

4.3 AIR QUALITY

This chapter describes the existing air quality setting and examines the air quality impacts associated with potential land uses changes associated with the San Joaquin River Parkway Master Plan Update (proposed Project). This chapter is based on the methodology recommended by the San Joaquin Valley Air Pollution Control District (SJVAPCD).

4.3.1 ENVIRONMENTAL SETTING

4.3.1.1 REGULATORY SETTING

Ambient air quality standards (AAQS) have been adopted at State and federal levels for criteria air pollutants. In addition, both the State and federal government regulate the release of toxic air contaminants (TACs). The Project site is in the San Joaquin Valley Air Basin (SJVAB or basin) and is subject to the rules and regulations imposed by the SJVAPCD, as well as the California AAQS adopted by the California Air Resources Board (CARB) and national AAQS adopted by the United States Environmental Protection Agency (EPA). Federal, State, regional and local laws, regulations, plans, or guidelines that are potentially applicable to the San Joaquin River Parkway Master Plan Update are summarized below.

Federal and State Laws

Ambient Air Quality Standards

The Clean Air Act (CAA) was passed in 1963 by the U.S. Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments are the latest in a series of federal efforts to protect air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act, signed into law in 1988, requires all areas of the State to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS based on even greater health and welfare concerns.

The National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect “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.

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Both California and the federal government have established health-based AAQS for seven air pollutants, which are shown in Table 4.3-1, Ambient Air Quality Standards for Criteria Pollutants. These pollutants are ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), coarse inhalable particulate matter (PM₁₀), fine inhalable particulate matter (PM_{2.5}), and lead (Pb). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Air Pollutants of Concern

Criteria Air Pollutants

The pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and State law. Air pollutants are categorized as primary and/or secondary pollutants. Primary air pollutants are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxides (NO_x), sulfur dioxide (SO₂), coarse inhalable particulate matter (PM₁₀), PM_{2.5}, and lead (Pb) are primary air pollutants. Of these, CO, SO₂, NO₂, PM₁₀, and PM_{2.5} are “criteria air pollutants,” which means that AAQS have been established for them. ROG and NO₂ are criteria pollutant precursors that form secondary criteria air pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O₃) and NO₂ are the principal secondary pollutants.

A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

- Carbon Monoxide (CO) is a colorless, odorless gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation.¹ The SJVAB is designated under the California and National AAQS as being in attainment of CO criteria levels.²
- Reactive Organic Gases (ROGs) are compounds composed primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of ROGs. Other sources of ROGs include evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. There are no ambient air quality standards established for ROGs. However, because they contribute to the formation of O₃, the SJVAPCD has established a significance threshold for this pollutant.

¹ U.S. Environmental Protection Agency (EPA), 2012. What Are the Six Common Air Pollutants? <http://www.epa.gov/airquality/urbanair>, accessed on April 24, 2017.

² California Air Resources Board (CARB), 2015. Area Designations Maps/State and National. <https://www.arb.ca.gov/design/adm/adm.htm>, accessed on April 24, 2017.

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TABLE 4.3-1 AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Major Pollutant Sources
Ozone (O ₃)	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.075 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO ₂)	Annual Average	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	*	* _a	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	* _a	
Respirable Particulate Matter (PM ₁₀)	Annual Arithmetic Mean	20 µg/m ³	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
	24 hours	50 µg/m ³	150 µg/m ³	
Respirable Particulate Matter (PM _{2.5})	Annual Arithmetic Mean	12 µg/m ³	12 µg/m ³	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m ³	
Lead (Pb)	30-Day Average	1.5 µg/m ³	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarterly	*	1.5 µg/m ³	
	Rolling 3-Month Average	*	0.15 µg/m ³	
Sulfates (SO ₄)	24 hours	25 µg/m ³	*	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size, and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.

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TABLE 4.3-1 AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Major Pollutant Sources
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H ₂ S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.
Vinyl Chloride	24 hour	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Notes: ppm: parts per million; µg/m³: micrograms per cubic meter

* Standard has not been established for this pollutant/duration by this entity.

a. On June 2, 2010, a new 1-hour SO₂ standard was established, and the existing 24-hour and annual primary standards were revoked.

Source: California Air Resources Board (CARB), 2013, Ambient Air Quality Standards. <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>, April 24, 2017.

- Nitrogen Oxides (NO_x) are a by-product of fuel combustion and contribute to the formation of ground-level O₃, PM₁₀, and PM_{2.5}. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO₂). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. The principal form of NO₂ produced by combustion is NO, but NO reacts with oxygen quickly to form NO₂, creating the mixture of NO and NO₂ commonly called NO_x. NO₂ acts as an acute irritant and is more injurious than NO in equal concentrations. At atmospheric concentrations, however, NO₂ is only potentially irritating. NO₂ absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO₂ exposure concentrations near roadways are of particular concern for susceptible individuals, including people with asthma asthmatics, children, and the elderly. Current scientific evidence links short-term NO₂ exposures, ranging from 30 minutes to 24 hours, with adverse respiratory effects, including airway inflammation in healthy people and increased respiratory symptoms in people with asthma. Also, studies show a connection between breathing elevated short-term NO₂ concentrations and increased visits to emergency departments and hospital admissions for respiratory issues, especially asthma.³ The SJVAB is designated an attainment area for NO₂ under the National and California AAQS.⁴
- Sulfur Dioxide (SO₂) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO₂. When sulfur dioxide forms sulfates (SO₄) in the atmosphere, together

³ U.S. Environmental Protection Agency (EPA), 2012, April 20. What Are the Six Common Air Pollutants? <http://www.epa.gov/airquality/urbanair>, accessed on April 24, 2017.

⁴ California Air Resources Board (CARB), 2015, December. Area Designations Maps/State and National. <http://www.arb.ca.gov/desig/adm/adm.htm>, accessed on April 24, 2017.

these pollutants are referred to as sulfur oxides (SO_x). Thus, SO₂ is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO₂ may irritate the upper respiratory tract. Current scientific evidence links short-term exposures to SO₂, ranging from 5 minutes to 24 hours, with an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms. These effects are particularly important for asthmatics at elevated ventilation rates (e.g., while exercising or playing). At lower concentrations and when combined with particulates, SO₂ may do greater harm by injuring lung tissue. Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly, and asthmatics.⁵ The SJVAB is designated attainment under the California and National AAQS.⁶

- Suspended Particulate Matter (PM₁₀ and PM_{2.5}) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or PM₁₀, include particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or PM_{2.5}, have an aerodynamic diameter of 2.5 microns (i.e., 2.5 millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. Both PM₁₀ and PM_{2.5} may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems. EPA scientific review concluded that PM_{2.5}, which penetrates deeply into the lungs, is more likely than PM₁₀ to contribute to health effects and at concentrations well below those allowed by the current PM₁₀ standards. These health effects include premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing). Diesel particulate matter (DPM) is classified by the CARB as a carcinogen. Particulate matter can also cause environmental effects such as visibility impairment,⁷ environmental damage,⁸ and aesthetic damage.^{9,10} The SJVAB is a nonattainment area for PM₁₀ under the California AAQS and nonattainment for PM_{2.5} under the California and National AAQS.¹¹
- Ozone (O₃) is commonly referred to as “smog” and is a gas that is formed when ROG_s and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O₃ is a secondary criteria air pollutant. O₃ concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions for the

⁵ U.S. Environmental Protection Agency (EPA), 2012, April 20. What Are the Six Common Air Pollutants? <http://www.epa.gov/airquality/urbanair>, accessed on April 24, 2017.

⁶ California Air Resources Board (CARB), 2015, December. Area Designations Maps/State and National. <http://www.arb.ca.gov/desig/adm/adm.htm>, accessed on April 24, 2017.

⁷ PM_{2.5} is the main cause of reduced visibility (haze) in parts of the United States.

⁸ Particulate matter can be carried over long distances by wind and then settle on ground or water. The effects of this settling include: making lakes and streams acidic; changing the nutrient balance in coastal waters and large river basins; depleting the nutrients in soil; damaging sensitive forests and farm crops; and affecting the diversity of ecosystems.

⁹ Particulate matter can stain and damage stone and other materials, including culturally important objects such as statues and monuments.

¹⁰ U.S. Environmental Protection Agency (EPA), 2012, April 20. What Are the Six Common Air Pollutants? <http://www.epa.gov/airquality/urbanair>, accessed on April 24, 2017.

¹¹ California Air Resources Board (CARB), 2015, December. Area Designations Maps/State and National. <http://www.arb.ca.gov/desig/adm/adm.htm>, accessed on April 24, 2017.

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formation of this pollutant. O₃ poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Breathing O₃ can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground-level O₃ also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. O₃ also affects sensitive vegetation and ecosystems, including forests, parks, wildlife refuges and wilderness areas. In particular, O₃ harms sensitive vegetation, including forest trees and plants during the growing season.¹² The SJVAB is designated severe nonattainment under the California AAQS (1-hour and 8-hour) and extreme nonattainment under the National AAQS (8-hour).¹³

- Lead (Pb) is a metal found naturally in the environment, as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the EPA's regulatory efforts to remove lead from on-road motor vehicle gasoline, emissions of lead from the transportation sector dramatically declined by 95 percent between 1980 and 1999, and levels of lead in the air decreased by 94 percent between 1980 and 1999. Today, the highest levels of lead in air are usually found near lead smelters. The major sources of lead emissions to the air today are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline. Once taken into the body, lead distributes throughout the blood and accumulates in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen-carrying capacity of the blood. The lead effects most commonly encountered in current populations are neurological effects in children and cardiovascular effects (e.g., high blood pressure and heart disease) in adults. Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems, learning deficits, and lowered IQ.¹⁴ The SJVAB is designated in attainment of the California and National AAQS for lead.¹⁵ Because emissions of lead are found only in projects that are permitted by SJVAPCD, lead is not an air quality of concern for the proposed project.

