EXHIBIT "H"

Gosford Village

Final Environmental Impact Report

SCH# 2002051156

Prepared for:

City of Bakersfield

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Chapter 3B
Air Quality

Introduction

This section describes the setting and potential air quality impacts of the proposed land development project known as Gosford Village, located in the western part of the City of Bakersfield. Specifically, it focuses on the relationship between topography and climate, discusses federal and state ambient air quality standards and existing air quality conditions in the proposed project area, describes the overall regulatory framework for air quality management in California and the region, and identifies sensitive receptors in the proposed project area. This section then identifies the potential air quality impacts of the proposed project and proposes mitigation measures to reduce any significant impacts to less-than-significant levels. This analysis is primarily based on the Air Quality Impact Study prepared for the project by WZI Inc. (2002) (Appendix C).

Environmental Setting

Regional Climate and Meteorology

The proposed project site is located in Kern County, and lies within the San Joaquin Valley Air Basin (SJVAB). The SJVAB includes a portion of Kern County and all of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare Counties. The San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) has jurisdiction over air quality issues throughout the 8-county San Joaquin Valley Air Basin. It administers air quality regulations developed at the federal, state, and local levels. Federal, state, and local air quality regulations applicable to the proposed project are described below.

The SJVAB, which is approximately 250 miles long and averages 35 miles wide, is the second largest air basin in the state. The SJVAB is defined by the Sierra Nevada mountains in the east (8,000–14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi Mountains in the south (6,000–8,000 feet in elevation). The topography of the air basin includes foothills and mountain ranges to the east, west and south, and a relatively flat valley floor with a slight downward gradient to the northwest. The topography of the project area is flat at an elevation of approximately 365 feet above mean sea level as shown on the U. S. Geological Survey topographical

map, Gosford, California, Quadrangle. The valley opens to the sea at the Carquinez Straits where the San Joaquin-Sacramento Delta empties into San Francisco Bay. The San Joaquin Valley (SJV), thus, could be considered a "bowl" open only to the north.

The SJVAB has an "inland Mediterranean" climate averaging over 260 sunny days per year. The valley floor experiences warm, dry summers and cool, wet, winters. Summer high temperatures often exceed 100°F, averaging in the low 90s in the northern valley and high 90s in the south. In the entire SJV, high daily temperature readings in summer average 95°F. Over the last 30 years, the SJV averaged 106 days a year at 90°F or hotter, and 40 days a year at 100°F or hotter. The daily summer temperature variation can be as high as 30°F.

In winter, as the cyclonic storm track moves southward, the storm systems moving in from the Pacific Ocean bring a maritime influence to the SJV. The high mountains to the east prevent the cold, continental air masses of the interior from influencing the valley. Winters are mild and humid. Temperatures below freezing are unusual. Average high temperatures in the winter are in the 50s, but highs in the 30s and 40s can occur on days with persistent fog and low cloudiness. The average daily low temperature is 45°F.

Although marine air generally flows into the basin from the San Joaquin River Delta, the region's topographic features restrict air movement through and out of the basin. The Coastal Range hinders wind access into the SJV from the west, the Tehachapis prevent southerly passage of airflow, and the high Sierra Nevada range is a significant barrier to the east. These topographic features result in weak airflow, which becomes blocked vertically by high barometric pressure over the SJV. As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500–3,000 feet).

Criteria Pollutants and Local Air Quality

Description of Pollutants

The federal and state governments have established ambient air quality standards for six criteria pollutants: ozone, carbon dioxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter smaller than 10 microns in diameter (PM_{10}), and lead. Ozone and PM_{10} are generally considered to be "regional" pollutants, as these pollutants or their precursors affect air quality on a regional scale. Pollutants such as CO, NO_2, SO_2, and lead are considered to be local pollutants that tend to accumulate in the air locally. PM_{10} is considered to be a localized pollutant as well as a regional pollutant. In the area where the proposed project is located, PM_{10} and ozone are of particular concern.

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Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Ozone is a severe eye, nose, and throat irritant. Ozone also attacks synthetic rubber, textiles, plants, and other materials. Ozone causes extensive damage to plants by leaf discoloration and cell damage.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and oxides of nitrogen (NO_x), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. The ozone precursors, ROG and NO_x, are emitted by mobile sources and by stationary combustion equipment.

State and federal standards for ozone have been set for a 1-hour averaging time. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded. The federal 1-hour ozone standard is 0.12 ppm, not to be exceeded more than three times in any 3-year period.

The Bakersfield California Avenue monitoring station has recorded 131 exceedances of the state ozone standard and two exceedances of the federal ozone standard during the three most recent years for which data are available (1998-2000) (Table 3B-1).

Carbon Monoxide

CO is essentially inert to plants and materials but can have significant effects on human health. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. Effects on humans range from slight headaches to nausea to death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

State and federal CO standards have been set for both 1-hour and 8-hour averaging times. The state 1-hour standard is 20 ppm by volume, and the federal 1-hour standard is 35 ppm. Both state and federal standards are 9 ppm for the 8-hour averaging period.

The Bakersfield California Avenue monitoring station has recorded no exceedances of the state or federal CO standard during the three most recent years for which data are available (1998-2000) (Table 3B-1).

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PM_{10}

Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates can damage human health and retard plant growth. Particulates also reduce visibility, and soil buildings and other materials, and corrode materials.

PM_{10} emissions are generated by a wide variety of sources including agricultural activities, industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere.

The state PM_{10} standards are 50 micrograms per cubic meter as a 24-hour average and 20 micrograms per cubic meter as an annual geometric mean. The federal PM_{10} standards are 150 micrograms per cubic meter as a 24-hour average and 50 micrograms per cubic meter as an annual arithmetic mean.

The Bakersfield California Avenue monitoring station has recorded 324 exceedances of the state PM_{10} standard and nine exceedances of the federal PM_{10} standard during the three most recent years for which data are available (1998-2000) (Table 3B-1).

Existing Air Quality Conditions

The existing air quality conditions in the proposed project area can be characterized by monitoring data collected in the region. PM_{10}, CO, and ozone concentrations are measured at several north bay monitoring stations. These are the pollutants of greatest concentration within the SJVUAPCD and are the pollutants of most concern from the proposed project. Air quality monitoring data for the last three years are presented in Table 3B-1. The closest monitoring station is located at the California Avenue monitoring station in the City of Bakersfield.

Areas such as the San Joaquin Valley are classified as either *attainment* or *non-attainment* with respect to state and federal ambient air quality standards. These classifications are determined by comparing actual monitored air pollutant concentrations to state and federal standards. The pollutants of greatest concern in this valley are ozone and inhalable particulate matter. As seen from Table 3B-1, the project area has experienced violations of the state and federal ozone standards and state PM_{10} standards during the last three years. Table 3B-1 also indicates that the federal and state CO standards have not been exceeded.

The State of California has designated the SJVUAPCD as being in severe non-attainment for ozone and in non-attainment for PM_{10}. The SJVUAPCD has adopted an air quality improvement plan that addresses NO_x and ROGs, both of which are ozone precursors and contribute to PM_{10}. The plan specifies that regional air quality standards for ozone and PM_{10} concentrations can be met through the use of additional source controls and trip reduction strategies. It also establishes emissions budgets for transportation and stationary sources. Those

Table 3B-1. Ambient Air Quality Monitoring Data from Bakersfield- California Avenue Monitoring Station

Pollutant Standards	1999	2000	2001
Ozone (O_3)			
Maximum 1-hour concentration (ppm)	0.116	0.125	0.129
No. Days Standard Exceeded			
CAAQS (1-hour) > 0.09 ppm	44	41	46
NAAQS (1-hour) > 0.12 ppm	0	1	1
Carbon Monoxide (CO)			
Maximum 8-hour concentration (ppm)	4.51	4.89	3.41
Maximum 1-hour concentration (ppm)	5.8	6.9	5.8
No. Days Standard Exceeded			
CAAQS (8-hour) ≥ 9.0 ppm	0	0	0
NAAQS (8-hour) ≥ 9.0 ppm	0	0	0
CAAQS (1-hour) ≥ 20 ppm	0	0	0
NAAQS (1-hour) ≥ 35 ppm	0	0	0
Particulate Matter (PM10)			
Maximum 24-hour concentration ($\mu g/m^3$)	143.0	140.0	190.0
2nd Highest 24-hour concentration ($\mu g/m^3$)	138.0	133.0	186.0
Average geometric mean concentration ($\mu g/m^3$)	40	39	43
Average arithmetic mean concentration ($\mu g/m^3$)	47	45	47
No. Days Standard Exceeded*			
CAAQS (24-hour) > 50 $\mu g/m^3$	108	102	114
NAAQS (24-hour) > 150 $\mu g/m^3$	0	0	9

* Calculated exceedances based on measurements taken every six days.

Source: California Air Resources Board 2002 and Environmental Protection Agency 2002

budgets, developed through air quality modeling, reveal how much air pollution can occur in an area before national ambient air quality standards are violated.

The EPA has designated the SJVUAPCD as being in severe non-attainment for ozone and in serious non-attainment for PM_{10}. The San Joaquin Valley Air Basin did not attain the federal 1-hour ozone standards by November 1999; as a result, EPA redesignated the San Joaquin Valley Air Basin as a *severe* ozone non-attainment area. Under the *serious* designation, the SJVUAPCD had until November 1999 to reach the federal 1-hour ozone standards. The redesignation as a *severe* non-attainment area gives the SJVUAPCD more time (until 2005) to conform to the health-based standards. However, the redesignation also will require that more stringent and expensive control measures be imposed on industry and will bring thousands of businesses under EPA Title I requirements. If the SJVUAPCD fails to attain the standards by 2005, sanctions and a *de facto* growth moratorium could be imposed in the air basin.

