This section includes a summary of applicable regulations, a description of existing air quality conditions, and an analysis of potential air quality impacts associated with conceptual development identified as part of the Reynolds & Brown Plaza III project. Mitigation measures are recommended, as necessary, to reduce significant air quality impacts. This section is based on the "Air Quality Impact Assessment for Reynolds & Brown Plaza III Project" prepared by AMBIENT Air Quality & Noise Consulting, Inc. (2008). Urbemis calculations supporting the impact assessment are contained in **Appendix B**.

4.2.1 ENVIRONMENTAL SETTING

Air quality in a region is determined by its topography, meteorology, and existing air pollutant sources. These factors are discussed below, together with the current regulatory structure that applies to the Sacramento Valley Air Basin (SVAB) pursuant to the regulatory authority of the Sacramento Metropolitan Air Quality Management District (SMAQMD).

CLIMATE AND METEOROLOGY

Ambient air quality is commonly characterized by climatological conditions, the meteorological influences on air quality, and the quantity and type of pollutants released. The air basin is subject to a combination of topographical and climatic factors that reduce the potential for high levels of regional and local air pollutants. The following section describes pertinent characteristics of the air basin and provides an overview of the physical conditions affecting pollutant dispersion in the project area.

Regional Climate

The project site is located in the SVAB, which is under the jurisdiction of the SMAQMD. The SVAB is relatively flat, bordered by mountains to the east, west and the north. Air flows into the SVAB through the Carquinez Strait, moving across the Delta, and bringing with it pollutants from the heavily populated San Francisco Bay Area. The climate is characterized by hot, dry summers and cool, rainy winters. Characteristic of SVAB winter weather are periods of dense and persistent low-level fog, which are most prevalent between storms. From May to October, the region's intense heat and sunlight lead to high ozone concentrations. Summer inversions are strong and frequent, but are less troublesome than those that occur in the fall. Autumn inversions, formed by warm air subsiding in a region of high pressure, have accompanying light winds that do not provide adequate dispersion of air pollutants.

Most precipitation in the SVAB results from air masses moving in from the Pacific Ocean during the winter months. These storms usually move through the area from the west or northwest. During the winter rainy season (November through February) over half the total annual precipitation falls while the average winter temperature is a moderate 49 degrees. During the summer, daytime temperatures can exceed 100 degrees Fahrenheit. Dense fog occurs mostly in mid-winter and never in the summer. Daytime temperatures from April through October average between 70 and 90 degrees with extremely low humidity. The inland location and surrounding mountains shelter the valley from much of the ocean breezes that keep the coastal regions moderate in temperature. The only breech in the mountain barrier is the Carquinez Strait, which exposes the midsection of the valley to the coastal air mass.

Winds across the study area are an important meteorological parameter because they control the dilution of locally-generated air pollutant emissions and their regional trajectory. Based on data obtained from the Sacramento Executive Airport, the closest station that measures wind speed and direction, southwest winds are the most predominant (ARB, 1992).

Meteorological Influences on Air Quality

Regional flow patterns affect air quality patterns by directing pollutants downwind of sources. Localized meteorological conditions, such as moderate winds, disperse pollutants and reduce pollutant concentrations. However, the mountains surrounding the Sacramento Valley can create a barrier to airflow, which can trap air pollutants in the Valley when meteorological conditions are right. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells lie over the Valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with smoke from agricultural burning or when temperature inversions trap cool air, fog and pollutants near the ground (SMAQMD 2004).

The ozone season (May through October) in the Sacramento Valley is characterized by stagnant morning air or light winds with the delta sea breeze arriving in the afternoon out of the southwest. Usually the evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. During about half of the days from July to September, however, a phenomenon called the "Schultz Eddy" prevents this from occurring. Instead of allowing for the prevailing wind patterns to move north carrying the pollutants out of the valley, the Schultz Eddy causes the wind pattern to circle back south. Essentially this phenomenon causes the air pollutants to be blown south toward the Sacramento nonattainment area. This phenomenon's effect exacerbates the pollution levels in the area and increases the likelihood of violating federal or State standards (SMAQMD 2004).

AMBIENT AIR QUALITY

Criteria Air Pollutants

Ambient air quality in the project area can be inferred from ambient air quality measurements conducted at nearby air quality monitoring stations. The Elk Grove-Bruceville air quality monitoring station is the closest station to the project site. The Elk Grove-Bruceville air quality monitoring station monitors ambient concentrations of ozone and nitrogen dioxide. Concentrations of carbon monoxide and airborne particulate matter were obtained from nearby monitoring stations located in Sacramento (i.e., Sacramento-3801 Airport Road and Sacramento-T Street air monitoring stations). Ambient emission concentrations will vary due to localized variations in emission sources and climate and should be considered 'generally' representative of ambient concentrations within the project area.

Table 4.2-1 summarizes the last 3 years of published data from nearby monitoring stations. As depicted in **Table 4.2-1**, State and federal ozone and PM_{10} standards have been exceeded on several occasions during the last three years of available data.

TABLE 4.2-1
SUMMARY OF AMBIENT AIR QUALITY DATA

Pollutant Standards	2004	2005	2006
Elk Grove–Bruceville Road Air Monitoring Station			
Ozone (O_3)			
Maximum concentration (1-hr/8-hr, ppm)	0.096/0.086	0.113/0.095	0.143/0.112
Number of days state standard exceeded	1	7	10
Number of days federal standard (1-hr/8-hr) exceeded	0/1	0/2	1/7
Nitrogen Dioxide (NO_2)			
Maximum 1-hour concentration (ppm)	0.041	0.051	0.052
Number of days state standard exceeded	0	0	0
Annual arithmetic mean (AAM)	0.008	0.008	0.009
AAM exceed federal standard?	0	0	0
Sacramento- T Street Air Monitoring Station			
Carbon Monoxide (CO)			
Maximum concentration, 1-hr/8-hr period (ppm)	3.5/2.96	4.9/3.64	N/A
Number of days state (1-hr/8-hr) standard exceeded	0/0	0/0	0/0
Number of days federal (1-hr/8-hr) standard exceeded	0/0	0/0	0/0
Respirable Particulate Matter (PM_{10})			
Maximum daily concentration (National/State, $\mu g/m^3$)	58.0/58.0	53.0/55.0	109.0/111.0
Number of days state standard exceeded	1	4	8
Number of days federal standard exceeded	0	0	0
Fine Particulate Matter ($PM_{2.5}$)			
Maximum 24-hour concentration (National/State, $\mu g/m^3$)	46.0/52.5	59.0/63.8	54.0/54.0
Number of days federal standard exceeded	0	0	0

AAM Annual Arithmetic Mean ($\mu g/m^3$) Micrograms per Cubic Meter
ppm Parts per Million -- Not Calculated or Insufficient Data Available

Source: ARB 2006, EPA 2006.