Toxic Air Contaminants

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

¹² U.S. Environmental Protection Agency (EPA), 2012, April 20. What Are the Six Common Air Pollutants? <http://www.epa.gov/airquality/urbanair>, accessed on April 24, 2017.

¹³ California Air Resources Board (CARB), 2015, December 1. Area Designations Maps/State and National. <http://www.arb.ca.gov/deg/adm/adm.htm>, accessed on April 24, 2017.

¹⁴ U.S. Environmental Protection Agency (EPA), 2012, April 20. What Are the Six Common Air Pollutants? <http://www.epa.gov/airquality/urbanair>, accessed on April 24, 2017.

¹⁵ California Air Resources Board (CARB), 2015, December. Area Designations Maps/State and National. <http://www.arb.ca.gov/deg/adm/adm.htm>, accessed on April 24, 2017.

TAC if it is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics “Hot Spot” Information and Assessment Act of 1987). The Tanner Air Toxics Act sets up a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an “airborne toxics control measure” for sources that emit designated TACs. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for 11 TACs that have no safe threshold.

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

By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs.¹⁶ Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

In 1998, CARB identified DPM as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particles are 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lungs.

San Joaquin Valley Air Basin

The SJVAB consists of eight counties: Fresno, Kern (western and central), Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare. Air pollution from significant activities in the SJVAB includes a variety of industrial-based sources as well as on- and off-road mobile sources. These sources, coupled with geographical and meteorological conditions unique to the area, stimulate the formation of unhealthy air.

Topography

The SJVAB is approximately 250 miles long and an average of 35 miles wide. It is bordered by the Sierra Nevada Mountains in the east, the Coast Ranges in the west, and the Tehachapi mountains in the south. There is a slight downward elevation gradient from Bakersfield in the southeast end (elevation 408 feet) to sea level at the northwest end where the valley opens to the San Francisco Bay at the Carquinez Straits. At its northern end is the

¹⁶ California Air Resources Board (CARB), 1999. Final Staff Report: Update to the Toxic Air Contaminant List.

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Sacramento Valley, which comprises the northern half of California's Central Valley. The bowl-shaped topography inhibits movement of pollutants out of the Valley.¹⁷

Climate

The SJVAB is in a Mediterranean Climate Zone and is influenced by a subtropical high-pressure cell most of the year. Mediterranean Climates are characterized by sparse rainfall, which occurs mainly in winter. Summers are hot and dry. Summertime maximum temperatures often exceed 100 degrees Fahrenheit (°F) in the Valley.

The subtropical high-pressure cell is strongest during spring, summer and fall and produces subsiding air, which can result in temperature inversions in the Valley. A temperature inversion can act like a lid, inhibiting vertical mixing of the air mass at the surface. Any emissions of pollutants can be trapped below the inversion. Most of the surrounding mountains are above the normal height of summer inversions (1,500–3,000 feet).

Winter-time high pressure events can often last many weeks, with surface temperatures often lowering into the 30s. During these events, fog can be present and inversions are extremely strong. These wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet.¹⁸

Wind Patterns

Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing and by transporting the pollution to other locations.

Especially in summer, winds in the valley most frequently blow from the northwest. The region's topographic features restrict air movement and channel the air mass toward the southeastern end of the Valley. Marine air can flow into the basin from the San Joaquin River Delta and over Altamont Pass and Pacheco Pass, where it can flow along the axis of the valley, over the Tehachapi pass, and into the Southeast Desert Air Basin. The Coastal Range is a barrier to air movement to the west, and the high Sierra Nevada is a significant barrier to the east (the highest peaks in the southern Sierra Nevada reach almost halfway through the Earth's atmosphere). Many days in the winter are marked by stagnation events where winds are very weak. Transport of pollutants during winter can be very limited. A secondary but significant summer wind pattern is from the southeast and can be associated with nighttime drainage winds, prefrontal conditions, and summer monsoons.

Two significant diurnal wind cycles that occur frequently in the Valley are the sea breeze and mountain-valley upslope and drainage flows. The sea breeze can accentuate the northwest wind flow, especially on summer afternoons. Nighttime drainage flows can accentuate the southeast movement of air down the Valley. In the mountains during periods of weak winds, winds tend to be upslope during the day and downslope at night. Nighttime and drainage flows are especially pronounced during the winter when flow from the east is enhanced by

¹⁷ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

¹⁸ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

nighttime cooling in the Sierra Nevada. Eddies can form in the valley wind flow and can re-circulate a polluted air mass for an extended period. Such an eddy occurs in the Fresno area during both winter and summer.¹⁹

Temperature, Sunlight, Ozone Production

Solar radiation and temperature are particularly important in the chemistry of ozone formation. The SJVAB averages over 260 sunny days per year. Photochemical air pollution (primarily ozone) is produced by the atmospheric reaction of organic substances (such as reactive organic gases) and nitrogen dioxide under the influence of sunlight. Ozone concentrations are very dependent on the amount of solar radiation, especially during late spring, summer and early fall. Ozone levels typically peak in the afternoon. After the sun goes down, the chemical reaction between nitrous oxide and ozone begins to dominate. This reaction tends to scatter the ozone in the metropolitan areas through the early morning hours, resulting in the lowest ozone levels, possibly reaching zero at sunrise in areas with high nitrogen oxides emissions. At sunrise, nitrogen oxides tend to peak, partly due to low levels of ozone at this time and also due to the morning commuter vehicle emissions of nitrogen oxides.

Generally, the higher the temperature, the more ozone formed, since reaction rates increase with temperature. However, extremely hot temperatures can “lift” or “break” the inversion layer. Typically, if the inversion layer doesn’t lift to allow the buildup of contaminants to be dispersed, the ozone levels will peak in the late afternoon. If the inversion layer breaks and the resultant afternoon winds occur, the ozone will peak in the early afternoon and decrease in the late afternoon as the contaminants are dispersed or transported out of the SJVAB.

Ozone levels are low during winter when there is much less sunlight to drive the photochemical reaction.²⁰

Inversions

The vertical dispersion of air pollutants in the San Joaquin Valley can be limited by persistent temperature inversions. Air temperature in the lowest layer of the atmosphere typically decreases with altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. The height of the base of the inversion is known as the “mixing height.” This is the level to which pollutants can mix vertically. Mixing of air is minimized above and below the inversion base. The inversion base represents an abrupt density change where little air movement occurs.

Inversion layers are significant in determining pollutant concentrations. Concentration levels can be related to the amount of mixing space below the inversion. Temperature inversions that occur on the summer days are usually encountered 2,000 to 2,500 feet above the Valley floor. In winter months, overnight inversions occur 500 to 1,500 feet above the valley floor.²¹

¹⁹ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

²⁰ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

²¹ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

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Precipitation, Humidity, and Fog

Precipitation and fog may reduce or limit some pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog can block the required solar radiation. Wet fogs can cleanse the air during winter as moisture collects on particles and deposits them on the ground. Atmospheric moisture can also increase pollution levels. In fogs with less water content, the moisture acts to form secondary ammonium nitrate particulate matter. This ammonium nitrate is part of the valleys PM_{2.5} and PM₁₀ problem. The winds and unstable air conditions experienced during the passage of winter storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the SJVAB floor. This creates strong low-level temperature inversions and very stable air conditions, which can lead to tule fog. Wintertime conditions favorable to fog formation are also conditions favorable to high concentrations of PM_{2.5} and PM₁₀.²²

San Joaquin Valley Air Pollution Control District

The primary role of SJVAPCD is to develop plans and implement control measures in the SJVAB to control air pollution. These controls primarily affect stationary sources such as industry and power plants. Rules and regulations have been developed by SJVAPCD to control air pollution from a wide range of air pollution sources. SJVAPCD also provides uniform procedures for assessing potential air quality impacts of proposed projects and for preparing the air quality section of environmental documents (see Section D(2), *SJVAPCD Significance Criteria*).²³

Attainment Status

At the federal level, the SJVAB is designated extreme nonattainment for the 8-hour ozone standard, attainment for PM₁₀ and CO, and nonattainment for PM_{2.5}. At the State level, the SJVAB is designated nonattainment for the 8-hour ozone, PM₁₀, and PM_{2.5} standards. The basin has not attained the federal 1-hour ozone, although this standard was revoked in 2005. The attainment status for the SJVAB with respect to various pollutants of concern is displayed in Table 4.3-2.

Air Quality Planning

The EPA requires states that have areas that do not meet the National AAQS to prepare and submit air quality plans showing how the National AAQS will be met. If the states cannot show how the National AAQS will be met, then the states must show progress toward meeting the National AAQS. These plans are referred to as the State Implementation Plan (SIP). California's adopted *2007 State Strategy* was submitted to the US EPA as a revision

²² San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

²³ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

TABLE 4.3-2 SAN JOAQUIN VALLEY AIR BASIN ATTAINMENT STATUS

Pollutant	Federal Status	State Status
Ozone (O ₃) – 1-Hour Standard	Revoked in 2005	Severe Nonattainment
Ozone (O ₃) – 8-Hour Standard	Extreme Nonattainment	Nonattainment
Respirable Particulate Matter (PM ₁₀)	Attainment	Nonattainment
Fine Particulate Matter (PM _{2.5}) ^a	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide (NO ₂)	Attainment/Unclassified	Attainment
Sulfur Dioxide (SO ₂)	Attainment/Unclassified	Attainment
Lead	Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Note: Shading = nonattainment zones.

a. The Valley is designated nonattainment for the 1997 federal PM_{2.5} standards. EPA released final designations for the 2006 PM_{2.5} standards (effective in 2009), designating the Valley as nonattainment.