Under the severe designation, transportation control measures are no longer voluntary. Reasonably available transportation control measures must be implemented unless a demonstration can be made that a measure is either financially or technologically infeasible, or would not contribute to attainment, or does not apply to a local area. Non-attainment has already forced local transportation control measures, air district controls on industrial emissions and enhanced vehicle emissions testing. Prolonged non-attainment could also result in the implementation of federal controls on interstate truck, train, and plane travel, as well as additional controls on stationary and mobile sources (Stanislaus Council of Governments [StanCOG] 2001a).

The EPA has mandated that the SJVUAPCD submit a Severe Area Ozone Plan by May 31, 2002 (StanCOG 2001a). In addition, the SJVUAPCD must adopt and implement by November 15, 2002, the six measures committed to in the federally approved State Implementation Plan (SIP), or revise its SIP. Failure to address the nonimplementation finding within this deadline will trigger the Clean Air Act sanctions 18 months after the effective date of the October 23, 2001 action. The Valley Regional Transportation Planning Agencies (RTPAs) are already in the process of evaluating transportation control measures for the SIP development process in response to the severe nonattainment status. At present, applicable SIPs submitted to and approved by EPA include ozone (under a serious classification) and CO (a maintenance plan). Approved motor vehicle emission budgets for volatile organic compounds (VOCs), NO_X, and CO are in place. The EPA has found the submitted PM_{10} plan budgets to be inadequate (which included PM_{10}, VOC, and NO_X) (StanCOG 2001b).

Sensitive Land Uses

Sensitive land uses are generally defined as locations where people reside or where the presence of air emissions could adversely affect the use of the land. Typical sensitive receptors include residents, school children, hospital patients, the elderly, etc.

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Sensitive land uses in the vicinity of the project area include:

- the "Campus Park" single-family residential subdivision located north of the project site across Pacheco Road and adjacent to the Southern Pacific Railroad (SPRR) tracks;
- the "Silver Creek" single-family residential subdivision located east of the project site across Gosford Road;
- Reimer's Garden Center plant nursery located east of the project site at the southeast corner of Gosford Road and Pacheco Road; and
- Sing Lum School, which is located west on 4600 Chaney Lane, approximately 0.25-mile from the project site.

Applicable Regulations

Both the State of California and the federal government have established ambient air quality standards for several different pollutants. For some pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). The pollutants of greatest concern in the Bakersfield area are CO, ozone, and PM_{10}. Table 3B-2 shows the state and federal standards for a variety of pollutants.

Federal Regulations

Federal Clean Air Act

The federal Clean Air Act, promulgated in 1970 and amended twice thereafter (including the 1990 amendment), establishes the framework for modern air pollution control. The Act directs the EPA to establish ambient air standards for six pollutants: ozone, carbon monoxide, lead, nitrogen dioxide, particulate matter, and sulphur dioxide. The standards are divided into primary and secondary standards; the former are set to protect human health within an adequate margin of safety and the latter to protect environmental values, such as plant and animal life.

The primary legislation that governs federal air quality regulations is the Clean Air Act Amendments of 1990 (CAAA). The CAAA delegates primary responsibility for clean air to the EPA. The EPA develops rules and regulations to preserve and improve air quality, as well as delegating specific responsibilities to state and local agencies.

The EPA has established National Ambient Air Quality Standards for criteria pollutants (Table 3B-2). Criteria pollutants include CO, NO_2, SO_2, ozone, PM_{10}, and lead.

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Table 3B-2. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Concentration	
		State Standards	Federal Standards
Ozone	8 hours	NA[a]	0.08 ppm
	1 hour	0.09 ppm (180 $\mu g/m^3$)	0.12 ppm (235$\mu g/m^3$)
Carbon Monoxide	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide	Annual average	NA[a]	0.053 ppm (100 $\mu g/m^3$)
	1 hour	0.25 ppm (470 $\mu g/m^3$)	NA[a]
Sulfur Dioxide	Annual average	NA[a]	80 $\mu g/m^3$ (0.03 ppm)
	24 hours	0.04 ppm (105 $\mu g/m^3$)	365 $\mu g/m^3$ (0.14 ppm)
	1 hour	0.25 ppm (655 $\mu g/m^3$)	NA[a]
Particulate Matter (PM_{10})	Annual arithmetic mean	NA[a]	50 $\mu g/m^3$
	Annual geometric mean	20 $\mu g/m^3$	NA[a]
	24 hours	50 $\mu g/m^3$	150 $\mu g/m^3$
Particulate Matter – Fine ($PM_{2.5}$)	Annual arithmetic mean	NA[a]	12 $\mu g/m^3$
	24 hours	NA[a]	65 $\mu g/m^3$
Sulfates	24 hours	25 $\mu g/m^3$	NA[a]
Lead	Calendar quarter	NA[a]	1.5 $\mu g/m^3$
	30 days	1.5 $\mu g/m^3$	NA[a]
Hydrogen Sulfide	1 hour	0.03 ppm (2 $\mu g/m^3$)	NA[a]
Vinyl Chloride (chloroethene)	24 hours	0.010 ppm (26 $\mu g/m^3$)	NA[a]
Visibility Reducing Particles (VRP)	8 hours (10 a.m.–6 p.m. PST)	Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70%.[b]	NA[a]

Notes: ppm = parts per million
mg/m^3 = milligrams per cubic meter
$\mu g/m^3$ = micrograms per cubic meter
PST = Pacific Standard Time

[a] No standard implemented.

[b] Statewide VRP Standard applies statewide except in Lake Tahoe Air Basin. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Source: WZI Inc. 2002

If an area does not meet the federal NAAQS shown in Table 3B-2 are called "nonattainment" areas. For these nonattainment areas, the federal Clean Air Act requires states to develop and adopt SIPs, which are air quality plans showing how air quality standards will be attained. The SIP, which is reviewed and approved by the EPA, must demonstrate how the federal standards will be achieved. Failing to submit a plan or secure approval could lead to denial of federal funding and permits for such improvements as highway construction and sewage treatment plants. In cases where the SIP is submitted by the State but fails to demonstrate achievement of the standards, the EPA is directed to prepare a Federal Implementation Plan. In California, the EPA has delegated authority to prepare SIPs to the California Air Resources Board (ARB), which, in turn, has delegated that authority to individual air districts.

State Regulations

California Clean Air Act

Responsibility for achieving California's standards, which are more stringent than federal standards, is placed on the ARB and local air pollution control districts, and is to be achieved through district-level air quality management plans that will be incorporated into the SIP. In California, the EPA has delegated authority to prepare SIPs to the ARB, which, in turn, has delegated that authority to individual air districts

The ARB has traditionally established state air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving state implementation plans.

Responsibilities of air districts include overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality–related sections of environmental documents required by CEQA.

The California CAA of 1988 substantially added to the authority and responsibilities of air districts. The California CAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The California CAA focuses on attainment of the state ambient air quality standards, which, for certain pollutants and averaging periods, are more stringent than the comparable federal standards.

The California CAA requires designation of attainment and nonattainment areas with respect to state ambient air quality standards. The California CAA also requires that local and regional air districts expeditiously adopt and prepare an air quality attainment plan if the district violates state air quality standards for CO, SO_2, NO_2, or ozone. These Clean Air Plans are specifically designed to attain these standards and must be designed to achieve an annual five percent reduction in districtwide emissions of each nonattainment pollutant or its precursors. No

locally prepared attainment plans are required for areas that violate the state PM_{10} standards.

The California CAA requires that the state air quality standards be met as expeditiously as practicable but, unlike the federal CAA, does not set precise attainment deadlines. Instead, the act established increasingly stringent requirements for areas that will require more time to achieve the standards.

The California CAA emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The California Clean Air Act gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures (TCM). The California CAA does not define *indirect and area-wide sources*. However, Section 110 of the federal CAA defines an indirect source as

> "a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution. Such term includes parking lots, parking garages, and other facilities subject to any measure for management of parking supply...."

TCMs are defined in the California CAA as "any strategy to reduce trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing vehicle emissions."

Recently enacted amendments to the California Clean Air act impose additional requirements designed to ensure an improvement in air quality within the next five years. More specifically, local districts with moderate air pollution that do not achieve "transitional nonattainment" status by December 31, 1997, must implement the more stringent measures applicable to districts with serious air pollution.

California Air Resources Board Diesel Exhaust Control Program

In August 1998, the ARB identified air particulate emissions from diesel-fueled engines (diesel PM) as toxic air contaminants based on their potential to cause cancer and other adverse health effects. The ARB then conducted a risk management evaluation to identify whether a need for further control of diesel PM was warranted (California Air Resources Board 2001).

The ARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, and *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines*. The Board approved these documents on September 28, 2000, paving the way for the next step in the regulatory process: the control measure phase (California Air Resources Board 2001).

During the control measure phase, specific statewide regulations designed to further reduce diesel PM emissions from diesel-fueled engines and vehicles are

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to be evaluated and developed. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel PM emissions. The regulations will be developed in an open and public process where availability, applicability, and cost of technology will all be evaluated. The interested members of the public, manufacturers, and other stakeholders will be asked to participate in the development of all proposed regulations (California Air Resources Board 2001).

Currently, the ARB is still in the process of developing Air Toxics Control Measures for diesel engines. A public hearing for the ARB's diesel emission control strategy verification procedure for on-road, off-road, and stationary diesel-fueled vehicles and equipment has been scheduled to take place in Sacramento, California. Some of the diesel control measures identified by the ARB that will be addressed at the public hearing include diesel oxidation catalysts, diesel particulate filters, fuel additives, alternative diesel fuels, and NO_X control strategies. A further discussion of these diesel control measures identified by the ARB is presented in Appendix D (California Air Resources Board 2002b). Please reference the final recommendation of the ARB evaluation prepared in August 1998.

Local Regulations

San Joaquin Valley Unified Air Pollution Control District

At the local level, the SJVUAPCD is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws. Air quality is also managed through land use and development planning practices. These practices are implemented in Kern County through the general planning process.

