4.1 Air Quality and Greenhouse Gases

This section considers operational and construction-related emissions and odors that could result from the proposed Project. Emission rates were generated using standard emission factors and the California Emission Estimator Model (CalEEMod) modeling program, as applicable. CalEEMod data sheets and other emission calculations are included in the Air Quality and Greenhouse Gas Emissions Appendix (Appendix B). Appendix B also provides an introductory section on the calculation methodologies and inputs to the calculations. Emissions were estimated using spreadsheets for the remediation phase and using the CalEEMod model for the development phase. The Project would include a variety of activities, including remediation, construction, and operations, some of which would occur daily and others which would occur sporadically. This analysis attempts to provide a reasonable worst-case scenario of potential air emissions resulting from remediation, construction, and daily operations and recommends mitigation to reduce those impacts to a less than significant level.

4.1.1 Environmental Setting

San Luis Obispo County (County) is part of the South Central Coast Air Basin, which also includes Santa Barbara and Ventura Counties. The climate of the San Luis Obispo area is strongly influenced by its proximity to the Pacific Ocean. Airflow around the County plays an important role in the movement and dispersion of pollutants. The speed and direction of local winds are controlled by the location and strength of the Pacific high-pressure system and other global weather patterns, topographical factors, and circulation patterns that result from temperature differences between the land and the sea.

The County constitutes a land area of approximately 3,316 square miles with varied vegetation, topography, and climate. From a geographical and meteorological standpoint, the County can be divided into three general regions: the Coastal Plateau, the Upper Salinas River Valley, and the East County Plain. Air quality in each of these regions is characteristically different, although the physical features that divide them provide only limited barriers to the transport of pollutants between regions.

Approximately 75 percent of the County's population, and a corresponding portion of the commercial and industrial facilities, are located within the Coastal Plateau. Due to higher population density and closer spacing of urban areas, emissions of air pollutants per unit area are generally higher in this region than in other regions of the County. The Project is located within the Coastal Plateau.

4.1.1.1 Air Quality Monitoring

The County's air quality is measured by ten air quality-monitoring stations. The San Luis Obispo Air Pollution Control District (SLOAPCD) operates six permanent stations at Nipomo Regional

Park, Grover Beach, Morro Bay, Atascadero, Red Hills (near Shandon in eastern San Luis Obispo County), and Carrizo Plain. The California Air Resources Board (CARB) operates two additional stations in the cities of San Luis Obispo (City) and Paso Robles. One station on the Nipomo Mesa was operated by the District for the ConocoPhillips refinery in 2007. A tenth station was operated at Hillview (near Highway 1 and Willow Road), Nipomo Mesa (San Luis Obispo APCD 2008). This station specialized in the monitoring of inhalable particulate matter less than 10 microns in size (PM_{10}).

Air quality monitoring is rigorously controlled by federal and state quality assurance and control procedures to ensure data validity. Gaseous pollutant levels are measured continuously and averaged each hour, 24 hours per day. Particulate pollutants are generally sampled by filter techniques over averaging periods of 3 to 24 hours. PM_{10} and inhalable particulate matter that is 2.5 microns or less in size ($PM_{2.5}$) are sampled for 24 hours every sixth day on the same schedule nationwide. Table 4.1-1 outlines the federal and state standards for ambient air quality. Specific air pollutants monitored are discussed below.

Carbon Monoxide (CO): CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO competes with oxygen, often replacing it in the blood, thus reducing the blood's ability to transport oxygen to vital organs in the body. The ambient air quality standard for CO is intended to protect people whose medical condition already compromises their circulatory system's ability to deliver oxygen.

Nitrogen Dioxide (NO_2): NO_2 is a brownish gas formed in the atmosphere through a rapid reaction of the colorless gas nitric oxide (NO) with atmospheric oxygen. NO and NO_2 are collectively referred to as nitrogen oxides (NO_x). NO_2 can cause respiratory irritation and constriction of the airways, making breathing more difficult.

Sulfur Dioxide (SO_2): SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Health effects include acute respiratory symptoms and breathing difficulty. In 2006, seven locations monitored SO_2 levels and neither the state nor the federal standards were exceeded.

Suspended Particulate Matter (PM_{10}). PM_{10} is the coarse fraction of suspended particulate matter measuring 10 microns or less in diameter, and includes a complex mixture of man-made and natural substances including sulfates, nitrates, metals, elemental carbon, sea salt, soil, organics, and other materials. PM_{10} may have adverse health impacts because these microscopic particles can penetrate the respiratory system. In some cases, the particulates themselves may cause actual damage to the alveoli of the lungs or they may contain adsorbed substances that are injurious.

Ambient PM_{10} concentrations have been primarily a localized issue of concern in the southern portion of the County, including the City, Paso Robles, Morro Bay, and Nipomo. Exceedances in these areas are the major impetus for the County's nonattainment designation for the state PM_{10} standard. The major sources for PM_{10} are mineral quarries, grading, demolition, agricultural tilling, road dust, and vehicle exhaust.

Table 4.1-1 State and National Criteria Air Pollutant Standards, Effects, and Sources

Air Pollutant	State Standard (concentration/ averaging time)	Federal Primary Standard (concentration/ averaging time)	Most Relevant Effects
Ozone	0.09 ppm, 1-hour average 0.070 ppm, 8-hour	0.075 ppm, 8-hour average*	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals and (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; and (d) Property damage.
Carbon Monoxide	9.0 ppm, 8-hour average 20 ppm, 1-hour average	9 ppm, 8-hour average 35 ppm, 1-hour average	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses.
Nitrogen Dioxide	0.18 ppm, 1-hour average, 0.03 ppm, annual average	0.053 ppm 0.10 ppm 98th percentile, 3-year average	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration.
Sulfur Dioxide	0.04 ppm, 24-hour average 0.25 ppm, 1-hour average	0.075 ppm, 1-hour, 99th percentile 3-year average	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
Respirable Particulate Matter (PM_{10})	20 µg/m^3, annual arithmetic mean 50 µg/m^3, 24-hour average	150 µg/m^3, 24-hour average	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease and (b) Excess seasonal declines in pulmonary function, especially in children.
Fine Particulate Matter ($PM_{2.5}$)	12 µg/m^3, annual arithmetic mean	15 µg/m^3, annual arithmetic mean 35 µg/m^3, 24-hour average	Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease, elderly, and children.
Sulfates	25 µg/m^3, 24-hour average	No federal standard	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and (f) Property damage due to corrosion.

Table 4.1-1 State and National Criteria Air Pollutant Standards, Effects, and Sources

Air Pollutant	State Standard (concentration/ averaging time)	Federal Primary Standard (concentration/ averaging time)	Most Relevant Effects
Lead	1.5 µg/m^3, 30-day average	0.15 µg/m^3, roll 3-month average 1.5 µg/m^3, calendar quarter	(a) Increased body burden and (b) Impairment of blood formation and nerve conduction.
Visibility-Reducing Particles	In sufficient amount to give an extinction coefficient of 0.23 per kilometers (visual range of 10 miles or more) with relative humidity less than 70%, 8-hour average (10 a.m. to 6 p.m. PST)	No federal standard	Reduction of visibility, aesthetic impact and impacts due to particulates (see above).
Hydrogen Sulfide	0.03 ppm, 1-hour average	No federal standard	Odor annoyance.
Vinyl Chloride	0.01 ppm, 24-hour average	No federal standard	Known carcinogen.

Note: µg/m3 = micrograms per cubic meter. * Effective May 27, 2008. Was 0.08 ppm prior
Source: SLOAPCD web site 2012 http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

The $PM_{2.5}$ standard is a subset of the PM_{10} standard. In addition to the health effects of PM_{10}, exposure to $PM_{2.5}$ may result in increased respiratory symptoms, disease, and decreased lung function.

In addition to primary criteria pollutants, the SLOAPCD monitors ozone at various locations throughout the region. Unlike primary criteria pollutants emitted directly from an emissions source, ozone is a secondary pollutant. Ozone is formed in the atmosphere through the photochemical reaction of volatile organic compounds (VOC), NO_x, oxygen, and other hydrocarbon materials with sunlight.

Ozone is a deep lung irritant, causing the passages to become inflamed and swollen. Exposure to ozone produces alterations in respiration; the most characteristic of which are shallow, rapid breathing and a decrease in pulmonary performance. Ozone also reduces the respiratory system's ability to fight infection and remove foreign particles.

Ozone exists both at ground level, where it is considered a pollutant with harmful effects, and at higher elevations in the lower portion of the stratosphere from approximately 13 to 40 km above Earth, where, providing a beneficial effect, it absorbs more than 95 percent of the Sun's ultraviolet light.

Ground-level ambient ozone is primarily generated by combustion byproducts reacting with sunlight and ambient conditions. Areas where ozone violations primarily occur are the northern and eastern portions of the County, where summer temperatures are high. Ozone levels exceeding the state standard have been measured in Paso Robles, the Carrizo Plain, and Atascadero in recent years. In addition, ozone is transported into the County from upwind regions of the state.

In the County, ozone and PM_{10} are the pollutants of main concern, since concentrations exceeding state health-based standards occur here. For this reason, the County has been designated as a non-attainment area for the state PM_{10} and ozone standards.

Table 4.1-2 shows the last three years of monitoring data for ozone and PM for the Higuera Street monitoring station, located about 0.5 miles northwest of the Project Site. Note that the ozone standards were exceeded for one to two days in 2008 and there were no exceedances in 2007 and 2006. PM standards were exceeded in 2006, with no exceedances in 2007 and 2008. Table 4.1-3 shows the attainment status of criteria pollutants in the Air Basin.

Meteorological data from the Higuera Street station was obtained from the CARB for the year 2008 and plotted into a wind rose to demonstrate the predominant wind direction and speeds at the Project Site. Figure 4.1-1 shows the resulting wind rose. The predominant wind direction is from the northwest.

Table 4.1-2 Monitoring Results at the Higuera Street Monitoring Station

Pollutant	Standard	2006	2007	2008
Ozone				
Max 1-hr concentration (ppm)		0.070	0.071	0.109
No. days exceeded: State	> 0.09 ppm/1-hr	0	0	1
Max 8-hr concentration (ppm)		0.060	0.064	0.076
No. days exceeded: State	> 0.07 ppm/8-hr	0	0	2
No. days exceeded: Federal	> 0.075 ppm/8-hr	0	0	1
Particulates (PM_{10})				
Max 24-hr concentration (µg/m3)		72	32	42.2
No. days exceeded: State	> 50 µg/m3/24-hr	5.8	0	0
No. days exceeded: Federal	> 150 µg/m3/24-hr	0	0	0
Particulates (PM2.5)				
Max 24-hr concentration (µg/m3)		24.2	19.2	18.4
No. days exceeded: Federal	> 35 µg/m3/24-hr	0	0	-

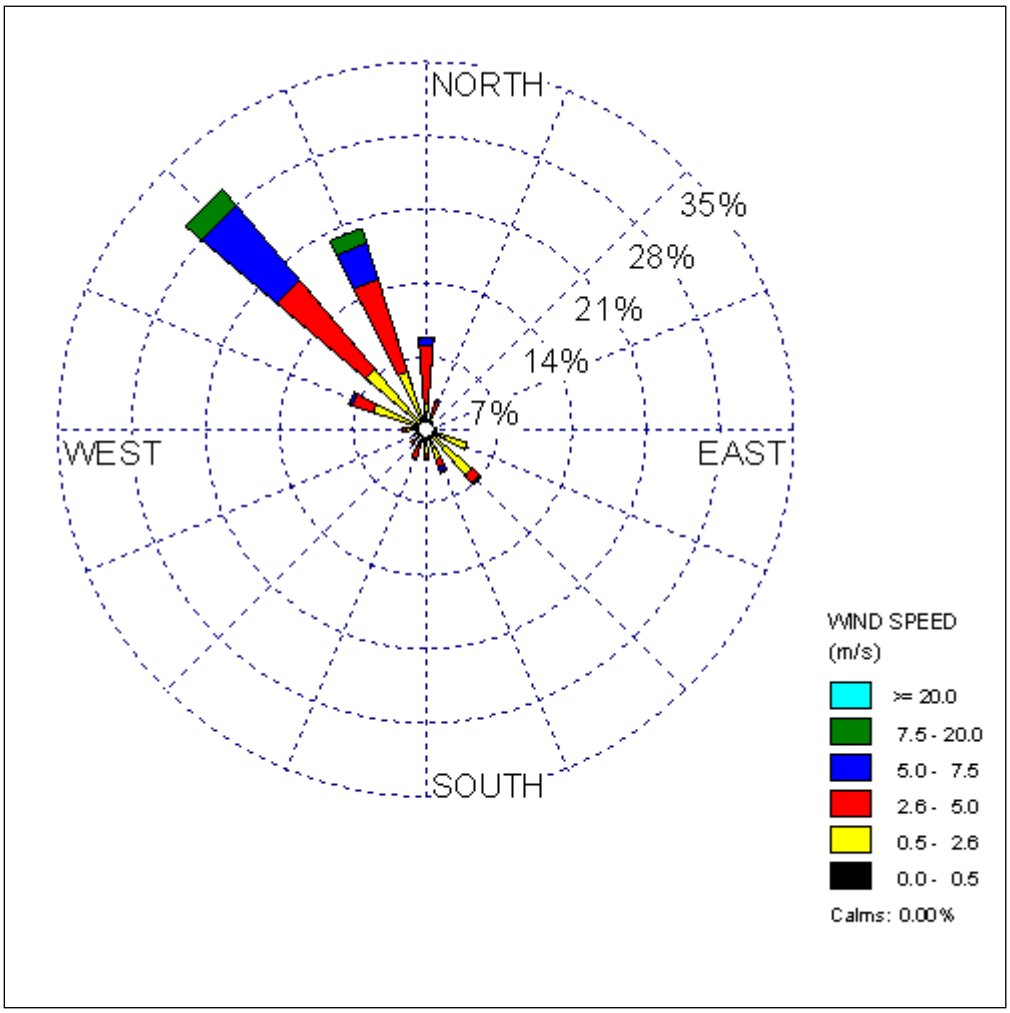
Notes: The Higuera Station only monitors ozone and PM
Source: CARB website Air Quality Data

Table 4.1-3 Attainment Status of Criteria Pollutants in the South Central Coast Air Basin

Pollutant	State	Federal
O_3 - 1 hour	Nonattainment	Standard Revoked June 2005
O_3 - 8 hour	Nonattainment	Nonattainment Eastern SLO Attainment Western SLO
PM_{10}	Nonattainment	Attainment/Unclassified
$PM_{2.5}$	Attainment	Attainment/Unclassified
CO	Attainment	Unclassified
NO_2	Attainment	Unclassified
SO_2	Attainment	Unclassified
Lead	Attainment	No Attainment Information
All others	Attainment/Unclassified	No standards

Source: SLOAPCD website

Figure 4.1-1 Higuera Street Meteorological Station Wind Rose - 2008



Note: Wind rose shows the direction that the wind is coming from.
Source: CARB meteorological data, 2008

4.1.1.2 Countywide Emissions Inventory

This section provides a summary of the countywide emission inventory.

Criteria Pollutants

On a regional basis, ozone is the criteria pollutant of greatest concern in the County, particularly within the Coastal Plateau. Ozone is a secondary pollutant, formed in the atmosphere by complex photochemical reactions involving the precursor pollutants of nitrogen oxides (NO_x), reactive organic gases (ROG), and sunlight. The amount of ozone formed is dependent upon both the ambient concentration of the chemical precursors and the intensity and duration of sunlight. Consequently, ambient ozone concentration tends to vary seasonally with the weather.

NO_x is emitted primarily from the combustion of fossil fuels; ROG emissions are also generated by fossil fuel combustion and through the evaporation of petroleum products. Emissions of ROG and NO_x are fairly equally divided between mobile and stationary sources in the County. Motor vehicles and electrical generation produce the majority of NO_x emissions.

Local concentrations of inert (non-reactive) pollutants (carbon monoxide, ozone, PM_{10}) are primarily influenced by nearby sources of emissions and, thus, vary considerably between monitoring stations. SO_2 emissions are mainly concentrated around areas where large quantities of fossil fuels are either burned in electrical production or where petroleum products are refined (i.e., SO_2 levels at the Nipomo Mesa and the Morro Bay power plant).

Every three years the District performs an emissions inventory for the majority of permitted sources. The last complete inventory was conducted for the year 2007 emissions; Table 4.1-4 shows these emissions for ozone precursors and particulate matter. As seen in the table, the largest sources of ozone precursors are on-road vehicles, other mobile sources, and wildfires. The largest sources of particulate matter are wildfires, road dust, construction and demolition, and residential fuel combustion.

Table 4.1-4 San Luis Obispo County Ozone Precursors and PM Emissions by Source

Emission Sources				
Ozone Precursors	**ROG (tpy)**	**ROG %**	**NOx (tpy)**	**NOx %**
Fuel Combustion	64	1%	586	4%
Waste Disposal	8.1	0%	1.3	0%
Cleaning/Surface Coating	1,023	11%	0.0	0%
Petroleum Production and Marketing	372	4%	13	0%
Industrial Processes	101	1%	37	0%
Solvent Evaporation	604	6%	0.0	0%
Miscellaneous Processes	1,445	15%	258	2%
On-Road Motor Vehicles	2,623	27%	4,448	33%
Other Mobile Sources	1,837	19%	7,563	56%
Wildfires	1,581	16%	715	5%
Total Ozone Precursor	9,657		13,620	
Particulate Matter	**PM10 (tpy)**	**PM10 %**	**PM2.5 (tpy)**	**PM2.5 %**
Wildfires	2,307	20%	1,956	46%
Ships & Commercial Boats	366	3%	356	8%
Cooking	123	1%	74	2%
Waste Burning & Disposal	34	0%	32	1%
Fugitive Wind Blown Dust	639	6%	106	2%
Unpaved Road Dust	3,226	28%	321	7%
Paved Road Dust	1,789	16%	266	6%
Construction & Demolition	1,486	13%	150	3%
Livestock	723	6%	150	3%

Table 4.1-4 San Luis Obispo County Ozone Precursors and PM Emissions by Source

Emission Sources				
Residential Fuel Combustion	631	6%	610	14%
Mineral Processes	87	1%	-	-
Farm Equipment	-	-	62	1%
Off-Road Equipment	-	-	91	2%
On-Road Motor Vehicle	-	-	114	3%
Petroleum Refining	-	-	9	0%
Total PM	11,410		4,298	

Source SLOAPCD 2007 Emission Inventory

Countywide Air Toxics

Air toxics are substances that may cause or contribute to an increase in risk of cancer or serious illness, such as respiratory disease. A new, nationwide, air toxics control program was provided for within the federal 1990 Clean Air Act Amendments (CAAA). The federal program focuses on larger industrial sources that are of the highest national priority, such as chemical manufacturers. State and local air pollution control agencies adopt measures to minimize Californians' exposure to toxic air contaminants (TAC).

