

CHAPTER 10
AIR QUALITY

10.0 AIR QUALITY

Ambient air quality is generally affected by climatological conditions, the topography of the air basin, the type and amounts of pollutants emitted, and, for some pollutants, sunlight. The area of the proposed project is subject to a combination of topographical and climatic factors that create the potential for high regional and local concentrations of air pollutants. This chapter describes relevant characteristics of the air basin that affect pollutant dispersion in the Riolo Vineyards Specific Plan (RVSP) Area (specific plan area or Plan Area) and discusses types of air pollutants, health effects, and existing air quality levels.

This chapter will also consider the impacts of the proposed Specific Plan on greenhouse gas (GHG) emissions and global climate change. In California, observational trends from the last half century show warmer winter and spring temperatures, decreased spring snow levels in lower- and mid-elevation mountains, up to one month earlier snowpack melting, and flowers blooming 1 to 2 weeks earlier than under historical conditions (Cayan et al., 2006b). Research suggests that human activities, such as the burning of fossil fuels and clearing of forests, may contribute additional carbon dioxide (CO₂) and other heat-trapping gas emissions into the atmosphere. Future global climate change could have widespread consequences that would affect many of California's important resources, including its water supply.

10.1 ENVIRONMENTAL SETTING

10.1.1 Climate and Topography

The proposed project is located in the Sacramento Valley Air Basin (SVAB), within the southwestern portion of Placer County. Weather patterns throughout the SVAB are, in part, affected by the geography. SVAB is bounded by the North Coast Ranges to the west, the northern Sierra Nevada Mountains to the east, and the Cascade Range to the north. The areas within the ranges and mountains are relatively flat. The Carquinez Strait breaches the Coast Range, exposing the middle portion of the SVAB to the influence of Pacific Coast marine weather. This geography channels winds through the Sacramento Valley but inhibits dispersion of pollutant emissions in portions of the valley. Typically, marine air entering the SVAB through the Carquinez Strait transports pollutants out of the valley to the north. However, conditions can lead to the prevailing winds circling back south, particularly between July and September, resulting in elevated pollution levels in the SVAB. This marine influence can result in pollutants being carried from the San Francisco Bay Area and Sacramento regions to West Placer County.

The climate of the SVAB is Mediterranean in character, with mild, rainy winter weather from November through March, and hot, dry weather from May through September. January temperatures in the area range from an average low in the 30s (°F) to an average high in the 50s (°F). July temperatures range from an average low in the 50s (°F) to an average high in the 90s (°F). These high temperatures, combined with low humidity, produce hot, dry summers that contribute to the buildup of ozone (a major constituent of smog).

Pollutant dispersion is also affected by temperature inversions that are common throughout the year but most prominent in the late summer and fall. Surface inversions are formed when the air close to the earth's surface cools more rapidly than the warm layer of air above it. Elevated inversions can occur when a layer of cool air is suspended between warm air layers above and below it. Both types of inversions inhibit vertical air dispersion. Coupled with the generally light winds during the late summer and fall, inversions contribute to high pollutant concentrations near ground level.

10.1.2 Air Quality Standards and Existing Concentrations

The federal and state governments have established separate ambient air quality standards. The U.S. Environmental Protection Agency (EPA) has established primary and secondary National Ambient Air Quality Standards (NAAQS) that specify allowable ambient concentrations for criteria pollutants under the provisions of the Clean Air Act. Primary NAAQS are established at levels necessary, with an adequate margin of safety, to protect the public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Similarly, secondary NAAQS specify the allowable levels of air quality determined appropriate to protect the public welfare from any known or anticipated adverse effects associated with air contaminants. Allowable ambient concentrations are set for ozone, respirable particulate matter (PM₁₀), fine particulate matter (PM_{2.5}), carbon monoxide (CO), nitrogen dioxide (NO₂), lead (Pb), and sulfur dioxide (SO₂). Table 10-1 summarizes the NAAQS for these pollutants. The 8-hour ozone and PM_{2.5} standards listed in the table were promulgated in 1997 but were challenged in the courts. In 2002, the courts upheld these two standards. The U.S. EPA made final designations for the 8-hour ozone standards on April 15, 2004, and made final designations for the new federal PM_{2.5} standards on December 2004. Now U.S. EPA and the states are working together to develop air quality plans to achieve compliance with the standards, where needed.

In California, the California Air Resources Board (CARB), which is part of the California Environmental Protection Agency, has promulgated ambient air quality standards for ozone, PM₁₀, PM_{2.5}, CO, NO₂, SO₂, and Pb that are more stringent than U.S. EPA's standards, as shown in Table 10-1. In 2002, CARB revised the state annual PM₁₀ standard and established an annual PM_{2.5} standard. These standards went into effect July 7, 2004. In April 2005, CARB approved a new 8-hour average standard for ozone that went into effect on May 17, 2006. CARB has also developed standards for sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride.

Counties and metropolitan areas are classified as being attainment or nonattainment with respect to these federal and state ambient pollutant standards. An area's classification is determined by comparing actual monitored air pollutant concentrations with state and federal standards. More than 200 air monitoring stations are located throughout California and are part of the State and Local Air Monitoring Network. These stations are operated by CARB, local Air Pollution Control Districts (APCDs) or Air Quality Management Districts (AQMDs), private contractors, and the National Park Service (NPS). Areas that do not have sufficient data for an attainment/nonattainment determination are given an unclassified designation and are not considered to be nonattainment. Based on pollutant concentrations measured at these stations, the western portion of Placer County is in compliance with ambient air quality standards for all pollutants except the state and federal ozone standards and the state PM₁₀ standards. Also, in 1998, the U.S. EPA redesignated the region as being in attainment for the national 8-hour CO standard.

The two ambient pollutant monitoring stations closest to the proposed Plan Area are located in North Highlands, which is about 2 miles south of the site, and Roseville, which is about 8 miles east of the site. Tables 10-2 and 10-3 summarize measured criteria pollutant concentrations over the past three years at these stations. Following are discussions on the measured local concentrations and the health effects and other characteristics of ozone, PM₁₀, PM_{2.5}, CO, NO₂, and SO₂. Lead, sulfates, and hydrogen sulfide are of less concern in this area because levels are well below standards and no major sources of these pollutants exist in the study area.

**Table 10-1
Federal and California Ambient Air Quality Standards**

Pollutant	Averaging Time	Federal ¹	State
Ozone	1-Hour	None ⁴	0.09 ppm
	8-Hour	0.08 ppm	0.070 ppm ⁽³⁾
PM ₁₀	24-Hour	150 µg/m ³	50 µg/m ³
	Annual Average	50 µg/m ³	20 µg/m ³
PM _{2.5}	24-Hour	35 µg/m ³	None
	Annual Average	15 µg/m ³	12 µg/m ³
CO	1-Hour	35 ppm	20 ppm
	8-Hour	9 ppm	9.0 ppm
	8-Hour (Lake Tahoe)	None	6 ppm
NO ₂	1-Hour	None	0.18 ppm
	Annual Average	0.053 ppm	0.030 ppm
Pb	30 days	None	1.5 µg/m ³
	Calendar Quarter	1.5 µg/m ³	None
SO ₂	1-Hour	None	0.25 ppm
	3-Hour	0.5 ppm ²	NA
	24-Hour	0.14 ppm	0.04 ppm
	Annual Average	0.03 ppm	None
Sulfates	24-Hour	None	25 µg/m ³
Hydrogen Sulfide	1-Hour	None	0.03 ppm
Visibility Reducing Particles	8-Hour	None	Extinction coefficient of 0.23 per kilometer
Vinyl Chloride	24-Hour	None	0.01 ppm

Source: CARB, 2006c, and California Code of Regulations

Notes:

¹ Primary NAAQS unless otherwise noted.

² Secondary NAAQS.

³ Approved by CARB on April 2005 and expected to go into effect in 2006.

⁴ 1-hour ozone standard revoked June 5, 2005, except for areas that do not yet have an effective date for their 8-hour designations.

Standards are expressed in units in which they were promulgated (ppm = parts per million; µg/m³ = micrograms per cubic meter)

National standards (other than ozone, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once per year.

California standards for ozone, CO, SO₂ (1-hour averaging period), NO₂, and PM₁₀ are not to be exceeded.

All others are not to be equaled or exceeded.

Compliance with state and federal standards is not entirely based on the highest measured concentrations. The process for determining compliance with ambient air quality standards is described in CCR Title 17 Section 70100.

**Table 10-2
Maximum Measured Pollutant Concentrations at North Highlands**

Pollutant	Averaging Time	Units	Standards		Maximum Measured Concentration		
			Federal	State	2003	2004	2005
Ozone	1 hour	ppm	None	0.09	0.131 ²	0.103 ²	0.103 ²
	8 hours	ppm	0.08	0.070	0.094 ^{1,2}	0.088 ^{1,2}	0.085 ^{1,2}
PM ₁₀	24 hours	µg/m ³	150	50	62/64 ^{2,3}	44/47 ³	110/109 ³
	Annual Average	µg/m ³	50	20	21/NA ^{2,3}	23.5/24.2 ^{2,3}	27/27.9 ^{2,3}
PM _{2.5}	24 hours	µg/m ³	65	None	NA	NA	NA
	Annual Average	µg/m ³	15	12	NA	NA	NA
NO ₂	1 hour	ppm	None	0.25	0.087	0.146	0.060
	Annual Average	ppm	0.053	None	0.015	0.014	0.011
CO	1 hour	ppm	35	20	4.4	7.3	8.0
	8 hours	ppm	9	9.0	2.07	4.05	2.9
SO ₂	1 hour	ppm		0.25	0.012	0.008	0.010
	3 hours	ppm	0.5		0.008	0.006	0.007
	24 hours	ppm	0.14	0.04	0.004/0.006 ³	0.002	0.002
	Annual Average	ppm	0.030		0.001	0.001	0.001

Source: Monitoring station located at 7823 Blackfoot Way, North Highlands
CARB, 2006a; U.S. EPA, 2006

Notes:

¹ Exceeds the federal standard

² Exceeds the state standard

³ Federal/state values. The federal and state values differ due to differences in sampling methods and criteria.

