V.D. AIR QUALITY

The following discussion of air quality and air quality impacts associated with the proposed project is based on the technical report *Air Quality Analysis: Willow Road Extension/US 101 Interchange Project,* prepared by LSA Associates, Inc. (July 2005). This analysis is included in its entirety in Volume II, Appendix D.

1. Existing Conditions

Climate. The climate of San Luis Obispo County can be characterized as Mediterranean, with warm, dry summers and cooler, damp winters. Along the coast, mild temperatures are the rule throughout the year due to the moderating influence of the Pacific Ocean. This effect is diminished inland in proportion to distance from the ocean or by major intervening terrain features, such as the coastal mountain ranges. As a result, inland areas are characterized by a wider range of temperature conditions. Maximum summer temperatures average about 70 degrees Fahrenheit near the coast, while inland valleys are often in the high 90s. Minimum winter temperatures average from the low 30s along the coast to the low 20s inland. The climatological station closest to the site that monitors temperature and rainfall is the Santa Maria Airport Station.[1]

Regional meteorology is largely dominated by a persistent high pressure area that commonly resides over the eastern Pacific Ocean. Seasonal variations in the strength and position of this pressure cell cause seasonal changes in the weather patterns of the area. The Pacific High remains generally fixed several hundred miles offshore from May through September, enhancing onshore winds and opposing offshore winds. During spring and early summer, as onshore breezes pass over the cool water of the ocean, fog and low clouds often form in the marine air layer along the coast. Surface heating in the interior valleys dissipates the marine layer as it moves inland.

From November through April, the Pacific High tends to migrate south, allowing northern storms to move across the County. About 90 percent of the total annual rainfall is received during this period. Winter conditions are usually mild, with intermittent periods of precipitation followed by mostly clear days. Rainfall amounts can vary considerably around the County ranging anywhere from 30 to 71 cm (12 to 28 inches). Average rainfall at the Santa Maria Airport Station varied from 6.93 cm (2.73 inches) in February to 1.17 cm (0.46 inches) or less between May and October, with an average annual rainfall total of 32.72 cm (12.88 inches).

Airflow around the County plays an important role in the movement and dispersion of pollutants. The speed and direction of local winds are controlled by the location and strength of the Pacific high pressure system and other global patterns, by topographical factors, and by circulation patterns resulting from temperature differences between the land and sea. In spring and summer, when the Pacific High attains its greatest strength, onshore winds from the northwest generally prevail during the day. At night, as the sea breeze dies, weak drainage winds flow down the coastal mountains and valleys to form a light, easterly land breeze.

In the fall, onshore surface winds decline and the marine layer grows shallow, allowing an occasional reversal to a weak offshore flow. This, along with the diurnal alternation of land-sea breeze circulation, can sometimes produce a “sloshing” effect. Under these conditions, pollutants may

[1] Western Regional Climatic Center. 2003. http://www.wrcc.dri.edu (accessed October 14, 2003).

accumulate over the ocean for a period of one or more days and are subsequently carried back onshore with the return of the sea breeze. Strong inversions can form at this time, trapping pollutants near the ground surface.

This effect is intensified when the Pacific High weakens or moves inland. This may produce a "Santa Ana" condition in which air, often pollutant-laden, is transported into the county from the east and southeast. This can occur over a period of several days until the high pressure system returns to its normal location, breaking the pattern. The breakup of a Santa Ana condition may result in relatively stagnant conditions and a buildup of pollutants offshore. The onset of the typical daytime sea breeze can bring these pollutants back onshore, where they combine with local emissions to cause high pollutant concentrations. Not all occurrences of the post-Santa Ana condition lead to high ambient pollutant levels, but it does play an important role in the air pollution meteorology of the County.

Air Quality Management Authorities. A region's topographic features have a direct correlation with air pollution flow; therefore, they are used by the California Air Resources Board (ARB) to determine the boundary of air basins. The ARB has divided the State into 15 air basins. A local air district is then formed for each air basin. The ARB coordinates and oversees both state and federal air pollution control programs in California. The ARB oversees activities of local air quality management agencies and is responsible for incorporating air quality management plans for local air basins into a State Implementation Plan (SIP) for federal Environmental Protection Agency (EPA) approval.

The Willow Road Extension/US 101 Interchange project is located in and near the community of Nipomo, an area within the South Central Coast Air Basin (SCCAB). The SCCAB includes San Luis Obispo, Santa Barbara, and Ventura Counties. Air quality regulation in the project region of the SCCAB is administered by the San Luis Obispo County Air Pollution Control District (APCD).

Air Quality Standards and Measurements. Pursuant to the federal Clean Air Act (CAA) of 1970, the U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) The NAAQS were established for six major pollutants termed "criteria" pollutants. The NAAQS were developed primarily, to protect public health, and secondarily, to prevent degradation to the environment (e.g., impairment of visibility, damage to vegetation and property).

The six criteria pollutants include ozone (O_3), carbon monoxide (CO), and particulates less than 10 microns (PM_{10}), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). In 1997, the EPA added new air quality standards for ground-level ozone and for fine particulate matter 2.5 microns or less in diameter ($PM_{2.5}$). The primary standards for these pollutants are shown in Table V.D-1. A discussion of each pollutant can be found in Appendix D, page 13.

