APPENDIX B

Air Quality Technical Report

Air Quality and Greenhouse Gas Technical Report for the Robinson Ranch Planned Development

Prepared for
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1.0 Introduction

This air quality evaluation was prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) to determine if significant air quality impacts are likely to occur in conjunction with the type and scale of development associated with the proposed Robinson Ranch Planned Development. This report also assesses the impacts of the Planned Development on climate change and greenhouse gas emissions.

2.0 Project Description

The Robinson Ranch Planned Development project area covers 522 acres in the southwest portion of the city of Yucaipa (Figure 1). The city is located in southwest San Bernardino County and is bordered by the city of Redlands and San Bernardino County to the west; the city of Calimesa in Riverside County to the south; and San Bernardino County to the north and east.

The Planned Development will consist of 4,159 multi-family and single-family dwelling units; 1,213,017 square feet of new commercial space; 369,992 square feet of business park uses; and 49 acres of open space divided among three planning areas. These three planning areas are Robinson Ranch North, West Oak Center, and Wildwood Ranch.

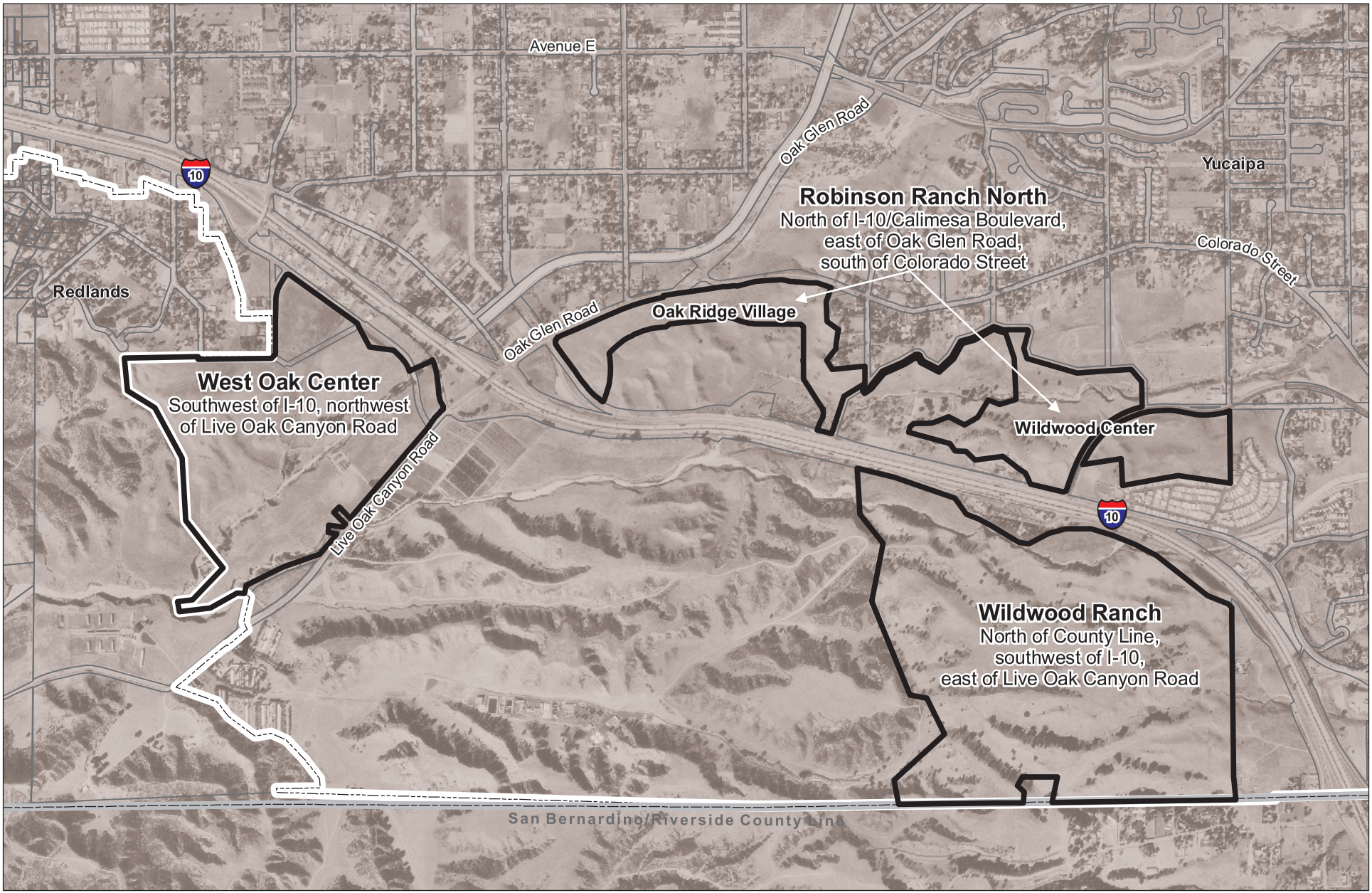
The Robinson Ranch Planned Development is proposing to provide new housing, including affordable housing components, commercial and business park facilities, and natural and improved open space for use and enjoyment by the citizens of Yucaipa and the region.

2.1 Robinson Ranch North Planning Area

The Robinson Ranch North Planning Area is located generally north of Interstate 10 (I-10), east of Oak Glen Road, and south of Colorado Street. This planning area is 104 acres and is divided between the Oak Ridge Village and the Wildwood Center subareas. Approximately 64 acres of this planning area would be developed with 1,069 residential units and 20,000 square feet of commercial space. Approximately 32 acres would be designated as improved open space and 8 acres would be designated as natural open space.

2.2 West Oak Center Planning Area

The West Oak Center Planning Area is located south of I-10, west of Live Oak Canyon Road, north of the Yucaipa city limits, and east of 16th Street and the Yucaipa city limits. This planning area is 150 acres in size. Approximately 113 acres would be developed with 810 residential units; 603,000 square feet of commercial space; and 370,000 square feet of business park use. Approximately 22 acres would be designated as improved open space and 15 acres would be designated as natural open space.



Source: PBS&J 2010; USGS 2002

PBS&J

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VICINITY MAP
FIGURE 1

2.3 Wildwood Ranch Planning Area

The Wildwood Ranch Planning Area is located south of I-10 and north of County Line Road and the city of Calimesa. This Planning Area is 268 acres in size. Approximately 178 acres would be developed with 2,280 residential units and 590,000 square feet of commercial space. Approximately 26 acres would be designated as improved open space and 64 acres would be designated as natural open space.

3.0 Environmental Setting

3.1 Climate and Meteorology

The Planned Development project area is located in the South Coast Air Basin (Basin). This Basin includes all of Orange County as well as the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The Basin is located in a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant, with high mountains forming the remainder of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station located nearest to the site, KCAYUCAI12 in the Yucaipa Bryant-Oak Glen area, reports a 2009 yearly average of 65.9°F. The average low is reported at 39.8°F in January, while the average high is 94.7°F in August.

In contrast to a very steady pattern of temperature, rainfall is seasonally and annually highly variable. Almost all rain falls from November through April. Summer rainfall is normally restricted to widely scattered thundershowers near the coast, with slightly heavier shower activity in the east and over the mountains. The annual average precipitation in Yucaipa is 13.62 inches. Rainfall is fairly evenly distributed throughout the year. The wettest month of the year is February with an average rainfall of 3.04 inches in the project area.

Although the Basin has a semi-arid climate, the air near the surface is typically moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the Basin by off shore winds, the ocean effect is dominant. Periods of heavy fog, especially along the coastline, are frequent; and low stratus clouds, often referred to as “high fog,” are a characteristic climatic feature. Annual average humidity is 70 percent at the coast and 57 percent in the east portions of the Basin.

Wind patterns across the south coastal region are characterized by westerly and southwesterly onshore winds during the day and easterly or northeasterly breezes at night. Wind speed is somewhat greater during the dry summer months than during the rainy winter season. Annually, typical winds in the project area average about four miles per hour.

Between the periods of dominant airflow, periods of air stagnation may occur both in the morning and evening hours. Whether such a period of stagnation occurs is one of the critical determinants of air quality conditions on any given day. During the winter and fall months, surface high-pressure systems over the Basin, combined with other meteorological conditions, can result in very strong, down slope Santa Ana winds. These winds normally have a duration of a few days before predominant meteorological conditions are reestablished.

In conjunction with the two characteristic wind patterns that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. These inversions are the marine/subsidence inversion and the radiation inversion. The height of the base of the inversion at any given time is known as the "mixing height." This mixing height can change under conditions when the top of the inversion does not change. The combination of winds and inversions are critical determinants in leading to the highly degraded air quality in summer and the generally good air quality in the winter in the project area.

3.2 Criteria Air Pollutants

Federal and state laws regulate the air pollutants emitted into the ambient air by stationary and mobile sources. These regulated air pollutants are known as "criteria air pollutants" and are categorized as primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and most fine particulate matter including lead (Pb) and fugitive dust (PM_{10} and $PM_{2.5}$) are primary air pollutants. Of these CO, SO_2, PM_{10}, and $PM_{2.5}$ are criteria pollutants. ROGs and NO_x are criteria pollutant precursors that go on to form secondary criteria pollutants through chemical and photochemical reaction in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants. Diesel Particulate Matter (DPM) is a mixture of particles that is a component of diesel exhaust. The U.S. Environmental Protection Agency (EPA) lists diesel exhaust as a mobile source air toxic due to the cancer and noncancer health effects associated with exposure to whole diesel exhaust.

Presented below is a description of each of these primary and secondary criteria air pollutants and their known health effects.

Carbon Monoxide (CO) is an odorless, colorless, and toxic gas. Because it is impossible to see, taste, or smell the toxic fumes, CO can kill people before they are aware that it is in their homes. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea, and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health, and the concentration and length of exposure (EPA 2010b). The major sources of CO in the Basin are on-road vehicles, aircraft, and off-road vehicles and equipment.

Reactive Organic Gases (ROGs) are defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. ROGs consist of non-methane hydrocarbons and oxygenated hydrocarbons. Hydrocarbons are organic compounds that contain only hydrogen and

carbon atoms. Non-methane hydrocarbons are hydrocarbons that do not contain the un-reactive hydrocarbon, methane. Oxygenated hydrocarbons are hydrocarbons with oxygenated functional groups attached.

It should be noted that there are no state or national ambient air quality standards for ROGs because they are not classified as criteria pollutants. They are regulated, however, because a reduction in ROG emissions reduces certain chemical reactions that contribute to the formulation of ozone. ROGs are also transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} levels and lower visibility. Although health-based standards have not been established for ROGs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, higher concentrations of ROGs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, kidneys, and central nervous system (EPA 1999).

The major sources of ROGs in the Basin are on-road motor vehicles and solvent evaporation. Benzene is a ROG and is a known carcinogen. Benzene is emitted into the air from gasoline service stations (fuel evaporation), motor vehicle exhaust, tobacco smoke, and from burning oil and coal. Benzene is also sometimes used as a solvent for paints, inks, oils, waxes, plastic, and rubber. It is used in the extraction of oils from seeds and nuts. It is also used in the manufacture of detergents, explosives, dyestuffs, and pharmaceuticals. Short-term (acute) exposure of high doses from inhalation of benzene may cause dizziness, drowsiness, headaches, eye irritation, skin irritation, and respiratory tract irritation, and at higher levels, unconsciousness can occur. Long-term (chronic) occupational exposure of high doses by inhalation has caused blood disorders, including aplastic anemia and lower levels of red blood cells (EPA 1999).

Nitrogen Oxides (NO_x) serves as integral participants in the process of photochemical smog production. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown, irritating gas formed by the combination of NO and oxygen. NO_x acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens. NO_x is also an ozone precursor. A precursor is a directly emitted air contaminant that, when released into the atmosphere, forms, causes to be formed, or contributes to the formation of a secondary air contaminant for which a National Ambient Air Quality Standard (NAAQS) has been adopted, or whose presence in the atmosphere will contribute to the violation of one or more NAAQS. When NO_x and ROGs are released in the atmosphere, they can chemically react with one another in the presence of sunlight to form ozone.

Nitrogen dioxide (NO_2) is a byproduct of fuel combustion. The principal form of NO_2 produced by combustion is nitrogen oxide (NO). NO reacts with oxygen in the air to form NO_2 creating the mixture of NO and NO_2 commonly called NO_x. Other oxides of nitrogen including nitrous acid and nitric acid are part of the nitrogen family. While the EPA's NAAQS covers this entire family, NO_2 is the component of greatest interest and the indicator for the larger group of nitrogen oxides.

Ozone (O_3) is one of a number of substances called photochemical oxidants that are formed when reactive organic compounds (ROC) and NO_x (both byproducts of the internal combustion engine) react with sunlight. Ozone is present in relatively high concentrations in the Basin, and the damaging effects of photochemical smog are generally related to ozone concentrations. Ozone may pose a health threat to those who already suffer from respiratory diseases as well as healthy people. Additionally, ozone has

been tied to crop damage, typically in the form of stunted growth and pre-mature death. Ozone can also act as a corrosive, resulting in property damage such as the embitterment of rubber products.

Lead (Pb) is a solid heavy metal that can exist in air pollution as an aerosol particle component. An aerosol is a collection of solid, liquid, or mixed-phase particles suspended in the air. Lead was first regulated as an air pollutant in 1976. Leaded gasoline was first marketed in 1923 and was used in motor vehicles until around 1970. The exclusion of lead from gasoline helped to decrease emissions of lead in the United States from 219,000 to 4,000 short tons per year between 1970 and 1997. Even though leaded gasoline has been phased out in most countries, some still use leaded gasoline. Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering. The mechanisms by which lead can be removed from the atmosphere (sinks) include deposition to soils, ice caps, oceans, and inhalation.

Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. The more serious effects of lead poisoning include behavior disorders, mental retardation, and neurological impairment. Low levels of lead in fetuses and young children can result in nervous system damage, which can cause learning deficiencies and low IQs. Lead may also contribute to high blood pressure and heart disease. Lead concentrations once exceeded the state and national air quality standards by a wide margin but have not exceeded state or national air quality standards at any regular monitoring station since 1982. Lead is no longer an additive to normal gasoline, which is the main reason concentration of lead in the air is low. The Planned Development would not emit lead, and therefore, lead is eliminated from further review in this analysis.

Sulfur Dioxide (SO_2) is a colorless, pungent gas. At levels greater than 0.5 parts per million (ppm), the gas has a strong odor, similar to rotten eggs. Sulfuric acid is formed from SO_2 and is an aerosol particle component that may lead to acid deposition. Acid deposition into water, vegetation, soil, or other materials can harm natural resources and materials. Sulfur oxides (SO_x) include SO_2 and sulfur trioxide (SO_3). Although SO_2 concentrations have been reduced to levels well below state and national standards, further reductions are desirable because SO_2 is a precursor to sulfates. Sulfates are a particulate formed through the photochemical oxidation of SO_2. Long-term exposure to high levels of SO_2 can cause irritation of existing cardiovascular disease, respiratory illness, and changes in the defenses in the lungs. When people with asthma are exposed to high levels of SO_2 for short periods of time during moderate activity, effects may include wheezing, chest tightness, or shortness of breath.

Particulate Matter (PM) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulate are now recognized. Course particles, or PM_{10}, include that portion of the particulate matter with an aerodynamic diameter of 10 microns (i.e., ten one-millionths of a meter or 0.0004 inch) or less. Fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns, that is 2.5 one-millionths of a meter or 0.0001 inch or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities; however, wind action on the arid landscape also contributes substantially to the local particulate loading. Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in those people who are naturally sensitive or susceptible to breathing problems. The South Coast Air Quality Management District (SCAQMD) recently promulgated both regional and localized emissions thresholds for $PM_{2.5}$. These are based on the proposed EPA standard of 10 tons per year as included in the Federal Register, September 8, 2005.

Fugitive dust poses primarily two public health and safety concerns. The first concern is that of respiratory problems attributable to the suspended particulates in the air. The second concern is that of motor vehicle accidents caused by reduced visibility during severe wind conditions. Fugitive dust may also cause significant property damage during strong windstorms by acting as an abrasive material agent (similar to sandblasting activities). Finally, fugitive dust can result in a nuisance factor due to the soiling of proximate structures and vehicles.

Diesel Particulate Matter (DPM) is a mixture of many exhaust particles and gases that is produced when an engine burns diesel fuel. Many compounds found in diesel exhaust are carcinogenic, including 16 that are classified as possibly carcinogenic by the International Agency for Research on Cancer. DPM includes the particle-phase constituents in diesel exhaust. Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation and exposure can cause coughs, headaches, light-headedness, and nausea. Diesel exhaust is a major source of ambient PM pollution as well, and numerous studies have linked elevated PM levels in the air to increased hospital admission, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems (OEHHA 2001) DPM in the Basin poses the greatest cancer risk of all the toxic air pollutants.