⁴ µg/m³ = micrograms per cubic meter; NA= not available; ppm = parts per million

**Table 10-3
Maximum Measured Pollutant Concentrations at Roseville**

Pollutant	Averaging Time	Units	Standards		Maximum Measured Concentration		
			Federal	State	2003	2004	2005
Ozone	1 hour	ppm	None	0.09	0.133 ²	0.106 ²	0.118 ²
	8 hours	ppm	0.08	0.070	0.109 ^{1,2}	0.085 ^{1,2}	0.086 ^{1,2}
PM ₁₀	24 hours	µg/m ³	150	50	58.0/59.0 ^{2,3}	43.0/43.0 ³	55.0/42.0 ³
	Annual Average	µg/m ³	50	20	21.0/21.3 ^{2,3}	21.6/22.1 ^{2,3}	19/NA
PM _{2.5}	24 hours	µg/m ³	65	None	30.0	32.0/47.8	51.0 ⁴ /59.2
	Annual Average	µg/m ³	15	12	9.9	9.4	10.7
NO ₂	1 hour	ppm	None	0.25	0.083	0.067	0.079
	Annual Average	ppm	0.053	None	0.014	0.013	0.013
CO	1 hour	ppm	35	20	2.4	2.6	2.0
	8 hours	ppm	9	9.0	1.59	1.93	1.30
SO ₂	1 hour	ppm		0.25	NA	NA	NA
	3 hours	ppm	0.5		NA	NA	NA
	24 hours	ppm	0.14	0.04	NA	NA	NA
	Annual Average	ppm	0.030		NA	NA	NA

Source: Monitoring station located at 151 N. Sunrise Blvd., Roseville, CA
CARB, 2006a and U.S. EPA, 2006

Notes:

¹ Exceeds the federal standard

² Exceeds the state standard

³ Federal/state values. The federal and state values differ due to differences in sampling methods and criteria.

⁴ µg/m³ = micrograms per cubic meter; NA= not available; ppm = parts per million

As shown in Tables 10-2 and 10-3, ozone concentrations have exceeded federal and state ambient air quality standards at both monitoring stations. These violations, together with violations throughout the Sacramento area, have resulted in the region being designated as being in nonattainment of the state ozone standards and serious nonattainment of the federal 8-hour ozone standard. The nonattainment region is called the Sacramento Federal Nonattainment Area and includes all of Sacramento and Yolo Counties and portions of El Dorado, Placer (West Placer County), Sutter, and Solano Counties. Maximum concentrations in excess of the California ambient standards for PM₁₀ have also been recorded at both the North Highlands and Roseville monitoring stations.

The properties and sources of concern individual pollutants, and their potential effects on air quality and human health are discussed below.

Ozone

Ozone is a colorless gas that has a pungent odor and causes eye and lung irritation, visibility reduction, and crop damage. A primary constituent of smog, ozone is formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving oxides of nitrogen (NO_x) and reactive organic gases (ROG). Because these reactions occur on a regional scale, ozone is considered a regional air pollutant. Industrial fuel combustion and motor vehicles are primary sources of NO_x and ROG.

As indicated in Tables 10-2 and 10-3, maximum concentrations of ozone have exceeded federal and state ambient ozone standards in each of the past several years, leading to a nonattainment designation for this pollutant over a broad geographical area that includes the proposed Plan Area.

Carbon Monoxide

CO is an odorless, colorless gas that can impair the transport of oxygen in the bloodstream; aggravate cardiovascular disease; and cause fatigue, headache, confusion, and dizziness. CO forms through incomplete combustion of fuels in vehicles, wood stoves, industrial operations, and fireplaces. In Placer County, vehicular exhaust is a major source of CO. CO tends to dissipate rapidly into the atmosphere and consequently is generally a concern at the local level, particularly at major road intersections.

CO concentrations at the two monitoring stations have been well below federal and state 1-hour and 8-hour average standards. In fact, all of Placer County is in attainment of the CO standards.

Nitrogen Dioxide

NO₂ is a brownish, highly reactive gas that can irritate the lungs, cause pneumonia, and lower the resistance to respiratory infections. NO_x, which include NO₂, are a key precursor to ozone and acid rain. NO_x forms when fuel is burned at high temperatures and principally comes from transportation sources and stationary fuel combustion sources such as electric utility and industrial boilers.

Table 10-2 and 10-3 show that measured concentrations of NO₂ have consistently remained well below the federal and state standards. With similar trends throughout the region (and state), the area is well within federal and state NO₂ standards.

Sulfur Dioxide

SO₂ is a colorless acidic gas with a strong odor. High concentrations of SO₂ affect breathing and may aggravate existing respiratory and cardiovascular disease. SO₂ is also a primary contributor to acid deposition, which, in high concentrations, can cause acidification of lakes and streams and can damage trees,

crops, building materials, and statues. In addition, sulfur compounds in the air can contribute to visibility impairment. The major source category for SO₂ is fuel-burning equipment combusting fossil fuels.

SO₂ is measured at the North Highlands station but not the Roseville station. The North Highlands station, along with stations throughout California, has measured concentrations well within federal and state standards.

Particulate Matter

Particulate matter is generally composed of particles in the air such as dust, soot, aerosols, fumes, and mists. Of particular concern are inhalable particulates that have aerodynamic diameters of 10 micrometers or less (PM₁₀). A subgroup of these particulates is fine particulates (particles with aerodynamic diameters less than 2.5 micrometers [PM_{2.5}]), which have characteristics, sources, and potential health effects that are different from those of coarse particulates (particles with aerodynamic diameter between 2.5 to 10 micrometers). Coarse particulates are generated by sources such as windblown dust, agricultural fields, and dust from vehicular traffic on unpaved roads. PM_{2.5} is generally emitted from activities such as industrial combustion, vehicle exhaust, and residential wood-burning stoves and fireplaces. PM_{2.5} is also formed in the atmosphere when gases such as sulfur dioxide, NO_x, and volatile organic compounds emitted by combustion activities are transformed by chemical reactions in the air. PM₁₀ affects breathing and the respiratory system, and, in particular, can damage lung tissue and contribute to cancer and premature death. Separate standards for PM_{2.5} were established in 1997 because these smaller particles can penetrate deep into the respiratory tract and cause their own unique adverse health effects.

Measured concentrations at the two monitoring nearest stations have not exceeded federal PM₁₀ standards over the past three years. However, exceedances of the state PM₁₀ standards have occurred in all three years, except for the 24-hour average in 2004. These measured concentrations have contributed to the region being classified as nonattainment for the state PM₁₀ standard. The last exceedance of the state PM_{2.5} was in 2002, for the annual average.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome-plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least 40 different toxic air contaminants. The most important, in terms of health risk, are diesel particulate, benzene, formaldehyde, 1,3-butadiene, and acetaldehyde. Public exposure to TACs can result from emissions from normal operations as well as accidental releases. Health effects of TACs include cancer, birth defects, neurological damage, and death. The CARB has developed recommendations regarding the siting of TAC sources in relation to the locations of sensitive receptors. The recommendations identify minimum separations between sources and receptors (CARB, 2005).

10.1.3 Greenhouse Gases

Various gases in the Earth's atmosphere, classified as atmospheric GHGs, play a critical role in determining the Earth's surface temperature. Solar radiation enters Earth's atmosphere from space, and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect.

Among the prominent GHGs contributing to the greenhouse effect are CO₂, methane (CH₄), ozone, water vapor, nitrous oxide, and chlorofluorocarbons. Greenhouse gases specifically listed in Assembly Bill AB 32, the California Global Warming Solutions Act of 2006, are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are regarded by many researchers as responsible for enhancing the greenhouse effect (Ahrens, 2003). Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors (CEC, 2006a). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CEC, 2006a). A byproduct of fossil fuel combustion is CO₂. Methane, a highly potent GHG, results from offgassing associated with agricultural practices and landfills. Processes that absorb and accumulate CO₂, often called CO₂ “sinks,” include uptake by vegetation and dissolution into the ocean.

As the name implies, global climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California is the 12th to 16th largest emitter of CO₂ in the world and produced 492 million gross metric tons of CO₂ equivalents in 2004 (CEC, 2006a). Carbon dioxide equivalents is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, CH₄ is a much more potent GHG than CO₂. As described in Appendix C, “Calculation Referenced,” of the General Reporting Protocol of the California Climate Action Registry (CCAR) (2006), one ton of CH₄ has the same contribution to the greenhouse effect as approximately 21 tons of CO₂. Expressing GHG emissions in CO₂ equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO₂ were being emitted. Consumption of fossil fuels in the transportation sector was the single largest source of California’s GHG emissions in 2004, accounting for 40.7 percent of total GHG emissions in the state (CEC, 2006a). This category was followed by the electric power sector (including both in-state and out of- state sources) (22.2 percent) and the industrial sector (20.5 percent) (CEC, 2006a).

Feedback Mechanisms and Uncertainty

Many complex mechanisms interact within Earth’s energy budget to establish the global average temperature. For example, a change in ocean temperature would be expected to lead to changes in the circulation of ocean currents, which, in turn would further alter ocean temperatures. There is uncertainty about how some factors could affect global climate change because they have the potential to both enhance and neutralize future climate warming. Additionally, current modeling for climate change is not an exact science and there is a high degree of uncertainty in projecting future climate change. Examples of these conditions are also described below.

Direct and Indirect Effects of Aerosols

Aerosols, including particulate matter, reflect sunlight back to space. As particulate matter attainment designations are met and fewer emissions of particulate matter occur, the cooling effect of anthropogenic aerosols would be reduced and the greenhouse effect would be further enhanced. Similarly, aerosols act as cloud condensation nuclei, aiding in cloud formation and increasing cloud lifetime. Clouds can efficiently reflect solar radiation back to space (see discussion of the cloud effect below). As particulate matter emissions are reduced, the indirect positive effect of aerosols on clouds would be reduced, potentially further amplifying the greenhouse effect.