Attainment Status for Criteria Air Pollutants

The attainment status of Sacramento County is summarized in **Table 4.2-2**. An attainment designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A nonattainment designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation(s) was caused by an exceptional event, as defined in the criteria.

As depicted in **Table 4.2-2**, Sacramento County is currently designated nonattainment for the State and federal ozone and PM_{10} standards, as well as the State $PM_{2.5}$ standard. Sacramento County is designated either attainment or unclassified for the remaining federal and State ambient air quality standards.

TABLE 4.2-2
ATTAINMENT STATUS DESIGNATIONS

Pollutant	California Standard	Federal Standard
Ozone	Non-Attainment Classification: Serious (1/8-hour Standards)	Non-Attainment Classification: Serious (8-hour Standards)
PM_{10}	Non-Attainment (24-hour Standard and Annual Mean)	Non-Attainment Classification: Moderate (24-hour Standards)
$PM_{2.5}$	Non-Attainment (Annual Standard)	Attainment/Unclassified (24-hour Standard and Annual Mean)
Carbon Monoxide	Attainment (1-hour and 8-hour Standards)	Attainment (1-hour and 8-hour Standards)
Nitrogen Dioxide	Attainment (1-hour Standard)	Attainment (Annual Standard)
Sulfur Dioxide	Attainment (1-hour and 24-hour Standards)	Attainment (3-hour ,24-hour & Annual Standards)
Lead	Attainment (30-day Standard)	Attainment (Calendar Quarter)
Visibility Reducing Particles	Unclassified (8-hour Standard)	No Federal Standard
Sulfates	Attainment (24-hour Standard)	No Federal Standard
Hydrogen Sulfide	Unclassified (1-hour Standard)	No Federal Standard

Source: SMAQMD 2006.

Odors

Typically odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from the psychological (i.e. irritation, anger, or anxiety) to the physiological, including circulatory and respiratory effects, nausea, vomiting, and headache.

The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor and in fact an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word strong to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Neither the state nor the federal governments have adopted any rules or regulations for the control of odor sources. The SMAQMD does not have an individual rule or regulation that specifically addresses odors; however, odors would be applicable to SMAQMD's Rule 204, Nuisance. Any actions related to odors would be based on citizen complaints to local governments and the SMAQMD. No major stationary sources of odors have been identified in the vicinity of the project site.

Toxic Air Contaminants

Toxic air contaminants (TACs) are not considered criteria pollutants in that the federal and California Clean Air Acts do not address them specifically through the setting of National or State Ambient Air Quality Standards. Instead, EPA and CARB regulate Hazardous Air Pollutants (HAPs) and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology to limit emissions. In conjunction with District rules, they establish the regulatory framework for TACs. At the national levels, the EPA has established National Emission Standards for HAPs (NESHAPs), as required by the federal Clean Air Act Amendments. These are technology-based source-specific regulations that limit allowable emissions of HAPs.

At the state level, the ARB has authority for the regulation of emissions, including TACs, from motor vehicles, fuels, and consumer products. Within California, TACs are regulated primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB designates a substance as a TAC.

At the local level, air districts have the authority over stationary or industrial sources. All projects that require air quality permits from the SMAQMD are evaluated for TAC emissions. The SMAQMD limits emissions and public exposure to TACs through a number of programs. The SMAQMD prioritizes TAC-emitting stationary sources, based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. The SMAQMD requires a comprehensive health risk assessment for facilities that are classified in the significant-risk category, pursuant to AB 2588.

Within the project area, the primary mobile-source TAC of concern is diesel-exhaust particulate matter (PM). No major stationary sources of TACs were identified within an approximate one-half-mile radius of the project site. Of all controlled TACs, emissions of diesel-exhaust PM are estimated to be responsible for approximately 70 percent of the total ambient TAC risk. As a result, the ARB has made the reduction of the public's exposure to diesel-exhaust PM one of its highest priorities, with an aggressive plan to require cleaner diesel fuel and cleaner diesel engines and vehicles (ARB 2005).

Greenhouse Gas Emissions & Climate Change

The earth's climate has been warming for the past century. It is believed that this warming trend is related to the release of certain gases into the atmosphere. The greenhouse gases (GHG) include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and hydrofluorocarbons. Greenhouse gases absorb infrared energy that would otherwise escape from the earth. As the infrared energy is absorbed, the air surrounding the earth is heated. An overall warming trend has been recorded since the late 19th century, with the most rapid warming occurring over the past two decades. The 10 warmest years of the last century all occurred within the last 15 years. It appears that the decade of the 1990s was the warmest in human history. Human activities have been attributed to an increase in the atmospheric abundance of greenhouse gases. There are uncertainties as to exactly what the climate changes will be in various local areas of the earth, and what the effects of clouds will have in determining the rate at which the mean temperature will increase. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, air pollution episodes, and the consequence of these effects on the economy (ARB 2005, 2006).

The State of California has been studying the impacts of climate change since 1988, when AB4420 was approved. This legislation directed the California Energy Commission, in consultation with the Air Resources Board and other agencies, to study the implications of global warming on California's environment, economy, and water supply. The Energy Commission was also directed to prepare and maintain the state's inventory of GHG emissions. That bill directed the ARB to adopt regulations to achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from motor vehicles. ARB staff's proposal implementing these regulations was approved by the Air Resources Board in September, 2004. With implementation, the average reduction of greenhouse gases from new California cars and light trucks will be about 22 percent in 2012 and about 30 percent in 2016, compared to today's vehicles (ARB 2005, 2006).

Most recently, California adopted AB32, the Global Warming Solutions Act of 2006. AB 32 codifies the state's goal by requiring that the state's global warming emissions be reduced to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on global warming emissions that will be phased in starting in 2012. In order to effectively implement the cap, AB 32 directs ARB to develop appropriate regulations and establish a mandatory reporting system to track and monitor global warming emissions levels.

4.2.2 REGULATORY FRAMEWORK

Air quality within the SVAB is regulated by several jurisdictions including the United States Environmental Protection Agency (EPA), California Air Resources Board (ARB), and the SMAQMD. Each of these jurisdictions develops rules, regulations, and policies to attain the goals or directives imposed upon them through legislation. Although EPA regulations may not be superseded, both State and local regulations may be more stringent.