The District regulates air quality in the Bakersfield area. The predicted emissions associated with vehicular traffic (mobile sources) are not subject to the District's permit requirements. However, the District is responsible for overseeing efforts to improve air quality within the San Joaquin Valley. The District has prepared an Air Quality Attainment Plan to bring the San Joaquin Valley into compliance with the California Ambient Air Quality Standard for ozone. The District reviews land use changes to evaluate the potential impact on air quality.

San Joaquin Valley Air Pollution Control District Regulation VIII

San Joaquin Valley Air Pollution Control District Regulation VIII specifies control measures for specified outdoor sources of fugitive particulate matter emissions. The District does not require a permit for these activities, but does impose measures to control fugitive dust, such as the application of water or a

chemical dust suppressant. The rules contained in Regulation VIII are listed below.

- **Rule 8010** Fugitive dust administrative requirement for control of fine particulate matter.
- **Rule 8020** Fugitive dust requirements for control of fine particulate matter from construction, demolition, excavation and extraction activities.
- **Rule 8070** Fugitive dust requirements for control of fine particulate matter from vehicle and/or equipment parking, shipping, receiving, transfer, fueling and service areas one acre or larger.

In addition, the facility shall include the following as requirements of local zoning regulations.

- Water sprays or chemical suppressants must be used in all unpaved areas to control fugitive emissions.
- All access roads and parking areas must be covered with asphalt-concrete paving.

Compliance with District Regulation VIII and the local zoning code will reduce particulate emission impacts to levels that are considered "less than significant."

Impacts and Mitigation

Methodology

Construction Emissions

Construction will also result in exhaust emissions from diesel-powered heavy equipment. Exhaust emissions from construction include emissions associated with the transport of machinery and supplies to and from the site, emissions produced onsite as the equipment is used, and emissions from trucks transporting excavated materials from the site and fill soils to the site.

Emissions due to construction activities include CO, ROG, NO_X, SO_X, and PM_{10}. Emissions from construction activities were calculated using the URBEMIS 7G air quality model. Model inputs included five pieces of earthmoving equipment, two trucks, four miscellaneous mobile units, one fork-lift, seven construction workers commuting to the site, 30 days of grading, and a six-month construction period. The model output is available upon request at the City of Bakersfield Planning Department as part of the WZI Inc. report (WZI Inc 2002).

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Operational Emissions

Mobile Source Emissions

Vehicle emissions have been estimated for the year 2020 (expected completion date of this project) using the URBEMIS 7G computer model from the California Air Resources Board. This model predicts carbon monoxide, total hydrocarbons, nitrogen oxides, oxides of sulfur, and particulate matter emissions from motor vehicle traffic associated with new or modified land uses. The URBEMIS 7G modeling results are available upon request at the City of Bakersfield Planning Department as part of the WZI Inc. report (WZI Inc 2002).

Carbon monoxide emissions are a function of vehicle idling time and, thus, under normal meteorological conditions depend on traffic flow conditions. Carbon monoxide transport is extremely limited; it disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations close to a congested roadway or intersection may reach unhealthful levels, affecting sensitive receptors (residents, school children, hospital patients, the elderly, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at an unacceptable Level of Service (LOS). CO "Hot Spot" modeling is required if a traffic study reveals that the project will reduce the LOS on one or more streets to E or F; or, if the project will worsen an existing LOS F.

The impact of the proposed project on local carbon monoxide levels was assessed at these intersections with the Caltrans CALINE-4 Air Quality Model, which allows microscale CO concentrations to be estimated along each roadway corridor or near intersections. This model is designed to identify localized concentrations of carbon monoxide, often termed "hot spots." Year 2020 traffic data as predicted by the traffic study was used in the CALINE-4 model.

A traffic study was prepared by McIntosh & Associates for the Gosford Village project. The study indicates that nine intersections warrant a CO Hot Spot analysis:

- Gosford Road and Stockdale Highway,
- Gosford Road and Ming Avenue,
- Ashe Road and Ming Avenue,
- Ashe Road and White Lane,
- Stine Road and White Lane,
- Ashe Road and Harris Road,
- Gosford Road and Panama Lane,
- Ashe Road and Panama Lane, and
- Gosford Road and Taft Highway (PM hours).

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The modeling analysis was performed for worst-case wind angle and windspeed. The assumptions are shown below.

- Due to lack of specific receptor locations for CO hot spot analysis, locations near the most impacted intersections were used for this analysis. Selected modeling locations represent the intersections that would potentially experience LOS F or worse in year 2020. Receptor locations with the possibility of extended outdoor exposure are located between 21–51 meters from the roadway centerlines.
- Four receptor locations at each intersection, under worst-case wind angle conditions, were modeled to determine carbon monoxide dispersion concentrations. CO concentrations were modeled at these locations to assess the potential maximum CO exposure that would occur in year 2020.
- The calculations assume a meteorological condition of almost no wind (0.5 m/s), a flat topological condition between the source and the receptor, and a mixing height of 1,000 meters.
- CO concentrations are calculated for the one-hour averaging period, and then compared to the state one-hour CO standard. CO eight-hour averages are extrapolated using techniques outlined by the U.S. Environmental Protection Agency and compared to the carbon monoxide eight-hour standards.
- Emission factors for year 2020 were used in the model. Caltrans has indicated in its Transportation Project-Level Carbon Monoxide Protocol (Caltrans, revised 1997) that the "intersection" option of CALINE-4 should not be used because it calculates model emissions based on an algorithm developed for an outdated vehicle fleet. The "at-grade" option has been used in this analysis. Emission factors for approach and departure links were based on approach and departure average speeds as a function of traffic volume, average cruise speed, and percentage of red time.
- Concentrations are given in parts per million (ppm) at each of the receptor locations.
- Future year ambient CO concentrations were derived by averaging the last two years' CO levels monitored at Bakersfield's California Avenue station. Actual future ambient CO levels may be lower due to emissions control strategies that will be implemented between now and year 2020.

The input and output data for Caline-4 modeling is available upon request at the City of Bakersfield Planning Department as part of the WZI Inc. report (WZI Inc 2002).

Area Source Emissions

Area source emissions result from fuel and personal product use. Electricity and natural gas are utilized by almost every commercial and residential development. The URBEMIS 7G computer model predicted the following emissions from natural gas usage and landscape maintenance. The model output is available upon request at the City of Bakersfield Planning Department as part of the WZI Inc. report (WZI Inc 2002). The numbers shown below are from typical energy

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consumption and do not include fireplaces and consumer products such as hairspray.

Criteria for Determining Significance

Based on the State CEQA Guidelines and standard professional practice, the proposed project would result in a significant impact on air quality if it would:

- conflict with or obstruct implementation of the applicable air quality management plan;
- violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

In addition to the above significant criteria, emission thresholds are contained in the *Guide for Assessing and Mitigating Air Quality Impacts* produced by the SJVUAPCD (SJVUAPCD 2002). According to the SJVUAPCD, impacts would be significant if the project would:

- expose sensitive receptors to substantial pollutant concentrations,
- produce greater than 10 tons/year ROG,
- produce greater than 10 tons/year NO_x,
- exceed National or California Ambient Air Quality Standard for CO (9 ppm 8-hr average; 20 ppm 1-hr average), or
- not comply with the San Joaquin Valley Air Pollution Control's Regulation VIII regarding particulate matter emissions from construction activities. Compliance with District Regulation VIII and the local zoning code will reduce particulate emission impacts to levels that are considered less-than-significant by the SJVUAPCD.

Additionally, the SJVUAPCD has not established a significance threshold for PM_{10}. However, because the San Joaquin Valley Air Basin is classified as a severe PM_{10} nonattainment area for the federal standard, emissions exceeding the SJVUAPCD's New Source Review threshold of 15 tons per year are considered a significant impact (Mitchell pers. comm.).

Project Impacts

Impact B-1. Conflict With or Obstruct Implementation of Air Quality Attainment Plan

The California CAA requires non-attainment districts with severe air quality problems to provide for a five percent reduction in non-attainment emissions per year. The SJVAPCD prepared an Air Quality Attainment Plan for the SJVAB in compliance with the requirements of the Act. The plan requires best available retrofit technology on specific types of stationary sources to reduce emissions. The California CAA and the Air Quality Attainment Plan also identify transportation control measures as methods of reducing emissions from mobile sources. The California CAA defines transportation control measures as, "any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling or traffic congestion for the purpose of reducing motor vehicle emissions." The Air Quality Attainment Plan for the SJVAB identifies the provisions to accommodate the use of bicycles, public transportation and traffic flow improvements as transportation control measures.

The emissions of reactive organic gases and nitrogen oxides predicted by the model exceed the District's interim threshold levels; however, Golden Empire Transit (GET) provides public (bus) transportation in the Bakersfield metropolitan area. The project area is undeveloped; therefore, it is not currently served by GET. However, GET does provide service to the general area. The project could easily be serviced by GET upon completion. A "Traffic Impact Study" was prepared by McIntosh & Associates to evaluate impacts on the surrounding local roadway system due to traffic generated by the proposed development. The Traffic Impact Study recommends mitigation measures, such as street improvements or traffic signals, for intersections and street segments which fall below an acceptable LOS due to the impact of future traffic. The study allocates a proportionate share of the mitigation measures to the project. The proposed mitigation measures are traffic flow improvements, which are recognized transportation control measures in compliance with the Air Quality Attainment Plan.

The Air Quality Attainment Plan recognized growth of the population and economy within the air basin. The plan predicted the workforce in Kern County to increase 40 percent and housing to increase 30 percent from 1990 to 2000. This project can be viewed as growth that was anticipated by the plan and will not conflict with or obstruct implementation of the air quality plan. Consequently, this impact is considered less-than-significant.

Mitigation Measures

No mitigation is required.

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Residual Impacts

Impacts would be less than significant.

Impact B-2. Violation of Air Quality Standards or Substantial Contribution to an Existing or Projected Air Quality Violation

Construction-Related Emissions

Construction of the project would result in the temporary generation of emissions of ROG, NO_x, and PM_{10}. Construction-related emissions would result from construction equipment exhaust, construction employee vehicle exhaust, dust from land clearing, wind erosion of exposed soil, and volatile organic compound (VOC) emissions from painting, and asphalt paving. Construction-related emissions would vary substantially, depending on the level of activity, length of construction period, the specific construction operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content.

