V. ENVIRONMENTAL IMPACT ANALYSIS
B. AIR QUALITY

ENVIRONMENTAL SETTING

This Section is based on the *Air Quality and Noise Impact Technical Report* prepared by Terry A. Hayes Associates (January 2005). The entire report is included in Appendix C to this EIR. The input parameters for all air quality modeling analyses were based on the results of the *Draft Traffic and Circulation Study for the Malibu La Paz Project*, prepared by Kaku Associates (December 2004), included in Appendix C to this ~~Draft~~ Final EIR.

Pollutants and Effects

Air quality studies generally focus on five pollutants that are most commonly measured and regulated: carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and respirable particulate matter (PM_{10}).

Carbon Monoxide

Carbon monoxide (CO), a colorless and odorless gas, interferes with the transfer of oxygen to the brain. It can cause dizziness and fatigue, and can impair central nervous system functions. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. In urban areas, CO is emitted by motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. Automobile exhausts release most of the CO in urban areas. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient carbon monoxide concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February.[1] The highest CO concentrations measured in the South Coast Air Basin (SCAB) are typically recorded during the winter.

Ozone

Ozone (O_3), a colorless toxic gas, is the chief component of urban smog. O_3 enters the blood stream and interferes with the transfer of oxygen, depriving sensitive tissues in the heart and brain of oxygen. O_3 also damages vegetation by inhibiting their growth. Although O_3 is not directly emitted, it forms in the atmosphere through a chemical reaction between reactive organic gas (ROG) and nitrogen oxides (NO_x)

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[1] *Inversion is an atmospheric condition in which a layer of warm air traps cooler air near the surface of the earth, preventing the normal rising of surface air.*

under sunlight.[2] O_3 is present in relatively high concentrations within the SCAB, and the damaging effects of photochemical smog are generally related to the concentration of O_3. Meteorology and terrain play major roles in ozone formation. Ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. The greatest source of smog-producing gases is the automobile.

Nitrogen Dioxide

Nitrogen dioxide (NO_2), a brownish gas, irritates the lungs. It can cause breathing difficulties at high concentrations. Like O_3, NO_2 is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as nitrogen oxides (NO_x) and are major contributors to ozone formation. NO_2 also contributes to the formation of PM_{10} (see discussion of PM_{10} below). At atmospheric concentration, NO_2 is only potentially irritating. In high concentrations, the result is a brownish-red cast to the atmosphere and reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 parts per million (ppm).

Sulfur Dioxide

Sulfur dioxide (SO_2) is a product of high-sulfur fuel combustion. Main sources of SO_2 are coal and oil used in power stations, in industries, and for domestic heating. Industrial chemical manufacturing is another source of SO_2. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also cause plant leaves to turn yellow, as well as erode iron and steel. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 concentrations have been reduced to levels well below the State and national standards, but further reductions in emissions are needed to attain compliance with standards for sulfates and PM_{10}, of which SO_2 is a contributor.

Suspended Particulate Matter

Particulate matter (PM) pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. "PM_{10}" and "$PM_{2.5}$" represent fractions of particulate matter. Respirable particulate matter (PM_{10}) refers to particulate matter less than 10 microns in diameter, about one/seventh the thickness of a human hair. Fine particulate matter ($PM_{2.5}$) refers to particulate matter that is 2.5 microns or less in diameter, roughly $1/28^{th}$ the diameter of a human hair. Major sources of PM_{10} include: motor vehicles; wood burning stoves and fireplaces; dust

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[2] *ROG and NO_X are emitted from automobiles and industrial sources.*

from construction, landfills, and agriculture; wildfires and brush/waste burning, industrial sources, windblown dust from open lands; and atmospheric chemical and photochemical reactions. $PM_{2.5}$ results from fuel combustion (from motor vehicles, power generation, industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds.

PM_{10} and $PM_{2.5}$ pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM_{10} and $PM_{2.5}$ can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as lead, sulfates, and nitrates can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage elsewhere in the body. These substances can transport absorbed gases, such as chlorides or ammonium, into the lungs and cause injury. Whereas particles 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, particles 2.5 microns or less are so tiny that they can penetrate deeper into the lungs and damage lung tissues.[3] Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

Regulatory Setting

Air quality in the United States is governed by the Federal Clean Air Act (CAA). In addition to being subject to the requirements of the CAA, air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). At the federal level, the CAA is administered by the United States Environmental Protection Agency (USEPA). In California, the CCAA is administered by the California Air Resources Board (CARB) at the State level and by the Air Quality Management Districts at the regional and local levels.

Responsible Agencies

United States Environmental Protection Agency

The USEPA is responsible for enforcing the CAA and for establishing the National Ambient Air Quality Standards (NAAQS). The NAAQS are required under the 1977 CAA and subsequent amendments. The USEPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards,

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[3] *The NAAQS for $PM_{2.5}$ was adopted in 1997. Presently, no methodologies for determining impacts relating to $PM_{2.5}$ have been developed or adopted by federal, State, or regional agencies. Additionally, no strategies or mitigation programs for $PM_{2.5}$ have been developed or adopted by federal, State, or regional agencies. Currently, this standard is not enforceable. However, the standard may be reinstated in the future. Thus, this air quality analysis does not analyze $PM_{2.5}$.*

including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by the CARB.

California Air Resources Board

In California, the CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for meeting the state requirements of the CAA, administering the CCAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CCAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. The CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. The CARB also regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. The CARB established passenger vehicle fuel specifications, which became effective on March 1996. The CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level.

South Coast Air Quality Management District (SCAQMD)

The SCAQMD monitors air quality within the project area. The 1977 Lewis Air Quality Management Act ("Act") created the SCAQMD to coordinate air quality planning efforts throughout southern California. This Act merged four county air pollution control agencies into one regional district to better address the issue of improving air quality in southern California. Under the Act, renamed the Lewis-Presley Air Quality Management Act in 1988, the SCAQMD is the agency principally responsible for comprehensive air pollution control in the South Coast Air Basin (SCAB). Specifically, the SCAQMD is responsible for monitoring air quality, as well as planning, implementing and enforcing programs designed to attain and maintain state and federal ambient air quality standards in the district. Programs that were developed include air quality rules and regulations that regulate stationary source, area source, point source and certain mobile source emissions. The SCAQMD is also responsible for establishing permitting requirements for stationary sources and ensuring that new, modified or relocated stationary sources do not create net emission increases and therefore, are consistent with the region's air quality goals.

