SECTION 4.3
AIR QUALITY

4.3.1 INTRODUCTION

This Section evaluates the potential air quality impacts associated with the Butterfield Specific Plan. The purpose is also to recommend mitigation measures to avoid or lessen the significance of potential impacts. Information presented in this Section is based upon the *City of Banning General Plan* (January 2006), the *Environmental Impact Report for the City of Banning Comprehensive General Plan and Zoning Ordinance* (June 2005), the *City of Banning Municipal Code* (codified through January 2010), and Air Quality Data provided by the California Air Resources Board. Land use and traffic data are based on the proposed Butterfield Specific Plan, and the Project's Traffic Impact Analysis (Appendix I). Refer to Appendix B, *Air Quality Data* for detailed air quality modeling assumptions and results.

4.3.2 EXISTING CONDITIONS

4.3.2.1 ENVIRONMENTAL SETTING

Physical Site Conditions

The Project site is currently vacant, gently sloping lands, periodically used for livestock grazing. The existing vegetative cover provides some protection from water and wind erosion, although site soil conditions and wind patterns have occasionally produced severe wind erosion across the site, typically depositing windblown sand to the west. As discussed further below, the site is bordered by existing residential and other sensitive receptors on the southwest, south and southeast property lines.

South Coast Air Basin

The South Coast Air Basin (Basin), in which the City of Banning is located, is characterized as having a "Mediterranean" climate (a semi-arid environment with mild winters, warm summers, and moderate rainfall). The Basin is a 6,600-square-mile area bounded by the Pacific Ocean to the west, and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area in Riverside County. The Basin's terrain and geographical location (i.e., a coastal plain with connecting broad valleys and low hills) determine its distinctive climate.

The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. The climate is mild and tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the Basin is a function of the

area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the Basin.

Climate

The climate in the Basin is characterized by moderate temperatures and comfortable humidity, with precipitation limited to a few storms during the winter season (November through April). The average annual temperature varies little and averages 75 degrees Fahrenheit. However, with a less pronounced oceanic influence, the eastern inland portions of the Basin show greater variability in annual minimum and maximum temperatures. January is usually the coldest month at all locations, while July and August are usually the hottest months of the year. Although the Basin has a semi-arid climate, the air near the surface is moist due to the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought in by offshore winds. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as "high fog," are a characteristic climate feature.

In the City of Banning, the climate is typically warm during summer when temperatures tend to be in the 90s and cool during winter when temperatures tend to be in the 60s. The warmest month of the year is August with an average maximum temperature of 97 degrees Fahrenheit, while the coldest month of the year is January with an average minimum temperature of 64 degrees Fahrenheit. Temperature variations between night and day tend to be moderate during summer with a difference that can reach 37 degrees Fahrenheit, and moderate during winter with a difference of approximately 24 degrees Fahrenheit. The annual average precipitation in Banning is 19.30 inches. Rainfall occurs most frequently in January, with an average rainfall of 4.18 inches.[1]

Photochemical Smog

The presence and intensity of sunlight are necessary prerequisites for the formation of photochemical smog. Under the influence of the ultraviolet radiation of sunlight, certain original or "primary" pollutants (mainly reactive hydrocarbons and oxides of nitrogen) react to form "secondary" pollutants (primarily oxidants). Since this process is time dependent, secondary pollutants can be formed many miles downwind from the emission sources. Because of the prevailing daytime winds and time-delayed nature of photochemical smog, oxidant concentrations are highest in the inland areas of Southern California.

[1] The Weather Channel, *Average Weather for Banning, CA*, http://www.weather.com/outlook/health/airquality/wxclimatology/monthly/graph/USCA0066, accessed July 27, 2010.

Temperature Inversions

Under ideal meteorological conditions and irrespective of topography, pollutants emitted into the air would be mixed and dispersed into the upper atmosphere. However, the Southern California region frequently experiences temperature inversions in which pollutants are trapped and accumulate close to the ground. The inversion, a layer of warm, dry air overlaying cool, moist marine air, is a normal condition in the southland. When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from entering the upper atmosphere, resulting in a settlement in the foothill communities. Below 1,200 feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Smog in Southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight.

Monitored Air Quality Levels

The South Coast Air Quality Management District (SCAQMD) and the California Air Resources Board (CARB) monitor the local ambient air quality from approximately 250 air monitoring stations located across the State. Air quality monitoring stations usually measure pollutant concentrations ten feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Each monitoring station is located within a Source Receptor Area (SRA). The communities within a SRA have similar climatology and ambient air pollutant concentrations. The City of Banning is located within the Banning Airport SRA (SRA 29), and the nearest monitoring station is located within the City at 200 South Hathaway Street.

Air quality data from 2007 to 2009 for the Banning Airport Monitoring Station is provided in Table 4.3-1, *Local Air Quality Levels*. The Banning Airport Monitoring Station collects data for NO_2, O_3, PM_{10}, and $PM_{2.5}$. Therefore, data for CO and $PM_{2.5}$ was obtained from the San Bernardino Monitoring Station, which is the next closest monitoring station to the Project area that monitors CO and $PM_{2.5}$. The following air quality information briefly describes the various types of pollutants monitored at the local stations.

Ozone. O_3 occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately ten miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" ozone) layer extends upward from about ten to 30 miles and protects life on earth from the sun's harmful ultraviolet rays (UV-B). "Bad" ozone is a photochemical pollutant, and needs VOCs, NO_X and sunlight to form; therefore, volatile organic compounds (VOCs) and NO_X are ozone precursors. VOCs and NO_X are emitted from various sources throughout the City. Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions

when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

Table 4.3-1
Local Air Quality Levels

Pollutant	California Standard	Federal Primary Standard	Year	Maximum[3] Concentration	Days (Samples) State/Federal Std. Exceeded
1-hour Ozone (O_3)[1]	0.09 ppm for 1 hour	NA[6]	2007 2008 2009	0.129 ppm 0.149 0.133	28/1 57/10 55/1
8-hour Ozone (O_3)[1]	0.07 ppm for 8 hours	0.075 ppm for 8 hours	2007 2008 2009	0.114 ppm 0.120 0.105	62/43 95/74 91/70
1-hour Carbon Monoxide (CO)[2]	20 ppm for 1 hour	35 ppm for 1 hour	2007 2008 2009	3.70 ppm 2.40 2.50	0/0 0/0 0/0
8-hour Carbon Monoxide (CO)[2]	9.0 ppm for 8 hour	9.0 ppm for 8 hour	2007 2008 2009	2.27 ppm 1.65 1.90	0/0 0/0 0/0
Nitrogen Dioxide (NO_2)[1]	0.18 ppm for 1 hour	0.100 ppm For 1 hour	2007 2008 2009	0.079 ppm 0.079 0.056	0/NA 0/NA 0/NA
Fine Particulate Matter ($PM_{2.5}$)[2, 5]	No Separate Standard	35μ/m³ for 24 hours	2007 2008 2009	72.1 μ/m³ 43.5 37.8	NA/11 NA/3 NA/2
Particulate Matter (PM_{10})[1, 4, 5]	50 μ/m³ for 24 hours	150μ/m³ for 24 hours	2007 2008 2009	78.0 μ/m³ 51.0 99.0	7/0 0/0 1/0

Source: Aerometric Data Analysis and Measurement System (ADAM), summaries from 2007 to 2009, http://www.arb.ca.gov/adam.

ppm = parts per million; PM_{10} = particulate matter 10 microns in diameter or less; NM = not measured; μg/m³ = micrograms per cubic meter; $PM_{2.5}$ = particulate matter 2.5 microns in diameter or less; NA = not applicable.

Notes:
1. Data collected from the Banning Airport Monitoring Station located at 200 South Hathaway Street, Banning, California 92220.
2. Data collected from San Bernardino Monitoring Station located at 24302 East 4th Street, San Bernardino, California 92410.
3. Maximum concentration is measured over the same period as the California Standards.
4. PM_{10} exceedances are based on State thresholds established prior to amendments adopted on June 20, 2002.
5. PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.
6. The Federal standard was revoked in June 2005.

Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems (such as forests and foothill plant communities) and damages agricultural crops and some man-made materials (such as rubber, paint and plastics). Societal costs from ozone damage include increased healthcare costs, the loss of human and animal life, accelerated replacement of industrial equipment and reduced crop yields.

Carbon Monoxide. CO is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. At high concentrations, CO can reduce the oxygen-carrying capacity of the blood and cause headaches, dizziness, and unconsciousness.

Nitrogen Dioxide. NO_X are a family of highly reactive gases that are a primary precursor to the formation of ground-level O_3, and react in the atmosphere to form acid rain. NO_2 (often used interchangeably with NO_X) is a reddish-brown gas that can cause breathing difficulties at high levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations).

NO_2 can irritate and damage the lungs, and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_2 concentrations that are typically much higher than those normally found in the ambient air may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

Coarse Particulate Matter (PM_{10}). PM_{10} refers to suspended particulate matter, which is smaller than ten microns or ten one-millionths of a meter. PM_{10} arises from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. PM_{10} scatters light and significantly reduces visibility. In addition, these particulates penetrate the lungs and can potentially damage the respiratory tract. On June 19, 2003, CARB adopted amendments to the statewide 24-hour particulate matter standards based upon requirements set forth in the Children's Environmental Health Protection Act (SB 25).

Fine Particulate Matter ($PM_{2.5}$). Due to recent increased concerns over health impacts related to fine particulate matter (particulate matter 2.5 microns in diameter or less), both State and Federal $PM_{2.5}$ standards have been created. Particulate matter impacts primarily affect infants, children, the elderly, and those with pre-existing cardiopulmonary disease. In 1997, the Environmental Protection Agency (EPA) announced new $PM_{2.5}$ standards. Industry groups challenged the new standard in court and the implementation of the standard was blocked. However, upon appeal by the EPA, the U.S. Supreme Court reversed this decision and upheld the EPA's new standards.

On January 5, 2005, the EPA published a Final Rule in the Federal Register that designates the Basin as a nonattainment area for Federal $PM_{2.5}$ standards. On June 20, 2002, CARB adopted amendments for statewide annual ambient particulate matter air quality standards. These standards were adopted due to increasing concerns by CARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current State standards during some parts of the year, and the statewide potential for significant health impacts associated with particulate matter exposure was determined to be large and wide-ranging.

Reactive Organic Gases and Volatile Organic Compounds. Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases including reactive organic gases (ROGs) and VOCs. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions, and paint (via evaporation).

Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than is the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics and CO are of particular concern. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The following types of people are most likely to be adversely affected by air pollution, as identified by CARB: children under 14, elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. Locations that may contain a high concentration of these sensitive population groups are called sensitive receptors and include residential areas, hospitals, day-care facilities, elder-care facilities, elementary schools, and parks.