3.3 Global Climate Change Overview

Parts of the earth's atmosphere act as an insulating blanket of just the right thickness, trapping sufficient solar energy to keep the global average temperature in a suitable range. The 'blanket' is a collection of atmospheric gases called 'greenhouse gases' (GHGs) based on the idea that the gases 'trap' heat similar to the glass walls of a greenhouse. These gases, mainly water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone(O_3), and chlorofluorocarbons (CFCs), act as global insulators, reflecting visible light and infrared radiation back to the earth.

The participation of water vapor and ozone as GHGs is poorly understood. It is unclear the extent to which water vapor acts as a GHG. The uncertainty is due to the fact that water vapor can also produce cloud cover, which reflects sunlight away from the earth and can counteract its effect, if any, as a GHG. Also, water vapor tends to increase as the earth warms, so it is not well understood whether an increase in water vapor is contributing to climate change or rather a reaction to climate change. Ozone tends to break down in the presence of solar radiation but the mechanism is not well understood. For these reasons methodologies approved by the Intergovernmental Panel on Climate Change (IPCC), EPA, and the California Air Resources Board (CARB) focus on carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and hydrofluorcarbons as GHGs. A brief description of each of these GHGs is provided below.

3.3.1 Greenhouse Gas Emissions

The following provides a brief description of the GHGs considered in the following analysis.

Carbon Dioxide (CO_2) enters the atmosphere through the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, and trees and wood products, and as a result of other chemical reactions, such as those required to manufacture cement. Globally, the largest source of CO_2 emissions is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral

production, metal production, and the use of petroleum-based products can also lead to CO_2 emissions. CO_2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle. Natural sources of CO_2 that occur within the carbon cycle where billions of tons of atmospheric CO_2 are removed from the atmosphere by oceans and growing plants, also known as 'sinks,' and are emitted back into the atmosphere annually through natural processes, also known as 'sources.' When in balance, the total CO_2 emissions and removals from the entire carbon cycle are roughly equal. Since the Industrial Revolution in the 1700s, human activities, including burning of oil, coal and gas and deforestation, have increased CO_2 concentrations in the atmosphere. In 2005, global atmospheric concentrations of CO_2 were 35 percent higher than they were before the Industrial Revolution (EPA 2010b)

Methane (CH_4) is emitted from a variety of both human-related and natural sources. Human-related activities include fossil fuel production, animal husbandry, rice cultivation, biomass burning, and waste management. CH_4 is emitted during the production and transport of coal, natural gas, and oil. CH_4 emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills. It is estimated that 60 percent of global CH_4 emissions are related to human-related activities. Natural sources of CH_4 include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources, such as wildfires. CH_4 emission levels from a particular source can vary significantly from one country or region to another, depending on many factors such as climate, industrial and agricultural production characteristics, energy types and usage, and waste management practices. For example, temperature and moisture have a significant effect on the anaerobic digestion process, which is one of the key biological processes that cause CH_4 emissions in both human-related and natural sources. Also, the implementation of technologies to capture and utilize CH_4 from sources such as landfills, coal mines, and manure management systems affects the emission levels from these sources (EPA 2010b).

Nitrous oxide (N_2O), more commonly known as "laughing gas," is produced naturally by microbial processes in soil and water. In addition to agricultural sources, some industrial processes, such as fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions, also contribute to its atmospheric load. It is used in rocket engines, racecars, and as an aerosol spray propellant. Global concentration of nitrous oxide in 1998 was 314 parts per billion (ppb) (EPA 2010b).

Chlorofluorocarbons (CFCs) have no natural source, but were synthesized for uses as refrigerants, aerosol propellants, and cleaning solvents. Since their creation in 1928, the concentrations of CFCs in the atmosphere have been rising. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and has successfully reduced or stopped the increase in the levels of the major CFCs. However, due to the long atmospheric lifetimes, CFCs will remain in the atmosphere for over 100 years. CFCs, Tetrafluoromethane (CF_4), sulfur hexafluoride (SF_6), and hydrofluorcarbons (HFCs) have been banned and are no longer commercially available. Therefore, they are not considered any further in this analysis.

Hydrofluorcarbons (HFCs) are another set of synthesized compounds. HFCs are also considered GHGs, though they are less stable in the atmosphere and therefore have a shorter lifetime and less of an impact than CFCs.

Global atmospheric concentrations of the above-mentioned GHGs have increased markedly as a result of human activities and now far exceed pre-industrial era values. The accumulation of GHGs in the

atmosphere regulates the earth's temperature. The evidence is now considerable that anthropogenic GHG emissions, from electricity production, motor vehicle use, etc., have contributed to the elevated concentration of these gases in the atmosphere. The elevated concentration, in turn, is causing the earth's temperature to rise. A warmer earth may lead to changes in rainfall patterns, much smaller polar ice caps, a rise in sea level, and a wide range of impacts on plants, wildlife, and humans. GHG emissions from California are comprised of approximately 81 percent CO_2 from fossil fuel combustion; four percent CO_2 from process emissions; six percent from CH_4; and seven percent from N_2O. The remaining two percent of HGH emission in California are comprised of other GHGs.

3.3.2 GHG Inventories

Through a collaborative effort of staffs at the SCAQMD, Mojave Desert Air Quality Management District (MDAQMD), the County of San Bernardino and their consultants, GHG inventories have been developed for the county for the years 1990, 2007 and 2020. The methodology used for developing this GHG inventory is primarily consistent with the SCAQMD 2007 Air Quality Management Plan (AQMP) inventory method, which used 2002 data as the base year. Since the county is located in two air basins (the South Coast and the Mojave Desert Air Basins), the data collected and developed by the MDAQMD was combined with the SCAQMD data. County of San Bernardino staff also provided additional data to augment the AQMP inventory, such as electricity consumption and dairy activity.

Individual GHGs have varying potential to contribute to global warming and atmospheric lifetimes. Table 1 identifies the global warming potentials (GWP) and atmospheric lifetimes of basic GHGs. The CO_2 equivalent (CO_{2e}) is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent measure. The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of one. By comparison, the GWP of CH_4 is 21. This means that CH_4 has a greater global warming effect than CO_2 on a molecule per molecule basis. One million metric tons of CO_2 equivalent (MMT CO_2e) is the mass emissions of an individual GHG multiplied by its GWP.

Table 1 Global Warming Potentials and Atmospheric Lifetimes of Basic GHGs

GHG	Formula	100-year global warming potential[(1)]	Atmospheric lifetime (yrs)
Carbon dioxide	CO_2	1	Variable
Methane	CH_4	21	12 (± 3)
Nitrous oxide	N_2O	310	120
Sulphur hexafluoride	SF_6	23,900	3,200

(1) The warming effects over a 100-year time frame relative to other GHG.
Source: USEPA 2009

Table 2 summarizes the inventory in million metric tonnes (MMT) for the various milestone years by major source category. This information is for the county as a whole. The inventory in Table 2 includes all sources regardless of whether the County of San Bernardino has authority to control the emissions.

Table 2 CO_2e Inventory for Entire San Bernardino County in MMT

Category		1990	2002	2007	2020
Mobile On-Road	All	8	10	11	15
Mobile Off-Road	Locomotives	1	1	1	1
	Aircraft	0	0	0	1
	Other	0	1	1	1
Stationary	Utilities	3	3	4	5
	Landfills	1	1	1	1
	Other	13	12	14	17
Total		26	28	32	41

CO_2e = CO_2 equivalent
MMT = million metric tones
Source: SCAQMD 2009

3.3.3 Regional Adverse Effects of Climate Change

The increasing atmospheric concentration of GHGs resulting from human activities is changing the climate in ways that pose serious risks to health, economy, and environment. Potential consequences of climate change could include impacts on water resources, public health, air quality, electricity supplies, stormwater management, fire suppression resources, and vegetation.

Human Health

One of the biggest risks to the health of climate change is air pollution. Increased heat may increase ozone levels and air pollution toxicity, which may intensify respiratory cases and death attributed to asthma and pulmonary inflammation. Warmer temperatures could increase the opportunities for tick-borne Lyme disease and mosquito-borne diseases such as West Nile virus. Cases of dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat may also increase.

Ecosystems

The ecosystems that support the Yucaipa area through water and food supplies, as well as the city's economy, will endure a variety of stresses associated with climate change. There is some uncertainty about exactly how changes in temperature and precipitation will impact the health of the many ecosystems of the state, and how sensitive their interdependent systems are to any significant level of change.

Temperature

If greenhouse gases continue to increase, climate models predict that the average temperature at the Earth's surface could increase from 3.2 to 7.2°F above 1990 levels by the end of this century (EPA, 2010c). The average daily temperature for the city of Yucaipa in 2009 was 65.9°F (18.83°C). Given a seven degree increase, the average daily temperature could reach up to 72.9°F (22.72°C) by 2100.

Water Resources

Southern California is a semi-arid region and is largely dependent upon imported water supplies. A growing population, climate change, environmental concerns, and other factors in other parts of the state and western United States, make the city highly susceptible to water supply reliability issues. Primary water supplies from snow packs in the Sierra Nevada mountain range and Colorado Mountains could be reduced by as much as 70 to 90 percent by 2100. The city receives imported water from the San Gorgonio Pass Water Agency and the San Bernardino Valley Municipal Water District. Both of the water agencies receive water from the State Water Project (SWP).

Fire Risk

The occurrence of wildfires could increase as much as 55 percent, especially in areas interfacing with natural vegetation. The city is bordered by hills, mountains, open fields, and undeveloped lots contiguous to residential development. Residential landscaping, fencing, and outbuildings increase fuel loading, spotting, and fire intensity.

Increased Frequency of Rolling Blackouts

A blackout refers to the total loss of power to an area. Blackouts come without warning, last for indeterminate periods, and are typically caused by catastrophic equipment failure, severe weather, or excessive power demands. Under the worst case scenario, electricity demand in 2020 could increase by approximately 193 gigawatt hours (GWh) annually over the 2007 baseline. Worst case scenarios include rolling and/or total black outs. The nature, cause, and locality of the blackout determine who is affected. Outages may last from a few hours to a few weeks depending on the nature of the blackout and the configuration of the electrical network. Rolling blackouts are deliberate power cuts which are designed to reduce the load on an electricity generation system and the power grid. Rolling blackouts are a last resort measure used by an electricity provider in order to avoid a total blackout of the power system. They are usually in response to a situation where the demand for electricity exceeds the power supply capability of the network. Rolling blackouts may be localized to a specific part of the electricity network or may be more widespread and affect the entire city. Rolling blackouts typically last only a few hours.

Almost all modern activities depend on electricity. An electricity blackout causes impacts to every aspect of daily life, virtually bringing daily activities to a complete standstill. Electrical loss could affect daily commutes (no traffic signals or trains), elevator use, office functions (no light, computers, copiers, or faxes), food preparation (no microwave, refrigerators, appliances, or solid state ignition), and communications (no television or radio.). Emergency services would be drastically affected. As electricity demand increases and sources decrease, cost will rise and affect our overall economy.

4.0 Air Quality and GHG Emissions Regulations

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

4.1 Federal

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the EPA to establish National Ambient Air Quality Standards (NAAQS) with states retaining the option to adopt more stringent standards or to include other specific pollutants.

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

Current NAAQS are listed in Table 3. Areas that meet the ambient air quality standards are classified as "attainment" areas while areas that do not meet these standards are classified as "non-attainment" areas. The classifications for ozone non-attainment include and range in magnitude from marginal, moderate, serious, severe, and extreme. The EPA classifies the Basin as in attainment for CO and NO_2. The Basin is in non-attainment for PM_{10} and $PM_{2.5}$ and is in extreme non-attainment for ozone (1-hour) and severe non-attainment for ozone (8-hour). Table 4 lists the attainment status of the Basin County for the criteria pollutants.

The CAA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The SIP is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The EPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA.

Table 3 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]	Federal Standards [2]	
		Concentration	Primary [3, 4]	Secondary [3, 5]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	--	Same as Primary Standards
	8 Hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary Standards
	Annual Arithmetic Mean	20 µg/m	--	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard	35 µg/m	Same as Primary Standards
	Annual Arithmetic Mean	12 µg/m	15 µg/m	
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
	1 Hour	0.18 ppm (470 mg/m^3)	--	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	--	0.030 ppm (80 µg/m^3)	--
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	--
	3 Hour	--	--	0.5 ppm (1300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	--	--
Lead[6]	30 Day Average	1.5 µg/m^3	--	--
	Calendar Quarter	--	1.5 µg/m^3	Same as Primary Standard
	Rolling 3-Month Average[7]	--	0.15 µg/m^3	
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more due to particles.	No Federal Standards	
Sulfates	24 Hour	25 µg/m^3	No Federal Standards	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	No Federal Standards	
Vinyl Chloride[6]	24 Hour	0.01 ppm (26 µg/m^3)	No Federal Standards	

[1] California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, lead, hydrogen sulfide, and vinyl chloride standards are not to be equaled or exceeded.

[2] National standards, other than 1-hour O_3, 8-hour O_3, 24-hour PM_{10}, 24-hour $PM_{2.5}$, and those based on annual averages, are not to be exceeded more than once a year. The 1-hour O_3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one. The 8-hour O_3 standard is attained when the 3-year average of the annual fourth-highest daily maximum 8-hour concentrations is below 0.08 ppm. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile 24-hour concentrations is below 150 µg/m^3. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of the 98th percentile 24-hour concentrations is below 65 µg/m^3.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parenthesis are based on a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar). All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury; parts per million (ppm) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

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

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

[6] The CARB had identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[7] National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Source: CARB 2010a.

Table 4 Attainment Status for the Basin

Pollutant	State Status	Federal Status
Ozone (1-hour)	Extreme Non-attainment	Note [1]
Ozone (8-hour)	Extreme Non-Attainment	Severe (17 years to attain) (may petition for Extreme)
PM_{10}	Non-attainment	Non-attainment
$PM_{2.5}$	Non-attainment	Non-attainment
CO	Attainment	Attainment/Maintenance
NO_2	Attainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead (Pb)	Attainment	Attainment

Note [1] The federal 1-hour ozone standard was revoked in 2005 and is no longer in effect for the state of California.
Source: CARB 2010b

4.2 State

The CARB, a part of the California EPA (CalEPA) is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets state ambient air quality standards (California Ambient Air Quality Standards (CAAQS)), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. The CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. The CARB also has primary responsibility for the development of California's SIP, for which it works closely with the federal government and the local air districts.

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

The Basin is designated as attainment of the CAAQS for CO, NO_2, SO_2, and lead. The Basin is in non-attainment status for PM_{10} and $PM_{2.5}$ and is designated as Severe-17 non-attainment for ozone (8-hour). With this designation, the Basin must meet attainment of the 8-hour standard within 17 years of the designation, which in this case would be by 2021. If the designation is changed to Extreme non-attainment, then attainment would be required by 2024.

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets:

- By 2010, California shall reduce GHG emissions to 2000 levels;
- By 2020, California shall reduce GHG emissions to 1990 levels; and
- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

The first California Climate Action Team (CCAT) Report to the Governor in 2006 contained recommendations and strategies to help meet the targets in Executive Order S-3-05. In April 2010, the Draft California Action Team (CAT) Biennial Report released expands on the policy oriented 2006 assessment. This report provides new information and scientific findings. The new information and details in the CAT Assessment Report include development of new climate and sea-level projections using new information and tools that have become available in the last two years; and evaluation of climate change within the context of broader social changes, such as land-use changes and demographic shifts (CCAT 2010). The action items in the report focus on the preparation of the Climate Change Adaptation Strategy, required by Executive Order S-13-08, described below.

Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006

In September 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG emissions in California. GHGs as defined under AB 32 include CO_2, methane, N_2O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6). Under AB 32, the CARB has the primary responsibility for reducing GHG emissions and managing the CCAT to coordinate statewide efforts and promote strategies that can be undertaken by many other California agencies. AB 32 requires the CARB to adopt rules and regulations that would achieve GHG emissions equivalent to state-wide levels in 1990 by 2020. In general, AB 32 directs the CARB to do the following:

- Make publicly available a list of discrete early action GHG emission reduction measures that can be implemented prior to the adoption of the statewide GHG limit and the measures required to achieve compliance with the statewide limit;
- Make publicly available a GHG inventory for the year 1990 and determine target levels for 2020;
- On or before January 1, 2010, adopt regulations to implement the early action GHG emission reduction measures;
- On or before January 1, 2011, adopt quantifiable, verifiable, and enforceable emission reduction measures by regulation that will achieve the statewide GHG emissions limit by 2020, to become operative on January 1, 2012, at the latest. The emission reduction measures may include direct emission reduction measures, alternative compliance mechanisms, and potential monetary and non-monetary incentives that reduce GHG emissions from any sources or categories of sources that the CARB finds necessary to achieve the statewide GHG emissions limit; and
- Monitor compliance with and enforce any emission reduction measure adopted pursuant to AB 32.