The Cloud Effect

As global temperature rises, the ability of the air to hold moisture increases, facilitating cloud formation. If an increase in cloud cover occurs at low or middle altitudes, resulting in clouds with greater liquid water content such as stratus or cumulus clouds, more radiation would be reflected back to space, resulting in a negative feedback mechanism, wherein the side effect of more cloud cover resulting from global warming acts to balance further warming. If clouds form at higher altitudes in the form of cirrus clouds, however, these clouds actually allow more solar radiation to pass through than they reflect, and ultimately they act as a GHG themselves. This results in a positive feedback mechanism in which the side effect of global warming acts to enhance the warming process. This feedback mechanism, known as the “cloud effect,” contributes to uncertainties associated with projecting future global climate conditions.

Other Feedback Mechanisms

To the extent that global temperature continues to rise, CH₄ gas currently trapped in permafrost would be released into the atmosphere when areas of permafrost thaw. Thawing of permafrost attributable to global warming could be expected to accelerate and enhance global warming trends. Additionally, as the surface area of polar and sea ice continues to diminish, the Earth’s albedo, or reflectivity, is also anticipated to decrease. More incoming solar radiation will likely be absorbed by the Earth rather than being reflected back to space, which may enhance the greenhouse effect. The scientific community is still studying these and other positive and negative feedback mechanisms to better understand their potential effects on global climate change.

10.1.4 Existing Emission Sources

The pollutant concentrations measured at monitoring stations in the study area are a result of emissions from both human-generated and natural sources. Human-generated sources of emissions are generally divided into three types: stationary, area-wide, and mobile sources. The contributions of these source categories vary from region to region. CARB maintains an emissions inventory to determine the sources and quantities of air pollution generated within the state’s counties and air basins. Table 10-4 presents a summary of the projected 2005 pollutant emission data for a number of general source categories in the Placer County. Emissions from mobile sources constitute the majority of ROG, CO, NO_x, and SO_x emissions in Placer County. Areawide emissions contribute more than 75 percent of the PM₁₀ emissions in Placer County.

10.2 REGULATORY SETTING

Air quality in the study area is regulated by several agencies, including the U.S. EPA, the CARB, and the Placer County APCD. Although U.S. EPA regulations may not be superseded, both state and local regulations may be more stringent than the federal requirements. The U.S. EPA is responsible for establishing the NAAQS, setting minimum New Source Review permitting and Operating Permit requirements for stationary sources; establishing New Source Performance Standards, National Emission Standards for Hazardous Pollutants and the Acid Deposition Control program; and administering regional air quality initiatives. The CARB’s role includes development, implementation, and enforcement of California’s motor vehicle pollution control program, administration of the state’s air pollution research program, adoption and updating, as necessary, of California ambient air quality standards (CAAQS), review of local APCD activities, and coordination of the development of the State Implementation Plan (SIP) for achievement of the national ambient standards. Local APCDs are responsible for implementing federal and state regulations at the local level, permitting stationary sources of air pollution, and developing the local elements of the SIP. Emissions from indirect sources, such as automobile traffic associated with development projects, are addressed through the APCD’s air quality plans.

**Table 10-4
Summary of Estimated 2005 Pollutant Emissions in Placer County**

	ROG	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}
Stationary Sources						
Fuel Combustion	0.41	1.93	3.05	0.04	0.22	0.21
Waste Disposal	0.09	0.00	0.00	0.00	0.00	0.00
Cleaning And Surface Coating	2.75	0.00	0.00	0.00	0.00	0.00
Petroleum Production And Marketing	1.06	0.00	0.00	0.00	0.00	0.00
Industrial Processes	1.53	0.24	0.14	0.03	1.51	0.8
Total Stationary Sources	5.85	2.17	3.19	0.07	1.73	1.01
Area Sources						
Solvent Evaporation	3.30	0.00	0.00	0.00	0.00	0.00
Miscellaneous Processes	3.51	46.62	1.09	0.16	22.18	8.34
Total Area	6.81	46.62	1.09	0.16	22.18	8.34
Mobile Sources						
On-Road Motor Vehicles	8.05	76.84	12.21	0.09	0.42	0.27
Other Mobile Sources	5.86	43.78	13.68	0.66	0.82	0.72
Total Mobile Sources	13.91	120.62	25.89	0.75	1.24	0.99
Total	26.55	169.41	30.17	0.98	25.15	10.34

Source: CARB, 2006b.

Placer County spans portions of three air basins in California; the southwestern third of the county (which includes the Plan Area) is within the SVAB; the northeastern portion is within the Lake Tahoe Air Basin; and the remainder is within the Mountain Counties Air Basin. Since air quality is sometimes regulated on a county-by-county basis and sometimes on a regional basis (e.g., within an air basin), air quality regulations and planning efforts in Placer County are intricate and require close coordination between several agencies. For example, because the southwestern part of Placer County lies within the SVAB, the District coordinates with other SVAB air districts (e.g., Sacramento Metropolitan Air Quality Management District) to resolve basinwide air pollution problems.

The following three subsections describe in more detail the roles and requirement at the federal, state, and local levels of government, and how these levels interact with each other to maintain and improve air quality. This subsection also includes a review of recent state regulations that cover GHGs and climate change.

10.2.1 Federal

As discussed previously, the federal government, through the U.S. EPA, has established primary and secondary NAAQS for criteria pollutants under the provisions of the Clean Air Act (see Table 10-1). Most recently, U.S. EPA promulgated new 8-hour ozone and annual and 24-hour PM_{2.5} ambient air quality standards, which have been upheld in the courts. The U.S. EPA made final designations for the 8-hour ozone standards on April 15, 2004, and made final designations for the new federal PM_{2.5} standards in December 2004. With the new 8-hour ozone standard in place, the 1-hour federal ozone standard has been revoked for the region. The following discussion addresses the current attainment status of the study area with respect to the NAAQS.

A large region consisting of Sacramento and parts of Yolo, Placer (including the Plan Area), and Solano counties has received a serious nonattainment designation with respect to the 8-hour average ozone NAAQS. This nonattainment area is called the Sacramento Ozone Nonattainment Area. The U.S. EPA, under the provisions of the Clean Air Act, requires each state with regions that have not attained the NAAQS to prepare a plan called the SIP, detailing how these standards are to be met in each local area. The SIP is not a single document, but a compilation of new and previously submitted plans, programs, district rules, state regulations, and federal controls. Areas designated as serious nonattainment are required to achieve attainment by June 15, 2013. In California, CARB is the lead agency for developing the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards the SIP revisions to U.S. EPA for approval and publication in the Federal Register.

The APCDs within the nonattainment area had developed the 1994 *Sacramento Area Regional Ozone Attainment Plan* to satisfy the SIP requirement for the 1-hour ozone standard. This Attainment Plan identifies source controls and trip reduction strategies aimed at achieving the federal 1-hour ozone standard by 2005. The attainment strategy requires reductions of approximately 38 percent of ROG and 40 percent of NO_x emissions (ozone precursors) relative to 1990 baseline emissions. The strategy relies heavily on mobile-source NO_x reductions since, as shown previously, mobile sources generate a large majority of the regional NO_x emissions. With the revocation of the 1-hour ozone standard, the APCDs will continue to implement the existing control strategies, although efforts are currently underway to develop and submit an 8-hour ozone attainment plan by June 2007.

There is currently no federal legislation regarding GHGs, though several bills have been introduced in Congress with the intention of setting emissions limits. Additionally, the recent U.S. Supreme Court ruling in *Massachusetts vs. EPA* (Case 05-1120) requires the EPA to either promulgate regulations on GHG emissions or provide better reasons than those presented before the Court for not regulating. However, at the time of writing, there are no regulations setting ambient air quality emissions standards for GHGs.

10.2.2 State

The state of California has established its own ambient air quality standards (the CAAQS) for criteria air pollutants that are, in general, more stringent than the federal standards (see Table 10-1). CARB, the state's air quality management agency, enforces these standards by regulating mobile emission sources and overseeing activities of the county APCDs and regional AQMD. As stated previously, the proposed project is located in a nonattainment area with respect to the state ozone and PM₁₀ standards.

The California Clean Air Act requires that each area exceeding the state ambient air quality standards for ozone, CO, SO₂, and NO₂ must develop a plan aimed at achieving those standards (California Health and Safety Code 40911). The California Health and Safety Code Section 40914 requires AQMDs to design a plan that achieves an annual reduction in district-wide emission of 5 percent or more, averaged every consecutive three-year period. To satisfy this requirement, local air districts have developed an Air Quality Attainment Plan (AQAP) outlining strategies for achieving the state ambient air quality standard for ozone. The AQAP outlines both stationary and mobile emission source control measures and emphasizes Transportation Control Measures and Indirect Source Control Measures to reduce mobile source emissions. These measures are also incorporated into the SIP to satisfy federal requirements.

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed AB 1493. AB 1493 requires that the CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by

passenger vehicles and light-duty truck and other vehicles determined by the CARB to be vehicles whose primary use is noncommercial personal transportation in the state.”

Executive Order S-3-05

Executive Order S-3-05, which was signed by Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra’s snowpack, further exacerbate California’s air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total GHG emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

The Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The Secretary will also submit biannual reports to the governor and state legislature describing: (1) progress made toward reaching the emission targets; (2) impacts of global warming on California’s resources; and (3) mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of the CalEPA created a Climate Act Team (CAT) made up of members from various state agencies and commissions. CAT released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government, and community actions, as well as through state incentive and regulatory programs.