Pollutants subject to federal ambient standards are referred to as "criteria" pollutants because the EPA publishes criteria documents to justify the choice of standards. One of the most important reasons for air quality standards is the protection of those members of the population who are most sensitive to the adverse health effects of air pollution, termed "sensitive receptors." The term "sensitive receptors" refers to specific population groups, as well as the land uses where they would reside for long periods. Commonly identified sensitive population groups are children, the elderly, the acutely ill, and the chronically ill. Commonly identified sensitive land

uses are residences, schools, playgrounds, childcare centers, retirement homes or convalescent homes, hospitals, and clinics. Criteria air pollutants, common sources, and associated effects are summarized in **Table 4.2-3**. The federal and State standards for the criteria pollutants and other state regulated air pollutants are shown in **Table 4.2-4**.

FEDERAL AIR QUALITY REGULATIONS

At the federal level, the EPA has been charged with implementing national air quality programs. The EPA's air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was signed into law in 1970. Congress substantially amended the FCAA in 1977 and again in 1990.

TABLE 4.2-3
CRITERIA AIR POLLUTANTS
SUMMARY OF COMMON SOURCES AND EFFECTS

Pollutant	Description	Sources	Health Effects	Welfare Effects
Carbon Monoxide	Colorless, odorless gas	Motor vehicle exhaust, indoor sources include kerosene wood-burning stoves	Headaches, reduced mental alertness, heart attack, cardio-vascular diseases, impaired fetal development, death.	Contribute to the formation of smog.
Sulfur Dioxide	Colorless gas that dissolves in water vapor to form acid, and interacts with other gases and particulates in the air	Coal-fired power plants, petroleum refineries, manufacture of sulfuric acid and smelting of ores containing sulfur	Eye irritation, wheezing, chest tightness, shortness of breath, lung damage.	Contribute to the formation of acid rain, visibility impairment, plant and water damage, aesthetic damage.
Nitrogen Dioxide	Reddish brown, highly reactive gas	Motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels	Susceptibility to respiratory infections, irritation of the lung and respiratory symptoms (e.g., cough, chest pain, difficulty breathing).	Contribute to the formation of smog, acid rain, water quality deterioration, global warming, and visibility impairment.
Ozone	Gaseous pollutant when it is formed in the troposphere	Primarily vehicle exhaust. Formed from the combination of reactive organic gases and oxides of nitrogen in the presence of sunlight.	Eye and throat irritation, coughing, respiratory tract problems, asthma, lung damage.	Plant and ecosystem damage.

Pollutant	Description	Sources	Health Effects	Welfare Effects
Lead	Metallic element	Metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ	Affects animals and plants, affects aquatic ecosystems.
Particulate Matter	Very small particles of dust, soot, or other matter, including tiny droplets of liquids	Diesel engines, power plants, industries, windblown dust, wood stoves.	Eye irritation, asthma, bronchitis, lung damage, cancer, heavy metal poisoning, cardiovascular effects.	Visibility impairment, atmospheric deposition, aesthetic damage, impaired plant photosynthesis.

Source: EPA 2006

TABLE 4.2-4
SUMMARY OF AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [1] Concentration[3]	Federal Standards[2]	
			Primary [3,4]	Secondary [3,5]
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m^3)	- -	Same as Primary
	8-hour	0.070 ppm (137 µg/m^3)	0.08 ppm (157 µg/m^3)	
Particulate Matter (PM_{10})	AAM	20 µg/m^3	--	
	24-hour	50 µg/m^3	150 µg/m^3	
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m^3	15 µg/m^3	
	24-hour	No Standard	35 µg/m^3	
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	None
	8-hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	
	8-hour (Lake Tahoe)	6 ppm (7 mg/m^3)	–	
Nitrogen Dioxide (NO_2) *	AAM	0.030 ppm (56 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
	1-hour	0.18 ppm (470 µg/m^3)	–	

Pollutant	Averaging Time	California Standards [1] Concentration[3]	Federal Standards[2]	
			Primary [3,4]	Secondary [3,5]
Sulfur Dioxide (SO_2)	AAM	–	0.03 ppm (80 µg/m^3)	–
	24-hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	–
	3-hour	–	–	0.5 ppm (1,300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	–	–
Lead[6]	30-day Average	1.5 µg/m^3	–	–
	Calendar Quarter	–	1.5 µg/m^3	Same as Primary
Sulfates	24-hour	25 µg/m^3	No Federal Standards	
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride[6]	24-hour	0.01 ppm (26 µg/m^3)		
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer — visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%.		

* The Nitrogen Dioxide ambient air quality standard was amended on February 22, 2007, to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes become effective after regulatory changes are submitted and approved by the Office of Administrative Law, expected later this year.

AAM = annual arithmetic mean

[1] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

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

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

Pollutant	Averaging Time	California Standards [1] Concentration[3]	Federal Standards[2]	
			Primary [3,4]	Secondary [3,5]
[6] The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.				

Source: ARB 02/22/2007; US EPA 2006.

The FCAA required the EPA to establish National Ambient Air Quality Standards (NAAQS), and also set deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health; and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions.

California Air Quality Regulations

The California Clean Air Act (CCAA), 1988, requires that all air districts in the state endeavor to achieve and maintain California Ambient Air Quality Standards (CAAQS) for O_3, CO, SO_2, and nitrogen dioxide (NO_2) by the earliest practical date. Plans for attaining CAAQS were to be submitted to ARB by June 30, 1991. The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a 5% annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each non-attainment pollutant or its precursors, or (2) to provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

The ARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the CCAA of 1988. The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS for O_3, CO, SO_2, and nitrogen dioxide (NO_2) by the earliest practical date. Each district plan is to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. Any additional development within the region obviously would impede the reduction goals of the CCAA.

Other ARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts), establishing CAAQS (which in many cases are more stringent than the NAAQS), and setting emissions standards for new motor vehicles. The emission standards established for motor vehicles differ depending on various factors including the model year, and the type of vehicle, fuel and engine used.

California Building Energy Efficiency Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings were established in 1978 in response to a legislative mandate to reduce California's energy consumption. These standards are codified in Title 24, Part 6, of the California Code of Regulations and are generally referred to as "Title 24 Standards." The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The most recent update was adopted in 2003 and took effect as of October 1, 2005. California's building efficiency standards (along with those for energy efficient appliances) have saved more than $56 billion in electricity and natural gas costs since 1978. It is estimated the standards will save an additional $23 billion by 2013 (CEC, 2007). By reducing the heating and cooling

demands of buildings, California's Energy Efficiency Standards result in decreased emissions associated with the use of natural-gas fired appliances and electricity production.