Table V.D-1: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[2,5]	Secondary[2,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	0.12 ppm (235 µg/m^3)[8]	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	–		0.08 ppm (157 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean	20 µg/m^3		50 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		65 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Nondispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m$_3$)	None	Nondispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	–	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.25 ppm (470 µg/m^3)		–		
Lead	30-day Average	1.5 µg/m^3	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m^3	Same as Primary Standard	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	–	Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	–	
	3-Hour	–		–	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		–	–	
Visibility Reducing Particles	8-Hour	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 relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Cloride[9]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: ARB (July 2003).

Footnotes:

[1] California standards for ozone; carbon monoxide (except Lake Tahoe); sulfur dioxide (1 and 24 hour); nitrogen dioxide; suspended particulate matter, PM_{10}; and visibility-reducing particles are values 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 PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. 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] Any equivalent procedure that can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

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

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

[7] Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.

[8] New federal eight-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18, 1997. Contact U.S. EPA for further clarification and current federal policies.

[9] 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.

Air quality monitoring stations are located throughout the nation and maintained by the local air districts and state air quality regulating agencies. Data collected at permanent monitoring stations are used by the EPA to identify regions as "attainment" or "non-attainment," depending on whether the regions met the requirements stated in the primary NAAQS. Non-attainment areas are imposed with additional restrictions as required by the EPA. In addition, different classifications of attainment, such as marginal, moderate, serious, severe, and extreme, are used to classify each air basin in a state on a pollutant - by - pollutant basis. The classifications are used as a foundation to create air quality management strategies to improve air quality and comply with the NAAQS.

The region is classified as follows:

1-hour Ozone: Attainment for federal standards, attainment for state standards.

8-hour Ozone: Preliminary attainment for federal standards.

PM_{10}: Attainment for federal standards, non-attainment for state standards.

$PM_{2.5}$: Preliminary non-attainment for federal standards, unclassified for state standards.

CO: Attainment for both federal and state standards.

NO_2: Attainment for both federal and state standards.

The area is in attainment or unclassified for all other pollutants under and federal air quality standards.

Regional Clean Air Plan. The California Clean Air Act (CCAA) provides the APCD with the authority to regulate stationary sources of air pollution and to manage transportation activities at indirect sources. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution such as motor vehicles at an intersection and on highways. The California ARB regulates emissions from motor vehicles and fuels.

As part of the California Clean Air Act, the APCD is required to develop a plan to achieve and maintain the State ozone standard by the earliest practicable date. The Clean Air Plan (CAP) outlines the Pad's strategies to reduce ozone precursor emissions from a wide variety of stationary and mobile sources.

The APCD and the San Luis Obispo Council of Governments (SLOCOG) are responsible for formulating and implementing the Clean Air Plan (CAP) for the SCCAB. A CAP describes air pollution control strategies to be taken by counties or regions classified as non-attainment areas. The CAP's main purpose is to bring the area into compliance with the requirements of federal and State air quality standards. The CAP uses the assumptions and projections by local planning agencies to determine control strategies for regional compliance status. Therefore, any projects causing a significant impact on air quality would impede the progress of the CAP. The first CAP was adopted in 1991. Each CAP has a 20-year horizon and is updated every three years. The most recent CAP was prepared in 2001.

For a project in the SCCAB to be consistent with the CAP, the pollutants emitted from the project must not exceed the APCD significance threshold or cause a significant impact on air quality (see

section on thresholds of significance). If feasible mitigation measures can be implemented to reduce the project's impact level from significant to less than significant under CEQA, the project is considered to be consistent with the CAP.

Air quality models are used to demonstrate that the project's emissions will not contribute to the deterioration or impede the progress of air quality goals stated in the CAP. The air quality models use project-specific data to estimate the quantity of pollutants generated from the implementation of a project.

Implementation of transportation control measures is a major goal of the SCCAB Clean Air Plan. Transportation control measures focus on traffic flow improvements and traffic calming. Implementation of transportation control measures helps provide mobile source emission reductions necessary to achieve State air control standards. The Willow Road Extension/US 101 Interchange project is just such a transportation control measure and is estimated to have a positive impact on air quality locally and in the region.

South County Air Quality Mitigation Program. As a partial means to mitigate for cumulative effects from new development, each new residence in the South County Planning Area will be subject to the South County Air Quality Mitigation fee. This program funds several strategies within the South County to improve air quality and reduce single-occupant vehicles, by: attracting transit ridership through regional bus stop improvements; replacement of older, high polluting buses with much cleaner school buses; encouraging carpooling through park-and-ride lot improvements and ridesharing advertising; promoting the use of bicycles through bike lane installation; reducing dust through limited road paving of several unpaved roads; and by providing electronic information/services locally to reduce vehicle trip lengths.

In 1994, the South County Area Plan was adopted and the associated EIR was certified. As a part of that analysis, a cumulative assessment of the buildout impacts of the planning area was completed. While cumulative impacts to air quality was identified in the EIR as potentially significant and unavoidable, the findings recognized that the existing cumulative air quality mitigation program, combined with a slight improvement over the previous Area Plan buildout would offset some of these impacts. Extension of Willow Road to Highway 101 was generally anticipated in this EIR.