Assembly Bill 32

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Climate Solutions Act of 2006. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that CARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

Senate Bill 1368

Senate Bill (SB) 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a GHG emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The California Energy Commission (CEC) must establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

10.2.3 Local

At the local level, the Placer County APCD (PCAPCD) regulates air quality by establishing local air quality regulations, permitting stationary sources, and planning activities related to air quality. The PCAPCD is also responsible for enforcing and implementing federal and state standards. Through its enhanced California Environmental Quality Act (CEQA) review process, the PCAPCD has developed significance thresholds for land use projects that generate air pollutants. These thresholds apply to both short- and long-term air pollutant emissions. Projects with the potential to generate emissions exceeding the thresholds would have a significant impact on air quality. If the project's impact exceeds any of the significance criteria, various mitigation measures are available, depending on the nature of the air quality impact. The significance criteria are discussed in Section 10.3.

The 1988 California Clean Air Act requires nonattainment areas to develop plans aimed at achieving state ambient standards. The PCAPCD has developed an AQAP outlining strategies for achieving the state ambient ozone standard. The AQAP outlines both stationary and mobile emission source control measures, and emphasizes Transportation Control Measures and Indirect Source Control Measures as a means of reducing mobile source emissions in Placer County. Measures in the AQAP include:

- City or County trip reduction ordinances;
- Areawide carpool/vanpool matching and assistance;
- In new developments, provision of bikeways and bicycling support facilities and pedestrian amenities such as sidewalks, adequate crosswalks, and building entries near sidewalks rather than behind large parking lots;
- Mixed land use requirement (i.e., residence, workplaces, and services located closely enough that private motorized transit between them would not be necessary);
- Use of alternative motor fuels and energy sources;
- Job/housing balance requirement for new developments;
- Transit service expansion and operational changes;
- Parking space limitations; and,
- Suburban fringe area park-and-ride lots.

Placer County General Plan

In addition to the air quality regulations, Placer County manages air quality through land use and development planning practices. The Placer County General Plan Air Quality Element provides countywide goals and policies aimed at improving air quality. Goals and policies in the Air Quality Element parallel those identified in state and federal plans applicable to Placer County. The proposed project's consistency with applicable General Plan policies is evaluated in Appendix D. General Plan policies and goals applicable to the proposed project include the following:

Air Quality – General

- Goal 6.F To protect and improve air quality in Placer County.
- Policy 6.F.2 The County shall develop mitigation measures to minimize stationary source and area source emissions.
- Policy 6.F.6 The County shall require project-level environment review to include identification of potential air quality impacts and designation of design and other appropriate mitigation measures or offset fees to reduce impacts. The County shall dedicate staff to work with project proponents and other agencies in identifying, ensuring the implementation of, and monitoring the success of mitigation measures.
- Policy 6.F.7 The County shall encourage development to be located and designed to minimize direct and indirect air pollutants.
- Policy 6.F.8 The County shall submit development proposals to the PCAPCD for review and comment in compliance with CEQA prior to consideration by the appropriate decision-making body.
- Policy 6.F.9 In reviewing project applications, the County shall consider alternatives or amendments that reduce emissions of air pollutants.
- Policy 6.F.10 The County may require new development projects to submit an air quality analysis for review and approval. Based on this analysis, the County shall require appropriate mitigation measures consistent with the PCAPCD's 1991 Air Quality Attainment Plan (or updated edition).
- Policy 6.F.11 The County shall apply the buffer standards described in Part I of this Policy Document and meteorological analyses to provide separation between possible emission/nuisance sources (such as industrial and commercial uses) and residential uses.

Air Quality – Transportation/Circulation

- Goal 6.G To integrate air quality planning with the land use and transportation planning process.
- Policy 6.G.1 The County shall require new development to be planned to result in smooth flowing traffic conditions for major roadways. This includes traffic signals and traffic signal coordination, parallel roadways, and intra- and inter-neighborhood connections where significant reductions in overall emissions can be achieved.
- Policy 6.G.3 The County shall encourage the use of alternative modes of transportation by incorporating public transit, bicycle, and pedestrian modes in County transportation planning and by requiring new development to provide adequate pedestrian and bikeway facilities.
- Policy 6.G.5 The County shall endeavor to secure adequate funding for transit services so that transit is a viable transportation alternative. New development shall pay its fair share of the cost of transit equipment and facilities required to serve new projects.
- Policy 6.G.6 The County shall require large new developments to dedicate land for and construct appropriate improvements for park-and-ride lots, if suitably located.

Policy 6.G.7 The County shall require stationary-source projects that generate significant amounts of air pollutants to incorporate air quality mitigation in their design.

Dry Creek/West Placer Community Plan

The proposed project's consistency with applicable Community Plan policies is evaluated in Appendix D. Community Plan policies and goals applicable to the proposed project include the following:

Community Development: Land Use

Policy 29 Review proposed developments for their potential adverse affect on air and water quality.

10.3 IMPACTS

This section identifies and discusses the environmental impacts that would result from the proposed project, and suggests mitigation measures to reduce the levels of impact. A detailed discussion of mitigation measures is included in Section 10.4.

10.3.1 Significance Criteria

In accordance with Appendix G of the state CEQA Guidelines, Placer County has determined that a project could have a significant adverse air quality impact if project-generated pollutant emissions would:

- Cause a violation of an ambient air quality standard or worsen an existing violation,
- Contribute substantially to an existing or projected air quality violation,
- Expose sensitive receptors to substantial pollutant concentrations,
- Conflict with adopted environmental plans, policies, or regulations for air pollutants, or
- Expose sensitive receptors to objectionable odors.

In practice, the PCAPCD recommends use of a combination of quantitative and qualitative criteria described below. For the purposes of this EIR, impacts are considered significant if the proposed project would:

- Cause emissions from all project-related sources (including mobile sources) to exceed the PCAPCD's significance threshold for construction and operational impacts, which includes:
 - ROG 82 pounds per day (lb/day)
 - NO_x 82 lb/day
 - CO 550 lb/day
 - PM₁₀ 82 lb/day
- Cause emissions from all project-related sources (including mobile sources) to exceed the PCAPCD's significance threshold for cumulative operational impacts, which includes:
 - ROG 10 lb/day
 - NO_x 10 lb/day
- Cause or contribute to local CO concentrations exceeding 20 parts per million (ppm) over a 1-hour averaging period or 9 ppm over an 8-hour averaging period;
- Frequently expose members of the public to objectionable odors;

- Expose sensitive receptors to toxic air contaminants that would adversely impact their health and well being; or
- Conflict with or obstruct implementation of any applicable air quality plans.

Greenhouse Gas Emissions and Climate Change

No air district in California, including the Placer County Air Pollution Control District, has identified a significance threshold for GHG emissions or a methodology for analyzing air quality impacts related to GHG emissions. The state has identified 1990 emission levels as a goal through adoption of AB 32. To meet this goal, California would need to generate lower levels of GHG emissions than current levels. However, no standards have yet been adopted quantifying 1990 emission targets.

It is recognized that for most projects, there is no simple metric available to determine if a single project would help or hinder meeting the AB 32 emission goals. Furthermore, at this time AB 32 only applies to stationary source emissions, none of which are proposed within the Riolo Vineyard Specific Plan. Consumption of fossil fuels in the transportation sector accounted for more than 40 percent of the total GHG emissions in California in 2004. Current standards for reducing vehicle emissions considered under AB 1493 call for “the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles” and do not provide a quantified target for GHG emissions reductions for vehicles.

Emitting CO₂ into the atmosphere is not itself an adverse environmental affect. It is the increased concentration of CO₂ in the atmosphere potentially resulting in global climate change and the associated consequences of such climate change that results in adverse environmental affects (e.g., sea level rise, loss of snowpack, severe weather events). Although it is possible to generally estimate a project’s incremental contribution of CO₂ into the atmosphere, it is typically not possible to determine whether or how an individual project’s relatively small incremental contribution might translate into physical effects on the environment. Given the complex interactions between various global and regional-scale physical, chemical, atmospheric, terrestrial, and aquatic systems that result in the physical expressions of global climate change, it is impossible to discern whether the presence or absence of CO₂ emitted by the project would result in any altered conditions.

Given the challenges associated with determining project-specific significance criteria for GHG emissions when the issue must be viewed on a global scale, quantitative significance criteria are not proposed for the Riolo Vineyard project. For this analysis, a project’s incremental contribution to global climate change would be considered significant if, due to the size or nature of the project, it would generate a substantial increase in GHG emissions relative to existing conditions.

10.3.2 Project-Level Impacts

Construction Impacts

IMPACT 10-1:	Construction activities would increase short-term criteria air pollutant emissions
SIGNIFICANCE:	Short-term: Significant for NO _x , CO, ROG, and PM ₁₀ Long-term: Less than Significant
MITIGATION:	Mitigation Measures 10-1a through 10-1e
Proposed:	Mitigation Measures 10-1a, 10-1b, 10-1c, 10-1d, and 10-1e

Significance After Proposed Mitigation:	Short-term: Significant for NO _x , CO, and ROG; Less than Significant for PM ₁₀ Long-term: Less than Significant
Recommended:	None
RESIDUAL SIGNIFICANCE:	Short-term: Significant for NO _x , CO, and ROG; Less than Significant for PM ₁₀ Long-term: Less than Significant

In general, construction activities generate short-term criteria pollutant emissions, particularly PM₁₀ and NO_x. The potential emissions from the proposed construction were calculated and compared with the emission thresholds presented previously in Section 10.1.2. Emissions from construction can be categorized into three sources:

- Fugitive dust from earthmoving activities and traffic on unpaved and paved surfaces,
- Construction equipment exhaust, and
- Employee vehicle exhaust.

Generally, fugitive dust from earthmoving activities produces the most PM₁₀ construction emissions, while exhaust emissions from construction equipment produce the most ROG, NO_x, and CO. Employee vehicle trip emissions are generally low relative to the other two main sources of emissions.

As was discussed in the project description, the proposed project residential development could be completed in between two to five years after project approval, subject to market conditions. Development would generally occur from east to west, consisting of eight general phases (Section 3.6.10). The site preparation and grading activities are expected to last about 20 to 40 days spread out over the duration of the entire construction activities. Similarly, architectural coating and asphaltting activities will be spread out over the duration of the entire construction activities.