Regarding the first two bullets, the CARB has already made available a list of discrete early action GHG emission reduction measures. The CARB has also published a staff report titled *California 1990 GHG Emissions Level and 2020 Emissions Limit* (CARB 2007a) that determined the statewide levels of GHG emissions in 1990. The CARB identified 427 MMT CO_2e as the total statewide aggregated GHG 1990

emissions level and 2020 emissions limit. Additionally, in December 2008, the CARB adopted the Climate Change Scoping Plan, which outlines the state's strategy to achieve the 2020 GHG limit. This Scoping Plan proposes a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve the environment, reduce dependence on oil, diversify energy sources, save energy, create new jobs, and enhance public health. The plan emphasizes a cap-and-trade program, but also includes the discrete early actions.

Senate Bill 97

SB 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directs the California Office of Planning and Research (OPR) to develop draft CEQA Guidelines "for the mitigation of GHG emissions or the effects of GHG emissions" by July 1, 2009 and directs the Resources Agency to certify and adopt the CEQA Guidelines by January 1, 2010.

On April 13, 2009, OPR submitted the proposed amendments to the Secretary for Natural Resources. The Natural Resources Agency conducted formal rulemaking in 2009, certified the amendments in December 2009, and adopted and codified into law the amendments in March 2010. The amendments become effective in June 2010 and provide regulatory guidance with respect to the analysis and mitigation of the potential effects of GHG emissions.

Executive Order S-13-08

On November 14, 2008, Governor Schwarzenegger issued Executive Order S-13-08, the Climate Adaptation and Sea Level Rise Planning Directive, which provides clear direction for how the state should plan for future climate impacts. Executive Order S-13-08 calls for the implementation of four key actions to reduce the vulnerability of California to climate change:

i. Initiate California's first statewide Climate Change Adaptation Strategy (CAS) that will assess the state's expected climate change impacts, identify where California is most vulnerable and recommend climate adaptation policies;

ii. Request that the National Academy of Sciences establish an expert panel to report on sea level rise impacts in California in order to inform state planning and development efforts;

iii. Issue interim guidance to state agencies for how to plan for sea level rise in designated coastal and floodplain areas for new and existing projects; and

iv. Initiate studies on critical infrastructure projects and land-use policies vulnerable to sea level rise.

The 2009 CAS report summarizes the best known science on climate change impacts in the state to assess vulnerability and outlines possible solutions that can be implemented within and across state agencies to promote resiliency. This is the first step in an ongoing, evolving process to reduce California's vulnerability to climate impacts (California Climate Change Portal 2010).

California Code of Regulations (CCR) Title 24, Part 6

Although it was not originally intended to reduce GHG emissions, CCR Title 24, Part 6: *California's Energy Efficiency Standards for Residential and Nonresidential Buildings* were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

The Energy Commission adopted 2008 Standards on April 23, 2008 and the Building Standards Commission approved them for publication on September 11, 2008. The 2008 updates became effective on August 1, 2009. The Energy Commission adopted the 2008 changes to the Building Energy Efficiency Standards for several reasons:

i. To provide California with an adequate, reasonably priced, and environmentally sound supply of energy;

ii. To respond to AB 32, the Global Warming Solutions Act of 2006, which mandates that California must reduce its GHG emissions to 1990 levels by 2020;

iii. To pursue California energy policy that energy efficiency is the resource of first choice for meeting California's energy needs;

iv. To act on the findings of California's Integrated Energy Policy Report (IEPR) that concludes that the Standards are the most cost effective means to achieve energy efficiency, expects the Building Energy Efficiency Standards to continue to be upgraded over time to reduce electricity and peak demand, and recognizes the role of the Standards in reducing energy related to meeting California's water needs and in reducing GHG emissions;

v. To meet the West Coast Governors' Global Warming Initiative commitment to include aggressive energy efficiency measures into updates of state building codes; and

vi. To meet the Executive Order in the Green Building Initiative to improve the energy efficiency of nonresidential buildings through aggressive standards.

4.3 Local

Air Quality Management Plan

The SCAQMD and the Southern California Association of Governments (SCAG) are the agencies responsible for preparing the Air Quality Management Plan (AQMP) for the Basin. Since 1979, a number of AQMPs have been prepared. The 1997 AQMP, updated in 1999 and replaced in 2003, was based on the 1994 AQMP, and ultimately the 1991 AQMP, and was designed to comply with state and federal requirements, reduce the high level of pollutant emissions in the Basin, and ensure clean air for the region through various control measures. To accomplish its task, the 1991 AQMP relied on a multilevel partnership of governmental agencies at the federal, state, regional, and local level. These agencies (i.e., the USEPA, the CARB, local governments, SCAG, and SCAQMD) are the cornerstones that implement the AQMP programs.

The 2003 AQMP, adopted in August 2003, updated the attainment demonstration for the federal standards for ozone and PM_{10}; replaced the 1997 attainment demonstration for the federal CO standard and provided a basis for a maintenance plan for CO for the future; and updated the maintenance plan for the federal NO_2 standard that the Basin has met since 1992.

The most recent comprehensive plan is the 2007 AQMP adopted on July 13, 2007. The 2007 AQMP is designed to meet the state and Federal Clean Air Act planning requirements and focuses on ozone and $PM_{2.5}$. The 2007 AQMP incorporates significant new emissions inventories, ambient measurements, scientific data, control strategies, and air quality modeling.

SCAQMD Rule 403 – Fugitive Dust

During construction, the Planned Development would be subject to SCAQMD Rule 403 (fugitive dust). SCAQMD Rule 403 does not require a permit for construction activities, per se, but rather, sets forth general and specific requirements for all construction sites (as well as other fugitive dust sources) in the Basin. The general requirement prohibits a person from causing or allowing emissions of fugitive dust from construction (or other fugitive dust source) such that the presence of such dust remains visible in the atmosphere beyond the property line of the emissions source. SCAQMD Rule 403 also prohibits a construction site from causing an incremental PM_{10} concentration impact at the property line of more than 50 micrograms per cubic meter as determined through PM_{10} high-volume sampling, but the concentration standard and associated PM_{10} sampling do not apply if specific measures identified in the rules are implemented and appropriately documented.

In accordance with Rule 403, the SCAQMD requires that contractors implement Best Available Control Technology (BACT) for construction activities. Rule 403 identifies a set of specific measures for projects less than 50 acres. These requirements are included in Table 5. It is assumed that no more than five acres of the site will be graded and/or disturbed on any given day. Note that these measures are regulatory requirements and as such, do not constitute mitigation under CEQA.

The conditions included in Table 5 apply to construction activities conducted during normal wind conditions (i.e., with wind gusts less than 25 miles per hour (mph)). The contingency measures, included in Table 6, are applied to those periods when instantaneous wind gusts meet or exceed 25 mph.

5.0 Existing Air Quality

Existing levels of ambient air quality and historical trends and projections in the Planned Development project area are best documented by measurements made by the SCAQMD. The project area is located within Source Receptor Area (SRA) 35, East San Bernardino Valley. No data was available for CO, NO_2, or $PM_{2.5}$ in SRA 35; therefore, data from monitoring station SRA 34 located in Central San Bernardino Valley was used. Data from monitoring stations in SRAs 34 and 35 are summarized in Table 7.

Ozone pollution decreased between 2006 and 2007 and generally increased in 2008, with 72 days experiencing a violation of the federal hourly standard. The data show recurring violations of both the state and federal ozone standards, and no clear trend is apparent. The data also indicate that the area

exceeds the PM_{10} state standards and $PM_{2.5}$ federal standards. The CO and NO_2 standards have not been violated in the last three years at the indicated station.

Table 5 Required Best Available Control Measures (BACM) for Fugitive Dust (Applicable to All Construction Activity Sources)

Source Category	Control Measures[(1)]	Guidance[(2)]
Backfilling	Stabilize backfill material when not actively handling; and Stabilize backfill material during handling; and Stabilize soil at completion of activity	Mix backfill soil with water prior to moving; and Dedicate water truck or high capacity hose to backfilling equipment; and Empty loader bucket slowly so that no dust plumes are generated; and Minimize drop height from loader bucket.
Clearing and grubbing	Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and Stabilize soil during clearing and grubbing activities; and Stabilize soil immediately after clearing and grubbing activities.	Maintain live perennial vegetation where possible; and Apply water in sufficient quantity to prevent generation of dust plumes.
Clearing forms	Use water spray to clear forms; or Use sweeping and water spray to clear forms; or Use vacuum system to clear forms.	Use of high pressure air to clear forms may cause exceedance of Rule requirements.
Crushing	Stabilize surface soils prior to operation of support equipment; and Stabilize material after crushing.	Follow permit conditions for crushing equipment; and Pre-water material prior to loading into crusher; and Monitor crusher emissions opacity; and Apply water to crushed material to prevent dust plumes.
Cut and fill	Pre-water soils prior to cut and fill activities; and Stabilize soil during and after cut and fill activities.	For large sites, pre-water with sprinklers or water trucks and allow time for penetration; and Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts.
Demolition – mechanical/ manual	Stabilize wind erodible surfaces to reduce dust; and Stabilize surface soil where support equipment and vehicles will operate; and Stabilize loose soil and demolition debris; and Comply with AQMD Rule 1403.	Apply water in sufficient quantities to prevent the generation of visible dust plumes.
Disturbed soil	Stabilize disturbed soil throughout the construction site; and Stabilize disturbed soil between structures	Limit vehicular traffic and disturbances on soils where possible; and If interior block walls are planned, install as early as possible; and Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes.
Earth-moving activities	Pre-apply water to depth of proposed cuts; and Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and Stabilize soils once earth-moving activities are complete.	Grade each Project phase separately, timed to coincide with construction phase; and Upwind fencing can prevent material movement on site; and Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes.

Table 5. Continued

Source Category	Control Measures[1]	Guidance[2]
Importing/ exporting of bulk materials	Stabilize material while loading to reduce fugitive dust emissions; and Maintain at least six inches of freeboard on haul vehicles; and Stabilize material while transporting to reduce fugitive dust emissions; and stabilize material while unloading to reduce fugitive dust. Comply with Vehicle Code Section 23114.	Use tarps or other suitable enclosures on haul trucks; and Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage; and Comply with track-out prevention/mitigation requirements; Provide water while loading and unloading to reduce visible dust plumes.
Landscaping	Stabilize soils, materials, slopes	Apply water to materials to stabilize; and Maintain materials in a crusted condition; and Maintain effective cover over materials; and Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes; and Hydro seed prior to rain season.
Road shoulder maintenance	Apply water to unpaved shoulders prior to clearing; and Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs; and Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs.
Screening	Pre-water material prior to screening; and Limit fugitive dust emissions to opacity and plume length standards; and Stabilize material immediately after screening.	Dedicate water truck or high capacity hose to screening operation; and Drop material through the screen slowly and minimize drop height; and Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point.
Staging areas	Stabilize staging areas during use; and stabilize staging area soils at project completion.	Limit size of staging area; and Limit vehicle speeds to 15 miles per hour; and Limit number and size of staging area entrances/exits.
Stockpiles/bulk material handling	Stabilize stockpiled materials, and stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	Add or remove material from the downwind portion of the storage pile; and Maintain storage piles to avoid steep sides or faces.
Traffic areas for construction activities	Stabilize all off-road traffic and parking areas; and Stabilize all haul routes; and Direct construction traffic over established haul routes.	Apply gravel/paving to all haul routes as soon as possible to all future roadway areas; and Barriers can be used to ensure vehicles are used only on established parking areas/haul routes.
Trenching	Stabilize surface soils where trencher or excavator and support equipment will operate; and Stabilize soils at the completion of trenching activities.	Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches, soak soils via the pre-trench, and resume trenching; and Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment.
Truck loading	Pre-water material prior to loading; and Ensure that freeboard exceeds six inches (CVC 23114)	Empty loader bucket such that no visible dust plumes are created; and Ensure that the loader bucket is close to the truck to minimize drop height while loading.

Table 5. Continued

Source Category	Control Measures[1]	Guidance[2]
Turf overseeding	Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and Cover haul vehicles prior to exiting the site.	Haul waste material immediately off site.
Unpaved roads/parking lots	Stabilize soils to meet the applicable performance standards; and Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements.
Vacant land	In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking, and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees, or other effective control measures.	

(1) Control Measures are required actions.
(2) Guidance are suggestions on how to accomplish the control measures.
Source: SCAQMD 2004

Table 6 Contingency Control Measures for Fugitive Dust During High Winds in Excess of 25 MPH

Fugitive Dust Source Category	Control Measures
Earth-moving	Cease all active operations; or Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; or Apply chemical stabilizers prior to wind event; or Apply water to all unstabilized disturbed areas three times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; or Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; or Utilize any combination of these control actions such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	Apply chemical stabilizers prior to wind event; or Apply water twice per hour during active operation; or Stop all vehicular traffic.
Open storage piles	Apply water twice per hour; or Install temporary coverings.
Paved road track-out	Cover all haul vehicles; or Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All categories	Any other control measures approved by the Executive Officer and the USEPA as equivalent to the methods specified in this table may be used.

Source: SCAQMD 2004

Table 7 Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels During Such Violations					
	2006		2007		2008	
Ozone						
State 1-hour ≥ 0.09 ppm	60	days	54	days	72	days
Federal 1-hour > 0.12 ppm	11	days	7	days	12	days
Federal 8-hour > 0.08 ppm	36	days	25	days	50	days
Max. 1-hour Conc. (ppm)	0.16	ppm	0.149	ppm	0.154	ppm
Max. 8-hour Conc. (ppm)	0.135	ppm	0.124	ppm	0.12	ppm
Carbon Monoxide						
State 8-hour > 9.0 ppm	0	days	0	days	0	days
Federal 8-hour ≥ 9.5 ppm	0	days	0	days	0	days
Max 1-hour Conc. (ppm)	3	ppm	4	ppm	2	ppm
Max. 8-hour Conc. (ppm)	2.3	ppm	2.3	ppm	1.8	ppm
Nitrogen Dioxide						
State 1-hour ≥ 0.25 ppm	0	days	0	days	0	days
Max. 1-hour Conc. (ppm)	0.09	ppm	0.08	ppm	0.09	ppm
Max. Annual Conc. (ppm)	0.05	ppm	0.0245	ppm	0.0217	ppm
Inhalable Particulates (PM_{10})						
State 24-hour > 50 $\mu g/m^3$	12	days	19	days	4	days
Federal 24-hour > 150 $\mu g/m^3$	0	days	0	days	0	days
Max. 24-hour Conc. ($\mu g/m^3$)	103	$\mu g/m^3$	97	$\mu g/m^3$	58	$\mu g/m^3$
Max. Annual Conc. ($\mu g/m^3$)	0	$\mu g/m^3$	0	$\mu g/m^3$	29	$\mu g/m^3$
Inhalable Particulates ($PM_{2.5}$)						
Federal 24-hour > 35 $\mu g/m^3$	8	days	11	days	3	days
Max. 24-hour Conc. ($\mu g/m^3$)	55	$\mu g/m^3$	72.1	$\mu g/m^3$	43.5	$\mu g/m^3$
Max. Annual. ($\mu g/m^3$)	17.8	$\mu g/m^3$	18.3	$\mu g/m^3$	13.5	$\mu g/m^3$

ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter
SRA 35 - Ozone & Inhalable Particulates (PM_{10})
SRA 34 - Carbon Monoxide, Nitrogen Dioxide & Inhalable Particulates ($PM_{2.5}$)
Source: SCAQMD 2010a,

6.0 Planned Development Impacts and Mitigation

6.1 Conformance to Federal and State Ambient Air Quality Standards

The impact analysis contained in this report was prepared in accordance with the methodologies provided by the SCAQMD as included in its CEQA Air Quality Handbook (Handbook) (SCAQMD 1993). Regional impacts for both construction and operation are assessed using the Urban Emissions Model (URBEMIS2007, version 9.2.4) distributed by the CARB. The URBEMIS2007 model uses EMFAC2007 emissions factors for vehicle traffic and OffRoad2007 for construction equipment.

The impact analysis of the subsequent operation of the Planned Development was analyzed using the URBEMIS2007 model and included the traffic-projections from the Traffic Impact Analysis Report for Robinson Ranch Planned Development Specific Plan, San Bernardino County, California (Traffic Study) provided by Urban Crossroads. The calculated emissions of the Planned Development are compared to thresholds of significance for individual projects using the SCAQMD Thresholds of Significance published on the SCAQMD Website (SCAQMD 2010b).