Local Air Quality Monitoring. The project site is located within the APCD jurisdiction. The APCD maintains ambient air quality monitoring stations throughout the SCCAB. The Nipomo Regional Park air quality monitoring station monitors four of the criteria pollutants: ozone, NO_2, SO_2, and PM_{10}. The closest monitoring station with CO and $PM_{2.5}$ data is the Santa Maria station. Air quality trends identified from data collected at both air quality monitoring stations between 1998 and 2002 are listed in Table V.D-2. From the ambient air quality data listed, it can be seen that CO levels have not exceeded the relevant federal or State standards in the past three years (prior to 2000, CO concentrations were not monitored at this station). Ozone levels in the proposed project area did not exceed the federal and State standard in the past five years. The PM_{10} level in the proposed project area exceeded the State standard from 1 to 3 days per year in the past five years and never exceeded the federal PM_{10} standard in the past five years. The $PM_{2.5}$ levels did not exceed the federal standard in the five years (there is no State standard for $PM_{2.5}$). Neither the nitrogen dioxide level nor the sulfur dioxide level in the proposed project area exceeded the federal or state standard in the past five years.

Table V.D-2: Ambient Air Quality at the Nipomo Regional Park Air Monitoring Station

Pollutant	Standard	2002	2001	2000	1999	1998
Carbon Monoxide[1]						
Max 1-hr concentration (ppm)		3.1	3.5	4.0	Not monitored	
No. days exceeded: State	> 20 ppm/1-hr	0	0	0	--	--
Federal	> 35 ppm/1-hr	0	0	0	--	--
Max 8-hr concentration (ppm)		1.2	1.3	2.1	Not monitored	
No. days exceeded: State	≥ 9.0 ppm/8-hr	0	0	0	--	--
Federal	≥ 9 ppm/8-hr	0	0	0	--	--
Ozone						
Max 1-hr concentration (ppm)		0.080	0.085	0.078	0.089	0.057
No. days exceeded: State	> 0.09 ppm/1-hr	0	0	0	0	0
Federal	> 0.12 ppm/1-hr	0	0	0	0	0
Max 8-hr concentration (ppm)		0.069	0.080	0.066	0.076	0.050
No. days exceeded: Federal	> 0.08 ppm/8-hr	0	0	0	0	0
Particulates (PM_{10})						
Max 24-hr concentration (ppm)		55	64	113	41	27
No. days exceeded: State	> 50 $\mu g/m^3$	2	3	1	0	0
Federal	> 150 $\mu g/m^3$	0	0	0	0	0
Annual geometric average concentration		19	20	18	14	15
Annual arithmetic average concentration		20	24	21	17	10
No. days exceeded: State	> 20 $\mu g/m^3$ geo. avg	0	0	0	0	0
Federal	> 50 $\mu g/m^3$ arith. avg	0	0	0	0	0
Particulates ($PM_{2.5}$)[2]						
Max 24-hr concentration (ppm)		21.3	43.2	28.7	24.3	NM[2]
No. days exceeded: Federal	> 65 $\mu g/m^3$	0	0	0	0	--
Annual avg. concentration		9.6	10.4	9.8	11.5	NM
No. days exceeded: State	> 12 $\mu g/m^3$ annual avg	0	0	0	0	--
Federal	> 15 $\mu g/m^3$ annual avg	0	0	0	0	--
Nitrogen Dioxide						
Max 1-hr concentration (ppm)		0.047	0.042	0.043	0.067	0.041
No. days exceeded: State	> 0.25 ppm/1-hr	0	0	0	0	0
Annual avg. concentration		0.005	NM	0.006	0.007	NM
No. days exceeded: Federal	0.053 ppm annual avg	0	--	0	0	--
Sulfur Dioxide						
Max 1-hr concentration (ppm)		0.065	0.059	0.140	0.117	0.052
No. days exceeded: State	> 0.25 ppm/1-hr	0	0	0	0	0
Max 3-hr concentration (ppm)		0.037	0.040	0.083	0.039	0.028
No. days exceeded: Federal	> 0.5 ppm/3-hr	0	0	0	0	0
Max 24-hr concentration (ppm)		0.014	0.014	0.016	0.013	0.008
No. days exceeded: State	> 0.04 ppm/24-hr	0	0	0	0	0
Federal	> 0.14 ppm/24-hr	0	0	0	0	0
Annual avg. concentration		0.004	0.003	0.003	0.002	0.003
No. days exceeded: Federal	0.053 ppm annual avg.	0	0	0	0	0

Source: EPA and ARB 1998 to 2002

1 Carbon monoxide (CO) and $PM_{2.5}$ data are from the Santa Maria station because CO and $PM_{2.5}$ are not monitored at the Nipomo Regional Park station.

2 NM = Not monitored

2. Thresholds of Significance

Specific criteria for determining whether the potential air quality impacts of a project are significant are set forth in the Pad's CEQA Air Quality Handbook and stated in the County of San Luis Obispo Initial Study Checklist. Air quality impacts are considered significant if the following result:

- Violation of state or federal ambient air quality standard, or air quality emission thresholds established by the APCD are exceeded;
- Exposure of a sensitive receptor to substantial air pollutant concentrations;
- Create or subject individuals to objectionable odors;
- Inconsistency with the Clear Air Plan (CAP) for San Luis Obispo County.

Thresholds for Short-Term Construction Emissions. Mitigation of construction activities is required when the emission thresholds outlined in Table V.D-3 are equaled or exceeded by both fugitive and combustion emissions.