The State of California regulates TAC in several ways. The Toxic Air Contaminant Identification and Control Act (AB1807-1983) created a program to reduce the health risks from air toxics. This law expanded CARB authority to evaluate and control air toxics. An additional state law, the Air Toxics "Hot Spots" Information and Assessment Act (AB2588-1987) supplements the original legislation by requiring a statewide air toxics inventory and by notifying local residents of significant risks from nearby sources. A 1992 amendment to the law (SB1731) requires that risks be reduced from these sources.

The CARB has identified asbestos as a TAC. In its natural state, asbestos occurs throughout many areas. Serpentine is a very common rock type in California and was identified by the CARB as having the potential to contain naturally occurring asbestos. Under the CARB Air Toxics Control Measure (ATCM) for construction, grading, quarrying, and surface mining operations, prior to any grading activities at a site, a geologic analysis is necessary to determine if serpentine rock is present. Grading projects larger than 1 acre in serpentine rock would require prior SLOAPCD approval of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program.

Serpentine rock is found in many regions of the County, including coastal areas, as far inland as Paso Robles, and the extreme eastern area along the San Andreas Fault. Figure 4.1-2 shows areas subject to the naturally occurring asbestos ATCM requirements. The Project Site is within one of these general areas that may include asbestos-containing rock.

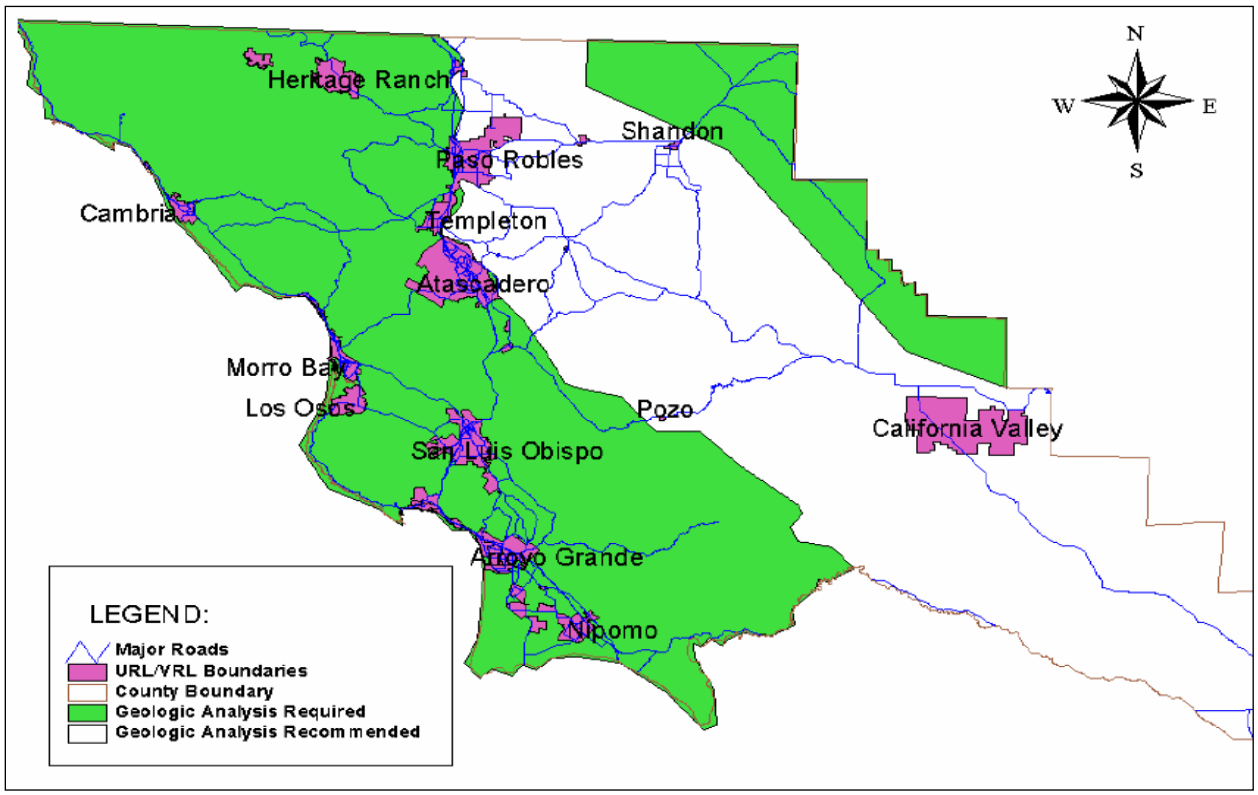
Greenhouse Gases

The California legislature concluded that global climate change poses significant adverse effects to the environment (Assembly Bill [AB] 32, the California Global Warming Solutions Act of 2006). In addition, the global scientific community has expressed a high confidence that climate

change is man-made and that climate change could lead to adverse changes around the globe (Intergovernmental Panel on Climate Change Climate [IPCC] 2007). Consequently, the following sections analyze potential climate change emissions that may occur while implementing the Project.

Global climate change is a change in the average weather of the earth, measured by wind patterns, storms, precipitation, and temperature. Although historical records show that dramatic fluctuations in temperature have occurred in the past, such as during previous ice ages, some data indicate that the current temperature record differs from previous climate changes in both rate and magnitude (AEP 2007).

Figure 4.1-2 Areas Requiring Asbestos ATCM Geological Analysis and Requirements



Source: SLOAPCD Website

Global climate change caused by greenhouse gases (GHG) is currently one of the most widely debated scientific, economic, and political issues in the United States. Although many groups agree with the conclusions of the IPCC and the CARB, many groups feel the work is lacking. However, in terms of CEQA analysis, jurisdictions have developed significance criteria and directed CEQA documents to analyze emissions of GHG.

Climate Change Background

GHG include any gas that absorbs infrared radiation in the atmosphere. GHG include, but are not limited to, water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and

fluorocarbons. The warming potential of different types of GHG varies. The global warming potential (GWP) is the relative measure of how much a greenhouse gas traps in the atmosphere. It compares the amount of heat trapped by a certain mass of the gas in question to the amount of the heat trapped by a similar mass of CO_2. A GWP is calculated over a specific time interval, commonly 20, 100, or 500 years. GWP is expressed as a factor of CO_2 (whose GWP is standardized to 1). For example, the 20 year GWP of methane is 72, which means if the same mass of methane and CO_2 were introduced into the atmosphere, that methane will trap 72 times more heat than the CO_2 over the next 20 years. Since GHG absorb different amounts of heat, a common reference gas, CO_2, is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as CO_2 equivalent, or CO_2e. CO_2e is the amount of GHG emitted multiplied by the global warming potential. The global warming potential of CO_2 is therefore defined as one.

The increase of GHG emissions has lead to the trapping and buildup of heat in the atmosphere near the earth's surface, commonly known as the greenhouse effect. Put another way, the amount of GHG in the atmosphere regulates the earth's temperature. Without natural GHG, the earth's surface would be cooler (CARB 2006). Emissions from human activities, such as electricity production and vehicle operation, have increased the emissions of these gases into the atmosphere. Emissions of GHG in excess of natural ambient concentrations are thought to be responsible for the enhancement of the greenhouse effect and acceleration of climate change. Unlike criteria air pollutants and TAC, which are pollutants of regional and local concern, GHG are global pollutants and climate change is a global issue.

Climate changes could lead to various changes in weather and rainfall patterns over time. According to the CARB, potential climate change impacts in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CARB 2006, 2007). Several recent studies have explored the possible negative consequences of climate change in California. These reports acknowledge that climate scientists' understanding of the complex global climate system and the interplay of the various internal and external factors that affect climate change remain too limited to yield scientifically valid conclusions on such a localized scale. Substantial work at the national and international level has evaluated climatic impacts, but far less information is available on regional and local impacts. In addition, projecting regional impacts of climate change and variability relies on large-scale scenarios of changing climate parameters, using information that is typically at too coarse a scale to accurately assess regional impacts (Kiparsky 2003).

The following example illustrates the difficulty of analyzing climate change on a regional or local level. Climate change modeling consistently predicts increasing temperatures; however, the ways that increasing temperatures will affect precipitation is not well understood. Studies have found that "considerable uncertainty about precise impacts of climate change on California hydrology and water resources will remain until we have more precise and consistent information about how precipitation patterns, timing, and intensity will change" (Kiparsky 2003).

Even assuming that climate change leads to long-term increases in precipitation, climate change impact analysis is further complicated because no studies have identified or quantified the runoff impacts in particular watersheds of an increase in precipitation. Also, little is known about the

effects on groundwater recharge and water quality. Higher rainfall could lead to greater groundwater recharge, although reductions in spring runoff and higher evapotranspiration could reduce the amount of water available for recharge (Kiparsky 2003). The Department of Water Resources and the California Energy Commission have also noted the uncertain effect of climate change on water supply. In light of this dearth of accurate scientific information, analyzing the potential impacts a project would have on the regional or local environment is inherently complicated, and only limited conclusions can be drawn. Therefore, the analysis conducted in this report quantifies the GHG emissions levels but does not attempt to predict actual impacts associated with these emissions.

Types of Greenhouse Gases

Water vapor is the most abundant and variable GHG in the atmosphere. It is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Evaporation from the oceans is the main source of water vapor (approximately 85 percent). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves (AEP 2007).

Carbon dioxide is an odorless, colorless GHG with a GWP of 1. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanoes. Man-made sources of carbon dioxide include burning fuels, such as coal, oil, natural gas, and wood. The interaction of man-made sources and natural sources of GHG and how they contribute to the atmospheric levels of GHG is a complex issue. Current concentrations of CO_2 in the atmosphere are approximately 379 parts per million (ppm); some say that concentrations may increase to 1,130 CO_2e ppm by the year 2100 as a direct result of man-made sources (IPCC 2007). Some predict that this will result in an average global temperature rise of at least 7.2 degrees Fahrenheit by the year 2100 (IPCC 2007).

Methane, a gas, is the main component of natural gas used in homes and has a GWP of approximately 21. Decaying organic matter in forests and oceans is a natural source of methane. Man-made sources include landfills, fermentation of manure, and cattle. Geological deposits known as natural gas fields contain methane, which is extracted for fuel.

Nitrous oxide (N_2O), also known as laughing gas, is a colorless gas with a GWP of approximately 310. Nitrous oxide is produced by microbial processes in soil and water, including reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (e.g., nylon production, nitric acid production) also emit N_2O. Nitrous oxide is used in rocket engines, as an aerosol spray propellant, and in race cars. During combustion, NO_x (NO_x is a generic term for mono-nitrogen oxides, NO and NO_2) is produced as a criteria pollutant and is not the same as N_2O. Very small quantities of N_2O may be formed during fuel combustion by the reaction of nitrogen and oxygen (API 2004).

Chlorofluorocarbons are synthetic gases formed by replacing all hydrogen atoms in methane or ethane with chlorine or fluorine atoms. Chlorofluorocarbons are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at the earth's surface). Chlorofluorocarbons were first synthesized in 1928 as refrigerants, aerosol propellants, and cleaning solvents. However, they destroy stratospheric ozone, and the Montreal Protocol stopped

their production in the 1990s. Fluorocarbons have a GWP between 140 and 11,700, with HFC-152a at the low end and HFC-23 at the higher end.

Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. Its GWP of 23,900 is the highest of any gas. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Table 4.1-5 shows a range of gases that contribute to GHG warming with their associated GWP. The table also shows their estimated lifetime in the atmosphere and the range in GWP over 20, 100, and 500 years.

Although ozone is a GHG, unlike the other GHG, ozone in the troposphere is relatively short-lived and therefore is not global in nature. According to the CARB, it is difficult to determine accurately the contribution of ozone precursors (NO_x and VOC) to global climate change (CARB 2006).

Table 4.1-5 Global Warming Potential of Various Gases

Gas	Life in the Atmosphere	GWP (average)
Carbon Dioxide	50-200	1
Methane	12	21
Nitrous Oxide	120	310
HFC-23	264	11,700
HFC-125	32.6	2,800
HFC-134a	14.6	1,300
HFC-143a	48.3	3,800
HFC-152a	1.5	140
HFC-227ea	36.5	2,900
HFC-236fa	209	6,300
HFC-4310mee	17.1	1,300
CF4	50,000	6,500
C2F6	10,000	9,200
C4F10	2,600	7,000
C6F14	3,200	7,400
SF6	3,200	23,900

Source: EPA 2007

Calculation of Greenhouse Gas Emissions

The quantification of GHG emissions associated with a project can be complex and relies on a number of assumptions. GHG emissions are global because emissions from one location could affect the entire planet, and they are not limited to local impacts. Therefore, off-site impacts, such as vehicle emissions and other associated transportation emissions, are included.

Emissions are generally classified as either direct or indirect. Direct emissions are associated with the production of GHG emissions at the Project Site. These include the combustion of

natural gas in heaters or stoves, the combustion of fuel in engines and construction vehicles, and fugitive emissions from valves and connections, which include methane as a component.

Indirect emissions include the emissions from vehicles (both gasoline and diesel) delivering materials and equipment to the site and the use of electricity. Electricity also produces GHG emissions because fossil fuels generate some electricity.

This report utilizes the California Climate Action Registry General Reporting Protocol and the CARB Compendium of Emission Factors and Methods to Support Mandatory Reporting of Greenhouse Gas Emissions as methods to calculate GHG emissions (CCAR 2009; CARB 2007c).

To quantify the emissions associated with electrical generation, the resource mix for a particular area must be determined. The resource mix is the proportion of electricity generated from different sources. Electricity generated from coal or oil combustion produces greater GHG emissions than electricity generated from natural gas combustion because of the higher carbon content of coal and oil. Electricity generated from wind turbines, hydroelectric dams, or nuclear power is assigned zero greenhouse gas emissions. Although these sources have some GHG emissions associated with the manufacture of wind generators, the mining and enrichment of uranium, and the displacement of forest areas for reservoirs, these emissions are not included in the lifecycle analysis because they are assumed to be relatively small compared to the electricity generated. For example, estimates of nuclear power GHG emissions associated with uranium mining and enrichment range up to approximately 60 pounds per megawatt hour (lbs/MWh), or approximately 5 percent of natural gas turbine GHG emissions (Canada 1998).

Detailed information on the power generation plants, their contribution to the area electricity resource mix, and their associated emissions have been developed by the Environmental Protection Agency (EPA) in the Emissions & Generation Resource Integrated Database (eGRID). This analysis used the most recent version of eGRID, released in April 2007 (EPA 2007b). eGRID is developed from a variety of data collected by the EPA, the Energy Information Administration, and the Federal Energy Regulatory Commission.

eGRID includes electricity generated from coal, gas, oil, other fossil fuels (e.g., solid waste, tire-derived fuel, hydrogen, methanol, coke gas), biomass (e.g., wood, paper, agricultural byproducts, landfill gas, digester gas), wind, and nuclear, hydroelectric, geothermal, and solar resources. Each of these is assigned criteria, as well as GHG emission levels, based on facility specifics. Wind, biomass, and nuclear, hydroelectric, geothermal, and solar resources are assigned zero GHG emissions. eGRID assigns zero CO_2 emissions to generation from the combustion of all biomass because these organic materials would otherwise release CO_2 (or other GHG) into the atmosphere through natural decomposition. The other fuels are assigned GHG emissions levels based on the fuel carbon content.

This report analyzed the eGRID database to assign a GHG emissions level to electricity generated for the operations. Table 4.1-6 shows the resource mix and estimated GHG emissions for a range of areas. Approximately half of the electricity in the U.S. is generated from coal. Nationwide, GHG emissions from all electricity production sources are approximately 1,363 lbs/MWh. The emissions rate is lower in western states primarily because of increased use of

hydroelectric resources and gas. The California Independent Service Operator (CalISO) area (which includes some generation outside of California) has a low GHG emission rate of approximately 687 lbs/MWh due to the use of hydroelectric, nuclear, and renewable energy sources.

Table 4.1-6 Electricity Generation Resource Mix and Greenhouse Gas Emissions

Resource Mix[a]	United States	Western States (WECC)	CalISO Service Area[b]
Coal	50.2	34.2	1.2
Oil	3.0	0.5	1.2
Gas	17.4	26.3	51.1
Nuclear	20.0	9.9	16.8
Hydro	6.6	24.3	17.3
Biomass	1.4	1.3	3.2
Wind	0.3	0.9	2.4
Solar	0.0	0.1	0.3
Geo	0.3	2.0	5.5
Other Fossil	0.5	0.3	0.9
Other	0.1	0.0	0.0
Non-Renewables	91.3	71.3	71.3
Renewables	8.7	28.7	28.7
Non-Hydro Renewables	2.1	4.3	11.4
CO_2 Rate, lb/MWh	1363	1107	687

a. Resource Mix is the percentage of total mega-watt hours.
b. The Mohave Generating Station is not included in CalISO Service Areas because it shut down in 2005.
Source: eGRID database with modifications and updates

Since the Mohave Generating Station shut down in 2005, it was removed from the eGRID database and calculations.