Source: California Air Resources Board (CARB). 2015, December. Area Designations: Activities and Maps. <http://www.arb.ca.gov/desig/adm/adm.htm>, accessed on April 24, 2017.

to its SIP in November 2007.²⁴ In addition, CARB requires regions that do not meet California AAQS for ozone to submit clean air plans that describe measures to attain the standard or show progress toward attainment. To ensure federal CAA compliance, SJVAPCD is currently developing plans for meeting new National AAQS for ozone and PM_{2.5} and the California AAQS for PM₁₀ in the SJVAB (for California CAA compliance).²⁵

1-Hour Ozone Plan

CARB submitted the *2004 Extreme Ozone Attainment Demonstration Plan* to the EPA on November 15, 2004. The plan was amended by the SJVAPCD in 2008. Effective June 15, 2005, the EPA revoked the federal 1-hour ozone AAQS, finding that the 8-hour ozone standard was more health protective. Under federal anti-backsliding

²⁴ California Air Resources Board (CARB), 2007. Air Resources Board's Proposed State Strategy for California's 2007 State Implementation Plan. April. Note that the plan was adopted by CARB on September 27, 2007.

²⁵ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

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provisions, the SJVAPCD has implemented the 2004 plan's control measures and emissions reductions strategies, and the Valley must still attain the revoked standard before it can rescind the CAA Section 185 fees collected under Rule 3170.²⁶

2013 Plan for the Revoked 1-Hour Ozone Standard

SJVAPCD has developed a new plan for EPA's revoked 1-hour ozone standard. Although EPA approved the SJVAPCD's 2004 plan for the 1-hour ozone standard in 2010, EPA withdrew this approval as a result of litigation. The SJVAPCD's 2013 Plan for the Revoked 1-Hour Ozone Standard was approved by the SJVAPCD Governing Board at a public hearing on September 19, 2013. The modeling confirms that the valley will attain the revoked 1-hour ozone standard by 2017.²⁷

8-Hour Ozone Plan

The SJVAPCD's Governing Board adopted the *2007 Ozone Plan* on April 30, 2007. This far-reaching plan, with innovative measures and a "dual path" strategy, assures expeditious attainment of the federal 8-hour ozone standard as set by EPA in 1997. The plan projects that the Valley will achieve the 8-hour ozone standard for all areas of the SJVAB no later than 2023. CARB approved the plan on June 14, 2007. EPA approved the 2007 Ozone Plan effective April 30, 2012. As of this writing, it is expected that the plan addressing EPA's 2008 revised 8 hour ozone standard will be due to EPA in 2016.²⁸

PM₁₀ Plan

Based on PM₁₀ measurements from 2003 to 2006, EPA found that the SJVAB has reached federal PM₁₀ standards. On September 21, 2007, the SJVAPCD's Governing Board adopted the *2007 PM₁₀ Maintenance Plan and Request for Redesignation*. This plan demonstrates that the Valley will continue to meet the PM₁₀ standard. EPA approved the document, and on September 25, 2008, the SJVAB was redesignated to attainment.²⁹

PM_{2.5} Plan

The SJVAPCD adopted the *2012 PM_{2.5} Plan* on December 20, 2012.³⁰ This plan was approved by CARB on January 24, 2013. This plan will assure that the Valley will attain the 2006 PM_{2.5} National AAQS. The plan uses control measures to reduce NO_x, which also leads to fine particulate formation in the atmosphere. The plan incorporates measures to reduce direct emissions of PM_{2.5}, including a strengthening of regulations for various

²⁶ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

²⁷ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2013. 2013 Plan for the Revoked 1 Hour Ozone Standard. http://www.valleyair.org/Air_Quality_Plans/Ozone-OneHourPlan-2013.htm, April 24, 2017.

²⁸ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2016. Ozone Plan, June. http://www.valleyair.org/Air_Quality_Plans/Ozone_Plans.htm, accessed January 2016.

²⁹ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

³⁰ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *2012 PM_{2.5} Plan*, December.

SJVAB industries and the general public through new rules and amendments. The plan estimates that the SJVAB will reach the PM_{2.5} standard by 2019.³¹

All of the above-referenced plans include measures (i.e., federal, State, and local) that would be implemented through rule making or program funding to reduce air pollutant emissions in the SJVAB. Transportation control measures (TCMs) are part of these plans.

Applicable SJVAPCD Rules and Regulations

SJVAPCD Indirect Source Review

On December 15, 2005, SJVAPCD adopted the Indirect Source Review Rule (ISR or Rule 9510) to reduce ozone precursors (i.e., ROG and NO_x) and PM₁₀ emissions from new land use development projects. Rule 9510 applies to both construction and operational-related impacts. The rule applies to any applicant that seeks to gain a final discretionary approval for a development project, or any portion thereof, which upon full buildout would include any one of the following:

- 50 residential units.
- 2,000 square feet of commercial space.
- 25,000 square feet of light industrial space.
- 100,000 square feet of heavy industrial space.
- 20,000 square feet of medical office space.
- 39,000 square feet of general office space.
- 9,000 square feet of educational space.
- 10,000 square feet of government space.
- 20,000 square feet of recreational space.
- 9,000 square feet of space not identified above.
- Transportation/transit projects with construction exhaust emissions of two or more tons of NO_x or two or more tons of PM₁₀.
- Projects on contiguous or adjacent property under common ownership of a single entity that is designated and zoned for the same development and density, and has the capability of accommodating more than 50 residential units.

³¹ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

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- Projects on contiguous or adjacent property under common ownership of a single entity that is designated and zoned for the same development and density and has the capability of accommodating development projects that generate two or more tons of NO_x or two or more tons of PM₁₀ during project operations.

The rule requires all subject, non-exempt projects³² to mitigate both construction and operational period emissions by (1) applying feasible SJVAPCD-approved mitigation measures, or (2) paying any applicable fees to support programs that reduce emissions. Off-site emissions reduction fees (off-site fees) are required for projects that do not achieve the required emissions reductions through on-site emission reduction measures. Phased projects can defer payment of fees in accordance with an Off-Site Emissions Reduction Fee Deferral Schedule (FDS) approved by the SJVAPCD.

To determine how an individual project would satisfy Rule 9510, each project would submit an air quality impact assessment (AIA) to the SJVAPCD as early as possible, but no later than prior to the project's final discretionary approval, to identify the project's baseline unmitigated emissions inventory for indirect sources: on-site exhaust emissions from construction activities and operational activities from mobile and area sources of emissions (excludes fugitive dust and permitted sources).³³ Rule 9510 requires the following:

- **Construction Equipment Emissions:** The exhaust emissions for construction equipment greater than 50 horsepower (hp) used or associated with the development project shall be reduced by the following amounts from the statewide average as estimated by CARB:
 - 20 percent of the total NO_x emissions, and
 - 45 percent of the total PM₁₀ exhaust emissions.

Mitigation measures may include those that reduce construction emissions on-site by using less polluting construction equipment, which can be achieved by utilizing add-on controls, cleaner fuels, or newer lower emitting equipment.

- **Operational Emissions:**
 - *NO_x Emissions:* Applicants shall reduce 33.3 percent of the project's operational baseline NO_x emissions over a period of ten years as quantified in the approved AIA.
 - *PM₁₀ Emissions:* Applicants shall reduce 50 percent of the project's operational baseline PM₁₀ emissions over a period of 10 years as quantified in the approved AIA.

These requirements can be met through any combination of on-site emissions reduction measures.

In the event that a project cannot achieve the above standards through imposition of mitigation measures, then the project would be required to pay the applicable off-site fees.

³² Development projects that have a mitigated baseline below 2 tons per year of NO_x and 2 tons per year of PM₁₀ are exempt.

³³ Stationary sources of air pollutant emissions are covered separately under SJVAPCD's Rule 2201, *New and Modified Stationary Source Review*.

New and Modified Stationary Source Review

SJVAPCD adopted Rule 2201, *New and Modified Stationary Source Review*, to control emissions from new stationary sources and all modifications to existing stationary sources that are subject to SJVAPCD's permit requirements (i.e., "permit projects" for which the SJVAPCD is the lead agency). Permit projects that exceed the source performance standards are required to install best available control technology (BACT) to control emissions to the maximum extent practicable.

Fugitive PM₁₀ Prohibitions

SJVAPCD controls fugitive PM₁₀ through Regulation VIII, *Fugitive PM₁₀ Prohibitions*. The purpose of this regulation is to reduce ambient concentrations of PM₁₀ and PM_{2.5} by requiring actions to prevent, reduce, or mitigate anthropogenic (human caused) fugitive dust emissions.

- Regulation VIII, Rule 8021 applies to any construction, demolition, excavation, extraction, and other earthmoving activities, including, but not limited to, land clearing, grubbing, scraping, travel on-site, and travel on access roads to and from the site.
- Regulation VIII, Rule 8031 applies to the outdoor handling, storage, and transport of any bulk material.
- Regulation VIII, Rule 8041 applies to sites where carryout or trackout has occurred or may occur on paved roads or the paved shoulders of public roads.
- Regulation VIII, Rule 8051 applies to any open area having 0.5 acre or more within urban areas or 3.0 acres or more within rural areas, and contains at least 1,000 square feet of disturbed surface area.
- Regulation VIII, Rule 8061 applies to any new or existing public or private paved or unpaved road, road construction project, or road modification project.
- Regulation VIII, Rule 8071 applies to any unpaved vehicle/equipment traffic area.
- Regulation VIII, Rule 8081 applies to off-field agricultural sources.

Sources regulated are required to provide Dust Control Plans that meet the regulation requirements. Under Rule 8021, a Dust Control Plan is required for any residential project that will include 10 or more acres of disturbed surface area, a non-residential project with five acres or more of disturbed surface area, or a project that relocates 2,500 cubic yards per day of bulk materials for at least 3 days. The Dust Control Plan must be submitted to SJVAPCD prior to the start of any construction activity. The Dust Control Plan must also describe fugitive dust control measure to be implemented before, during, and after any dust-generating activity. For sites smaller than those listed above, the project is still required to notify SJVAPCD a minimum of 48 hours prior to commencing earthmoving activities.