Table V.D-3: Level of Construction Activity Requiring Mitigation

Pollutant of Concern	Thresholds[1]			Mitigation Measures
	Tons/Qtr		Lbs/Day	
ROG	2.5	or	185	Requires CBACT[2]
	6.0			Requires CBACT plus further mitigation, including emission offsets
NO_X	2.5	or	185	Requires CBACT
	6.0			Requires CBACT plus further mitigation, including emission offsets
PM_{10}	2.5			Any project with a grading area greater than 4.0 acres of continuously worked area will exceed the 2.5-ton PM_{10} quarterly threshold. Combustion emissions should also be calculated based on the amount of cut and fill expected.

[1] Thresholds were approximated using the screening level emission rates from the APCD CEQA Handbook, Table 6-2. Daily emission thresholds are based upon the level of daily emissions that may result in a short-term exceedance of the ozone standard.

[2] CBACT = Best Available Control Technology for construction equipment.

Projects in the SCCAB with construction-related emissions that exceed any of the emission thresholds (daily or quarterly) above are considered significant by the APCD. For purposes of this analysis, a PM_{10} threshold of 75 lbs/day has been calculated, using three months per quarter and 22 days per month.

Thresholds for Long-Term Operational Emissions. The threshold criteria established by the district to determine the significance and appropriate mitigation level for long-term emissions from a project are presented in Table V.D-4. Emissions that equal or exceed the designated threshold levels are considered potentially significant and should be mitigated.

Table V.D-4: Thresholds of Significance for Operational Emissions Impacts

Pollutant		Tier 1	Tier 2	Tier 3
ROG, NO_X, SO_2, PM_{10}	< 10 lbs/day	10 lbs/day	25 lbs/day	25 tons/year
CO	< 550 lbs/day		550 lbs/day	
Significance	Insignificant	Potentially Significant Impacts	Significant Impacts	Significant Impacts

3. Project Impacts

Air quality impacts are measured on a short-term and a long-term basis. Short-term or temporary impacts are generally the result of grading and construction activities. Long-term impacts are considered to be those project related air quality impacts which occur once the proposed project is operational.

Short-Term Air Quality Impacts. Use of heavy equipment and earth moving operations during project construction can generate fugitive dust and combustion emissions that may have substantial temporary impacts on local air quality. Fugitive dust emissions results from land clearing, demolition, ground excavation, cut and fill operations and equipment traffic over temporary roads at the construction site. Combustion emissions, such as NO_x and diesel particulate matter (diesel PM), are most significant when using large, diesel-fueled scrapers, loaders, dozers, haul trucks, compressors, generators, and other heavy equipment. Emissions can vary substantially from day to day depending on the level of activity, the specific type of operation, and the prevailing weather conditions.

Construction Equipment Exhaust Emissions. Currently, a specific schedule for project construction operations is not yet available. Therefore, the construction emissions estimates summarized in Table V.D-5 were based on projects similar to the proposed project. Emissions shown in the table assumed a peak day operation.

The APCD has established emissions thresholds for construction activities associated with a proposed project. Construction equipment emissions would not exceed the daily thresholds for any of the criteria pollutants: NO_X, ROG, CO, SO_X and PM_{10}. Therefore, short-term air quality impacts associated with project construction will be less than significant.

Fugitive Dust. PM_{10} emissions from site clearance/grading operations during a peak construction day are based on assumptions and past experience on similar sized projects. The entire site is not expected to be under construction at one time. It is assumed that up to three acres of land would be under construction or exposed at any point in time. APCD states that any project with a grading area greater than four acres of continuously worked area will exceed the 2.5 tons/quarter PM_{10} threshold. Additionally, the project is underlain by medium to fine grained, well sorted sand that is less subject to dust emissions than typical soils. Therefore, with the implementation of the Best Available Control Technology for construction equipment (CBACT), as outlined in Standard Conditions D1 through D-15, the project's impact will be less than significant.

Table V.D-5: Daily Construction Equipment Exhaust Emissions

Number and Equipment Type[1]	No. of Hours in Operation[2]	Pollutants (lbs./day)				
		CO	ROG	NO_X	SO_X	PM_{10}
2 Tracked Loader	8	3.2	1.6	13.2	1.2	1.0
2 Tracked Tractor	8	5.6	1.0	20.2	2.2	1.8
2 Scraper	8	20.2	4.6	61.4	7.4	6.4
1 Roller	8	2.4	0.5	6.9	0.5	0.4
2 Motor Graders	8	2.4	0.6	11.4	1.4	1.0
2 Miscellaneous	8	10.8	2.4	27.1	2.3	2.2
24 Construction Worker Trips	80.5 k (50 mi)/RT[3]	10.3	1.9	3.3	0.6	1.2
TOTAL		54.9	12.6	143.5	15.6	14.0
APCD Threshold		N/A	185	185	N/A	75
Exceed APCD Threshold?			NO	NO		NO

Source: LSA Associates, Inc. 2004.