To analyze the significance of the air quality impacts from construction, a worst-case scenario was developed. This worst-case scenario assumes that maximum fugitive dust emissions occur simultaneously with the maximum emissions from construction equipment exhaust and employee vehicles. If the worst-case scenario emissions exceed the significance threshold, then the construction emission impacts would be considered significant. The worst-case scenario is expected to occur during grading construction activities.

Based on the construction schedule and the proposed project activities, the following assumptions were used in land use emission model URBEMIS2002 to calculate the maximum fugitive dust emission:

- The worst-case emission factor for fugitive dust emissions (38.2 lbs/acre-day) was used to calculate fugitive dust emissions as recommended by the URBEMIS2002 guide (Jones & Stokes Associates, 2002).
- The maximum total acreage area disturbed in one day is 10 acres.
- There will be no import or export of soils from the Plan Area.

The maximum construction equipment exhaust was also calculated using URBEMIS2002. The equipment list provided in the project description (Section 3.6.10, Tables 3-4 and 3-5) was input into the URBEMIS2002 model to obtain the maximum construction equipment emission rate. The equipment list includes the maximum number of equipment units that are expected to operate simultaneously. For conservative purposes, the onsite and offsite construction activities are assumed to occur simultaneously. Material haul trucks and pipe laying trucks were all considered to be off-highway trucks. This is a conservative assumption because these vehicles may be subject to on-road emission standards, which are

generally more stringent than off-road standards. Pick-up trucks were not included in the model because they are not typically diesel-powered vehicles. More details regarding the assumptions, information, and methodology used to calculate the construction emissions are presented in Appendix G.

Table 10-5
Maximum Unmitigated Pollutant Emissions During Site Construction
(lb/day)

Source	ROG	NO _x	PM ₁₀	CO
Employee Vehicle Exhaust	1.6	3.9	0.0	10.1
Equipment Exhaust	141.12	893.55	34.90	1,188.71
Fugitive Dust	0.00	0.00	382.06	0.00
Total	142.72	897.45	416.96	1,198.81
Significance Threshold	82	82	82	550

Note: Items in bold exceed the significance threshold.

The maximum employee vehicle emissions were also calculated. This calculation is based on the maximum employees expected at the site (88 employees—one employee per piece of construction equipment plus one foreman, assuming onsite and offsite construction proceeds concurrently). The emission factors from the employee vehicles were calculated by using the emission factor model EMFAC2002. The average trip distance was assumed to be 9.7 miles, based on the URBEMIS2002 model's home-to-work distance in the SVAB.

The maximum unmitigated equipment exhaust, fugitive dust emissions, and employee vehicle emissions calculated are shown in Table 10-5. (Further details of these calculations are included in Appendix G.) The maximum unmitigated construction emissions of ROG, NO_x, CO, and PM₁₀ are expected to exceed the significance threshold. Therefore, without mitigation measures, the construction emissions would be considered to have a short-term significant impact. PM_{2.5} emissions were not quantified for this analysis because there is no significance threshold for PM_{2.5}. However, the PM_{2.5} emissions are related to the PM₁₀ emissions, therefore, it is likely that impacts from PM_{2.5} would also be significant. Sulfur oxide emissions were also calculated but were not presented because these emissions are expected to be relatively low (less than 0.1 pound per day), and sulfur oxide concentrations have historically been well below the NAAQS and the CAAQS for this region.

Mitigation measures would be implemented to reduce the emissions from construction. Mitigation Measure 10-1a would reduce fugitive dust emissions, and Mitigation Measure 10-1b would reduce the emissions of NO_x and PM₁₀ from off-road construction equipment. Table 10-6 summarizes the effectiveness of some of the more important actions proposed by Mitigation Measure 10-1a.

Table 10-6
Fugitive Dust Emission Mitigation for PM₁₀ Emissions

Source	Action	PM ₁₀ Reduction
Surface/Grading	Water exposed soil with adequate frequency for continued moist soil	50%
Truck Hauling Road	Water all haul roads twice daily	45%
Soil Piles	Enclose, cover, or water twice daily all soil piles	9.5%
Entrained Dust	Reduce speed on unpaved roads to less than 15 miles per hour	40%

Source: Jones & Stokes Associates, 2002

The combined effect of the actions listed in Table 10-6 would reduce the fugitive dust emissions during construction by approximately 85 percent. Mitigation Measure 10-1b would reduce the emissions from off-road equipment exhaust. Table 10-7 shows the mitigated emissions calculated by the URBEMIS2002 model. Details of the mitigation measures selected in URBEMIS2002 are provided in Appendix G.

**Table 10-7
Mitigated Maximum Pollutant Emissions During Construction
(lb/day)**

Source	ROG	NO _x	PM ₁₀	CO
Employee Vehicle Exhaust	1.6	3.9	0.0	10.1
Equipment Exhaust	141.12	768.62	2.62	1,188.71
Fugitive Dust	0.00	0.00	57.04	0.00
Total (Worst-Case)	142.72	772.52	59.72	1,198.81
Significance Threshold	82	82	82	550

Note: Items in bold exceed the significance threshold.

Table 10-7 shows that the application of Mitigation Measures 10-1a and 10-1b would not reduce construction impacts below the significance thresholds for ROG, NO_x, and CO. Other mitigation is also recommended to reduce significant impacts. The effects of these other mitigation measures cannot be readily quantified, however. Therefore, exhaust emissions of ROG, NO_x, and CO from construction activities would have a significant, short-term impact on air quality.



Operational Impacts

IMPACT 10-2:	Increased regional criteria pollutant emissions
SIGNIFICANCE:	Short-term: Significant for PM ₁₀ , ROG, and NO _x Long-term: Significant for PM ₁₀ and ROG
MITIGATION:	Mitigation Measures 10-2a through 10-2d
Proposed:	Mitigation Measures 10-2a, 10-2b, 10-2c, and 10-2d
Significance After	
Proposed Mitigation:	Short-term: Significant for PM ₁₀ , ROG, and NO _x Long-term: Significant for PM ₁₀ and ROG
Recommended:	None
RESIDUAL SIGNIFICANCE:	Short-term: Significant for PM ₁₀ , ROG, and NO _x Long-term: Significant for PM ₁₀ and ROG

The proposed project would result in additional criteria pollutant emissions from vehicle exhaust and area sources. The URBEMIS2002 model (Jones & Stokes Associates, 2002) was used to estimate the increase in regional emissions as a result of the proposed project. This model estimates daily winter and summer emissions from both mobile and area sources. For the proposed project, the URBEMIS2002 model was run under conditions for 2010, which is the estimated buildout year.

According to the detailed traffic study performed for the proposed project, the project would generate about 11,326 vehicle trips on an average workday (see Table 9-16 in Chapter 9, Transportation and Circulation, in this Draft EIR). Table 9-16 presents the trip generation rates that were used to calculate the daily trips from

the different types of land uses. These trip rates were also used in the URBEMIS2002 model to calculate the operational emissions from mobile sources. The URBEMIS2002 model was also used to calculate the operational emissions from the area sources. More details regarding the methodology are presented in Appendix G. The URBEMIS model outputs are available for review at the Placer County Planning Department. The maximum estimated daily emissions from each source type for the year 2010 are presented in Table 10-8, along with the corresponding PCAPCD pollutant significance thresholds.

The maximum daily emissions for SO₂ would be below the significance thresholds and not considered to have a significant impact on air quality. However, the maximum daily PM₁₀, CO, ROG, and NO_x emissions associated with the proposed project development are estimated to exceed the significance threshold. Therefore, unmitigated, operational emissions of ROG, NO_x, CO, and PM₁₀ would have a significant impact on air quality.

Mitigation measures identified for Impact 10-2 would reduce the operational emissions of ROG, NO_x, CO, and PM₁₀. However, the effectiveness of these mitigation measures cannot be reliably quantified. Therefore, it is assumed that mitigated ROG, NO_x, CO, and PM₁₀ emissions would also have a potentially significant, long-term impact on air quality.

IMPACT 10-3:	Increase in ambient concentrations of CO at nearby intersections
SIGNIFICANCE:	Less than Significant
MITIGATION:	None Warranted

The proposed project would generate new traffic at nearby intersections and increase local congestion. In such situations, the potential increase in CO concentrations at these intersections is of particular concern. To evaluate the potential effect of the proposed project on local CO concentrations, the existing conditions with the proposed project were modeled at three nearby intersections using the California Department of Transportation (Caltrans) CALINE4 roadway dispersion model. The three intersections selected for modeling were:

- Locust and Baseline Avenue
- Watt Avenue and PFE Road
- Walerga Road and PFE Road

Other intersections that would be potentially affected by the proposed project are not expected to experience CO concentrations higher than the highest predicted among these three intersections. The existing level of service (LOS) at the intersection of Walerga Road and PFE Road is LOS F, which is the worst LOS ranking (see Chapter 9, Transportation and Circulation, for a discussion of LOS rankings). The LOS at the other two intersections would be expected to drop to LOS F after the proposed project is in place. Therefore, one of these intersections is expected to represent the worst-case intersection.

For modeling of the above intersections, sensitive receptors were assumed to be present immediately adjacent to the roadway on all sides of the modeled intersections. Appendix G describes the modeling methodology in more detail. The CALINE4 model outputs are available for review at the Placer County Planning Department. Existing conditions are modeled with emission factors from 2006.

Background CO concentrations were included in the CALINE4 model to generate total CO concentrations. The background was assumed to be well-represented by the maximum 1-hour CO concentration measured at the North Highlands monitoring station from 2003 to 2005. The maximum 1-hour CO concentration at North Highland station was reported at 8 ppm in 2005. Use of this maximum value is conservative because the CO concentrations are expected to improve over the years as cleaner cars enter the vehicle fleet.