The GHG emission rate from CalISO electricity is approximately 45 percent less than the rate associated with direct natural gas combustion due to the electricity resource mix including resources that do not create GHG emissions (e.g., hydroelectric, nuclear, and renewables).

Indirect GHG emissions are also associated with water use, since electricity would be necessary to pump and treat water used at the Project Site.

Indirect GHG emissions associated with trash hauling and other services that might visit the Project Site are incorporated through the inclusion of the travel of diesel trucks that would visit and service the Project Site.

National Greenhouse Gas Emissions

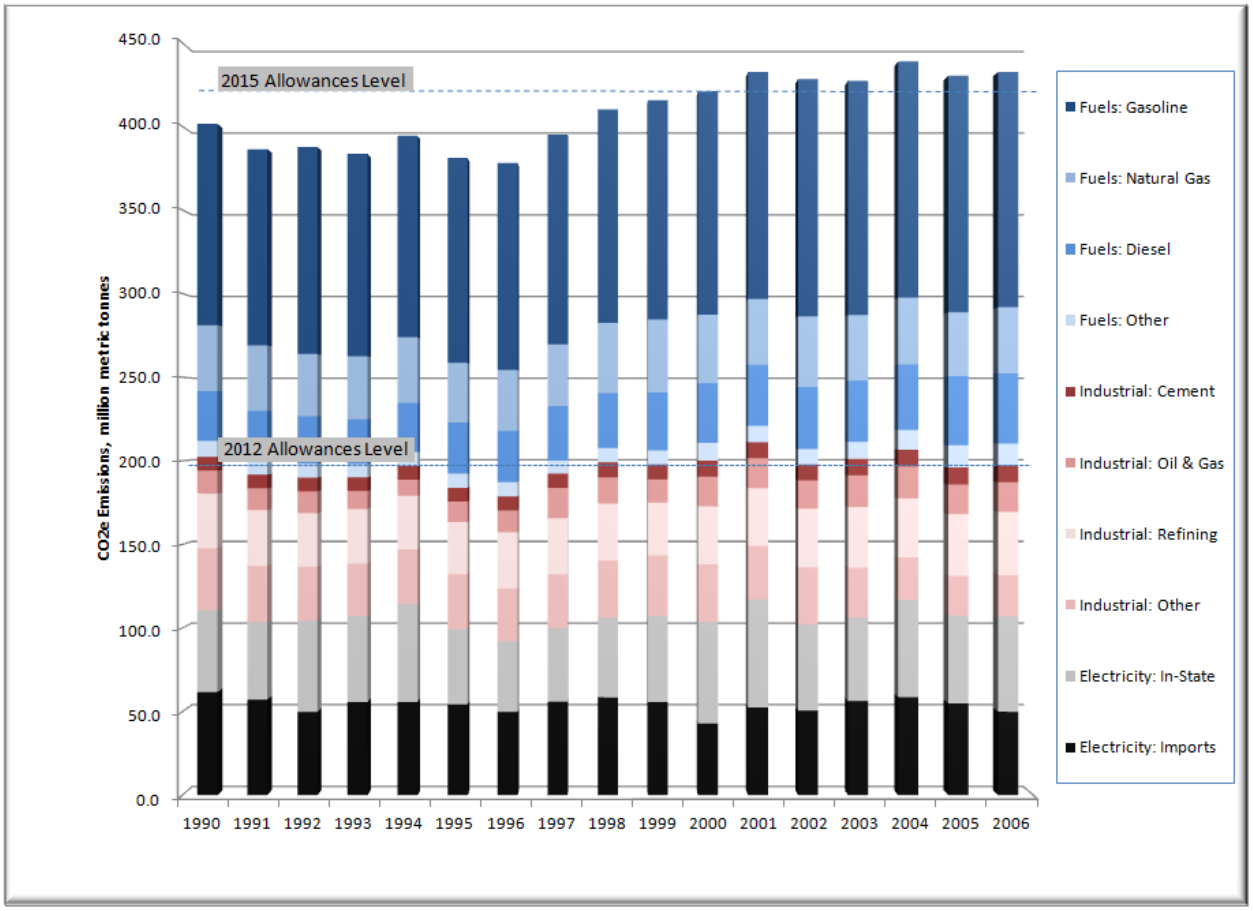
Fossil fuel combustion is responsible for the vast majority of the U.S.'s GHG emissions, and CO_2 is the primary GHG. In 2005, total U.S. GHG emissions were 7.26 billion metric tons of carbon equivalent (MMTCE); 84 percent of which were CO_2 emissions (EPA 2007). In 2005,

approximately 33 percent of GHG emissions were associated with transportation and approximately 41 percent were associated with electricity generation.

Statewide Greenhouse Gas Emissions

With a population of 33 million, California is the most populous state in the U.S. In 2004, California produced 492 MMTCE of GHG emissions (CARB 2008b). Overall, 81 percent of California's emissions are CO_2 from fossil fuel combustion (CARB 2008b). The transportation sector is the single largest contributor of California's GHG emissions, producing 41 percent of the state's total GHG emissions in 2004. In contrast, electrical generation produced more than half that, at 22 percent. Nonetheless, California ranks fourth lowest of the 50 states in CO_2 emissions per capita. Figure 4.1-3 shows the breakdown of California GHG emissions since 1990.

Figure 4.1-3 California Greenhouse Gas Emissions



Source: CARB 2009, Allowance levels shown for Cap-and-Trade legislation

Local Greenhouse Gas Emissions

In July 2008, the County Board of Supervisors made a commitment to calculate San Luis Obispo County's contribution to global climate change through the development of an Energywise Plan (Climate Action Plan), which it adopted on November 22, 2011. The GHG Inventory estimates

that the unincorporated areas of the County emitted approximately 917,700 metric tons of CO_2-equivalent emissions in the baseline year 2006. The transportation sector was by far the largest contributor to emissions (40 percent). Emissions from the commercial/industrial and residential sectors accounted for 24 and 15 percent of the total, respectively. Emissions from other sources, including livestock, select aircraft operations, and agricultural equipment, comprised the remaining 21 percent of the total.

4.1.1.3 Current Project Site Emissions

As detailed in Chapter 2.0, Project Description, current activity levels at the Project Site are minimal, with deliveries and visits to the site occurring sporadically. For example, visits by contractors to inspect netting enclosures and complete routine maintenance activities occur two to four times per month (up to 48 trips times per year), and two persons travel approximately 20 days per year (up to 40 trips per year) for groundwater, stormwater, and surface water monitoring. Additionally, an average of one truck per quarter-year (four trips per year) takes place to haul debris. Some additional activities may also occur due to on-site backhoe and generator operations possibly related to hauling debris.

Table 4.1-7 summarizes the emissions from the current Project Site-related activities. The table includes both criteria emissions and greenhouse gas emissions. Calculations are shown in Appendix B under the current emissions section.

Table 4.1-7 Current Activities Emissions

Activity	Criteria Pollutants						GHG tons		
	CO	ROG	NOx	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O
Peak Day, Pounds Per Day									
Off-site Vehicle Travel	1.20	0.10	0.55	0.00	11.46	2.44	-	-	-
On-site Equipment	4.79	1.34	8.43	0.01	0.71	0.70	-	-	-
On-site Fugitive Dust	0.00	0.00	0.00	0.00	10.11	1.45	-	-	-
Total	5.99	1.44	8.98	0.01	22.28	4.59	-	-	-
Annual, Tons Per Year									
Off-site Vehicle Travel	0.01	0.001	0.00	0.00	0.032	0.007	0.86	0.001	0.019
On-site Equipment	0.01	0.003	0.02	0.00	0.001	0.001	1.27	0.002	0.005
On-site Fugitive Dust	0.00	0.000	0.00	0.00	0.22	0.03	0.00	0.000	0.000
Total	0.02	0.003	0.02	0.00	0.25	0.04	2.13	0.003	0.024

Note: Assumes on-site emissions associated with a backhoe and generator operating 4 days per year.

4.1.2 Regulatory Setting

Federal, state, and local agencies have established standards and regulations that govern the Project. The following sections summarize the regulatory settings for air quality that apply to new development within the local air basin and the historic and most recent efforts on addressing GHG emissions.

4.1.2.1 Air Quality

Federal Regulations

The Clean Air Act of 1970 directs attainment and maintenance of the National Ambient Air Quality Standards (NAAQS). The 1990 Amendments to this Act included new provisions that address air pollutant emissions that affect local, regional, and global air quality. The EPA is responsible for implementing the Clean Air Act and establishing the NAAQS for criteria pollutants. In 1997, the EPA adopted revisions to the Ozone and Particulate Matter Standards in the Clean Air Act. These revisions included 8-hour ozone standards and particulate matter standards for $PM_{2.5}$. However, in May 1999 the U.S. Court of Appeals for the District of Columbia remanded the ozone standards. In January 2001, the EPA issued a "Proposed Response to Remand" that declared that the revised ozone standard should remain at 0.08 ppm, as established with the 1997 revisions. In March 2001, the U.S. Supreme Court upheld the constitutionality of the Clean Air Act as the EPA interpreted it, setting health-protective air quality standards for ground-level ozone and particulate matter. In April 2004, the EPA issued its Final Nonattainment Area Designations for the Eight-Hour Ozone Standard.

Air Quality Management Plan

Under the provisions of the Clean Air Act, the EPA requires each state that has not attained the NAAQS to prepare an Air Quality Management Plan, which is a separate local plan detailing how to meet the federal standards. The governor of each state designates a local agency to prepare these plans, which are then incorporated into a State Implementation Plan.

Emission Standards for Non-Road Diesel Engines

To reduce emissions from non-road diesel equipment, the EPA established a series of increasingly strict emission standards for new non-road diesel engines. Tier 1 standards were phased in from 1996 to 2000 (year of manufacture), depending on the engine horsepower category. Tier 2 standards were phased in from 2001 to 2006. Tier 3 standards were phased in from 2006 to 2008. Tier 4 standards, which likely will require add-on emission control equipment, will be phased in from 2008 until 2015. These standards will apply to construction equipment.

State Regulations

California Air Resources Board

The California Air Resources Board (CARB) has jurisdiction over all air pollutant sources in the state; it delegates responsibility for stationary sources to local air districts and retains authority over emissions from mobile sources. The County's local air district is the SLOAPCD. The CARB establishes the California Ambient Air Quality Standards (CAAQS). Comparing the criteria pollutant concentrations in ambient air to the CAAQS determines state attainment status for criteria pollutants in a given region. The CARB, in partnership with local California air

quality management districts, developed a pollutant-monitoring network to aid attainment of CAAQS. The network consists of numerous monitoring stations throughout California that monitor and report various pollutants' concentrations in ambient air.

California Clean Air Act
The California Clear Air Act (CCAA) went into effect in January 1, 1989, and was amended in 1992 (California Health and Safety Code, Division 26). The CCAA mandates achieving the health-based CAAQS at the earliest practical date.

Air Toxics "Hot Spots" Information and Assessment Act of 1987
The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB2588) requires an inventory of air toxics emissions from individual facilities, an assessment of health risk, and notification of potential significant health risk (California Health & Safety Code, Division 26, Part 6).

California Diesel Fuel Regulations
With the California Diesel Fuel Regulations, the CARB set sulfur limitations for diesel fuel sold in California for use in on-road and off-road motor vehicles. The rule initially excluded harbor craft and intrastate locomotives, but it later included them with a 2004 rule amendment. Under this rule, diesel fuel used in motor vehicles, except harbor craft and intrastate locomotives, has been limited to 500-ppm sulfur since 1993. This sulfur limit was later reduced to 15-ppm, effective September 1, 2006.

4.1.2.2 Local

In 1967, California passed legislation that placed the primary responsibility for controlling air pollution at the local level. In April 1970, the San Luis Obispo County Board of Supervisors formed the SLOAPCD, which included a decision-making body known as the SLOAPCD Board of Directors. Over the past 30 years, the SLOAPCD has adopted and implemented nearly 100 rules and currently has nearly 1,070 individual permits and agricultural registrations, and it operates 850 facilities. In 1994, revisions to state law changed the composition of the Board of Directors to include all five County supervisors plus one city council member from each of the seven incorporated cities.

As part of the California Clean Air Act, the SLOAPCD is required to develop a plan to achieve and maintain the state ozone standard by the earliest practicable date. To this end, the SLOAPCD developed the Clean Air Plan (CAP). The latest CAP is dated 2001, adopted by the SLOAPCD at a hearing on March 26, 2002, and addresses state requirements by updating the 1991 CAP (SLOAPCD 2001). The 1991 CAP, adopted by the SLOAPCD in 1992, contained a comprehensive set of control measures designed to reduce ozone precursor emissions from a wide variety of stationary and mobile sources. The 2001 CAP, similar to the 1998 CAP, is mainly a continuation of the 1995 CAP and proposes no new control measures.

Control measures proposed in the CAP include vapor recovery, solvent content reduction, improved fuel combustion, fuel switching or electrification, chemical or catalytic reduction, reduced vehicle use, and new source reviews.

The SLOAPCD also issues annual reports that address issues such as air quality summaries for each year as well as air quality trends.

The SLOAPCD developed a number of rules that are potentially applicable to this Project, including:

- Rule 204 – Requirements (new source review);
- Rule 219 – Toxics new source review;
- Rule 401 – Visible emissions, limits on offsite dust opacity;
- Rule 402 – Nuisance;
- Rule 403 – Particulate matter emission standards;
- Rule 405 – Nitrogen oxides emission standards, limitations, and prohibitions;
- Rule 406 – Carbon monoxide emission standards and limitations;
- Rule 407 – Organic material emission standards;
- Rule 412 – Airborne toxic control measures;
- Rule 417 – Control of fugitive emissions of volatile organic compounds;
- Rule 419 – Petroleum pits, ponds, sumps, well cellars and wastewater separators;
- Rule 420 – Cutback asphalt paving materials;
- Rule 425 – Storage of volatile organic compounds;
- Rule 430 – Control of oxides of nitrogen from industrial, institutional, commercial boilers, steam generators, and process heaters;
- Rule 431 – Stationary internal combustion engines; and
- Rule 433 – Architectural coatings.

4.1.2.3 Greenhouse Gas Emissions Regulations

Federal Regulations

Clean Air Act

In the past, the U.S. EPA has not regulated GHG under the Clean Air Act. However, the U.S. Supreme Court recently held that the EPA can, and should, consider regulating motor-vehicle GHG emissions. In Massachusetts v. Environmental Protection Agency, 12 states and cities, including California, in conjunction with several environmental organizations sued to force the EPA to regulate GHG as a pollutant pursuant to the Clean Air Act (U.S. Supreme Court No. 05-1120; 127 S.Ct. 1438 (2007)). The Court ruled that GHG fit within the Clean Air Act's definition of a pollutant and that the EPA's reason for not regulating GHG was insufficiently grounded.

Mandatory reporting requirements for a number of industries are specified under 40 CFR Section 98. The final 40 CFR Section 98 applies to certain downstream facilities that emit GHG and to certain upstream suppliers of fossil fuels and industrial GHG. For suppliers, the GHG emissions reported are those that would result from combustion or use of the products supplied. The rule also includes provisions to ensure the accuracy of emissions data through monitoring, recordkeeping and verification requirements. The mandatory reporting requirements generally apply to facilities that produce more than 25,000 metric tonnes of CO_2 equivalent per year.

State Regulations and Programs

Executive Order S-3-05

The 2005 California Executive Order S-3-05 established the following GHG emission-reduction targets for California:

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

The Secretary of the California Environmental Protection Agency (CalEPA) is charged with coordinating oversight of efforts to meet these targets and formed the Climate Action Team to carry out the Order. Emission reduction strategies or programs developed by the Climate Action Team to meet the emission targets are outlined in a March 2006 report (CalEPA 2006). The Climate Action Team also provided strategies and input to the CARB Scoping Plan.

Assembly Bill 1493

In 2002, the legislature declared in AB 1493 (the Pavley regulations) that global warming was a matter of increasing concern for public health and the environment in the state. It cited several risks that California faces from climate change, including reduction in the state's water supply, increased air pollution due to higher temperatures, harm to agriculture, and increase in wildfires, damage to the coastline, and economic losses caused by higher food, water, energy, and insurance prices. Furthermore, the legislature stated that technological solutions for reducing GHG emissions would stimulate California's economy and provide jobs. Accordingly, AB 1493 required the CARB to develop and adopt the nation's first GHG emission standards for automobiles. The CARB responded by adopting CO_2-equivalent fleet average emission standards. The standards will be phased in from 2009 to 2016, reducing emissions by 22 percent in the "near term" (2009 to 2012) and 30 percent in the "mid-term" (2013 to 2016), as compared to 2002 fleets.

The legislature passed amendments to AB 1493 in September 2009. Implementation of AB 1493 requires a waiver from the EPA, which was granted in June 2009.

Assembly Bill 32

AB 32 codifies California's GHG emissions target and requires the state to reduce global warming emissions to 1990 levels by 2020. It further directs the CARB to enforce the statewide cap that would begin phasing in by 2012. AB 32 was signed and passed into law by Governor Arnold Schwarzenegger on September 27, 2006. Key milestones of AB 32 include:

- June 20, 2007 - Identification of "discrete early action GHG emission-reduction measures."
- January 1, 2008 - Identification of the 1990 baseline GHG emissions levels and approval of a statewide limit equivalent to that level. Adoption of reporting and verification requirements concerning GHG emissions.
- January 1, 2009 - Adoption of a scoping plan for achieving GHG emission reductions.
- January 1, 2010 - Adoption and enforcement of regulations to implement the actions.
- January 1, 2011 - Regulatory adoption of GHG emission limits and reduction measures.

- January 1, 2012 - GHG emission limits and reduction measures become enforceable.

Since the passage of AB 32, the CARB published 'Proposed Early Actions to Mitigate Climate Change in California'. This publication indicated that the issue of GHG emissions in CEQA and General Plans was being deferred for later action, so the publication did not discuss any early action measures generally related to CEQA or to land use decisions.