Table 3B-3 summarizes maximum daily construction emissions. Construction activities were divided into separate phases and analyzed separately. Consequently, project significance is not a comparison of the sum of all construction phases to the SJVUAPCD threshold levels. Instead, if one phase of construction is found to have a significant impact, than the entire project is considered to have a significant air quality impact.

The construction of the proposed project would result in the generation of fugitive dust. Compliance with SJVUAPCD Regulation VIII and the City of Bakersfield air quality regulations would result in no significant fugitive dust emissions. To ensure compliance, mitigation measures B-1 and B-2 below shall be implemented.

Additionally, as indicated in Table 3B-3, emissions from architectural coatings exceed the SJVUAPCD's ROG threshold of 10 tons per year. Mitigation will further reduce ROG levels, but not to levels below the significance threshold of 10 tons per year. Consequently, this impact is considered significant and unavoidable.

Operation-Related Emissions

The proposed project would generate motor-vehicle trips that would in turn generate operation-related air emissions. Emission calculations for with-project conditions are based on the daily trip generation data provided by McIntosh & Associates. In addition, area source emissions were calculated based on land-use characteristics. Area source emissions result from fuel and personal product use. Electricity and natural gas are utilized by almost every commercial and

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residential development. Table 3B-4 summarizes the results of project operational emissions.

Table 3B-4 indicates that emissions resulting from project operations will exceed the SJVUAPCD's ROG and NO_X thresholds of 10 tons per year, and this impact is considered significant. Implementation of the following mitigation measures will reduce operational emissions, but not to a less-than-significant level. Consequently, this impact is considered significant and unavoidable.

Mitigation Measures

Construction-Related Mitigation Measures

Mitigation Measure B-1. Prior to approval of a grading plan, the project applicant shall submit a letter to the City of Bakersfield Planning Department from SJVUAPCD stating the dust suppression measures that shall be completed during construction activities to comply with the SJVUAPCD Regulation VIII.

Mitigation Measure B-2. In addition to compliance with Regulation VIII, the following measures shall be incorporated into building plans and implemented during construction activities to further reduce fugitive dust emissions associated with the project.

- Cover all access roads and parking areas with asphalt-concrete paving.
- Ensure that asphalt-concrete paving complies with SJVUAPCD Rule 4641 and restrict the use of cutback, slow-cure, and emulsified asphalt paving materials.
- Use water sprays or chemical suppressants on all unpaved areas to control fugitive dust emissions.
- Enclose, cover, or water all stockpiled soils to reduce fugitive dust emissions.
- Cease grading activities during periods of high winds (greater than 20 mph over a one-hour period).
- Limit construction-related vehicle speeds to 15 mph on all unpaved areas at the construction site.
- Cover all haul trucks when transporting loads of soils.
- Wash off construction and haul trucks to minimize the removal of mud and dirt from the project site.
- Shut down equipment when not in use for extended periods of time to reduce emissions associated with idling engines.
- Encourage ride sharing and use of transit transportation for construction employees commuting to the project site.
- Use electric equipment for construction whenever possible instead of fossil fuel-fired equipment.

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Table 3B-3. Emissions from Construction Activities

Construction Phase	Unmitigated				Mitigated			
	ROG (tons/year)	NO_X (tons/year)	PM_{10} (tons/year)	CO (tons/year)	ROG (tons/year)	NO_X (tons/year)	PM_{10} (tons/year)	CO (tons/year)
Site Grading	0.15	2.16	--	2.47	0.15	2.06	--	1.09
Construction Worker Trips	0.17	0.23	0.44	0.04	0.17	0.23	0.44	0.04
Stationary Equipment	0.33	0.27	--	0.02	0.33	0.27	--	0.02
Mobile Equipment- Gas	1.88	1.26	--	0.13	0	--	--	--
Mobile Equipment- Diesel	0.52	6.82	--	0.51	0.49	6.48	--	0.49
Architectural Coatings	12.95	--	--	--	12.3	--	--	--
Asphalt Offgassing	0.02	--	--	--	0.02	--	--	--
Total[1]	16.02	10.74	0.44	3.17	13.46	9.04	0.44	1.64
Threshold	**10**	**10**	**15**	**NA[2]**	**10**	**10**	**15**	**NA[2]**

1. Totals for construction emissions are presented for informational purposes only. Project significance is not a comparison of the sum total of all construction phases to the SJVUAPCD threshold levels. Rather, if one phase of construction is found to have a significant impact, than the entire project is considered to have a significant air quality impact.

2. The SJVUAPCD does not have a significance criteria for CO

Table 3B-4. Emissions from Project Operation

Operational Phase	ROG (tons/year)	NO_X (tons/year)	PM_{10} (tons/year)	CO (tons/year)
Area Source Emissions				
Natural Gas	0.09	1.24	0.0	0.49
Landscaping	0.01	0.0	0.0	0.06
Vehicular Emissions	12.21	34.98	1.4	119.77
Total	12.31	36.22	1.4	120.32
Threshold	**10**	**10**	**15**	**NA[1]**

1. The SJVUAPCD does not have a significance criteria for CO

Operational-Related Mitigation Measures

These projects will be required to comply with Title 24 of the California Code of Regulations regarding energy conservation standards. The applicant shall incorporate these requirements, along with the following mitigation measures, into the building plans:

Mitigation Measure B-3

Use low-NO_x emission water heaters.

Mitigation Measure B-4

Provide shade trees to reduce building cooling requirements consistent with the current landscaping ordinance requirements.

Mitigation Measure B-5

Install energy-efficient and automated air conditioners.

Mitigation Measure B-6

Exterior windows should all be double-paned glass.

Mitigation Measure B-7

Energy-efficient metal halide parking lights will be used.

Mitigation Measure B-8

Use EPA-approved wood burning stoves, fireplace inserts, or pellet stoves instead of conventional fireplaces.

Residual Impacts

Impacts would be significant and unavoidable.

Impact B-3. Cumulatively Considerable Net Increases of Criteria Pollutants

The State of California and EPA have designated the SJVAB as being in severe non-attainment for ozone. As seen in Table 3B-4, the project will result in cumulatively considerable net increases in ozone precursor (ROG and NO_X) emissions above the District thresholds of 10 tons per year. Consequently, this impact is considered significant. Additionally, construction-related emissions exceed District thresholds and are considered cumulatively considerable. Implementation of Mitigation Measures B-1 through B-8 will reduce air quality emissions, but not to a less-than-significant level. Consequently, this impact is considered significant and unavoidable.

Mitigation Measures

Mitigation Measures B-1 through B-8.

Residual Impacts

Impacts would be significant and unavoidable.

Impact B-4. Expose Use of Sensitive Receptors to Substantial Pollutant Concentrations of CO

The impact of the proposed project on local carbon monoxide levels was assessed at these intersections with the CalTrans CALINE-4 Air Quality Model, which allows microscale CO concentrations to be estimated along each roadway corridor or near intersections. This model is designed to identify localized concentrations of carbon monoxide, often termed "hot spots." Year 2020 traffic data as predicted by the traffic study was used in the CALINE-4 model. Table 3B-5 summarizes CALINE-4 modeling results.

The CO air quality impact of this project is not likely to affect sensitive receptors. Sensitive receptors are areas where young children, chronically ill individuals, or other individuals more sensitive than the general population are located. Examples of sensitive receptors are schools, day care centers, and hospitals.

Table 3B-5 indicates that the proposed project will not create any significant localized concentrations of carbon monoxide in excess of the California ambient air quality standards of 9 ppm on an 8-hour average and 20 ppm on a 1-hour average. Neither standard would be equaled or exceeded at any of the intersections studied. As such, the CO impacts from the project are considered less than significant.

The potential ambient air quality impacts from this project are related to increased in traffic. The project is not expected to result in localized impacts, such as CO hot spots, and is not expected to impact nearby sensitive receptors. Therefore, this impact is considered less-than-significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact B-5. Creation of Objectionable Odors Affecting A Substantial Number Of People

The project consists of general commercial land uses. The generation of odors is generally associated with certain types of industrial and agricultural activities and is not anticipated to result from the proposed project. Therefore, the project is

Table 3B-5. CALINE-4 Maximum Predicted Carbon Monoxide Concentrations

Intersection	Year 2020 w/ Project		Year 2020 w/o Project		Project Increase	
	1 hr[1] (ppm)	8 hr[2] (ppm)	1 hr[1] (ppm)	8 hr[2] (ppm)	1 hr[1] (ppm)	8 hr[2] (ppm)
Gosford Road & Stockdale Highway	12.7	8.9	12.7	8.9	0.0	0.0
Gosford Road & Ming Avenue	11.5	8.1	11.4	8.0	0.1	0.07
Ashe Road & Ming Avenue	9.5	6.7	9.5	6.7	0.0	0.0
Ashe Road & White Lane	11.7	8.2	11.5	8.1	0.2	0.14
Stine Road & White Lane	11.9	8.3	11.9	8.3	0.0	0.0
Ashe Road & Harris Road	9.2	6.4	9.2	6.4	0.0	0.0
Gosford Road & Panama Lane	9.5	6.7	9.1	6.4	0.0	0.0
Ashe Road & Panama Lane	8.6	6.0	8.5	6.0	0.1	0.07
Gosford Road & Taft Highway	7.8	5.5	7.8	5.5	0.0	0.0

Notes:

Predicted concentrations modeled using "worst case" option

1 1-hour concentrations include ambient CO of 6 ppm (extrapolated from 2 year, 8-hour average).

2 Eight 1-hour concentrations were obtained by multiplying the 1-hour concentration by a factor of 0.7, as referenced in *Screening Procedures for Estimating the Air Quality Impact of Stationary Sources*, USEPA, October 1992.