As previously mentioned, the Project area encompasses approximately 1,543 acres of vacant or undeveloped land. Sensitive receptors within the vicinity of the Project are presented in Table 4.3-2, *Sensitive Receptors.* Within the Project site, the Specific Plan is proposing the following sensitive land uses: schools; residential dwelling units; and parks.

Table 4.3-2
Sensitive Receptors

Type	Name	Distance from Project Site (feet)[1]	Direction from Project Site
Residential	Residential Uses	54	South
		105	East
		175	West
		418	Southeast
		808	Northwest
Hotels/Motels	Hampton Inn & Suites	1,740	South
	Highland Springs Resort	1,880	West
Schools	Pass Christian Pre-School	96	South
	Sundance Elementary School	2,030	West
Churches	First Assembly of God	96	South
	Highland Springs Fellowship	96	South
	Church of Jesus Christ of Latter Day Saints	170	South
	Fountain of Life Church	2,400	East
	Mountain Avenue Baptist Church	2,420	East
Hospitals	Cherry Valley Health Care	150	South
	San Gorgonio Memorial Hospital	290	South

Note:
1 – Distances are measured from the exterior Project boundary only and not from individual construction projects/areas within the interior of the Project site.
Source: Google Earth 2010.

4.3.2 REGULATORY FRAMEWORK

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) is responsible for implementing the Federal Clean Air Act (FCAA), which was first enacted in 1955 and amended numerous times after. The FCAA established Federal air Quality standards known as the National Ambient Air Quality Standards (NAAQS). These standards identify levels of air quality for "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The criteria pollutants are O_3, CO, NO_2 (which is a form of NO_X), SO_2 (which is a form of sulfur oxides SO_X), PM_{10}, $PM_{2.5}$, and Pb; refer to Table 4.3-3, *National and California Ambient Air Quality Standards*.

California Air Resources Board

CARB administers the air quality policy in California. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in Table 4.3-3, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide, and sulfates. The CCAA, which was approved in 1988, requires that each local air district prepare and maintain an air quality management plan (AQMP) to achieve compliance with CAAQS. These AQMPs also serve as the basis for preparation of the State Implementation Plan (SIP) for the State of California.

State Air Toxics Program

Toxic air contaminants are another group of pollutants of concern in Southern California. There are hundreds of different types of toxic air contaminants, with varying degrees of toxicity. Sources of toxic air contaminants include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle engine exhaust. Public exposure to toxic air contaminants can result from emissions from normal operations, as well as accidental releases of hazardous materials during upset spill conditions. Health effects of toxic air contaminants include cancer, birth defects, neurological damage, and death.

California regulates toxic air contaminants through its air toxics program, mandated in Chapter 3.5 (Toxic Air Contaminants) of the Health and Safety Code (Health and Safety Code Section 39660 et seq.) and Part 6 (Air Toxics "Hot Spots" Information and Assessment) (Health and Safety Code Section 44300 et seq.). CARB, working in conjunction with the State Office of Environmental Health Hazard Assessment, identifies toxic air contaminants. Air toxic control measures may then be adopted to reduce ambient concentrations of the identified toxic air contaminant to below a specific threshold, based on its effects on health, or to the lowest concentration achievable through use of best available control technology (BACT) for toxics. The program is administered by CARB. Air quality control agencies, including the SCAQMD, must incorporate air toxic control measures into their regulatory programs or adopt equally stringent control measures as rules within six months of adoption by CARB. The SCAQMD established Rules 1401 and 1402 to reduce air toxic exposures from new and existing stationary sources, respectively. Additionally, the SCAQMD has adopted State Air Toxic Control Measures pertaining to the emission of perchloroethylene from dry cleaning operations (AQMD Rule 1421) as well as the National Emission Standards for Hazardous Air Pollutants (NESHAP).

Table 4.3-3
National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California[1]		Federal[2]	
		Standard[3]	Attainment Status	Standards[4]	Attainment Status
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	**Nonattainment**	NA[5]	NA[5]
	8 Hours	0.07 ppm (137 µg/m^3)	Unclassified	0.075 ppm (147 µg/m^3)	**Nonattainment**
Particulate Matter (PM_{10})	24 Hours	50 µg/m^3	**Nonattainment**	150 µg/m^3	**Nonattainment**
	Annual Arithmetic Mean	20 µg/m^3	**Nonattainment**	NA[6]	**Nonattainment**
Fine Particulate Matter ($PM_{2.5}$)	24 Hours	No Separate State Standard		35 µg/m^3	Unclassified
	Annual Arithmetic Mean	12 µg/m^3	**Nonattainment**	15 µg/m^3	**Nonattainment**
Carbon Monoxide (CO)	8 Hours	9 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Attainment
	1 Hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment
Nitrogen Dioxide (NO_2)[7]	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	NA	53 ppb (100 µg/m^3)	Attainment
	1 Hour	0.18 ppm (339 µg/m^3)	Attainment	100 ppb (188 µg/m^3)	NA
Lead (Pb)	30 days average	1.5 µg/m^3	Attainment	N/A	NA
	Calendar Quarter	N/A	NA	1.5 µg/m^3	Attainment
Sulfur Dioxide (SO_2)	24 Hours	0.04 ppm (105 µg/m^3)	Attainment	N/A	Attainment
	3 Hours	N/A	NA	N/A	Attainment
	1 Hour	0.25 ppm (655 µg/m^3)	Attainment	75 ppb (196 µg/m^3)	NA
Visibility-Reducing Particles	8 Hours (10 a.m. to 6 p.m., PST)	Extinction coefficient = 0.23 km@<70% RH	Unclassified	**No Federal Standards**	
Sulfates	24 Hour	25 µg/m^3	Attainment		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Unclassified		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)	Unclassified		

Source: California Air Resources Board and U.S. Environmental Protection Agency, September 8, 2010.

µg/m^3 = micrograms per cubic meter; ppm = parts per million; ppb = parts per billion; km = kilometer(s); RH = relative humidity; PST = Pacific Standard Time; N/A = Not Applicable

(footnotes continued on next page)

(footnotes continued from previous page)

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter-PM_{10} and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations. In 1990, the California Air Resources Board (CARB) identified vinyl chloride as a toxic air contaminant, but determined that there was not sufficient available scientific evidence to support the identification of a threshold exposure level. This action allows the implementation of health-protective control measures at levels below the 0.010 ppm ambient concentration specified in the 1978 standard.
2. National standards (other than ozone, particulate matter and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. EPA also may designate an area as *attainment/unclassifiable*, if: (1) it has monitored air quality data that show that the area has not violated the ozone standard over a three-year period; or (2) there is not enough information to determine the air quality in the area. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3. Concentration is expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
5. The Federal 1-hour ozone standard was revoked on June 15, 2005 in all areas except the 14 8-hour ozone nonattainment Early Action Compact (EAC) areas.
6. The Environmental Protection Agency revoked the annual PM_{10} standard in 2006 (effective December 16, 2006).
7. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).

South Coast Air Quality Management District

The SCAQMD is one of 35 air quality management districts that have prepared Air Quality Management Plans to accomplish a five-percent annual reduction in emissions. *The 2007 Air Quality Management Plan for the South Coast Air Basin (*2007 AQMP) relies on a multi-level partnership of governmental agencies at the Federal, State, regional, and local level. The *2007 AQMP* proposes policies and measures to achieve Federal and State standards for improved air quality in the Basin and those portions of the Salton Sea Air Basin (formerly named the Southeast Desert Air Basin) that are under the SCAQMD jurisdiction.

The Basin is currently in non-attainment for Ozone and particulate matter. The 2007 AQMP states that "the overall control strategy for this Final Plan is designed to meet applicable federal and state requirements, including attainment of ambient air quality standards. The focus of the Plan is to demonstrate attainment of the federal $PM_{2.5}$ ambient air quality standard by 2015 and the federal 8-hour ozone standard by 2024, while making expeditious progress toward attainment of state standards. The proposed strategy, however, does not attain the previous federal 1-hour ozone standard by 2010 as previously required prior to the recent change in federal regulations."

The *2007 AQMP* includes new information on key elements such as:

- Current air quality;
- Improved emission inventories, particularly significant increases in mobile source emissions;
- An overall control strategy comprised of SCAQMD, State, and Federal Stationary and Mobile Source Control Measures, and the Southern California Association of Governments Regional Transportation Strategy and Control Measures;
- New attainment demonstration for $PM_{2.5}$ and O_3;
- Milestones to the Federal Reasonable Further Progress Plan; and
- Preliminary motor vehicle emission budgets for transportation conformity purposes.

In addition to the *2007 AQMP* and its rules and regulations, the SCAQMD published the *CEQA Air Quality Handbook*.[2] The *CEQA Air Quality Handbook* provides guidance to assist local government agencies and consultants in developing the environmental documents required by CEQA. With the help of the *CEQA Air Quality Handbook*, local land use planners and other consultants are able to analyze and document how proposed and existing projects affect air quality and should be able to fulfill the requirements of the CEQA review process. The SCAQMD is in the process of developing an *Air Quality Analysis Guidance Handbook* to replace the current *CEQA Air Quality Handbook.*

Southern California Association of Governments (SCAG)

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG serves as the Federally-designated metropolitan planning organization for the Southern California region and is the largest metropolitan planning organization in the United States. With respect to air quality planning, SCAG has prepared the *Regional Comprehensive Plan and Guide*, which includes Growth Management and Regional Mobility chapters that form the basis for the land use and transportation control portions of the *2007 AQMP*. SCAG is responsible under the FCAA for determining conformity of projects, plans, and programs with the AQMP.

[2] Approved by the South Coast Air Quality Management District Governing Board in 1993.

4.3.3 SIGNIFICANCE THRESHOLD CRITERIA

Air quality impacts due to the project within SCAQMD are assessed using methodologies identified in *CEQA Air Quality Handbook* prepared and revised by SCAQMD. Under CEQA, the SCAQMD reviews projects within its jurisdiction as a lead agency, a responsible agency and a commenting agency. The SCAQMD reviews projects to ensure that they will not: (1) cause or contribute to any new violation of any air quality standard; (2) increase the frequency or severity of any existing violation of any air quality standard; or (3) delay timely attainment of any air quality standard or any required interim emission reductions or other milestones of any Federal attainment plan. The *CEQA Air Quality Handbook* provides significance thresholds for both construction and operation of projects within the SCAQMD jurisdictional boundaries. If the SCAQMD thresholds are exceeded, a potentially significant impact could result. However, ultimately the lead agency determines the thresholds of significance for impacts. If a project proposes development in excess of the established thresholds, as outlined in Table 4.3-4, *SCAQMD Emission Thresholds*, a significant air quality impact may occur and additional analysis is warranted to fully assess the significance of impacts.