SCAB is a subregion of the SCAQMD and covers an area of 6,745 square miles. SCAB includes all of Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino counties. SCAB is bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east; and the San Diego County line to the south.

Attainment Status

The CCAA requires the CARB to designate areas within California as either attainment or non-attainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as non-attainment for the pollutant if air quality data shows that a State standard for a pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard, and are not used as a basis for designating areas as non-attainment.

Under the CCAA, the Los Angeles County portion of the SCAB is designated as a non-attainment area for ozone, carbon monoxide, and respirable particulate matter. The air basin is designated as an attainment area for nitrogen dioxide, sulfur dioxide, sulfates, and lead.[4]

Air Quality Management Plan

All areas designated as non-attainment under the CCAA are required to prepare plans showing how the areas would meet the State air quality standards by their attainment dates. The Air Quality Management Plan (AQMP) is the region's plan for improving air quality in the region. It addresses the CAA and CCAA requirements and demonstrates attainment with ambient air quality standards. The AQMP is prepared by the SCAQMD and the Southern California Association of Governments (SCAG). The AQMP provides policies and control measures that reduce emissions to attain both State and federal ambient air quality standards by their applicable deadlines. Environmental review of individual projects within the SCAB must demonstrate that daily construction and operational emissions thresholds, as established by the SCAB, would not be exceeded. The environmental review must also demonstrate that individual projects would not increase the number or severity of existing air quality violations.

The 2003 AQMP is the most recent air quality plan adopted by SCAQMD. SCAQMD adopted the 2003 AQMP on August 1, 2003. The 2003 AQMP updates the attainment demonstration for the federal standards of ozone and respirable particulate matter, replaces the 1997 attainment demonstration for the federal carbon monoxide standard, provides a basis for a carbon monoxide maintenance plan for the future, and updates the maintenance plan for the federal nitrogen dioxide standard that SCAB has met since 1992. The 2003 AQMP also addresses several State and federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2003 AQMP is consistent with and builds upon the approaches taken in the 1997 AQMP and the 1999 Amendments to the Ozone SIP for SCAB.

National and State Ambient Air Quality Standards

As required by the CAA, the NAAQS have been established for six major air pollutants: carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide and lead. Pursuant to the CCAA, the State has also established ambient air quality standards, known as the California Ambient Air Quality Standards (CAAQS). These standards are generally more stringent than the corresponding federal

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[4] *California Air Resources Board, Proposed Area Designations and Maps, September 2000.*

standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. Since the CAAQS are more stringent than the NAAQS, the CAAQS are used as the comparative standard in the air quality analysis contained in this analysis.

Both State and federal standards are summarized below in Table V.B-1 on page V.B-7. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare.

Existing Air Quality

Air Pollution Climatology

The Project Site is located within the Los Angeles County portion of the SCAB. The SCAB is an area of high air pollution potential due to its climate and topography. The SCAB is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of its perimeter. The City of Malibu is typical of some of the SCAB's best air quality areas because of its location along the coast, upwind from most mobile and stationary sources. Ambient pollution concentrations are typically higher in the San Gabriel Valley and near Riverside, at the foot of the San Gabriel Mountains.

The SCAB experiences frequent temperature inversions. Inversions are a critical factor in the degradation of air quality in the region. Temperature typically decreases with height. However, under inversion conditions, temperature increases as altitude increases, thereby preventing air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created due to the interaction between the ocean surface and the lower layer of the atmosphere. This interaction creates a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and NO_2 react under strong sunlight, creating pollution, commonly referred to as smog. Light daytime winds, predominantly from the west, further aggravate the condition by driving air pollutants inland, toward the mountains.

During the fall and winter, air quality problems are created due to CO and NO_2 emissions. CO concentrations are generally worse in the morning and late evening (around 10:00 p.m.). Morning levels are relatively high due to the large number of cars during the commute and colder temperatures. The high levels during the late evenings are a result of stagnant atmospheric conditions trapping CO in the area. Since CO is produced almost entirely from automobiles, the highest CO concentrations in SCAB are associated with heavy traffic. NO_2 levels are also generally higher during autumn or winter days, particularly on days with summer-like conditions.

Table V.B-1
State and National Ambient Air Quality Standards

Pollutant	Averaging Period	California Standard	Federal Standards	
			Primary	Secondary
Ozone (O_3)	1 hour	0.09 ppm (180 µg/m^3)	0.12 ppm (235 µg/m^3)	Same as Primary Standard
	8 hour	--	0.08 (157 µg/m^3)	
Respirable Particulate Matter (PM_{10})	24 hour	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m^3	50 µg/m^3)	
Carbon Monoxide (CO)	8 hour	9.0 (10 mg/ m^3)	9.0 (10 mg/ m^3)	None
	1 hour	20 (23 mg/ m^3)	35 ppm (40 mg/ m^3)	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	--	0.053 ppm (100 µg/m^3)	Same as Primary Standard
	1 hour	0.25 ppm (470 µg/m^3)	--	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	--	0.03 ppm (80 µg/m^3)	--
	24 hour	0.04 ppm (105 µg/m^3)	0.14 (365 µg/m^3)	--
	3 hour	--	--	0.5 ppm (1300 µg/m^3)
	1 hour	0.25 655 µg/m^3)	--	--

Source: California Air Resources Board, Federal and State Air Quality Standards, July 9, 2003.

Local Climate

The SCAB lies in the semi-permanent high pressure zone of the eastern Pacific (Pacific High), resulting in a mild climate tempered by cool sea breezes with light average wind speeds. This usual mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The mountains and hills within the area contribute to the variation of rainfall, temperature, and winds throughout the region.

The summer climate in the City of Malibu is strongly influenced by stable air flowing out of the Pacific High to the west. During the Malibu winter, the Pacific High migrates south, putting the City on the fringe of the influence of a low pressure cell. The combined effect of these meteorologic and oceanographic systems is a tempering of local weather such that extremes of wind, temperature and precipitation are relatively uncommon.

