3.14 Air Quality

The information in this section is based on the MCP *Air Quality Analysis* (LSA Associates, Inc., 2008).

3.14.1 Regulatory Setting

The Clean Air Act as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), particulate matter (PM), lead (Pb), and sulfur dioxide (SO2).

Under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to State Implementation Plan for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air Act takes place on two levels—first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), and particulate matter (PM). California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTP) are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as the Southern California Association of Governments (SCAG) for Southern California (Los Angeles, Orange, and portions of San Bernardino County and Western Riverside Counties) and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the RTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires "hot spot" analysis if an area is "nonattainment" or "maintenance" for carbon monoxide (CO) and/or particulate matter. A region is a "nonattainment" area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have recently met the standard are called "maintenance" areas. "Hot spot" analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA and CEQA purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in "nonattainment" areas the project must not cause any increase in the number and severity of violations. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

3.14.2 Affected Environment

3.14.2.1 Climatic Conditions

The project site is located in western Riverside County, an area within the South Coast Air Basin (Basin), which includes Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino Counties. Air quality regulation in the Basin is administered by the South Coast Air Quality Management District (SCAQMD), a regional agency created for the Basin.

The Basin climate is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern boundary, and high mountains surround the rest of the Basin. The region lies in the semipermanent high-pressure zone of the eastern Pacific. The resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, and Santa Ana wind conditions do occur.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than do inland areas. The climatological station closest to the MCP study area monitoring temperature is the Perris Station (station number 046816).[1] The annual average maximum temperature recorded at this station is 25.9°C (degrees Celsius) (78.7°F), and the annual average minimum is 7.4°C (45.3°F). January is typically the coldest month in this area of the Basin.

The majority of rainfall in the Basin occurs between November and April. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin along the coastal side of the mountains. The climatological station closest to the project area that monitors precipitation is the Perris Station. Average rainfall measured at this station varied from 4.90 centimeters (cm) (1.93 inches [in]) in February to 0.89 cm (0.35 in) or less between May and October, with an average annual total of 26.47 cm (10.42 in). Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The Basin experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed from midafternoon to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by midmorning.

Winds in the vicinity of the project area blow predominantly from the east-southeast at relatively low velocities. Wind speeds in the project area average about 6.4 kilometers per hour (kph) (4 miles per hour [mph]). Summer wind speeds average slightly higher than winter wind speeds. Low average wind speeds together with a persistent temperature inversion limit the vertical dispersion of air pollutants throughout the Basin. Strong, dry, northerly or northeasterly winds, known as Santa Ana winds, occur during the fall and winter months, dispersing air contaminants. The Santa Ana conditions tend to last for several days at a time.

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1 Western Regional Climatic Center. 2006. www.wrcc.dri.edu (accessed November 2006).

Inversion layers have a substantial role in determining ozone (O_3) formation. Ozone and its precursors will mix and react to produce higher concentrations under an inversion. The inversion will also simultaneously trap and hold directly emitted pollutants such as CO. PM_{10} (particulate matter with a diameter of 10 microns or smaller) is both directly emitted and created indirectly in the atmosphere as a result of chemical reactions. Concentration levels are directly related to inversion layers due to the limitation of mixing space.

Surface or radiation inversions are formed when the ground surface becomes cooler than the air above it during the night. The earth's surface goes through a radiative process on clear nights, when heat energy is transferred from the ground to a cooler night sky. As the earth's surface cools during the evening hours, the air directly above it also cools, while air higher up remains relatively warm. The inversion is destroyed when heat from the sun warms the ground, which in turn heats the lower layers of air; this heating stimulates the ground level air to float up through the inversion layer.

The combination of stagnant wind conditions and low inversions produces the greatest concentration of pollutants. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are CO and oxides of nitrogen (NO_x) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_x to form photochemical smog.