1 Emission factors provided in EPA, AP-42, Volume II.

2 This assumes an eight hour work day within the window of construction hours (7 a.m. to 9 p.m.)

3 RT: Round-trip

Naturally Occurring Asbestos. The project is located in San Luis Obispo County, which is among the counties listed as containing serpentine and ultramafic rock. Although a general location guide[1] shows no areas of naturally occurring asbestos (NOA) in the project vicinity, there is a potential for it to occur there; recent construction activities have encountered NOA in areas where the general location guide indicated there would not be any. Because of this, testing for NOA prior to construction will be necessary (See Mitigation Measure D-2). In the event that ultramafic or asbestos containing materials is not discovered during pre-construction testing but is discovered during construction activities, the County shall comply with all requirements outlined in the Asbestos Airborne Toxic Control Measures for Construction, Grading, Quarrying and Surface Mining Operations. These requirements may include, but are not limited to preparation of: 1) an Asbestos Dust Mitigation Plan that shall be approved by the APCD before construction begins, and 2) an Asbestos Health and Safety Program in accordance with the California Air Resources Board Regulations. Therefore, NOA impact during project construction would be less than significant.

Long-Term Air Quality Impacts. Long-term impacts are projected-related air quality impacts that occur once the proposed project is operational. The proposed project is projected to have beneficial long-term effects on air quality since it will improve traffic flow and reduce delay and congestion.

1 A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos, Department of Conservation, Division of Mines and Geology, State of California, August, 2000. (ftp://ftp.consrv.ca.gov/pub/dmg/pubs/ofr/ofr_2000-019.pdf)

Carbon Monoxide (CO) Hot Spots. The primary mobile source pollutant of local concern is CO, which is used as an indicator of a project's direct and indirect impact on local air quality because it is a direct function of vehicle idling time and traffic flow conditions. Under normal meteorological conditions, CO disperses rapidly with distance from the source. However, CO does not readily disperse in the local environment in cool weather when the wind is fairly still. Under certain extreme meteorological conditions, CO concentrations proximate to a congested roadway or intersection may reach unhealthful levels affecting local sensitive receptors (residents, school children, the elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. The highest CO concentrations would occur during peak traffic hours; hence, CO impacts calculated under peak traffic conditions represent a worst-case analysis.

The impact on local CO levels in the project area was assessed with the ARB approved CALINE4 air quality model, which allows microscale CO concentrations to be estimated along roadway corridors or near intersections. This model is designed to identify localized concentrations of carbon monoxide, often termed "hot spots." Modeling of the CO hot spot analysis was based on traffic volumes generated by the project traffic study (Fehr & Peers Associates, Inc., July 2004[2]) that identified the peak traffic levels generated in the project area for the years 2003 and 2030. The analysis was performed for the worst-case wind angle and wind speed conditions. The assumptions underlying the CALINE4 model can be found in Appendix D, page 22.

The data in Tables V.D-6 and V.D-7 show the projected CO levels for the 2003 existing year and 2030 build out conditions respectively during the weekday p.m. peak hour. The table presents the highest four CO concentrations measured at each intersection during a one-hour and eight-hour period. In no instance is the State or federal CO standard for the one-hour or the eight-hour durations exceeded. As no CO levels would exceed the federal and State one-hour and eight-hour standards, no CO hot spots would occur as a result of the proposed project.

Diesel Toxics Analysis. Exhaust from diesel engines is a major source of small airborne particles. California's Office of Environmental Health Hazard Assessment (OEHHA) has determined that long-term exposure to diesel exhaust particulate poses the highest cancer risk of any toxic air contaminant it has evaluated. Fortunately, improvements to diesel fuel and diesel engines have already reduced emissions of some of the pollutants associated with diesel exhaust. California's ARB has developed a Diesel Risk Reduction Plan which, when fully implemented, will result in a 75 percent reduction in particle emissions from diesel equipment by 2010 (compared to 2000 levels) and an 85 percent reduction by 2020.

It is not expected that implementation of this project will cause a significant increase in toxic air constituents. Since motor vehicles produce more exhaust per mile at slower speeds, and since this project will reduce traffic slow-downs, the effect of this project should be to reduce emissions per mile and therefore exposure of the population to toxic constituents from vehicle exhaust.

Air Quality Management Plan Consistency Analysis. The CAP describes air pollution control strategies to be taken by counties or regions classified as non-attainment areas. The CAP's main

[2] This traffic report has since been updated as of December 2004 with minor revisions. However, the revisions do not change the results of this analysis.

purpose is to bring the area into compliance with the requirements of federal and State air quality standards. The CAP uses the assumptions and projections by local planning agencies to determine control strategies for regional compliance status. Therefore, any projects causing a significant impact on air quality would impede the progress of the CAP. For a project in the SCCAB to be consistent with the CAP, the pollutants emitted from the project must not exceed the APCD significance threshold or cause a significant impact on air quality. Where standard conditions or mitigation measures can be implemented to reduce the project's impact level from significant to less than significant under CEQA, the project is considered to be consistent with the CAP.

A consistency analysis determination plays an essential role in local agency project review by linking local planning and unique individual projects to the CAP in the following ways: it fulfills the CEQA goal of fully informing local agency decision makers of the environmental costs of the project under consideration at a stage early enough to ensure that air quality concerns are fully addressed, and it provides the local agency with ongoing information, assuring local decision makers that the project is making real contributions to clean air goals defined in the most current CAP (adopted in 1991 and updated in 1995, 1998 and 2001). Because the CAP is based on projections from local General Plans, projects consistent with the local General Plan are considered consistent with the CAP.