Skies are mostly clear from mid-summer through autumn. Heavy cloud cover and fog occur primarily during spring and early summer when stratus clouds associated with the marine layer move in from the west. Compared to other locations of the same latitude and climate in the SCAB, Malibu summers are generally cooler with temperatures in the upper 60s to low 70s. Winters tend to be mild within the range of the upper 50s to low 60s. Precipitation occurs mostly during the winter and relatively infrequently during the summer. Total precipitation in the project area averages approximately 17.3 inches annually.

Precipitation averages approximately 10.4 inches during the winter and approximately 0.2 inch during the summer.[5]

Within the Project Site and its vicinity, the average wind speed, as recorded at the West Los Angeles Wind Monitoring Station, is approximately 3.4 miles per hour (mph), with calm winds occurring approximately 19 percent of the time. Wind in the vicinity of the Project Site predominately blows from the southwest.[6]

Air Monitoring Data

SCAQMD monitors air quality conditions at 37 locations throughout the SCAB. The Project Site is located in SCAQMD's Northwest Los Angeles County Coastal Air Monitoring Area (No. 2), which is served by the West Los Angeles - VA Hospital Monitoring Station, located at the intersection of Wilshire Boulevard and Sawtelle Boulevard in the City of Los Angeles (Figure V.B-1). The West Los Angeles - VA Hospital Monitoring Station is approximately 13 miles from the Project Site. Criteria pollutants monitored at the West Los Angeles - VA Hospital Monitoring Station includes O_3, CO, and NO_2. The monitoring station does not monitor SO_2 and PM_{10}. The Hawthorne Monitoring Station, located at 5234 West 120th Street in Hawthorne, is within the same general forecast area as the Project Site. The Hawthorne Monitoring Station monitors these two pollutants.[7] The Hawthorne Monitoring Station is approximately 19 miles from the Project Site. Historical data from the West Los Angeles - VA Hospital and Hawthorne Monitoring Stations were used to characterize existing conditions within the vicinity of the Project Site and to establish a baseline for estimating future conditions with and without the Proposed Project.

Table V.B-2, below, shows the number of violations recorded at Monitoring Station No.2 during the 2001-2003 period. The CAAQS for the criteria pollutants are also shown in the table. As Table V.B-2 indicates, criteria pollutants CO, NO_2, and SO_2 did not exceed the CAAQS during the 2001-2003 period. However, O_3 exceeded the State standard one to 11 times and PM_{10} exceeded the State standard 18 to 71 times during the same period.

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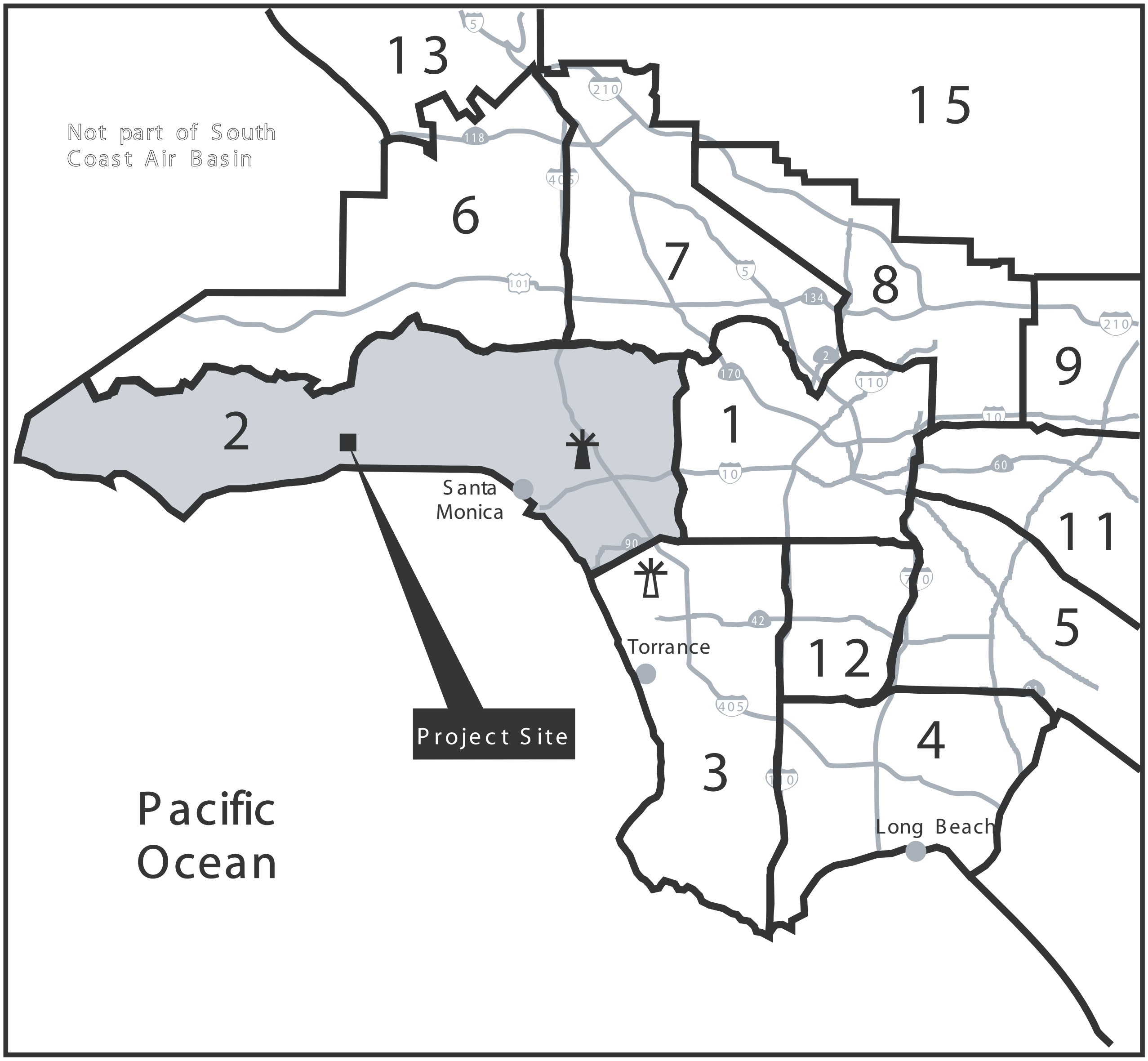
[5] *Western Regional Climate Center, 2001.*