**Table 10-8
Summary of Estimated Maximum Daily Pollutant Emissions from the Proposed Project in 2010
(lb/day)**

Source	ROG		NO _x		CO		SO ₂		PM ₁₀	
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Mobile	71.82	78.07	80.54	120.87	816.29	929.78	0.56	0.55	95.5	95.5
Natural Gas Combustion	0.95	0.95	12.39	12.39	5.63	5.63	0.00	0.00	0.02	0.02
Heating	0.00	0.45	0.00	7.68	0.00	3.27	0.00	0.05	0.00	0.62
Landscaping	3.61	0.00	0.47	0.00	28.7	0.00	0.18	0.00	0.09	0.00
Consumer Products	46.43	46.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coatings	32.30	32.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	155.11	156.2	93.4	140.94	850.62	938.68	0.74	0.60	95.61	96.14
<i>Significance Threshold</i>	82	82	82	82	550	550	82	82	82	82

Note: Items in bold exceed significance thresholds

Maximum 1-hour average CO concentrations predicted at the three intersections are presented in Table 10-9 without accounting for the background concentrations. Table 10-10 adds the background concentration of 8 ppm and gives the predicted total 1-hour average CO concentrations. As recommended by the Project-Level Carbon Monoxide Protocol (Caltrans, 1997), maximum 8-hour concentrations were estimated by multiplying the maximum 1-hour average concentrations by a persistence factor of 0.52. This persistence factor is based on the ratio of the top ten highest 8-hour CO concentrations at the North Highlands stations from 2003 to 2005 to the 1-hour concentrations that were measured at that time; see Appendix G for more information regarding this calculation. This method results in the estimated peak 8-hour average concentrations shown in Table 10-11.

A project is considered to have significant impacts if it results in CO concentrations that exceed the 1-hour average standard of 20 ppm and/or the 8-hour average standard of 9.0 ppm. As shown in Tables 10-10 and 10-11, the maximum predicted concentrations at the selected intersections are below these standards.

Table 10-9
Maximum Predicted 1-Hour Average CO Concentrations without Background (ppm)

Intersection	Existing ¹	
	No Project	With Project
Locust and Baseline Avenues	2.9	2.9
Watt Avenue and PFE Road	2.1	2.8
Walerga Road and PFE Road	3.9	4.3

Note:

¹Short-term data is based on traffic conditions and emission factors for 2006

Table 10-10
Maximum Predicted Total 1-Hour Average CO Concentration with Background (ppm)

Intersection	Existing ¹	
	No Project	With Project
Locust and Baseline Avenues	10.9	10.9
Watt Avenue and PFE Road	10.1	10.8
Walerga Road and PFE Road	11.9	12.3
State Standard	20	20
Federal Standard	35	35

Note:

¹Short-term data is based on traffic conditions and emission factors for 2006

**Table 10-11
Predicted Peak 8-Hour Average CO Concentration
(ppm)**

Intersection	Existing ¹	
	No Project	With Project
Locust and Baseline Avenues	5.7	5.7
Watt Avenue and PFE Road	5.3	5.6
Walerga Road and PFE Road	6.2	6.4
State Standard	9.0	9.0
Federal Standard	9	9

Notes:

¹Short-term data is based on traffic conditions and emission factors for 2006

Persistence factor of 0.52 as recommended in the Project-Level Carbon Monoxide Protocol (Caltrans, 1997).

IMPACT 10-4: Exposure of nearby sensitive receptors to odor
SIGNIFICANCE: Less than Significant
MITIGATION: None Warranted

The severity of odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and sensitivity of the receptor. In general, odors are usually associated with sources such as wastewater treatment plants, composting facilities, chemical plants, and other similar facilities. Such inherently odorous sources would not be used or constructed as part of the proposed project. In general, development projects of this nature are not likely to expose sensitive receptors to sources of odors, nor is the Plan Area located within a mile of sources that are likely to emit objectionable odors (e.g., wastewater treatment, food processing, chemical plants, composting, landfills, dairies, or rendering). Therefore, the odor impacts from the proposed project would be less than significant.

IMPACT 10-5: Exposure of nearby sensitive receptors to Toxic Air Contaminants
SIGNIFICANCE: Less than Significant
MITIGATION: None Warranted

The proposed project has the potential to expose sensitive receptors to TACs; specifically, the project could expose sensitive receptors to diesel particulates. During construction, heavy-duty diesel equipment could emit diesel particulate emissions. After completion of the proposed project, heavy-duty diesel trucks traveling along the roads in the vicinity of the project could expose sensitive receptors to diesel particulates.

The CARB limits diesel particulate emissions from construction activities through the CARB off-road equipment diesel regulations, which are intended to reduce diesel PM emissions from in-use off-road equipment as much as technically and economically feasible in the short and long term. Based on the short-term nature of the construction emissions and the regulations intended to reduce diesel particulate emissions, it is expected that the diesel particulate emissions from the construction activities would not have a significant impact on air quality. Mitigation measures identified for other construction impacts in this air quality analysis would also help reduce the diesel particulate emissions from construction equipment.

Similarly, diesel engines that could travel along the roads in the vicinity of the Plan Area are not expected to pose a significant risk to the residences of the area. The CARB recommends that sensitive receptors should not be sited within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day (CARB, 2005). Watt Avenue is the most traveled road in the Plan Area vicinity (as discussed in Chapter 9, Transportation and Circulation), with approximately 68,000 vehicles/day. This is well below the level of traffic that the CARB refers to in its recommendation for urban roads. Furthermore, diesel particulate emissions should be minimized to the extent feasible by CARB regulations. Therefore, impacts from diesel traffic to nearby sensitive receptors would be reduced to a less than significant level.

Consistency with County Plans and Policies

IMPACT 10-6:	Inconsistent with the <i>Placer County Air Quality Attainment Plan</i>
SIGNIFICANCE:	Significant
MITIGATION:	Mitigation Measure 10-6a
Proposed:	Mitigation Measure 10-6a
Significance After	
Proposed Mitigation:	Significant
Recommended:	None
RESIDUAL SIGNIFICANCE:	Significant and Unavoidable

Fugitive dust and exhaust emissions from short-term construction activities are projected to exceed the PCAPCD's significance thresholds for PM₁₀, NO_x, ROG, and CO, based on conservative assumptions made in the air quality analysis. With mitigation measures, the impacts from construction-related PM₁₀ emissions are predicted to be less than significant. However, the short-term impacts for the other three pollutants would still remain significant during peak construction activities.

Regional emissions of ROG from new trips generated during operations and area sources (such as architectural coatings, landscaping, and consumer products) are also expected to exceed the threshold based on conservative assumptions. By exceeding the PCAPCD's significance thresholds, the proposed project may add emissions that were not taken into account in the *Placer County Air Quality Attainment Plan*. Therefore, the proposed project would potentially be inconsistent with the goals of the *Placer County Air Quality Plan*; this would be a significant impact.

Estimated Emissions of Greenhouse Gases from the Proposed Project

IMPACT 10-7:	Emissions of greenhouse gases potentially contributing to global warming
SIGNIFICANCE:	Significant
MITIGATION:	Mitigation Measure 10-7a
Proposed:	Mitigation Measure 10-7a
Significance After	
Proposed Mitigation:	Significant
Recommended:	None
RESIDUAL SIGNIFICANCE:	Significant and Unavoidable

GHG emissions associated with the Riolo Vineyard project were estimated using CO₂ emissions as a proxy for all GHG emissions. This is consistent with the current reporting protocol of the CCAR. Calculations of GHG emissions typically focus on CO₂ because it is the most commonly produced GHG in terms of both number of sources and volume generated, and because it is among the easiest GHGs to measure. However, it is important to note that other GHGs have a higher global warming potential than CO₂. For example, as stated previously, 1 pound of CH₄ has an equivalent global warming potential of 21 pounds of CO₂ (CCAR, 2006). Nonetheless, emissions of other GHGs from the Riolo Vineyard project (and from almost all GHG emissions sources) would be low relative to emissions of CO₂ and would not contribute significantly to the overall generation of GHGs from the project.

Although the CCAR provides a methodology for calculating GHG emissions, the process is designed to be applied to a single or limited number of entities or operations where detailed information on emissions sources is available (e.g., usage of electricity and natural gas, numbers and types of vehicles and equipment in a fleet, type and usage of heating and cooling systems, and emissions from manufacturing processes). Information at this level of detail is not available for residential developments such as the Riolo Vineyard project, because these factors may vary significantly based upon the choices and behaviors of future project residents over time. GHG emissions from project residences could vary substantially based on numerous factors, such as the sizes of homes, the type and extent of energy efficiency measures that might be incorporated into each home's design, the type and size of appliances installed in the home, and whether solar energy facilities are included on any of the residences. Given this, the CCAR emissions inventory methodology is not appropriate for estimating GHG emissions from the project.

The traffic analysis conducted for the project in this Draft EIR provides data that can be used to estimate CO₂ emissions from project-generated vehicle trips. Buildout of the project would result in 11,326 vehicle trips per day (see Table 9-16). Assuming a trip rate of 5.48 miles per trip as described in Appendix G1 of the Draft EIR, the Riolo Vineyard project at full buildout would generate an average of 62,040 vehicle miles traveled (VMT) per day, or approximately 22.5 million VMT annually. Assuming an emissions factor for future CO₂ emissions from vehicles of approximately 366 grams of CO₂ per mile (CARB, 2002), approximately 9,100 tons of CO₂ per year would be generated by project-generated vehicle trips. Note that although this future CO₂ emissions factor does assume certain reductions in vehicle emissions due to future vehicle models operating more efficiently, it does not take into account additional vehicle emission reductions that might take place in response to AB 1493, if mobile source emission reductions are ultimately implemented through this legislation.

It is also important to note that this CO₂ emission estimate for vehicle trips associated with the Riolo Vineyard project is likely much greater than the emissions that will actually occur. The analysis methodology used for the emissions estimate assumes that all emissions sources (in this case, vehicles) are new sources and that emissions from these sources are 100 percent additive to existing conditions. This is a standard approach taken for air quality analyses. In many cases, such an assumption is appropriate because it is impossible to determine whether emissions sources associated with a project move from outside the air basin and are in effect new emissions sources, or whether they are sources that were already in the air basin and just shifted to a new location.