3 parts per million

not expected to result in the generation of odors and impacts are considered less-than-significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Cumulative Impacts

This Air Quality Impact Study considered the affects of the project, as defined by the Traffic Study, with the cumulative impacts of growth in the area.

The *Guide for Assessing and Mitigating Air Quality Impacts* (SJVUAPCD 2002) under CEQA defines cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

This report considered the following cumulative impacts.

- Cumulative Ozone Impacts – Ozone impacts are the result of the cumulative emissions from numerous sources in the region and transport from outside the region. Ozone is in chemical reactions involving ROG, NO_X, and sunlight.
- Cumulative PM_{10} Impacts – PM_{10} has the potential to cause significant local problems during periods of dry conditions accompanied by high winds, and during periods of heavy earth disturbing activities. PM_{10} may have cumulative local impacts, if, for example, several unrelated grading or earth moving projects are underway simultaneously at nearby sites.
- Cumulative CO Impacts – Cumulative carbon monoxide impacts are accounted for in the CO Hotspot Analysis described earlier in the assessment. Traffic levels were used to determine if the proposed project would have a significant cumulative impact.
- Cumulative Hazardous Air Pollutant (HAP) Impacts – Cumulative analysis for HAPs focused on local impacts on sensitive receptors. The District recommends screening a radius of 1 mile for HAP cumulative impacts.

The existing and proposed projects within one mile of the proposed project are shown in Figure 2-5. Three proposed residential development projects have been identified and modeled using the URBEMIS7G computer model to predict cumulative impacts. Emissions for the operational phase of these proposed projects were based on housing lot totals provided by the City of Bakersfield Planning Department (WZI Inc. 2002). The predicted model outputs, including the Gosford Village project, are summarized in Tables 3B-6 and 3B-7.

City of Bakersfield Planning Department has advised that no other proposed or existing project, besides the three that have been previously identified, exist within a 1-mile radius of the project (WZI Inc. 2002). Therefore, the cumulative impacts for ROG and NO_X attributable to this project are considered cumulatively considerable based on the District's levels of significance as summarized in Table 3B-7.

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Table 3B-6. Cumulative Impact Model Results

Project Name	Number of Lots	Emissions Source	Mitigated Emissions ROG (tons/year)	Mitigated Emissions NO_X (tons/year)	Mitigated Emissions PM_{10} (tons/year)	Mitigated Emissions CO (tons/year)
South Pacific District Christian & Mission Alliance	95	Area	5.26	0.38	0.66	5.00
		Vehicle	1.09	3.20	0.13	11.12
Burlington Homes	269	Area	14.84	1.07	1.87	14.16
		Vehicle	2.87	8.27	0.34	28.77
Coleman Homes, Inc.	267	Area	14.73	1.06	1.85	14.05
		Vehicle	2.87	8.30	0.34	28.86

Table 3B-7. Cumulative Impact Model Emissions Totals

Project Name	ROG (tons/year)	NO_X (tons/year)	PM_{10} (tons/year)	CO (tons/year)
South Pacific District Christian & Mission Alliance	6.33	3.58	0.79	16.12
Burlington Homes	17.71	9.34	2.21	42.93
Coleman Homes, Inc.	17.6	9.36	2.19	42.91
Gosford Village	14.81	43.95	1.67	146.13
Totals	56.45	66.23	6.86	248.09
Threshold	**10**	**10**	**15**	**NA[1]**

FINAL
Environmental Impact Report

General Plan Amendment / Zone Change #02-0193

5.4 AIR QUALITY

This Section evaluates air quality associated with short and long-term impacts resulting from buildout of the proposed Project. Information in this Section is based on the *Air Quality Impact Study* prepared by WZI Inc. (June 2002), which is included as Appendix 15.3, *Air Quality Data*, of this document. RBF Consulting conducted a peer review of the WZI report which was prepared pursuant to the San Joaquin Valley Air Pollution Control District's *Guide for Assessing and Mitigating Air Quality Impacts*, January 10, 2002 Revision.

EXISTING CONDITIONS

ENVIRONMENTAL SETTING

The proposed Project site is located in the San Joaquin Valley Air Basin, within the City of Bakersfield, and within the jurisdiction of the San Joaquin Valley Air Pollution Control District. The topography of the air basin includes foothills and mountain ranges to the east, west, and south, and a relatively flat valley floor. The valley is characterized by long, hot, dry summers, and short, foggy winters. The features of the valley produce climatic episodes such as frequent temperature inversions. The topography of the Project area is flat at an elevation of approximately 365 feet above mean sea level.

STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS

National Ambient Air Quality Standards (NAAQS) are assigned as the result of provisions of the Federal Clean Air Act. The NAAQS establish acceptable pollutant concentrations which may be equaled continuously or exceeded only once per year. California Ambient Air Quality Standards (CAAQS) are limits set by the California Air Resources Board (CARB) that cannot be equaled or exceeded. An air pollution control district must prepare an Air Quality Attainment Plan if the standards are not met. The California and National Ambient Air Quality Standards are outlined in Table 5.4-1, *Ambient Air Quality Standards.*

The following is a summary of the characteristics of primary and secondary pollutants.

Ozone (O_3)

Ozone is a pungent, colorless toxic gas. Ozone makes up 90 percent of the group of pollutants known as photochemical oxidants. Ozone and other photochemical oxidants are products of atmospheric reaction of nitrogen oxides and reactive organic gases with ultraviolet light. High ozone levels can adversely affect plants, and in humans, can cause respiratory irritation.

Carbon Monoxide (CO)

Carbon monoxide is an odorless, colorless toxic gas produced by incomplete combustion of carbon-containing substances. Carbon monoxide interferes with the transfer of fresh oxygen from blood into body tissues.

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Table 5.4-1
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		Federal Standards		
		Concentration	Method	Primary Standard	Secondary Standard	Method
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	0.12 ppm (235 µg/m³)	Same as Primary Standard	Ethylene Chemiluminescence
	8 Hour	–		0.08 ppm (157 µg/m³)		
Respirable Particulate Matter (PM_{10})	Annual Geometric Mean	30 µg/m³	Size Selective Inlet Sampler ARB Method P (8/22/85)	–	Same as Primary Standard	Inertial Separation Gravimetric Analysis
	24 Hour	50 µg/m³		150 µg/m³		
	Annual Arithmetic Mean	–		50 µg/m³		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		65 µg/m³	Same as Primary Standard	Inertial Separation Gravimetric Analysis
	Annual Arithmetic Mean			15 µg/m³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 µg/m³)	Non-dispersive Infrared Photometry (NDIR)	9.0 ppm (10 µg/m³)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 µg/m³)		35 ppm (40 µg/m³)		
	8 Hour (Lake Tahoe)	6 ppm (7 µg/m³)		–		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	–	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m³)		–		
Lead	30 days average	1.5 µg/m³	AHL Method 54 (12/74) Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m³	Same as Primary Standard	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	Fluorescence	0.04 ppm (105 µg/m³)	–	Pararosoaniline
	24 Hour	0.04 ppm (105 µg/m³)		0.04 ppm (105 µg/m³)	–	
	3 Hour	–		–	0.05 ppm (1300 µg/m³)	
	1 Hour	0.25 ppm (655 µg/m³)		–	–	
Visibility Reducing Particles	8 Hour (10 a.m. to 6 p.m., PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer-visibility of ten miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent. Method: ARB Method V (8/18/89).		No Federal Standards		
Sulfates	24 Hour	25 µg/m³	Turbidimetric Barium Sulfate-AIHL Method 61 (2/76)			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Cadmium Hydroxide STRactan			

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Nitrogen Oxides (NOx)

Nitrogen oxides are formed from nitrogen and oxygen at high combustion temperatures and further reacts to form other oxides of nitrogen, such as nitrogen dioxide. Nitrogen dioxide reacts with ultraviolet light to initiate reactions producing photochemical smog, and it reacts in air to form nitrate particulates. Nitrogen dioxide significantly affects visibility.

Sulfur Oxides (SOx)

Sulfur dioxide is a colorless, pungent gas primarily formed by combustion of sulfur-containing fossil fuels. High sulfur dioxide concentrations irritate the upper respiratory tract, while low concentrations of sulfur dioxide injure lung tissues. Sulfur oxides can react to form sulfates which significantly reduce visibility.

Particulates (PM_{10})

Dust, aerosols, soot, mists, and fumes make up atmospheric particulates. Sources of particulates include industrial and agricultural operations, combustion, and photochemical actions of pollutants in the atmosphere. Particulates substantially reduce visibility and adversely affect the respiratory tract. PM_{10} is made up of finely divided particulate matter less than 10 microns in diameter.

Reactive Organic Gases (ROG)

Organic compounds are composed primarily of carbon and hydrogen. Motor vehicle emissions and evaporation of organic compounds produce hydrocarbon emissions. Hydrocarbon levels can affect plant growth. Many hydrocarbon species react in the atmosphere to form photochemical smog.

Air Quality - Basin-wide. The San Joaquin Valley Air Pollution Control District has jurisdiction in eight counties located in the San Joaquin Valley, including the Bakersfield area. The San Joaquin Valley Air Basin has been designated as attainment for carbon monoxide and non-attainment for ozone and particulate matter (PM_{10}) by federal and California standards. The California Clean Air Act requires that all reasonable stationary and mobile source control measures be implemented in non-attainment areas to help achieve a mandated, five percent per year reduction in ozone precursors, and to reduce population exposures. Table 5.4-2, *Ambient Air Quality Classifications Project Area of the San Joaquin Valley*, contains the ambient air quality classifications for the Bakersfield area.

Table 5.4-2
Ambient Air Quality Classifications Project Area of the San Joaquin Valley

Pollutant	State	Federal
Carbon Monoxide	Attainment	Attainment
Ozone	Non-Attainment/Severe	Non-Attainment/Severe
Oxides of Nitrogen	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Particulate Matter <10 microns	Non-Attainment	Non-Attainment/Serious

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Air Monitoring Station. The closest air monitoring station to the Project site is the Bakersfield Station located at 5558 California Avenue. The station monitors particulates, ozone, carbon monoxide, and nitrogen dioxide.