[6] *Based on data from the West Los Angeles wind monitoring station (see Appendix C).*

[7] *General forecast areas are larger groupings of more specific air monitoring areas.*



LEGEND:

West Los Angeles Monitoring Station

Hawthorne Monitoring Station

Air Monitoring Areas in Los Angeles County:

1. Central Los Angeles
2. Northwest Coastal
3. Southwest Coastal
4. South Coastal
5. Southeast Los Angeles County
6. West San Fernando Valley
7. East San Fernando Valley
8. West San Gabriel Valley
9. East San Gabriel Valley
10. Pomona/Walnut Valley
11. South San Gabriel Valley
12. South Central Los Angeles
13. Santa Clarita Valley
14. Antelope Valley
15. San Gabriel Mountains

N

Approx. Scale

0 3.0 6.0 9.0 Miles

Source: South Coast Air Quality Management District, Air Monitoring Areas Map, 1989, and Terry A. Hayes Associates LLC, January 2005.

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Figure V.B-1
Air Quality Monitoring Stations

Table V.B-2
2001-2003 Criteria Pollutant Violations – West Los Angeles-VA Hospital and Hawthorne Monitoring Stations[a]

Pollutant	State Standard	Number of Days Above State Standard		
		2001	2002	2003
Ozone (O_3)	0.09 ppm (1-hour)	1	1	11
Carbon Monoxide(CO)	9.0 ppm (8-hour average)	0	0	0
Nitrogen Dioxide(NO_2)	0.25 ppm (1-hour)	0	0	0
Sulfur Dioxide(SO_2)	0.04 ppm (24-hour average)	0	0	0
Particulates (PM_{10})	50 µg/m^3 (24-hour average)	48	71	18

[a] Data for ozone, carbon monoxide, and nitrogen dioxide were taken at the West Los Angeles-VA Hospital Monitoring Station. Data for sulfur dioxide and PM_{10} were taken at the Hawthorne Monitoring Station.

Source: California Air Resources Board (see Appendix C).

Background Carbon Monoxide Conditions

Carbon monoxide concentrations are typically used as an indicator of conformity with the CAAQS because: (1) CO levels are directly related to vehicular traffic volumes, the main source of air pollutants and (2) localized CO concentrations and characteristics can be modeled using USEPA and SCAQMD methods. In other words, operational air quality impacts associated with a project are generally best reflected through estimated changes in CO concentrations.

For purposes of this assessment, the ambient, or background, CO concentration is first established. SCAQMD defines the ambient CO concentration as the highest eight-hour reading over the past three years. A review of data from the West Los Angeles - VA Hospital Monitoring Station for the 2001-2003 period indicates that the average eight-hour background concentration is approximately 3.2 ppm (see Appendix C). Assuming a persistence factor of 0.6, the estimated one-hour background concentration is approximately 5.3 ppm.[8] The existing eight- and one-hour background concentrations in the project vicinity do not exceed the State CO standards of 9.0 ppm and 20.0 ppm, respectively.

Existing Carbon Monoxide Concentrations at Project Area Intersections

There is a direct relationship between traffic/circulation congestion and CO impacts since exhaust fumes from vehicular traffic is the primary source of CO. CO is a localized gas that dissipates very quickly under normal meteorological conditions. Therefore, CO concentrations decrease substantially as distance

[8] *Persistence factor is the ratio between the eight- and one-hour CO concentrations measured at a continuous air monitoring station. A persistence factor of 0.6 is typically used in suburban areas.*

from the source (intersection) increases. The highest CO concentrations are typically found along sidewalks directly adjacent to congested roadway intersections.

To provide a "worst-case" simulation of CO concentrations within the area that might be affected by the Proposed Project, CO concentrations were modeled at sidewalks adjacent to five study intersections for weekday conditions and two intersection locations for weekend conditions, where future traffic volumes are anticipated to experience LOS E or F traffic conditions under "Project" conditions.[9] The existing modeled CO concentrations for the five selected study intersection locations for weekday conditions and weekend conditions are identified in Tables V.B-3 and V.B-4, respectively. As shown in Tables V.B-3 and V.B-4, one-hour CO concentrations range from approximately 6.5 ppm to 8.4 ppm during the weekday and from approximately 7.4 ppm to 7.9 ppm during the weekend. Eight-hour CO concentrations range from approximately 3.9 ppm to 5.1 ppm during the weekday and approximately 4.5 ppm to 4.8 ppm during the weekend. Presently, none of the study intersections exceed the State one- and eight-hour CO standard of 20.0 ppm and 9.0 ppm, respectively.

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The following people are most likely to be affected by air pollution, as identified by California Air Resources Board (CARB): children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. Locations that may contain a high concentration of these sensitive population groups are called sensitive receptors and include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks.

Table V.B-3
Existing Weekday Carbon Monoxide Concentrations[a]

Intersection	Parts Per Million	
	1-hour	**8-hour**
Malibu Canyon Road/Pacific Coast Highway	7.4	4.5
Webb Way/Pacific Coast Highway	7.3	4.4
Cross Creek Road/Pacific Coast Highway	8.0	4.8
Topanga Canyon Road/Pacific Coast Highway	8.4	5.1
Webb Way/Civic Center Road	6.5	3.9
State Standard	**20.0**	**9.0**

[a] All concentrations include one- and eight-hour ambient concentrations of 5.3 ppm and 3.2 ppm, respectively.
Source: Terry A. Hayes Associates, LLC, January 2005 (see Appendix C).