Table 4.3-4
SCAQMD Emissions Thresholds

Phase	Pollutant (lbs/day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Construction	75	100	550	150	150	55
Operational	55	55	550	150	150	55

Source: SCAQMD, *CEQA Air Quality Handbook*, page 6-1, April 1993.

ROG = reactive organic gases; NO_X = nitrogen oxides; $PM_{2.5}$ = particulate matter less than 2.5 microns
CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = particulate matter less than 10 microns

Additionally, the SCAQMD criterion recommends performing a CO hotspot analysis when a project increases the volume to capacity ratio (also called the intersection capacity utilization) by 0.02 (2 percent) for any intersection with an existing level of service (LOS) D or worse.

The environmental analysis in this section relative to air quality is patterned after the Initial Study Checklist recommended by the CEQA Guideline Appendix G, as amended, and used by the City of Banning in its environmental review process. The issues presented in Appendix G have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant air quality impact if it causes one or more of the following to occur:

a) Violate any air quality standard or contribute substantially to an existing or projected air quality violation)

b) Expose sensitive receptors to substantial pollutant concentrations;

c) Conflict with or obstruct implementation of the applicable air quality plan;

d) Creation of objectionable odors affecting a substantial number of people (also refer to Section 9.0, *Effects Found Not To Be Significant*); and/or

e) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

4.3.4 IMPACT ANALYSIS AND MITIGATION

ANALYTICAL METHOD

The air quality analysis uses methodology recommended by SCAQMD, including quantitative estimates of construction and operational emissions using the URBEMIS2007 and BREEZE ROADS models and comparing these emissions to regional construction thresholds established by the SCAQMD. As noted above, the previously approved the Deutsch Specific Plan and certified Deutsch Specific Plan EIR addressed development of the Project site with up to 5,400 dwelling units. This analysis has been updated to reflect the currently proposed Butterfield Specific Plan, including the off-site infrastructure and 21-acre unincorporated parcel.

The Project's impacts are analyzed at full Project build-out and in the Interim Phase between the site's initial grading and full build-out. In addition, long-term and construction phase impacts are analyzed for both on-site and off-site activity, including installation of off-site infrastructure.

PROJECT DESIGN FEATURES AND EXISTING REGULATIONS, RULES, AND REQUIREMENTS

Existing local, State and federal regulations noted above will avoid or mitigate potential impacts related to air quality. The following Project Design Features will also reduce, avoid or offset potentially adverse impacts:

1) The Project is proposed to be phased, with the initial Phase IA grading limited to the area necessary to achieve mass balancing and proper drainage of the overall property, leaving approximately 40 percent (over 500 acres) of the site in its current condition until such time the remaining phases begin to develop. This phased development will reduce the overall area being disturbed at any one time, and will reduce the overall annual grading emissions.

2) Project design features incorporate applicable recommendations from the Attorney General and CARB Scoping Plan, as discussed in Section 4.5, *Climate Change.* These

measures will not only reduce greenhouse gas emissions, but will also reduce criteria pollutant emissions of the Project.

3) The Project's water supply sources are focused first on local supplies, which will reduce reliance upon imported water, thereby reducing air emissions associated with pumping and delivering the water to the site.

IMPACT ANALYSIS AND MITIGATION MEASURES

Impact 4.3-1: Air Quality Standards

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

Determination: Significant and Unavoidable

Short-Term Construction Emissions

Implementation of the Specific Plan would facilitate development of various residential, commercial/office, school, and open space uses.[3] Development of the Specific Plan would occur within five phases, over approximately a 30-year time period; refer to Exhibit 3.0-14, *Conceptual Phasing Plan,* for a visual depiction of the construction phasing.

Fugitive Dust

Construction activities result in fugitive dust (PM_{10} and $PM_{2.5}$) emissions that may have a substantial, temporary impact on local air quality. Fugitive dust emissions vary substantially from day to day, depending on the level of activity, specific operations and weather conditions. Dust (PM_{10}) poses a serious health hazard alone or in combination with other pollutants. Graded soils would be exposed throughout the approximately 30 year construction period and would present air quality concerns to off-site and future on-site sensitive receptors.

Fine Particulate Matter ($PM_{2.5}$) is mostly derived from combustion sources, such as automobiles, trucks, and other vehicle exhaust, as well as from stationary sources. These particles are either directly emitted or are formed in the atmosphere from the combustion of gasses such as NO_X and SO_X combining with ammonia. $PM_{2.5}$ components from material in the earth's crust, such as dust, are also present, with the amount varying in different locations.

As shown below, Project construction would exceed SCAQMD fugitive dust emission thresholds in Phase 3. Mitigation measures noted below would substantially reduce, but not

[3] The trip generation table within the *Butterfield Specific Plan Traffic Impact Analysis*, prepared by LSA Associates, Inc. (September 15, 2010) includes 549,000 square feet of commercial uses and 200,000 square feet for school uses.

eliminate this temporary impact. Also refer to the conclusion and mitigation discussion following Table 4.3-9.

The fugitive dust emission levels estimated by URBEMIS2007 are based on soil disturbance activities and from entrained road dust sources. When detailed grading plans are unavailable, the recommended setting for the URBEMIS model is to apply 0.22 tons/acre-month (average conditions). The Midwest Research Institute has derived a value of 0.11 tons/acre/month, which converts to 10 pounds per day, assuming 22 workdays per month. The California Air Resources Board review has reviewed this factor and concluded that it represents PM10 emissions with watering. Consequently, ARB concludes that 20 pounds per acre day is more appropriate for unmitigated fugitive dust conditions.[4]

The mitigated PM_{10} and $PM_{2.5}$ emissions levels are achieved by implementation of the mitigation included in URBEMIS2007 and as typically required by the SCAQMD (Rule 403). These fugitive dust mitigation measures include: replace ground cover on disturbed areas quickly, water exposed surfaces twice daily, reduce speed on unpaved roads to 15 miles per hour (mph), and proper loading/unloading of mobile and other construction equipment; also refer to Mitigation Measure AQ-1.

The percent reductions achieved by implementation of the mitigation measures have been quantified in URBEMIS2007. Replace ground cover on disturbed areas and water exposed surfaces twice daily results in a 5 percent and 55 percent reduction of fugitive dust emissions from soil disturbance activities, respectively. Proper loading/unloading of mobile and other construction equipment results in a 69 percent reduction of fugitive dust from disturbance activities. Reducing speed on unpaved roads to less than 15 miles per hour results in a 44 percent reduction of fugitive dust emissions from entrained road dust.[5]

Naturally Occurring Asbestos

Pursuant to guidance issued by the Governor's Office of Planning and Research, State Clearinghouse, lead agencies are encouraged to analyze potential impacts related to naturally occurring asbestos (NOA). Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Asbestos is classified as a known human carcinogen by State, Federal, and international agencies and was identified as a toxic air contaminant by the CARB in 1986.

[4] California Air resources Board, http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-7.pdf, accessed May 16, 2011.

[5] Reduction percentages for fugitive dust and emissions factors have been prepared for the SCAQMD by the Midwest Desert Research Institute. *Midwest Research Institute, Improvement of Specific Emission Factors (BACM Project No. 1) Final Report Prepared for the South Coast AQMD*, November 14, 1995.

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed.

Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in the counties of the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. According to the Department of Conservation Division of Mines and Geology, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report* (dated August 2000), the proposed Project is not located in an area where NOA is likely to be present. Therefore impacts involving release of NOA are not anticipated.

Exhaust

Exhaust emissions would be generated by the operation of vehicles and equipment on the construction site, such as tractors, dozers, backhoes, cranes, and trucks. The majority of construction equipment and vehicles would be diesel powered, which tends to be more efficient than gasoline-powered equipment. Diesel-powered equipment produces lower carbon monoxide and hydrocarbon emissions than gasoline equipment, but produced greater amounts of NO_X, SO_X, and particulates per hour of activity. The transportation of equipment and materials to and from the site, as well as construction workers traveling to and from the site, would also generate vehicle emissions during construction. As shown below, only NOx emission thresholds would be exceeded, and then only during the initial Phase I mass grading stag. Recommended mitigation measures would substantially reduce but not completely offset this potential impact. Also refer to the conclusion and mitigation discussion following Table 4.3-9, which notes that the EIR construction emission estimates are highly conservative, and likely substantially overstate actual anticipated emissions. In addition, Section 4.5, *Climate Change,* includes additional mitigation measures that will also reduce Project construction-related emissions discussed in this section.

Grading/Hauling

Future development facilitated by the proposed Project would require the cut and fill of on-site soils. Cut and fill would be balanced on the Project site, and no export would be required. Although balanced cut and fill activities may create additional dust and PM_{10} and $PM_{2.5}$, they would be mitigated to less than significant levels through implementation of standard dust control practices required as part of the grading permit (periodic site watering and periodic street sweeping). Sand would be imported to the Project site for construction of the proposed golf course, as well as clay for construction of the golf course and Project water features. As summarized above and shown below, grading-related emissions will exceed fugitive dust and exhaust emission thresholds during Phase 3.

Machine Guided Grading. As deemed appropriate based on site conditions and supply of machinery, global positioning system (GPS) guided grading would also be performed (referred to as "machine guided grading"). GPS-based earthmoving systems use satellite data to compute the positions of GPS antennas mounted on construction equipment. Project-specific design information is loaded into an onboard computer that compares the exact position of the earthmover's blade with design coordinates and guides the equipment accordingly. The generated data can be used to drive fully automated blade control, or to guide a human operator by displaying grading information on an in-cab screen. This type of grading equipment reduces the duration of grading, minimizes unnecessary grading, and therefore reduces fuel consumption during the grading phase.[6] However, to be conservative, the emissions estimates presented below (in Tables 4.3-5 through 4.3-9) do not account for machine-guided grading.[7]

Project Development and Phasing

Development within the Project site would be constructed in five main phases over an estimated 30-year period of time, with an estimated 180 dwelling units to be developed per year on average. Mass grading of the Project site is anticipated involving four main phases, combining development Phases 1 and 2. Development would occur as appropriate levels of infrastructure and any required improvements are provided.

[6] "Building Information Modeling and Integrated Project Delivery", AEP 2010 Conference, March 2010, Ron Moreno, PE, PLS.