Air quality models are used to demonstrate that the project's emissions will not contribute to the deterioration or impede the progress of air quality goals stated in the CAP. The air quality models use project-specific data to estimate the quantity of pollutants generated from the implementation of a project. The results for the No Project and the Proposed Project scenarios in the horizon year are compared to the CAP's air quality projections.

As shown in Table V.D-7, the proposed project will not significantly contribute to or cause deterioration of existing air quality; therefore, mitigation measures are not required for the long-term operation of the project. Hence, the proposed project is considered to be consistent with the County of San Luis Obispo's General Plan and the SLOCOG forecast, and is therefore consistent with the CAP.

Table V.D-6: Existing CO Concentrations, P.M Peak Hour*

Intersection	Receptor Distance to Road Centerline (Meters)	One-Hour CO Concentration (ppm)	Eight-Hour CO Concentration (ppm)	Exceeds State Standards	
				1-Hr	8-Hr
SB 101 & Los Berros Rd.	10	4.2	2.5	No	No
	10	4.2	2.5	No	No
	8	4.1	2.5	No	No
	8	4.1	2.5	No	No
NB 101 & Los Berros Rd.	10	4.1	2.5	No	No
	10	4.0	2.4	No	No
	8	4.0	2.4	No	No
	8	4.0	2.4	No	No
Pomeroy Rd. & Willow Rd.	8	4.1	2.5	No	No
	8	4.1	2.5	No	No
	8	3.9	2.3	No	No
	8	3.9	2.3	No	No
Hetrick Ave. & Willow Rd.	8	3.5	2.0	No	No
	8	3.5	2.0	No	No
	8	3.5	2.0	No	No
	8	3.5	2.0	No	No
SB 101 Off/S. Frontage Rd. & Tefft St.	14	5.9	3.7	No	No
	14	5.6	3.5	No	No
	10	5.6	3.5	No	No
	10	5.6	3.5	No	No
SB 101 On & Tefft St.	10	5.5	3.4	No	No
	10	5.4	3.4	No	No
	10	5.3	3.3	No	No
	10	5.3	3.3	No	No
NB 101 & Tefft St.	14	5.0	3.1	No	No
	10	4.9	3.0	No	No
	10	4.9	3.0	No	No
	10	4.8	3.0	No	No

Source: LSA Associates, Inc. (2003).

NOTE: Includes ambient 1-hour concentration of 3.3 ppm and ambient 8-hour concentration of 1.9 ppm. Measured at the Santa Maria, 906 S Broadway, AQ Station (Santa Barbara County).

* The Table presents the highest four CO concentrations measured at each intersection during a one-hour and eight-hour period.

Table V.D-7: Build-Out (2030) CO Concentrations without/with Proposed Project, P.M. Peak Hour

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1-hr/8-hr (ppm)	One-Hour CO Concentration (ppm)	Eight-Hour CO Concentration (ppm)	Exceeds State Standards	
					1-Hr	8-Hr
SB 101 & Los Berros Rd.	10	-0.2/-0.2	3.8/3.6	2.3/2.1	No	No
	10	-0.2/-0.2	3.8/3.6	2.3/2.1	No	No
	8	-0.2/-0.2	3.8/3.6	2.3/2.1	No	No
	8	-0.2/-0.2	3.8/3.6	2.3/2.1	No	No
NB 101 & Los Berros Rd.	10	0.0/0.0	3.7/3.7	2.2/2.2	No	No
	10	-0.1/-0.1	3.7/3.6	2.2/2.1	No	No
	8	-0.1/-0.1	3.7/3.6	2.2/2.1	No	No
	8	-0.1/-0.1	3.7/3.6	2.2/2.1	No	No
Pomeroy Rd. & Willow Rd.	8	-0.1/-0.1	3.6/3.5	2.1/2.0	No	No
	8	-0.1/-0.1	3.6/3.5	2.1/2.0	No	No
	8	-0.1/-0.1	3.6/3.5	2.1/2.0	No	No
	8	0.0/0.0	3.5/3.5	2.0/2.0	No	No
Hetrick Ave. & Willow Rd.	8	0.2/0.1	3.3/3.5	1.9/2.0	No	No
	8	0.2/0.1	3.3/3.5	1.9/2.0	No	No
	8	0.2/0.1	3.3/3.5	1.9/2.0	No	No
	8	0.2/0.1	3.3/3.5	1.9/2.0	No	No
N. Frontage Rd. & Willow Rd.	8	0.3/0.2	3.3/3.6	1.9/2.1	No	No
	8	0.2/0.1	3.3/3.5	1.9/2.0	No	No
	8	0.2/0.1	3.3/3.5	1.9/2.0	No	No
	8	0.2/0.1	3.3/3.5	1.9/2.0	No	No
SB 101 & Willow Rd.	12	0.2/0.1	3.3/3.5	1.9/2.0	No	No
	12	0.2/0.1	3.3/3.5	1.9/2.0	No	No
	12	0.2/0.1	3.3/3.5	1.9/2.0	No	No
	12	0.2/0.1	3.3/3.5	1.9/2.0	No	No
NB 101 & Willow Rd.	12	0.1/0.1	3.3/3.4	1.9/2.0	No	No
	12	0.1/0.1	3.3/3.4	1.9/2.0	No	No
	12	0.1/0.1	3.3/3.4	1.9/2.0	No	No
	12	0.1/0.1	3.3/3.4	1.9/2.0	No	No
Thompson Ave. & Willow Rd.	8	0.2/0.1	3.3/3.5	1.9/2.0	No	No
	8	0.2/0.1	3.3/3.5	1.9/2.0	No	No
	8	0.2/0.1	3.3/3.5	1.9/2.0	No	No
	8	0.2/0.1	3.3/3.5	1.9/2.0	No	No
SB 101 Off/S. Frontage Rd. & Tefft St.	14	-0.1/0.0	4.2/4.1	2.5/2.5	No	No
	14	-0.1/0.0	4.2/4.1	2.5/2.5	No	No
	10	-0.2/-0.1	4.2/4.0	2.5/2.4	No	No
	10	-0.2/-0.1	4.2/4.0	2.5/2.4	No	No
SB 101 On & Tefft St.	14	-0.2/-0.2	4.1/3.9	2.5/2.3	No	No
	14	-0.1/-0.1	4.0/3.9	2.4/2.3	No	No
	10	-0.1/-0.1	4.0/3.9	2.4/2.3	No	No
	10	-0.1/-0.1	4.0/3.9	2.4/2.3	No	No
NB 101 & Tefft St.	14	-0.2/-0.1	4.0/3.8	2.4/2.3	No	No
	10	-0.1/0.0	3.9/3.8	2.3/2.3	No	No
	10	-0.1/0.0	3.9/3.8	2.3/2.3	No	No
	10	-0.1/0.0	3.9/3.8	2.3/2.3	No	No