[9] *Level of service is used to indicate the quality of traffic flow on roadway segments and at intersections. Level of service ranges from A (free flow, little congestion) to F (forced flow, extreme congestion).*

Table V.B-4
Existing Weekend Carbon Monoxide Concentrations[a]

Intersection	Parts Per Million	
	1-hour	8-hour
Webb Way/Pacific Coast Highway	7.43	4.46
Cross Creek Road/Pacific Coast Highway	7.93	4.76
State Standard	**20.0**	**9.0**

[b] All concentrations include one- and eight-hour ambient concentrations of 5.3 ppm and 3.2 ppm, respectively.
Source: Terry A. Hayes Associates, LLC, January 2005 (see Appendix C).

Four sensitive receptor land uses have been identified within one-quarter mile of the Project Site. These sensitive receptors include residences north of Project Site, Papa Jack's Skate Park, Colin McEwin High School, and St. John's Malibu - Urgent Care. Each of these receptors are mapped in relation to the project site in Figure V.B-2.

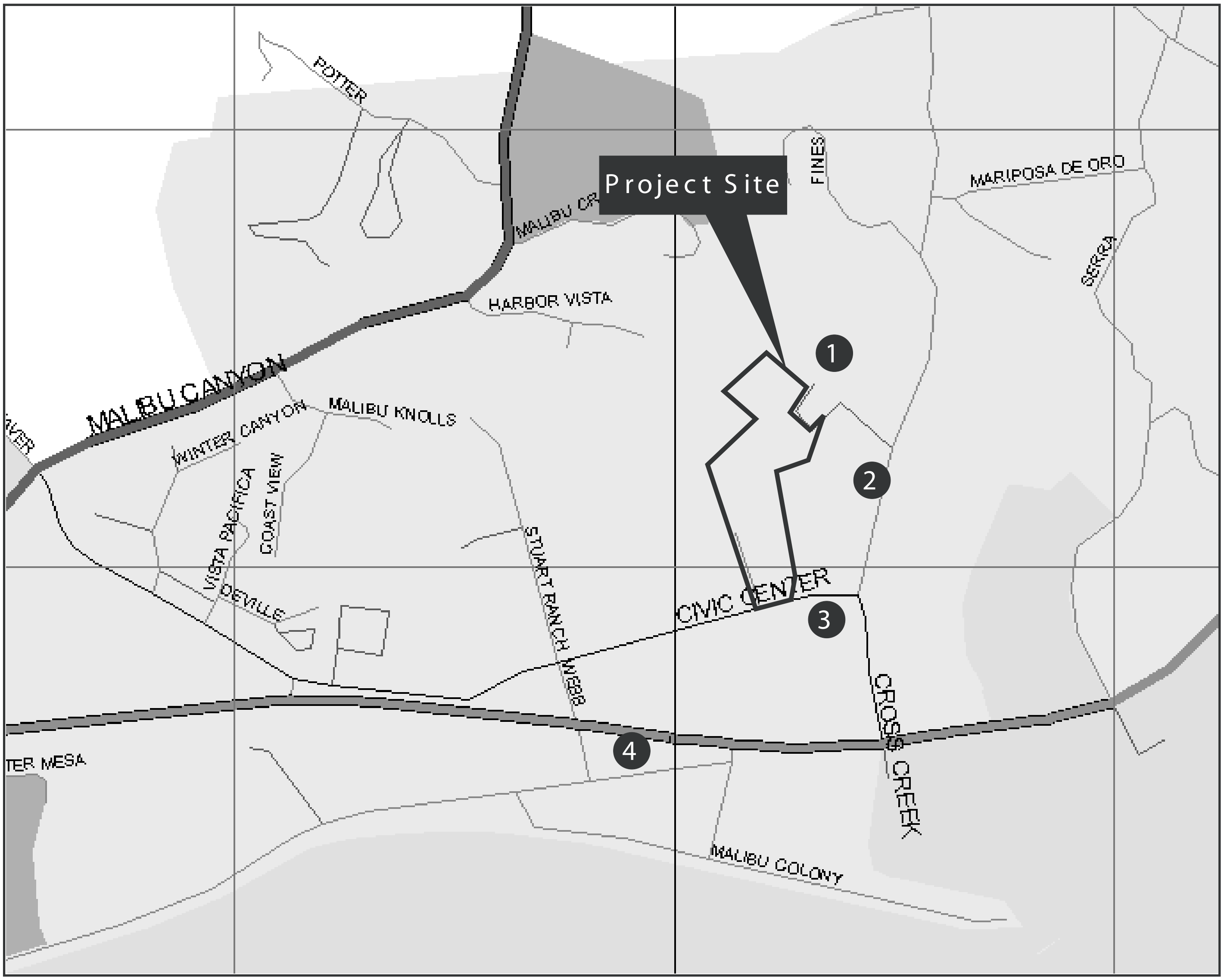
For purposes of providing a worst-case analysis, CO concentrations have been modeled at sidewalk locations adjacent to study area intersections that are anticipated to have LOS E or F under "Project" conditions. Since CO is a localized gas that disperses quickly, concentrations are highest within close proximity to intersections. Concentrations at specific sensitive receptors will be substantially lower than those concentrations immediately adjacent to intersections.

ENVIRONMENTAL IMPACTS

Methodology

This air quality analysis is consistent with the methods described in the SCAQMD California Environmental Quality Act (CEQA) Handbook (1993 edition). The following calculation methods and estimation models were used to determine air quality impacts: SCAQMD construction emissions calculation formulas, CARB's EMFAC2002 emissions factor model, and USEPA's CAL3QHC dispersion model. The Proposed Project does not contain any lead, hydrogen sulfide, or sulfates emissions sources. Therefore, emissions and concentrations related to these pollutants are not included in this analysis.[10]

[10] *Prior to 1978, mobile emissions were the primary source of lead resulting in air concentrations. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95 percent. Currently, industrial sources are the primary source of lead resulting in air concentrations. Since the Proposed Project does not contain an industrial component, lead emissions are not analyzed in this report.*



LEGEND:

1. Single-Family Residences north of Project Site
2. Papa Jack's Skate Park
3. Colin McEwin High School
4. St. John's Malibu Urgent Care

Source: Terry A. Hayes Associates LLC, January 2005.

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Figure V.B-2
Air Quality Sensitive Receptor Locations

Thresholds of Significance

Construction Thresholds of Significance

The Proposed Project would have a significant impact if:

- Daily construction emissions were to exceed the SCAQMD construction emissions thresholds for CO, ROG, NO_x, SO_X, or PM_{10} (see Table V.B-5, below).