[7] This mitigation measure will be implemented by Pardee in consultation with the respective grading contractor(s). Emission reductions are not quantified, as this reduction measure has not received formal SCAQMD review to verity appropriate emission reduction credits. In addition, the actual emissions reductions vary with each project depending on the equipment used, availability of GPS machinery, and other factors.

Phase 1

Within Phase 1, just over half (825 acres) of the proposed Project would be mass-graded. The entire golf course and those planning areas (PAs) within the southwestern corner of the proposed Project would be developed. The areas include PAs 1A, 1B, 1C, 2 through 8, 17 through 19, 22 through 27, 35, 38, 39, and 71. A detention basin would be constructed in PA 71 where Smith Creek flows into the Project area at the north. The Smith Creek's watercourse would be realigned into the golf course area. Drainage improvements within PA 19 would be built to safely transmit accumulated upstream and Project-originated drainage flows to the existing Smith Creek Channel culvert southeast of Butterfield, south of Wilson Street. Phase 1 would also include the installation of infrastructure facilities needed to support the phase, including on-site and off-site water, recycled water, sewer pipelines, and utility lines. Project entry roadways extending from the South Loop Collector Street to the west and south would be constructed. Also, the extent of "F" Street adjacent to the golf course, as well as the Phase 1 adjacent portions of Highland Springs Avenue (south of "F" Street) and of Wilson Street would be built.

Table 4.3-5, *Phase 1 Construction Air Emissions*, provides a summary of construction emissions from Phase 1. Phase 1 would consist of 825 acres graded, and construction of 830 single-family dwelling units, 253.9 acres of golf course, 20.8 acres of parkland, and approximately 549,000 square feet of commercial building space[8]. Grading for the 825 acres would last approximately 18 months, while building activities would also take approximately 18 months. Grading emissions in Table 4.3-5 account for both original mass grading and fine pad grading activities. Earthwork on the project site would be balanced and total volumes have not yet been determined. Therefore, the URBEMIS2007 emissions defaults have been utilized for earthwork. It should be noted that the URBEMIS2007 defaults provide a conservative emission estimate for earthwork activities. As seen in Table 4.3-5, Phase I emissions would exceed the NO_X, CO, and ROG thresholds.

[8] Commercial square footage is based on the trip generation table within the *Butterfield Specific Plan Traffic Impact Analysis*, prepared by LSA Associates, Inc. (December 22, 2010).

Table 4.3-5
Phase 1 Construction Air Emissions

Emissions Source	Pollutant (pounds/day)[1, 2, 3]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
PHASE 1[4, 5]						
2012 (Grading)						
Unmitigated Emissions	43.97	383.93	188.54	0.01	616.23	140.20
Mitigated Emissions	43.97	319.87	188.54	0.01	110.80	34.64
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***Yes***	***No***	***No***	***No***	***No***
2013 (Grading, Trenching, Paving)						
Unmitigated Emissions	42.46	360.15	177.61	0.02	615.10	139.16
Mitigated Emissions	42.46	319.87	177.61	0.02	109.67	33.61
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***Yes***	***No***	***No***	***No***	***No***
2014 (Paving, Building)						
Unmitigated Emissions	25.36	98.43	570.98	0.90	10.47	7.18
Mitigated Emissions	25.36	62.38	570.98	0.90	10.47	7.18
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***Yes***	***No***	***No***	***No***
2015 (Building, Architectural Coating)						
Unmitigated Emissions	344.70	89.51	533.39	0.90	10.14	6.87
Mitigated Emissions[6]	310.25	5.80	533.39	0.90	10.14	6.87
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***Yes***	***No***	***No***	***No***	***No***	***No***

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter less than 10 microns; $PM_{2.5}$ = particulate matter less than 2.5 microns.

Notes:

1. Emissions were calculated using the URBEMIS 2007 version 9.2.4 Computer Model, as recommended by the SCAQMD. The reduction/credits for construction emission mitigations are based on mitigation included in the URBEMIS 2007 version 9.2.4 Computer Model and as typically required by the SCAQMD (Rule 403 and Rule 1113). The mitigation includes the following: replace ground cover on disturbed areas as quickly as possible, water exposed surfaces twice daily, proper loading/unloading of mobile and other construction equipment, and the use of low ROG coatings. Mitigated NO_X emissions also account for implementation of Mitigation Measure AQ-5 which requires the use of EPA certified off-road equipment. NO_X reductions are based on the percentage reductions identified in SCAQMD Table I – CARB and EPA Off-Road Compression-Ignition (Diesel) Engine Standards (http://www.arb.ca.gov/msprog/ordiesel/documents/Off-Road_Diesel_Stds.xls, accessed May 10, 2011), and Table II – Off-Road Engine Emission Rates and Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates (http://www.aqmd.gov/ceqa/handbook/mitigation/offroad/MM_offroad.html, accessed May 10, 2011).

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2. Note that the URBEMIS 2007 model has been found to overestimate diesel emissions from construction equipment, as it does not account for various rules and regulations such as the Portable Equipment Airborne Toxic Control Measure (ATCM), Transportation Refrigeration Units (TRU) ATCM, Red/Green Sticker Program, Carl Moyer Program, In-use Off-road Diesel Vehicle Regulation, and Local Rules (Sierra Research, Inc., *Emissions from Diesel-Fueled Non-Road Equipment in California*, April 19, 2010). Therefore, actual emissions may be lower than those presented above. However, the URBEMIS 2007 modeled emissions as presented is the suggested method of emissions quantification by CARB and the SCAQMD.
3. Refer to Appendix B, Air Quality Data, for assumptions used in this analysis.
4. Phase 1 includes construction of 830 single family dwelling units and 549,000 square feet of commercial uses. Commercial square footage is based on the trip generation table within the *Butterfield Specific Plan Traffic Impact Analysis*, prepared by LSA Associates, Inc. (December 22, 2010).
5. Grading activities would occur over an approximate 18 month period, trenching would occur for 1 month, paving would occur for 6 months, building would occur for 18 months, and architectural coatings would occur for 3 months.
6. CARB Certified Tier 4 equipment would be required post-2015 per Mitigation Measure AQ-7.

Phase 2

Within Phase 2, the PAs within the southeastern corner of the proposed Project would be developed, over an approximately three year time period. These areas include PAs 9 through 16, 20, 21, 28 through 33, 36 and 37. The South Loop Collector's Street's eastern half would be completed as needed with Phase 2. The Project entry roadways extending northward and eastward from the South Loop Street would be constructed. Also, the remaining extent of F Street from the golf course edge to Highland Home Road along with the Phase 2 adjacent portion of Highland Home Road south of F Street would be constructed. Table 4.3-6, *Phase 2 Construction Air Emissions*, provides a summary of construction emissions from Phase 2. It should be noted that grading for the Phase 2 planning areas was conducted in Phase 1 and the mass and fine grading is included in the 825 acres analyzed above. Phase 2 would consist of construction of up to 1,713 dwelling units, 32.2 acres of parkland, and 100,000 square feet of school facilities space[9]. As seen in Table 4.3-6, 2018 emissions would exceed the ROG thresholds due to the application of architectural coatings, despite implementation of Mitigation Measure AQ-3, which requires the use of low ROG paint and low emissions application methods (i.e., compliance with SCAQMD Rule 1113).

Phase 3

Within Phase 3, the remaining PAs between Brookside Avenue, Highland Home Road, and F Street within the northwestern corner of the Project area would be developed, over an estimated 12 year time period. The areas include PAs 34, 40 through 42, 43, 44 through 49, 53 through 59, 62 through 66, and 72. The entirety of the North Loop Collector Street would be built. Phase 3 adjacent portions of Highland Springs Avenue north of F Street and Brookside Avenue and Highland Home Road, north of F Street and east of Highland Springs Avenue, would also be constructed. Table 4.3-7, *Phase 3 Construction Air Emissions*, provides a summary of construction

[9] The trip generation table within the *Butterfield Specific Plan Traffic Impact Analysis*, prepared by LSA Associates, Inc. (December 22, 2010) includes 549,000 square feet of commercial uses and 200,000 square feet for school uses.

emissions from Phase 3. Phase 3 would consist of 429 acres graded, and construction of up to 2,042 dwelling units and 11.8 acres of parkland. As seen in Table 4.3-7, 2019 emissions would exceed the PM_{10} and $PM_{2.5}$ thresholds; 2030 emissions would exceed the ROG thresholds.

Phase 4

Within Phase 4, the PAs to the east of Highland Home Road would be developed. The areas include PAs 50, 51, 52, and 67. Table 4.3-8, *Phase 4 Construction Air Emissions*, provides a summary of construction emissions from Phase 4. Phase 4 would consist of 120 acres graded, and construction of 390 dwelling units, 1.7 acres of parkland, and 100,000 square feet of school facility space[10]. As seen in Table 4.3-8, emissions would not exceed the thresholds.

Phase 5

Within Phase 5, the PAs north of Brookside Avenue, within the northernmost extent of the Specific Plan would be developed, over an approximately three year time period. The areas include PAs 60 and 61. Table 4.3-9, *Phase 5 Construction Air Emissions*, provides a summary of construction emissions from Phase 5. Phase 5 would consist of 175 acres graded and construction of up to 412 dwelling units. As seen in Table 4.3-9, Phase 5 emissions would not exceed thresholds.

Table 4.3-6
Phase 2 Construction Air Emissions

Emissions Source	Pollutant (pounds/day)[1, 2]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
PHASE 2[5, 6]						
2016 (Trenching, Building)[3]						
Unmitigated Emissions	9.36	45.45	201.71	0.40	4.38	2.98
Mitigated Emissions[7]	9.36	6.45	201.71	0.40	4.38	2.98
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
2017 (Building)						
Unmitigated Emissions	8.57	41.16	188.72	0.40	4.18	2.80
Mitigated Emissions[7]	8.57	6.45	188.72	0.40	4.18	2.80
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*

[10] The trip generation table within the *Butterfield Specific Plan Traffic Impact Analysis*, prepared by LSA Associates, Inc. (December 22, 2010) includes 549,000 square feet of commercial uses and 200,000 square feet for school uses.

Table 4.3-6 (continued)
Phase 2 Construction Air Emissions

Emissions Source	Pollutant (pounds/day)[1, 2]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
2018 (Building, Architectural Coating)						
Unmitigated Emissions	210.94	37.35	176.63	0.40	4.01	2.63
Mitigated Emissions[7]	189.86	6.45	176.63	0.40	4.01	2.63
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***Yes***	***No***	***No***	***No***	***No***	***No***

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter less than 10 microns; $PM_{2.5}$ = particulate matter less than 2.5 microns.