Sacramento Metropolitan Air Quality Management District

The SMAQMD in coordination with the air quality management districts and air pollution control districts of El Dorado, Placer, Solano, Sutter, and Yolo counties prepared and submitted the 1991 Air Quality Attainment Plan (AQAP) in compliance with the requirements set forth in the CCAA, which specifically addressed the nonattainment status for ozone and to a lesser extent, CO and PM_{10}. The CCAA also requires a triennial assessment of the extent of air quality improvements and emission reductions achieved through the use of control measures. As part of the assessment, the attainment plan must be reviewed and, if necessary, revised to correct for deficiencies in progress and to incorporate new data or projections. The requirement of the CCAA for a first triennial progress report and revision of the 1991 AQAP was fulfilled with the preparation and adoption of the 1994 Ozone Attainment Plan (OAP). The OAP stresses attainment of ozone standards and focuses on strategies for reducing ozone precursor emissions of ROG and NO_X. It promotes active public involvement, enforcement of compliance with SMAQMD rules and regulations, public education in both the public and private sectors, development and promotion of transportation and land use programs designed to reduce vehicle miles traveled (VMT) within the region, and implementation of stationary and mobile-source control measures. The OAP became part of the SIP in accordance with the requirements of the CAAA and amended the 1991 AQAP. However, at that time the region could not show that the national ozone (1-hour) standard would be met by 1999. In exchange for moving the deadline to 2005, the region accepted a designation of "severe nonattainment" coupled with additional emission requirements on stationary sources. Additional triennial reports were also prepared in 1997, 2000, and 2003 in compliance with the CCAA that act as incremental updates.

As a nonattainment area, the region is also required to submit rate-of-progress milestone evaluations in accordance with the CAAA. Milestone reports were prepared for 1996, 1999, and 2002. These milestone reports include compliance demonstrations that the requirements have been met for the Sacramento nonattainment area. The air quality attainment plans and reports present comprehensive strategies to reduce ROG, NO_X, and PM_{10} emissions from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations; enhancement of CEQA participation; implementation of a new and modified indirect source review program; adoption of local air quality plans; and stationary-, mobile-, and indirect-source control measures.

In July of 1997, the EPA promulgated a new 8-hour ozone standard. This change lowered the standard for ambient ozone from 0.12 ppm (parts per million) averaged over one hour to 0.08 ppm averaged over eight hours. In general, the 8-hour standard is more protective of public health and more stringent than the 1-hour standard. The promulgation of this standard prompted new designations and nonattainment classifications in June 2004, and resulted in the revocation of the 1-hour standard in June 2005. The region has been designated as a nonattainment (serious) area for the national (8-hour) ozone standard with an attainment deadline of June 2013.

The SMAQMD has also adopted various rules and regulations pertaining to the control of emissions from area and stationary sources. Some of the more pertinent regulatory requirements applicable to the proposed project are identified as follows:

Rule 402. Nuisance. The purpose of this rule is to limit emissions which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public, or which

endanger the comfort, repose, health or safety of any such persons or the public, or which cause or have natural tendency to cause injury or damage to business or property.

Rule 403. Fugitive Dust. The purpose of this rule is to require that reasonable precautions be taken so as not to cause or allow the emissions of fugitive dust from non-combustion sources from being airborne beyond the property line from which the emission originates.

Rule 417: Wood-Burning Appliances. The purpose of this rule is to limit emissions of particulate matter to the atmosphere from the operation of wood burning appliances.

Rule 442: Architectural Coatings. The developer or contractor is required to use coatings that comply with the volatile organic compound (VOC) content limits specified in the rule.

Assembly Bill 32 (AB 32)

The State of California has been studying the impacts of climate change since 1988, when AB 4420 was approved. This legislation directed the California Energy Commission (CEC), in consultation with the ARB and other agencies, to study the implications of global warming on California's environment, economy, and water supply. The CEC was also directed to prepare and maintain the state's inventory of GHG emissions. That bill directed the ARB to adopt regulations to achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from motor vehicles. ARB staff's proposal implementing these regulations was approved by the ARB in September, 2004. With implementation, the average reduction of greenhouse gases from new California cars and light trucks will be approximately 22 percent in 2012 and approximately 30 percent in 2016, compared to today's vehicles (ARB 2005, 2006).

Most recently, California adopted AB 32, the Global Warming Solutions Act of 2006. AB 32 codifies the State's goal by requiring that the State's global warming emissions be reduced to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on global warming emissions that will be phased in starting in 2012. In order to effectively implement the cap, AB 32 directs ARB to develop appropriate regulations and establish a mandatory reporting system to track and monitor global warming emissions levels.

CITY OF ELK GROVE GENERAL PLAN

Table 4.2-5 identifies the City of Elk Grove General Plan policies regarding air quality that are applicable to the proposed Reynolds & Brown Plaza III project, and presents an evaluation of the consistency of the project with these statements as required by CEQA Guidelines Section 15125(d). This assessment is based on City staff's interpretation of the General Plan policies and action items. The final authority for interpretation of these policy statements, and determination of the project's consistency with the City's General Plan rests with the Elk Grove City Council.

TABLE 4.2-5
PROJECT CONSISTENCY WITH GENERAL PLAN NOISE POLICIES

General Plan Policies	Project Consistency with the General Plan	Analysis
Policy CAQ-27: The City shall promote energy conservation measures in new development to reduce on-site emissions and power plant emissions. The City shall seek to reduce the energy impacts from new residential and commercial projects through investigation and implementation of energy efficiency measures during all phases of design and development.	Yes	Air Quality impacts associated with the proposed project would not exceed SMAQMD's significance thresholds and, therefore, would be considered less than significant. In addition, development of the proposed land uses would be required to incorporate energy-saving features, sufficient to achieve California Building Energy-Efficiency Standards (CCR, Title 24, Part 6).
Policy CAQ-32: As part of the environmental review of projects, the City shall identify the air quality impacts of development proposals to avoid significant adverse impacts and require appropriate mitigation measures, potentially including—in the case of projects which may conflict with applicable air quality plans—emission reductions in addition to those required by Policy CAQ-30.	Yes	Refer to consistency discussion CAQ-27 above.
Policy CAQ-33: The City shall require that public and private development projects use low emission vehicles and equipment as part of project construction and operation, unless determined to be infeasible.	Yes	Refer to consistency discussion CAQ-27 above.