However, because the effects of GHGs are global, a project that merely shifts the location of a GHG-emitting activity (e.g., where people live, where vehicles drive, or where companies conduct business) would result in no net change in global GHG emissions levels. For example, if a substantial portion of California's population migrated from the South Coast Air Basin (managed by the South Coast Air Quality Management District) to the San Joaquin Valley Air Basin (managed by the San Joaquin Valley Air Pollution Control District), this would likely result in decreased emissions in the South Coast Air Basin and increased emissions in the San Joaquin Valley Air Basin, but little change in overall global

GHG emissions. However, if a person moves from one location where the land use pattern requires substantial vehicle use for day-to-day activities (e.g., commuting, shopping, etc.) to a new development that promotes shorter and fewer vehicle trips, more walking, and overall less energy usage, then it could be argued that the new development would result in a potential net reduction in global GHG emissions.

It is impossible to know at this time whether residents in the Specific Plan area will have longer or shorter commutes relative to their existing homes or whether they will walk, bike, and use public transportation more or less than under existing circumstances; and whether their overall driving habits will result in higher or lower VMT. Much of the vehicle-generated CO₂ emissions attributed to the project could simply be from vehicles currently emitting CO₂ at an existing location moving to the project site, and not from new vehicle emissions sources relative to global climate change. Therefore, although it is not possible to calculate the net contribution of vehicle-generated CO₂ emissions from the Riolo Vineyard project (i.e., project generated emissions minus current emissions from vehicles that would move to the project site), the net CO₂ contribution would likely be much less than the 9,100 tons of CO₂ per year calculated above.

Although the estimate of 9,100 tons of CO₂ emitted per year from project-related vehicle trips is higher than would actually occur, it provides a starting point for further emissions calculations. As identified in the “Environmental Setting” discussion above, fossil fuel consumption in the transportation sector was the single largest source of California’s GHG emissions in 2004, accounting for 40.7 percent of total GHG emissions in the state (CEC, 2006a). Making the general but extremely conservative assumption that the proportion of transportation-sector emissions from the Riolo Vineyard project at buildout would be similar to the statewide results for 2004, overall CO₂ emissions from the Riolo Vineyard project would be approximately 15,000 tons per year. This should be considered a very general estimate, providing a conservative indication of the order of magnitude of CO₂ emissions from the Riolo Vineyard project, since statewide GHG emissions come from many significance sources (power plants, railroads, industrial facilities, etc.) that are not uses planned within the Specific Plan.

As discussed above, it is not possible to assume or estimate numerous factors that can substantially affect the project’s CO₂ emissions. In addition, the discussion above regarding net/actual CO₂ emissions from project-generated vehicle trips being much less than calculated also applies to all other emission sources. Every new resident at the Riolo Vineyard project site would be moving from an existing location where their activities are contributing to CO₂ emissions. It is also reasonable to expect that at least a portion of the businesses at the future Commercial site will be moving from an existing location to the project site and are not completely new businesses. However, as with CO₂ emissions from vehicles, it is not possible to calculate the net CO₂ emissions from other sources because the existing behavior of individuals or businesses that would ultimately move to the project site cannot be determined. It is unknown whether the residential units that residents would move into will be more or less energy-efficient than their existing residences, how many and which types of businesses on the Commercial site might be new facilities or relocations of existing facilities, and whether facilities and operations of relocated businesses might result in more or less overall CO₂ emissions relative to existing conditions. However, it is certain that much of the CO₂ emissions attributed to project residents and businesses will simply be from emissions sources that move from an existing location to the project site, not from new emissions sources relative to global climate change.

Therefore, although the estimate of 15,000 tons of CO₂ emitted annually from the Riolo Vineyard project is very general, and is considered high, it is sufficient to support a general evaluation of the project’s contribution towards GHG emissions. It should also be noted that the emissions calculations described above do not take into account reductions in GHG emissions resulting from implementation of AB 32. Stationary emissions sources on the project site and stationary sources that serve the project site (e.g., power plants) will be subject to emissions reductions requirements of AB 32. The extent of these

reductions has not yet been quantified by CARB. At the time of project buildout, overall CO₂ emissions attributable to the Riolo Vineyard project could be substantially less than current emissions assumptions might indicate.

Similarly, if GHG emissions reductions for vehicles are enacted, through either the requirements of AB 1493 or AB 32 or a federal regulation, CO₂ emissions from the Riolo Vineyard project would be further reduced. If regulations proposed to comply with AB 1493 survive current legal challenges, by the time of project buildout CO₂ emissions from vehicles associated with the project could be 20 percent to 30 percent less than under current conditions. If AB 1493 is repealed, it is unclear what vehicle emissions limits might be adopted as part of AB 32. Emissions reduction requirements associated with AB 1493, AB 32, SB 1368, and Executive Order S-3-5 would apply throughout California. Therefore, beyond the fact that their effect on the Riolo Vineyard project is unclear, their effect on the overall cumulative context relative to all GHG emissions in California is unknown.

Broadly speaking, climate change mitigation and adaptation strategies fall into three categories: (1) transportation sector strategies; (2) electricity sector strategies, including renewable energy and energy efficiency; and (3) all other adaptation strategies, such as carbon sequestration, participation in emissions trading markets, and research and public education (CEC, 2003). The Riolo Vineyard Specific Plan project incorporates guidelines, strategies, and mitigation measures that minimize the human and spatial environmental footprint in the Specific Plan area, including transportation and electricity impacts. Implementation of these measures will help reduce potential GHG emissions resulting from the development of the proposed project.

The state's primary source of GHG emissions is the consumption of fossil energy (CEC, 2003). The proposed Specific Plan has several components that would reduce consumption of fossil energy within the Specific Plan area and thereby reduce potential GHG emissions. These components are consistent with "smart growth" principles developed and promoted by the Sacramento Area Council of Governments (SACOG).

"Smart Growth" Factors

The proposed Specific Plan has several components that will promote the use of alternative modes of transportation that produce a lesser amount of GHG emissions than vehicular travel, or none at all. First, the proposed development is designed to encourage people to walk, ride bicycles, or take public transportation. Second, the overall design and land use plan of Riolo Vineyard creates a compact development pattern that encourages walking, biking, and public transit use. Third, the Specific Plan improves the regional balance of housing and jobs. Housing opportunities are made available closer to employment opportunities in Placer County to encourage fewer long distance commutes, thus reducing vehicular travel time for those persons currently commuting to Placer County from Sacramento County and elsewhere.

Traffic Factors

Implementation of the Specific Plan's transportation and circulation system and mitigation measures will also help reduce potential GHG emissions by smoothing the flow of traffic to allow engines to operate more efficiently. The proposed project's transportation and circulation system will also promote non-vehicular travel through the implementation of traffic calming measures that will make roads safer for pedestrians and bicyclists (ICLEI, 2001). Improvements in vehicle efficiency and alternative fuel vehicles will also help reduce GHG emissions in the project area over the long term.

Electricity Factors

In addition to targeting GHG emissions through the transportation sector, the proposed Specific Plan will implement measures that will minimize to the extent feasible energy consumption from power plants and non-transportation sources of fossil fuel consumption. In addition, existing measures in place through AB 32, SB 1368, and other state initiatives will help contribute to a countywide reduction of GHG emissions.

Even with implementation of the above-described measures, however, the Riolo Vineyard project will likely result in a substantial amount of GHG emissions. Because it cannot be determined to a reasonable degree of certainty that the Riolo Vineyard project will not result in a cumulatively considerable incremental contribution to the significant cumulative impact of global climate change, the impacts of the proposed project on global climate change are considered significant and unavoidable. Program-Level Impacts

Applicants for program-level parcels would need to undergo the County's Subsequent Conformity Review Process to ensure that their development proposals conform to the Riolo Vineyard Specific Plan, CEQA regulations, and program-level mitigation measures identified in this Draft EIR. Upon conclusion of the Subsequent Conformity Review Process, the County will determine whether the proposed development entitlement is consistent with the Specific Plan, whether additional environmental review is required, and if so, the scope of such additional review.

The Riolo Vineyards Specific Plan includes seven parcels that are not owned or controlled by the Applicant. These parcels are currently owned or controlled by Riar/Singh (Assessor Parcel Number [APN] 023-200-109), Elliott (APN 023-221-005), Frisvold (APN 023-200-057), Lund (APN 023-221-004), Park Arya (APN 023-221-007), the Roseville Public Cemetery (APN 023-200-027), and County (formerly Pulte (APN 023-221-054). The County parcel is mitigation land for the Doyle Ranch project. The Riar/Singh parcel is located almost entirely within the 100-year floodplain of Dry Creek. These parcels and the cemetery are therefore not expected to develop or to generate new air quality impacts in the future. This Draft EIR assumes that the Park Arya, Elliott, Frisvold, and a portion of the Lund parcels will develop in the future. Land uses are attributed to these parcels in this Draft EIR and described in Chapter 3. To be conservative, the transportation analysis (see Chapter 9, Transportation and Circulation) included these potential land uses in its analysis of project-generated traffic. To the extent that traffic is considered in the air quality analysis, it also addresses program-level impacts resulting from development of the program-level parcels. All mitigation measures identified for project-level impacts would apply to program-level impacts.

10.4 MITIGATION MEASURES

This section discusses mitigation measures that will be implemented to reduce project-related impacts to air quality. Mitigation measures are separately identified as those "Proposed" by the Applicant and those "Recommended" by County staff.

Mitigation Measure 10-1a: Prepare and implement emission control/dust control measures (Proposed)

The Applicant shall submit to the PCAPCD and receive approval of a Construction Emission/Dust Control Plan prior to groundbreaking. This plan must address the minimum Administrative Requirements found in Sections 300 and 400 of District Rule 228, Fugitive Dust (www.placer.ca.gov/airpollution/airpolut.htm).