Table V.B-5
SCAQMD Daily Emissions Thresholds

Criteria Pollutant	Construction (lbs/day)	Operations(lbs/day)
Carbon Monoxide (CO)	550	550
Reactive Organic Gas (ROG)	75	55
Nitrogen Oxides (NO_x)	100	55
Sulfur Oxides (SO_x)	150	150
Particulates (PM_{10})	150	150
Source: South Coast Air Quality Management District.		

Operations Thresholds of Significance

The Proposed Project would have a significant impact if:

- Daily operational emissions were to exceed SCAQMD operational emissions thresholds for CO, ROG, NO_x, SO_X, or PM_{10} (see Table V.B-5, above).

- Project-related traffic causes CO concentrations at study intersections to violate the CAAQS for either the one- or eight-hour period. The CAAQS for the one- and eight-hour periods are 20.0 ppm and 9.0 ppm, respectively. If CO concentrations currently exceed the CAAQS, then an incremental increase of 1.0 ppm over “No Project” conditions for the one-hour period would be considered a significant impact. An incremental increase of 0.45 ppm over the “No Project” conditions for the eight-hour period would be considered significant.[11]

Project Impacts

Construction Impacts

Construction of the Proposed Project would generate pollutant emissions from the following construction activities: (1) grading and excavation, (2) construction workers traveling to and from Project Site, (3)

[11] *Consistent with the SCAQMD Regulation XIII definition of a significant impact.*

delivery and hauling of construction supplies and debris to and from the Project Site, (4) the fuel combustion by on-site construction equipment, and (5) architectural coating. These construction activities would temporarily create emissions of dusts, fumes, equipment exhaust, and other air contaminants. However, PM_{10} is the most significant source of air pollution from construction, particularly during site preparation and grading.

Table V.B-6 shows the estimated daily emissions associated with each construction phase of the Proposed Project, and the corresponding SCAQMD thresholds for construction emissions. Daily emissions were derived using the applicable emission factors and formulas found in the SCAQMD CEQA Air Quality Handbook, Appendix to Chapter 9. As shown, estimated daily construction emissions are not anticipated to exceed any of the SCAQMD thresholds. Therefore, construction-related impacts would be less than significant.

Daily PM_{10} emissions identified in Table V.B-6 below, assume proper implementation of SCAQMD Rule 403 (see discussion on "Fugitive Dust Abatement", below).[12] Implementation of Mitigation Measures 1 through 10 (see Mitigation Measures, below) would ensure proper implementation of Rule 403 and that construction-related impacts would remain less-than-significant.

Table V.B-6
Estimated Daily Construction Emissions for the Proposed Project

Construction Phase	**Pounds per Day**				
	CO	**ROG**	**NO_x**	**SO_x**	**PM_{10}[a]**
SCAQMD Threshold	**550**	**75**	**100**	**150**	**150**
Grading/Excavation	25	4	49	3	98
Foundation	11	2	18	1	18
Finishing	5	14	1	<1	<1
Maximum	25	14	49	3	98
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**

[a] Assumes proper implementation of SCAQMD Rule 403. See Mitigation Measures.
Source: Terry A. Hayes Associates, LLC, January 2005 (see Appendix C).

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[12] *Implementation of Rule 403 is estimated to reduce dust and PM_{10} emissions by approximately 62 percent during the grading/excavation phase for the Proposed Project. The larger reduction in PM_{10} emissions during the grading phase is due to the heightened level of activity that would occur during this phase, which includes the use of construction vehicles, earthmoving activities, and haul truck trips. The resulting daily PM_{10} emissions, shown in Table V.B-6, would not exceed the SCAQMD significance threshold of 150 pounds per day.*

Fugitive Dust Abatement

The Proposed Project is subject to the provisions of SCAQMD Rule 403-Fugitive Dust. Rule 403 applies to any activity or man-made condition capable of generating fugitive dust. Rule 403 requires the use of best available control measures to suppress fugitive dust emissions. The requirements of Rule 403 that are applicable to the Proposed Project are as follows:

(1) A person shall not cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source.

(2) A person conducting active operations within the boundaries of the South Coast Air Basin shall utilize one or more of the applicable best available control measures to minimize fugitive dust emissions from each fugitive dust source type which is part of the active operation.

(3) Any person in the South Coast Air Basin shall:

(A) Prevent or remove within one hour the track-out of bulk material onto public paved roadways as a result of their operations; or

(B) Take at least one of the actions listed in Table V.B-7 and:

(i) Prevent the track-out of bulk material onto public paved roadways as a result of their operations and remove such material at anytime track-out extends for a cumulative distance of greater than 50 feet on to any paved public road during active operations; and

(ii) Remove all visible roadway dust tracked-out upon public paved roadways as a result of active operations at the conclusion of each work day when active operations cease.[13]

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[13] *See Appendix C for the complete text of SCAQMD Rule 403.*

Table V.B-7
SCAQMD Rule 403 – Track-Out Control Options

Control Options	
(1)	Pave or apply chemical stabilization and sufficient concentration and frequency to maintain a stabilized surface starting from the point of intersection with the public paved surface, and extending for a centerline distance of at least 100 feet and a width of at least 20 feet.
(2)	Pave from the point of intersection with the public paved road surface, and extending for a centerline distance of at least 25 feet and a width of at least 20 feet, and install a track-out control device immediately adjacent to the paved surface such that existing vehicles do not travel on any unpaved road surface after passing through the track-out control device.
(3)	Any other control measures approved by the Executive Officer and the USEPA as equivalent to the methods specified in this table may be used.
Source: South Coast Air Quality Management District, Rule 403 – Fugitive Dust, Table 3, Appendix E.	

For purposes of this analysis it is assumed that all applicable laws and regulations referenced above would be implemented. As such, project construction related impacts would be less than significant.

Operational Impacts

Regional Impacts

Motor vehicles would be the predominate source of long-term emissions for the Proposed Project. According to the Project Traffic Study (see Section V.K, Transportation and Circulation), the Proposed Project is anticipated to generate an additional ~~2,863~~2,850 daily vehicle trips during the weekday and ~~2,241~~2,250 daily vehicle trips during the weekend.