Nuisance Odors

SJVAPCD controls nuisance odors through implementation of Rule 4102, *Nuisance*. Pursuant to this rule, "a person shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or

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which endanger the comfort, repose, health or safety of any such person or the public or which cause or have a natural tendency to cause injury or damage to business or property.”

Employer Based Trip Reduction Program

SJVAPCD has implemented Rule 9410, *Employer Based Trip Reduction*. The purpose of this rule is to reduce vehicle miles traveled (VMT) from private vehicles used by employees to commute to and from their worksites, which would reduce emissions of NO_x, ROG, and particulate matter (PM₁₀ and PM_{2.5}). The rule applies to employers with at least 100 employees. Employers are required to implement an Employer Trip Reduction Implementation Plan (ETRIP) for each worksite with 100 or more eligible employees to meet applicable targets specified in the rule. Employers are required to facilitate participation in the development of ETRIPs by providing information to its employees explaining the requirements and applicability of this rule. Employers are required to prepare and submit an ETRIP for each worksite to the SJVAPCD. The ETRIP must be updated annually. Under this rule, employers shall collect information on the modes of transportation used for each eligible employee's commutes both to and from work for every day of the commute verification period, as defined in using either the mandatory commute verification method or a representative survey method. Annual reporting includes the results of the commute verification for the previous calendar year along with the measures implemented from the ETRIP and, if necessary, any updates to the ETRIP.

Parkway Master Plan Policies

The Conservancy will implement its mission and the Parkway Master Plan in a manner consistent with its adopted Parkway Master Plan goals, objectives, policies, design guidelines, and best management practices (BMPs) to the extent practicable.

4.3.1.2 EXISTING SETTING

Air Quality Monitoring Data

CARB, in cooperation with SJVAPCD, monitors air quality throughout the SJVAB. The closest monitoring station to the Plan Area is in the city of Clovis. The North Clovis Monitoring Station monitors O₃, NO₂, CO, PM₁₀, and PM_{2.5}. Data from this station is summarized in Table 4.3-3. In general, the ambient air quality measurements from this station are representative of the air quality in the Project vicinity.

As shown in this table, the area regularly exceeds the California and National AAQs for O₃. In addition, the area regularly exceeds the National PM_{2.5} AAQS and the California PM₁₀ AAQS. The area has not exceeded the CO or NO₂ standards in the last five years in the Project vicinity.

Significant Source Categories

The types of air pollutant emission sources are commonly characterized as either point or area sources. A point source is a single, identifiable source of air pollutant emissions (for example, the emissions from a stack). An area

TABLE 4.3-3 AMBIENT AIR QUALITY MONITORING SUMMARY

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels during Such Violations				
	2008	2009	2010	2011	2012
Ozone (O₃)^a					
State 1-Hour \geq 0.09 ppm	33	33	22	32	37
State 8-hour \geq 0.07 ppm	60	64	58	72	93
Federal 8-Hour > 0.075 ppm	44	48	39	49	57
Max. 1-Hour Conc. (ppm)	0.156	0.119	0.133	0.133	0.124
Max. 8-Hour Conc. (ppm)	0.128	0.105	0.106	0.103	0.109
Carbon Monoxide (CO)^a					
State 8-Hour > 9.0 ppm	0	0	0	0	NA
Federal 8-Hour \geq 9.0 ppm	0	0	0	0	NA
Max. 8-Hour Conc. (ppm)	1.50	1.66	1.43	1.42	NA
Nitrogen Dioxide (NO₂)^a					
State 1-Hour \geq 0.18 (ppm)	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	67.0	61.0	55.0	50.0	55.0
Annual Conc. (ppm)	12	NA	12	10	10
Coarse Particulates (PM₁₀)^a					
State 24-Hour > 50 $\mu\text{g}/\text{m}^3$	13	5	8	9	9
Federal 24-Hour > 150 $\mu\text{g}/\text{m}^3$	0	0	0	0	0
Max. 24-Hour Conc. ($\mu\text{g}/\text{m}^3$)	80.5	65.2	62.8	77.0	78.3
Annual Conc. ($\mu\text{g}/\text{m}^3$)	35.4	28.5	28.2	30.4	29.2
Fine Particulates (PM_{2.5})^a					
Federal 24-Hour > 35 $\mu\text{g}/\text{m}^3$	17	26	19	38	24
Max. 24-Hour Conc. ($\mu\text{g}/\text{m}^3$)	95.3	71.0	75.2	76.4	80.8
Annual Conc. ($\mu\text{g}/\text{m}^3$)	16.1	18.2	14.6	17.9	15.3

Notes: ppm: parts per million; $\mu\text{g}/\text{m}^3$: or micrograms per cubic meter; NA = Not Available

a. Data reported from the North Clovis – Villa Avenue Monitoring Station.

Source: California Air Resources Board (CARB), 2013. Air Pollution Data Monitoring Cards (2008, 2009, 2010, 2011, and 2012), <http://www.arb.ca.gov/adam/index.html>, accessed April 24, 2017.

source is a source of diffuse air pollutant emissions (for example, the emissions from use of landscape equipment). Sources may be further characterized as either stationary or mobile. Short-term sources (for example, construction emissions) constitute intermittent emissions. Long-term sources (stationary sources and development projects) constitute continuous emissions. Source categories consist of several broad groups:³⁴

³⁴ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2012. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*, May.

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- **Point Sources (stationary sources).** Facilities that have valid SJVAPCD permits for specific emissions units are called point sources. Refineries, gas stations, dry cleaners, and industrial plants are examples of point sources in the SJVAB.
- **Area Sources.** Area source emissions are from sources that are not permitted by SJVAPCD, or are individually so small that they may not be included in the SJVAPCD's emissions survey system. These small sources may not individually emit significant amounts of pollutants, but when aggregated, they can make an appreciable contribution to the emission inventory. Examples of these area sources are residential water heating and use of paints, varnishes, and consumer products.
- **Mobile Sources.** Mobile sources consist of motor vehicles and other portable sources. Mobile sources are classified as being on-road or off-road. On-road motor vehicles consist of passenger cars, trucks, buses and motorcycles. Off-road mobile sources generally consist of vehicles in which the primary function is not transportation. Examples of off-road vehicles include construction and farm equipment. Other mobile sources include boats and ships, trains, and aircrafts.
- **Natural Sources.** Natural sources are non-anthropogenic, naturally occurring emissions and are not typically included in a project-level emissions inventory for CEQA. Natural sources include biological and geological sources, wildfires, windblown dust, and biogenic emissions from plants and trees.

Existing Emissions

The existing Plan includes goals and supporting objectives and policies to preserve, protect, and restore the natural resource values of the San Joaquin River corridor and to provide public use of the river without adverse effects on those resources. Operation of park facilities along the approximately 22-mile reach, including campgrounds, interpretive centers, multi-purpose trails, fishing docks, non-motorized boat launch, and restroom facilities, currently generate criteria air pollutants from transportation sources (vehicles accessing park facilities) and area sources (camp fires/barbeques). In addition, there are currently 42 campsites within the San Joaquin River Parkway (40 river campsites and 7 campsites with hookups). Table 4.3-4 identifies existing criteria air pollutant emissions.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. "Sensitive receptors" are defined as facilities where sensitive population groups are likely to be located, such as children, the elderly, the acutely ill, and the chronically ill. These land uses include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, because the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

TABLE 4.3-4 ESTIMATE OF EXISTING ANNUAL OPERATIONAL CRITERIA AIR POLLUTANT EMISSIONS

Activity	Tons/year					
	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Campsites	15.71	0.18	17.33	0.03	2.37	2.35
Area Sources	<0.01	<0.01	0.04	<0.01	<0.01	<0.01
Energy	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transportation	2.59	11.62	32.12	0.05	3.43	1.10
Total	18.31	11.80	49.49	0.08	5.80	3.45

Notes: Modeling for park facilities are based on CalEEMod defaults. Based on 2013 emission rates. Total may not add to 100% due to rounding. Campsites are based on 2 bundles of wood burned per fire pit per campsite and conservatively assumes an average annual occupancy rate of 50 percent. Source: CalEEMod 2013.2.2 (area, energy, and transportation) and EPA 42 (campfires).

4.3.2 STANDARDS OF SIGNIFICANCE

The following section describes the significance thresholds used by the SJVAPCD for development projects. While it is unlikely that future implementation projects under the Parkway Plan would trigger the need for this level of analysis given the respective sizes of future projects, the information is provided for informational purposes and to allow for future “tiering” from this Draft Environmental Impact Report (EIR) as projects are proposed by the Conservancy.

Per Appendix G of the CEQA Guidelines, the proposed Project would have a significant impact with regard to air quality if it would:

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
4. Expose sensitive receptors to substantial pollutant concentrations.
5. Create objectionable odors affecting a substantial number of people.

SJVAPCD Significance Criteria

As stated in Appendix G of the CEQA Guidelines, the significance criteria established by the applicable air quality management district may be relied on to make the above determinations. Thus, this analysis also evaluates the

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Project’s air quality impacts pursuant to SJVAPCD’s recommended guidelines and thresholds of significance, as discussed further below.

The SJVAPCD has developed the *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI) and recently adopted the latest version on March 19, 2015.³⁵ The current GAMAQI represents the latest guidance for addressing air quality impacts in the SJVAB. Changes to the GAMAQI are primarily administrative in nature to update air basin information, attainment status, and general guidance to reflect updated conditions. The following thresholds of significance from the SJVAPCD’s GAMAQI are used to determine whether a proposed project would result in a significant air quality impact.