Thresholds of Significance

The CEQA Guidelines suggest, from an "air quality" perspective, that a project would normally be judged to produce a significant or potentially significant effect on the environment if the project were to:

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

In order to determine whether or not a proposed project would cause a significant effect on the environment, the impact of the project must be determined by examining the types and levels of emissions generated and their impacts on factors that affect air quality. To accomplish this determination of significance, the SCAQMD has established air pollution thresholds against which a proposed project can be evaluated, thereby assisting lead agencies in determining whether or not implementation of the proposed project would result in a significant impact to air quality. If the thresholds are exceeded by a proposed project, then the impact would be considered significant.

While the final determination of significance thresholds is within the purview of the lead agency, pursuant to the CEQA Guidelines, the SCAQMD recommends that the following air pollution thresholds be used by lead agencies in determining whether impacts to air quality during the construction or operational phase of a proposed project are significant. If the lead agency finds that the proposed project has the potential to exceed any of the air pollution thresholds, impacts resulting from implementation of the proposed project would be considered significant. Table 8 lists the significance thresholds for air quality that have been established by the SCAQMD for construction and operations emissions.

Table 8 Regional Thresholds of Significance

Pollutant	Construction Emissions (lbs/day)	Operations Emissions (lbs/day)
ROG	75	55
NO_x	100	55
CO	550	550
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_x	150	150

Source: SCAQMD 2010b

Impact Analysis

Construction

Air quality impacts may occur during site preparation, grading, and other construction activities required for implementation of the Planned Development. Major emissions sources during construction include exhaust emissions generated from construction equipment; fugitive dust generated as a result of soil and material disturbance during site preparation, grading, and excavation activities; and the emission of ROGs during site paving and painting of the structures. The proposed construction phases are mass grading, paving, building construction, and exterior architectural coating. The phases occur in sequence with some amount of overlap among them. The estimated durations of the phases, summarized in Table 9 below, were determined using the San Joaquin Valley Air Pollution Control District's Construction Schedule Worksheet (SJVAPCD 2010). Further, the analysis assumes that a limit of five acres per day would be disturbed and/or graded. In general, URBEMIS2007 default values were used.

Table 9 Approximate Durations of Construction Phases of Planned Development

Construction Phase	Planning Area		
	Robinson Ranch North	Wildwood Ranch	West Oak Center
Grading	6 months	6 months	6 months
Building Construction and Paving	3 months	3 months	3 months
Building Construction	3 years, 3 months	3 years, 3 months	3 years, 3 months
Building Construction and Coating	1 year	1 year	1 year
Total	5 years	5 years	5 years

Table 10, 11, and 12 summarize the estimated emissions from construction activities on each of the three planning areas. Table 13 summarizes the estimated emissions from simultaneous construction of all three planning areas.

Table 10 Robinson Ranch North Planning Area – Construction Daily Maximum Emissions

Construction Phase	CO (lbs/day)	NO_X (lbs/day)	ROG (lbs/day)	SO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
June 2011 – December 2011						
Mass Grading[(1)]						
Fugitive Dust	0.00	0.00	0.00	0.00	100.00	20.88
Exhaust	12.93	23.49	2.86	0.00	1.18	1.09
Total	12.93	23.49	2.86	0.00	101.18	21.97
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2012 – March 2012						
Building Construction	112.79	48.09	8.00	0.17	3.37	2.68
Paving	11.57	18.83	3.81	0.01	1.53	1.39
Total	124.36	66.92	11.81	0.18	4.90	4.07
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
April 2012 – December 2012						
Building Construction	112.79	48.09	8.00	0.17	3.37	2.68
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2013 – December 2013						
Building Construction	105.33	43.63	7.30	0.17	3.10	2.42
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2014 – December 2014						
Building Construction	98.56	39.42	6.66	0.17	2.86	2.21
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2015 – June 2015						
Building Construction	92.23	35.38	6.09	0.17	2.69	2.05
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
July 2015 – December 2015						
Building Construction	92.23	35.38	6.09	0.17	2.69	2.05
Coating	0.99	0.05	30.62	0.00	0.01	0.01
Total	93.22	35.43	36.71	0.17	2.70	2.06
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2016 – June 2016						
Building Construction	86.70	31.95	5.57	0.17	2.47	1.84
Coating	0.92	0.05	30.61	0.00	0.01	0.01
Total	87.62	32.00	36.18	0.17	2.48	1.85
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No

[(1)] Assuming a maximum land disturbance of five acres per day.

The analysis assumes that construction of the planning areas would not occur concurrently. However, because it is unknown which area would be developed first, a conservative analysis was conducted for each area using the same construction period of 2011 through 2016. Because more stringent regulations related to vehicle emissions and equipment will be implemented and enforced in the future, the actual emissions levels may be lower than those presented in this analysis.

Further, construction in one particular planning area may not be completed before construction in another planning area begins. The potential impact from construction in more than one planning area will be addressed in Section 6.4, Cumulatively Considerable Net Increase of Criteria Pollutants.

Robinson Ranch North Planning Area

The Robinson Ranch North Planning Area is approximately 104 acres. The analysis assumed that 96 acres would be disturbed (64 acres proposed for development and 32 acres proposed for improved open space) and assumed 24 acres would be paved for parking and roads. Table 10 summarizes the maximum daily emissions of grading (assuming a maximum of five acres per day), paving, construction, and coating in comparison with the SCAQMD regional thresholds of significance. As shown in Table 10, construction related emissions for the Robinson Ranch North Planning Area are below the thresholds. Therefore, impacts to air quality resulting from construction within this planning area are ***Less than Significant.***

West Oak Center Planning Area

The West Oak Center Planning Area is approximately 150 acres of land. The analysis assumed that 135 acres would be disturbed (113 acres proposed for development and 22 acres proposed for improved open space) and assumed 35 acres would be paved for parking and roads. Table 11 summarizes the maximum daily emissions of grading (assuming a maximum of five acres per day), paving, construction, and coating in comparison with the SCAQMD regional thresholds of significance. As shown in Table 11, emissions of ROG during the coating phase of construction would exceed the thresholds. Therefore, impacts to air quality resulting from construction within this planning area are ***Significant***.

Wildwood Ranch Planning Area

The Wildwood Ranch Planning Area includes approximately 268 acres of land. The analysis assumed that 204 acres would be disturbed (178 acres proposed for development and 26 acres proposed for improved open space) and assumed 65 acres would be paved for parking and roads. Table 12 summarizes the maximum daily emissions of grading (assuming a maximum of five acres per day), paving, construction, and coating in comparison with the SCAQMD regional thresholds of significance. As shown in Table 12, emissions of NO_x during the building construction and paving phase and emissions of ROG during the coating phase of construction would exceed the thresholds. Therefore, impacts to air quality resulting from construction within this planning area are ***Significant***.

Table 11 West Oak Center Planning Area – Construction Daily Maximum Emissions

Construction Phase	CO (lbs/day)	NO_X (lbs/day)	ROG (lbs/day)	SO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
June 2011 – December 2011						
Mass Grading[(1)]						
Fugitive Dust	0.00	0.00	0.00	0.00	100.00	20.88
Exhaust	12.93	23.49	2.86	0.00	1.18	1.09
Total	12.93	23.49	2.86	0.00	101.18	21.97
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2012 – March 2012						
Building Construction	154.68	52.29	9.38	0.23	3.88	2.98
Paving	12.15	20.34	4.38	0.01	1.60	1.45
Total	166.83	72.63	13.76	0.24	5.48	4.43
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
April 2012 – December 2012						
Building Construction	154.68	52.29	9.38	0.23	3.88	2.98
SCAQMD Threshold	550	100	75	150	150	55
Significant?	No	No	No	No	No	No
January 2013 – December 2013						
Building Construction	144.26	47.41	8.56	0.23	3.60	2.71
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2014 – December 2014						
Building Construction	134.82	42.83	7.82	0.23	3.36	2.50
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2015 – June 2015						
Building Construction	125.98	38.45	7.14	0.23	3.18	2.33
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
July 2015 – December 2015						
Building Construction	125.98	38.45	7.14	0.23	3.18	2.33
Coating	1.47	0.08	102.83	0.00	0.02	0.01
Total	127.45	38.53	109.97	0.23	3.20	2.34
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	**YES**	No	No	No
January 2016 – June 2016						
Building Construction	118.23	34.73	6.53	0.23	2.95	2.12
Coating	1.37	0.07	102.82	0.00	0.02	0.01
Total	119.60	34.80	109.35	0.23	2.97	2.13
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	**YES**	No	No	No

[(1)] Assuming a maximum land disturbance of five acres per day.

Table 12 Wildwood Ranch Planning Area – Construction Daily Maximum Emissions

Construction Phase	CO (lbs/day)	NO_X (lbs/day)	ROG (lbs/day)	SO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
June 2011 – December 2011						
Mass Grading[(1)]						
Fugitive Dust	0.00	0.00	0.00	0.00	100.00	20.88
Exhaust	12.93	23.49	2.86	0.00	1.81	1.09
Total	12.93	23.49	2.86	0.00	101.81	21.97
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2012 – March 2012						
Building Construction	257.25	83.03	14.20	0.40	5.99	4.47
Paving	13.77	24.52	5.93	0.02	1.78	1.61
Total	271.02	107.55	20.13	0.42	7.77	6.08
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	No	No	No	No
April 2012 – December 2012						
Building Construction	257.25	83.03	14.20	0.40	5.99	4.47
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2013 – December 2013						
Building Construction	239.38	74.71	12.95	0.40	5.57	4.09
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2014 – December 2014						
Building Construction	223.20	66.97	11.80	0.40	5.25	3.79
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2015 – June 2015						
Building Construction	208.07	59.74	10.76	0.40	4.96	3.52
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
July 2015 – December 2015						
Building Construction	208.07	59.74	10.76	0.40	4.96	3.52
Coating	2.48	0.14	104.93	0.00	0.03	0.02
Total	210.55	59.88	115.69	0.40	4.99	3.54
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	**YES**	No	No	No
January 2016 – June 2016						
Building Construction	194.80	53.67	9.84	0.40	4.65	3.24
Coating	2.32	0.13	104.92	0.00	0.03	0.02
Total	197.12	53.80	114.76	0.40	4.68	3.26
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	**YES**	No	No	No

(1) Assuming a maximum land disturbance of five acres per day.

Entire Planned Development

Although unlikely, the worst case scenario would include construction of all three planning areas at the same time. The emissions of this scenario would be the summation of the emissions of each of the planning areas. Table 13 summarizes the estimated construction emissions if the entire Planned Development were constructed at the same time. Table 13 summarizes the maximum daily emissions of grading (assuming a maximum of fifteen acres per day [five acres per day per planning area]), paving, construction, and coating in comparison with the SCAQMD regional thresholds of significance. As shown in Table 13, the estimated emissions would exceed the regional thresholds. Specifically, emissions of PM_{10} and $PM_{2.5}$ during the mass grading phase; emissions of CO during the building construction and paving phase; emissions of NO_x during all phases that include building construction; and emissions of ROG during the building construction and coating phase would exceed the thresholds. Therefore, impacts to air quality resulting from simultaneous construction of the entire Planned Development are ***Significant***.

Table 13 Entire Planned Development – Construction Daily Maximum Emissions

Construction Phase	CO (lbs / day)	NO_x (lbs / day)	ROG (lbs / day)	SO_x (lbs / day)	PM_{10} (lbs / day)	$PM_{2.5}$ (lbs / day)
June 2011 – December 2011						
Mass Grading Total[(1)]	38.79	70.47	8.58	0	303.54	65.91
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	Yes	Yes
January 2012 – March 2012						
Building Construction	524.72	183.41	31.58	0.8	13.24	10.13
Paving	37.49	63.69	14.12	0.04	4.91	4.45
Total	562.21	247.1	45.7	0.84	18.15	14.58
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	**YES**	**YES**	No	No	No	No
April 2012 – December 2012						
Building Construction	524.72	183.41	31.58	0.8	13.24	10.13
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	No	No	No	No
January 2013 – December 2013						
Building Construction	488.97	165.75	28.81	0.8	12.27	9.22
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	No	No	No	No
January 2014 – December 2014						
Building Construction	456.58	149.22	26.28	0.8	11.47	8.5
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	No	No	No	No
January 2015 – June 2015						
Building Construction	426.28	133.57	23.99	0.8	10.83	7.9
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	No	No	No	No

Table 13. Continued

Construction Phase	CO (lbs/day)	NO_X (lbs/day)	ROG (lbs/day)	SO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
July 2015 – December 2015						
Building Construction	426.28	133.57	23.99	0.8	10.83	7.9
Coating	4.94	0.27	238.38	0	0.06	0.04
Total	431.22	133.84	262.37	0.8	10.89	7.94
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	**YES**	No	No	No
January 2016 – June 2016						
Building Construction	399.73	120.35	21.94	0.647	10.07	7.2
Coating	4.61	0.25	238.35	0	0.06	0.04
Total	404.34	120.6	260.29	0.647	10.13	7.24
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	**YES**	No	No	No

(1) Assuming a maximum land disturbance of 15 acres (five acres per planning area) per day.

Operational

Emissions related to the operation of the Planned Development were calculated using the URBEMIS2007 computer model. The results from this modeling summarize the daily build-out emissions during operation of the development in comparison with the SCAQMD regional thresholds of significance. Emissions of CO, NO_x, ROG, PM_{10}, and $PM_{2.5}$ exceed the regional thresholds. Because the operational emissions related to the Planned Development would exceed the thresholds, implementation of the Planned Development would result in a significant impact to air quality.

Implementation of the Planned Development as a whole would result in significant impacts caused by operational emissions due to the large size of the project area. With incorporation of programmatic mitigation measures for individual projects, implementation of the individual projects themselves may result in less than significant impacts on a site-by-site basis. These individual projects would be required to prepare individual air quality impact analyses to determine their independent significance levels.

The major source of long-term operational air quality impacts is emissions produced from development-generated vehicle trips. Vehicle trip generation that would result from implementation of the Planned Development was estimated in the Traffic Impact Analysis (Urban Crossroads 2010) and used in this analysis. Emissions from vehicles were calculated using URBEMIS2007 assumptions and EMFAC2007 emission factors that are used in URBEMIS2007.

In addition to vehicle trips, the Planned Development would produce emissions from on-site area sources. Area sources of emissions associated with the Planned Development include natural gas combustion emissions from space and water heating, emissions from the use of residential fireplaces, fuel combustion emissions from landscape maintenance equipment, emissions from energy use of consumer products, and ROG emissions from periodic repainting of interior and exterior surfaces.

The vehicular and area source emissions associated with operation of the Planned Development are summarized in the tables below.

Robinson Ranch North Planning Area

Table 14 summarizes the anticipated daily emissions for build-out of the Robinson Ranch North Planning Area. The major sources of emissions are from vehicles and residential fireplaces. Within this planning area, emissions of CO, NO_x, ROG, PM_{10}, and $PM_{2.5}$ are expected to exceed the daily regional threshold. Therefore, impacts to air quality resulting from operations within this planning area are ***Significant***.

Table 14 Robinson Ranch North Planning Area – Operational Daily Maximum Emissions

Emissions Source	CO (lbs/day)	NO_x (lbs/day)	ROG (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Vehicular Sources						
Single Family Housing	85.01	11.09	7.42	0.09	15.04	2.93
Condo/Townhouse General	595.14	77.67	53.2	0.65	105.29	20.52
General Office Building	231.65	30.28	19.58	0.26	41.95	8.17
Area Sources						
Natural Gas	5.03	11.69	0.90	0.00	0.02	0.02
Fireplace Use	485.65	13.51	175.28	1.36	75.29	72.48
Landscape	7.11	0.09	0.97	0.00	0.02	0.02
Consumer Products	0.00	0.00	57.40	0.00	0.00	0.00
Architectural Coatings	0.00	0.00	2.20	0.00	0.00	0.00
Total Emissions	1409.59	144.33	316.95	2.36	237.61	104.14
SCAQMD Thresholds	550	55	55	150	150	55
Significant Impact?	**YES**	**YES**	**YES**	No	**YES**	**YES**

West Oak Center Planning Area

Table 15 summarizes the anticipated daily emissions for build-out of the West Oak Center Planning Area. The major sources of emissions are from vehicles and residential fireplaces. Within this planning area, emissions of CO, NO_x, ROG, PM_{10}, and $PM_{2.5}$ are expected to exceed the daily regional threshold. Therefore, impacts to air quality resulting from operations within this planning area are ***Significant***.