Mobile emissions were estimated using trip generation statistics, average trip length statistics, and CARB emission factors. The results, shown in Table V.B-8, indicate that the Proposed Project would not exceed any of the SCAQMD significance thresholds for criteria pollutants; therefore, long-term emissions impacts would be less than significant.

Table V.B-8
Proposed Project Daily Emissions

Pollutants	Pounds per Day				
	CO	ROG	NO_x	SO_x	PM_{10}
Weekday	214	24	46	<1	2
Weekend	167	18	36	<1	1
SCAQMD Threshold	**550**	**55**	**55**	**150**	**150**
Source: Terry A. Hayes Associates LLC, January 2005 (see Appendix C).					

Localized Impacts

Overall, CO concentrations in year 2007 are expected to be lower than existing conditions due to stringent State and federal mandates for lowering vehicle emissions. Although traffic volumes would be higher in the future both with and without implementation of the Proposed Project,[14] CO emissions from vehicles are expected to be much lower due to technological advances in vehicle emissions systems, as well as from normal turnover in the vehicle fleet. In other words, increases in traffic volumes are expected to be offset by increases in cleaner-running cars as a percentage of the entire vehicle fleet on the road.

The USEPA CAL3QHC micro-scale dispersion model was used to calculate CO concentrations for year 2007 "No Project" and "Proposed Project" conditions. Weekday CO concentrations at the study intersections are shown in Table V.B-9. Weekend CO concentrations at the study intersections are shown in Table V.B-10. As indicated, one-hour CO concentrations under "Proposed Project" conditions would range from approximately 5.4 ppm to 7.1 ppm during the weekday and from approximately 6.1 ppm to 6.6 ppm during the weekend at worst-case sidewalk receptors. "Proposed Project" eight-hour CO concentrations are anticipated to range from approximately 3.3 ppm to 4.3 ppm during the weekday and from approximately 3.7 ppm to 4.0 ppm during the weekend. The State one- and eight-hour standards of 20.0 ppm and 9.0 ppm, respectively, would not be exceeded at worst-case sidewalk receptor locations at the study intersections under "Proposed Project" conditions. Thus, less-than-significant impacts are anticipated.

CO is a gas that disperses quickly. Thus, CO concentrations at sensitive receptor locations are expected to be much lower than CO concentrations at sidewalks that adjoin roadway intersections, which are the model in this analysis. Additionally, the sidewalk locations modeled in this analysis were selected because the sidewalks adjoin intersections that have the worst LOS under project conditions.[15] Sensitive receptors that are located away from the sidewalk locations or are located near roadway intersections with better LOS are expected to have lower CO concentrations. As shown in Tables V.B-9 and V.B-10, CO concentrations would not exceed the State one- and eight-hour standards at the analyzed sidewalk locations. Thus, no significant increases in CO concentrations at sensitive receptor locations are expected, and no significant impacts would occur with implementation of the Proposed Project.

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[14] *Draft Traffic and Circulation Study for the Malibu La Paz Project, KAKU Associates, Inc., December 2004.*

[15] *Level of service is used to indicate the quality of traffic flow on roadway segments and at intersections. Level of service ranges from LOS A (free flow, little congestion) to LOS F (forced flow, extreme congestion). The study intersections that are analyzed in this report are anticipated to have LOS of E or F under "Project" conditions.*

Consistency with the Air Quality Management Plan (AQMP)

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the South Coast Air Quality Management District's CEQA Air Quality Handbook. These indicators are discussed below.

- **Consistency Criterion No. 1:** The proposed project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

Table V.B-9
2007 Weekday Carbon Monoxide Concentrations[a]

Intersection	1-hour (parts per million)		8-hour (parts per million)	
	No Project	Proposed Project	No Project	Proposed Project
Malibu Canyon Road/Pacific Coast Highway	6.7	6.7	4.0	4.0
Webb Way/Pacific Coast Highway	6.0	6.3	3.6	3.8
Cross Creek Road/Pacific Coast Highway	6.7	6.7	4.0	4.0
Topanga Canyon Road/Pacific Coast Highway	7.1	7.1	4.3	4.3
Webb Way/Civic Center Road	5.6	5.4	3.4	3.3
State Standard	**20.0**		**9.0**	

[b] CO concentrations include year 2007 one- and eight-hour ambient concentrations of 4.3 ppm and 2.6 ppm, respectively.
Source: Terry A. Hayes Associates, LLC, January 2005 (see Appendix C).

Table V.B-10
2007 Weekend Carbon Monoxide Concentrations[a]

Intersection	1-hour (parts per million)		8-hour (parts per million)	
	No Project	Proposed Project	No Project	Proposed Project
Webb Way/Pacific Coast Highway	6.1	6.1	3.7	3.7
Cross Creek Road/Pacific Coast Highway	6.6	6.6	4.0	4.0
State Standard	**20.0**		**9.0**	

[c] CO concentrations include year 2007 one- and eight-hour ambient concentrations of 4.3 ppm and 2.6 ppm, respectively.
Source: Terry A. Hayes Associates, LLC, January 2005 (see Appendix C).

The violations to which Consistency Criterion No. 1 refers are the CAAQS. The SCAQMD has identified CO as the best indicator pollutant for determining whether air quality violations would occur since it is most directly related to automobile traffic. The CO analysis in "Localized Impacts" (above) indicates that the Proposed Project would not exacerbate existing violations of the State one- and eight-hour CO concentration standards, and that no significant adverse impacts are anticipated. Therefore, the Proposed Project complies with Consistency Criterion No. 1, and no impacts would occur with respect to this threshold of significance.

- **Consistency Criterion No. 2:** The proposed project will not exceed the assumptions in the AQMP in 2010 or increments based on the year of project build-out phase.

The AQMP growth assumptions are generated by SCAG. SCAG derives its assumptions, in part, based on the General Plans of cities located within the SCAG region. Therefore, if a project does not exceed the growth projections in the General Plan, then it is consistent with the growth assumptions in the AQMP.