Regional Significance Thresholds

SJVAPCD has identified regional construction and operational emissions thresholds to determine a project’s cumulative impact on air quality in the SJVAB. Specifically, these thresholds gauge whether a project would significantly contribute to a nonattainment designation based on the mass emissions generated. Mass emissions from a project are not correlated with concentrations of air pollutants. Table 4.3-5 lists SJVAPCD’s regional significance thresholds. It should be noted that SJVAPCD Rule 9510 (indirect sources of ozone precursors) and Regulation VIII (particulate matter) may not reduce project-specific construction and operational emissions to below the SJVAPCD thresholds. There is growing evidence that although ultrafine particulates contribute a very small portion of the overall atmospheric mass concentration, they represent a greater proportion of the health risk from PM. However, the EPA or CARB have not yet adopted AAQS to regulate ultrafine particulates; therefore, SJVAPCD has not developed thresholds for them.

TABLE 4.3-5 SJVAPCD REGIONAL SIGNIFICANCE THRESHOLDS

Criteria Air Pollutant	Construction and Operational Significance Thresholds (Tons/Year)
CO	100
NO _x	10
ROG	10
SO _x	27
PM ₁₀	15
PM _{2.5}	15

Source: San Joaquin Valley Air Pollution Control District (SJVAPCD), 2015, March. *Guidance for Assessing and Mitigating Air Quality Impacts*. http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf.

³⁵ San Joaquin Valley Air Pollution Control District (SJVAPCD), 2015, March. *Guidance for Assessing and Mitigating Air Quality Impacts*. http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, accessed on April 24, 2017.

Ambient Air Quality Analysis

The need to perform air quality dispersion modeling for typical urban development projects is determined on a case-by-case basis, depending on project size. SJVAPCD applies the following guidance in determining whether an ambient air quality analysis should be conducted for development projects. Compliance with Rule 9510 frequently reduces project-specific emissions to less than significant levels. However, for large construction projects, additional mitigation may be required. SJVAPCD recommends that an ambient air quality analysis be performed for all pollutants when on-site emissions of any criteria pollutant from construction activities would equal or exceed any applicable threshold of significance for criteria pollutants, or 100 pounds per day of any criteria pollutant, after compliance with Rule 9510 requirements and implementation of all enforceable mitigation measures.

However, air dispersion modeling is not applicable at a program level. Consequently, for the purpose of this program EIR, emissions of any criteria air pollutant that would exceed the applicable threshold of significance identified in Table 4.3-5 is considered to result in elevated concentrations of air pollutants that have the potential to exceed the AAQS. It should be noted that CO hotspot monitoring was previously required under the GAMAQI. However, emissions from motor vehicles, by far the largest source of CO emissions, have been declining since 1985 despite increases in VMT, the introduction of new automotive emission controls, and fleet turnover. Consequently, no CO hotspots have been reported in the SJVAB even at the most congested intersections.

Consistency with the Applicable Air Quality Plan

SJVAPCD has prepared plans to attain federal and State AAQS. The significance thresholds in Table 4.3-5 are based on SJVAPCD's New Source Review (NSR) offset requirements for stationary sources. Emission reductions achieved through implementation of District offset requirements are a major component of SJVAPCD's air quality plans. Thus, projects with emissions below the thresholds of significance for criteria pollutants (see Table 4.3-5) would be determined to "Not conflict or obstruct implementation of the SJVAPCD's air quality plan." Because dispersion modeling is not applicable for a program EIR, projects with emissions that exceed these values are considered to have the potential to exceed the AAQS, resulting in a potentially significant impact.

Odors

Odor impacts associated with the proposed Project would be considered significant if the Project has the potential to frequently expose members of the public to objectionable odors. There are two general scenarios where a project could expose people to substantial odors:

- Odor Generator: projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and
- Odor Receiver: residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources.

Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there are no quantitative or formulaic methodologies to determine if

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potential odors would have a significant impact. Rather, projects must be assessed on a case-by-case basis. The SJVAPCD has identified buffer distances for common types of facilities that have been known to produce odors in the SJVAB. The degree of odors could be significant may be based on a review of SJVAPCD's complaint records.

For a new project locating near an existing source of odors, the impact is potentially significant when the project site is at least as close as any other site that has already experienced significant odor problems related to the odor source. Significant odor problems are defined as:

- More than one confirmed complaint per year averaged over a three year period, or
- Three unconfirmed complaints per year averaged over a three-year period.

Health Risk

Whenever a project would require use of chemical compounds that have been identified in SJVAPCD's Rule 2201; placed on CARB's air toxics list pursuant to Assembly Bill 1807 (AB 1807), Air Contaminant Identification and Control Act (1983); or placed on the EPA's National Emissions Standards for Hazardous Air Pollutants, a health risk assessment (HRA) is warranted. In addition, if a project would place sensitive land uses proximate to major sources of TACs (roadways with over 50,000 vehicles per day or major stationary sources), an HRA may be warranted. Table 4.3-6 lists the SJVAPCD's TAC incremental risk thresholds for operation of a project.

TABLE 4.3-6 TOXIC AIR CONTAMINANTS INCREMENTAL RISK THRESHOLDS

Maximum Exposed Individual (MEI) Cancer Risk	≥ 10 in 1 million
Hazard Index (Project Increment)	≥ 1.0

Source: San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015, March. Guidance for Assessing and Mitigating Air Quality Impacts. http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, accessed on April 24, 2017.

Cumulative Impacts

By its very nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development. Future attainment of State and federal AAQS is a function of successful implementation of the SJVAPCDs attainment plans. Consequently, the SJVAPCD's application of thresholds of significance for criteria pollutants is relevant to the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality. Pursuant to the SJVAPCD's guidance, if project-specific emissions would be less than the thresholds of significance for criteria pollutants, the project would not be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the SJVAPCD is in non-attainment under applicable federal or State AAQS.

4.3.3 IMPACT DISCUSSION

This section analyzes potential project-specific and cumulative impacts related to air quality.

AQ-1 The proposed Project would conflict with or obstruct implementation of the applicable air quality plan.

SJVAPCD is tasked with implementing programs and regulations required by the Clean Air Act and the California Clean Air Act. SJVAPCD has prepared several plans to attain the National AAQS and California AAQS. SJVAPCD has established thresholds of significance for criteria pollutant emissions. Emission reductions achieved through implementation of SJVAPCD’s offset requirements are a major component of SJVAPCD’s air quality plans. Therefore, projects with emissions below the thresholds of significance for criteria pollutants would be determined to “Not conflict or obstruct implementation of the SJVAPCD’s air quality plan.”

A wide variety of control measures are included in the regional air quality plans, such as reducing or offsetting emissions from construction and operational associated with land use developments.

The Plan would not generate an increase in population and employment that has the potential to affect regional population and employment projections. In addition, future park improvements proposed within the Parkway Plan Area would be required to adhere to the SJVAPCD control measures, as outlined in the air quality plans and implemented through SJVAPCD rules and regulations. Therefore, the proposed Project would not conflict with the attainment measures within the air quality management plans.

Because dispersion modeling is not applicable for a program EIR, projects with emissions that exceed the SJVAPCD’s regional significance threshold (see Table 4.3-5) are considered to have the potential to exceed the AAQS, resulting in a potentially significant impact. As discussed below in Impact AQ-3, the Project could generate a substantial increase in criteria air pollutants that would exceed the SJVAPCD’s significance thresholds. This is primarily due to the proposed improvements to the Lost Lake Park facility, along with the potential for campsites within other areas of the Parkway Plan area. Therefore, despite being consistent with the control measures in the air quality management plans, to be conservative, the Project is considered to be inconsistent with the SJVAPCD’s air quality management plans because emissions could exceed the significance thresholds. The Project’s impacts in this regard would be *significant*.

Several policies under the proposed Plan would also minimize impacts to air quality. Such policies would include:

Air Resources, Climate Change Adaptation, and Sequestration

Goals:

- In developing the Parkway, utilize opportunities to improve regional air quality and reduce the potential for Parkway projects to contribute to air pollution.

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Policies:

- AIR.10 Strive to connect primary multi-use trails to increase pedestrian and bicycle travel, reduce residents' reliance on motorized vehicles, and allow for longer, contiguous sections of the Parkway trail.
- AIR.11 Utilize appropriate surfaces and maintenance methods to reduce dust generation on trails, roads, and parking areas, and from un-vegetated ground surfaces where possible.

Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:

- CARB Airborne Toxics Control Measure (CCR 2840)
- Building Energy Efficiency Standards (Title 24)
- Appliance Energy Efficiency Standards (Title 20)
- Motor Vehicle Standards (AB 1493)
- SJVAPCD Regulation II – Permits
- SJVAPCD Regulation IV, Prohibitions, Rule 4100 – New Source Review Performance Standards
- SJVAPCD Regulation IV, Prohibitions, Rule 4101 – Visible Emissions
- SJVAPCD Regulation IV, Prohibitions, Rule 4102 – Nuisance
- SJVAPCD Regulation VIII – Fugitive PM₁₀ Prohibitions
- SJVAPCD Regulation IX, Mobile and Indirect Sources, Rule 9410, Employer Based Trip Reduction.
- SJVAPCD Regulation IX, Mobile and Indirect Sources, Rule 9510 Indirect Source Review (ISR)

Significance Without Mitigation: Significant

Impact AQ-1: Subsequent environmental review of future projects within the San Joaquin River Parkway may identify that individual projects could exceed the applicable SJVAPCD thresholds and therefore is inconsistent with SJVAPCD's air quality management plans.

Mitigation Measure AQ-1: Mitigation measures identified for Impact AQ-3 would lessen impacts associated with inconsistency with SJVAPCD's air quality management plans.

Significance With Mitigation: Adherence to SJVAPCD Rule 9510 and mitigation measures incorporated into future projects within the San Joaquin River Parkway for operation and construction phases described in Impact AQ-3 below would reduce criteria air pollutant emissions to the extent feasible. These regulations and mitigation measures would facilitate continued cooperation with SJVAPCD to achieve regional air quality improvement goals. However, due to the programmatic nature of the proposed Project, no additional mitigation measures are available to reduce impacts associated with inconsistency with SJVAPCD's air quality management plans to less than significant levels. It should be noted that the identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects that comply with SJVAPCD air quality management plans. However, because the Project's emissions cannot be reduced to a less-than-significant level, the Project's impacts in this regard would be *significant and unavoidable*.