Wildwood Ranch Planning Area

Table 16 summarizes the anticipated daily emissions for build-out of the Wildwood Ranch Planning Area. The major sources of emissions are from vehicles and residential fireplaces. Within this planning area, emissions of CO, NO_x, ROG, PM_{10}, and $PM_{2.5}$ are expected to exceed the daily regional threshold. Therefore, impacts to air quality resulting from operations within this planning area are ***Significant***.

Table 15 West Oak Center Planning Area – Operational Daily Maximum Emissions

Emissions Source	CO (lbs/day)	NO_x (lbs/day)	ROG (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Vehicular Sources						
Single Family Housing	81.66	9.83	7.4	0.17	27.05	5.26
Condo/Townhouse General	200.01	24.08	18.73	0.41	66.25	12.88
General Office Building	1130.74	138.9	99.02	2.34	383.67	74.53
Office Park	257.57	31.36	22.98	0.53	86.83	16.87
Area Sources						
Natural Gas	9.28	15.48	1.17	0.00	0.03	0.03
Fireplace Use	351.64	10.01	126.89	0.98	54.52	52.48
Landscape	11.87	0.14	1.68	0.00	0.04	0.04
Consumer Products	0.00	0.00	41.55	0.00	0.00	0.00
Architectural Coatings	0.00	0.00	7.39	0.00	0.00	0.00
Total Emissions	2042.77	229.80	326.81	4.43	618.39	162.09
SCAQMD Thresholds	550	55	55	150	150	55
Significant Impact?	**YES**	**YES**	**YES**	No	**YES**	**YES**

Table 16 Wildwood Ranch Planning Area – Operational Daily Maximum Emissions

Emissions Source	CO (lbs/day)	NO_x (lbs/day)	ROG (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Vehicular Sources						
Single Family Housing	222.63	28.24	19.41	0.36	58.31	11.36
Condo/Townhouse General	754.28	95.69	67.78	1.21	197.56	38.5
General Office Building	1280.92	165.88	108.14	2.1	343.85	66.94
Area Sources						
Natural Gas	13.33	28.01	2.15	0.00	0.05	0.05
Fireplace Use	989.69	27.92	357.16	2.76	153.44	147.70
Landscape	18.67	0.22	3.06	0.00	0.05	0.05
Consumer Products	0.00	0.00	116.96	0.00	0.00	0.00
Architectural Coatings	0.00	0.00	7.53	0.00	0.00	0.00
Total Emissions	3279.52	345.96	700.19	6.43	753.26	264.60
SCAQMD Thresholds	550	55	55	150	150	55
Significant Impact?	**YES**	**YES**	**YES**	No	**YES**	**YES**

Entire Planned Development

Table 17 summarizes the anticipated daily emissions for build-out of the entire Planned Development. As with the three planning areas, the major sources of emissions are from vehicles and residential fireplaces. For Planned Development, emissions of CO, NO_x, ROG, PM_{10}, and $PM_{2.5}$ are expected to exceed the daily regional threshold. Therefore, impacts to air quality resulting from operations within the Planned Development are ***Significant***.

Table 17 Entire Planned Development – Operational Daily Emissions

Emissions Source	CO (lbs/day)	NO_x (lbs/day)	ROG (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Vehicular Sources						
Single Family Housing	389.3	49.16	34.23	0.62	100.4	19.55
Condo/Townhouse General	1549.43	197.44	139.71	2.27	369.1	71.9
General Office Building	2643.31	335.06	226.74	4.7	769.47	149.64
Office Park	257.57	31.36	22.98	0.53	86.83	16.87
Area Sources						
Natural Gas	525.61	55.18	4.22	0	0.1	0.1
Fireplace Use	1826.98	51.44	677.33	5.1	283.25	272.66
Landscape	37.65	0.45	5.71	0	0.11	0.11
Consumer Products	0	0	215.91	0	0	0
Architectural Coasting	0	0	17.12	0	0	0
Total Emissions	7229.85	720.09	1343.95	13.22	1609.26	530.83
SCAQMD Thresholds	550	55	55	150	150	55
Significant Impact?	**YES**	**YES**	**YES**	No	**YES**	**YES**

Mitigation Measures

Construction

Robinson Ranch North Planning Area. Because impacts to air quality during the construction phase of the Robinson Ranch North Planning Area would result in a less than significant impact, assuming that no more than five acres per day would be disturbed, no mitigation for this planning area is required. However, if more than five acres per day were disturbed, then the Applicant would be required to prepare a new air quality technical analysis and purchase emission reduction credits (ERC) from SCAQMD for emissions in excess of the thresholds.

West Oak Center Planning Area. Implementation of mitigation measure AQ-1 during construction of the West Oak Center Planning Area would reduce this impact to air quality to a ***Less Than Significant*** level. Mitigation measure AQ-1 would reduce emissions of ROG during the coating phase of construction. Table 18 summarizes the construction related emissions of this planning area with incorporation of mitigation measure AQ-1 and mitigation measures AQ-6 and AQ-7, which would reduce PM emissions, during the construction of the West Oak Center Planning Area.

Table 18 West Oak Center Planning Area – Mitigated Construction Daily Maximum Emissions

Source	CO (lbs/day)	NO_X (lbs/day)	ROG (lbs/day)	SO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
June 2011 – December 2011						
Mass Grading[(1)]						
Fugitive Dust	0.00	0.00	0.00	0.00	10.98	2.29
Exhaust	12.93	23.49	2.86	0.00	1.18	1.09
Mass Grading Sub Totals	12.93	23.49	2.86	0.00	12.16	3.38
Total	12.93	23.49	2.86	0.00	12.16	3.38
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2012 – March 2012						
Building Construction	154.68	52.29	9.38	0.23	3.88	2.98
Paving	12.15	20.34	4.38	0.01	1.60	1.45
Total	166.83	72.63	13.76	0.24	5.48	4.43
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
April 2012 – December 2012						
Building Construction	154.68	52.29	9.38	0.23	3.88	2.98
Total	154.68	52.29	9.38	0.23	3.88	2.98
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2013 – December 2013						
Building Construction	144.26	47.41	8.56	0.23	3.60	2.71
Total	144.26	47.41	8.56	0.23	3.60	2.71
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2014 – December 2014						
Building Construction	134.82	42.83	7.82	0.23	3.36	2.50
Total	134.82	42.83	7.82	0.23	3.36	2.50
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2015 – June 2015						
Building Construction	125.98	38.45	7.14	0.23	0.00	0.00
Total	125.98	38.45	7.14	0.23	0.00	0.00
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No

Table 18. Continued

Source	CO (lbs/day)	NO_X (lbs/day)	ROG (lbs/day)	SO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
July 2015 – December 2015						
Building Construction	125.98	38.45	7.14	0.23	0.00	0.00
Coating	1.47	0.08	46.82	0.00	0.00	0.00
Total	127.45	38.53	53.96	0.23	0.00	0.00
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2016 – June 2016						
Building Construction	118.23	34.73	6.53	0.23	0.00	0.00
Coating	1.37	0.07	45.76	0.00	0.00	0.00
Total	119.60	34.80	52.29	0.23	0.00	0.00
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No

(1) Assuming a maximum land disturbance of five acres per day.

Wildwood Ranch Planning Area. Implementation of mitigation measures AQ-1 and AQ-2 during construction of the Wildwood Ranch Planning Area would reduce this impact air quality to a ***Less Than Significant*** level. Mitigation measure AQ-1 would reduce emissions of ROG during the coating phase of construction and mitigation measure AQ-2 would reduce emissions of NO_x during all building construction phases. Table 19 summarizes the construction related emissions of this planning area with incorporation of mitigation measures AQ-1 and AQ-2 and mitigation measures AQ-6 and AQ-7, which would reduce PM emissions, during the construction of the Wildwood Ranch Planning Area.

Entire Planned Development. Implementation of mitigation measures AQ-1 and AQ-2 during construction of the entire Planned Development would reduce emissions of ROG during the coating phase of construction and emissions of NO_x during all building construction phases. Mitigation measures AQ-6 and AQ-7 would reduce emissions of PM_{10} and $PM_{2.5}$. However, as shown in Table 20, these emissions would still exceed the thresholds. There are no mitigation measures to reduce the emissions of CO. Therefore, with incorporation of mitigation measures, impacts to air quality with simultaneous development of the Planned Development would result in ***Significant and Unavoidable*** **impacts**. However, the Applicant may choose to purchase ERCs for CO, ROG, NO_x, and PM_{10} through the SCAQMD to mitigate for the emissions produced in excess of the thresholds. If an adequate number of ERCs were purchased, then the impact could be reduced to a less than significant level.

AQ-1 Prior to issuance of a building permit, the City of Yucaipa shall verify that construction specifications indicate that low VOC paints shall be used in the construction of all buildings.

AQ-2 Prior to issuance of a building permit, the City of Yucaipa shall verify that construction specifications indicate that construction and paving equipment shall be EPA rated Tier 2.

Table 19 Wildwood Ranch Planning Area – Mitigated Construction Daily Maximum Emissions

Source	CO (lbs/day)	NO_X (lbs/day)	ROG (lbs/day)	SO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
June 2011 – December 2011						
Mass Grading[(1)]						
Fugitive Dust	0.00	0.00	0.00	0.00	10.98	2.29
Exhaust	12.93	23.49	2.86	0.00	1.18	1.21
Total	12.93	23.49	2.86	0.00	12.16	3.38
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2012 – March 2012						
Building Construction	257.25	79.39	14.20	0.40	5.99	4.47
Paving	13.77	18.33	5.93	0.02	1.78	1.61
Total	271.02	97.72	20.13	0.42	7.77	6.08
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
April 2012 – December 2012						
Building Construction	257.25	79.39	14.20	0.40	5.99	4.47
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2013 – December 2013						
Building Construction	239.38	71.32	12.95	0.40	5.57	4.09
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2014 – December 2014						
Building Construction	223.20	63.81	11.80	0.40	5.25	3.79
SCAQMD Threshold	550	100	75	150	150	55
Significant?	No	No	No	No	No	No
January 2015 – June 2015						
Building Construction	208.07	56.84	10.76	0.40	0.00	0.00
SCAQMD Threshold	550	100	75	150	150	55
Significant?	No	No	No	No	No	No
July 2015 – December 2015						
Building Construction	208.07	56.84	10.76	0.40	0.00	0.00
Coating	2.48	0.14	47.80	0.00	0.00	0.00
Total	210.55	56.98	58.56	0.40	0.00	0.00
SCAQMD Threshold	550	100	75	150	150	55
Significant?	No	No	No	No	No	No
January 2016 – June 2016						
Building Construction	194.80	51.02	9.84	0.40	0.00	0.00
Coating	2.32	0.13	46.71	0.00	0.00	0.00
Total	197.12	51.15	56.55	0.40	0.00	0.00
SCAQMD Threshold	550	100	75	150	150	55
Significant?	No	No	No	No	No	No

(1) Assuming a maximum land disturbance of five acres per day.

Table 20 Entire Planned Development – Mitigated Construction Emissions

Construction Phase	CO (lbs/day)	NO_x (lbs/day)	ROG (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
June 2011 – December 2011						
Mass Grading Total[(1)]	38.79	70.47	8.58	0	36.48	10.14
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	No	No	No	No	No
January 2012 – March 2012						
Building Construction	524.72	179.77	31.58	0.8	13.24	10.13
Paving	37.49	57.5	14.12	0.04	4.91	4.45
Total	562.21	237.27	45.7	0.84	18.15	14.58
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	Yes	**YES**	No	No	No	No
April 2012 – December 2012						
Building Construction	524.72	179.77	31.58	0.8	13.24	10.13
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	No	No	No	No
January 2013 – December 2013						
Building Construction	488.97	162.36	28.81	0.8	12.27	9.22
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	No	No	No	No
January 2014 – December 2014						
Building Construction	456.58	146.06	26.28	0.8	11.47	8.5
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	No	No	No	No
January 2015 – June 2015						
Building Construction	426.28	130.67	23.99	0.8	10.83	7.9
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	No	No	No	No
July 2015 – December 2015						
Building Construction	426.28	130.67	23.99	0.8	5.87	4.38
Coating	4.94	0.27	125.24	0	0.01	0.01
Total	431.22	130.94	149.23	0.8	5.88	4.39
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	**YES**	No	No	No
January 2016 – June 2016						
Building Construction	399.73	117.7	21.94	0.647	5.42	3.96
Coating	4.61	0.25	123.08	0	0.01	0.01
Total	404.34	117.95	145.02	0.647	5.43	3.97
SCAQMD Threshold	550	100	75	150	150	55
Significant Impact?	No	**YES**	**YES**	No	No	No

(1) Assuming a maximum land disturbance of 15 acres (five acres per planning area) per day.

Operational

Operational emissions associated with implementation of the Planned Development would result in significant impacts to air quality. The following mitigation measures apply to each of the three planning areas. Implementation of these mitigation measures would slightly reduce criteria air pollutant emission; however, as shown in Tables 21, 22, 23, and 24, the daily emissions would continue to exceed the regional thresholds. Therefore, the impact would be ***Significant and Unavoidable.***

AQ-3 Prior to issuance of a building permit, the Applicant shall demonstrate that the design of the proposed buildings or structures exceeds current Title 24 requirements (Title 24, Part 11 of the California Code of Regulations; Energy Efficiency Standards for Residential and Non Residential Buildings, effective August 1, 2009) by a minimum of 5 percent. Any combination of the following design features may be used to fulfill this mitigation provided that the total increase in efficiency meets or exceeds 5 percent:

i. Increase in insulation such that heat transfer and thermal bridging is minimized;
ii. Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption;
iii. Incorporate dual-paned or other energy efficient windows;
iv. Incorporate energy efficient space heating and cooling equipment;
v. Incorporate energy efficient light fixtures;
vi. Incorporate energy efficient appliances;
vii. Incorporate energy efficient domestic hot water systems;
viii. Incorporate solar panels into the electrical system;
ix. Incorporate cool roofs/light-colored roofing; or
x. Other measures that will increase the energy efficiency of building envelope in a manner that when combined with the other options listed above exceeds current Title 24 Standards (Title 24, Part 11 of the California Code of Regulations; Energy Efficiency Standards for Residential and Non Residential Buildings, effective August 1, 2009) by a minimum of 5 percent.

AQ-4 Prior to issuance of a building permit, the City of Yucaipa shall verify that construction specifications include exterior electrical outlets for use by landscaping contractors.

AQ-5 Prior to issuance of the building permit, the Applicant shall demonstrate that measures have been included to provide adequate bicycle parking at commercial locations near building entrances to promote cyclist safety, security, and convenience. The Applicant shall ensure that secure bicycle parking is made available at the site at a rate of at least one bike space per every 20 passenger vehicle spaces. Bicycle racks that allow bicycle riders to lock their bicycles in place shall provide bicycle parking.