California Senate Bill 1368

In 2006, the California legislature passed SB 1368, which requires the Public Utilities Commission (PUC) to develop and adopt a "greenhouse gases emission performance standard" by March 1, 2007, for private electric utilities under its regulation. The PUC adopted an interim standard on January 25, 2007, requiring that all new long-term commitments for base load generation involve power plants that have emissions no greater than a combined cycle gas turbine plant. That level is established at 1,100 lbs/MWh of CO_2. The California Energy Commission has also adopted similar rules.

Senate Bill 97 – CEQA: Greenhouse Gas Emissions

In August 2007, Governor Schwarzenegger signed into law SB 97 – CEQA: Greenhouse Gas Emissions stating, "This bill advances a coordinated policy for reducing greenhouse gas emissions by directing the Office of Planning and Research and the Resources Agency to develop CEQA guidelines on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions." Specifically, SB 97 requires the Office of Planning and Research (OPR), by July 1, 2009, to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, including, but not limited to, effects associated with transportation or energy consumption. The Resources Agency would be required to certify and adopt those guidelines by January 1, 2010. OPR would be required to periodically update the guidelines to incorporate new information or criteria established by the CARB pursuant to the California Global Warming Solutions Act of 2006. SB 97 also identifies a limited number of types of projects that would be exempt under CEQA from analyzing GHG emissions.

On January 7, 2009, OPR issued its draft CEQA guidelines revisions pursuant to SB 97. On March 16, 2010, the Office of Administrative Law approved the Amendments and filed them with the Secretary of State for inclusion in the California Code of Regulations. The Amendments became effective on March 18, 2010.

Office of Planning and Research Technical Advisory and Preliminary Draft CEQA Guidelines Amendments for Greenhouse Gas Emissions

Consistent with SB 97, on March 18, 2010, the CEQA Guidelines were amended to include references to GHG emissions. The amendments offer guidance regarding the steps lead agencies should take to address climate change in their CEQA documents.

According to OPR, lead agencies should determine whether GHG may be generated by a proposed project, and if so, quantify or estimate the GHG emissions by type and source. Second, the lead agency must assess whether those emissions are individually or cumulatively significant. When assessing whether a project's effects on climate change are cumulatively considerable, even though its GHG contribution may be individually limited, the lead agency must consider the impact of the project when viewed in connection with the effects of past, current, and

probable future projects. Finally, if the lead agency determines that the GHG emissions from the proposed project are potentially significant, it must investigate and implement ways to avoid, reduce, or otherwise mitigate the impacts of those emissions.

The Amendments do not identify a threshold of significance for GHG emissions, nor do they prescribe assessment methodologies or specific mitigation measures. The Preliminary Amendments maintain CEQA discretion for lead agencies to establish thresholds of significance based on individual circumstances.

The guidelines developed by OPR provide the lead agency with discretion in determining what methodology is used in assessing the impacts of greenhouse gas emissions in the context of a particular project. This guidance is provided because the methodology for assessing GHG emissions is expected to evolve over time. The OPR guidance also states that the lead agency can rely on qualitative or other performance based standards for estimating the significance of GHG emissions.

California Air Resources Board: Scoping Plan

On December 11, 2008, the CARB adopted the Scoping Plan as directed by AB 32 (CARB 2008a). The Scoping Plan proposes a set of actions designed to reduce overall GHG emissions in California. The measures in the Scoping Plan approved by the CARB will be in place by 2012, with further implementation details and regulations to be developed, followed by the rulemaking process to meet the 2012 deadline. Measures include a cap-and-trade system, car standards, low carbon fuel standards, landfill gas control methods, energy efficiency, green buildings, renewable electricity standards, and refrigerant management programs.

California businesses are required to report their annual GHG emissions. This requirement is contained within sections 95100-95133 of Title 17, California Code of Regulations. It establishes who must report GHG emissions to the CARB and sets forth the requirements for measuring, calculating, reporting and verifying those emissions. The rule specifies a reporting threshold of 25,000 metric tonnes of CO_2.

California Climate Action Registry General Reporting Protocol

The California Climate Action Registry is a program of the Climate Action Reserve and serves as a voluntary GHG registry. The California Climate Action Registry was formed in 2001 when a group of chief executive officers, who were investing in energy efficiency projects that reduced their organizations' GHG emissions, asked the state to create a place to accurately report their emissions history. The California Climate Action Registry publishes a General Reporting Protocol, which provides the principles, approach, methodology, and procedures to estimate such emissions.

California Air Resource Board Proposed Mandatory Reporting Regulation

The CARB approved a mandatory reporting regulation in December 2007, which became effective January 2009 (which appears at sections 95100-95133 of title 17, California Code of Regulations), which requires the mandatory reporting of GHG emissions for specific industries emitting more than 25,000 metric tonnes of CO_2 equivalent per year.

California Air Resource Board Proposed Cap-and-Trade Regulation

The CARB has recently adopted a rule to develop a cap-and-trade type system applicable to specific industries that emit more than 25,000 metric tonnes of CO_2 equivalent per year. The AB 32 Scoping Plan identifies a cap-and-trade program as one of the strategies California will employ to reduce the greenhouse gas (GHG) emissions that cause climate change. Under cap-and-trade, an overall limit on GHG emissions from capped sectors will be established by the cap-and-trade program, and facilities subject to the cap will be able to trade permits (allowances) to emit GHGs. The program started on January 1, 2012, with an enforceable compliance obligation beginning with the 2013 GHG emissions from stationary sources. The petroleum and natural gas systems sector is covered starting in 2013 for stationary and related combustion, process vents and flare emissions if the total emissions from these sources exceed 25,000 metric tonnes of CO_2 equivalent per year. Suppliers of Natural Gas and transportation fuels are covered beginning in 2015 for combustion emissions from the total volume of natural gas delivered to non-covered entity or for transportation fuels.

Facilities subject to cap-and-trade are not automatically exempt from the significant evaluation under CEQA. Proposed projects must quantify GHG emissions and determine the significance of a project's environmental impact.

Local Regulations and Programs

City Climate Action Plan

The City adopted a Climate Action Plan in July 2012. The CAP includes a series of steps accomplished from 2010 thru 2012 including research, outreach, local policy audit, and strategy review. Research includes review of climate science, climate planning guidance documents, climate policy enacted in other jurisdictions, and existing local policies and programs already serving to reduce GHG emissions. Community strategies for climate change adaptation and reduction of GHG emissions include strategies related to (1) Buildings; (2) Renewable Energy; (3) Transportation & Land Use; (4) Water; (5) Solid Waste; and (6) Parks & Open Space. Strategies are also included that help reduce GHG emissions associated with City Government Operations. The adopted target is a reduction of community-wide GHG emissions to 1990 levels by 2020, consistent with AB 32. The City's community-wide emissions in 2005 totaled 264,240 $MTCO_2e$. Half of community emissions come from transportation sources.

County Climate Action Plan

The County Department of Planning and Building adopted a Climate Action Plan (CAP) on November 22, 2011, as a blueprint for reducing greenhouse gas emissions. Additionally, the Department aims to establish a Green Building Ordinance to improve energy efficiency in new and existing development. The CAP will focus on local actions to reduce GHG emissions through energy efficiencies, including: retrofitting existing buildings; reversing rural sprawl; and increasing use of non-fossil fuels such as solar and wind energy (SLOC 2011). The County inventory in 2010 is estimated to be 942,080 $MTCO_2e$ with 40 percent of GHG emissions coming from transportation sources.

City General Plan, Conservation, and Open Space Element

The City's General Plan Conservation and Open Space Element addresses issues such as energy efficiency and green building in new development, green building standards, and green energy utilities, which would serve to reduce GHG emissions.

County General Plan, Conservation, and Open Space Element
The County Board of Supervisors in 2010 adopted a comprehensive Conservation and Open Space Element with a focus on reducing GHG emissions, increasing energy efficiency, and using local renewable energy.

A preliminary analysis of the Project's consistency with applicable air quality plans and policies is provided in Appendix E.

4.1.3 Significance Criteria

According to the April 2012 SLOAPCD CEQA Air Quality Handbook, project impacts may be considered significant if one or more of the following special conditions apply:

- If any of the thresholds are exceeded;
- If the project has the ability to emit hazardous or toxic air pollutants in the close proximity of sensitive receptors such that an increased cancer risk affects the population;
- If the project has the potential to emit diesel particulate matter in an area of human exposure, even if overall emissions are low;
- Remodeling or demolition operations where asbestos-containing materials will be encountered;
- If naturally occurring asbestos has been identified in the project area;
- If the project has the ability to emit hazardous or toxic air pollutants in the close proximity of sensitive receptors such as schools, churches, and hospitals;
- If the project results in a nuisance odor problem to sensitive receptors; and
- If more than 4 acres are graded at any given time.

The CEQA Air Quality Handbook defines thresholds for long-term operational emissions and short-term construction related emissions. Depending on the level of exceedance of a defined threshold, the SLOAPCD has established varying levels of mitigation.

4.1.3.1 Operational Thresholds

Table 4.1-8 shows the threshold criteria established by the SLOAPCD to determine a project's significance and appropriate mitigation level for long-term operational emissions (i.e., vehicular and area source emissions). Emissions that equal or exceed the designated threshold levels are considered potentially significant and should be mitigated. For projects requiring air quality mitigation, the SLOAPCD has developed a list of both standard and discretionary mitigation strategies tailored to the type of project proposed: residential, commercial, or industrial.

Table 4.1-8 SLOAPCD Thresholds of Significance for Operational Emissions Impacts

Pollutant	Daily	Annual
ROG + NOx	25 pounds	25 tons
Diesel Particulate Matter	1.25 pounds	-
Fugitive Dust Particulate Matter (PM_{10})	25 pounds	25 tons
CO	550 pounds	-

Source: SLOAPCD 2012

Construction Thresholds

Use of heavy equipment and earth-moving operations during Project construction generates fugitive dust and combustion emissions that may have substantial temporary impacts on local air quality. Fugitive dust emissions would result from land clearing, demolition, ground excavation, cut and fill operations, and equipment traffic over temporary roads. Combustion emissions, such as NOx and ROG, are most significant when using diesel-fueled equipment, such as loaders, dozers, haul trucks, compressors, and generators. Table 4.1-9 lists construction thresholds.

Table 4.1-9 SLOAPCD Thresholds of Significance for Construction Emissions Impacts

Pollutant	Daily	Quarterly Tier 1	Quarterly Tier 2
ROG + NOx	137 pounds	2.5 tons	6.3 tons
Diesel Particulate Matter	7 pounds	0.13 tons	0.32 tons
Fugitive Dust Particulate Matter (PM_{10})	-	2.5 tons	-

Source: SLOAPCD 2012

Exceeding Tier 1 emissions thresholds requires the implementation of a listing of standard mitigation measures and best available control technologies (BACT). Tier 2 requires the implementation of a construction activity management plan in addition to Tier 1 requirements. If emission levels cannot be decreased to less than the Tier thresholds, then off-site mitigation may be necessary.

As per the SLOAPCD Handbook, if the construction phase is longer than 90 days, the daily threshold (for ROG + NOx and diesel particulate matter) is not applicable.

Greenhouse Gases Thresholds

The SLOAPCD adopted GHG thresholds on March 28, 2012, and updated their CEQA Handbook in April 2012 to incorporate the new thresholds shown in Table 4.1-10. Only a few air districts in California have adopted thresholds for GHG emissions.

Table 4.1-10 SLOAPCD Board-Approved GHG Thresholds For SLO County

District/Area	Threshold Level $MTCO_2e$	Notes
SLOAPCD	10,000/year (industrial), 1,150/year (residential, commercial & mixed-use), or 4.9/service population (SP)/yr (residents + employees), or Project is deemed consistent with a qualified climate action plan.	Adopted March 28, 2012

Notes: San Luis Obispo Air Pollution Control District = SLOAPCD

The County of San Luis Obispo and the City of San Luis Obispo began implementing the SLOAPCD recommended thresholds for Planning Agencies on March 28, 2012 and May 1, 2012 respectively. Based on the County and City implemented GHG thresholds (see Table 4.1-10) for industrial development, the following thresholds are proposed for this EIR. The Project would be less than significant if it meets these criteria:

- Industrial/commercial development Project emits below 10,000 $MTCO_2e$ per year, including transportation with amortized construction emissions;
- Commercial below 1,150; and/or
- Commercial below the 4.9 service population; and/or
- Consistent with the applicable qualified Climate Action Plan (City or County).

Air Toxic Health Risk Thresholds

If a project has the potential to emit toxic or hazardous air pollutants, or is located in close proximity to sensitive receptors, impacts may be considered significant due to increased cancer risk for the affected population, even at a very low level of emissions. Such projects may be required to prepare a risk assessment to determine the potential level of risk associated with their operations. Pursuant to the requirements of California Health and Safety Code Section 42301.6 (AB 3205) and Public Resources Code Section 21151.8, subd. (a)(2), any new school, or proposed industrial or commercial project site located within 1000 feet of a school must be referred to the SLOAPCD for review.

As defined in the CAPCOA guidance document (CAPCOA 2009) there are basically two types of land use projects that have the potential to cause long-term public health risk impacts:

- Type A Projects: new proposed land use projects that generate toxic air contaminants (such as gasoline stations, distribution facilities or asphalt batch plants) that impact sensitive receptors. Air districts across California are uniform in their recommendation to use the significance thresholds that have been established under each district's "Hot Spots" and permitting programs. The SLOAPCD has defined the excess cancer risk significance threshold at 10 in a million for Type A projects in the County; and,

- Type B Projects: new land use projects that will place sensitive receptors (e.g., residential units) in close proximity to existing toxics sources (e.g., freeway). The SLOAPCD has

established a CEQA health risk threshold of 89 in-a-million for the analysis of projects proposed in close proximity to toxic sources. This value represents the population weighted average health risk caused by ambient background concentrations of toxic air contaminants in the County. The SLOAPCD recommends Health Risk screening and, if necessary, Health Risk Assessment (HRA) for any residential or sensitive receptor development proposed in proximity to toxic sources.

If a project is located near a sensitive receptor (e.g., school, hospital, dwelling unit(s)), its level of impact may be considered significant, even if other criteria do not apply. The health effects of a project's emissions may be more pronounced if they impact a considerable number of children, elderly, or people with compromised respiratory or cardiac conditions.

4.1.4 Remediation Project Impacts and Mitigation Measures

The remediation portion of the Project (including restoration) would generate air emissions due to the following activities:

- Construction equipment and fugitive dust;
- Excavation of contaminated soils;
- Paving and asphalt emissions;
- Potential releases of asbestos due to demolition or grading; and
- Off-site vehicles emissions associated with workers commuting and from off-site materials hauling.

The following sub-activities were separately examined as part of the air quality analysis, including scheduling, soil movement, areas disturbed, demolition activities and unpaved road travel.

1. Building Demolition
2. Pipeline Removal
3. Marsh Debris Removal
4. Concrete Debris Removal
5. Nursery
6. Mobilization
7. Entrance Improvements
8. Crushing Operation
9. Flower Mound Borrow/Rough Grading
10. OU#3 Reservoir4 Cap/Rough Pad Grades
11. OU#1 Cap Construction
12. South Tank Farm Creek Restoration
13. OU#2 Reservoir 5 Cap
14. OU#2 Reservoir 7 Cap
15. OU#4 North Marsh Remediation
16. OU#4 Reservoir 3 Cap
17. OU#4 PPSH Remediation
18. North Tank Farm Creek Restoration

19. East Fork San Luis Creek Restoration
20. Borrow Area Restoration
21. Restoration Monitoring
22. Borrow Area 2
23. Borrow Area 3
24. Access Roads
25. Staging Area

Many of the activities overlap in timing, producing an array of peak day and peak quarter assessments. The specific details on each of these activities are shown in the Air Appendix under the section Methodology: Emission Factors and Inputs.

The remainder of this section discusses the impacts associated with the remediation air emissions, odor and air toxic emission impacts.

Impact #	Impact Description	Phase	Residual Impact
AQ.1	Construction activities associated with remediation could generate ROG + NOx and Diesel PM emissions that exceed SLOAPCD thresholds.	Remediation	Class II

Air emissions of criteria pollutants (CO, ROG, NOx, SO_2, and PM) during construction would result from the use of construction equipment with internal combustion engines (e.g., backhoes, cranes), and off-site vehicles (e.g., construction employee commuter vehicles and trucks delivering equipment and hauling materials to and from the site). Air emissions from construction equipment were estimated using the emission factors and equations from the CalEEMod software, and the assumptions on the duration and personnel detailed in Chapter 2.0, Project Description. Emissions from off-site vehicles were estimated using the recent EMFAC2011 factors for light duty automobiles, light duty trucks and heavy duty trucks at different speeds. Appendix B, the Air Quality and Greenhouse Gases Appendix, includes details on the construction equipment and periods of operation for each equipment piece.

Although CalEEMod factors were generally used, the emissions calculations were performed in a spreadsheet, as it is difficult, using the CalEEMod program, to assess construction impacts associated with a remediation project with different activities (i.e., soil offgassing, pipe removal offgassing), ongoing at different locations and at different times (see Appendix B sections Methodology, Methodology: Emission Factors and sections On-site Construction Equipment Emissions Calculations by Activity, Off-site Emissions by Activity and On-site Fugitive Dust Emissions).

ROG emissions from contaminated soils were estimated based on studies conducted by the EPA (EPA 1992), which estimated hydrocarbon emissions for soil contaminated with different materials. Heavier hydrocarbon contamination was assumed (nonane, a heavier alkane hydrocarbon), as the oil would be weathered. Based on the risk assessment reports (see Appendix H) prepared for the Project, “the soil at the Site is composed predominately of higher molecular

weight hydrocarbons (carbon fraction range C10-C40)," data which was approximated using the surrogate of nonane (C9).