AQ-2 **The proposed Project would violate any air quality standard or contribute substantially to an existing or projected air quality violation.**

The determination of whether project emissions would violate any ambient air quality standard is largely a function of air quality dispersion modeling. If project emissions would not exceed State and National AAQS at the project's property boundaries, the project would be considered to not violate any air quality standard or contribute substantially to an existing or projected air quality violation. However, the need to perform air quality dispersion modeling for development projects is determined on a case-by-case basis, depending on project size and is not applicable for program-level EIRs. As identified in AQ-3, construction of individual projects within the San Joaquin River Parkway have the potential to exceed the SJVAPCD's significance thresholds. Adherence to SJVAPCD rules would reduce impacts to the extent feasible; however, for large construction projects at the scale of the Lost Lake Park Conceptual Plan improvements, impacts may continue to exceed the SJVAPCD thresholds. Consequently, impacts are *significant*.

Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:

- CARB Airborne Toxics Control Measure (CCR 2840)
- Building Energy Efficiency Standards (Title 24)
- Appliance Energy Efficiency Standards (Title 20)
- Motor Vehicle Standards (AB 1493)
- SJVAPCD Regulation II – Permits
- SJVAPCD Regulation IV, Prohibitions, Rule 4100 – New Source Review Performance Standards
- SJVAPCD Regulation IV, Prohibitions, Rule 4101 – Visible Emissions
- SJVAPCD Regulation IV, Prohibitions, Rule 4102 – Nuisance
- SJVAPCD Regulation VIII – Fugitive PM₁₀ Prohibitions
- SJVAPCD Regulation IX, Mobile and Indirect Sources, Rule 9410, Employer Based Trip Reduction.
- SJVAPCD Regulation IX, Mobile and Indirect Sources, Rule 9510 Indirect Source Review (ISR)

Significance Without Mitigation: Significant

Impact AQ-2: Subsequent environmental review of future projects within the San Joaquin River Parkway may identify that individual projects could exceed the applicable SJVAPCD thresholds and therefore the Project could violate air quality standards or contribute substantially to an existing or projected air quality violation.

Mitigation Measure AQ-2: Mitigation measures identified for Impact AQ-3 would lessen impacts associated with inconsistency with SJVAPCD's air quality management plans.

Significance With Mitigation: Determination of whether project emissions would violate any ambient air quality standard is largely a function of air quality dispersion modeling. If project emissions would not exceed State and National AAQS at the project's property boundaries, the project would be considered to not violate any air quality standard or contribute substantially to an existing or projected air quality violation. However, the need to perform air quality dispersion modeling for typical urban development projects is determined on a case-by-case basis, depending on project size, and is not applicable for program-level EIRs. As identified in

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Impact AQ-3, subsequent environmental review of future projects within the Parkway Plan Area may identify that construction and operational phase emissions would exceed SJVAPCD's project-level significance thresholds. Although feasible mitigation measures would be imposed (see below), due to the nature and scope of the Project and its anticipated buildout horizon, regional construction and operational phase emissions could exceed the SJVAPCD significance thresholds. It should be noted that the identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects that comply with SJVAPCD screening criteria or meet applicable thresholds of significance. However, due to the programmatic nature of the proposed Project, no additional mitigation measures are available, and project-level and cumulative impacts are considered *significant and unavoidable*.

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

Operation of the proposed Project would result in improvements to existing park facilities and expansion of park facilities along an approximately 22-mile reach of the San Joaquin River. The majority of park facilities would be for passive uses that would not generate criteria air pollutant emissions (e.g., habitat restoration projects, multi-purpose trails, non-motorized boat launch, etc.). However, improvements and expansion of park facilities, including parking to accommodate increased visitors, would generate an increase in transportation sources of emissions. New campgrounds would also lead to an increase in area sources (e.g., campfires, barbeques). Construction of the proposed improvements would also generate a short-term increase in criteria air pollutants. Of the facilities listed in Chapter 3, *Project Description*, the following locations would experience the most substantial changes due to the proposed Project. Improvements to other park facilities would be minor and would generate nominal short-term and long-term emissions:

- **Lost Lake Park:** Improvements to the approximately 374-acre³⁶ Lost Lake Park in Fresno County are the most intensive of all the park improvements proposed as part of the Master Plan Update. They include construction of a 500-square-foot entrance station, an additional 1,530 day-use parking spaces plus additional 40 ADA-compliant parking spaces, a gravel parking lot for overflow (peak events) parking, fishing access and cleaning stations, three non-motorized boat access points, picnic tables including three uncovered group picnic areas with a large barbeques, 25 restroom facilities (800 square feet each), 40 riverside camping sites and 40 camping sites with hookups, 7,000 square feet for an indoor pavilion with commercial catering kitchen, 27 miles of parkway trails, 29 miles of nature trails, 5.9 miles of hiking/equestrian trails, and an interpretive/cultural center of up to a 10,000 square feet.
- **River West-Madera.** The approximately 800-acre River West-Madera in Madera County includes improvements to both the Sycamore Island and Buren Unit facilities. The River West-Madera improvements include habitat restoration, 22 miles of multi-use trails, picnic areas, two parking areas with 60 parking stalls

³⁶ The 374 acres includes additional Conservancy lands adjacent to Lost Lake Park, which includes 190 acres within the County of Fresno, 76 acres managed by the California Department of Fish and Wildlife and the Wildlife Conservation Board, and 108 acres adjacent Conservancy lands.

and 10 horse trailers, access roads, boat ramps (electric and non-motorized only), and a park host facility. A separate Initial Study/Mitigated Negative Declaration was prepared in 2012 for these improvements; impacts were found to be less than significant impacts with mitigation (SJVAPCD's construction fugitive dust control measures).

- **River Vista:** The approximately 177-acre River Vista in Madera County includes a hiking trail, hand-carried non-motorized boat launch, cultural interests, fishing, nature observation, parking, picnicking, and restrooms.

Due to the programmatic nature of this EIR and funding requirements, the timing of specific improvements to facilities is speculative, and construction information (e.g., construction schedules) is not known at this time. To estimate the potential magnitude of construction impacts, this program-level EIR evaluates impacts from construction of the improvements identified for the Lost Lake Park. This facility would experience the most improvements and would result in the highest emissions from both an operational and construction standpoint. Other park improvements would generate substantially less emissions. Consequently, the magnitude of potential air quality impacts for this program-level evaluation is estimated based on the improvements proposed for the Lost Lake Park. It should be noted that the Lost Lake Park Conceptual Plan project will undergo separate environmental review to identify project-specific impacts.

Construction

Construction activities associated proposed Project would occur over the buildout horizon and cause short-term emissions of criteria air pollutants. The primary source of NO_x, CO, and SO_x emissions is the operation of construction equipment. The primary sources of particulate matter (PM₁₀ and PM_{2.5}) emissions are activities that disturb the soil, such as grading and excavation road construction, and building demolition and construction. The primary source of ROG emissions is the application of architectural coating and off-gas emissions associated with asphalt paving. A discussion of health impacts associated with air pollutant emissions generated by construction activities is included under "Air Pollutants of Concern" in section 4.3.1, *Environmental Setting*.

Air quality emissions related to construction must be addressed on a project-by-project basis. Information regarding specific projects within the park facilities would be needed in order to quantify the level of impact associated with construction activities. As identified above, construction of the Lost Lake Park project was estimated and used to determine the potential magnitude of emissions associated with the Master Plan Update from construction activities, since improvements proposed at this facility represent the most intensive construction activities of the San Joaquin River Parkway Master Plan Update (see Table 4.3-7).

As shown in Table 4.3-7, construction activities associated with the Lost Lake Park Conceptual Plan would generate a short-term increase in criteria air pollutants. The Initial Study/Mitigated Negative Declaration for the Madera-West Master Plan identified that annual construction activities associated with that project would not exceed the SJVAPCD thresholds. However, given the scale of the San Joaquin River Parkway Master Plan, multiple facilities could be constructed at any one time, and construction projects could overlap.

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TABLE 4.3-7 ESTIMATE OF MAXIMUM ANNUAL CONSTRUCTION EMISSIONS: LOST LAKE PARK

Activity	Tons/Year					
	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Site Preparation	0.11	1.16	0.89	<1	0.23	0.15
Grading	0.38	4.45	2.93	<1	0.44	0.29
Building	0.95	6.18	8.20	0.01	0.83	0.44
Paving	0.11	0.98	0.61	<1	0.06	0.05
Architectural Coating	0.42	0.12	0.26	<1	0.03	0.02
Annual	1.98	12.89	12.90	0.02	2.10	1.18
SJVAPCD Annual Threshold	10	10	10	27	15	15
Exceeds Threshold	No	Yes	Yes	No	No	No

Note: Worst case assumptions: Assumes construction in 2014. Given the scale of the Master Plan, assumes all that all activities could occur in the same year.
 Source: CalEEMod 2013.2.2. Includes implementation of SJVAPCD Rule 8021 for fugitive dust control.

Due to the scale of some of the planned development activity associated with the proposed Project, emissions could exceed the SJVAPCD regional significance thresholds. Therefore, in accordance with the SJVAPCD methodology, the Project would cumulatively contribute to the nonattainment designations of the SJVAB. The SJVAB is currently designated nonattainment for O₃ and particulate matter (PM₁₀ and PM_{2.5}). Emissions of ROG and NO_x are precursors to the formation of O₃. In addition, NO_x is a precursor to the formation of particulate matter (PM₁₀ and PM_{2.5}). Therefore, the proposed Project would cumulatively contribute to the existing nonattainment designations of the SJVAB for O₃ and particulate matter (PM₁₀ and PM). As a part of the development process for site-specific projects under the proposed Project, the development and approval of a Fugitive Dust Control Plan from SJVAPCD to mitigate, as feasible, fugitive dust emissions would be required.