Table 21 Robinson Ranch North Planning Area – Mitigated Daily Maximum Operational Emissions

Source	CO (lbs/day)	NO_x (lbs/day)	ROG (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Operational Sources						
Single Family Housing	83.31	10.87	7.28	0.09	14.74	2.87
Condo/Townhouse General	575.7	75.13	51.56	0.63	101.85	19.85
General Office Building	227.02	30.2	19.19	0.25	41.11	8.01
Area Sources						
Natural Gas	4.02	9.35	0.72	0.00	0.02	0.02
Hearth	485.65	13.51	175.28	1.36	75.29	72.48
Landscape	5.69	0.07	0.78	0.00	0.02	0.02
Consumer Products	0.00	0.00	57.40	0.00	0.00	0.00
Architectural Coatings	0.00	0.00	1.98	0.00	0.00	0.00
Total Emissions	1381.39	139.13	314.19	2.33	233.03	103.25
SCAQMD Thresholds	550	55	55	150	150	55
Significant Impact?	**YES**	**YES**	**YES**	No	**YES**	**YES**

Table 22 West Oak Center Planning Area – Mitigated Daily Maximum Operational Emissions

Source	CO (lbs/day)	NO_x (lbs/day)	ROG (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Operational Sources						
Single Family Housing	80.03	9.63	7.26	0.16	26.51	5.16
Condo/Townhouse General	193.48	23.29	18.17	0.39	64.09	12.46
General Office Building	1108.13	136.12	97.06	2.3	376	73.04
Office Park	252.42	30.73	22.54	0.52	85.1	16.54
Area Sources						
Natural Gas	7.42	12.38	0.93	0.00	0.02	0.02
Hearth	351.64	10.01	126.89	0.98	54.52	52.48
Landscape	9.49	0.11	1.34	0.00	0.03	0.03
Consumer Products	0.00	0.00	41.55	0.00	0.00	0.00
Architectural Coatings	0.00	0.00	6.65	0.00	0.00	0.00
Total Emissions	2002.61	222.27	322.39	4.35	606.27	159.73
SCAQMD Thresholds	550	55	55	150	150	55
Significant Impact?	**YES**	**YES**	**YES**	No	**YES**	**YES**

Table 23 Wildwood Ranch Planning Area – Mitigated Daily Maximum Operational Emissions

Source	CO (lbs/day)	NO_x (lbs/day)	ROG (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Operational Sources						
Single Family Housing	218.18	27.68	19.05	0.35	57.14	11.14
Condo/Townhouse General	729.64	92.57	65.74	1.17	191.1	37.25
General Office Building	1255.3	162.56	106.01	2.06	336.97	65.6
Area Sources						
Natural Gas	10.66	22.41	1.72	0.00	0.04	0.04
Hearth	989.69	27.92	357.16	2.76	153.44	147.70
Landscape	14.94	0.17	2.45	0.00	0.04	0.04
Consumer Products	0.00	0.00	116.96	0.00	0.00	0.00
Architectural Coatings	0.00	0.00	6.78	0.00	0.00	0.00
Total Emissions	3218.41	333.31	675.87	6.34	738.73	261.77
SCAQMD Thresholds	550	55	55	150	150	55
Significant Impact?	**YES**	**YES**	**YES**	No	**YES**	**YES**

Table 24 Entire Planned Development – Mitigated Daily Maximum Operational Emissions

Source	CO (lbs/day)	NO_x (lbs/day)	ROG (lbs/day)	SO_x (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Vehicular Sources						
Single Family Housing	381.52	48.18	33.59	0.6	98.39	19.17
Condo/Townhouse General	1498.82	190.99	135.47	2.19	357.04	69.56
General Office Building	2590.45	328.88	222.26	4.61	754.08	146.65
Office Park	257.57	31.36	22.98	0.53	86.83	16.87
Area Sources						
Natural Gas	22.1	44.14	3.37	0	0.08	0.08
Fireplace Use	1826.98	51.44	659.33	5.1	283.25	272.66
Landscape	30.12	0.35	4.57	0	0.09	0.09
Consumer Products	0	0	215.91	0	0	0
Architectural Coasting	0	0	15.41	0	0	0
Total Emissions	6607.56	695.34	1312.89	13.03	1579.76	525.08
SCAQMD Thresholds	550	55	55	150	150	55
Significant Impact?	**YES**	**YES**	**YES**	No	**YES**	**YES**

6.2 Impacts to Sensitive Receptors

Air quality regulators typically define sensitive receptors as schools (preschool through 12th grade), hospitals, resident care facilities, day-care centers, or other facilities that may house individuals with health conditions that would be adversely affected by changes in air quality. The two primary emissions of concern regarding health effects for land development are CO and diesel-fired particulate matter (DPM).

Thresholds of Significance

The CEQA Guidelines suggest, from an "air quality" perspective, that a project would normally be judged to produce a significant or potentially significant effect on the environment if the project were to:

- Expose sensitive receptors to substantial pollutant concentrations.

CO Hotspots

Areas with high vehicle density, such as congested intersections and parking garages, have the potential to create high concentrations of CO, known as CO hot spots. An air quality impact is considered significant if CO emissions create a hot spot where either the California 1-hour standard of 20 ppm or the federal and state 8-hour standard of 9.0 ppm is exceeded.

Localized Sensitive Receptors

In addition to the mass daily threshold values presented in Table 8, the SCAQMD has established the following mass rate look-up tables for each SRA that can be used to determine whether or not a project may generate significant adverse localized air quality impacts. The allowable emissions for SRA 35 from construction activities within a maximum disturbance of five acres per day are listed in Table 25, below.

Table 25 Mass Daily Thresholds for Source Receptor Area (SRA) 35

Distance	CO	NO_2	PM_{10}	$PM_{2.5}$
Allowable emissions at 25 meters	2,075	270	14	9
Allowable emissions at 50 meters	2,890	302	42	12
Allowable emissions at 100 meters	4,765	378	66	20
Allowable emissions at 200 meters	9,044	486	113	40
Allowable emissions at 500 meters	27,650	778	255	140

Source: SCAQMD 2008.

Toxic Air Contaminants

The CARB recommends that any project that proposes to locate sensitive receptors proposed within 500 feet of a highway should prepare a health risk assessment. The closest freeway to the Planned Development is I-10. Therefore, significant impact would occur if a sensitive receptor is proposed within 500 feet of I-10.

Impact Analysis

CO Hotspots

CO is the criteria pollutant that is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere. Long-term adherence to Ambient Air Quality Standards is typically demonstrated through an analysis of localized CO concentrations. Areas of vehicle congestion have the potential to create CO hot spots. These hot spots typically occur at intersections where vehicle speeds are reduced and idle time is increased. Intersection that tend to exhibit a significant CO concentration, typically operate at level of service (LOS) D or worse. To determine the potential for hot spots, CALINE4 modeling was performed using the procedures outlined in the Caltrans' Transportation Development-Level Carbon Monoxide Protocol. Intersection movements are based on data included in the Traffic Study (Urban Crossroads 2010) and include ambient growth, the Planned Development, and other projects. Modeling was performed using 2030 traffic volumes emission factors. As a reasonable worst-case, the analysis assumes the retention of the existing intersection alignments and does not consider those measures outlined in the traffic analysis to improve traffic flow through the Planned Development area. As shown in Table 26, all predicted values are below the state's 1 and 8-hour standards. Therefore, implementation of the Planned Development would result in a ***Less Than Significant*** impact with respect to the exposure of sensitive receptors to excessive concentrations of CO.

Localized Sensitive Receptors

Local sensitive receptors include both existing off site and future on-site residential developments as there is a potential for on-site residential development to be occupied while additional nearby residential or commercial development occurs.

In accordance with the SCAQMD methodology, actual receptor locations with respect to the project should be used when available. If receptor locations are unknown or varied, methodology stipulates that receptors be evaluated for distances of 25, 50, 100, and 500 meters from the edge of the construction site. Because the exact locations of the commercial and residential properties from the proposed project are unknown, the distance to receptors from the construction sites are also unknown. Therefore, the default distances were used in this analysis.

The results on the localized sensitive receptors analysis for each of the planning areas are shown in Tables 27, 28, and 29. Within all three of the planning areas, emissions of PM_{10} and $PM_{2.5}$ would exceed Localized Significance Thresholds and would therefore result in a ***Significant*** impact to sensitive receptors.

Table 26 Estimated Carbon Monoxide (CO) Concentrations

Intersection	LOS	Peak Vehicle Volume	1-hour CO Concentrations (ppm)				8-hour Concentrations (ppm)			
			Project Concentration	Background Concentration	Total Concentration	1-hr Significant[1]	Project Concentration	Background Concentration	Total Concentration	8-hr Significant[2]
16th Street/Outer Hwy 10 S	F	1,396	0.5	4.0	4.5	No	0.4	2.3	2.7	No
16th Street/Sand Canyon	F	1,839	0.8	4.0	4.8	No	0.6	2.3	2.9	No
16th Street/ Yucaipa Boulevard	F	2,011	0.7	4.0	4.7	No	0.5	2.3	2.8	No
5th Street/Avenue L	F	1,615	0.6	4.0	4.6	No	0.4	2.3	2.7	No
5th Street/County Line Road	F	2,945	0.9	4.0	4.9	No	0.6	2.3	2.9	No
Bryant Street/State Hwy 38	F	987	0.5	4.0	4.5	No	0.4	2.3	2.7	No
California Street/ County Line Road	F	1,597	0.6	4.0	4.6	No	0.4	2.3	2.7	No
Colorado Avenue/ Wildwood Canyon Road	F	1,331	0.5	4.0	4.5	No	0.4	2.3	2.7	No
I-10 EB Ramp/ County Line Road	F	2,959	1.0	4.0	5.0	No	0.7	2.3	3.0	No
I-10 WB Ramp/ County Line Road	F	3,024	1.0	4.0	5.0	No	0.7	2.3	3.0	No
Oak Glen Road/ Colorado Street	F	1,906	0.8	4.0	4.8	No	0.6	2.3	2.9	No
Oak Glen Road/ I-10 WB Ramp	F	2,764	0.8	4.0	4.8	No	0.6	2.3	2.9	No
14th Street/Oak Glen Road	F	3,267	0.8	4.0	4.8	No	0.6	2.3	2.9	No
San Timoteo Canyon Road/ Live Oak Canyon Road	F	1,571	0.6	4.0	4.6	No	0.4	2.3	2.7	No
Wabash Avenue/5th Street	F	1,617	0.7	4.0	4.7	No	0.5	2.3	2.8	No

Notes: California State 1-hour CO standard is 20.0 ppm and California State 8-hour CO standard is 9.0 ppm

Table 27 Robinson Ranch North Planning Area – Localized Construction Emissions Concentrations

Distance	CO (lbs/day)		NO_2 (lbs/day)		PM_{10} (lbs/day)		$PM_{2.5}$ (lbs/day)	
	UNM[1]	MIT[2]	UNM[1]	MIT[2]	UNM[1]	MIT[2]	UNM[1]	MIT[2]
Peak Daily On-site Emissions[3]	124.36	124.36	66.92	66.92	101.18	12.16	21.97	4.07
Allowable emissions at 25 meters	2,075		270		14		9	
Allowable emissions at 50 meters	2,890		302		42		12	
Allowable emissions at 100 meters	4,765		378		66		20	
Allowable emissions at 200 meters	9,044		486		113		40	
Allowable emissions at 500 meters	27,650		778		255		140	
Exceed Allowable emissions?	No	No	No	No	**YES**	No	**YES**	No

(1) UNM column for each criteria pollutant shows emissions before mitigation measures are incorporated.
(2) MIT column for each criteria pollutant shows emissions after mitigation measures AQ-6 and AQ-7 are incorporated.
(3) Assuming a maximum land disturbance of five acres per day.

Table 28 West Oak Center Planning Area – Localized Construction Emissions Concentrations

Distance	CO (lbs/day)		NO_2 (lbs/day)		PM_{10} (lbs/day)		$PM_{2.5}$ (lbs/day)	
	UNM[1]	MIT[2]	UNM[1]	MIT[2]	UNM[1]	MIT[2]	UNM[1]	MIT[2]
Peak Daily On-site Emissions[3]	166.83	166.83	72.63	72.63	101.18	12.16	21.97	4.43
Allowable emissions at 25 meters	2,075		270		14		9	
Allowable emissions at 50 meters	2,890		302		42		12	
Allowable emissions at 100 meters	4,765		378		66		20	
Allowable emissions at 200 meters	9,044		486		113		40	
Allowable emissions at 500 meters	27,650		778		255		140	
Exceed Allowable emissions?	No	No	No	No	**YES**	No	**YES**	No

(1) UNM column for each criteria pollutant shows emissions before mitigation measures are incorporated.
(2) MIT column for each criteria pollutant shows emissions after mitigation measures AQ-6 and AQ-7 are incorporated.
(3) Assuming a maximum land disturbance of five acres per day.

Table 29 Wildwood Ranch Planning Area – Localized Construction Emissions Concentrations

Distance	CO (lbs/day)		NO_2 (lbs/day)		PM_{10} (lbs/day)		$PM_{2.5}$ (lbs/day)	
	UNM[1]	MIT[2]	UNM[1]	MIT[2]	UNM[1]	MIT[2]	UNM[1]	MIT[2]
Peak Daily On-site Emissions[3]	271.02	271.02	107.55	107.55	101.81	12.16	21.97	6.08
Allowable emissions at 25 meters	2,075		270		14		9	
Allowable emissions at 50 meters	2,890		302		42		12	
Allowable emissions at 100 meters	4,765		378		66		20	
Allowable emissions at 200 meters	9,044		486		113		40	
Allowable emissions at 500 meters	27,650		778		255		140	
Exceed Allowable emissions?	No	No	No	No	**YES**	No	**YES**	No

(1) UNM column for each criteria pollutant shows emissions before mitigation measures are incorporated.
(2) MIT column for each criteria pollutant shows emissions after mitigation measures AQ-6 and AQ-7 are incorporated.
(3) Assuming a maximum land disturbance of five acres per day.

Toxic Air Contaminants

The proposed residential and commercial land uses within the Planned Development would not attract a disproportionate amount of diesel trucks. Typical commercial uses such as retail, restaurants, and office complexes that are anticipated as part of the Planned Development would not be considered a source of Toxic Air Contaminants (TAC) emissions.

However, there are two potential sources of diesel PM and TAC emissions within the project area: delivery trucks and transit buses. In 2004, the CARB adopted an Airborne Toxic Control Measure (ATCM) to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel PM and other TAC emissions. The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. The measure does not allow diesel fueled commercial vehicles to idle for more than five minutes at any given time. Potential localized air toxic impacts from on-site sources of diesel PM would be minimal since only a limited number of heavy-duty trucks would access the project area, and the trucks that would frequent the area would not idle for extended periods of time.

With regard to off-site sources of TAC emissions, the CARB recommends siting new sensitive land uses at least 500 feet from a freeway. In traffic-related studies, the additional non-cancer health risk attributable to proximity was seen within 1,000 feet and was strongest within 300 feet. California freeway studies show about a 70 percent drop in particulate pollution levels at 500 feet (CARB 2005). Therefore, CARB also recommends that any project that proposes to locate sensitive receptors within 500 feet of a highway should prepare a health risk assessment. The closest freeway to the Planned Development is I-10. Residential uses placed within 500 feet of I-10 may be impacted by truck traffic on the freeway.

Robinson Ranch North Planning Area

The Planned Development proposes to designate residential land uses within 500 feet of I-10 within both the Oak Ridge Village and Wildwood Center subareas of the Robinson Ranch North Planning Area. Therefore, impacts to sensitive receptors due to TAC emissions within this planning area would be ***Potentially Significant***.

West Oak Center Planning Area

The proposed land uses within the West Oak Center Planning Area nearest to the I-10 are commercial land uses. The proposed residential land uses are proposed to be located over 1,000 feet from I-10. Therefore, impacts to sensitive receptors due to TAC emissions within this planning area would be ***Less than Significant***.

Wildwood Ranch Planning Area

The Planned Development proposes to designate residential land uses within 500 feet of I-10 within the Wildwood Ranch Planning Area. Therefore, impacts to sensitive receptors due to TAC emissions within this planning area would be ***Potentially Significant***.

Mitigation Measures

CO Hotspots. Implementation of the Planned Development, including all three planning areas, would result in a ***Less than Significant*** impact with respect to the exposure of sensitive receptors to excessive concentrations of CO and CO hotspots. No mitigation is required.

Localized Sensitive Receptors. As shown in Tables 23, 24, and 25, implementation of mitigation measures AQ-6 and AQ-7 would reduce this impact to a ***Less than Significant*** level. Mitigation measures AQ-6 and AQ-7 apply to all three planning areas.

Toxic Air Contaminants. Within the West Oak Center Planning Area, impacts to sensitive receptors due to TAC emissions would be ***Less than Significant***. Therefore, no mitigation measures are required.

Implementation of mitigation measure AQ-8 within the Robinson Ranch North and Wildwood Ranch Planning Areas would reduce these impacts to a ***Less than Significant*** level.

AQ-6 During grading activities for any future development within the Planned Development, the on-site construction superintendent shall ensure implementation of standard best management practices (BMPs) to reduce the emission of fugitive dust, including, but not limited to the following actions:

i. Water any exposed soil areas a minimum of twice per day, or as allowed under any imposed drought restrictions. On windy days or when fugitive dust can be observed leaving the construction site, additional water will be applied at a frequency to be determined by the on-site construction superintendent.

ii. Graded areas on slopes will provide temporary hydroseeding and irrigation of cleared vegetation and graded slopes as soon as possible following grading activities in areas that will remain in disturbed condition (but will not be subject to further construction activities) for a period greater than three months during the construction phase.

iii. Pave or periodically water all on-site access points or apply chemical stabilizer to construction sites.

iv. Securely cover all transported material to prevent fugitive dust.

v. Operate all vehicles on the construction site at speeds less than 15 miles per hour.

vi. Water all non-paved haul roads at least two (2) times per day.

vii. Cover all stockpiles that will not be utilized within three days with plastic or equivalent material, to be determined by the on-site construction superintendent, or spray them with a non-toxic chemical stabilizer.

viii. Apply soil stabilizers to any disturbed area that is to remain inactive for more than five consecutive days. For prolonged periods of inactivity, re-application of soil stabilizer should be conducted as appropriate to eliminate visible dust from leaving the site.

ix. Replace ground cover in disturbed areas within 30 days of the completion of construction activities. Dust suppression shall be required for all disturbed areas where ground cover has not yet been re-established.

x. Water down all soils/debris/fill materials being loaded or unloaded at the site sufficiently within fifteen minutes of its loading/unloading. The materials should be saturated to the point where no visible dust plums are generated during loading/unloading activities.