ROG emissions associated with pipeline removal were also calculated based on the volume of pipeline to be removed, assuming that the entire pipeline volume was full of hydrocarbon vapors at standard conditions. Emissions were calculated for each activity and for each month to determine the peak quarter and peak day operating scenarios. The construction schedule provided by the Applicant was utilized to determine what activities might occur simultaneously or during the same quarter.

Emissions associated with the use of demolition charges associated with blasting at the Flower Mound area would be minimal, but have been tabulated in the air appendix. According to AP-42 section 15.9, the primary pollutant emitted from the use of the Demolition Block Charge is carbon dioxide. Criteria pollutants and hazardous air pollutants from demolition are emitted at low levels.

Emissions that occur in Santa Barbara County were also calculated, as truck trips would occur within Santa Barbara County to haul soils to the Santa Maria Landfill. However, no construction activities would occur within Santa Barbara County.

Table 4.1-11 summarizes construction air emissions as they pertain to the SLOAPCD thresholds. Detailed emissions levels are shown in Appendix B (see sections on Emissions Summaries by Activity and Month (both on-site and off-site), On-site Construction Equipment Emissions Calculations by Activity, Off-site Emissions by Activity and On-site Fugitive Dust Emissions).

Table 4.1-11 Unmitigated Remediation Emissions

PEAK DAY (lbs/day)	ROG + NOx	Diesel PM	
SLO County	1092.3	30.5	
Thresholds	137.0	7.0	
Exceeds Thresholds?	Yes	Yes	
SB County	56.4	2.2	
Combined SLOC & SBC	1,148.7	32.7	
PEAK QUARTER (tons/qrtr)	**ROG + NOx**	**Diesel PM**	**Fugitive Dust**
SLO County	33.1	0.9	19.5
Thresholds	2.5	0.1	2.5
Exceeds Thresholds?	Yes	Yes	Yes
SB County	1.7	0.01	-
Combined SLOC & SBC	34.8	0.9	19.5

Note: Santa Barbara County does not have a peak day or quarter threshold for construction emissions. Appendix B provides an introductory section on the calculation methodologies and inputs to the calculations. Peak day numbers within SLOC include transportation of contaminated soils to Buttonwillow.

Emissions of ROG + NOx exceed the SLOAPCD thresholds for the Project for peak day and peak quarter. However, as the construction activity would last for more than 90 days, the daily thresholds would not apply (as per the SLOAPCD Handbook). Impacts would still be considered significant due to the peak quarter emissions, but as shown below, mitigable.

The peak day and quarter scenarios were determined to be the following: OU#2 Reservoir 5 Cap, OU#2 Reservoir 7 Cap, OU#4 North Marsh Remediation along with the associated offsite vehicle transportation, including transportation of contaminated soils to Buttonwillow.

Emissions of diesel particulate matter would result from the use of diesel powered construction equipment and vehicles. Diesel PM emissions would exceed the SLOAPCD thresholds for the Project for peak day and peak quarter (see Table 4.1-11). Therefore, impacts would be considered significant, but as shown below, mitigable.

Emissions within Santa Barbara County are also shown in Table 4.1-11. However, the SBCAPCD does not have thresholds for construction, except the offset threshold of 25 tons per year. This level would not be exceeded for any pollutant within Santa Barbara County.

If contaminated soils would need to be hauled to Buttonwillow, these truck trips could add to the emissions totals. These values are included in the peak day and peak quarter estimates in Table 4.1-11. See Appendix B (section Off-site Emissions by Activity) for detailed calculations.

Mitigation measures that could be implemented to reduce the emissions would include measures such as cleaner construction equipment diesel engines, the use of recent model year trucks and obtaining off-site reductions.

Mitigation Measures

AQ-1a *Prior to issuance of applicable grading permit, and throughout project construction, as applicable, the Applicant shall implement the following construction emission reduction measures:*

a. *Properly maintain all construction equipment according to manufacturer's specifications;*

b. *Fuel all off-road and portable diesel powered equipment with CARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road);*

c. *Use CARB Tier 3 certified diesel construction equipment or cleaner off-road heavy-duty diesel engines, and comply with state Off-Road Regulations;*

d. *Use CARB 2007 or cleaner certified on-road heavy-duty diesel trucks and comply with state On-Road Regulations;*

e. *If construction or trucking companies that are awarded the bid or are subcontractors for the project do not have equipment to meet the above two measures, the impacts from the dirtier equipment shall be addressed through SLOAPCD approved off-site or other mitigation measures;*

f. *All on- and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and job sites to remind drivers and operators of the 5 minute idling limit;*

g. *Diesel idling within 1,000 feet of sensitive receptors is not permitted or applicable measures shall be employed as per the direction of the SLOCAPCD, including monitoring or low-particulate engine technologies (Sensitive receptors are defined in the SLOAPCD Handbook as people that have an increased sensitivity to air*

pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling units. No staging, queuing or idling within 1000 feet of the recreational fields when in use;

h. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors or applicable measures shall be employed as per the direction of the SLOCAPCD, including monitoring or low-particulate engine technologies; No staging, queuing or idling within 1,000 feet of the recreational fields when in use.

i. Equipment shall be electrified when feasible;

j. Substitute gasoline-powered or diesel hybrids in place of diesel-powered equipment, where feasible; and

k. Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel.

AQ-1b Prior to issuance of applicable grading permit, the Applicant shall ensure SLOAPCD regulations that prohibit developmental burning of vegetative material within San Luis Obispo County are followed.

AQ-1c Prior to issuance of applicable grading permit, the Applicant shall ensure that portable equipment and engines 50 horsepower or greater, used during grading and construction activities must have a California portable equipment registration (issued by the ARB) or an SLOAPCD permit. Proof of registration must be provided to the SLOAPCD prior to the start of grading or construction or a permit secured from the SLOAPCD prior to the start of grading or construction. The following list is as a guide to equipment and operations that may have permitting requirements, but it is not exclusive:

a. Power screens, conveyors, diesel engines, and/or crushers;

b. Portable generators and equipment with 50-horsepower or greater engines;

c. Internal combustion engines;

d. Unconfined abrasive blasting operations;

e. Concrete batch plants;

f. Rock and pavement crushing;

g. Tub grinders; and

h. Trommel screens.

AQ-1d Prior to issuance of applicable grading permit, the Applicant shall obtain the required SLOAPCD permits for the hydrocarbon contaminated soil. In addition, the following measures shall be implemented unless otherwise directed by the SLOAPCD upon a finding that alternative measures will result in equal or greater reduction in emission of air contaminants.:

a. Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal;

b. Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH –non-permeable barrier such as plastic tarp, or other methods as approved by the SLOCAPCD. No headspace shall be allowed where vapors could accumulate;

c. Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted;

d. The air quality impacts from the excavation and haul trips associated with removing the contaminated soil must be evaluated, with emissions estimates provided to the SLOAPCD and mitigated with low emission trucks, low emission construction equipment and/or offsets if needed, if total emissions exceed the SLOAPCD's construction phase thresholds. An estimate of these emissions is included in this EIR;

e. During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance, or violation of SLOAPCD regulations would result;

f. Clean soil must be segregated from contaminated soil; and

g. The permit shall specify applicable criteria established by SLOAPCD.

The notification and permitting determination requirements shall be directed to the SLOAPCD Engineering Division.

AQ-1e Prior to issuance of applicable grading permits, or during construction, if emissions of ROG+NOx with the above mitigations still exceed the thresholds, the Applicant shall secure SLOAPCD-approved off-site reductions in ROG + NO_x emissions to ensure that ROG + NO_x emissions do not exceed the SLOAPCD quarterly thresholds. Coordination with the SLOAPCD should begin at least six (6) months prior to issuance of grading permits for the Project to allow time for refining calculations and for the SLOAPCD to review and approve the CAMP and off-site mitigation approach.

AQ-1f Prior to issuance of applicable grading permit, the Applicant shall ensure that all grading and construction equipment greater than 100 bhp be equipped with CARB Level 3 diesel particulate filters (DPF), or equivalent, to achieve an 85 percent reduction in diesel particulate emissions. If CARB verified Level 3 DPFs cannot be secured for all of the equipment greater than 100 hp then the applicant will work to offset the added DPM with measures including but not limited to schedule modifications, implementation of no idling requirement, and expanded implementation of AQ-1a measures "i", "j", and "k"(e.g. use of alternative fueled generators).

AQ-1g Prior to issuance of applicable grading permit, the Applicant shall produce a schedule detailing the phasing of activities for each OU and ensuring that the emissions of diesel particulate in any quarter falls below the applicable SLOAPCD thresholds. This could include measures such as ensuring that Reservoir 5 Cap, Reservoir 7 Cap and North Marsh remediation do not coincide. As an alternative approach, if scheduling is not feasible, the Applicant shall provide SLOAPCD-approved off-site

reductions in DPM emissions to ensure that DPM emissions do not exceed the SLOAPCD thresholds.

Residual Impacts

Emissions after implementation of the mitigation measures listed above are shown in Table 4.1-12. Details of the calculations are shown in Appendix B (see sections Mitigated On-site Construction Equipment Emissions Calculations by Activity, Mitigated Off-site Emissions by Activity and Mitigated On-site Fugitive Dust Emissions). The mitigation measures were included in the spreadsheets and the emission factors (for example, Tier 3 engines utilized a lower emission factor; application of DPF reduced DPM emissions by 85 percent, etc).

Table 4.1-12 Remediation Emissions Mitigated

PEAK DAY (lbs/day)	ROG + NOx	Diesel PM	
SLO County	552.3	5.7	
Thresholds	137.0	7.0	
Exceeds Thresholds?	Yes	No	
SB County	20.4	0.3	
Combined SLOC & SBC	566.9	6.0	
PEAK QUARTER (tons/qrtr)	**ROG + NOx**	**Diesel PM**	**Fugitive Dust**
SLO County	17.4	0.2	6.3
Thresholds	2.5	0.1	2.5
Exceeds Thresholds?	Yes	Yes	Yes
SB County	0.6	0.002	-
Combined SLOC & SBC	17.9	0.2	6.3

Note: Santa Barbara County does not have a peak day or quarter threshold for construction emissions. Assumes use of all 2007 model year or newer trucks. Without 2007 model year trucks, emissions of DPM would increase by 8 lbs/day.
Peak days occur at different times in SBC and SLO County. Therefore, Combined is not an addition of the individual peaks in the above table.
Appendix B provides an introductory section on the calculation methodologies and inputs to the calculations.
* Emissions with on-site measures only; but would be less than the thresholds with off-site mitigation obtained through the SLOAPCD.

Implementation of the mitigation measures would reduce ROG + NOx emissions. However, the emissions of ROG + NOx would remain above the significance thresholds. Implementation of mitigation measure AQ-1a requires entering into an off-site mitigation agreement with SLOAPCD relative to the ROG + NOx exceedance. This will reduce these impacts to below the thresholds.

For off-site mitigations (AQ-1a), the Applicant will be required by the SLOAPCD to complete a Construction Activity Management Plan (CAMP). This document shall include Project specific information (i.e., actual fleet make-up, emissions level, and schedule) that will allow for more refined project emissions to be determined. If, after the standard and BACT mitigation measures are factored into the refined emission estimation, the Project still exceeds the Tier 2 threshold, then SLOAPCD approved off-site mitigation would be necessary. Coordination with the

SLOAPCD should begin at least six months prior to issuance of grading permits for the Project to allow time for refining calculations and for the SLOAPCD to review and approve the CAMP and off-site mitigation approach.

The Applicant may use funding defined for off-site mitigation to implement SLOAPCD-approved ROG + NOx emission reduction projects, or they may pay the off-site mitigation for projects plus an administration fee of 15% to the SLOAPCD to administer emission reduction projects. The Applicant shall provide this funding at least two months prior to the start of construction to help facilitate emission offsets that are as real-time as possible. If possible, the phase impacts should be addressed through one transaction.

Mitigation measures associated with diesel particulate catalysts and impact AQ.1, including the use of 2007 model year trucks, would reduce the emissions levels of diesel particulate, but would remain slightly above the thresholds for the peak quarter. However, the availability of only 2007 model year or newer trucks is uncertain at this time, although it is anticipated that they would become more readily available at the time of the project construction. Phasing of the project affects peak quarter and daily emissions as multiple areas could be undergoing construction at the same time. Advanced planning of construction activities to minimize peak quarter diesel particulate emissions could reduce the emissions (for example, planning any Buttonwillow contaminated soil trips for when other truck trips are not occurring, etc). In combination, these measures would reduce impacts to below the SLOAPCD thresholds. Therefore, impacts would be *less than significant with mitigation (Class II)*.

Impact #	Impact Description	Phase	Residual Impact
AQ.2	Construction activities associated with remediation could generate fugitive dust that exceeds SLOAPCD thresholds.	Remediation	Class II

During construction, a large portion of PM_{10} emissions typically arises from large pieces of equipment and vehicles traveling on disturbed soil, unpaved surfaces, and various earth-moving activities, such as grading and clearing. These emissions are known as “fugitive dust” and depend heavily on the size of the graded area, the volume of soil moved, the number of vehicles and construction machinery required, the duration of construction and the soil conditions (i.e., level of moisture, soil type). The fugitive PM_{10} emissions are estimated based on a disturbed area as provided by the Applicant.

Multiple activities would involve the disturbance of more than 4 acres, including the flower mound, OU#3 grading, OU#4 North Marsh and borrow area 2.

Emission factors were used from the CalEEMod model for soil moving and from EPA AP-42 for industrial roads utilizing average soil silt content. Fugitive dust would also be generated from soil dumping operations associated with cap construction and borrow sites. The borrow sites are specifically addressed under the crushing operations, including the Flower Mound borrow area and the borrow areas 2 and 3 activity assessments (see above). Fugitive dust emissions

associated with the use of demolition charges and blasting at the Flower Mound are addressed under fugitive dust emissions generated from demolition activities.

Naturally-occurring asbestos could also be present in the soils and could cause impacts as it would be associated with the generation of fugitive dust from activities, including Flower Mound area blasting and crushing activities. A geologic study performed by the Applicant (Padre 2012) examined the prevalence of naturally occurring asbestos at the site. Asbestos was not indicated above the analytical detection limit of 0.25% in any of the rock or soil samples. However, the *microscopic* analyses indicated that several rock core samples contained trace concentrations of chrysotile (serpentinite) asbestos but could not be quantified due to the method quantification criteria. The findings of the microscopic analyses and field observations would be utilized in the development of a dust mitigation plan associated with proposed future grading activities at the Project Site and compliance and consultation with SLOAPCD requirements, including Asbestos NOA ATCM, a Work Plan, Asbestos Dust Control Plan and Health and Safety Plan.

SLOAPCD Emissions of fugitive dust exceed the SLOAPCD thresholds for fugitive dust during the peak quarter (see Table 4.1-11). Therefore, impacts would be considered significant.

Mitigation measures that could be implemented to reduce the emissions would include measures to reduce fugitive dust (i.e., watering).

Mitigation Measures

AQ-2a Prior to issuance of applicable grading permit, the Applicant shall provide satisfactory evidence that a SLOAPCD-approved Construction Activity Management Plan (CAMP) has been prepared that addresses fugitive dust emissions. The Plan shall include requirements in the SLOAPCD CEQA Handbook. Fugitive dust mitigation measures in the plan shall include a combination of the following, as approved by the SLOAPCD:

a. Reduce the amount of the disturbed area where possible.

b. Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. An adequate water supply source must be identified. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible.

c. All dirt stockpile areas should be sprayed daily as needed, covered, or a SLOAPCD-approved alternative method will be used. (90 percent reduction).

d. Permanent dust control measures identified in the approved Project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities.

e. Exposed ground areas that will be reworked at dates greater than one month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established, unless other dust and erosion control measures are specified in the agency-approved Dust Control Plan.

f. All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the SLOAPCD.

g. All roadways, driveways, sidewalks, etc. to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.

i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114.

j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site.

k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible

l. Apply water every 3 hours to disturbed areas within the construction site (61 percent reduction in particulate emissions).

m. Application of soil binders to dirt roads shall be applied to achieve at least an 80 percent reduction in fugitive dust emissions. All soil binders used shall be 'environmentally friendly' and shall be either lignosulfonate- or calcium lignosulfonate-based approved by the SLOAPCD. All dust control methods, including soil binders, shall be demonstrated in the fugitive dust control plan to ensure compliance with SLOAPCD Rule 401.

n. All roadway, driveway, and sidewalk paving should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

o. The contractor or builder shall designate a person to monitor the fugitive dust emissions and oversee mitigation measure implementation as per SLOAPCD approval to minimize dust complaints, reduce visible emissions to less than 20 percent opacity, and to prevent transport of dust off-site. The designated monitor shall carry out these duties on regular workdays, as well as holidays and weekends when work may not be in progress. The name and telephone number of the designated monitor shall be provided to the SLOAPCD Compliance Division prior to the start of any grading, earthwork, or demolition.

AQ-2b Prior to issuance of applicable grading permit, the Applicant shall submit an APCD approved Construction Activity Monitoring Plan (CAMP), which shall include, but not be limited to the following elements:

a. A Dust Control Management Plan that encompasses all, but is not limited to, measures associated with impact AQ.1 and AQ.2;

b. Tabulation of on- and off-road construction equipment information (e.g., make, model, type, engine tier, DPM Level 3 filter age, horse-power, and miles or hours of operation);

c. Construction truck trips scheduled during non-peak hours to reduce peak-hour emissions;

d. Limited construction work-day period, if necessary; and

e. Phase construction activities, if appropriate.

AQ-2c Prior to issuance of applicable grading permit, the Applicant shall implement the following idle-restricting measures for both on- and off-road equipment during the Project grading and construction phase near sensitive receptors:

a. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors or applicable measures shall be employed as per the direction of the SLOCAPCD, including monitoring or low-particulate engine technologies. No staging, queuing or idling within 1,000 feet of the recreational fields when in use;

b. Diesel idling within 1,000 feet of sensitive receptors is not permitted or applicable measures shall be employed as per the direction of the SLOCAPCD, including monitoring or low-particulate engine technologies. No staging, queuing or idling within 1,000 feet of the recreational fields when in use;

c. Use alternative fueled equipment whenever possible; and

d. Signs identifying the no idling requirements must be posted and enforced at the construction site.