4.2.3 PROJECT IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following standards, to determine whether the proposed project would result in significant impacts to air quality, are based on CEQA Guidelines Appendix G. A significant impact to air quality would occur if implementation of the proposed project would do any of the following:

1) Conflict with or obstruct implementation of the applicable air quality plan.

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

3) Result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors).

4) Expose sensitive receptors to substantial pollutant concentrations.

5) Create objectionable odors affecting a substantial number of people.

In addition, the following thresholds of significance, as identified by the SMAQMD have been used to determine whether implementation of the proposed project would result in significant air quality impacts:

- Short-term Emissions of Criteria Air Pollutants. Construction-generated criteria air pollutant or precursor emissions exceed the SMAQMD-recommended threshold of 85 pounds per day (lbs/day) for NO_X, or substantially contribute to emissions concentrations (e.g., PM_{10}) that exceed the NAAQS or CAAQS. When emissions of NO_x can be reduced to below 85 lbs/day with implementation of all feasible mitigation measures and offsets other construction-generated mobile-source pollutants can be considered to be less than significant (SMAQMD 2004).

The SMAQMD provides screening criteria that can also be used for the evaluation of construction-generated PM_{10}, based on the overall maximum daily area of disturbance associated with proposed projects (refer to **Table 4.2-6**). In accordance with these criteria, areas of disturbance in excess of SMAQMD's screening criteria would also be considered potentially significant. These screening levels are based on the maximum actively disturbed area of the project site. For example, assuming a maximum daily disturbance of less than 15 acres, implementation of recommended "Level Three Mitigation" would typically be considered sufficient to reduce fugitive dust-related impacts to a less-than-significant level. If the maximum daily area of disturbance would exceed the screening criteria or if the project cannot undertake the mitigation measures that would be required, a more detailed analysis, involving dispersion modeling, may be required (SMAQMD 2004).

TABLE 4.2-6
SMAQMD PARTICULATE MATTER SCREENING LEVELS FOR CONSTRUCTION PROJECTS

Maximum Daily Area of Disturbance	Recommended Mitigation
5 Acres and Below	No Mitigation Required
5.1 – 8 Acres	Level One Mitigation Required: Water exposed soil twice daily. Maintain two feet of freeboard space on haul trucks.
8.1 – 12 Acres	Level Two Mitigation Required: Water exposed soil three times daily. Water soil piles three times daily. Maintain two feet of freeboard space on haul trucks.
12.1 – 15 Acres	Level Three Mitigation Required: Keep soil moist at all times. Maintain two feet of freeboard space on haul trucks. Use emulsified diesel or diesel catalysts on applicable heavy-duty diesel construction equipment.

Source: SMAQMD 2004.

- Long-term Emissions of Criteria Air Pollutants. Long-term regional criteria air pollutant or precursor emissions exceed the SMAQMD-recommended threshold of 65 lbs/day for ROG and NO_X, or substantially contribute to emissions concentrations (e.g., PM_{10}) that exceed the NAAQS or CAAQS.

- Local Carbon Monoxide Concentrations. Local mobile-source emissions exceed or substantially contribute to CO concentrations that violate the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm.

- Local Toxic Air Contaminant Concentrations. Exposure of sensitive receptors to TAC emissions exceeds 10 in one million for the Maximally Exposed Individual (MEI) to contract cancer and/or a Hazard Index of one for the MEI.

- Local Odor Concentrations. Frequent exposure of a substantial number of individuals to odorous emissions would be considered significant.

METHODOLOGY

The analysis of air quality impacts was based on the conceptual site plan prepared for the project site. Uses analyzed included a hotel, restaurant and gas station, mini-mart and car wash.

Short-term Impacts

The SMAQMD recommends that construction-generated emissions of ROG and NO_X be quantified and presented as part of the analysis of project-generated emissions. However, because construction equipment emit relatively low levels of ROG and because ROG emissions from other construction processes (e.g., asphalt paving, architectural coatings) are typically regulated by the SMAQMD, the SMAQMD has not adopted a construction emissions threshold for ROG. The SMAQMD has, however, adopted a construction emissions threshold of 85 lbs/day for NO_X. In addition, if daily emissions of NO_X from heavy-duty mobile equipment do not exceed the 85 lbs/day threshold, then SMAQMD considers exhaust emissions of other pollutants to also be less than significant (SMAQMD 2004).

Short-term construction emissions of ROG and NO_X were estimated using the ARB-approved URBEMIS2007 (version 9.2.2) computer program as recommended by the SMAQMD. URBEMIS is designed to model construction emissions for land use development projects and allows for the input of project-specific information. Detailed construction information (e.g., equipment requirements, type, hours of operation, number of employees, etc.) was not available at the time this analysis was conducted. As a result, the estimation of construction-generated emissions was based primarily on the default assumptions contained in the model, assuming an overall construction period of 12 months. The demolition phase schedule was derived from URBEMIS2002 (version 8.7) default modeling assumptions. Model parameters were adjusted to include equipment assumptions recommended by the SMAQMD, based on the overall size of the proposed project site (i.e., 4 acres). The estimated maximum area of disturbance was adjusted to assume that the entire project site (i.e., 4 acres) could be disturbed on any given day.

Long-term Impacts

Regional area- and mobile-source emissions associated with the proposed project were estimated using the ARB-approved URBEMIS2007 (version 9.2.2) computer program, which includes options for the estimation of operational emissions for land use development projects. Emissions were calculated for both summer and winter conditions. Modeling was conducted for proposed project Alternatives 1 and 2, based on the default parameters contained in the model and trip-generation rates derived from the traffic analysis prepared for this project (Fehr & Peers 2007). Cumulative increases in regional criteria air pollutants were analyzed in comparison to the emission inventories used for development of regional air quality attainment plans.

The SMAQMD's *Guide to Air Quality Assessment (2004)* provides a project-level screening procedure to determine whether detailed intersection-level modeling is required for a proposed development project. The screening procedure conservatively estimates the background CO concentration in the project area and the project's contribution to predicted future concentrations, based on an estimation of peak-hour vehicle trips.

Estimated emissions of GHGs were calculated using the URBEMIS2007 computer program for area and mobile sources. Emissions associated with electrical consumption were calculated based on emission factors and estimated average usage rates for commercial land uses (CCAR 2007, CAPCOA 2008). To account for individual pollutant's contribution to global warming, predicted emissions of GHGs are presented in CO2 equivalent units of measure expressed in metric tons per day (CO2/day).