Air Resources, Climate Change Adaptation, and Sequestration

Goals:

- In developing the Parkway, utilize opportunities to improve regional air quality and reduce the potential for Parkway projects to contribute to air pollution.

Policies:

AIR.11 Utilize appropriate surfaces and maintenance methods to reduce dust generation on trails, roads, and parking areas, and from un-vegetated ground surfaces where possible.

BMP GHG-1. Air Quality

- Encourage contractors to use alternative fueled construction equipment, minimize idling time, and require that equipment is properly tuned.

Indirect Source Review

SJVAPCD's Indirect Source Review Rule (Rule 9510) would apply to construction activities for applicable projects under the San Joaquin River Parkway Master Plan Update that meet the size requirements or generate more than two tons per year of NO_x or PM₁₀. As identified in Table 4.3-7 above, the Lost Lake Park Conceptual Plan has the potential to generate more than two tons per year of NO_x (Rule 9510 excludes fugitive PM₁₀ [see Appendix D]), and exhaust PM₁₀ emissions would not exceed two tons per year based on the results of CalEEMod). As part of the development process, individual, site-specific projects under the San Joaquin River Parkway Master Plan Update that meet the criteria of Rule 9510 would be required to prepare a detailed AIA. To the extent applicable under Rule 9510 for each such individual development, SJVAPCD would require calculation of the construction and operational emissions from the development at issue. The purpose of the AIA is to confirm a development's construction exhaust emissions, and therefore be able to identify appropriate mitigation, either through implementation of specific mitigation measures or payment of applicable off-site fees. Under Rule 9510, each project that is subject to this Rule would be required to reduce construction exhaust emissions by 20 percent for NO_x and 45 percent for PM₁₀ or pay offset mitigation fees for emissions that do not achieve the mitigation requirements. Offset fees would be calculated in accordance with the procedures identified in the Rule 9510 and approved by the SJVAPCD. In addition to regulatory measure, such as Indirect Source Review Rule 9510, mitigation may include use of newer equipment or after-market air pollution control devices on equipment.

Construction Significance Conclusion

Due to the scale and extent of construction activities pursuant to the Lost Lake Park Conceptual Plan improvements, future development that would be accommodated by the proposed Project, large construction projects could exceed the relevant SJVAPCD thresholds. Consequently, construction-related air quality impacts associated with development in accordance with the San Joaquin River Parkway Master Plan Update are deemed *significant*.

Operation

The San Joaquin River Parkway Master Plan Update (the proposed Project) is a policy document that sets up the framework for restoration efforts and facilities to meet state park needs and does not directly result in development in and of itself. Before any development can occur in the San Joaquin River Parkway, all such development must be analyzed for conformance with the applicable local and state requirements, comply with the requirements of CEQA, and obtain all necessary clearances and permits.

The proposed Project includes goals and supporting objectives and policies to preserve, protect, and restore the natural resource values of the San Joaquin River corridor and to provide public use of the river without adverse effects on those resources. The proposed Parkway will include a 22-mile trail interconnected with the regional trail

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system that can be used for pedestrian and bicycle travel in lieu of vehicular travel. However, the proposed Project would result in greater vehicle miles travel and emissions as a result of new and expanded parks and trailheads.

New and expanded park facilities would increase air pollutant emissions in the San Joaquin River Parkway and contribute to the overall emissions inventory in the SJVAB. A discussion of health impacts associated with air pollutant emissions generated by operational activities is included in the Air Pollutants of Concern discussion in Section 4.3-1, Environmental Setting. Chapter 4.15, Transportation and Traffic, identifies that the Project on full build-out would generate a net increase of 5,130 average daily vehicle trips.

Table 4.3-8 identifies the potential increase in criteria air pollutant emissions from an increased use of the improved Parkway. As shown in Table 4.3-8, the proposed Project would generate long-term emissions that exceed the daily SJVAPCD thresholds for ROG, NO_x, and CO due to an increase in transportation emissions. Emissions of ROG and NO_x are precursors to the formation of O₃. In addition, NO_x is a precursor to the formation of particulate matter (PM₁₀ and PM_{2.5}). Consequently, emissions of ROG and NO_x that exceed the SJVAPCD regional significance thresholds would contribute to the O₃ nonattainment designation of the SJVAB, and emissions of NO_x and PM₁₀ that exceed the SJVAPCD regional significance thresholds would contribute to the particulate matter (PM₁₀ and PM_{2.5}) nonattainment designation of the SJVAB.

Similar to construction, operation of individual projects constructed under the proposed Project would be subject to SJVAPCD's Indirect Source Review (Rule 9510) to reduce NO_x and PM₁₀ emissions. To the extent applicable under Rule 9510, as a part of the development process for site-specific projects under the Master Plan, the development at issue would be required to reduce operational NO_x emissions by 33 percent and operational PM₁₀ emissions by 50 percent over 10 years or pay offset mitigation fees for emissions that do not achieve the mitigation requirements. Rule 9510 only requires offsets to be effective for 10 years. The actual required reductions would be determined by SJVAPCD when an application is submitted prior to the last discretionary approval for each individual site-specific project under the San Joaquin River Parkway Master Plan Update. Emissions of NO_x, PM₁₀, and to some extent ROG, would be reduced with compliance with Rule 9510. Individual projects would be required to adhere to the requirements of SJVAPCD Rule 9510, as applicable. Nonetheless, operational-related air quality impacts associated with future development that would be accommodated by the San Joaquin River Parkway Master Plan Update are *significant*.

Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:

- CARB Airborne Toxics Control Measure (CCR 2840)
- Building Energy Efficiency Standards (Title 24)
- Appliance Energy Efficiency Standards (Title 20)
- Motor Vehicle Standards (AB 1493)
- SJVAPCD Regulation II – Permits
- SJVAPCD Regulation IV, Prohibitions, Rule 4100 – New Source Review Performance Standards
- SJVAPCD Regulation IV, Prohibitions, Rule 4101 – Visible Emissions
- SJVAPCD Regulation IV, Prohibitions, Rule 4102 – Nuisance
- SJVAPCD Regulation VIII – Fugitive PM₁₀ Prohibitions

TABLE 4.3-8 ESTIMATE OF MAXIMUM ANNUAL OPERATIONAL CRITERIA AIR POLLUTANT EMISSIONS

Activity	Tons/Year					
	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Existing						
Campsites	15.71	0.18	17.33	0.03	2.37	2.35
Area Sources	<0.01	<0.01	0.04	<0.01	<0.01	<0.01
Energy	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Transportation	1.33	5.49	17.29	0.05	3.26	0.94
<i>Total</i>	<i>17.04</i>	<i>5.67</i>	<i>34.66</i>	<i>0.08</i>	<i>5.63</i>	<i>3.29</i>
Project						
Campsites	40.12	0.46	44.26	0.07	6.06	6.00
Area Sources	0.25	<0.01	0.04	<0.01	<0.01	<0.01
Energy	0.01	0.05	0.04	<0.01	<0.01	<0.01
Transportation	5.46	22.60	71.23	0.21	13.41	3.85
<i>Total</i>	<i>45.83</i>	<i>23.11</i>	<i>115.56</i>	<i>0.28</i>	<i>19.48</i>	<i>9.86</i>
Change From Existing						
Net Increase	28.79	17.44	80.90	0.20	13.85	6.57
SJVAPCD Threshold	10	10	10	27	15	15
Exceeds Threshold	YES	YES	YES	NO	NO	NO

Notes: Modeling for park facilities are based on CalEEMod defaults. Based on 2020 emission rates. Total may not add to 100% due to rounding. Campsites are based on 2 bundles of wood burned per fire pit per campsite and conservatively assumes an average annual occupancy rate of 50 percent for existing and 75 percent for the Project. Source: CalEEMod 2013.2.2 (area, energy, and transportation) and EPA 42 (campfires).

- SJVAPCD Regulation IX, Mobile and Indirect Sources, Rule 9410, Employer Based Trip Reduction.
- SJVAPCD Regulation IX, Mobile and Indirect Sources, Rule 9510 Indirect Source Review (ISR)

Significance Without Mitigation: Significant.

Impact AQ-3: Subsequent environmental review of future projects under the proposed Project may identify that construction and operational phase emissions would exceed SJVAPCD’s project-level regional significance thresholds and the Project would cumulatively contribute to the nonattainment designations in the SJVAB.

CONSTRUCTION

Mitigation Measure AQ-3a: Prior to initiation of construction activities, construction contractors shall prepare and submit to the Conservancy a technical assessment evaluating potential project construction-

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related air quality impacts. The evaluation shall be prepared in conformance with San Joaquin Valley Air Pollution Control District (SJVAPCD) methodology in assessing air quality impacts. The following identified measures shall be incorporated into all appropriate construction documents (e.g., construction management plans) and submitted to the Conservancy. Mitigation measures to reduce construction-related emissions include, but are not limited to:

- Using construction equipment rated by the United States EPA as having Tier 3 (model year 2006 or newer) or Tier 4 (model year 2008 or newer) emission limits, applicable for engines between 50 and 750 horsepower. A list of construction equipment by type and model year shall be maintained by the construction contractor on-site, which shall be available for Conservancy review upon request.
- Ensuring construction equipment is properly serviced and maintained to the manufacturer's standards.
- Use of alternative-fueled or catalyst-equipped diesel construction equipment, if available and feasible.
- Clearly posted signs that require operators of trucks and construction equipment to minimize idling time (e.g., 5-minute maximum).
- Preparation and implementation of a fugitive dust control plan that may include the following measures:
 - Disturbed areas (including storage piles) that are not being actively utilized for construction purposes shall be effectively stabilized using water, chemical stabilizer/suppressant, or covered with a tarp or other suitable cover (e.g., revegetated).
 - On-site unpaved roads and off-site unpaved access roads shall be effectively stabilized using water or chemical stabilizer/suppressant.
 - Land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled utilizing application of water or by presoaking.
 - Material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained when materials are transported off-site.
 - Operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)
 - Following the addition of materials to or the removal of materials from the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
 - Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
 - Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.
 - Limit traffic speeds on unpaved roads to 15 mph.

- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.
- Install wheel washers for all exiting trucks or wash off all trucks and equipment leaving the project area.
- Adhere to Regulation VIII's 20 percent opacity limitation, as applicable.

OPERATIONAL

Mitigation Measure AQ-3b: Prior to initiation of construction activities, construction contractors shall prepare and submit to the Conservancy a technical assessment evaluating potential project operation phase-related air quality impacts. The evaluation shall be prepared in conformance with San Joaquin Valley Air Pollution Control District (SJVAPCD) methodology in assessing air quality impacts. If operational-related criteria air pollutants are determined to have the potential to exceed the SJVAPCD adopted thresholds of significance, as identified in the GAMAQI, the Conservancy shall require the construction contractor to incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the Standard Conditions of Approval. Mitigation measures to reduce long-term emissions can include, but are not limited to:

- Site-specific development shall demonstrate an adequate number of electrical vehicle Level 2 charging stations are provided on-site. The location of the electrical outlets shall be specified on building plans, included in subsequent environmental review, and proper installation shall be verified by the Conservancy prior to operation.
- Appliances shall be Energy Star appliances (dishwashers, refrigerators, clothes washers, and dryers). Installation of Energy Star appliances shall be verified by the Conservancy prior to operation.

Mitigation Measure AQ-3c: The use of outdoor fire pits shall be prohibited.

Significance With Mitigation: Subsequent environmental review of future projects within the San Joaquin River Parkway may identify that construction and operational phase emissions would exceed SJVAPCD's project-level significance thresholds. Though feasible mitigation measures would be imposed, due to the nature and scope of the Project and its anticipated buildout horizon, regional construction and operational phase emissions could exceed the SJVAPCD significance thresholds. It should be noted that the identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects that comply with SJVAPCD screening criteria or meet applicable thresholds of significance. However, due to the programmatic nature of the proposed Project, no additional mitigation measures are available, and project-level and cumulative impacts are considered *significant and unavoidable*.

AQ-4 **The proposed Project would expose sensitive receptors to substantial pollutant concentrations.**

Construction and operation of the proposed Project could generate an increase in localized emissions. However, the proposed Project is not the type of project that would generate substantial new sources of TACs. Though

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parks are considered to be areas where sensitive receptors are located, the duration exposure is much less than a residential scenario, and therefore review of the effects of existing sources of TACs on sensitive receptors is not warranted.

Ambient Air Quality Analyses

As identified previously (see Impact AQ-3), for this broad-based program level EIR, it is not possible to determine whether the scale and phasing of individual projects would result in the exceedance of SJVAPCD's short-term regional or localized (ambient air quality) construction emissions thresholds, since the timing of specific activities and phasing is not known. However, due to the scale of development activity associated with the proposed Project, on-site emissions from large construction projects would likely exceed the SJVAPCD regional significance thresholds of 100 pounds per day for applicable criteria air pollutants. Compliance with Rule 9510 frequently reduces project-specific construction emissions to less than significant levels. However, for large construction projects, additional mitigation may be required. Therefore, in accordance with the SJVAPCD methodology, projects under the San Joaquin River Parkway Master Plan Update would have the potential to exceed the California or National AAQS. Consequently, construction-related air quality impacts associated with development in accordance with the San Joaquin River Parkway Master Plan Update are deemed *significant*.

Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:

- CARB Airborne Toxics Control Measure (CCR 2840)
- Building Energy Efficiency Standards (Title 24)
- Appliance Energy Efficiency Standards (Title 20)
- Motor Vehicle Standards (AB 1493)
- SJVAPCD Regulation II – Permits
- SJVAPCD Regulation IV, Prohibitions, Rule 4100 – New Source Review Performance Standards
- SJVAPCD Regulation IV, Prohibitions, Rule 4101 – Visible Emissions
- SJVAPCD Regulation IV, Prohibitions, Rule 4102 – Nuisance
- SJVAPCD Regulation VIII – Fugitive PM₁₀ Prohibitions
- SJVAPCD Regulation IX, Mobile and Indirect Sources, Rule 9410, Employer Based Trip Reduction.
- SJVAPCD Regulation IX, Mobile and Indirect Sources, Rule 9510 Indirect Source Review (ISR)

Significance Without Mitigation: Significant.

Impact AQ-4: Emissions generated by the project could exceed the California or National AAQS.

Mitigation Measure AQ-4: Mitigation Measures identified for Impact AQ-3 would lessen impacts associated with Project-related emissions contributing to SJVAB ambient air quality standards.

Significance With Mitigation: Subsequent environmental review of future projects associated with the San Joaquin River Parkway Master Plan may identify that construction and operational phase emissions would exceed SJVAPCD's project-level significance thresholds. Compliance with Rule 9510 frequently reduces project-specific operational emissions to less than significant levels. However, some construction activities

have the potential to result in substantial on-site emissions, and additional mitigation may be required. Because dispersion modeling is not applicable for a program EIR, projects with emissions that exceed these values are considered to have the potential to exceed the California and National AAQS, resulting in a potentially significant impact. SJVAPCD Rule 9510 and Mitigation Measures AQ-3(a) through AQ-3(d) would reduce emissions to the extent feasible. However, due to the programmatic nature of the proposed Project, no additional mitigation measures are available to reduce emissions to less than significant levels. It should be noted that the identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects that comply with SJVAPCD air quality standards. Therefore, in accordance with the SJVAPCD methodology, the Project's localized (ambient air quality) impacts in this regard would be *significant and unavoidable*.

AQ-5 The proposed Project would not create objectionable odors affecting a substantial number of people.

Pursuant to the GAMAQI, the proposed Project is not the type of land use that would generate substantial odors.³⁷ Consequently, the proposed Project would not generate objectionable odors that could affect a substantial number of people. Furthermore, odors are regulated under Regulation IV, Prohibitions, Rule 4102, Nuisance, which states:

“A person shall not discharge from any source whatsoever such quantities of air contaminants or other materials 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 person or the public or which cause or have a natural tendency to cause injury or damage to business or property.”

Rule 4102 requires abatement of any nuisance generated by an odor complaint. Because sources of odors are required to comply with SJVAPCD Rule 4102, impacts would be *less than significant*.

Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:

- SJVAPCD Regulation IV, Prohibitions, Rule 4102 – Nuisance

Significance Without Mitigation: Less than significant.

³⁷ SJVAPCD 2012. San Joaquin Valley Air Pollution Control District (SJVAPCD). *Draft Guidance for Assessing and Mitigating Air Quality Impacts*. May.

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4.3.4 CUMULATIVE IMPACTS

AQ-6 **The proposed Project would, in combination with past, present, and reasonably foreseeable projects, would cumulatively contribute to air quality impacts in the San Joaquin Valley Air Basin.**

This section analyzes potential impacts related to air quality that could occur from the buildout associated with the proposed Project in combination with the regional growth within the air basin. Any project that produces a significant project-level regional air quality impact in an area that is in non-attainment adds to the cumulative impact. The analysis in this section is the Project's contribution to cumulative impacts because it addresses development throughout the Parkway Plan Area. Furthermore, by its very nature, air pollution is largely a cumulative impact. Pursuant to the SJVAPCD's guidance, if project-specific emissions would be less than the thresholds of significance for criteria pollutants, the project would not be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the SJVAPCD is in non-attainment under applicable federal or State AAQS. As identified in Impact AQ-3, specific projects implemented under the proposed Project would exceed the SJVAPCD thresholds, subject to future project-specific analysis; therefore, cumulative air quality impacts are *significant*.

Applicable Regulations and Conditions of Approval:

- CARB Airborne Toxics Control Measure (CCR 2840)
- Building Energy Efficiency Standards (Title 24)
- Appliance Energy Efficiency Standards (Title 20)
- Motor Vehicle Standards (AB 1493)
- SJVAPCD Regulation II – Permits
- SJVAPCD Regulation IV, Prohibitions, Rule 4100 – New Source Review Performance Standards
- SJVAPCD Regulation IV, Prohibitions, Rule 4101 – Visible Emissions
- SJVAPCD Regulation IV, Prohibitions, Rule 4102 – Nuisance
- SJVAPCD Regulation VIII – Fugitive PM₁₀ Prohibitions
- SJVAPCD Regulation IX, Mobile and Indirect Sources, Rule 9410, Employer Based Trip Reduction.
- SJVAPCD Regulation IX, Mobile and Indirect Sources, Rule 9510 Indirect Source Review (ISR)

Significance Without Mitigation: Significant

Impact AQ-6: Subsequent environmental review of future projects associated with the proposed Project may identify that construction phase emissions would exceed SJVAPCD's project-level localized significance thresholds for ambient air quality standards.

Mitigation Measure AQ-6: Implement Mitigation Measure AQ-3.

Significance With Mitigation: Subsequent environmental review of future projects within the San Joaquin River Parkway may identify that construction and operational phase emissions would exceed SJVAPCD's

project-level significance thresholds. Though feasible mitigation measures would be imposed, due to the nature and scope of the Project and its anticipated buildout horizon, regional construction and operational phase emissions could exceed the SJVAPCD significance thresholds. It should be noted that the identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects that comply with SJVAPCD screening criteria or meet applicable thresholds of significance. However, due to the programmatic nature of the proposed Project, no additional mitigation measures are available, and project-level and cumulative impacts are considered *significant and unavoidable*.

AIR QUALITY