AQ-2d Prior to issuance of applicable grading permit, the Applicant shall implement the following idle-restricting measures for on-road vehicles during the grading and construction phase of the Project:

a. Section 2485 of Title 13, the California Code of Regulations limits diesel-fueled commercial motor vehicles that operate in the State of California with gross vehicular weight ratings of greater than 10,000 pounds and licensed for operation on highways. It applies to California and non-California based vehicles. In general, the regulation specifies that drivers of these vehicles:

- *Shall not idle the vehicle's primary diesel engine for more than 5 minutes at any location, except as noted in Subsection (d) of the regulation; and,*
- *Shall not operate a diesel-fueled auxiliary power system (APS) to power a heater, air conditioner, or any ancillary equipment on that vehicle during sleeping or resting in a sleeper berth for greater than 5 minutes at any location when within 100 feet of a restricted area, except as noted in Subsection (d) of the regulation.*

b. Signs shall be posted in the designated queuing areas and job sites to remind on-road equipment operators of the 5-minute idling limit.

AQ-2e *Prior to issuance of applicable grading permit, the Applicant shall implement the following idle restricting measures for off-road vehicles during the construction phase of the Project:*

a. Off-road diesel equipment shall comply with the 5-minute idling restriction identified in Section 2449(d)(3) of the CARB In-Use off-Road Diesel regulation: www.arb.ca.gov/regact/2007/ordiesl07/frooal.pdf.

b. Signs shall be posted in the designated queuing areas and job sites to remind off-road equipment operators of the 5-minute idling limit.

AQ-2f *Prior to issuance of applicable grading permit, the Applicant shall submit a geologic evaluation under the CARB Air Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations, to determine if Naturally Occurring Asbestos (NOA) is present within the area that will be disturbed. NOA has been identified as a toxic air contaminant by the CARB. If NOA is not present, an exemption request must be filed with the District. If NOA is found at the site, the Applicant must 1) comply with all requirements outlined in the Asbestos ATCM. This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the SLOAPCD; 2) require that any crushing operations do not result in any dust that is visible crossing the property line, does not discharge into the air any visible emissions other than uncombined water vapor, for a period aggregating more than three minutes in any one hour which are 50 percent as dark or darker in shade as that designated as number one on the Ringlemann Chart or exceed at 10 % opacity; and 3) conduct a geological evaluation prior to any grading. Technical Appendix 4.4 of the SLOAPCD CEQA Handbook includes a map of zones throughout the County where NOA has been found. More information on NOA is available at http://www.slocleanair.org/business/asbestos.php.*

AQ-2g *Prior to issuance of demolition permits, the Applicant shall comply with asbestos containing material (ACM) requirements. Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and disposal of ACM. ACM could be encountered during demolition or remodeling of existing buildings. Asbestos can also be found in utility pipes and pipelines (transite pipes or insulation on pipes). If utility pipelines are scheduled for removal or relocation or a building(s) is proposed to be removed or renovated, various regulatory requirements may apply, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP). These requirements include but are not limited to: (1) notification to the SLOAPCD; (2) an asbestos survey conducted by a Certified Asbestos Inspector; and (3) applicable removal and disposal requirements of identified ACM. More information on asbestos is available at http://www.slocleanair.org/business/asbestos.php.*

Residual Impact

Implementation of the fugitive dust measures would reduce fugitive dust emissions during the peak quarter by 55 percent (Table 4.1-11 to Table 4.1-12). See details in Appendix B (see section Mitigated On-site Fugitive Dust Emissions). Fugitive dust emission mitigation measures were

calculated by incorporating the reduction percentages into the spreadsheets. The use of fugitive dust control measures, such as watering, would also help to control emissions of NOA. Additional measures for NOA that would be addressed in the required Asbestos Dust Mitigation Plan (if NOA is determined to be present), could include:

- Visible dust limits;
- Storage pile moisture or coverings;
- Vehicle speed limits of 15 mph;
- Water of disturbed areas and roadways;
- Limits on activities during high winds;
- Surface treatment;
- Track-out measures;
- Appointment of a dust control supervisor; and
- Air monitoring requirements.

Mitigation measure AQ-2a would limit offsite dust to a 20 percent opacity, as per SLOCAPCD Rule 401, which would limit offsite impacts. As per the SLOCAPCD Handbook, exceedances of the 2.5 ton/qtr threshold requires fugitive PM10 mitigation measures and would require the implementation of a CAMP. As per the Guidelines, all fugitive dust sources shall be managed to ensure that dust emissions are adequately controlled to below the 20% opacity limit identified in the APCD Rule 401 Visible Emissions and to ensure that dust is not emitted offsite. With the implementation of a CAMP, fugitive dust emissions would be *less than significant with mitigation (Class II)*.

Impact #	Impact Description	Phase	Residual Impact
AQ.3	Construction activities associated with remediation could generate GHG emissions that exceed SLOAPCD thresholds.	Remediation	Class III

Air emissions of GHG pollutants (CO_2, N_2, and CH_4) during construction would be associated with construction equipment at the Project Site and the use of off-site vehicles for transporting materials, equipment, and personnel. As per SLOAPCD guidelines, GHG emissions associated with construction are amortized over 25 years. Total GHG emissions associated with remediation would be 7,839 metric tons of CO_2e, with an amortized (over 25 years) value of 314 metric tons per year. Please see Appendix B (sections Proposed Project Emissions Summary, On-site Construction Equipment Emissions Calculations by Activity and Off-site Emissions by Activity) for the detailed calculations by pollutant (CO_2, CH_4 and N_2O). This would be less than the significance thresholds and would constitute a less than significant impact.

Mitigation Measures

No mitigation measures are required since the impact is less than significant.

Residual Impact

The residual impact would be *less than significant (Class III)*.

Impact #	Impact Description	Phase	Residual Impact
AQ.4	Construction activities associated with remediation would generate toxic emissions that exceed SLOAPCD thresholds for impacts to sensitive receptors.	Remediation	Class II

Emissions associated with the remediation construction would generate toxic emissions, primarily due to the use of construction equipment diesel engines. Diesel engines would emit diesel particulate matter, which is defined by the CARB as a carcinogen. Impacts of construction equipment diesel engine use were estimated by utilizing the construction equipment emissions (as calculated above) and construction schedules. Diesel particulate emissions may take place within 1,000 feet of sensitive receptors.

Toxic emissions from pipeline removal would be minimal as most of the lighter hydrocarbons are no longer present and would therefore not produce off-site toxic impacts.

Diesel trucks would also be traveling to and from the Project Site to bring in and remove materials. These trucks would travel along area roadways, would emit diesel particulate matter in these areas, and could increase toxic impacts in these areas. Truck levels associated with remediation could exceed 100 trucks per day, but would only occur above these levels for a period of four months during the Operable Unit (OU) #2 Reservoir cap and North Marsh remediation periods.

Impacts to sensitive receptors shall be minimized by requiring the use of cleaner equipment, which shall include diesel particulate filters on the larger horse powered equipment (as per mitigation measures associated with impacts AQ.1 and AQ.2) and use of alternatively powered equipment (as per AQ-1f).

Mitigation Measures

Implement mitigation measures AQ-1a through AQ-1g, and AQ-2a through AQ-2g.

Residual Impacts

CARB level 3 diesel particulate catalysts are readily available and over 40 models have been verified by the CARB. With construction phase DPM mitigation managed through the Construction Activity Management Plan, short term DPM impacts are considered *less than significant with mitigation* (Class II).

4.1.5 City Development Plan Impacts and Mitigation Measures

The City Development Plan would generate emissions from construction of the various land uses and from the operations associated with those land uses. Emissions of both criteria pollutants and GHG would occur. Emissions of odors associated with the City Development Plan are not anticipated. Emissions of CO would not occur in confined spaces or exceed the CO threshold of 550 lbs per day. Therefore, as per the SLOAPCD CEQA Air Quality handbook, CO modeling has not been conducted. Each of these impacts is discussed below.

Impact #	Impact Description	Phase	Residual Impact
AQ.5	Construction activities associated with the City Development Plan would generate emissions that exceed SLOAPCD thresholds.	Development	Class III

Emissions associated with the construction of development scenarios would generate emissions due to construction equipment engines, fugitive dust, worker vehicles, and delivery of materials and equipment. Construction would occur associated with each of the five phases of construction and would occur every five years associated with the phases of development.

Emissions were estimated utilizing the CalEEMod modeling software utilizing the development land uses associated with each phase. Construction equipment load factors were updated, as per the SLOAPCD CalEEMod guidance, to coordinate with the Carl Moyer Program Guidelines adopted in 2011. Equipment horsepower and daily usage were assigned the CalEEMod defaults.

Emissions associated with construction for each phase of the Project are shown in Table 4.1-13.

Table 4.1-13 City Development Plan Construction Emissions by Phase

PEAK DAY (lbs/day)	ROG + NOx	Diesel PM
Phase 1 – 2015	170.61	2.55
Phase 2 – 2020	228.32	1.5
Phase 3 – 2025	147.22	0.85
Phase 4 – 2030	195.49	0.55
Phase 5 – 2035	391.96	0.37
Thresholds	137	7.0
Exceeds Thresholds?	Yes	No

PEAK QUARTER (tons/qrtr) Phase	ROG + NOx	Diesel PM	Fugitive Dust
Phase 1 – 2015	1.74	0.06	1.01
Phase 2 – 2020	1.25	0.03	0.97
Phase 3 – 2025	0.66	0.01	0.06
Phase 4 – 2030	0.81	0.01	0.97
Phase 5 – 2035	1.33	0.01	1.00
Thresholds	2.50	0.13	2.50
Exceeds Thresholds?	No	No	No

Note: Tons per quarter are derived from the CalEEMod annual emissions. Peak day used the winter emissions as they are higher than the summer CalEEMod estimates. Appendix B provides an introductory section on the calculation methodologies and inputs to the calculations.

Emissions exceed the SLOAPCD thresholds for the peak day ROG+NOx emission levels. However, as the construction activity would last for more than 90 days (anticipated lasting for 2-3 years), the daily thresholds would not apply (as per the SLOAPCD Handbook). All other thresholds would not be exceeded by the development phase construction activities. Therefore, impacts for ROG+NOx would be considered less than significant.

Mitigation Measures

Fugitive dust mitigation measures (see impact AQ.2) would be applicable to this phase of the Project as per SLOAPCD requirements and are included in the mitigation monitoring table at the end of this section.

Residual Impacts

Impacts would remain *less than significant (Class III)*.

Impact #	Impact Description	Phase	Residual Impact
AQ.6	Operational activities associated with the City Development Plan would generate ROG+NOx emissions that exceed SLOAPCD thresholds.	Development	Class II

Emissions associated with the operational phases of City Development Plan would generate emissions due to activities at each site that would be a function of land use, employee vehicles, and delivery of materials to each site. Operations would occur associated with each of the five phases of development and would increase cumulatively every five years associated with the five phases of development.

Emissions were estimated using the CalEEMod modeling program for each phase along with the associated land uses defined in Chapter 2.0, Project Description. Each phase and land use were entered into the CalEEMod program along with estimated parking lot areas (using the "other asphalt surface" designation). Inputs were utilized as described in the SLOAPCD CalEEMod information sheet. Most other inputs utilized the CalEEMod defaults.

Emissions associated with each phase of the City Development Plan are tabulated individually and are shown in Table 4.1-14. Additional emissions would occur during each phase of the City Development Plan until final build-out in 2040, which are also shown in Table 4.1-14.

Table 4.1-14 City Development Plan Operational Emissions by Phase

PEAK DAY (lbs/day) Phase	ROG + NOx	Diesel PM	Fugitive Dust	CO
Phase 1 – 2020	32.92	0.75	23.75	85.06
Phase 2 – 2025	20.28	0.45	14.41	44.94
Phase 3 – 2030	11.07	0.27	9.15	22.62
Phase 4 – 2035	30.33	0.68	21.38	78.35
Phase 5 – 2040	36.16	0.60	18.31	76.60
Phase 1 & 2 in 2025	41.22	0.91	29.38	91.27
Phases 1, 2 & 3 in 2030	46.64	1.14	38.53	95.53
Phases 1, 2, 3 & 4 in 2035	88.36	1.71	52.47	213.4
All Phases Combined in 2040	79.46	2.06	70.72	141.7
Thresholds	25	1.25	25	550
Exceeds Thresholds?	Yes	Yes	Yes	No

Table 4.1-14 City Development Plan Operational Emissions by Phase

PEAK YEAR (tons/year) Phase	ROG + NOx	Fugitive Dust
Phase 1 – 2020	4.78	2.95
Phase 2 – 2025	3.06	1.78
Phase 3 – 2030	1.66	1.11
Phase 4 – 2035	4.55	2.76
Phase 5 – 2040	5.60	2.33
Phase 1 & 2 in 2025	6.22	3.63
Phases 1, 2 &3 in 2030	7.14	4.74
Phases 1, 2, 3 & 4 in 2035	13.15	6.51
All Phases Combined in 2040	12.59	8.84
Thresholds	25	25
Exceeds Thresholds?	No	No

Note: Peak day used the winter emissions as they are higher than the summer CalEEMod estimates. CalEEMod demonstrates a substantial reduction in mobile emissions from 2035 to 2040, with the year 2040 aligning with the EMFAC2011 emissions more accurately than 2035 CalEEMod results. This is partly due to the CalEEMod use of the EMFAC2007 model instead of EMFAC2011 and is anticipated that this will be corrected in future versions of CalEEMod. Appendix B provides an introductory section on the calculation methodologies and inputs to the calculations.

SLOAPCD ROG+NOx emissions would exceed the operational thresholds for the daily thresholds except the CO threshold, and therefore would be considered significant. Emissions would not exceed any of the annual thresholds.

The City Development Plan, by design, addresses a number of operational measures that could reduce emissions including in-fill development, development within ¼ mile of public transit connections, the use of bike paths, etc. Although the City Development Plan does not include residential development, some measures could be applied to reduce energy use, and thereby, reduce emissions. Title 24, for example, is applicable to all occupied buildings in California. Some measures related to LEED requirements could reduce energy use of the proposed land uses. However, the majority of emissions are associated with on-road vehicle traffic. Fugitive dust, for example, is entirely associated with on-road vehicle traffic, and 85 percent of NOx emissions are generated by on-road vehicles. As on-road vehicles are regulated by the CARB and existing regulations are in place to reduce these emissions in the coming years (Pavley, for example), there are minimal mitigation measures that could be applied to the operational phase of the Project to reduce criteria emissions, although some measures can be applied to reduce vehicle trips.

Based upon the trip generation estimates for the commercial component of the Project, much of the parking facilities would go unused during non-peak time of the weekdays and could be used by daily commuters as a park and ride location.

Mitigation Measures

AQ-6a Prior to issuance of applicable construction permits, the Applicant shall implement the following mitigation measures to reduce area source emissions, where applicable.

a. Increase walls and attic insulation by 20 percent above what is required by the 2008 Title 24 requirements.

b. Shade tree planting along southern exposures of buildings to reduce summer cooling needs.

c. Shade tree planting in parking lots to reduce evaporative emissions from parked vehicles.

d. Use built-in energy efficient appliances, were applicable.

e. Orient buildings toward streets with convenient pedestrian and transit access.

f. Use double-paned windows.

g. Use sodium low-energy parking lot and streetlights. (e.g., sodium)

h. Use energy efficient interior lighting.

i. Incorporate energy efficient skylights into roof plan (i.e., should meet the EPA/DOE Energy Star® rating).

j. Install High efficiency or gas space heating.

k. Install door sweeps and weather stripping if more efficient doors and windows are not available.

AQ-6b Prior to issuance of applicable construction permits or lease agreement, the Applicant shall implement the following mitigation measures to reduce vehicle emissions.

a. Locate electrical vehicle charging station(s) in the parking lots at a ratio required by County or City ordinance or as recommended by APCD.

b. In coordination with the City Transit Management, provide transit demand enhancements (i.e., additional stops, shelters, phones) within the Project impact area to meet the increased ridership demand associated with the Project.

c. Provide on-site long-and short-term bicycle parking consistent with location and design criteria established by the City's Bicycle Transportation Plan, with installation and design guidance provided by the City's Community Design Guidelines. One bicycle parking space for every 10 employees is considered appropriate.

d. Provide shower stalls and locker facilities to encourage employees to bike or walk to work.

e. The Applicant or lessee shall meet with SLOCOG's Rideshare Program Coordinator to develop a Trip Reduction Plan to be reviewed and approved by the Public Works Director and APCD. The Trip Reduction Plan shall include the following:

1) A comprehensive Transportation Demand Management program for employees. The TDM may include: (a) private vanpool operation; (b) transit and vanpool fare subsidies; (c) pay parking for employees; (d) provision of subscription bus services; (e) alternative work hours; (f) capital improvements for transit services; (g) reduction of parking fees for carpools

and vanpools; (h) Bikeway linkages to established bicycle routes; and (i) provision of an on-site employee transportation and rideshare coordinator.