Table 5.4-3, *Maximum Pollutant Levels at Bakersfield's California Avenue Monitoring Station*, contains the maximum pollutant levels detected during 1999 through 2001 (the latest data available).

Table 5.4-3
Maximum Pollutant Levels at Bakersfield's California Avenue Monitoring Station

Pollutant	Averaging Time	Year Maximum	Year Maximum	Year Maximum	Standard	
					National	State
Ozone (O_3)	1 Hour	0.116 ppm	0.125 ppm	0.129 ppm	0.12 ppm	0.09 ppm
Ozone (O_3)	8 Hour	0.101 ppm	0.106 ppm	0.115 ppm	0.08 ppm	—
Carbon Monoxide (CO)	8 Hour	4.51 ppm	4.89 ppm	3.41 ppm	9 ppm	9 ppm
Nitrogen Dioxide (NO_2)	1 Hour	0.107 ppm	0.089 ppm	0.115 ppm	—	0.25 ppm
Nitrogen Dioxide (NO_2)	1 Hour Annual Average	0.025 ppm	0.024 ppm	—	0.053 ppm	—
Particulates (PM_{10})	24 Hour	143 µg/m³	140 µg/m³	190 µg/m³	150 µg/m³	50 µg/m³
	Federal Annual Geometric Mean	47 µg/m³	45 µg/m³	47 µg/m³	50 µg/m³	—
	State Annual Geometric Mean	40 µg/m³	39 µg/m³	43 µg/m³	—	30 µg/m³
Sulfur Dioxide (SO_2)	24 Hour	0.006 ppm	0.003 ppm	0.005 ppm	0.14 ppm	0.04 ppm

Notes: ppm = parts per million
µg/m³ = micrograms per cubic meter
— = no applicable

Source: CARB Website, 2002.

SENSITIVE RECEPTORS

Air quality impacts of this Project are not likely to affect sensitive receptors. Sensitive receptors are areas where young children, chronically ill individuals, or other individuals more sensitive than the general population are located. Examples of sensitive receptors are schools, day care centers, and hospitals.

The nearest receptor is W.A. Kendrick School, which is located approximately 0.5-miles north of the Project site. There are also a residential areas bordering the Project site to the north and east, which could contain sensitive receptors.

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STANDARDS OF SIGNIFICANCE

SIGNIFICANCE CRITERIA

In accordance with CEQA, the effects of a Project are evaluated to determine if they will result in a significant impact on the environment. An EIR is required to focus on these effects and offer mitigation measures to reduce or avoid any significant impacts which are identified. The criteria, or standards, used to determine the significance of impacts may vary depending on the nature of the Project. Air quality impacts resulting from the implementation of the proposed Project could be considered significant if they cause any of the following to occur:

- Conflict with or obstruct implementation of the applicable air quality plan (refer to Impact Statement 5.4-4);
- Violate any air quality standard or contribute substantially to an existing or Projected air quality violation (refer to Impact Statements5.4-1 and 5.4-2);
- 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) (refer to Impact Statement 5.4-5);
- Exposes sensitive receptors to substantial pollutant concentrations (refer to Impact Statement5.4-2 and 5.4-3); and/or
- Create objectionable odors affecting a substantial number of people (refer to Section 10.0, *Effect Found Not to be Significant*).

Potential impacts associated with the proposed Project have been identified. The impacts are categorized according to topic then numbered consecutively under each category. Mitigation measures at the end of this Section directly correspond to the numbered impact statements below.

IMPACTS

SHORT-TERM EMISSIONS

5.4-1 *Significant short-term air quality impacts may occur during site preparation and project construction. These impacts are considered less than significant with implementation of the recommended mitigation measures. (Mitigation in this instance refers to applicable City Development Code Sections and SJV APCD Rules.)*

Short-term impacts from the Projects would primarily result in fugitive particulate matter emissions during construction. Grading, excavation, trenching, filling, and other construction activities result in increased dust emissions. Regulation VIII of the San Joaquin Valley Unified Air Pollution Control District specifies control measures for specified outdoor sources of fugitive particulate matter emissions. Rule 8010

contains administration requirements, Rule 8020 applies to construction activities, and Rule 8070 applies to vehicle and equipment parking, fueling, and service areas. The Air District does not require a permit for these activities, but does impose measures to control fugitive dust, such as the application of water or a chemical dust suppressant.

Construction would also result in exhaust emissions from diesel-powered heavy equipment. Exhaust emissions from construction include emissions associated with the transport of machinery and supplies to and from the site, emissions produced onsite as the equipment is used and emissions from trucks transporting excavated materials from the site and fill soils to the site. Examples of these emissions include CO, ROG, NOx, SOx, and PM_{10}.

The proposed Project may have potentially significant short-term construction equipment emission impacts, which could exceed the Air District threshold levels for several criteria pollutants. Exhaust emission factors for typical diesel-powered heavy equipment, are found in U.S. EPA AP-42, Volume II, Table II-7.1 (1985) (refer to Table 5.4-4, *Emission Factors for Heavy-Duty Diesel-Powered Equipment*). Exhaust emissions would vary substantially from day to day. Numerous variables factored into estimating total construction emissions include: level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and amount of materials to be transported on/offsite. Additional exhaust emissions would be associated with the transport of workers and materials. Because the specific mix of construction equipment needed for future development is not presently known, equipment emissions cannot be accurately quantified. This data is not available until the construction of specific project components is undertaken. The construction equipment should be properly and routinely maintained, as recommended by manufacturer manuals, to control exhaust emissions.

Table 5.4-4
Emission Factors for Heavy-Duty Diesel-Powered Equipment

Type of Equipment	Pollutant (lb/hr)			
	ROC	NOx	CO	PM_{10}
Track-Type Tractor	0.12	1.26	0.35	0.11
Wheeled Tractor	0.18	1.27	3.59	0.14
Wheeled Dozer	0.19	4.17	1.79	0.17
Scraper	0.27	3.84	1.26	0.41
Motor Grader	0.039	0.71	0.15	0.061
Wheeled Loader	0.23	1.89	0.57	0.17
Track-Type Loader	0.095	0.83	0.20	0.059
Off-Highway Truck	0.19	4.17	1.79	0.26
Roller	0.065	0.86	0.30	0.050
Miscellaneous	0.15	1.69	0.68	0.14

Source: U.S. EPA AP-42, Volume II, Table II-7.1, 1985.

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The Bakersfield area and the San Joaquin Valley are non-attainment for particulates. Although the proposed land uses are not considered a potential source for significant particulate emissions, fugitive particulate emissions would occur during construction. Construction activity has the potential to generate 1.2 tons of total suspended particulates per acre per month of activity.[1] The proposed Project involves development of 37.52 acres. Fugitive construction emissions have the potential to cause a significant impact on air quality. The application of water, or other dust suppressant, could significantly reduce emissions. Doubling the moisture content could reduce emissions on unpaved roads by 75 percent[2] and use of a chemical dust suppressant on storage piles could reduce emissions by approximately 90 percent.[3] Assuming that the total suspended particulates are comprised of 50 percent PM_{10} and that the application of water controls emissions by 50 percent, fugitive PM_{10} emissions during construction could be reduced to 0.3 tons per acre per month of activity. Actual emissions would depend on the level of activity and the type of control being used. A construction schedule for each project component would be required to develop accurate emission estimates from construction. Control measures required and enforced by the San Joaquin Valley Air Pollution Control District under Regulation VIII would control these short-term emission sources to a level that is considered less than significant provided a limited amount of acres is disturbed at any one time. The following three rules related to fugitive dust control apply to this project:

- Rule 8010 Fugitive dust administrative requirements for control of fine particulate matter.
- Rule 8020 Fugitive dust requirements for control of fine particulate matter from construction, demolition, excavation and extraction activities.
- Rule 8070 Fugitive dust requirements for control of fine particulate matter from vehicle and/or equipment parking, shipping, receiving, transfer, fueling and service areas one acre or larger.

In addition, the Project shall include the following as required by the Bakersfield Zoning Code.

- Water sprays or chemical suppressants must be used in all unpaved areas to control fugitive emissions.
- All access roads and parking areas must be covered with asphalt-concrete paving.

[1] EPA, *Compilation of Air Pollutant Emission Factors*, Volume I: Stationary Point and Area Sources, EPA Publication No. AP–42, Fifth Edition, GPO Stock No. 055–000–00251–7, January 1995; Section 13.2.3, Heavy Construction Operations.

[2] United States Environmental Protection Agency, *Control of Open Fugitive Dust Sources*, EPA–450/3–88–008, September 1988.

[3] Ibid.

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Compliance with Regulation VIII of the San Joaquin Valley Unified Air Pollution Control District and the Bakersfield Zoning Code would reduce particulate emission impacts to levels that are considered less than significant.

LONG-TERM OPERATIONAL EMISSIONS

5.4-2 *The Project may result in an overall increase in the local and regional pollutant load due to direct impacts from vehicle emissions and indirect impacts from electricity and natural gas consumption. This impact is considered significant and unavoidable for ROG and NOx.*

Long-term air quality impacts would consist of mobile source emissions generated from project-related traffic and area source emissions generated directly from the natural gas consumed and indirectly from the power plant providing electricity to the Project site. Emissions associated with each of these sources are discussed and calculated below.

Mobile Source - Ozone

The Bakersfield area is a non-attainment area for federal air quality standards for ozone and particulates. Nitrogen oxides and reactive organic gases are regulated as ozone precursors. A precursor is defined by the District as "a directly emitted air contaminant that, when released into the atmosphere, forms or causes to be formed or contributes to the formation of a secondary air contaminant for which an ambient air quality standard has been adopted..."