The City of Malibu General Plan designates the Project Site as CC (Community Commercial). The Proposed Project would construct retail and office uses, as well as a City Hall, on the Project Site, which is considered to be consistent with the City of Malibu General Plan. Since the Proposed Project is consistent with the City of Malibu General Plan, it is assumed that implementation of the Proposed Project would not exceed the growth projections in the General Plan or the growth projections established by SCAG. Thus, the Proposed Project complies with Consistency Criterion No. 2, and no impacts would occur with respect to this threshold.

CUMULATIVE IMPACTS

Fourteen related projects have been identified within the area that may be affected by the Proposed Project. Using SCAQMD daily emissions thresholds for individual development projects, cumulative emissions thresholds were calculated (by multiplying each criteria pollutant threshold by the total number of individual projects) to establish a baseline from which to evaluate cumulative project emissions. Tables V.B-11 and V.B-12, below, show the criteria pollutant emissions for the related projects during the weekday and weekend (respectively). Criteria pollutant emissions from all related projects, as well as emissions from the Proposed Project, were estimated using trip generation statistics, average trip length statistics, and CARB emission factors.

As indicated in Tables V.B-11 and V.B-12, the 14 related projects in combination with the Proposed Project (No. 15) are not anticipated to exceed any of the cumulative SCAQMD operational emissions thresholds. Additionally, as discussed previously, the Proposed Project is not anticipated to exceed any of the SCAQMD operational emissions thresholds. Thus, the Proposed Project would not significantly contribute to cumulative emissions.

Table V.B-11
Cumulative Weekday Project Operational Impact Analysis

Project	Pounds per Day				
	CO	ROG	NO_x	SO_x	PM_{10}
1. Rancho Malibu Hotel	115	13	25	<1	1
2. Pepperdine University Upper Campus	92	10	20	<1	1
3. Forge Lodge	19	2	4	<1	<1
4. Pepperdine Office Development	71	8	15	<1	1
5. Proposed Senior Housing	11	1	2	<1	<1
6. Single Family Housing Development	6	1	1	<1	<1
7. Adamson Self-Storage	11	1	2	<1	<1
8. Shultz	100	11	21	<1	1
9. Yamaguchi	219	24	47	<1	2
10. Residential	4	<1	<1	<1	<1
11. Office	21	2	5	<1	<1
12. ~~Malibu~~ Pierview	83	9	18	<1	1
13. Windsail	52	6	11	<1	<1
14. Office	17	2	4	<1	<1
15. La Paz –Proposed Project	214	24	46	<1	2
Total Emissions	**1,035**	**49**	**219**	**2**	**9**
Cumulative SCAQMD Thresholds[a]	**8,250**	**825**	**825**	**2,250**	**2,250**
Cumulative Project – Percent of Threshold	**13%**	**14%**	**27%**	**<1%**	**<1%**

[a] *Individual project threshold multiplied by the number of individual projects.*
Source: Terry A. Hayes Associates LLC, January 2005 (see Appendix C).

Table V.B-12
Cumulative Weekend Project Operational Impact Analysis

Project	Pounds per Day				
	CO	ROG	NO_x	SO_x	PM_{10}
1. Rancho Malibu Hotel	108	12	23	<1	1
2. Pepperdine University Upper Campus	69	8	15	<1	1
3. Forge Lodge	22	2	5	<1	<1
4. Pepperdine Office Development	12	1	3	<1	<1
5. Proposed Senior Housing	11	1	2	<1	<1
6. Single Family Housing Development	6	1	1	<1	<1
7. Adamson Self-Storage	10	1	2	<1	<1
8. Shultz	11	1	2	<1	<1
9. Yamaguchi	211	23	45	<1	2
10. Residential	5	1	1	<1	<1
11. Office	4	<1	1	<1	<1
12. Malibu Pier	90	10	19	<1	1
13. Windsail	52	6	11	<1	<1
14. Office	3	<1	1	<1	<1
15. La Paz –Proposed Project	167	18	36	<1	1
Total Emissions	**781**	**86**	**167**	**1**	**6**
Cumulative SCAQMD Thresholds[a]	**8,250**	**825**	**825**	**2,250**	**2,250**
Cumulative Project – Percent of Threshold	**9%**	**10%**	**20%**	**<1%**	**<1%**

[b] *Individual project threshold multiplied by the number of individual projects.*
Source: Terry A. Hayes Associates LLC, January 2005 (see Appendix C).

MITIGATION MEASURES

Construction Mitigation Measures

The following mitigation measures, as recommended by the SCAQMD, shall be implemented for all areas (both on-site and off-site) where construction would occur in order to reduce PM_{10} emissions to a less-than-significant level.

1. The construction area and vicinity (500-foot radius) shall be swept (preferably with water sweepers) and watered at least twice daily.

2. All unpaved roads, parking and staging areas shall be watered at least once every two hours of active operations.

3. Site access points shall be swept/washed of visible dirt deposition at the end of each workday.

4. On-site stockpiles of debris, dirt or rusty material shall be covered or watered at least twice daily.

5. All haul trucks hauling soil, sand, and other loose materials shall either be covered or maintain two feet of freeboard.

6. All haul trucks shall have a capacity of no less than twelve and three-quarter (12.75) cubic yard.

7. At least 80 percent of all inactive disturbed surface areas shall be watered on a daily basis when there is evidence of wind-driven fugitive dust.

8. Operations on any unpaved surfaces shall be suspended when winds exceed 25 mph.

9. Traffic speeds on unpaved roads shall be limited to 15 miles per hour.

10. Operations on any unpaved surfaces shall be suspended during first and second stage smog alerts.

Operational Mitigation Measures

No operational mitigation measures are required since operation of the Proposed Project would not exceed any of the SCAQMD significance thresholds or the State one- and eight-hour CO standards.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Construction

Implementation of the required mitigation measures is estimated to reduce PM_{10} emissions to approximately 85 ppd during the grading phase of the Proposed Project. PM_{10} emissions would not exceed the SCAQMD threshold of 150 ppd under Proposed Project conditions. Thus, a less-than-significant impact would occur.

Operations

Operation of the Proposed Project would not exceed any of the SCAQMD significance thresholds or the State one- and eight-hour CO standards. Thus, a less-than-significant impact would occur.