AQ-7 Mass grading, fine grading, and structure construction shall be conducted at separate time periods and shall not overlap with one another. Further, no more than five acres per day of ground disturbance shall occur. If more than five acres per day of ground is disturbed, then the Applicant shall prepare a new air quality technical analysis and purchase pollution offsets from the SCAQMD for emissions in excess of the thresholds.

AQ-8 Residential units shall be set back at least 500 feet from I-10 or a project specific Health Risk Assessment shall be conducted to identify and mitigate potential health risks from being situated within the CARB recommended buffer.

6.3 Objectionable Odors

Thresholds of Significance

The CEQA Guidelines suggest, from an "air quality" perspective, that a project would normally be judged to produce a significant or potentially significant effect on the environment if the project were to:

- Create objectionable odors affecting a substantial number of people.

Impact Analysis

The following analysis applies to all three planning areas within the Planned Development.

Construction associated with implementation of the Planned Development could result in minor amounts of odor compounds associated with diesel heavy equipment exhaust. However, construction equipment would be operating at various locations throughout the project area, construction would not take place all at once, and construction near existing receptors would be temporary. Therefore, impacts associated with odors during construction would not be likely to result in nuisance odors and are not considered significant.

The CARB's Air Quality and Land Use Handbook includes a list of the most common sources of odor complaints received by local air districts. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. The Planned Development proposes the designation of commercial, business park, and residential land uses. These land uses do not typically result in a source of nuisance odors associated with operation. Therefore, odors would not be considered objectionable and odor impacts would be ***Less than Significant***.

Mitigation Measures

No mitigation is required.

6.4 Cumulatively Considerable Net Increase of Criteria Pollutants

Thresholds of Significance

The CEQA Guidelines suggest, from an "air quality" perspective, that a project would normally be judged to produce a significant or potentially significant effect on the environment if the project were to:

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under applicable federal or state ambient air quality standard.

Impact Analysis

The Basin is in non-attainment for PM_{10}, $PM_{2.5}$, and ozone. ROGs and NO_x are precursors that form ozone through chemical and photochemical reactions in the atmosphere. In Section 6.1, estimated emissions for both construction and operation of the Planned Development were presented. The conclusion stated that, with mitigation, construction of the individual planning areas would result in emissions that are below the regional thresholds. However, even with incorporation of mitigation measures, construction of the planning areas would still result in emissions of ROG, NO_x, PM_{10}, and $PM_{2.5}$, which would result in a net increase of these pollutants. Further, construction of all three planning areas simultaneously would result in emissions that exceed the thresholds. While it is unlikely that construction would occur at same time in all three planning areas, there is the potential that construction in one planning area may begin before the construction in another planning area has been completed. This could result in a cumulatively considerable net increase in ROG, NO_x, PM_{10}, and $PM_{2.5}$.

Further, even with incorporation of mitigation measures, emissions associated with operations of the Planned Development exceed the regional thresholds. Therefore, operation of the Planned Development would result in a cumulatively considerable net increase in ROG, NO_x, PM_{10}, and $PM_{2.5}$.

6.5 Cumulative Impacts

The Basin is in non-attainment for PM10, PM2.5, and ozone. ROGs and NOx are precursors that form ozone through chemical and photochemical reactions in the atmosphere. Therefore, there is a significant cumulative impact to air quality resulting from air quality violations of PM10, PM2.5, ROG, and NOx emissions.

CEQA Section 21100 (e) addresses evaluation of cumulative effects allowing the use of approved land use documents in a cumulative impact analysis. CEQA Guidelines Section 15064 (i)(3) further stipulates that for an impact involving a resource that is addressed by an approved plan or mitigation program, the lead agency may determine that a project's incremental contribution is not cumulatively considerable if the project complies with the adopted plan or program.

In addressing cumulative effects for air quality, the AQMP is the most appropriate document to use. The AQMP sets forth a comprehensive program that will lead the Basin, including the Planned Development area, into compliance with all federal and state air quality standards. Further, this document uses

control measures and related emission reduction estimates based upon emissions projections for a future development scenario derived from land use, population, and employment characteristics defined in consultation with local governments.

Impact Analysis

Conformance to Federal and State Ambient Air Quality Standards

The geographical context for this analysis is the Basin. The Basin is in non-attainment for PM_{10}, $PM_{2.5}$, and ozone. ROGs and NO_x are precursors that form ozone through chemical and photochemical reactions in the atmosphere. Therefore, there is a significant cumulative impact to air quality resulting from air quality violations of PM_{10}, $PM_{2.5}$, ROG, and NO_x emissions.

Construction

As discussed in Section 6.1, emissions from construction of the Robinson Ranch North Planning Area would be below established thresholds and emissions from construction of the West Oak Center and Wildwood Ranch Planning Areas would exceed established thresholds. However, if all of the planning areas were developed at the same time, emissions of NO_x, ROG, PM_{10}, and $PM_{2.5}$ would exceed the thresholds. Implementation of mitigation measures AQ-1, AQ-2, AQ-6, and AQ-7 would slightly reduce these emissions, but not to a level below the threshold. Therefore, implementation of the Planned Development would result in a ***Cumulatively Considerable Contribution*** to a cumulatively significant impact to air quality.

Operational

Based on the analysis presented in Section 6.1, implementation of the individual planning areas within the Planned Development would result in significant and unavoidable impacts due to excessive emissions of CO, NO_x, ROG, PM_{10}, and $PM_{2.5}$. Combined with each other and with future proposed developments, the implementation of the Planned Development would result in a significant impact on a cumulative level. Therefore, operational emissions of the Planned Development would result in a ***Cumulatively Considerable Contribution*** to a cumulatively significant impact to air quality. With implementation of mitigation measures AQ-3 through AQ-5, implementation of the Planned Development would continue to result in a ***Cumulatively Considerable Contribution.***

Sensitive Receptors

CO Hotspots

The geographic context for the analysis of cumulative impacts relative to exposure of sensitive receptors (e.g., residences, commercial developments, schools, hospitals) to CO hot spots includes the vicinity of the 15 intersections analyzed for CO hot spots analysis in Section 6.3. It is assumed that traffic volumes from some of these projects may contribute to CO emissions at the fifteen intersections projected to operate below LOS E. Some of the cumulative projects may not contribute any traffic volumes to certain intersections in Table 26 but it is beyond the scope of this analysis to identify the traffic volumes contributed from each of the cumulative projects at intersections that are outside the study area of the Planned Development. As indicated in Table 26, the CO concentrations at the affected intersections are less than the NAAQS and CAAQS for CO with implementation of the Planned Development and the

cumulative projects. Therefore, the cumulative impact to sensitive receptors exposed to CO hot spots in the local cumulative impact area is ***Less than Significant.***

Local Sensitive Receptors

The geographic context for the following analysis is sensitive receptors adjacent to the Planned Development. PM_{10} and $PM_{2.5}$ emissions associated with construction generally result in near-field impacts. As shown in the emissions evaluation in Section 6.1, the emissions of PM_{10} and $PM_{2.5}$ during construction would be below the significance levels, with incorporation of mitigation. It is unlikely that all construction within the Planned Development would occur at the same time as other projects in the vicinity. Additionally, it is unlikely that construction projects associated with the Planned Development and those associated with other area projects would take place adjacent to each other. Therefore, the contribution of the Planned Development to a cumulative significant impact is ***not Cumulatively Considerable*** with respect to impacts on localized receptors.

6.6 Greenhouse Gas Emissions and Conflict With Adopted Plans

Thresholds of Significance

The CEQA Guidelines suggest, from an "air quality" perspective, that a project would normally be judged to produce a significant or potentially significant effect on the environment if the project were to:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or
- Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The Planned Development cannot generate enough GHG emissions to influence global climate change on its own. The Planned Development participates in this potential impact by its incremental contribution combined with the cumulative increase of all other sources of GHGs. As indicated in Section 15064(i)(1) of the CEQA Guidelines, "cumulatively considerable" is defined to mean "that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."

In order to determine whether or not a proposed project would cause a significant effect on the environment, the impact of the project must be determined by examining the types and levels of GHG emissions generated. To date, no federal, state, or project area local agencies have developed thresholds against which a proposed project can be evaluated to assist lead agencies in determining whether or not the proposed project is significant. In accordance with CEQA Guidelines (Section 15064 (h)(3)), "A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem (e.g., water quality control plan, air quality plan, integrated waste management plan) within the geographic area in which the project is located. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a

public review process to implement, interpret, or make specific the law enforced or administered by the public agency…"

AB 32, the California Global Warming Solutions Act of 2006, requires that greenhouse gases emitted in California be reduced to 1990 levels by the year 2020 and 80 percent below 1990 levels by 2050. The 2020 reduction target equates to a decrease of approximately 30 percent below the current GHG emissions. Under AB 32, the CARB published its Final Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California (CARB 2007b), which are needed to achieve the reduction goals of AB 32. These reduction goals are derived from the United Nations Intergovernmental Panel on Climate Change (IPCC 2007).

Because AB 32 addresses global climate change in California and is in concert with international efforts to address global climate change, AB 32 has specific requirements in it that will substantially lessen the cumulative problem and fulfills the definition of a mitigation program found in CEQA Guidelines §15064(H)(3). This analysis uses compliance with AB 32, a previously approved mitigation program as defined in CEQA Guidelines §15064(h)(3), in determining if the Planned Development's incremental contribution of GHGs is a cumulatively considerable contribution to global warming impacts. CEQA Guideline §15064(h)(3) states three main conditions that a plan must meet to be sufficient for use as a basis for determining significance of GHG emissions. The plan must:

1. Be "a previously approved plan or mitigation program;"
2. Provide "specific requirements that will avoid or substantially lessen the cumulative problem;" and
3. Be "be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency."

AB 32 meets both conditions 1 and 3 as it was adopted in 2006 by the California State Legislature. AB 32 focuses on reducing GHG in California and further defines GHG to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Further, AB 32 satisfies the second condition because it requires the CARB to adopt rules and regulations that would achieve greenhouse gas emissions equivalent to statewide levels in 1990 by 2020.

AB 32 required that, by January 1, 2008, the State Board shall determine what the statewide greenhouse gas emissions level was in 1990 and approve a statewide greenhouse gas emissions limit that is equivalent to that level, to be achieved by 2020. While the level of 1990 GHG emissions has not yet been approved, reported emissions vary from 425 to 468 teragram (Tg) CO2e (CEC 2006). In 2004, the emissions were estimated at 492 Tg CO2e (CEC 2006). As yet, the finalized 1990 gas emission levels have not been released.

Therefore, using project compliance with AB 32 in determining that the project's incremental contribution of GHG emissions to the significant cumulative climate change impact is appropriate and supported by CEQA Guidelines §15064(h)(3). AB 32 requires that greenhouse gases emitted in California be reduced to 1990 levels by the year 2020 and 80 percent below 1990 levels by 2050. This results in a

reduction of emissions by 30 percent from business as usual levels. Business as usual is defined as the construction and operation of a proposed project without taking into account any potential laws or reduction strategies that are not already adopted and in place at the time of the analysis.

Impact Analysis

By definition, the impacts to and from climate change are cumulative. The Planned Development participates in this potential impact by its incremental contribution combined with the cumulative increase of all other sources of GHGs, which when taken together form global climate change impacts. The following discussion reviews each of the GHGs and the Planned Development's potential generation of these gases.

As shown in Table 1, individual greenhouse gases have varying global warming potentials (GWP) and atmospheric lifetimes. The carbon dioxide equivalent (CO2e) is a consistent methodology for comparing greenhouse gas emissions since it normalizes various greenhouse gas emissions into a consistent metric. The reference gas for global warming potentials is carbon dioxide, with a GWP of 1. By comparison, methane's GWP is 23, as methane has a greater global warming effect than carbon dioxide on a molecule to molecule basis. One teragram ([Tg] equal to one million MT) of carbon dioxide equivalent is the mass of a project emissions of an individual greenhouse gas multiplied by the gas's GWP. Nitrous oxide's GWP is 310. The following discussion details the Planned Development's generation of each of the individual greenhouse gases, then defines their impacts based on total CO_2e emissions from each planning area.

Carbon Dioxide

The Planned Development's main contribution to GHGs is carbon dioxide. The Planned Development would generate emissions of carbon dioxide primarily in the form of vehicle exhaust and in the consumption of natural gas for heating. Carbon dioxide emissions from vehicles were calculated using URBEMIS2007 assumptions and EMFAC2007 emission factors that are used in URBEMIS2007. Carbon dioxide emissions from natural gas combustion were generated using an EPA AP-42 emission factor (EPA 1998). Implementation of mitigation measures AQ-1 through AQ-5 in addition to measures GHG-1 through GHG-5 would reduce carbon dioxide emissions from the Planned Development. The unmitigated and mitigated carbon dioxide emissions are shown in Tables 30, 31, and 32 by planning area.

Table 30 Robinson Ranch North Planning Area – Carbon Dioxide Emissions

Emission Source	Carbon Dioxide Emissions (tons per year) Before Mitigation	Global Warming Potential (GWP) (tons per year) Before Mitigation	Carbon Dioxide Emissions (tons per year) With Mitigation[(1)]	Global Warming Potential (GWP) (tons per year) With Mitigation[(1)]
Construction period Emissions	82.82	82.82	82.82	82.82
Vehicles	17,177.31	17,177.31	16,692.47	16,692.47
Natural Gas Combustion	2,721.14	2,721.14	2,176.91	2,176.91
Landscape Equipment	2.20	2.20	0.00	0.00
Electric Use	2,638.11	2,638.11	2,638.11	2,638.11
Potable Water Treatment	1,118.67	1,118.67	1,118.67	1,118.67
Wastewater Treatment	626.45	626.45	626.45	626.45
Solid Waste Transport/Disposal	252.25	252.25	252.25	252.25
Total Emissions	24,618.95	24,618.95	23,587.68	23,587.68

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Table 31 West Oak Center Planning Area – Carbon Dioxide Emissions

Emission Source	Carbon Dioxide Emissions (tons per year) Before Mitigation	Global Warming Potential (GWP) (tons per year) Before Mitigation	Carbon Dioxide Emissions (tons per year) With Mitigation[(1)]	Global Warming Potential (GWP) (tons per year) With Mitigation[(1)]
Construction period Emissions	109.03	109.03	108.60	108.60
Vehicles	59,926.99	59,926.99	58,638.97	58,638.97
Natural Gas Combustion	3,515.51	3,515.51	2,812.40	2,812.40
Landscape Equipment	3.66	3.66	0.00	0.00
Electric Use	6,475.56	6,475.56	6,475.56	6,475.56
Potable Water Treatment	467.84	467.84	467.84	467.84
Wastewater Treatment	261.99	261.99	261.99	261.99
Solid Waste Transport/Disposal	249.51	249.51	249.51	249.51
Total Emissions	71,010.09	71,010.09	69,014.86	69,014.86

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Table 32 Wildwood Ranch Planning Area – Carbon Dioxide Emissions

Emission Source	Carbon Dioxide Emissions (tons per year) Before Mitigation	Global Warming Potential (GWP) (tons per year) Before Mitigation	Carbon Dioxide Emissions (tons per year) With Mitigation[(1)]	Global Warming Potential (GWP) (tons per year) With Mitigation[(1)]
Construction period Emissions	184.20	184.20	184.20	184.20
Vehicles	63,602.53	63,602.53	62,064.49	62,064.49
Natural Gas Combustion	6,478.30	6,478.30	5,182.64	5,182.64
Landscape Equipment	5.59	5.59	0.00	0.00
Electric Use	7,842.79	7,842.79	7,842.79	7,842.79
Potable Water Treatment	4,036.88	4,036.88	4,036.88	4,036.88
Wastewater Treatment	2,260.65	2,260.65	2,260.65	2,260.65
Solid Waste Transport/Disposal	262.54	262.54	262.54	262.54
Total Emissions	84,673.49	84,673.49	81,834.20	81,834.20

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Methane

The Planned Development would generate some methane gas from operational activities such as the combustion of natural gas. Methane was estimated using EPA emission factors for on-road vehicles. Implementation of mitigation measures AQ-1 through AQ-5 in addition to measures GHG-1 through GHG-5 would reduce methane emissions from the Planned Development. The unmitigated and mitigated methane emissions are shown in Tables 33, 34, and 35 for each of the three planning areas.