The District regulates air quality in the Bakersfield area. The predicted emissions associated with vehicular traffic (mobile sources) are not subject to the District's permit requirements. However, the District is responsible for overseeing efforts to improve air quality within the San Joaquin Valley. The District has prepared an Air Quality Attainment Plan to bring the San Joaquin Valley into compliance with the California Ambient Air Quality Standard for ozone. The District reviews land use changes to evaluate the potential impact on air quality. The District has established a significance level for ROG and NOx of 10 tons per year each, but has not established levels of significance for other pollutants.

Vehicle emissions have been estimated for the year 2020 using the URBEMIS 7G computer model from the California Air Resources Board. This model predicts carbon monoxide, total hydrocarbons, nitrogen oxides, oxides of sulfur, and particulate matter emissions from motor vehicle traffic associated with new or modified land uses. Appendix 15.3, *Air Quality Data*, contains the URBEMIS 7G modeling results.

Project-related mobile source mitigated emissions for ROG and NOx would be considered significant based on the District's levels of significance as summarized on Table 5.4-5, *Long-Term Project Emissions*.

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Table 5.4-5
Long-Term Project Emissions

[illegible]	ROG (tons/year)	NOx (tons/year)	CO (tons/year)	PM_{10} (tons/year)
Project Buildout • Mobile Source Emissions • Area Source Emissions (Mitigated)	10.39 00.06	30.9 00.71	105 0.33	1.24 0.00
Total Mitigated Emissions	10.45	31.61	105.33	1.24
SJVAPCD Significance Threshold	10	10	N/A	N/A
Is Threshold Exceeded? (Significant Impact?)	**Yes**	**Yes**	**N/A**	**N/A**

ROG = reactive organic gases
NOx = nitrogen oxides
CO = carbon monoxide
PM_{10} = fine particulate matter

Area Source Emissions

The proposed Project would result in personal product use, and would create electrical demands and heating demands resulting in natural gas combustion. Electrical demand would result in electrical generation emissions from local power plants. The URBEMIS 7G computer model predicted emissions from typical energy consumption, gas usage, landscape maintenance, and consumer products. The model output is included in Appendix 15.3, Air Quality Data. As indicated in Table 5.4-5, *Long-Term Project Emissions*, area source emissions generated by the Project at buildout would not individually exceed SJVAPCD thresholds. However, as discussed below, area source emissions combined with vehicular emissions would cause operational emissions to exceed SJVAPCD thresholds for ROG and NO_X.

Potential Effect on Sensitive Receptors

Air quality impacts of the Project are not likely to affect sensitive receptors. Sensitive receptors are areas where young children, chronically ill individuals, or other individuals more sensitive than the general population are located. Examples of sensitive receptors are schools, day care centers, and hospitals.

The nearest receptor is W.A. Kendrick School, which is located approximately 0.5-mile north of the Project site. There is also a residential area bordering the Project site to the north and east, which could contain sensitive receptors.

The potential ambient air quality impacts from the Project are related to increases in traffic. The Project is not expected to result in localized impacts, such as CO hot spots, and is not expected to impact nearby sensitive receptors.

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Potential Impacts from Odors and Hazardous Air Pollutants

The Project consists of general commercial land uses. The generation of odors and hazardous air pollutants is generally associated with certain types of industrial and agricultural activities. Therefore, the Project is not expected to result in the generation of odors or hazardous air pollutants.

Total Project Operational Emissions

As shown in Table 5.4-5, the mobile source and area emissions associated with the proposed Project would generate pollutant emissions in excess of SJVAPCD thresholds. Thus, implementation of the proposed Project would create a significant and unavoidable individual Project impact from ROG and NOx emissions.

LOCALIZED CO EMISSIONS

5.4-3 *The Project may expose sensitive receptors to substantial pollutant concentrations. Analysis has concluded that a less than significant impact would occur in this regard.*

Mobile Source - Carbon Monoxide

Carbon monoxide emissions are a function of vehicle idling time and, thus, under normal meteorological conditions, depend on traffic flow conditions. Carbon monoxide transport is extremely limited; it disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations close to a congested roadway or intersection may reach unhealthful levels, affecting sensitive receptors (residents, school children, hospital patients, the elderly, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at an unacceptable Level of Service (LOS). CO "Hot Spot" modeling is required if a traffic study reveals that the project will reduce the LOS on one or more streets to E or F; or, if the project will worsen an existing LOS F.

A traffic study was prepared by Ruettgers & Schuler for the proposed Project. The study indicates that twelve unsignalized intersections (based on Year 2020 + projections) warrant a CO Hot Spot analysis:

- South H Street at McKee Road*
- Hosking Road at Wible Road*
- Hosking Road at South H Street*
- Berkshire Road at South H Street*
- Panama Lane at Gosford Road*
- Panama Lane at Monitor Street*
- White Lane at State Road 99 North Bound Ramp*
- Berkshire Road at Wible Road*
- White Lane at Wible Road
- White Lane at State Road 99 South Bound Ramps
- Panama Lane at Wible Road
- Wible Road at Harris Road

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*Denotes intersections for which the CO analysis was based on mitigation measures proposed in the Traffic Study.

The impact of the proposed Project on local carbon monoxide levels was assessed at these intersections with the Caltrans CALINE-4 Air Quality Model, which allows microscale CO concentrations to be estimated along each roadway corridor or near intersections. This model is designed to identify localized concentrations of carbon monoxide, often termed "hot spots". Year 2020 traffic as predicted by the Traffic Study was used in the CALINE-4 model.

The modeling analysis was performed for worst-case wind angle and windspeed. The assumptions used in conducting the modeling analysis are provided in Appendix 15.3, *Air Quality Data*.

The results of the modeling analysis are shown in Table 5.4-6, *CALINE-4 Predicted Carbon Monoxide (CO) Concentrations*. The modeling results were compared to the California ambient air quality standards for carbon monoxide of 9 ppm on an 8-hour average and 20 ppm on a 1-hour average. Neither standard would be equaled or exceeded at any of the intersections studied. As such, the CO impacts from the proposed Project are considered less than significant. The input and output data is contained in Appendix 15.3, *Air Quality Data*.

Table 5.4-6
CALINE-4 Predicted Carbon Monoxide (CO) Concentrations

Intersection	Maximum Modeled Impact at 2020 With Project		Maximum Modeled Impact at 2020 Without Project		Project Impact	
	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)
South H Street at Mckee Road	8.3	5.8	8.2	5.7	0.1	0.07
Hosking Road at Wible Road	8.2	5.7	8.2	5.7	0.0	0.00
Hosking Road at South H Street	7.7	5.4	7.7	5.4	0.0	0.00
Berkshire Road at South H Street	7.6	5.3	7.5	5.3	0.1	0.07
Panama Lane at Gosford Road	8.4	5.9	8.4	5.9	0.0	0.00
Panama Lane at Monitor Street	9.5	6.7	9.3	6.5	0.2	0.14
White Lane at State Road 99 North Bound Ramp	9.2	6.4	9.1	6.4	0.1	0.07
Berkshire Road at Wible Road	7.9	5.5	7.8	5.5	0.1	0.07
White Lane at Wible Road	12.1	8.5	12.0	8.4	0.1	0.07
White Lane at State Road 99 South Bound Ramps	11.1	7.8	11.1	7.8	0.0	0.00
Panama Lane at Wible Road	11.5	8.1	11.0	7.7	0.5	0.35
Wible Road at Harris Road	9.8	6.9	9.7	6.8	0.1	0.07

Notes: 1. 1-hour concentrations include ambient CO of 6.8 ppm (second highest 2 year impact, 8-hour average corrected upwards for 1-hour averaging period).
2. 8-hour concentrations were obtained by multiplying the 1-hour concentration by a factor of 0.7, as referenced in *Screening Procedures for Estimating the Air Quality Impact of Stationary Sources*, USEPA, October, 1992. Predicted concentrations modeled using "worst case" option.

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CONFORMITY WITH AIR QUALITY ATTAINMENT PLAN

5.4-4 *The Project has the potential to conflict with the Air Quality Attainment Plan. Analysis has concluded that a less than significant impact would occur in this regard.*

As noted above under the Significance Criteria discussion, a potentially significant impact to air quality would occur if the Project would conflict with or obstruct implementation of the applicable air quality plan. Although the Project would represent an incremental negative impact to air quality in the Basin, of primary concern is that Project-related impacts have been properly anticipated in the regional air quality planning process and reduced whenever feasible. Therefore, it is necessary to assess the Project's Conformity with the AQMP.

Conformity with the Air Quality Attainment Plan

The California Clean Air Act requires non-attainment districts with severe air quality problems to provide for a five percent reduction in non-attainment emissions per year. The San Joaquin Valley Air Pollution Control District prepared an Air Quality Attainment Plan for the San Joaquin Valley Air Basin in compliance with the requirements of the Act. The plan requires best available retrofit technology on specific types of stationary sources to reduce emissions. The California Clean Air Act and the Air Quality Attainment Plan also identify transportation control measures as methods of reducing emissions from mobile sources. The California Clean Air Act defines transportation control measures as "any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling or traffic congestion for the purpose of reducing motor vehicle emissions." The Air Quality Attainment Plan for the San Joaquin Valley Air Basin identifies the provisions to accommodate the use of bicycles, public transportation, and traffic flow improvements as transportation control measures.

The ROG and NOx emissions predicted by the model exceed the District's interim threshold levels. Golden Empire Transit (GET) provides public (bus) transportation in the Metropolitan Bakersfield area. The Project area is located near two separate GET bus routes. The possibility exists that when the Project is completed, the City would increase the level of service to the Project area, thereby reducing the operational (vehicular) emissions attributable to the Project.

The "traffic Impact study" prepared by Ruettgers & Schuler recommends mitigation measures, such as street improvements and traffic signals, for intersections and street segments which fall below an acceptable Level of Service due to the impact of future traffic. The study allocates a proportionate share of the mitigation measures to the Project. The proposed mitigation measures are traffic flow improvements that are recognized transportation control measures in compliance with the Air Quality Attainment Plan.