IMPACTS AND MITIGATION MEASURES

Short-term Increases of Criteria Air Pollutants

Impact 4.2.1 The development of uses allowed by the proposed GPA, rezone and TPM would result in short-term increases in criteria air pollutants during construction. This impact is considered **less than significant**.

Construction-generated emissions are short-term and of temporary duration, lasting only as long as construction activities occur, but possess the potential to represent a significant air quality impact. The construction and development of the project site would result in the temporary generation of emissions resulting from site grading and excavation, road paving, motor vehicle exhaust associated with construction equipment and worker trips, and the movement of construction equipment, especially on unpaved surfaces. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities.

Ozone-Precursor Pollutants

The estimated daily construction-generated emissions of ROG and NO_X associated with development of the proposed GPA and rezone proposed project are summarized in **Table 4.2-7**. As depicted, the project would generate maximum daily emissions of approximately 3 lbs/day of ROG and 21 lbs/day of NOx. Predicted emissions of NOx associated with the project would not exceed the SMAQMD's significance threshold of 85 lbs/day. As a result, short-term construction-generated emissions of ozone-precursor pollutants would be considered less than significant.

TABLE 4.2-7
SUMMARY OF ESTIMATED SHORT-TERM CONSTRUCTION EMISSIONS

Building Phase/Site Alternative	Emissions (lb/day)	
	ROG	NO_X
Demolition	0.30	2.35
Grading	1.33	11.74
Building Construction & Asphalt Paving	3.26	20.54

Building Phase/Site Alternative	Emissions (lb/day)	
	ROG	NO_x
Maximum Daily Emissions:	3.26	20.54
SMAQMD Significance Threshold:	None	85

Emissions were calculated using the URBEMIS2007 (v9.2.2) computer program.

In addition to emissions from onsite mobile equipment, onsite grading activities would also result in increased emissions of fugitive dust. Construction projects that require grading or other earth-moving activities generate large amounts of particulate matter. While construction related emissions produce only temporary impacts, these short-term impacts contribute to the emission inventory. Under certain conditions, the increased pollution load can exceed State and National Ambient Air Quality Standards.

To assist in the evaluation of fugitive dust-related impacts, SMAQMD staff has developed screening criteria for construction projects (refer to **Table 4.2-6**, above). As previously discussed, these screening levels are based on the maximum actively disturbed area of the project site. The overall size of the proposed project site is approximately 4 acres, which is below the SMAQMD's minimum screening level of 5 acres. In accordance with SMAQMD screening-level criteria, short-term emissions of fugitive dust attributable to the proposed project would be considered less than significant and no additional mitigation would be required. It is important to note that conceptual development associated with the proposed project would, however, be required to comply with SMAQMD's *Rule 403, Fugitive Dust*. As previously discussed, *Rule 403* requires implementation of reasonable precautions so as not to cause or allow emissions of fugitive dust from being airborne beyond the property line of the project site. Therefore, short-term increases in criteria pollutants, including ozone precursors and fugitive dust are considered **less than significant.**

Mitigation Measures

None required.

Short-term Exposure to Toxic Air Contaminants

Impact 4.2.2 Implementation of conceptual development associated with the proposed GPA, rezone and TPM would result in short-term exposure to toxic air contaminants. This impact is considered **less than significant**.

Construction of the uses identified on the conceptual site plan would result in construction-generated diesel-exhaust emissions. Particulate-exhaust emissions from diesel-fueled engines (diesel-exhaust PM) were identified as a TAC by the CARB in 1998. Implementation of the proposed project would result in the generation of diesel PM emissions during construction from the use of off-road diesel equipment for site grading and excavation, paving, demolition, and other construction activities.

Health-related risks associated with diesel-exhaust emissions are primarily connected to long-term exposure and the potential risk of contracting cancer. For residential land uses, the calculation of cancer risk associated with exposure to TACs are typically calculated based on a 70-year period of exposure. The use of diesel-powered construction equipment, however, would be temporary and episodic and would occur over a relatively large area. In addition, measures

required by the SMAQMD for the control of particulate emissions from onsite construction equipment would substantially reduce emissions of diesel-exhaust PM. For these reasons, diesel-exhaust PM generated by project construction, in and of itself, would not be expected to create conditions where the probability of contracting cancer is greater than 10 in 1 million for nearby receptors. Long-term health risks associated with short-term construction activities would, therefore, be considered **less than significant.**

Mitigation Measures

None required.

Long-term Increases of Criteria Air Pollutants

Impact 4.2.3 Implementation of conceptual development associated with the proposed GPA, rezone and TPM would result in long-term increases in criteria air pollutants. This impact is considered **less than significant**.

Table 4.2-8 contains estimated daily operational emissions associated with the proposed project. As depicted in **Table 4.2-8**, the proposed project would generate maximum emissions of approximately 22 lbs/day of ROG and 25 lbs/day of NOx. Criteria pollutant emissions generated in association with the proposed project include approximately 21 lbs/day of PM_{10} and 4 lbs/day of $PM_{2.5}$. None of the daily emissions resulting from the proposed project would exceed the SMAQMD's significance threshold of 65 lbs/day for ROG or NOx. As previously noted, SMAQMD has not adopted a significance threshold for emissions of CO, SOx, or PM_{10}.

TABLE 4.2-8
LONG-TERM OPERATIONAL EMISSIONS

Source	Estimated Emissions (lbs/day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer Emissions						
Natural Gas Appliances	0.07	1.02	0.85	0.00	0.00	0.00
Landscape Equipment	0.37	0.06	4.64	0.00	0.02	0.02
Architectural Coatings	0.39				--	--
Consumer Products	0.00	--	--	--	--	--
Mobile source:	21.39	16.64	188.91	0.13	20.70	4.03
Total:	*22.22*	*17.72*	*194.40*	*0.13*	*20.72*	*4.05*
Winter Emissions						
Natural Gas Appliances	0.07	1.02	0.85	0.00	0.00	0.00
Landscape Equipment	No Winter Emissions					
Architectural Coatings	0.39	--	--	--	--	--

Source	Estimated Emissions (lbs/day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Consumer Products	0.00	--	--	--	--	--
Mobile source:	21.79	24.17	181.04	0.10	20.70	4.03
Total:	*22.25*	*25.19*	*181.89*	*0.10*	*20.70*	*4.03*
Significance Threshold:	**65**	**65**	**None**	**None**	**None**	**None**

Emissions were estimated using the URBEMIS2007 (v9.2.2) computer program, based on default model settings recommended by the SMAQMD. Totals may not sum due to rounding.