Notes:
1. Emissions were calculated using the URBEMIS 2007 version 9.2.4 Computer Model, as recommended by the SCAQMD. The reduction/credits for construction emission mitigations are based on mitigation included in the URBEMIS 2007 version 9.2.4 Computer Model and as typically required by the SCAQMD (Rule 403 and Rule 1113). The mitigation includes the following: replace ground cover on disturbed areas quickly, water exposed surfaces twice daily, proper loading/unloading of mobile and other construction equipment, and the use of low ROG coatings.
2. Note that the URBEMIS 2007 model has been found to overestimate diesel emissions from construction equipment, as it does not account for various rules and regulations such as the Portable Equipment Airborne Toxic Control Measure (ATCM), Transportation Refrigeration Units (TRU) ATCM, Red/Green Sticker Program, Carl Moyer Program, In-use Off-road Diesel Vehicle Regulation, and Local Rules (Sierra Research, Inc., *Emissions from Diesel-Fueled Non-Road Equipment in California*, April 19, 2010). Therefore, actual emissions may be lower than those presented above. However, the URBEMIS 2007 modeled emissions as presented is the suggested method of emissions quantification by CARB and the SCAQMD.
3. Grading for the Phase 2 area would occur during Phase 1.
4. Refer to Appendix B, Air Quality Data, for assumptions used in this analysis.
5. Phase 2 includes construction of 788 single family dwelling units, 925 condominium/townhome units, and 100,000 square feet of elementary school.
6. Trenching activities would occur for 2 months, building would occur for 36 months, and architectural coatings would occur for 3 months.
7. CARB Certified Tier 4 equipment would be required post 2015 per Mitigation Measure AQ-7.

Table 4.3-7
Phase 3 Construction Air Emissions

Emissions Source	Pollutant (pounds/day)[1, 2, 4]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
PHASE 3[5, 6]						
2019 (Grading)						
Unmitigated Emissions	11.12	79.56	47.71	0.00	3,084.92	646.46
Mitigated Emissions[8]	11.12	25.45	47.71	0.00	488.85	104.30

Table 4.3-7 (continued)
Phase 3 Construction Air Emissions

Emissions Source	Pollutant (pounds/day)[1, 2, 4]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***Yes***	***Yes***
2020 (Grading, Trenching, Paving, Building)						
Unmitigated Emissions	22.48	34.80	183.41	0.48	4.33	2.72
Mitigated Emissions[8]	22.48	3.31	183.41	0.48	4.33	2.72
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
2021 – 2029 (Building)[3]						
Unmitigated Emissions	5.72	27.38	136.30	0.48	4.15	2.56
Mitigated Emissions[8]	5.72	6.81	136.30	0.48	4.15	2.56
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
2021 – 2031 (Architectural Coating)[3]						
Unmitigated Emissions	194.17	0.10	2.18	0.01	0.09	0.05
Mitigated Emissions	89.45	0.12	2.60	0.01	0.09	0.05
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***Yes***	***No***	***No***	***No***	***No***	***No***

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter less than 10 microns; $PM_{2.5}$ = particulate matter less than 2.5 microns.

Notes:

1. Emissions were calculated using the URBEMIS 2007 version 9.2.4 Computer Model, as recommended by the SCAQMD. The reduction/credits for construction emission mitigations are based on mitigation included in the URBEMIS 2007 version 9.2.4 Computer Model and as typically required by the SCAQMD (Rule 403 and Rule 1113). The mitigation includes the following: replace ground cover on disturbed areas quickly, water exposed surfaces twice daily, proper loading/unloading of mobile and other construction equipment, and the use of low ROG coatings.
2. Note that the URBEMIS 2007 model has been found to overestimate diesel emissions from construction equipment, as it does not account for various rules and regulations such as the Portable Equipment Airborne Toxic Control Measure (ATCM), Transportation Refrigeration Units (TRU) ATCM, Red/Green Sticker Program, Carl Moyer Program, In-use Off-road Diesel Vehicle Regulation, and Local Rules (Sierra Research, Inc., *Emissions from Diesel-Fueled Non-Road Equipment in California*, April 19, 2010). Therefore, actual emissions may be lower than those presented above. However, the URBEMIS 2007 modeled emissions as presented is the suggested method of emissions quantification by CARB and the SCAQMD.
3. Emissions were similar during these years and the highest emissions are reported.
4. Refer to Appendix B, Air Quality Data, for assumptions used in this analysis.
5. Phase 3 includes construction of 1,761 single family dwelling units and 281 condominium/townhome units.
6. Grading activities would occur over an approximate 12 month period, trenching would occur for 2 months, paving would occur for 1 month, building would occur for 115 months, and architectural coatings would occur intermittently between 2021 and 2031.
8. CARB Certified Tier 4 equipment would be required post 2015 per Mitigation Measure AQ-7.

Table 4.3-8
Phase 4 Construction Air Emissions

Emissions Source	Pollutant (pounds/day)[1, 2, 3]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
PHASE 4[4, 5]						
2032 (Grading, Trenching, Paving, Building)						
Unmitigated Emissions	6.24	42.81	32.51	0.11	683.14	143.90
Mitigated Emissions[6]	6.24	6.78	32.51	0.11	109.14	24.02
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
2033 (Building)						
Unmitigated Emissions	114.08	13.11	30.47	0.11	1.28	0.90
Mitigated Emissions[6]	35.31	6.78	30.47	0.11	1.28	0.90
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
2034 (Architectural Coating)						
Unmitigated Emissions	114.08	0.04	1.00	0.01	0.04	0.02
Mitigated Emissions	68.99	0.04	1.00	0.01	0.04	0.02
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter less than 10 microns; $PM_{2.5}$ = particulate matter less than 2.5 microns.

Notes:

1. Emissions were calculated using the URBEMIS 2007 version 9.2.4 Computer Model, as recommended by the SCAQMD. The reduction/credits for construction emission mitigations are based on mitigation included in the URBEMIS 2007 version 9.2.4 Computer Model and as typically required by the SCAQMD (Rule 403 and Rule 1113). The mitigation includes the following: replace ground cover on disturbed areas quickly, water exposed surfaces twice daily, proper loading/unloading of mobile and other construction equipment, and the use of low ROG coatings.
2. Note that the URBEMIS 2007 model has been found to overestimate diesel emissions from construction equipment, as it does not account for various rules and regulations such as the Portable Equipment Airborne Toxic Control Measure (ATCM), Transportation Refrigeration Units (TRU) ATCM, Red/Green Sticker Program, Carl Moyer Program, In-use Off-road Diesel Vehicle Regulation, and Local Rules (Sierra Research, Inc., *Emissions from Diesel-Fueled Non-Road Equipment in California*, April 19, 2010). Therefore, actual emissions may be lower than those presented above. However, the URBEMIS 2007 modeled emissions as presented is the suggested method of emissions quantification by CARB and the SCAQMD.
3. Refer to Appendix B, Air Quality Data, for assumptions used in this analysis.
4. Phase 4 includes construction of 390 single family dwelling units and 100,000 square feet of elementary school.
5. Grading activities would occur for 2 months, trenching would occur for 1 month, paving would occur for 1 month, building would occur for 19 months, and architectural coatings would occur for 6 months.
6. CARB Certified Tier 4 equipment would be required post 2015 per Mitigation Measure AQ-7.

Table 4.3-9
Phase 5 Construction Air Emissions

Emissions Source	Pollutant (pounds/day)[1, 2, 3]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
PHASE 5[4, 5]						
2035 (Grading, Trenching, Building)						
Unmitigated Emissions	6.24	42.81	32.51	0.10	688.34	144.99
Mitigated Emissions[6]	6.24	21.51	32.51	0.10	109.96	24.20
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
2036 (Building)						
Unmitigated Emissions	2.14	12.83	26.92	0.10	1.21	0.71
Mitigated Emissions[6]	2.14	6.78	26.92	0.10	1.21	0.71
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
2037 (Building, Architectural Coating)						
Unmitigated Emissions	82.57	12.83	26.92	0.10	1.21	0.71
Mitigated Emissions[6]	74.31	6.78	26.92	0.10	1.21	0.71
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter less than 10 microns; $PM_{2.5}$ = particulate matter less than 2.5 microns.

Notes:

1. Emissions were calculated using the URBEMIS 2007 version 9.2.4 Computer Model, as recommended by the SCAQMD. The reduction/credits for construction emission mitigations are based on mitigation included in the URBEMIS 2007 version 9.2.4 Computer Model and as typically required by the SCAQMD (Rule 403 and Rule 1113). The mitigation includes the following: replace ground cover on disturbed areas quickly, water exposed surfaces twice daily, proper loading/unloading of mobile and other construction equipment, and the use of low ROG coatings.
2. Note that the URBEMIS 2007 model has been found to overestimate diesel emissions from construction equipment, as it does not account for various rules and regulations such as the Portable Equipment Airborne Toxic Control Measure (ATCM), Transportation Refrigeration Units (TRU) ATCM, Red/Green Sticker Program, Carl Moyer Program, In-use Off-road Diesel Vehicle Regulation, and Local Rules (Sierra Research, Inc., *Emissions from Diesel-Fueled Non-Road Equipment in California*, April 19, 2010). Therefore, actual emissions may be lower than those presented above. However, the URBEMIS 2007 modeled emissions as presented is the suggested method of emissions quantification by CARB and the SCAQMD.
3. Refer to Appendix B, Air Quality Data, for assumptions used in this analysis.
4. Phase 5 includes construction of 412 single family dwelling units.
5. Grading activities would occur for 3 months, trenching would occur for 1 month, building would occur for 20 months, and architectural coatings would occur for 6 months.
6. CARB Certified Tier 4 equipment would be required post 2015 per Mitigation Measure AQ-7.

Conclusion. As previously noted, construction activities would occur in different locations on the Project site at different times; thereby not affecting the same sensitive receptors for significant periods of time. Nonetheless, construction impacts have the potential to exceed Federal and State ambient air quality standards. As depicted in Table 4.3-5 through Table 4.3-9, construction emissions would exceed the established SCAQMD thresholds for criteria pollutants. Implementation of Mitigation Measures AQ-1 through AQ-7 would lessen construction-related impacts by requiring measures to reduce air pollutant emissions from construction activities. These measures call for the maintenance of construction equipment, the use of non-polluting and non-toxic building equipment, the minimization of fugitive dust, and the use of machine guided grading equipment. Additionally, as the Project proposes significant grading activities and would result in exposed soils for the approximately 30 year construction period, Mitigation Measure AQ-5 would require the development of a Dust Management Plan prior to the issuance of grading permits for the control of fugitive dust throughout the five phases of construction.