3.14.2.2 Monitored Air Quality

The primary federal and state standards for pollutants are shown in Table 3.14.A. The MCP study area is located within SCAQMD jurisdiction. As shown in Figure 3.14.1, the SCAQMD maintains ambient air quality monitoring stations throughout the Basin. The air quality monitoring stations closest to the MCP study area are Perris (237½ North D Street, located within the MCP study area), Lake Elsinore (506 West Flint Street, approximately 14.5 kilometers [km] [9 miles (mi)] south of the MCP study area), and Riverside-Rubidoux (5888 Mission Boulevard, approximately 32 km [20 mi] north of the MCP study area). Air quality trends identified from data collected at these three air quality monitoring stations between 2002 and 2006 are listed in Tables 3.14.B, 3.14.C, and 3.14.D.

Table 3.14.A Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	**Method[4]**	**Primary[2,5]**	**Secondary[3,6]**	**Method[7]**
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 µg/m^3)		0.075 ppm (147 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 Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		–		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric 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	0.030 ppm (57 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (339 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 10 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 Chloride[8]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: California Air Resources Board, June 26, 2008.

See footnotes on next page.

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 8-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 the expected number of days per calendar year with a 24-hour average concentration above 150 mg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the 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] 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.

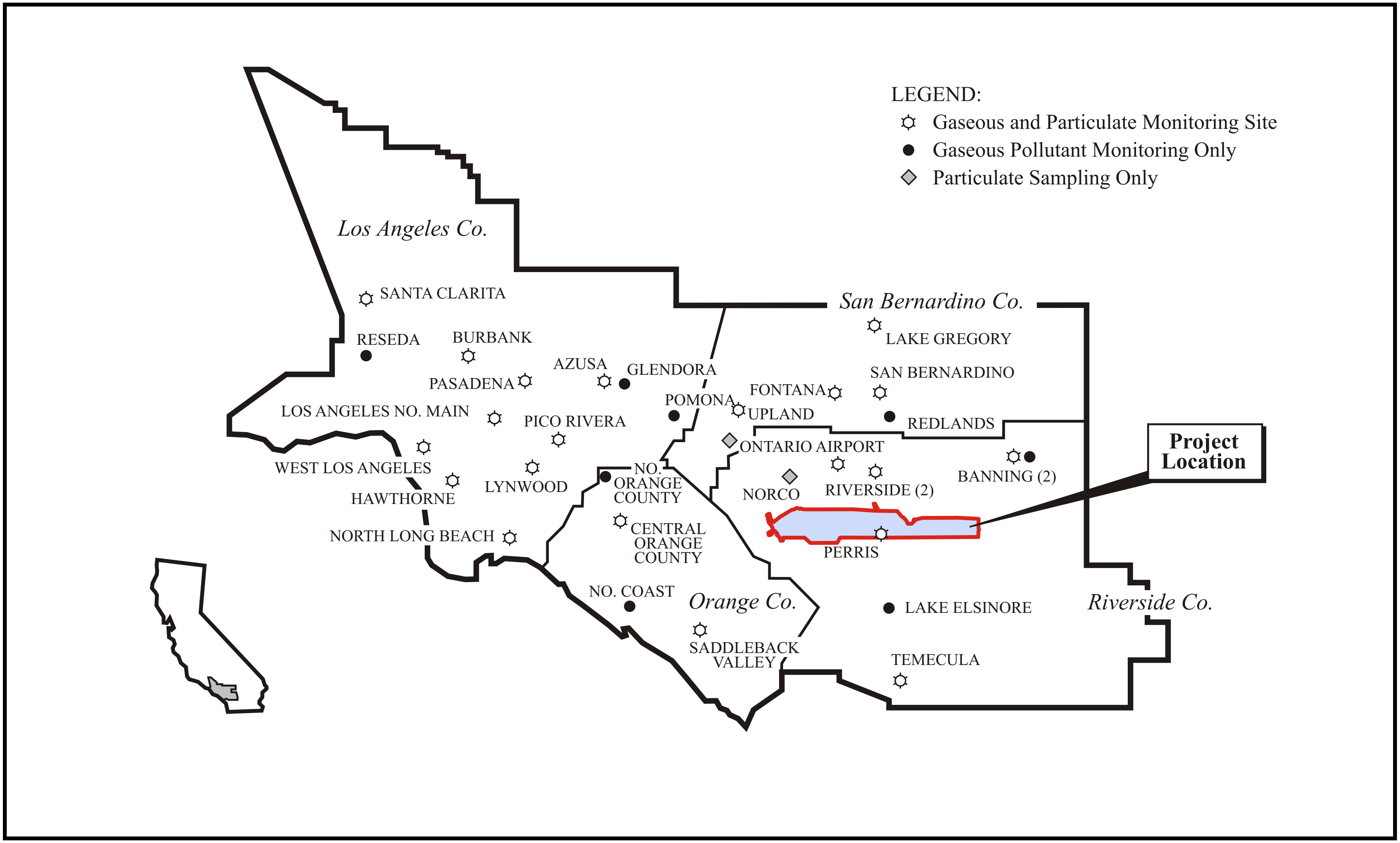

Figure 3.14.1

Legend

MCP Project Area