Source: LSA Associates, Inc. (2003).

NOTE: Includes ambient 1-hour concentration of 3.3 ppm and ambient 8-hour concentration of 1.9 ppm. Measured at the Santa Maria, 906 S Broadway, AQ Station (Santa Barbara County).

4. Cumulative Impacts

The proposed Willow Road Extension, US 101 Interchange project is one of more than two dozen public works and private development projects proposed within the general project area. A majority of these projects have already been approved and are primarily residential subdivisions (see Figure IV, Cumulative Projects). Completion of the proposed project will result in the redistribution of automobile traffic on local and regional roadways. This redistribution could incrementally change air quality levels in specific areas where new development is clustered. Since the air quality analysis is based on the year 2030 traffic volume forecasts, which include these future development projects, the air quality analysis reflects the cumulative condition.

As previously discussed, at the regional level, future levels of pollutant generation associated with automobile traffic will be reduced over the long-term. This is due to several factors: (a) the fact that the proposed project does not generate, but instead redistributes, automobile traffic within the project area; (b) this redistribution of traffic will result in more efficient automobile circulation and reduced congestion; and (c) vehicular emissions factors are projected to decrease steadily up to the year 2010. Therefore, the completion of the proposed cumulative projects should not add appreciable quantities of pollutants to the regional airshed. Therefore, the proposed project will have a less than significant contribution to the cumulative impact on the region's air quality conditions.

5. Air Quality Standard Conditions

The County shall ensure that the construction contractor implements the following standard conditions to reduce or minimize air pollutants generated by project construction activities, including vehicle and equipment exhaust.

D-1, APCD Asphalt Paving Regulations. The construction contractor shall adhere to the requirements of APCD rules and regulations on cutback and emulsified asphalt paving materials. Prior to application, the County shall contact APCD for verification.

D-2, Pre-Construction Asbestos Detection Program. Prior to the start of any construction activities, the County shall conduct borings in the project area to test for the occurrence of ultramafic or asbestos containing materials. In the event that ultramafic or asbestos containing materials are discovered, the County shall comply with all requirements outlined in the Asbestos ATCM for Construction, Grading, Quarrying and Surface Mining Operations. These requirements may include, but are not limited to preparation of: 1) an Asbestos Dust Mitigation Plan that shall be approved by the APCD before construction begins, and 2) an Asbestos Health and Safety Program in accordance with the California Air Resources Board regulations. This program shall be prepared and reviewed as part of the final plan check. This condition shall be included in the construction plan specifications.

D-3, Procedure for Handling Unanticipated Discoveries of Asbestos. In the event of the discovery of ultramafic or asbestos containing materials during construction, construction operations in the affected area should cease immediately and the County shall comply with all requirements outlined in the Asbestos ATCM for Construction, Grading, Quarrying and Surface Mining Operations. These requirements may include, but are not limited to preparation of: 1) an Asbestos Dust Mitigation Plan that shall be approved by the APCD before construction gets back underway, and 2) an Asbestos Health and Safety Program in accordance with the California Air Resources Board regulations. This

program shall be prepared and reviewed as part of the final plan check. This condition shall be included in the construction plan specifications.

D-4, ARB Certified Equipment. Maximize to the extent feasible the use of diesel construction equipment meeting the ARB's 1996 or newer certification standard for off-road heavy-duty diesel engines during any construction activities. This condition shall be included in the construction plan specifications.

D-5, Installation of Emission Reduction Devices. The contractors shall install diesel oxidation catalysts (DOC), catalyzed diesel particulate filters (CDPF), or other District-approved emission-reduction retrofit devices prior to construction activities. The ARB has recently verified DOC and CDPF systems for HD diesel vehicles. DOCs have control efficiencies on the order of 25 percent, while CDPFs can achieve diesel PM reductions of 85 percent or better. In general, DOCs are effective at reducing the fine particle component, while CDPFs are effective at reducing both the fine particle and larger black soot components. Manufacturer data indicates that both types of devices can reduce about 90 percent of CO emissions and 50 to 70 percent of ROG emissions, some being a portion of the diesel PM component. Some devices/systems are being developed that have the added benefit of being able to reduce NOx emissions. Determination of the appropriate CBACT control device(s) for the project must be performed in consultation with APCD staff. This condition shall be included in the construction plan specifications.