2) *Preferential carpool and vanpool parking for employees.*

3) A *lunch-time shuttle to reduce single occupant vehicle trips.*

4) *On-site facilities for eating and convenience including refrigeration, automatic banking, and other vending for employees.*

5) *Incentive programs, similar to the County Rideshare Transportation Choices Program, to reduce employee commute trips. Programs should be coordinated with adjacent commercial development with a goal to achieve an Average Vehicle Ridership (AVR) of 1.20 persons per vehicle or greater.*

6) *The Applicant shall set aside funds equivalent to three month enrollment in Rideshare's Back 'N' Forth Club for 25 percent of all employees (a maximum of $52,230 for this project). This fund shall be managed by APCD through a program similar to the "Flash Pass" used for the San Luis Obispo Home Depot development. If funds are not used for this purpose, they may be used for other incentives that have been included in the approved Trip Reduction Plan.*

f. *The Applicant shall coordinate with the City and APCD to pursue a shared use agreement to use over-supplied parking areas for a potential park-and-ride lot. The park-and-ride lot should be away from building entrances and as close as possible to the parking lot entrance nearest to Tank Farm Road or fronting street. The target number of park-and-ride spaces should be 25. The parking area should be identified with signage and registered with the San Luis Obispo Council of Governments as an official park-and-ride lot.*

g. *Implement on-site circulation design elements in parking lots to reduce vehicle queuing and improve the pedestrian and bicycle environment.*

AQ-6c *Prior to issuance of applicable construction permits, if emissions of ROG+NOx with the above mitigations still exceed the thresholds, the Applicant shall secure SLOAPCD approved off-site reductions in ROG+NO_x emissions from the SLOAPCD to ensure that ROG+NO_x emissions do not exceed the SLOAPCD daily and annual thresholds.*

AQ-6d *Implement a program of periodic wet-vacuum street sweeping in coordination with APCD in order to reduce vehicle-related fugitive dust emissions.*

Residual Impacts

CalEEMod includes the reductions in emissions associated with the use of newer automobiles and trucks over time, as by the completion of Phase 5 in 2040, automobiles and trucks would be emitting substantially fewer emissions on a per mile basis than the current fleet of trucks and automobiles. The CalEEMod model was run with project design features and mitigation measures implemented for traffic mitigation as per the CAPCOA "Quantifying GHG Mitigation Measures" and as discussed in the CalEEMod User Guide. These include:

- Increased transit accessibility – distance to transit station 0.25 miles (CAPCOA LUT-5 estimates that transit use/share would increase by about 25%);
- Improved pedestrian network (CAPCOA SDT-1 produces about a 1% reduction in VMT for Project Site improvements);
- Trip reduction program with 25% employee eligibility (CAPCOA TRT-1 produces up to a 6% reduction in voluntary employee vehicle trips);
- Ridesharing programs with 25% employee eligibility (CAPCOA TRT-3 about a 4% reduction in vehicles miles in an urban area)
- Transit subsidies with 25% employee eligibility (CAPCOA TRT-4 produces about a 6% reduction in vehicles miles with a $0.75 daily subsidy in an urban setting).

These measures would reduce emissions of ROG+NOx by about 6 percent as per the CalEEMod modeling runs (see Table 4.1-15).

By requiring the Applicant to obtain off-site ROG+NOx emission reductions, emissions of ROG+NOx could be reduced to below the daily thresholds. Impacts would therefore be *less than significant with mitigation (Class II)* for ROG+NOx emissions.

Table 4.1-15 City Development Plan Operational Emissions by Phase - Mitigated

PEAK DAY (lbs/day) Phase	ROG + NOx	Diesel PM	Fugitive Dust	CO
Phase 1 – 2020	29.2	0.63	19.7	73.62
Phase 2 – 2025	18.53	0.38	11.95	39.54
Phase 3 – 2030	10.19	0.23	7.59	19.83
Phase 4 – 2035	26.98	0.57	17.74	68.06
Phase 5 – 2040	33.07	0.51	15.19	67.62
Phase 1 & 2 in 2025	37.66	0.77	24.37	80.27
Phases 1, 2 & 3 in 2030	42.96	0.96	31.96	83.77
Phases 1, 2, 3 & 4 in 2035	80.03	1.44	43.52	188.12
All Phases Combined in 2040	74.02	1.74	58.66	124
Thresholds	25	1.25	25	550
Exceeds Thresholds?	Yes	Yes	Yes	No

PEAK YEAR (tons/year) Phase	ROG + NOx	Fugitive Dust
Phase 1 – 2020	4.28	2.45
Phase 2 – 2025	2.82	1.48
Phase 3 – 2030	1.56	0.92
Phase 4 – 2035	4.09	2.29
Phase 5 – 2040	5.17	1.93
Phase 1 & 2 in 2025	6.22	3.63
Phases 1, 2 &3 in 2030	7.14	4.74
Phases 1, 2, 3 & 4 in 2035	13.15	6.51
All Phases Combined in 2040	11.8	7.29
Thresholds	25	25
Exceeds Thresholds?	No	No

Note: Appendix B provides an introductory section on the calculation methodologies and inputs to the calculations.

Impact #	Impact Description	Phase	Residual Impact
AQ.7	Operational activities associated with the City Development Plan would generate diesel particulate and fugitive dust emissions that exceed SLOAPCD thresholds.	Development	Class I

Emissions associated with the operational phases of City Development Plan would generate diesel particulate and fugitive dust emissions due to activities at each site that would be a function of land use, employee vehicles, and delivery of materials to each site. Operations would occur associated with each of the five phases of development and would increase cumulatively every five years associated with the five phases of development.

Emissions were estimated using the CalEEMod modeling program for each phase along with the associated land uses defined in Chapter 2.0, Project Description. Each phase and land use was entered into the CalEEMod program. Inputs were utilized as described in the SLOAPCD CalEEMod information sheet. Most other inputs utilized the CalEEMod defaults.

Emissions associated with each phase of the City Development Plan are tabulated individually and are shown in Table 4.1-14 and 4.1.15. Additional emissions would occur cumulatively during each phase of the City Development Plan until final build-out in 2040, which is also shown in Table 4.1-14 and 4.1.15.

Diesel particulate and fugitive dust emissions would exceed the operational thresholds for the daily thresholds (Diesel PM by 2035 and fugitive dust by 2025). Emissions would not exceed any of the annual thresholds.

Mitigation Measures

See mitigation measure AQ-6b

Residual Impacts

CalEEMod includes the reductions in emissions associated with the use of newer diesel automobiles and diesel trucks over time, as by the completion of Phase 5 in 2040, automobiles and trucks would be emitting substantially fewer diesel emissions on a per mile basis than the current fleet of trucks and automobiles. However, at full build-out, the project would generate over 1,300 diesel truck trips per day. Even with the use of cleaner vehicles over time (as estimated by CalEEMod in the year 2040), the emissions of diesel particulate matter and fugitive dust would remain above the thresholds. This would be a *significant and unavoidable (Class I)* impact.

Impact #	Impact Description	Phase	Residual Impact
AQ.8	Operational and construction activities associated with the City Development Plan would generate GHG emissions that exceed SLOAPCD thresholds.	Development	Class II

Emissions associated with the construction and operational phases of development scenarios would generate GHG emissions due to activities at each site that would be a function of construction equipment use, land use, employee and worker vehicles, equipment and material delivery, electrical use, as well as water and solid waste generation.

CalEEMod was used to estimate the GHG emissions associated with the development construction and operational phases of the Project. Construction emissions were calculated for each construction phase and then amortized over 25 years, as per SLOAPCD requirements. CalEEMod estimates GHG emissions associate with biogenic and non-biogenic CO_2, CH_4, and N_2O. Total CO_2 equivalent emissions are then estimated within the CalEEMod program in metric tons.

Emissions of GHG are summarized in Table 4.1-16. See Appendix B, sections CalEEMod: Summaries and CalEEMod: Development All Phases Annual in 2040 including Mitigations.

Table 4.1-16 City Development Plan Operational GHG Emissions by Phase

Peak Year for each Development Phase	Metric Tons CO_2e
Phase 1 – 2020	6,046
Phase 2 – 2025	4,783
Phase 3 – 2030	2,430
Phase 4 – 2035	6,935
Phase 5 – 2040	4,257
Phase 1 & 2 in 2025	6,879
Phases 1, 2 &3 in 2030	12,403
Phases 1, 2, 3 & 4 in 2035	18,940
All Phases Combined in 2040 (GHG per SP)	22,543 (12.5)
Thresholds	1,150 (4.9)
Exceeds Thresholds?	Yes

Note: includes construction emissions amortized over 25 years. Service population based on employees and land use category. Appendix B provides an introductory section on the calculation methodologies and inputs to the calculations.

GHG emissions would be attributable to energy consumption (21 percent), mobile sources (23 percent), waste production and treatment creating non-biogenic and biogenic CO_2 and methane (34 percent), water consumption (17 percent) and construction (1 percent). GHG emissions would exceed the SLOAPCD threshold of 1,150 metric tonnes per year.

Mitigation measures would include those associated with impact AQ.6 (off-site mobile reductions), in addition to the requirement for the use of higher efficiency buildings and, if emissions continue to exceed the thresholds, working with the SLOCAPCD to secure GHG emissions reductions. Similar to the SLOAPCD ROG+NOx program, the GHG program is

administered by the SLOAPCD and funds programs in the community which reduce GHG emissions.

Mitigation Measures

See mitigation measures AQ-6a and b

AQ-8 Prior to issuance of applicable construction permits for each phase, the Applicant shall include building efficiency improvements with construction permit applications and/or secure SLOAPCD approved off-site reductions in GHG emissions to ensure that GHG emissions do not exceed the SLOAPCD thresholds.

Residual Impacts

Implementation of mitigation measures from other impact areas and implementation of building energy efficiency improvements (exceeding Title 24 by 10 percent, reducing lighting energy use by 10 percent) would reduce GHG emissions by about 5 percent as per the CalEEMod program (although the CalEEMod program does not incorporate all of the measures into the model - see Appendix B sections CalEEMod: summaries and CalEEMod: Development All Phases Annual in 2040).

Increasing building efficiency, as well as implementing and funding APCD approved programs, would ensure GHG emissions are reduced below SLOAPCD GHG thresholds, and impacts would be *less than significant with mitigation* (Class II).

Impact #	Impact Description	Phase	Residual Impact
AQ.9	Operational activities associated with the City Development Plan would generate CO emissions that produce localized CO Hot Spots.	Development	Class III

Increased trips associated with the vehicles at area intersections would emit CO emissions that could cause localized concentrations of CO to exceed the air standards. Although the area is in attainment for CO, the addition of over 8,000 vehicles per day onto area roadways could still produce localized impacts. An assessment was conducted utilizing the CALINE4 model at all intersections that would exceed an LOS D during the build-out plus Project phase (please see section 4.3, Transportation and Circulation). The Protocol for CO assessments (ITS 1997) was followed. Eleven intersections were assessed and the greatest increase in CO emissions would be less than 1 ppm. The CO levels ranged from 4.0 ppm to 5.0 ppm 1-hour results and from 3.4 to 4.0 ppm for the 8-hour results. These levels are below the standards of 20 ppm and 9 ppm for the 1-hour and 8-hour respectively. CALINE output files are included in Appendix B. Impacts would therefore be less than significant.

Mitigation Measures

No mitigation measures are required since the impact is less than significant.

Residual Impact

The residual impact would be *less than significant (Class III)*.

Impact #	Impact Description	Phase	Residual Impact
AQ.10	Operational activities associated with the City Development Plan would generate diesel PM emissions that produce localized, elevated cancer impacts.	Development	Class III

Increased trips associated with the City Development Plan (a Type A Project under the SLOAPCD guidelines) would increase diesel particulate emissions (DPM) associated with diesel trucks near area intersections and roadways that could cause localized concentrations of DPM to elevate cancer risks. The City Development Plan would generate over 1,300 trucks per day on area roadways, with over 300 daily trips of heavy trucks. The diesel emissions from these trucks and their impacts were assessed using EMFAC2011 and AERMOD modeling of the intersections and roadways with highest levels of Project truck trips (Tank Farm Road/Broad Street and Tank Farm Road/Higuera Road). The AERMOD model was set up with volume sources aligned with each roadway at roadway speeds, volume sources associated with intersection approaches (lower speeds) and intersection truck idling incorporating intersection delay times. A receptor grid at 25 meter spacing was used to define receptors outside of 30 meters from the roadway centerline to a distance of 1,000 meters. Diesel truck daily trip rates were input for all intersection branches and for roadways within 1,000 meters of the intersections. Both heavy diesel trucks and medium diesel trucks were incorporated into the modeling to define emission rates. The EMFAC2011 model (for model year 2015) was used to define truck emission rates at different speeds and at idle. AERMOD input and output files are included in Appendix B (the AERMOD Diesel Truck Emissions at Intersections/Roadways section).

Evaluation of roadway segments and intersections found that the City Development Plan resulted in a highest cancer risk of 5.8 cancer cases per million located immediately adjacent to the Tank Farm Road and Higuera Street intersection, which would be below the SLOAPCD significance criteria. Impacts would therefore be less than significant.

Mitigation Measures

No mitigation measures are required since the impact is less than significant.

Residual Impact

The residual impact would be *less than significant (Class III)*.

4.1.6 County Development Plan Impacts and Mitigation Measures

Impacts from the County Development Plan would be the same as the impacts from the City Development Plan as the phasing, construction requirements, and land use mix would be the same. The differences between the two projects would be that the business park and service commercial developments would be located on slightly smaller acreages (but with the same square footages), and there would be the construction and operation of a wastewater treatment plant. Emissions would be slightly higher during the Wastewater Treatment Plant (WWTP) construction (constructed in Phase 1), but would be lower in Phase 5 as a smaller acreage (not square footage) would be developed. Energy use of the WWTP would increase GHG emissions,

but this would be somewhat offset by the reduction in emissions associated with the smaller acreage developed as part of Phase 5 (to make room for the WWTP).

Impacts associated with the County Development Plan would be the same as the City Development Plan for impact AQ.1-4, associated with the development phase construction. Mitigation measures would still apply.

Impacts associated with AQ.5-10, construction and operational activities of the development phase, would be the same as the City plan, and mitigation measure would still apply. Some additional emissions may occur due to the operations at the WWTP. Emissions of ROG from a WWTP are a function of the facility design, the level of industrial effluent treated as well as the level of biological oxygen demand generated by residential customers (EPA AP-42). As these inputs are not known at this time, an approximate estimate of the criteria emissions are generated based on EIRs from other WWTPs. Due to the relatively efficient operations and emission controls generally installed on WWTP, emissions of ROG could range from about 1.3 pounds/day (City of Merced 2006) to 14 pounds/day (IONA 2009). These are emissions from the WWTP processes only. Emissions from internal combustion engines related to digester gas combustion or other processes would increase the ROG emissions and generate NO_x, CO, SO_x and PM emissions, if engines are included in the design.

The WWTP would generate some additional CH_4 emissions from treatment processes (assuming no combustion at the WWTP from digester gases, etc.). Annual CH_4 emissions contributing to GHG emissions would total about 15 $MTCO_2e$ per 1,000 people served by the WWTP (EPA AP-42).

Impacts associated with odors could occur due to the location of the WWTP. These are discussed below.

Impact #	Impact Description	Phase	Residual Impact
AQ.11	Operational activities associated with the County Development Plan WWTP could generate odor emissions.	Development	Class II

According to the SLOAPCD CEQA Air Quality Handbook, “If a project has the potential to cause an odor or other nuisance problem which could impact a considerable number of people, then it may be considered significant.” The Handbook also indicates the project screening distance for nuisance sources category “wastewater treatment plant” is 1 mile. A distance of 1 mile from the proposed WWTP would encompass all of the areas associated with the proposed development Project phases as well as numerous residential and business communities along Broad Street and Tank Farm Road east of Broad Street. Therefore, the impact could be considered significant.

Mitigation measures can be applied to WWTPs, depending on the design of the WWTP. Mitigation measures could include measures to capture or reduce the emissions of odors from the plant (SMAQMD 2011).

Mitigation Measures

AQ-11 Prior to issuance of building or construction permits for the WWTP, the Applicant shall, where applicable, apply to the SLOAPCD for permits and develop an odor Control plan in coordination with the SLOAPCD.

Residual Impacts

Implementation of the above listed mitigation measures would help to reduce odor emissions. Mitigation measures at WWTP are well established and extensive and proven effective. These measures often include:

- Activated carbon filters/carbon adsorption in primary clarifiers, headworks building, aeration basin influent channel, and/or all waste gas exhaust systems;
- Biofiltration/bio trickling filters for waste gas exhaust systems;
- Fine bubble aerators to wastewater treatment tanks or ponds to increase treatment efficiency and dissolved oxygen to prevent odor-generating anaerobic activity;
- Hooded enclosures on grit dumpsters and belt filter presses, primary clarifier weir covers, and/or channel seals;
- Wet and dry scrubbers on waste gas exhaust systems from treatment tanks;
- Caustic and hypochlorite chemical scrubbers on waste gas exhaust systems from treatment tanks;
- Ammonia scrubber on waste gas exhaust from treatment tanks;
- Energy-efficient blower system to increase treatment efficiency and dissolved oxygen levels;
- Thermal oxidizer to oxidize all waste gas exhaust;
- Caps or covers on storage basins and anaerobic ponds to avoid release of odorous compounds.

Impacts would therefore be *less than significant with mitigation (Class II)*.

4.1.7 Cumulative Analysis

None of the proposed development found under the cumulative projects list (see Chapter 3.0, Cumulative Scenario and Methodology) would be constructed in the immediate vicinity of the Project where there would be localized impacts associated with cumulative projects (health risk from construction diesel or localized hot spots of nitrogen dioxide, for example). Regional impacts could be realized, however, since multiple projects would emit into the South Central Coast Air Basin at the same time. All of the projects are within the South Central Coast Air Basin and most of these projects are also within the San Luis Obispo planning area. All projects within the San Luis Obispo planning area are subject to the air quality impact program as detailed in the Air Quality Handbook (SLOAPCD 2012) through standard mitigation measures and off-site mitigation which identifies improvements that will help reduce some of the cumulative air quality impacts.

All cumulative projects must comply with SLOAPCD rules and regulations that include air emission reduction strategies for the basin. These, in concert with individual project mitigation measures, will help reduce air quality impacts. However, until the San Luis Obispo area as a

whole attains all federal and state standards, it is likely that the air emissions from the cumulative projects would be regionally significant.