NO SCALE

SCAQMD Air Monitoring Network
Within the South Coast Air Basin
KP0.0/51.0 (PM 0.0/31.7) EA 08-0F3200

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Table 3.14.B Ambient Air Quality Monitored at the Perris Air Monitoring Station

Pollutant	Standard	2006	2005	2004	2003	2002
Carbon Monoxide (CO)						
Max 1-hr concentration (ppm)		NM	NM	NM	NM	NM
No. days exceeded: State . . . . Federal	> 20 ppm/1-hr > 35 ppm/1-hr	NM	NM	NM	NM	NM
Max 8-hr concentration (ppm)		NM	NM	NM	NM	NM
No. days exceeded: State . . . . Federal	> 9.1 ppm/8-hr > 9.5 ppm/8-hr	NM	NM	NM	NM	NM
Ozone (O_3)						
Max 1-hr concentration (ppm)		0.169	0.126	0.128	0.155	0.147
No. days exceeded: State	> 0.09 ppm/1-hr	77	11	36	67	59
Ozone (O_3)						
Max 8-hr concentration (ppm)		0.122	0.103	0.104	0.121	0.117
No. days exceeded: Federal	> 0.08 ppm/8-hr	53	3	20	46	39
Particulates (PM_{10})						
Max 24-hr concentration (ppm)		119	75	79	135	95
No. days exceeded: State . . . . Federal	> 50 μg/m^3 > 150 μg/m^3	18 0	18 0	15 0	17 0	21 0
Annual Arithmetic Average (μg/m^3)		37	37	43	43	43
Exceeded: State	> 20 μg/m^3	Yes	Yes	Yes	Yes	Yes
Particulates ($PM_{2.5}$)						
Max 24-hr concentration (ppm)		NM	NM	NM	NM	NM
No. days exceeded: Federal	> 65 μg/m^3	NM	NM	NM	NM	NM
Annual Arithmetic Average (μg/m^3)		NM	NM	NM	NM	NM
Exceeded: State . . . . Federal	> 12 μg/m^3 > 15 μg/m^3	NM NM	NM NM	NM NM	NM NM	NM NM
Nitrogen Dioxide (NO_2)						
Max 1-hr concentration (ppm): State	> 0.25 ppm/1-hr	NM	NM	NM	NM	NM
No. days exceeded		NM	NM	NM	NM	NM
Annual average concentration: Federal	0.053 ppm annual average	NM	NM	NM	NM	NM
No. days exceeded		NM	NM	NM	NM	NM

Source: *Air Quality Analysis,* LSA Associates, Inc., 2008.
hr = hour
NM = not monitored at this station
$PM_{2.5}$ = particulate matter with a diameter of 2.5 microns or smaller
PM_{10} = particulate matter with a diameter of 10 microns or smaller
ppm = parts per million
μg/m^3 = micrograms per cubic meter

Table 3.14.C Ambient Air Quality Monitored at the Lake Elsinore Air Monitoring Station