As noted in the tables above, the URBEMIS 2007 model has been found to overestimate diesel emissions from construction equipment, as it does not account for various rules and regulations such as the Portable Equipment Airborne Toxic Control Measure (ATCM), Transportation Refrigeration Units (TRU) ATCM, Red/Green Sticker Program, Carl Moyer Program, In-use Off-road Diesel Vehicle Regulation, and Local Rules.[11] Therefore, actual emissions may be lower than those presented above. However, the URBEMIS 2007 modeled emissions as presented is the suggested method of emissions quantification by CARB and the SCAQMD.

Project grading must conform to the City's Municipal Code and California Building Code grading regulations. These regulations include adhering to SCAQMD Rule 403 and the City's Grading Manual, devising a haul route plan, erosion and sediment control plan, and slope analysis plan. The Specific Plan also calls for interim erosion control measures such as vegetation and soil stabilizers to minimize wind-blown dust. Project Design Features noted above would also reduce construction-related emissions. However, even with implementation of Mitigation Measures AQ-1 through AQ-7, construction emissions would exceed SCAQMD thresholds for ROG, CO, NO_x, $PM_{2.5}$, and PM_{10} due to the magnitude of the proposed development, and a significant unavoidable impact would result.

Long-Term Mobile and Stationary Source Emissions

The proposed Specific Plan's implementation includes the development of various residential, commercial/office, school, recreational and open space uses, and possibly a satellite wastewater treatment facility. Table 4.3-10, *Estimated Operational Emissions for the Specific Plan*, summarizes the emissions based on the maximum development potential for the Specific Plan area. The overall emissions from development associated with the Specific Plan would exceed the SCAQMD thresholds for ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$, resulting in a significant impact.

[11] Sierra Research, Inc., *Emissions from Diesel-Fueled Non-Road Equipment in California*, April 19, 2010.

Area source (indirect) and mobile emissions are described in greater detail below, followed by a conclusion regarding significance following implementation of Project Design Features and recommended mitigation measures.

Table 4.3-10
Estimated Operational Emissions for the Specific Plan

Source[2]	Estimated Average Emissions (pounds/day) [1]					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer Emissions						
Area Sources	370.50	89.38	232.97	0.01	0.69	0.67
Mobile Sources	434.33	587.02	5,385.97	6.41	1,046.26	203.61
Total Emissions	**804.83**	**676.40**	**5,681.94**	**6.42**	**1,046.95**	**204.28**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Is Threshold Exceeded? (Significant Impact)	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Winter Emissions						
Area Sources	336.27	87.19	40.10	0.00	0.17	0.16
Mobile Sources	468.85	707.03	5,144.34	5.34	1,046.26	203.61
Total Emissions	**805.12**	**794.22**	**5,184.44**	**5.34**	**1,046.43**	**203.77**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Is Threshold Exceeded? (Significant Impact)	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

Notes:
1 Emissions estimates calculated using URBEMIS 2007 (version 9.2.4). URBEMIS utilizes regional default assumptions, which are consistent with the Traffic Impact Assessment.
2 Emissions estimates calculated using the land use categories/intensities depicted in Section 3.0, *Project Description*.
Refer to Appendix B, *Air Quality Modeling Data*, for detailed model input/output data.

Area Source Emissions

Area source emissions are sources of air pollutants that individually emit relatively small quantities of air pollutants, but which cumulatively may emit large quantities of emissions. Area source emissions would result from the use of natural gas combustion, landscape maintenance equipment, and the use of consumer products, such as aerosol sprays. As indicated in Table 4.3-10, URBEMIS2007 was used to estimate area sources from the project. URBEMIS2007 estimates landscape maintenance equipment emissions from fuel combustion as well as from fugitive dust generated by equipment such as leaf blowers. Future emissions from area sources within the Project area could be significant.

Air quality impacts would be regional and not confined to the City limits. Development of the Specific Plan would be required to comply with SCAQMD regulations and permitting requirements. Compliance with Mitigation Measure GHG-1 and GHG-2 (refer to Section 4.5, *Climate Change*), as well as with regulations and permit requirements, would reduce emissions from new commercial and residential uses. Mitigation Measure GHG-1 includes requirements for building and water efficiency. Implementation of these measures and programs would reduce area source emissions due to reduced energy demand, thereby reducing area source emissions related to natural gas and electricity consumption. Additionally, Mitigation Measure GHG-2 would amend the Specific Plan to allow and promote renewable energy resources such as rooftop solar. However, emissions resulting from area sources would remain significant due to the magnitude of development associated with the proposed Specific Plan.

Mobile Source Emissions

Based on the *Butterfield Specific Plan Traffic Impact Analysis*, prepared by LSA Associates, Inc. (December, 2010), the proposed Project would generate 62,263 net daily trips. Although the Specific Plan would be consistent with the General Plan goals and policies, as concluded in Section 4.10, *Land Use and Planning*, a General Plan Amendment would be required for the designation of specific land uses on the General Plan Land Use Map to correspond to the land use designations in the Specific Plan area. Refer to the *Consistency with Air Quality Management Plan* discussion below.

As seen in Table 4.3-10, mobile sources are anticipated to be the largest contributor to the estimated annual average air pollutant levels, and would exceed the SCAQMD thresholds. Mobile source emissions are emissions from vehicle trips that are generated by the operation of a project. Mobile source emissions include tailpipe and evaporative emissions (i.e., gasoline vapors escaping from the vehicle's fuel system). Mobile source emission depicted in Table 4.3-10 are from the URBEMIS2007 model run conducted for the proposed project. URBEMIS uses the fleet mix information included in the EMFAC2007 files to generate the fleet mix estimates. For example, depending on the base year and area selected, URBEMIS uses a specific EMFAC file to obtain the average fleet mix for that location and year; refer to Appendix B for detailed data on the fleet mix utilized for the proposed project.

Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, VOCs, NO_X, SO_X and PM_{10} are all pollutants of regional concern; (NO_X and VOCs react with sunlight to form O_3 [photochemical smog], and wind currents readily transport SO_X and PM_{10}). However, CO tends to be a localized pollutant, dispersing rapidly at the source.

The destinations of motor vehicles, which are the primary contributors to mobile air pollution, vary widely and cross many jurisdictional boundaries. The Specific Plan proposes residential, commercial/office, school, and open space uses within the Plan area. The variety of land uses

within the Plan area would reduce vehicle miles traveled (VMT), thereby reducing emissions. However, due to the magnitude of development and associated mobile source air quality impacts, impacts in this regard remain significant and unavoidable.

Health Effects

The proposed Specific Plan is located in the City of Banning, and is located less than one-half mile north of Interstate 10 (I-10), and the Southern Pacific Railroad (SPRR). The proximity to I-10 and SPRR rights-of-ways poses a concern for potential exposure of future development to toxic air contaminants from these sources. Emissions from trains and freeway truck travel include the following four toxic compounds that contribute the greatest risk: diesel particulate, benzene, 1,3 butadiene, and formaldehyde. The Multiple Air Toxics Exposure Study III (MATES III) is a monitoring and evaluation study conducted by the SCAQMD. The MATES III study consists of a monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to characterize risk throughout the Basin. The study concentrates on the carcinogenic risk from exposure to air toxics. Ten monitoring locations measured toxic air contaminants (over 30 air pollutants) once every three days for two years.

The carcinogenic risk from air toxics in the Basin, based on average concentrations at the fixed monitoring locations, is about 1,200 per million. This risk refers to the expected number of additional cancers in a population of one million individuals that are exposed over a 70-year lifetime. Under the MATES III methodology, approximately 94 percent of the risk is attributed to mobile source emissions, and approximately six percent is attributed to stationary sources. The Inland Valley San Bernardino monitoring location (nearest monitoring station to the Project area, approximately 33 miles to the west) reported higher levels of risk. However, the MATES III Study found a decreasing risk for air toxics exposure compared to previous MATES studies. Additionally, the MATES III study found an estimated Basin-wide population-weighted risk reduced by eight percent from the MATES II Study, which includes the City of Banning. Although the City is located in an area of the Basin with some of the higher concentrations of air toxics, these concentrations are declining and conditions are continuing to improve. Additionally, the ambient air toxics data from the ten fixed monitoring sites demonstrated a reduction in air toxic levels and risks. Additionally, CARB's *Air Quality and Land Use Handbook* recommends 500 feet (150 meters) between busy roadways and sensitive receptor locations. The closest portion of the Project is more than 2,000 feet away from I-10 and the SPRR. Therefore, health risk impacts to the proposed Project would be less than significant.

AQ-1 Prior to issuance of any Grading Permit, the Director of Public Works and the Building Official shall confirm that the Grading Plan, Building Plans, and specifications stipulate that, in compliance with SCAQMD Rule 403, excessive fugitive dust emissions shall be controlled by regular watering or other dust prevention measures, as specified in the SCAQMD's Rules and Regulations. In addition, in accordance with SCAQMD Rule 402, the Applicant shall implement dust

suppression techniques to prevent fugitive dust from creating a nuisance off-site. Implementation of the following measures would reduce short-term fugitive dust impacts on nearby sensitive receptors:

- All active portions of the construction site shall be watered at least twice daily to prevent excessive amounts of dust;
- On-site vehicle speed shall be limited to 15 miles per hour;
- All on-site roads shall be paved where feasible, watered as needed, or chemically stabilized;
- Visible dust beyond the property line which emanates from the project shall be prevented to the maximum extent feasible;
- All material transported off-site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust prior to departing the job site;
- Track-out devices shall be used at all construction site access points;
- All delivery truck tires shall be watered down and/or scraped down prior to departing the job site; and
- Replace ground cover on disturbed areas quickly.

AQ-2 All trucks that are to haul excavated or graded material on-site shall comply with State Vehicle Code Section 23114 (Spilling Loads on Highways), with special attention to Sections 23114(b)(F), (e)(4) as amended, regarding the prevention of such material spilling onto public streets and roads. Prior to the issuance of grading permits, the Applicant shall coordinate with the appropriate City of Banning Engineer on hauling activities compliance.

AQ-3 Prior to the issuance of building permits, the City building official shall confirm that construction plans and specifications include the following measures, which shall be implemented to reduce ROG emissions resulting from application of architectural coatings:

- Contractors shall use high-pressure-low-volume (HPLV) paint applicators with a minimum transfer efficiency of at least 50 percent;
- Coatings and solvents with a ROG content lower than required under Rule 1113 shall be used;
- Construction and building materials that do not require painting shall be used to the extent feasible; and
- Pre-painted construction materials shall be used to the extent feasible.