4.1.8 Mitigation Monitoring Plan

4.1.8.1 Remediation Project Mitigation Monitoring Plan

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
AQ-1a	Prior to issuance of applicable grading permit, and throughout project construction, as applicable, the Applicant shall implement the following construction emission reduction measures: a. Properly maintain all construction equipment according to manufacturer's specifications; b. Fuel all off-road and portable diesel powered equipment with CARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road); c. Use CARB Tier 3 certified diesel construction equipment or cleaner off-road heavy-duty diesel engines, and comply with state Off-Road Regulations; d. Use CARB 2007 or cleaner certified on-road heavy-duty diesel trucks and comply with state On-Road Regulations; e. If construction or trucking companies that are awarded the bid or are subcontractors for the project do not have equipment to meet the above two measures, the impacts from the dirtier equipment shall be addressed through SLOAPCD-approved off-site or other mitigation measures; f. All on- and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and job sites to remind drivers and operators of the 5 minute idling limit; g. Diesel idling within 1,000 feet of sensitive receptors is not permitted or applicable measures shall be employed as per the direction of the SLOCAPCD, including monitoring or low-particulate engine technologies. (Sensitive receptors are defined in the SLOAPCD Handbook as people that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling units);	Review of Plan documents	Before construction	SLOAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	h. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors or applicable measures shall be employed as per the direction of the SLOCAPCD, including monitoring or low-particulate engine technologies; No staging, queuing or idling within 1,000 feet of the recreational fields when in use; i. Equipment shall be electrified when feasible; j. Substitute gasoline-powered in place of diesel-powered equipment, where feasible; and k. Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel.			
AQ-1b	Prior to issuance of applicable grading permit, the Applicant shall ensure SLOAPCD regulations that prohibit developmental burning of vegetative material within San Luis Obispo County are followed.	Limits/notes on design documents/ plans	Before construction	SLOAPCD
AQ-1c	Prior to issuance of applicable grading permit, the Applicant shall ensure that portable equipment and engines 50 horsepower or greater, used during grading and construction activities must have a California portable equipment registration (issued by the ARB) or an SLOAPCD permit. Proof of registration must be provided to the SLOAPCD prior to the start of grading or construction or a permit secured from the SLOAPCD prior to the start of grading or construction. The following list is as a guide to equipment and operations that may have permitting requirements, but it is not exclusive: a. Power screens, conveyors, diesel engines, and/or crushers; b. Portable generators and equipment with 50-horsepower or greater engines; c. Internal combustion engines; d. Unconfined abrasive blasting operations; e. Concrete batch plants; f. Rock and pavement crushing; g. Tub grinders; and h. Trommel screens.	Review of Plan documents	Before construction	SLOAPCD
AQ-1d	Prior to issuance of applicable grading permit, the Applicant shall obtain the required SLOAPCD permits for the hydrocarbon contaminated soil. In addition, the following measures shall be implemented unless otherwise directed by the SLOAPCD upon a finding that alternative measures will result in equal or greater reduction in emission of air contaminants. a. Covers on storage piles shall be maintained in	Review of construction Plan documents	Before construction	SLOAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	place at all times in areas not actively involved in soil addition or removal; b. Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH –non-permeable barrier such as plastic tarp or other methods as approved by the SLOCAPCD. No headspace shall be allowed where vapors could accumulate; c. Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted; d. The air quality impacts from the excavation and haul trips associated with removing the contaminated soil must be evaluated, with emissions estimates provided to the SLOAPCD and mitigated with low emission trucks, low emission construction equipment and/or offsets if needed, if total emissions exceed the SLOAPCD's construction phase thresholds. An estimate of these emissions is included in this EIR; e. During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance or violation of SLOAPCD regulations would result; f. Clean soil must be segregated from contaminated soil; and g. The permit shall specify applicable criteria established by SLOAPCD. The notification and permitting determination requirements shall be directed to the SLOAPCD Engineering Division.			
AQ-1e	Prior to issuance of applicable grading permits, or during construction, if emissions of ROG+NOx with the above mitigations still exceed the thresholds, the Applicant shall secure SLOAPCD-approved off-site reductions in ROG + NOx emissions to ensure that ROG + NOx emissions do not exceed the SLOAPCD quarterly thresholds. Coordination with the SLOAPCD should begin at least six (6) months prior to issuance of grading permits for the Project to allow time for refining calculations and for the SLOAPCD to review and approve the CAMP and off-site mitigation approach.	Review of Plan documents	Before construction	SLOAPCD
AQ-1f	Prior to issuance of applicable grading permit, the Applicant shall ensure that all grading and construction equipment greater than 100 bhp be equipped with CARB Level 3 diesel particulate catalysts, or equivalent, to achieve an 85 percent reduction in diesel	Review construction plans and contractor requirements,	Before construction	SLOAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	particulate emissions. If CARB verified Level 3 DPFs cannot be secured for all of the equipment greater than 100 hp then the applicant will work to offset the added DPM with measures including but not limited to schedule modifications, implementation of no idling requirement, and expanded implementation of AQ-1a measures "i", "j", and "k"(e.g. use of alternative fueled generators).	in-field inspections		
AQ-1g	Prior to issuance of applicable grading permit, the Applicant shall produce a schedule detailing the phasing of activities for each OU and ensuring that the emissions of diesel particulate in any quarter falls below the applicable SLOAPCD thresholds. This could include measures such as ensuring that Reservoir 5 Cap, Reservoir 7 Cap and North Marsh remediation do not coincide. As an alternative approach, if scheduling is not feasible, the Applicant shall provide SLOAPCD-approved off-site reductions in DPM emissions to ensure that DPM emissions do not exceed the SLOAPCD thresholds.	Review of Plan documents	Before construction	SLOAPCD
AQ-2a	Prior to issuance of applicable grading permit, the Applicant shall provide satisfactory evidence that a SLOAPCD-approved Construction Activity Management Plan (CAMP) has been prepared that addresses fugitive dust emissions. The Plan shall include requirements in the SLOAPCD CEQA Handbook. Fugitive dust mitigation measures in the plan shall include a combination of the following, as approved by the SLOAPCD: a. Reduce the amount of the disturbed area where possible. b. Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. An adequate water supply source must be identified. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible. c. All dirt stockpile areas should be sprayed daily as needed, covered, or a SLOAPCD-approved alternative method will be used. (90 percent reduction). d. Permanent dust control measures identified in the approved Project revegetation and landscape plans should be implemented as soon as possible following completion of any soil disturbing activities. e. Exposed ground areas that will be reworked at	Review of Plan documents	Before construction	SLOAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	dates greater than one month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established, unless other dust and erosion control measures are specified in the agency-approved Dust Control Plan. f. All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the SLOAPCD. g. All roadways, driveways, sidewalks, etc. to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used. h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114. j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site. k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible l. Apply water every 3 hours to disturbed areas within the construction site (61 percent reduction in particulate emissions). m. Application of soil binders to dirt roads shall be applied to achieve at least an 80 percent reduction in fugitive dust emissions. All soil binders used shall be 'environmentally friendly' and shall be either lignosulfonate- or calcium lignosulfonate-based approved by the SLOAPCD. All dust control methods, including soil binders, shall be demonstrated in the fugitive dust control plan to ensure compliance with SLOAPCD Rule 401. n. All roadway, driveway, and sidewalk paving should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.			

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	o. The contractor or builder shall designate a person to monitor the fugitive dust emissions and oversee mitigation measure implementation as per SLOAPCD approval to minimize dust complaints, reduce visible emissions to less than 20 percent opacity, and to prevent transport of dust off-site. The designated monitor shall carry out these duties on regular workdays, as well as holidays and weekends when work may not be in progress. The name and telephone number of the designated monitor shall be provided to the SLOAPCD Compliance Division prior to the start of any grading, earthwork, or demolition.			
AQ-2b	Prior to issuance of applicable grading permit, the Applicant shall submit an APCD approved Construction Activity Monitoring Plan (CAMP), which shall include, but not be limited to the following elements: a. A Dust Control Management Plan that encompasses all, but is not limited to, measures associated with impact AQ.1 and AQ.2; b. Tabulation of on- and off-road construction equipment information (e.g., make, model, type, engine tier, DPM Level 3 filter age, horse-power, and miles or hours of operation); c. Construction truck trips scheduled during non-peak hours to reduce peak-hour emissions; d. Limited construction work-day period, if necessary; and e. Phase construction activities, if appropriate.	Review of Plan documents	Before construction	SLOAPCD
AQ-2c	Prior to issuance of applicable grading permit, the Applicant shall implement the following idle-restricting measures for both on- and off-road equipment during the Project grading and construction phase near sensitive receptors: a. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors or applicable measures shall be employed as per the direction of the SLOCAPCD, including monitoring or low-particulate engine technologies. No staging, queuing or idling within 1,000 feet of the recreational fields when in use; b. Diesel idling within 1,000 feet of sensitive receptors is not permitted or applicable measures shall be employed as per the direction of the SLOCAPCD, including monitoring or low-particulate engine technologies. No staging, queuing or idling within 1,000 feet of the	Review of Plan documents	Before construction	SLOAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	recreational fields when in use; c. Use alternative fueled equipment whenever possible; and d. Signs identifying the no idling requirements must be posted and enforced at the construction site.			
AQ-2d	Prior to issuance of applicable grading permit, the Applicant shall implement the following idle-restricting measures for on-road vehicles during the grading and construction phase of the Project: a. Section 2485 of Title 13, the California Code of Regulations limits diesel-fueled commercial motor vehicles that operate in the State of California with gross vehicular weight ratings of greater than 10,000 pounds and licensed for operation on highways. It applies to California and non-California based vehicles. In general, the regulation specifies that drivers of these vehicles: - Shall not idle the vehicle's primary diesel engine for more than 5 minutes at any location, except as noted in Subsection (d) of the regulation; and, - Shall not operate a diesel-fueled auxiliary power system (APS) to power a heater, air conditioner, or any ancillary equipment on that vehicle during sleeping or resting in a sleeper berth for greater than 5 minutes at any location when within 100 feet of a restricted area, except as noted in Subsection (d) of the regulation. b. Signs shall be posted in the designated queuing areas and job sites to remind on-road equipment operators of the 5-minute idling limit.	Review of Plan documents	Before construction	SLOAPCD
AQ-2e	Prior to issuance of applicable grading permit, the Applicant shall implement the following idle restricting measures for off-road vehicles during the construction phase of the Project: a. Off-road diesel equipment shall comply with the 5-minute idling restriction identified in Section 2449(d)(3) of the CARB In-Use off-Road Diesel regulation: www.arb.ca.gov/regact/2007/ordiesl07/frooal.pdf. b. Signs shall be posted in the designated queuing areas and job sites to remind off-road equipment operators of the 5-minute idling limit.	Review of Plan documents	Before construction	SLOAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
AQ-2f	Prior to issuance of applicable grading permit, the Applicant shall submit a geologic evaluation under the CARB Air Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations, to determine if Naturally Occurring Asbestos (NOA) is present within the area that will be disturbed. NOA has been identified as a toxic air contaminant by the CARB. If NOA is not present, an exemption request must be filed with the District. If NOA is found at the site, the Applicant must 1) comply with all requirements outlined in the Asbestos ATCM. This may include development of an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program for approval by the SLOAPCD; 2) require that any crushing operations do not result in any dust that is visible crossing the property line, does not discharge into the air any visible emissions other than uncombined water vapor, for a period aggregating more than three minutes in any one hour which are 50 percent as dark or darker in shade as that designated as number one on the Ringlemann Chart or exceed at 10 % opacity; and 3) conduct a geological evaluation prior to any grading. Technical Appendix 4.4 of the SLOAPCD CEQA Handbook includes a map of zones throughout the County where NOA has been found. More information on NOA is available at http://www.slocleanair.org/business/asbestos.php	Review of Plan documents	Before construction	SLOAPCD
AQ-2g	Prior to issuance of demolition permit, the Applicant shall comply with asbestos containing material (ACM) requirements. Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and disposal of ACM. ACM could be encountered during demolition or remodeling of existing buildings. Asbestos can also be found in utility pipes and pipelines (transite pipes or insulation on pipes). If utility pipelines are scheduled for removal or relocation or a building(s) is proposed to be removed or renovated, various regulatory requirements may apply, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP). These requirements include but are not limited to: (1) notification to the SLOAPCD; (2) an asbestos survey conducted by a Certified Asbestos Inspector; and (3) applicable removal and disposal requirements of identified ACM. More information on asbestos is available at http://www.slocleanair.org/business/asbestos.php.	Review of Plan documents	Before construction	SLOAPCD

4.1.8.2 City Development Plan Mitigation Monitoring Plan

Mitigation measures AQ-1a though AQ-1g and AQ-2a though AQ-2f would apply to the City Development Plan during development construction. See the Mitigation Monitoring Plan for Remediation above for a list of these measures.

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
AQ-6a	Prior to issuance of applicable construction permits, the Applicant shall implement the following mitigation measures to reduce area source emissions, where applicable. a. Increase walls and attic insulation by 20 percent above what is required by the 2008 Title 24 requirements. b. Shade tree planting along southern exposures of buildings to reduce summer cooling needs. c. Shade tree planting in parking lots to reduce evaporative emissions from parked vehicles. d. Use built-in energy efficient appliances, were applicable. e. Orient buildings toward streets with convenient pedestrian and transit access. f. Use double-paned windows. g. Use sodium low-energy parking lot and streetlights. (e.g., sodium) h. Use energy efficient interior lighting. i. Incorporate energy efficient skylights into roof plan (i.e., should meet the EPA/DOE Energy Star® rating). j. Install High efficiency or gas space heating. k. Install door sweeps and weather stripping if more efficient doors and windows are not available.	Review of Plan documents	Before construction	SLOAPCD
AQ-6b	Prior to issuance of applicable construction permits or lease agreement, the Applicant shall implement the following mitigation measures to reduce vehicle emissions. a. Locate electrical vehicle charging station(s) in the parking lots at a ratio required by County or City ordinance or as recommended by APCD. b. In coordination with the City Transit Management, provide transit demand enhancements (i.e., additional stops, shelters, phones) within the Project impact area to meet the increased ridership demand associated with the Project.	Review of Plan documents	Before construction	SLOAPCD

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	c. Provide on-site long-and short-term bicycle parking consistent with location and design criteria established by the City's Bicycle Transportation Plan, with installation and design guidance provided by the City's Community Design Guidelines. One bicycle parking space for every 10 employees is considered appropriate. d. Provide shower stalls and locker facilities to encourage employees to bike or walk to work. e. The Applicant or lessee shall meet with SLOCOG's Rideshare Program Coordinator to develop a Trip Reduction Plan to be reviewed and approved by the Public Works Director and APCD. The Trip Reduction Plan shall include the following: 1) A comprehensive Transportation Demand Management program for employees. The TDM may include: (a) private vanpool operation; (b) transit and vanpool fare subsidies; (c) pay parking for employees; (d) provision of subscription bus services; (e) alternative work hours; (f) capital improvements for transit services; (g) reduction of parking fees for carpools and vanpools; (h) Bikeway linkages to established bicycle routes; and (i) provision of an on-site employee transportation and rideshare coordinator. 2) Preferential carpool and vanpool parking for employees. 3) A lunch-time shuttle to reduce single occupant vehicle trips. 4) On-site facilities for eating and convenience including refrigeration, automatic banking, and other vending for employees. 5) Incentive programs, similar to the County Rideshare Transportation Choices Program, to reduce employee commute trips. Programs should be coordinated with adjacent commercial development with a goal to achieve an Average Vehicle Ridership (AVR) of 1.20 persons per vehicle or greater. 6) The Applicant shall set aside funds equivalent to three month enrollment in Rideshare's Back 'N' Forth Club for 25			

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
	percent of all employees (a maximum of $52,230 for this project). This fund shall be managed by APCD through a program similar to the "Flash Pass" used for the San Luis Obispo Home Depot development. If funds are not used for this purpose, they may be used for other incentives that have been included in the approved Trip Reduction Plan. f. The Applicant shall coordinate with the City and APCD to pursue a shared use agreement to use over-supplied parking areas for a potential park-and-ride lot. The park-and-ride lot should be away from building entrances and as close as possible to the parking lot entrance nearest to Tank Farm Road or fronting street. The target number of park-and-ride spaces should be 25. The parking area should be identified with signage and registered with the San Luis Obispo Council of Governments as an official park-and-ride lot. g. Implement on-site circulation design elements in parking lots to reduce vehicle queuing and improve the pedestrian and bicycle environment.			
AQ-6c	Prior to issuance of applicable construction permits, if emissions of ROG+NOx with the above mitigations still exceed the thresholds, the Applicant shall secure SLOAPCD approved off-site reductions in ROG+NOx emissions from the SLOAPCD to ensure that ROG+NOx emissions do not exceed the SLOAPCD daily and annual thresholds.	Review of Plan documents	Before construction	SLOAPCD
AQ-6d	Implement a program of periodic wet-vacuum street sweeping in coordination with APCD in order to reduce vehicle-related fugitive dust emissions.	Review of Plan documents Site Inspection	Before construction During construction	SLOAPCD
AQ-8	Prior to issuance of applicable construction permits for each phase, the Applicant shall include building efficiency improvements and/or off-site reductions in GHG emissions to ensure that GHG emissions do not exceed the SLOAPCD thresholds.	Review of Plan documents	Before construction	SLOAPCD

4.1.8.3 County Development Plan Mitigation Monitoring Plan

Mitigation measures AQ-1a though AQ-1g and AQ-2a though AQ-2g would apply to the County Development Plan during development construction. See the Mitigation Monitoring Plan for Remediation above for a list of these measures.

All mitigation measures identified for the City Development Plan would apply to the County Development Plan. See the Mitigation Monitoring Plan for the City Development Plan above for a list of these measures.

Mitigation Measure	Plan Requirements and Timing	Compliance Verification		
		Method	Timing	Responsible Party
AQ-11	Prior to issuance of building or construction permits for the WWTP, the Applicant shall, where applicable, apply to the SLOAPCD for permits and develop an odor Control plan in coordination with the SLOAPCD.	Review of design documents and plan	Before construction and before operations	SLOAPCD

4.1.9 References

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