Pollutant	Standard	2006	2005	2004	2003	2002
Carbon Monoxide (CO)						
Max 1-hr concentration (ppm)		1.4	1.7	2.0	4.0	2.5
No. days exceeded: State . . . . Federal	> 20 ppm/1-hr > 35 ppm/1-hr	0 0	0 0	0 0	0 0	0 0
Max 8-hr concentration (ppm)		1.0	1.0	1.1	1.4	1.9
No. days exceeded: State . . . . Federal	> 9.1 ppm/8-hr > 9.5 ppm/8-hr	0 0	0 0	0 0	0 0	0 0
Ozone (O_3)						
Max 1-hr concentration (ppm)		0.142	0.149	0.130	0.154	0.139
No. days exceeded: State	> 0.09 ppm/1-hr	42	32	34	50	52
Ozone (O_3)						
Max 8-hr concentration (ppm)		0.109	0.119	0.113	0.137	0.114
No. days exceeded: Federal	> 0.08 ppm/8-hr	24	15	21	36	41
Particulates (PM_{10})						
Max 24-hr concentration (ppm)		NM	NM	NM	NM	NM
No. days exceeded: State . . . . Federal	> 50 μg/m^3 > 150 μg/m^3	NM	NM	NM	NM	NM
Annual Arithmetic Average (μg/m^3)		NM	NM	NM	NM	NM
Exceeded: State	> 20 μg/m^3	NM	NM	NM	NM	NM
Particulates ($PM_{2.5}$)						
Max 24-hr concentration (ppm)		NM	NM	NM	NM	NM
No. days exceeded: Federal	> 65 μg/m^3	NM	NM	NM	NM	NM
Annual Arithmetic Average (μg/m^3)		NM	NM	NM	NM	NM
Exceeded: State . . . . Federal	> 12 μg/m^3 > 15 μg/m^3	NM NM	NM NM	NM NM	NM NM	NM NM
Nitrogen Dioxide (NO_2)						
Max 1-hr concentration (ppm): State	> 0.25 ppm/1-hr	0.072	0.065	0.090	0.074	0.074
No. days exceeded		0	0	0	0	0
Annual average concentration: Federal	0.053 ppm annual average	0.015	0.014	0.015	0.018	0.017
No. days exceeded		0	0	0	0	0

Source: *Air Quality Analysis,* LSA Associates, Inc., 2008.
hr = hour
NM = not monitored at this station
$PM_{2.5}$ = particulate matter with a diameter of 2.5 microns or smaller
PM_{10} = particulate matter with a diameter of 10 microns or smaller
ppm = parts per million
μg/m^3 = micrograms per cubic meter

Table 3.14.D Ambient Air Quality Monitored at the Riverside-Rubidoux Air Monitoring Station

Pollutant	Standard	2006	2005	2004	2003	2002
Carbon Monoxide (CO)						
Max 1-hr concentration (ppm)		2.7	3.4	4.3	4.5	4.1
No. days exceeded: State . . . . Federal	> 20 ppm/1-hr > 35 ppm/1-hr	0 0	0 0	0 0	0 0	0 0
Max 8-hr concentration (ppm)		2.3	2.5	3.0	3.7	3.1
No. days exceeded: State . . . . Federal	> 9.1 ppm/8-hr > 9.5 ppm/8-hr	0 0	0 0	0 0	0 0	0 0
Ozone (O_3)						
Max 1-hr concentration (ppm)		0.151	0.144	0.141	0.169	0.155
No. days exceeded: State	> 0.09 ppm/1-hr	45	46	59	80	56
Ozone (O_3)						
Max 8-hr concentration (ppm)		0.117	0.129	0.114	0.140	0.124
No. days exceeded: Federal	> 0.08 ppm/8-hr	30	32	35	62	35
Particulates (PM_{10})						
Max 24-hr concentration (ppm)		109	123	137	164	130
No. days exceeded: State . . . . Federal	> 50 µg/m³ > 150 µg/m³	69 0	67 0	70 0	59 2	71 0
Annual Arithmetic Average (µg/m³)		52.7	50.4	53.5	55.1	56.2
Exceeded: State	> 20 µg/m³	Yes	Yes	Yes	Yes	Yes
Particulates ($PM_{2.5}$)						
Max 24-hr concentration (ppm)		68	99	92	104	78
No. days exceeded: Federal	> 65 µg/m³	1	4	5	8	8
Annual Arithmetic Average (µg/m³)		19.0	20.9	22.1	24.8	27.5
Exceeded: State . . . . Federal	> 12 µg/m³ > 15 µg/m³	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Nitrogen Dioxide (NO_2)						
Max 1-hr concentration (ppm): State	> 0.25 ppm/1-hr	0.076	0.077	0.092	0.099	0.098
No. days exceeded		0	0	0	0	0
Annual average concentration: Federal	0.053 ppm annual average	0.020	0.022	0.017	0.021	0.023
No. days exceeded		0	0	0	0	0