Project-generated emissions of ROG and NOx are of particular concern during the summer ozone season, which extends from the beginning of May through the end of October. Project-generated emissions during these warmer months of the year would not be anticipated to exceed the SMAQMD's recommended significance threshold of 65 lbs/day; nor would winter emissions exceed SMAQMD's threshold. As a result, this impact would be considered **less than significant.**

Mitigation Measures

None required.

Exposure to Mobile-Source Concentrations of Carbon Monoxide

Impact 4.2.4 Implementation of the conceptual land uses associated with the proposed GPA, rezone and TPM would result in exposure to mobile-source concentrations of carbon monoxide. This impact is considered **less than significant**.

Carbon monoxide (CO) is the criteria air pollutant of primary concern associated with development of the project site. As previously discussed, CO is a tasteless, odorless, and colorless gas. If inhaled, CO can be adsorbed easily by the blood stream and can inhibit oxygen delivery to the body, which can cause significant health effects ranging from slight headaches to death. Typically, symptoms of CO intoxication begin when the CO saturation in the blood reaches 20 percent, and unconsciousness occurs at 60 percent saturation. The most serious effects are felt by individuals susceptible to oxygen deficiencies, including people with anemia and those suffering from chronic lung or heart disease.

Under specific meteorological and operational conditions, such as near areas of heavily congested vehicle traffic, CO concentrations may reach unhealthy levels. Mobile-source emissions of CO are a direct function of traffic volume, speed, and delay. Transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. Modeling of mobile-source CO concentrations is, therefore, typically recommended for sensitive land uses located near signalized roadway intersections that are projected to operate at unacceptable levels of service (i.e., LOS E or F). Unsignalized intersections projected to operate at unacceptable levels of service do not typically have sufficient traffic volumes, such that projected unacceptable levels of service at these intersections would typically result in localized concentrations of CO that would exceed applicable standards.

The conceptual development associated with the proposed project is predicted to contribute localized concentrations of CO as presented in **Table 4.2-9**.

TABLE 4.2-9
PREDICTED LOCAL MOBILE SOURCE CARBON MONOXIDE CONCENTRATIONS

	CO Concentration (ppm)	
	1-hour	8-hour
Background Concentration [a]	5.8	3.6
Project Contribution	1.7	1.2
Predicted Total Concentration [b]	7.5	4.8
California Ambient Air Quality Standard	20.0	9.0

Source: AMBIENT Air Quality & Noise Consulting, 2008.
[a] *To ensure a conservative analysis, background concentrations are based on highest concentrations measured at the nearest ambient air quality monitoring station, based on the last three years of available data.*
[b] *Predicted CO concentrations are the sums of a background component, which includes the cumulative effects of all CO sources in the project area vicinity, and the proposed project's contribution.*
Refer to Appendix A of the Air Quality Assessment for CO screening analysis modeling.

As previously discussed, predicted localized concentrations of mobile source CO were analyzed in accordance with the SMAQMD-recommended screening-level assessment methodology. Based on the modeling conducted, the predicted 1-hour and 8-hour local mobile-source CO concentrations would be approximately 7.5 ppm and 4.8 ppm, respectively. Predicted concentrations would not exceed the 1-hour or 8-hour CAAQS (i.e., 20 ppm and 9.0 ppm, respectively). As a result, this impact would be considered **less than significant.**

Mitigation Measures

None required.

Long-term Exposure to Toxic Air Contaminants.

Impact 4.2.5 The proposed project would not construct uses which would generate TACs nor would it result in construction of sensitive uses which would be exposed to TACs. Therefore, long-term exposure to toxic air contaminants are considered **less than significant**.

The proposed project does not include construction of residential uses which are considered sensitive land uses and would not result in the long-term operation of any major onsite stationary sources of TACs. In addition, no major stationary sources of TACs were identified within a one-half mile radius of the project site (CHAPIS 2006). As a result, long-term exposure to TACs would be considered **less than significant**.

Mitigation Measures

None required.

Exposure to Odorous Emissions

Impact 4.2.6 The proposed project would not result the generation of odorous emissions. Therefore, this impact is considered **less than significant**.

The occurrence and severity of odor impacts depends on numerous factors, including: the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies. Projects with the potential to frequently expose members of the public to objectionable odors would be deemed to have a significant impact.

Construction of the proposed project would involve the use of a variety of gasoline or diesel-powered equipment that would emit exhaust fumes. Exhaust fumes, particularly diesel-exhaust, may be considered objectionable by some people. In addition pavement coatings and architectural coatings used during project construction would also emit temporary odors. However, construction-generated emissions would occur intermittently throughout the workday and would dissipate rapidly within increasing distance from the source. As a result, short-term construction activities would not expose a substantial number of people to frequent odorous emissions.

No major existing stationary sources of odors have been identified in the project vicinity. In addition, the proposed project would not result in the installation of any equipment or processes that would be considered major odor emission sources. As a result, potential exposure of sensitive receptors to odors associated with proposed project would be considered **less than significant**.

Mitigation Measures

None required.

4.2.4 CUMULATIVE SETTING, IMPACTS AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for air quality is the Sacramento Valley Air Basin (SVAB). This includes the five counties of Sacramento, Solano, Yolo, Placer and Sutter. The projects identified in **Table 4.0-1** in Section 4.0 as well as existing and reasonably foreseeable projects in the greater SVAB are included in the cumulative setting for air quality. The climate and geography of the lower SVAB severely limits the dilution and transportation of any air pollutants that released to the atmosphere. At current levels of development (residential, commercial, industrial, etc.) and activity, the air basin exceeds the state/federal ambient standards for particulates and ozone. Cumulative growth in population, vehicle use and industrial activity could inhibit efforts to improve regional air quality and attain the ambient air quality standards.

In addition to cumulative air pollutant issues, the cumulative setting and impact analysis considers the on-going research and concerns regarding greenhouse gas emissions and their associated effect on global climate change. The "Climate Change and California Water Resources: A Survey and Summary of the Literature" (prepared by the Pacific Institute for Studies in Development, Environment and Security) noted the following general effects from climate change:

- Snowpack higher in elevation in the Sierra Nevada Mountains;
- Alterations in current precipitation and runoff conditions;
- Greater number of extreme flood and drought events.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Contribution to Local Air Quality Conditions

Impact 4.2.7 Implementation of the proposed project, in combination with existing, approved, proposed and reasonably, foreseeable development would cumulatively contribute to local air quality conditions. This impact is considered **less than cumulatively considerable**.