The Applicant shall have a pre-construction meeting for grading activities for 20 or more acres to discuss the construction emission/dust control plan with employees and/or contractors and the District is to be invited.

The Applicant shall suspend all grading operations when fugitive dust exceeds District Rule 228 fugitive dust limitations. An Applicant representative, CARB-certified to perform Visible Emissions Evaluations (VEE), shall routinely evaluate compliance with Rule 228. This requirement for a VEE is for projects grading 20 or more acres in size regardless in how many acres are to be disturbed daily.

It is to be noted that fugitive dust is not to exceed 40 percent opacity and not to go beyond the property boundary at any time. If lime or other drying agents are used to dry out wet grading areas, they shall be controlled so as not to exceed District Rule 228 fugitive dust limitations.

Mitigation Measure 10-1b: Provide PCAPCD with a list of construction equipment and anticipated construction timeline (Proposed)

The PCAPCD shall be provided with a list of construction equipment and anticipated construction timeline for each project. The prime contractor for each construction project shall submit to the PCAPCD a comprehensive inventory (i.e., make, model, year, emission rating) of all the heavy-duty off-road equipment (50 horsepower or greater) that will be used an aggregate of 40 or more hours for the construction project. The PCAPCD shall be provided with the anticipated construction timeline for each project including start date, and name and phone number of the project manager and onsite foreman. A plan for each project shall be submitted for approval by the PCAPCD demonstrating that the heavy-duty (> 50 horsepower) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NO_x reduction and 45 percent particulate reduction compared to the most recent CARB fleet average. The PCAPCD should be contacted for average fleet emission data. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. During smog season (May through October), the construction period shall be lengthened so as to minimize the number of vehicles and equipment operating at the same time. Contractors can access the Sacramento Metropolitan AQMD's web site to determine if their off-road fleet meets the requirements listed in this measure (http://www.airquality.org/ceqa/Construction_Mitigation_Calculator.xls).

Mitigation Measure 10-1c: Maintain construction equipment and vehicles (Proposed)

Construction equipment and vehicles shall be maintained for each project. Construction equipment exhaust emissions shall not exceed PCAPCD Rule 202 Visible Emission limitations. Operators of vehicles and equipment found to exceed opacity limits are to be immediately notified and the equipment must be repaired within 72 hours. An Applicant/developer representative (CARB-certified to perform visible emissions evaluations) shall routinely evaluate project related off-road and heavy-duty on-road equipment emissions for compliance with this requirement for projects grading more than 20 acres in size regardless of how many acres are to be disturbed daily.

Mitigation Measure 10-1d: Minimize idling time for diesel-powered equipment (Proposed)

Idling time for all diesel-powered equipment shall be minimized to 5 minutes.

Mitigation Measure 10-1e: No open burning of removed vegetation (Proposed)

For each project, the contract language shall stipulate that contractors shall not engage in open burning of removed vegetation. Vegetative material shall be chipped, delivered to waste to energy facilities, or disposed at an appropriate disposal site.

Mitigation Measure 10-2a: Implement measures to reduce energy consumption (Proposed)

The Riolo Vineyard Specific Plan shall incorporate and implement the following measures, or equally effective measures, to reduce energy consumption:

- Install low-NO_x hot water heaters per PCAPCD Rule 246.
- Encourage landscape maintenance companies to use battery-powered or electric equipment for non-residential maintenance activities, where feasible.
- Provide natural gas lines or electrical outlets to all backyards to encourage natural gas or electric barbecues, as well as electric lawn equipment.
- Install Class I bicycle lockers along with bike racks in commercial sites.
- Encourage landscaping with drought-resistant species, and the use of groundcovers rather than pavement to reduce heat reflection.
- Include Energy Star efficient appliances, such as dishwashers, refrigerators, and clothes washers.
- Include energy-efficient SunCoat Max window glazings, which have a solar heat gain of 0.27.
- Include high-efficiency heating and efficient ventilation methods on all new residential units. Furnaces to be low-NO_x with an AFUE of 80 percent.
- Incorporate solar heaters and panels in proposed project residences as feasible.
- Include high-efficiency water heaters. The external insulation used should have an R-value of 16 and an efficiency value of 0.62.
- Include high efficiency insulation with the following ratings – Ceilings: R-38, 2×6 Walls, 2×4 Walls: R-19, and Ducts: R-6.4.

Implementation of Mitigation Measure 10-2a will also help reduce atmospheric and greenhouse gas emissions from the Riolo Vineyard project and/or reduce energy consumption, and thus may reduce the project's contribution to the impact of global climate change.

Mitigation Measure 10-2b: Prohibit open burning (Proposed)

Open burning of any kind shall be prohibited in the residential, commercial, and recreational parcels of the Riolo Vineyards Specific Plan Area. Open burning will be allowed on the Agricultural, Agriculture-10, and Rural Residential parcels in accordance with PCAPCD Regulation 3, which requires a burn permit to be issued by the PCAPCD. Open burning creates substantial pollutant emissions of ozone precursors, CO, and PM. Any company employed to maintain landscapes within the Plan Area will be prohibited from open burning of vegetative refuse anywhere in the SVAB. The incorporation of this mitigation measure as part of the by-laws of a homeowners association (e.g., covenants, conditions,

and restrictions) would ensure compliance with this future rule, which will be enforced by PCAPCD as a requirement for the County to comply with the ambient air quality standard for PM_{2.5} pollutants.

The Applicant proposes additional open-burning restrictions, which state that burning activities shall be limited to vegetation materials (green waste) and conducted within 200 feet of a public street, trail, or park facility. Additionally, open-burning activities shall require a burn permit from the Placer County Air Pollution Control District (APCD) and shall be in compliance with APCD Regulation 3.

Mitigation Measure 10-2c: Allow only gas-fired fireplace appliances (Proposed)

Only gas-fired fireplace appliances shall be permitted in the Specific Plan Area. This condition shall be incorporated into any contracts, covenants, and restrictions that are established.

Mitigation Measure 10-2d: Implement offsite mitigation programs or pay an in-lieu amount into the Placer County Air Pollution Control District's Air Quality Mitigation Program (Proposed)

Each project shall implement an offsite mitigation program, coordinated through the PCAPCD, to offset the project's long-term ozone precursor emissions. The project offsite mitigation program must be approved by the PCAPCD. The project's offsite mitigation program provides monetary incentives to sources of air pollution within the project's air basin that are not required by law to reduce their emissions. Therefore, the emission reductions are real, quantifiable and implement provisions of the 1994 State Implementation Plan. The offsite mitigation program reduces emissions within the air basin that would not otherwise be eliminated.

In lieu of each project implementing its own offsite mitigation program, the Applicant can choose to participate in the PCAPCD Offsite Mitigation Program by paying an equivalent amount of money into the District program. Based on the URBEMIS results in Appendix G2, the per house unit fee is \$323 and the multi family per unit fee is \$232. This is a one time fee that would be payable at the time of the final map recording.

Mitigation Measure 10-6a: Implement the following mitigation measures (Proposed):

Mitigation Measure 10-1a (Prepare and implement emission control/dust control measures);

Mitigation Measure 10-1b (Provide PCAPCD with a list of construction equipment and anticipated construction timeline);

Mitigation Measure 10-1c (Maintain construction equipment and vehicles);

Mitigation Measure 10-1d (Minimize idling time for diesel-power equipment);

Mitigation Measure 10-1e (No open burning of removed vegetation);

Mitigation Measure 10-2a (Implement measures to reduce energy consumption);

Mitigation Measure 10-2b (Prohibit open burning);

Mitigation 10-2c (Allow only gas-fired fireplace appliances); and

Mitigation Measure 10-2d (Implement offsite mitigation programs or pay an in-lieu amount into the Placer County Air Pollution Control District's Air Quality Mitigation Program)

The complete descriptions of these mitigation measures are provided above.

Mitigation Measure 10-7a: Implement the following mitigation measures (Proposed):

Mitigation Measure 10-1c (Maintain construction equipment and vehicles);

Mitigation Measure 10-1d (Minimize idling time for diesel-powered equipment);

Mitigation Measure 10-2a (Implement measures to reduce energy consumption);

Mitigation Measure 10-2d (Implement offsite mitigation programs or pay an in-lieu amount into the Placer County Air Pollution Control District's Air Quality Mitigation Program);

Mitigation Measure 9-1a: Prepare and implement a Construction Traffic Management Plan;

Mitigation Measure 9-2a: Pay an in lieu fee and construct Walerga Road frontage improvements from the Dry Creek Bridge to the Placer County line;

Mitigation Measure 9-2b: Contribute a fair share to widen Walerga Road from the Dry Creek Bridge to Baseline Road;

Mitigation Measure 9-3a: Contribute a fair share to widen the intersections of Locust Road and Baseline Road, Watt Avenue and Baseline Road, and Walerga Road and Baseline Road;

Mitigation Measure 9-8a: Contribute a fair share to widen SR 65 from Blue Oaks Boulevard to SR 65;

Mitigation Measure 9-9a: Contribute a fair share to construct an interchange to replace the SR 70/99 and Riego Road intersection;

Mitigation Measure 9-11a: Contribute a fair share to widen the intersections of Locust Road and Baseline Road, and Walerga Road and Baseline Road;

Mitigation Measure 9-16a: Contribute a fair share to widen SR 65 to six lanes from Blue Oaks Boulevard to I-80;

Mitigation Measure 9-17a: Contribute a fair share to constructing an interchange at the intersection of SR 70/99 with Riego Road;

Mitigation Measure 9-18a: Create a Community Service Area to cover Transit Service;

Mitigation Measure 9-19a: Contribute a fair share to widen PFE Road to four lanes from Watt Avenue to Walerga Road; and

Mitigation Measure 9-20a: Contribute a fair share to widening the intersection of Walerga Road and PFE Road, signalizing the intersection of Cook Riolo Road and PFE Road, and signalizing the intersection of "East" Road and PFE Road.