Source: *Air Quality Analysis,* LSA Associates, Inc., 2008.
hr = hour
NM = not monitored at this station
$PM_{2.5}$ = particulate matter with a diameter of 2.5 microns or smaller
PM_{10} = particulate matter with a diameter of 10 microns or smaller
ppm = parts per million
µg/m³ = micrograms per cubic meter

From the ambient air quality data listed, it can be seen that CO and NO_2 levels are below the relevant state and federal standards at the stations where these pollutants are monitored. One-hour ozone levels exceeded the State standard in each of the past 5 years. Eight-hour ozone levels exceeded the federal standard in each of the past 5 years. The PM_{10} levels in the MCP project area exceeded the state standards in each of the past 5 years and exceeded the federal PM_{10} standard in 2003. The federal 24-hour $PM_{2.5}$ standard was exceeded in each of the past 5 years. The federal and state annual $PM_{2.5}$ standards were also exceeded in each of the past 5 years.

Historical ambient air quality data are used to classify the attainment status for the Basin. More specifically, the data collected at the air quality monitoring stations are used by the United States Environmental Protection Agency (EPA) to identify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment 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 the 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 Basin's attainment status for each of the criteria pollutants is listed in Table 3.14.E.

Table 3.14.E Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
O_3 1-hour	Nonattainment	Revoked June 2005
O_3 8-hour	Not Established	Severe 17 Nonattainment
PM_{10}	Nonattainment	Serious Nonattainment[1]
$PM_{2.5}$	Nonattainment	Nonattainment[2]
CO	Attainment	Attainment/Maintenance[3]
NO_2	Attainment	Attainment/Maintenance
All others	Attainment/Unclassified	Attainment/Unclassified

Source: *Air Quality Analysis,* LSA Associates, Inc., 2008.

[1] In October 2006, the EPA, in its final rule revision, eliminated the annual PM_{10} standard.

[2] The $PM_{2.5}$ nonattainment designation is based on the 1997 standard. In 2006, the EPA revised the 24-hour standard. The 2006 $PM_{2.5}$ new standard of 35 $\mu g/m^3$ applies one year after the effective date of the new designation (April 2010).

[3] Effective June 11, 2007, the South Coast Air Basin was redesignated as attainment/maintenance for the federal CO standard.

$\mu g/m^3$ = micrograms per cubic meter
CO = carbon monoxide
EPA = United States Environmental Protection Agency
NO_2 = nitrogen dioxide
O_3 = ozone
PM_{10} = particulate matter with a diameter of 10 microns or smaller
$PM_{2.5}$ = particulate matter with a diameter of 2.5 microns or smaller

3.14.2.3 Regional Air Quality Conformity

The proposed project is in the 2008 RTP, which was found to conform by the FHWA/Federal Transit Administration (FTA) on June 5, 2008. The project is also included in the SCAG financially constrained 2006 Regional Transportation Improvement Program (RTIP), which was found to be conforming by the FHWA/FTA on October 2, 2006 (Project ID: RIV031218, CETAP – Mid County Parkway Corridor: complete environmental work/route alternatives (Phases 1 and 2) from SR79 in the east through Lake Mathews and Mead Valley to I-15). The design concept and scope of the proposed project is consistent with the project description in the 2008 RTP, the 2006 RTIP, and the assumptions in SCAG's regional emission analysis. Therefore, the MCP project is in conformance with the State Implementation Plan (SIP). The project will also comply with all SCAQMD requirements. A copy of the RTIP project listing is included in Appendix K. The RCTC has submitted updated project modeling information for use by SCAG in preparing and modeling the 2008 RTIP. The 2008 conformity determination will be included in the Final Environmental Impact Statement for the MCP project prior to approval of the Record of Decision.