As noted in Impact 4.2.4, the criteria air pollutant of local concern is CO. Modeling of conceptual development associated with the proposed project would not be anticipated to contribute to localized concentrations of CO that would exceed applicable ambient air quality standards. In addition, as noted in Impact 4.2.5, implementation of conceptual development would not result in the long-term operation of any major stationary sources of toxic air contaminants. Further, no major sources of TACs have been identified in the vicinity of the project site that would be anticipated to result in an increase in health risk at nearby existing receptors that would exceed the SMAQMD's thresholds of significance. As a result, the contribution of localized concentrations of criteria and hazardous air pollutants resulting from conceptual development associated with the proposed project would be considered **less than cumulatively considerable**.

Mitigation Measures

None required.

Contribution to Regional Air Quality Conditions

Impact 4.2.8 Implementation of the proposed project, in combination with proposed and approved projects, would contribute to regional air quality conditions. This impact is a **less than cumulatively considerable impact**.

Due to the region's non-attainment status for ozone and PM_{10}, if project-generated emissions of either of the ozone precursor pollutants (i.e., ROG and NOx) or PM_{10} would exceed the long-term thresholds, then the project's cumulative impacts would be considered significant. In addition, projects that would result in a change in land use and corresponding increases in vehicle miles traveled (VMT) may result in an increase in VMT that is unaccounted for in regional emissions inventories contained in regional air quality control plans. Substantial increases in VMT that are not accounted for in the emissions inventory may result in a cumulative contribution to the region's existing air quality nonattainment status.

As discussed in Impact 4.2.3 predicted short-term and long-term operational emissions attributable to the proposed project would not exceed SMAQMD significance thresholds. However, implementation of the proposed project would result in a change in land use and that could result in a potential increase in vehicle miles traveled (VMT). However, a majority of project-generated trips, such as the trips attributable to the proposed onsite hotel, are anticipated to be pass-by trips originating from existing vehicle traffic on adjacent State Route 99, as well as other local roadways.

The proposed project would also include a mix of commercial land uses that would help to promote the sharing of vehicle trips with adjacent commercial uses, which is in keeping with current land-use development guidance that promotes the use of "Smart Growth" principles in local planning efforts. Generally speaking, the underlying goal of "Smart Growth" principles is to promote land-use development that utilizes existing resources and infrastructure in a manner that reduces impacts to natural resources and promotes conservation. At the local level, examples of such "smart growth" principles include promotion of "mixed-use" development, such as the proposed project. "Mixed use" refers to the mixing or combining of land uses in an attempt to reduce dependency on the automobile by promoting use of alternative transportation and the sharing of trips between existing and proposed land uses. Such "smart growth" principles are currently the basis for the region's "Blueprint" scenario which is included as part of Sacramento Area Council of Government's recently adopted "Metropolitan Transportation Plan for 2035" (SACOG 2007). The inclusion of "smart growth" principles has been shown to result in an overall reduction in regional VMT projections. Given that the proposed project would not result in an increase in emissions that would exceed SMAQMD's significance thresholds for criteria pollutants and that the proposed project is consistent with the currently recommended "smart growth" principles, implementation of the proposed project would not be anticipated to result in a cumulatively significant air quality impact. As a result, increases in regional criteria air pollutants would be considered **less than cumulatively considerable**.

Mitigation Measures

None required.

Contribution to Climate Change and Global Warming

Impact 4.2.9 Implementation of the proposed project, in combination with proposed and approved projects, would contribute to climate change and global warming through increased greenhouse gas emissions. This impact is considered **less than cumulatively considerable**.

Implementation of the proposed project would contribute to increases of greenhouse gas (GHG) emissions that are associated with global climate change. Estimated GHG emissions attributable to future development would be primarily associated with increases of carbon dioxide (CO_2) from mobile sources. Emissions of CO_2 are anticipated to constitute more than 90 percent of total mobile-source GHGs commonly associated with community development projects. To a lesser extent, other GHG pollutants, such as Methane (CH_4) generated by natural-gas combustion would typically have a minor contribution to overall GHG emissions (EPA 1996), or are not commonly associated with typical community development projects.

Estimated emissions of GHGs were calculated based on predicted increases in vehicle miles traveled attributable to the proposed development, obtained from the Urbemis modeling conducted for this project, as well as emission factors obtained from CARB-approved Emfac/Burden 2007 computer program for Sacramento County, as well as emissions factors for natural gas combustion obtained from the U.S. EPA. To account for individual pollutants' contribution to global warming, predicted emissions of GHGs are presented in CO2 equivalent units of measure (expressed in CO2 equivalent/day). Estimated emissions are summarized in **Table 4.2-10**.

TABLE 4.2-10
ESTIMATED GREENHOUSE GAS EMISSIONS

Source	Emissions (CO_2e/Day)
Short-Term Construction	52.2
Long-Term Operation	
Natural Gas Usage	202.1
Landscaping	0.7
Electricity Usage	53.5
Motor Vehicles	2,046.7
Total Annual Operational Emissions:	2,303.0

Emissions were calculated using the URBEMIS2007 computer program. Electrical usage based on usage rates from similar projects (CCAR GPR 2007, CAPCOA 2008).

As shown, construction activities associated with the proposed project would result in a maximum of approximately 52.2 tons/year of CO2. Long-term operation of the proposed project would result in combined increases of approximately 2,303 tons/year of CO2. It is important to note, however, that predicted emissions presented in **Table 4.2-10** assume that all mobile and stationary sources would be "new" sources.

While scientific advances have been made in the past few years related to the assessment of future climate change and global warming, projections of future changes are still highly speculative and dependent on assumptions and generalizations that are most often applied at a global or national level. At the present time, there are currently no criteria or thresholds established under federal, state or local laws for the evaluation of increases in GHGs associated with individual development projects. It is also important to note that in order to accurately assess GHGs attributable to an individual project, when assessed in a global context, it would be necessary to differentiate between increased emissions created by a proposed project verses relocated emissions that can often occur due to shifts in population or a relocation of stationary sources. Such factors are often not accounted for when quantifying impacts of development projects at a local level. For these reasons, a conclusion of whether or not the proposed project's incremental effect would result in a 'cumulatively considerable' impact with regard to global climate change would be considered speculative and cannot be made at this time. It is worth noting; however, that implementation of the proposed project, as noted in Impact 4.2.8 would be consistent with currently recommended "smart growth" principles, which have been shown to result in reductions in VMT and related motor vehicle emissions, including greenhouse gas emissions.

Mitigation Measures

None required.

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