The Air Quality Attainment Plan recognized growth of the population and economy within the air basin. The Plan predicted the workforce in Kern County to increase 40 percent and housing to increase 30 percent from 1990 to 2000. Although the proposed project was not anticipated by the Plan, it is consistent with growth

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projections in the County. Thus, the Project is considered consistent with the Air Quality Attainment Plan.

CUMULATIVE IMPACTS

5.4-5 *Impacts to regional air quality resulting from cumulative development may significantly impact existing air quality levels. Analysis has concluded that a less than significant impact would occur in this regard.*

This Air Quality Impact Study considered the affects of the Project, as defined by the Traffic Study, with the cumulative impacts of growth in the area.

The *Guide for Assessing and Mitigating Air Quality Impacts*[4] under CEQA defines cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The document also states that "any proposed project that would individually have a significant air quality impact... would also be considered to have a significant cumulative air quality impact."[5]

This study considered the following cumulative impacts:

- Cumulative Ozone Impacts. Ozone impacts are the result of the cumulative emissions from numerous sources in the region and transport from outside the region. Ozone is in chemical reactions involving ROG, NOx, and sunlight.
- Cumulative PM_{10} Impacts. PM_{10} has the potential to cause significant local problems during periods of dry conditions accompanied by high winds, and during periods of heavy earth disturbing activities. PM_{10} may have cumulative local impacts, if for example, several unrelated grading or earth moving projects are underway simultaneously at nearby sites.
- Cumulative CO Impacts. Cumulative carbon monoxide impacts are accounted for in the CO Hotspot Analysis described earlier in this assessment. Traffic levels were used to determine if the proposed Project would have a significant cumulative impact.
- Cumulative Hazardous Air Pollutant (HAP) Impacts. Cumulative analysis for HAPs focused on local impacts on sensitive receptors. The District recommends screening a radius of one mile for HAP cumulative impacts.

The existing and proposed projects within one mile of the proposed Project are illustrated on Exhibit 4-1, *Cumulative Projects Location Map*. Six proposed residential development projects have been identified and modeled using the URBEMIS 7G computer model to predict cumulative impacts. Emissions for the operational phase of the proposed projects were based on housing lot totals provided by the City of Bakersfield Planning Department.[6] In accordance with district

[4] CARB Guide for Assessing and Mitigating Air Quality Impacts, revised January 10, 2002.

[5] City of Bakersfield, Active Tentative Tracts, David Dow, last updated April 25, 2002.

[6] CARB Guide for Assessing and Mitigating Air Quality Impacts, revised January 10, 2002.

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guidance, fireplaces were not considered since they are seasonal in nature. The predicted model outputs, including the proposed Project, are summarized in Table 5.4-7, *Cumulative Impact Model Results*, and Table 5.4-8, *Cumulative Impact Emission Totals*, and are included in Appendix 15.3, *Air Quality Data*.

Table 5.4-7
Cumulative Impact Model Results

Subdivision Name	Number of Lots	Source	ROG (lbs/day)		CO (lbs/day)	
			Mitigated	Unmitigated	Mitigated	Unmitigated
T5327R – Genevieve Myers	93	Area Source	0.87	0.36	0.29	0.00
		Vehicle Source	3.45	5.03	28.98	0.19
T5738 – John Giumarra, Jr.	504	Area Source	4.74	1.93	1.57	0.01
		Vehicle Source	16.6	23.8	137	0.92
T5762R – R-M Development, Inc.	143	Area Source	1.34	0.55	0.44	0.00
		Vehicle Source	5.14	7.47	43.0	0.29
T5941 – Cemland Development	240	Area Source	2.26	0.92	0.75	0.00
		Vehicle Source	8.33	12.0	69.4	0.47
T6064 – Summerwind Group, Inc.	188	Area Source	1.77	0.72	0.58	0.00
		Vehicle Source	6.64	9.62	55.4	0.37
T6092 – Cemland Development	187	Area Source	1.76	0.72	0.58	0.00
		Vehicle Source	6.60	9.57	55.1	0.37

The *Guide for Assessing and Mitigating Air Quality Impacts*[7] states, "impacts of local pollutants (CO, HAPs) are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects will exceed air quality standards." The project is not expected to cause a cumulative impact in excess of the California Ambient Air Quality Standards (CAAQS) for several reasons. CO "hot spot" modeling demonstrated that the ambient air quality standards for CO would not be exceeded as a result of the Project. Also, the Project is not a source of HAP emissions and therefore cannot have a significant impact from HAPs.

For ROG and NOx, the only significance thresholds exceeded would be from the Project's mobile source emissions. The Project was below the thresholds for both ROG and NOx for stationary source emissions. Therefore the Project is considered to be cumulatively less than significant for ROG and NOx. PM_{10} emissions from the Project are minimal and are expected to be less than significant.

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[7] *CARB Guide for Assessing and Mitigating Air Quality Impacts*, revised January 10, 2002, p. 29.

Table 5.4-8
Cumulative Impact Emission Totals

SUBDIVISION NAME	TROG (lbs/day)	NOx (lbs/day)	CO (lbs/day)	PM10 (lbs/day)
Area Source Emissions				
T5327R – Genevieve Myers	0.87	0.36	0.29	0.00
T5738 – John Giumarra, Jr.	4.74	1.93	1.57	0.01
T5762R – R-M Development, Inc.	1.34	0.55	0.44	0.00
T5941 – Cemland Development	2.26	0.92	0.75	0.00
T6064 – Summerwind Group, Inc.	1.77	0.72	0.58	0.00
T6092 – Cemland Development	1.76	0.72	0.58	0.00
Panama 99 Properties, LLC	0.06	0.71	0.33	0.00
Totals	***12.8***	***5.91***	***4.54***	***0.01***
Vehicular Source Emissions				
T5327R – Genevieve Myers	3.45	5.03	28.98	0.19
T5738 – John Giumarra, Jr.	16.6	23.8	137	0.92
T5762R – R-M Development, Inc.	5.14	7.47	43.0	0.29
T5941 – Cemland Development	8.33	12.0	69.4	0.47
T6064 – Summerwind Group, Inc.	6.64	9.62	55.4	0.37
T6092 – Cemland Development	6.60	9.57	55.1	0.37
Panama 99 Properties, LLC	10.4	30.9	105	1.24
Totals	***57.2***	***98.4***	***494***	***3.85***
Cumulative Total	**70.0**	**104**	**498**	**3.86**

Cumulative operational impacts associated with the Project are also expected to be less than significant. For the most part, the cumulative vehicular emissions from the Project would not occur at the site, but would be distributed throughout an area surrounding the Project site. This would minimize the impact from the vehicular sources due to the large area in which the pollutants are emitted and the mixing that traffic creates. Overall, cumulative impacts are expected to be less than the CAAQS and, therefore, would be considered less than significant.

MITIGATION MEASURES

This section directly corresponds to the identified Impact Statements in the impacts subsection.

SHORT-TERM EMISSIONS

5.4-1a The following mitigation measures shall be utilized during the construction phase of the Project to reduce construction exhaust emissions:

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- Properly and routinely maintain all construction equipment, as recommended by manufacturer manuals, to control exhaust emissions.

- Shut down equipment when not in use for extended periods of time to reduce emissions associated with idling engines.

- Encourage ride sharing and use of transit transportation for construction employee commuting to the project sites.

- Use electric equipment for construction whenever possible in lieu of fossil fuel-fired equipment.

- Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak-hour of vehicular traffic on adjacent roadways.

5.4-1b Construction of the project requires the implementation of control measures set forth under Regulation VIII, Fugitive PM_{10} Prohibitions of the San Joaquin Valley Air Pollution Control District. The following mitigation measures, in addition to those required under Regulation VIII, shall be implemented to reduce fugitive dust emissions associated with the Project:

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/ suppressant, covered with a tarp or other suitable cover, or vegetative ground cover.

- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.

- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.

- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.

- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden)

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- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be ~~effectively stabilized of fugitive dust emissions utilizing sufficient water~~ or chemical stabilizer/suppressant.
- Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.
- Asphalt-concrete paving shall comply with San Joaquin Valley Air Pollution Control District Rule 4641 and restrict the use of cutback, slow-cure and emulsified asphalt paving materials.
- Grading activities shall cease during periods of high winds (greater than 20 mph over a one-hour period).
- Construction-related vehicle speeds shall be limited to 15 mph on all unpaved areas at the construction site.
- Wash off construction and haul trucks to minimize the removal of mud and dirt from the project sites.

LONG-TERM OPERATIONAL EMISSIONS

5.4-2a The Project shall comply with Title 24 of the California Energy Efficient Standards for Residential and Non-Residential Buildings. These requirements, along with the following mitigation measures, shall be incorporated into the project design:

- Use of low-NOx emission water heaters.
- Provision of shade trees to reduce building cooling requirements.
- Installation of energy-efficient and automated air conditioners.
- Exterior windows shall all be double-paned glass.
- Energy-efficient ~~(low-sodium)~~ parking lights shall be used.

5.4-2b Transportation control measures and design features shall be incorporated into the Project to reduce emissions from mobile sources. The following control measure is recommended to provide a strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, and vehicle idling and traffic congestion for the purpose of reducing motor vehicle emissions: Streets and traffic signals for intersections and street segments that may impact the surrounding local roadway system due to Project-generated traffic shall be improved. Specific mitigation measures for improving the level of service on congested roadways is presented in Section 5.3, *Traffic and Circulation*.

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LOCALIZED CO EMISSIONS

5.4-3 No mitigation measures are recommended.

CONFORMITY WITH AIR QUALITY MANAGEMENT PLAN

5.4-4 No mitigation measures are recommended.

CUMULATIVE IMPACTS

5.4-5 No mitigation measures are recommended.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

ROG and NOx emissions from Project operations would remain significant and unavoidable following mitigation.

If the City of Bakersfield approves the Project, the City would be required to cite their findings in accordance with Section 15091 of the CEQA Guidelines and prepare a Statement of Overriding Considerations in accordance with Section 15093 of the CEQA Guidelines.