AQ-4 Prior to issuance of any Grading Permit, the Director of Public Works and the Building Official shall confirm that the Grading Plan, Building Plans and specifications stipulate that, in compliance with SCAQMD Rule 403, ozone precursor emissions from construction equipment vehicles shall be controlled by maintaining equipment engines in good condition and in proper tune per manufacturer's specifications, to the satisfaction of the City Engineer. A set of maintenance records shall be provided to the City before grading commences. The City Inspector shall be responsible for ensuring that contractors comply with this measure during construction.

AQ-5 Prior to issuance of any Grading Permit, the grading plan shall indicate dust management measures for review and approval by the City Engineer, to identify viable dust control measures and include a monitoring plan to be implemented throughout the construction phases of the Specific Plan. In accordance with the Specific Plan and City's Municipal Code, the dust management measures shall minimize wind-blown particles by including:

a) All applicable mitigation measures identified in this EIR (related to dust control) and otherwise required by the City or SCAQMD;

b) An erosion and sediment control plan to minimize wind or waterborne transport of soil onto adjacent properties, streets, storm drains, or drainages; and

c) A Revegetation Plan to address interim conditions between initial grading and final site development. The Revegetation Plan, although focused on the control of wind and water erosion, shall consider compatibility with fuel modification zone requirements, drought tolerant landscape requirements, and potential ongoing livestock grazing. Special techniques such as wind fences shall also be considered, to minimize surface soil and dust during high wind events.

AQ-6 GPS-controlled "machine-guided grading", or other equivalent grading techniques, shall be incorporated into Project grading plans, subject to review and approval by the City Engineer. This technology will be utilized on mass grading activities where deemed feasible, and shall be used where feasible on subsequent rough or fine grading activities.

AQ-7 The following measures shall be implemented during construction to substantially reduce NO_x related emissions. They shall be included in the Grading Plan, Building Plans, and specifications.

- Off-road diesel equipment operators shall be required to shut down their engines rather than idle for more than five minutes, and shall ensure that all off-road

equipment is compliant with the CARB in-use off-road diesel vehicle regulation and SCAQMD Rule 2449.

- The following note shall be included on all grading plans: "The City shall require construction contractors to utilize diesel powered construction equipment that meets EPA-Certified Tier III emissions standards, or higher according to the following:

    - January 1, 2012, to December 31, 2014: All off-road diesel-powered construction equipment greater than 50 hp shall meet Tier 3 off-road emissions standards at a minimum. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

    - Post-January 1, 2015: All off-road diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

    - A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment.

    - Encourage construction contractors to apply for AQMD "SOON" funds. Incentives could be provided for those construction contractors who apply for AQMD "SOON" funds. The "SOON" program provides funds to accelerate clean up of off-road diesel vehicles, such as heavy duty construction equipment. More information on this program can be found at the following website: http://www.aqmd.gov/tao/Implementation/SOONProgram.htm."

- The contractor and applicant, if the applicant's equipment is used, shall maintain construction equipment engines by keeping them tuned and regularly serviced to minimize exhaust emissions.

- Low sulfur fuel for stationary construction equipment shall be required. This is required by SCAQMD Rules 431.1 and 431.2.

- Existing power sources (i.e., power poles) shall be used when available. This measure would minimize the use of higher polluting gas or diesel generators.

- Construction parking shall be located on-site where possible and shall be configured to minimize traffic interference.

- Obstruction of through-traffic lanes shall be minimized by providing temporary traffic controls such as flag persons, cones and/or signage during all phases of construction when needed to maintain smooth traffic flow. Construction shall be planned so that lane closures on existing streets are kept to a minimum.

- Construction operations affecting traffic shall be scheduled for off-peak hours to the extent feasible.

- Develop a traffic plan to minimize traffic flow interference from construction activities. The plan shall specify the times during which construction activities will occur and particular times when travel lanes cannot be blocked (e.g., peak traffic periods as directed by the affected City Engineer). The plans shall provide details regarding the placement of traffic control, warning devices and detours. As a supplement to the traffic plan, the construction contractor shall coordinate with the affected agency to determine the need for a public information program which would inform area residents, employers and business owners of the details concerning construction schedules and expected travel delays, detours, and blocking of turning movements lanes at intersections. The public information programs could utilize various media venues (e.g., newspaper, radio, television, telephone hot lines, internet website, etc.) to disseminate information such as:

    - Overview of project information
    - Weekly updates on location of construction zones;
    - Identification of street(s) affected by construction;
    - Times when construction activities will occur and when traffic delays, and blockage of intersection turning movements can be expected; and
    - Identification of alternate routes which could be use to avoid construction delays.

Impact 4.3-2: Sensitive Receptors

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

Determination: Less than Significant Impact

Carbon Monoxide Hotspots

CO emissions are a function of vehicle idling time, meteorological conditions and traffic flow. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels (i.e., adversely affect residents, school children, hospital patients, the elderly, etc.). The SCAQMD requires a quantified assessment of CO hotspots when a project increases the volume-to-capacity ratio (also called the intersection capacity utilization) by 0.02 (two percent) for any intersection with an existing level of service LOS D or worse. Because traffic congestion is highest at intersections where vehicles queue and are subject to reduced speeds, these hot spots are typically produced at intersections. However, for the purposes of this analysis, intersections with the worst LOS and delay times were modeled based on the three categories of intersections in the study area: signalized, two-way stop controlled, and all-way stop controlled; refer to Table 4.3-11, *Project Buildout Carbon Monoxide Concentrations*. All other intersections would be expected to have lower CO concentrations than those modeled.

The projected traffic volumes were modeled using the BREEZE ROADS dispersion model. The resultant values were then added to an ambient concentration. A receptor height of 1.8 meters was used in accordance with the EPA's recommendations. The calculations assume a meteorological condition of almost no wind (0.5 meters/second), a flat topological condition between the source and the receptor and a mixing height of 1,000 meters. A standard deviation of five degrees was used for the deviation of wind direction. The suburban land classification was used for the aerodynamic roughness coefficient. This follows the BREEZE ROADS user's manual definition of suburban as, "regular coverage with large obstacles, open spaces roughly equal to obstacle heights, villages, mature forests."

For the purposes of this analysis, the ambient concentration used in the modeling was the highest one-hour measurement from 2009 (the latest year data was available) of SCAQMD monitoring data at the San Bernardino Monitoring Station. Actual future ambient CO levels may be lower due to emissions control strategies that would be implemented between now and the Project buildout date.

Table 4.3-11
Project Buildout Carbon Monoxide Concentrations

Intersection	1-Hour CO (ppm)[1]		8-Hour CO (ppm)[1]	
	1-Hour Standard	Future + Project	8-Hour Standard	Future + Project
I-10 EB Ramps/San Timoteo Canyon Drive (two-way stop control)	20 ppm	2.8	9 ppm	2.13
Sunset Avenue/Wilson Street (all-way stop control)	20 ppm	2.7	9 ppm	2.05
Sunset Avenue/Ramsey Street (signal)	20 ppm	2.7	9 ppm	2.05

Notes:
1. As measured at a distance of 10 feet from the corner of the intersection predicting the highest value. Presented 1 hour CO concentrations include a background concentration of 2.50 ppm. Eight-hour concentrations are based on a persistence of 0.76 of the 1-hour concentration.

The intersections in the study area currently operate at an LOS ranging from LOS A to LOS F for PM peak hour activities. At Project buildout, 48 of these intersections would operate at LOS D or worse in an unmitigated condition. Table 4.3-11 presents the CO concentrations for the worst case scenarios. As indicated in Table 4.3-11, CO concentrations at the three worst case intersections would be well below the State and Federal standards. Therefore, it can be reasonably inferred that the remainder of the intersections would also be below the State and Federal standards. The modeling results are compared to the CAAQS for CO of 9 ppm on an eight-hour average and 20 ppm on a one-hour average. Neither the one-hour average nor the eight-hour average would be equaled or exceeded. Impacts in regards to CO hotspots would be less than significant.

Impact 4.3-3: Air Quality Management Plan

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

Determination: Significant and Unavoidable

Consistency with the *2007 Air Quality Management Plan for the South Coast Air Basin* (*2007 AQMP*) means that a project is consistent with the goals, objectives, and assumptions in the respective plan to achieve the Federal and State air quality standards. According to the SCAQMD *CEQA Air Quality Handbook*, in order to determine consistency with the *AQMP*, two main criteria must be addressed.

*Criterion 1 (determination – **potentially not consistent**):*

With respect to the first criterion, SCAQMD methodologies require that an air quality analysis for a project include forecasts of project emissions in relation to contributing to air quality violations and delay of attainment.

*a) Would the project result in an increase in the frequency or severity of existing air quality violations? **Potentially**.*

The South Coast Air Bain is currently in non-attainment for ozone and particulate matter. ROG and NOx are precursors to ozone formation. As shown above in Tables 4.3-5 through 4.3-9, Project emissions would exceed SCAQMD thresholds during construction and operations for ROG, NOx, CO, PM_{10}, and $PM_{2.5}$.

The Project would implement applicable local, State and Federal air quality measures, and Project construction fleet and operational-related traffic is regulated by CARB vehicle emission reduction programs. The EIR also identifies an extensive menu of additional mitigation measures and Project Design Features to further reduce potential construction-related and operational emissions to the extent feasible; refer to Mitigation Measures GHG-1 and GHG-2 in Section 4.5, *Climate Change.* The SCAQMD continues to promulgate rules and regulations to bring the Basin into conformity. The Project is consistent with the City's General Plan, and generally consistent with the previously approved Deutsch Specific Plan dating back to the early 1990's. Nonetheless, given the scale of the Project and non-attainment status of the Basin, it is possible that the Project's construction and/or operational emissions would exacerbate SCAQMD's regional efforts to bring the Basin into attainment. However, this is no different than the cumulative effect that SCAQMD development projects would have upon Basin attainment, for which the SCAQMD has and is continuing to pursue various attainment strategies through the AQMP implementation process.

*b) Would the project cause or contribute to new air quality violations? **Potentially.***

As discussed above, localized concentrations of CO have been analyzed for the Project, and would be below SCAQMD thresholds. SO_x emissions would be minimal during construction and long-term operations, and therefore would not have the potential to cause or affect a violation of the SO_x ambient air quality standard. As shown in Table 4.3-11, the Project would not exceed localized significance thresholds. However, it should be noted that the proposed project would exceed each of the SCAQMD's regional thresholds of significance with the exception of SO_x emissions.

c) Would the project delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMP? ***Potentially.***

The proposed Project would result in significant impacts for regional emissions with regard to criteria pollutants during Project construction and operations (refer to the discussion above under Criterion 1a). As such, the Project could delay the timely attainment of air quality standards or AQMP emissions reductions.