D-6, Construction Activity Management Plan. The contractor shall develop a comprehensive construction activity management plan designed to minimize the amount of large construction equipment operating during any given time period prior to construction activities. This condition shall be included in the construction plan specifications.

D-7, Construction Truck Trips. The contractor shall schedule construction truck trips during non-peak hours to reduce peak hour emissions prior to and during any construction activities. This condition shall be included in the construction plan specifications.

D-8, Construction Work-Day. The County shall limit the length of the construction work-day period, if necessary. This condition shall be included in the construction plan specifications.

D-9, Construction Phasing. The County shall phase construction activities, if appropriate so that fugitive dust and other emissions being generated do not exceed daily thresholds. Construction phasing shall be planned and reviewed as part of the final design.

D-10, PM_{10} and Dust Emissions Reduction. Proper implementation of the following measures during construction activities will achieve a significant reduction in PM_{10} emissions. All PM_{10} mitigation measures required shall be included on grading and building plans. In addition, the contractor must designate a monitor for the dust control program and order increased watering, as necessary, to prevent transport of dust off site. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD prior to land use clearance for map recordation and land use clearance for finish grading of the structure.

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

b. Use water trucks or sprinkler systems to prevent airborne dust from leaving the site. Increase watering frequency whenever wind speed exceeds 15 mph. Reclaimed (nonpotable) water should be used whenever possible.

c. Spray all dirt stock-pile areas daily as needed.

d. Implement permanent dust control measures identified in the approved project revegetation and landscape plans as soon as possible following completion of any soil-disturbing activities.

e. Sow exposed ground areas that are planned to be reworked at dates more than one month after initial grading with a fast-germinating native grass seed, and water until vegetation is established.

f. Stabilize all disturbed soil areas not subject to revegetation using approved chemical soil binders, jute netting, or other methods approved in advance by the APCD.

g. Complete all roadways, driveways, sidewalks, etc., to be paved as soon as possible. In addition, lay building pads as soon as possible after grading unless seeding or soil binders are used.

h. Construction vehicles shall not exceed a speed of 15 mph on any unpaved surface at the construction site. APCD CEQA Air Quality Handbook 2003

i. Cover trucks hauling dirt, sand, soil, or other loose materials or maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114.

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

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

The construction contractor shall adhere to the requirements of APCD CEQA Air Quality Handbook to reduce fugitive dust emissions. The Best Available Control Technologies for construction equipment (CBACT) shall be adhered to during the project construction.

D-11, Well -Tuned, Efficient Equipment. Prior approval of any grading permits, the construction contractor shall select the construction equipment used on site based on low emission factors and high energy efficiency. The contractor shall also ensure that all construction equipment is maintained in proper tune according to manufacturer's specification prior to and during any construction activities. The County shall ensure that construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.

D-12, Alternative-Fuel-Powered Equipment. The construction contractor shall utilize electric or alternative-fuel powered equipment in lieu of gasoline and diesel powered engines where feasible during construction activities. This condition shall be included in the construction plan specifications.

D-13, ARB-Certified Fuel. The contractor shall ensure that all off-road and portable diesel powered equipment, including but not limited to bulldozers, graders, cranes, loaders, scrapers, backhoes, generator sets, compressors, auxiliary power units, are powered with ARB-certified motor vehicle

diesel fuel (non-taxed version suitable for off-road use) during any construction activities. This condition shall be included in the construction plan specifications.

D-14, Equipment Shut Off. Prior to approval of grading permits, the construction contractor shall ensure that construction grading plans include a statement that work crews will shut off equipment when not in use. This condition shall be included in the construction plan specifications.

D-15, Construction Timing. During construction activities, the construction contractor shall time the construction activities so as not to interfere with peak hour traffic and to minimize obstruction of through traffic lanes adjacent to the site; if necessary, a flag-person shall be retained to maintain safety adjacent to existing roadways. This condition shall be included in the construction plan specifications.

D-16, Ridesharing. The construction contractor shall support and encourage ridesharing and transit incentives for the construction crew during construction activities. This condition shall be included in the construction plan specifications.

The following standard conditions for construction equipment are recommended but are not mandatory.

- Electrify equipment where feasible.
- Substitute gasoline-powered for diesel-powered equipment, where feasible.
- Use equipment that has Caterpillar pre-chamber diesel engines.
- Implement activity management techniques as described in Section 6.4, pages B-2 and B-3 in Appendix D (Air Quality Assessment).

6. Residual Impacts

Implementation of the above prescribed standard conditions will ensure that the project's short-term impacts will be reduced to less than significant.

Long-term air quality impacts on both a local and regional level will benefit from the improved traffic circulation and reduced traffic congestion associated with the proposed project. As stated above, because the long-term operation of the proposed project will not significantly contribute to or cause deterioration of existing air quality, no long-term mitigation measures are required. Consequently, the proposed project is considered to be consistent with the County of San Luis Obispo's General Plan and the SLOCOG forecast, and is therefore consistent with the CAP.