Table 33 Robinson Ranch North Planning Area – Methane Emissions

Emission Source	Methane Emissions (tons per year) Before Mitigation	Global Warming Potential (tons per year) Before Mitigation	Methane Emissions (tons per year) With Mitigation[(1)]	Global Warming Potential (tons per year) With Mitigation[(1)]
Construction Period Emissions	0.01	0.17	0.01	0.17
Vehicles	4.83	101.43	4.69	98.49
Natural Gas Combustion	0.39	8.20	0.39	8.20
Landscape Equipment	0.00	0.01	0.00	0.01
Electric Use	0.02	0.46	0.02	0.46
Potable Water Treatment	0.01	0.20	0.01	0.20
Wastewater Treatment	0.005216	0.11	0.0052200	0.11
Solid Waste Transport and Disposal	4.70	98.70	4.70	98.71
Total Emissions	9.97	209.28	9.83	206.36

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Table 34 West Oak Center Planning Area – Methane Emissions

Emission Source	Methane Emissions (tons per year) Before Mitigation	Global Warming Potential (tons per year) Before Mitigation	Methane Emissions (tons per year) With Mitigation[(1)]	Global Warming Potential (tons per year) With Mitigation[(1)]
Construction Period Emissions	0.01	0.22	0.01	0.22
Vehicles	57.63	1,210.23	56.39	1,184.19
Natural Gas Combustion	0.40	8.41	0.40	8.41
Landscape Equipment	0.00	0.07	0.00	0.07
Electric Use	0.04	0.88	0.04	0.88
Potable Water Treatment	0.00	0.08	0.00	0.08
Wastewater Treatment	0.002181	0.05	0.0021800	0.05
Solid Waste Transport and Disposal	3.49	73.29	3.49	73.30
Total Emissions	61.58	1,293.23	60.34	1,267.20

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Table 35 Wildwood Ranch Planning Area – Methane Emissions

Emission Source	Methane Emissions (tons per year) Before Mitigation	Global Warming Potential (tons per year) Before Mitigation	Methane Emissions (tons per year) With Mitigation[(1)]	Global Warming Potential (tons per year) With Mitigation[(1)]
Construction Period Emissions	0.02	0.37	0.02	0.37
Vehicles	61.19	1,284.99	59.71	1,253.91
Natural Gas Combustion	0.91	19.08	0.91	19.08
Landscape Equipment	0.01	0.12	0.01	0.12
Electric Use	0.07	1.37	0.07	1.37
Potable Water Treatment	0.03	0.71	0.03	0.71
Wastewater Treatment	0.018826	0.40	0.0188300	0.40
Solid Waste Transport and Disposal	9.25	194.25	9.25	194.28
Total Emissions	71.49	1,501.28	70.01	1,470.23

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Nitrous Oxide

Nitrous oxide was estimated using EPA emission factors for on-road vehicles (EPA 2004). Implementation of mitigation measures AQ-1 through AQ-5 in addition to measures GHG-1 through GHG-5 would reduce nitrous oxide emissions from the Planned Development. The unmitigated and mitigated emissions are presented in Tables 36, 37, and 38 for each of the three planning areas.

Table 36 Robinson Ranch North Planning Area – Nitrous Oxide Emissions

Emission Source	Nitrous Oxide Emissions (tons per year) Before Mitigation	Global Warming Potential (GWP) (tons per year) Before Mitigation	Nitrous Oxide Emissions (tons per year) With Mitigation[(1)]	Global Warming Potential (GWP) (tons per year) With Mitigation[(1)]
Construction Period Emissions	0.00019	0.06	0.00019	0.06
Vehicles	2.18	675.38	2.09	647.90
Natural Gas Combustion	0.01	2.05	0.01	2.05
Landscape Equipment	0.00026	0.08	0.000	0.08
Electric Use	0.01	3.76	0.01	3.76
Potable Water Treatment	0.01	1.59	0.01	1.59
Wastewater Treatment	0.00	0.89	0.00	0.89
Solid Waste Transport/Disposal	2.85	883.51	2.85	883.51
Total Emissions	5.06	1,567.33	4.97	1,539.85

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Table 37 West Oak Center Planning Area – Nitrous Oxide Emissions

Emission Source	Nitrous Oxide Emissions (tons per year) Before Mitigation	Global Warming Potential (GWP) (tons per year) Before Mitigation	Nitrous Oxide Emissions (tons per year) With Mitigation[(1)]	Global Warming Potential (GWP) (tons per year) With Mitigation[(1)]
Construction Period Emissions	0.00025	0.08	0.00025	0.08
Vehicles	9.05	2,807.03	8.88	2,752.80
Natural Gas Combustion	0.01	2.10	0.01	2.10
Landscape Equipment	0.00054	0.17	0.001	0.17
Electric Use	0.02	7.14	0.02	7.14
Potable Water Treatment	0.00	0.67	0.00	0.67
Wastewater Treatment	0.00	0.37	0.00	0.37
Solid Waste Transport/Disposal	2.85	883.50	2.85	883.50
Total Emissions	11.94	3,701.07	11.76	3,646.84

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Table 38 Wildwood Ranch Planning Area – Nitrous Oxide Emissions

Emission Source	Nitrous Oxide Emissions (tons per year) Before Mitigation	Global Warming Potential (GWP) (tons per year) Before Mitigation	Nitrous Oxide Emissions (tons per year) With Mitigation[(1)]	Global Warming Potential (GWP) (tons per year) With Mitigation[(1)]
Construction Period Emissions	0.00042	0.13	0.00042	0.13
Vehicles	9.62	2,982.45	9.38	2,907.80
Natural Gas Combustion	0.02	4.78	0.02	4.77
Landscape Equipment	0.00087	0.27	0.001	0.27
Electric Use	0.04	11.18	0.04	11.18
Potable Water Treatment	0.02	5.76	0.02	5.76
Wastewater Treatment	0.01	3.22	0.01	3.22
Solid Waste Transport/Disposal	2.85	883.51	2.85	883.51
Total Emissions	12.55	3,891.29	12.31	3,816.65

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Total GHG Emissions

Tables 39, 40, and 41 show the total GHG emissions in terms of GWP for each of the planning areas. The tables also show the percent of emissions reduction with mitigation measures. To comply with AB 32, the reduction should be more than 30 percent. As shown in Tables 39, 40, and 41, overall reduction levels with mitigation are significantly less than the recommended 30 percent. Therefore, individual implementation of the planning areas of the Planned Development would result in ***Significant*** impacts.

Table 39 Robinson Ranch North Planning Area – Global Warming Potential Summary

Emission Sources	Unmitigated Global Warming Potential (GWP) (tons per year)	Mitigated GWP of Greenhouse Gases (tons per year) [(1)]	Percent Reduction from Unmitigated Emissions
Construction Period Emissions	83.05	83.05	0.00%
Vehicles	17,954.12	17,438.86	2.87%
Natural Gas Combustion	2,731.40	2,187.17	19.92%
Landscape Equipment	2.29	0.09	95.95%
Electric Use	2,642.33	2,642.33	0.00%
Potable Water Treatment	1,120.46	1,120.46	0.00%
Wastewater Treatment	627.46	627.46	0.00%
Solid Waste Transport/Disposal	1,234.46	1,234.47	0.00%
Total Operational Emissions	26,395.56	25,333.88	4.02%

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Table 40 West Oak Center Planning Area – Global Warming Potential Summary

Emission Sources	Unmitigated Global Warming Potential (GWP) (tons per year)	Mitigated GWP of Greenhouse Gases (tons per year) [(1)]	Percent Reduction from Unmitigated Emissions
Construction Period Emissions	109.34	108.90	0.40%
Vehicles	63,944.25	62,575.96	2.14%
Natural Gas Combustion	3,526.02	2,822.91	19.94%
Landscape Equipment	3.90	0.24	93.84%
Electric Use	6,483.58	6,483.58	0.00%
Potable Water Treatment	468.59	468.59	0.00%
Wastewater Treatment	262.41	262.41	0.00%
Solid Waste Transport/Disposal	1,206.30	1,206.31	0.00%
Total Operational Emissions	76,004.39	73,928.90	2.73%

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Table 41 Wildwood Ranch Planning Area – Global Warming Potential Summary

Emission Sources	Unmitigated Global Warming Potential (GWP) (tons per year)	Mitigated GWP of Greenhouse Gases (tons per year)[(1)]	Percent Reduction from Unmitigated Emissions
Construction Period Emissions	184.70	184.70	0.00%
Vehicles	67,869.97	66,226.20	2.42%
Natural Gas Combustion	6,502.16	5,206.50	19.93%
Landscape Equipment	5.98	0.39	93.55%
Electric Use	7,855.34	7,855.34	0.00%
Potable Water Treatment	4,043.35	4,043.35	0.00%
Wastewater Treatment	2,264.27	2,264.27	0.00%
Solid Waste Transport/Disposal	1,340.30	1,340.33	0.00%
Total Operational Emissions	90,066.07	87,121.08	3.27%

(1) With incorporation of mitigation measures AQ-1 through AQ-5.

Mitigation Measures

Implementation of the following mitigation measures, in conjunction with implementation of mitigation measures AQ-1 through AQ-5, would reduce GHG emissions. These mitigation measures apply to all three planning areas. However, as shown in Tables 39, 40, and 41, even with the implementation of mitigation measures AQ-1 through AQ-5 and GHG-1 through GHG-6, the significant impact would remain. Therefore, implementation of the Planned Development would result in ***Significant and Unavoidable*** impacts with respect to GHG emissions.

GHG-1 All diesel fueled construction equipment shall be classified EPA Tier II or better emission efficiencies.

GHG-2 Prior to issuance of any grading or building permit, the Planned Development plans and specifications shall include a statement that construction equipment, on-road construction

trucks and other vehicles greater than 10,000 pounds shall be shut off when not in use and shall not idle for more than five minutes.

GHG-3 Prior to issuance of any grading or building permit, the Planned Development plans and specifications shall include a statement that queuing of trucks on and off site shall be limited to periods when absolutely necessitated by grading or construction activities.

GHG-4 Prior to issuance of any grading or building permit, temporary construction power shall be installed on site. The Planned Development plans and specifications shall include a statement that, to the extent feasible, all small diesel- and gasoline-powered construction equipment (i.e. electric generators, compressors, stucco mixers, etc.) shall be replaced with equivalent electric equipment.

GHG-5 Prior to issuance of any grading or building permit, the Project Development plans and specifications shall include policies and procedures for the reuse and recycling of construction and demolition waste of 50 percent (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).

GHG-6 The GHG emissions reduction measures listed in Table 42 shall be implemented, as appropriate, on a project-level basis.

Table 42 Additional Recommended GHG Emissions Reduction Measures

Reduction Measures By Category	
Bike Parking	• Nonresidential projects provide plentiful short- and long-term bicycle parking facilities to meet peak season maximum demand (e.g., one bike rack space per 20 vehicle/employee parking spaces. • Prior to issuance of a building permit for any future project, the project applicant shall identify and submit building plans that identify the following design features to reduce operational emissions associated with vehicular traffic: • Projects within one-quarter mile of a transit facility, including Sprinter Stations and bus stops, shall enhance existing or construct new pedestrian and bicycle facilities to provide safe and efficient access to the transit services. • Projects located within one-half mile of an existing/planned Class I or Class II bike lane shall include a comparable network that connects the project uses to the existing off-site facility. Project design shall include a designated bicycle route connecting all units, on-site bicycle parking facilities, off-site bicycle facilities, site entrances, and primary building entrances to existing Class I or Class II bike lane(s) within one half mile, as feasible. • Nonresidential projects shall provide “end-of-trip” facilities including showers, lockers, and changing space. At a minimum, project will provide four clothes lockers and one shower provided for every 80 employee parking spaces, including separate facilities for each gender for projects with 160 or more employee parking spaces. • Bicycle racks that are accessible from the street and the pedestrian routes. At a minimum, one bike rack space shall be provided per 20 vehicle parking spaces. • Provide a parking lot design that includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances.
Bike Parking at Multi-Unit Residential	• Long-term bicycle parking is provided at apartment complexes or condominiums without garages (e.g., one long-term bicycle parking space for each unit without a garage). Long-term facilities shall consist of one of the following: a bicycle locker, a locked room with standard racks and access limited to bicyclists only, or a standard rack in a location that is staffed and/or monitored by video surveillance 24 hours per day.

Table 42. Continued

Reduction Measures By Category	
Pedestrian Network	• The project provides a pedestrian access network that internally links all uses and connects to all existing/planned external streets and pedestrian facilities contiguous with the project site. Project design includes a designated pedestrian route interconnecting all internal uses, site entrances, primary building entrances, public facilities, and adjacent uses to existing external pedestrian facilities and streets. Route has minimal conflict with parking and automobile circulation facilities. Streets (with the exception of alleys) within the project have sidewalks on both sides. All sidewalks internal and adjacent to project site are minimum of five feet wide. All sidewalks feature vertical curbs. • Pedestrian facilities and improvements such as grade separation, wider sidewalks, and traffic calming are implemented wherever feasible to minimize pedestrian barriers. All site entrances provide pedestrian access.
Bus Shelter for Existing/ Planned Transit Service	• Bus or streetcar service provides headways of one hour or less for stops within one-quarter mile; project provides safe and convenient bicycle/pedestrian access to transit stop(s) and provides essential transit stop improvements (i.e., shelters, route information, benches, and lighting).
Traffic Calming	• Project design includes pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways are designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips by featuring traffic calming features. All sidewalks internal and adjacent to project site are minimum of five feet wide. All sidewalks feature vertical curbs. Intersections internal and adjacent to the project feature one or more of the following pedestrian safety/traffic calming design techniques: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, and roundabouts or mini-circles. Streets internal and adjacent to the project feature pedestrian safety/traffic calming measures such as on-street parking, planter strips with street trees, and chicanes/chokers (variations in road width to discourage high-speed travel).
Pedestrian Pathway Through Parking	• Provide a parking lot design that includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances.
Orientation to Existing/Planned Transit, Bikeway, or Pedestrian Corridor	• Project is oriented towards existing transit, bicycle, or pedestrian corridor. Setback distance between project and existing or planned adjacent uses is minimized or nonexistent. Setback distance between different buildings on project site is minimized. Setbacks between project buildings and planned or existing sidewalks are minimized. Buildings are oriented towards existing or planned street frontage. Primary entrances to buildings are located along planned or existing public street frontage. Project provides bicycle access to any planned bicycle corridor(s). Project provides pedestrian access to any planned pedestrian corridor(s).
Services Operational	• Project provides on-site shops and services for employees.
Residential Density (Employ Sufficient Density for New Residential Development to Support the Use of Public Transit)	• Project provides high-density residential development. Transit facilities must be within one quarter mile of project border. Project provides safe and convenient bicycle/pedestrian access to all transit stop(s) within one-quarter mile of project border.
Green Building Certification	• Project shall seek green building certification through an approved certifying program such as LEED or the California Green Builder Program. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. The CA Green Builder Program is a statewide partnership between homebuilders, manufacturers, and local governments that requires the building of residences that incorporate high energy efficiency standards; resources conservation; advanced ventilation design installation; and waste reduction.

Table 42. Continued

Reduction Measures By Category	
Landscaping	• Project shall use drought resistant native trees, trees with low emissions and high carbon sequestration potential. • Evergreen trees on the north and west sides afford the best protection from the setting summer sun and cold winter winds. Additional considerations include the use of deciduous trees on the south side of the house that will admit summer sun; evergreen plantings on the north side will slow cold winter winds; constructing a natural planted channel to funnel summer cooling breezes into the house. • Neighborhood CCRs not requiring that front and side yards of single family homes be planted with turf grass. • Vegetable gardens, bunch grass, and low-water landscaping shall also be permitted, or even encouraged.
Exceed Title 24	• Project exceeds title 24 requirements by 30%.
Low Energy Cooling	• Project optimizes building's thermal distribution by separating ventilation and thermal conditioning systems.
Light Colored Paving	• Project provides light-colored paving (e.g., increased albedo pavement).
Solar Water Heaters	• Project provides solar water heaters.
Energy Efficient Appliance Standards	• Project uses energy efficient appliances (e.g., Energy Star®).
Green Building Materials	• Project uses materials which are resource efficient, recycled, with long life cycles and manufactured in an environmentally friendly way.
Water Use Appliances	• Require the installation of low-water use appliances.
Local Building Materials	• Use locally made building materials for construction of the project and associated infrastructure.
Recycle Demolished Building Material	• Recycle/Reuse demolished construction material. Use locally made building materials for construction of the project and associated infrastructure.
Water Conservation and Efficiency	• Create water-efficient landscapes. • Use reclaimed water for landscape irrigation in new developments and on public property. Install the infrastructure to deliver and use reclaimed water. • Restrict the use of water for cleaning outdoor surfaces and vehicles.
Solid Waste Measures	• Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, and concrete, lumber, metal, and cardboard). • Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas. • Provide education and publicity about reducing waste and available recycling services.

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(1) CAPCOA 2008
(2) Office of the California Attorney General 2008
(3) California Climate Action Team 2006

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