Criterion 2 (determination – ***consistent****):*

With respect to the second criterion for determining consistency with SCAQMD and SCAG air quality policies, it is important to recognize that air quality planning within the Basin focuses on attainment of ambient air quality standards at the earliest feasible date. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends. Thus, the SCAQMD's second criterion for determining project consistency focuses on whether or not the proposed Project exceeds the assumptions utilized in preparing the forecasts presented in the AQMP. Determining whether or not a project exceeds the assumptions reflected in the AQMP involves the evaluation of the three criteria outlined below. The following discussion provides an analysis of each of these criteria.

a) Would the project be consistent with the population, housing, and employment growth projections utilized in the preparation of the AQMP? ***Yes.***

A project is consistent with the AQMP in part if it is consistent with the population, housing, and employment assumptions that were used in the development of the AQMP. In the case of the *2007 AQMP*, three sources of data form the basis for the projections of air pollutant emissions: the *City of Banning General Plan* (*General Plan*), SCAG's *Growth Management* Chapter of the *Regional Comprehensive Plan and Guide* (*RCPG*), and SCAG's *2008 Regional Transportation Plan* (*RTP*). The *RTP* also provides socioeconomic forecast projections of regional population growth. The Specific Plan would also be consistent with the *General Plan* goals and policies, as concluded in Section 4.10, *Land Use and Relevant Planning*, although a *General Plan* Amendment would be required for the redesignation of land uses on the General Plan Land Use Map within the Specific Plan area. The Project is generally consistent with the previously approved Deutsch Specific Plan[12]. These uses were incorporated into the City General Plan and GPEIR. Thus, the proposed Project is consistent with City-wide plans for population growth at the Project site, and is consistent with the types, intensity, and patterns of land use envisioned for the site

[12] Other than small variations in individual Planning Areas, the overall nature and density of development has remained similar for the Project since 1993. Although there is a slight increase in proposed commercial/office uses, there are other Project features that would more than offset this (such as slight reduction in residential, a new overlay that could replace school and commercial uses with residential uses without exceeding the residential maximum, the maintaining of an average gross density from 3.5 DU/acre, and the addition of an "Active Adult Alternative", all of which would serve to reduce net traffic generation and associated VMT). On a regional scale of SCAG and RTP consistency, the Project is considered consistent.

vicinity in the *RCPG*. The population, housing, and employment forecasts, which are adopted by SCAG's Regional Council, are based on the local plans and policies applicable to the City; these are used by SCAG in all phases of implementation and review. Additionally, as the SCAQMD has incorporated these same projections into the *2007 AQMP*, it can be concluded that the proposed Project would be consistent with the projections.

b) Would the project implement all feasible air quality mitigation measures? ***Yes****.*

The Project implements applicable feasible mitigation measures as described in this Section, as well as feasible greenhouse gas reduction measures, as described in Section 4.5, *Climate Change.* The project would include design features that would reduce operational emissions of criteria pollutants. For example, the "Smart Homes" program would improve building efficiency and energy usage, thereby reducing both direct and indirect area source emissions. Furthermore, several design features would reduce vehicle trips and/or vehicle miles traveled, thereby reducing mobile source emissions. Although Project-related emissions would remain significant, the applicant has committed to additional aggressive emissions reductions measures such as use of machine-guided grading to reduce construction emissions, provision of "Smart Homes" to reduce residential operational emissions, and inclusion of renewable energy uses as "conditionally permitted uses" in the Specific Plan to allow for incorporation of solar, electric and/or hydrogen power stations into the Project to accommodate "clean vehicles", thereby reducing mobile source emissions of criteria pollutants (refer to Section 4.5, *Climate Change*, for additional discussion). As such, the proposed Specific Plan Project meets this AQMP consistency criterion.

c) Would the project be consistent with the land use planning strategies set forth in the AQMP? ***Yes.***

The proposed Project would serve to implement various City and SCAG policies. The Project would implement the Butterfield Specific Plan development in a currently undeveloped portion of the City (this Project is substantially the same as the Deutsch Specific Plan, which was approved for the site in 1993). The project would be consistent with the applicable AQMP measures such as the energy efficiency and control measures. As described above, the proposed project would implement the "Smart Homes" program that would improve building energy efficiency and promote conservation. The southwestern corner of the Project is located approximately 300 feet from an existing bus stop (at the hospital on the corner of North Highland Springs Avenue and West Wilson Street). The existing transit network would be expanded throughout the entire project site and the City of Banning and Riverside County Transit authorities would be consulted to implement long-term public transportation projects and to develop vanpools and subscription bus service. Furthermore, the project would include pedestrian paths and bike trails that would provide both internal and external connections. These various project design features would be consistent with the land use and planning strategies set forth in the AQMP. Other AQMP transportation strategies target regional

emissions (mobile sources outside of the project area) that require SCAQMD coordination with SCAG and include control programs to reduce vehicle emissions and remove high emitters. The proposed project would not conflict with these strategies.

Impact 4.3-4: Odors

Threshold: *Would the project result in the creation of objectionable odors affecting a substantial number of people?*

Determination: Less than Significant Impact with Mitigation Incorporated

Short-Term (Construction) Related Odors

Potential odors could arise from the diesel construction equipment used on-site, as well as from architectural coatings and asphalt off-gassing. Emissions produced during grading and construction activities are short-term, as they would exist only in close proximity to the specific construction activity. Although construction would occur over a 25-year period, these activities would occur at different locations as the equipment moves throughout the 1,543 acre project site. In addition, construction odors would be subject to the requirements of SCAQMD Rule 402 which prevents odor nuisance to surrounding receptors. Therefore, short-term (construction) odor impacts would be less than significant with implementation of Mitigation Measure AQ-7, which requires measures during construction to substantially reduce NO_x related emissions.

Operational Odors

The Project includes an optional satellite wastewater treatment plant. This facility would be fully enclosed, and would operate on a 24-hour basis, with approximately 16 hours of operational staff time per week. The solids removed during the treatment process would be pumped into the existing sewer line in Wilson Street and to the City's existing wastewater treatment plant for further treatment and disposal. Since there would be no further handling of solids at the satellite wastewater treatment plant, there would not be significant truck traffic accessing the site during operation. The plant would use a membrane bioreactor (MBR) process to treat up to approximately 1.7 to 2.0 million gallons per day on average of wastewater to acceptable recycled water levels. There will not be any outside ponds or storage facilities typically associated with wastewater treatment plants. All wastewater not turned into recycled water will be diverted into existing sewers system in Wilson Street where it will flow to the City's main wastewater treatment plant at the southeast end of the City.

The construction and implementation of the wastewater treatment plant would require a conditional use permit (CUP) to be approved by the City of Banning, as well as design review of the proposed site plan and building architecture, landscaping and lighting; refer to mitigation

Measure AQ-8. The satellite wastewater treatment plant would not involve outdoor settling ponds or wet weather basins, would be fully enclosed, and would have to comply with the City Municipal Code Section 13.20 and SCAQMD Rule 402 requirements for odor control.

AQ-8 Construction and implementation of the wastewater treatment plan shall require a Conditional Use Permit (CUP) to be approved by the City of Banning, as well as design review of the proposed site plan and building architecture, landscaping and lighting.

4.3.5 CUMULATIVE IMPACTS

Determination: Significant and Unavoidable.

The SCAQMD neither recommends quantified analyses of cumulative construction or operational emissions, nor does it provide separate methodologies or thresholds of significance to be used to assess cumulative construction impacts. Instead, the SCAQMD recommends that a project's potential contribution to cumulative impacts should be assessed using the same significance criteria as those for project-specific impacts. Therefore, individual development projects that generate construction-related or operational emissions that exceed the SCAQMD recommended daily thresholds for project-specific impacts would also cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is nonattainment.

Short-Term Construction Emissions

SCAQMD thresholds for criteria pollutants are established for individual development projects, and it is assumed that some of the projects that would be implemented under the Specific Plan could individually exceed the SCAQMD thresholds. Based on the program-level construction analysis above, construction-related emissions associated with future potential development projects in the Project area may be "cumulatively considerable", even with implementation of the recommended mitigation measures. Construction of future development and infrastructure projects under the Specific Plan would be required to comply with the applicable SCAQMD rules and regulations, SCAQMD Air Quality Management Plan, City of Banning and City of Beaumont General Plan EIRs, Riverside County General Plan EIR, and SCAG Compass Blueprint Growth Visioning Program. These measures call for the maintenance of construction equipment, the use of non-polluting and non-toxic building equipment, and minimizing fugitive dust.

Long-Term Operational Emissions

New development under the proposed Specific Plan, combined with other anticipated future development in the region would contribute to a cumulative annual increase in regional air pollutant emissions. Table 4.3-10 depicts the estimated mobile and stationary source emissions

associated with the potential development in the Specific Plan area. As shown in Table 4.3-10, the emissions from development of the project area exceed the SCAQMD thresholds for ROG, NO_X, CO, $PM_{2.5}$, and PM_{10}, resulting in a significant impact. In accordance with SCAQMD methodology, any project that cannot be mitigated to a level of less than significant is also significant on a cumulative basis. Therefore, the cumulative operational emissions associated with the proposed Project are significant on a program level.

4.3.6 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Implementation of the proposed Project would result in a significant and unavoidable impact for the following areas:

- Construction-Related Emissions – As Project-related emissions are anticipated to exceed SCAQMD thresholds, construction-related emissions are considered significant and unavoidable.

- Regional Operational Emissions – During the operational phase, the Project would result in a net increase in regional emissions of ROG, NO_X, SO_2, CO, PM_{10}, and $PM_{2.5}$ from the operation of both stationary and mobile sources. Despite the inclusion of numerous project design features that would reduce the potential air quality impacts to the degree feasible, emissions would remain above SCAQMD significance thresholds. Therefore, operation of the proposed Project would have a significant and unavoidable impact on regional air quality.

- AQMP Consistency – As the Project would exceed SCAQMD thresholds, the Project would potentially result in a long-term impact on the region's ability to meet State and Federal air quality Standards. The Project would conflict with the AQMP as it would not meet the first AQMP consistency criterion. However, the proposed Specific Plan is generally consistent with the previously approved Deutsch Specific Plan, and therefore the City of Banning General Plan's assumptions regarding population and housing growth. On a regional scale, the emissions from the Specific Plan have been considered in the forecasts presented in the 2007 AQMP. The Project would meet the second AQMP consistency criterion.

- Cumulative Construction and Operational Emissions Impacts – Emissions from development of the proposed Project would exceed the SCAQMD thresholds, resulting in a significant impact. In accordance with SCAQMD methodology, any project that cannot be mitigated to a level of less than significant is also significant on a cumulative basis.

All other impacts are either at less than significant levels or can be mitigated to less than significant levels.