3.14.2.4 Project Level Air Quality Conformity

Because the MCP project is within a nonattainment area for federal $PM_{2.5}$ and PM_{10} standards, a local hot-spot analysis for $PM_{2.5}$ (particulate matter with a diameter of 2.5 microns or smaller) and PM_{10} is required for conformity purposes. However, the EPA does not require hot-spot analyses, qualitative or quantitative, for projects that are not listed as a project of air quality concern (POAQC). POAQC includes new or expanded highway projects that have a substantial number of or an increase in diesel vehicles and projects in or affecting locations identified in the PM_{10} or $PM_{2.5}$ applicable implementation plan as sites of possible violation. As the MCP project will be constructing a new roadway, it may be a POAQC. Therefore, a detailed $PM_{2.5}$ and PM_{10} hot-spot analysis (LSA Associates, September 2007) was prepared and submitted to the Transportation Conformity Working Group (TCWG) on August 14, 2007, and reviewed by the working group on August 28, 2007. An updated version of the $PM_{2.5}$ and PM_{10} hot-spot analysis was submitted to the TCWG in March 2008. The project was approved and concurred upon by Interagency Consultation by the TCWG on March 24, 2008, as a project not having adverse impacts on air quality and that meets the requirements of Clean Air Act and 40 CFR 93.116.

3.14.3 Environmental Consequences

3.14.3.1 Permanent Impacts

Build Alternatives

Long-term Regional Emissions

The purpose of the MCP project is to provide a facility that would efficiently and effectively move people and goods between and through the cities of Corona, Perris, and San Jacinto. The MCP project is not expected to generate any additional traffic. Regional traffic trips would remain similar. Therefore, no new long-term regional emissions would result from implementation of the MCP project. The MCP project would improve traffic movement in the MCP study area, thereby lowering the total pollutants emitted by motor vehicles.

Long-term mobile emissions associated with the MCP Build Alternatives would be less than the No Build Alternatives due to improved traffic flow in the project area, with the same projected future trips in the project vicinity. However, emission reductions associated with such improvements are difficult to quantify. Therefore, no emission calculations are provided in this analysis for regional vehicular emissions.

Carbon Monoxide (CO)

CO is used as an indicator of a project's direct and indirect impact on local air quality because CO does not readily disperse in the local environment in cool weather when the wind is fairly still. The Caltrans *Transportation Project-Level Carbon Monoxide Protocol* (December 1997) was used to assess the project's impact on the local CO concentrations. Based on this protocol, a screening analysis was conducted to determine whether the MCP project would result in any CO hot spots. Localized emissions of CO may increase with implementation of the MCP project. However, as described in detail in the *Air Quality Analysis* (LSA Associates, Inc., 2008), none of the MCP Build Alternatives are expected to result in any concentrations exceeding the 1-hour or 8-hour CO standards. Therefore, the project has sufficiently addressed the CO impact, and no further analysis is needed.

Particulate Matter (PM_{10} and $PM_{2.5}$)

The MCP project is within a nonattainment area for the NAAQS for particulate matter (PM) less than 2.5 microns ($PM_{2.5}$) and less than 10 microns (PM_{10}) in size. Therefore, PM analyses are required for conformity purposes. A qualitative PM hot-spot analysis was conducted based on the EPA PM Qualitative Analysis Guidance for a project-level PM hot-spot analysis.

It is not expected that changes to $PM_{2.5}$ and PM_{10} emission levels associated with the proposed project would result in new violations of the federal air quality standards for the following reasons:

- The future truck traffic volumes along MCP would not exceed 10,000 average daily traffic (ADT).
- The ambient PM_{10} concentrations have not exceeded the 24-hour or annual federal standard within the past six years.
- Based on the projected PM_{10} concentrations listed in the 2003 Air Quality Management Plan (AQMP), the 24-hour PM_{10} concentrations would be 81 percent of the federal standard by 2015 and 38 percent of the federal standards by 2035.
- Based on the local monitoring data, the 24-hour $PM_{2.5}$ concentrations within the project area would be reduced to 38 to 57 percent of the federal standard by 2015 and 10 to 20 percent of the federal standard by 2035.
- Based on the local monitoring data, the annual average $PM_{2.5}$ concentrations within the project area would be reduced to 49 to 83 percent of the federal standard by 2015 and 10 to 18 percent of the federal standard by 2035.
- The project-related 3 to 6 percent increase in regional $PM_{2.5}$ and PM_{10} emissions would not result in any new exceedances of the federal standards in 2015 or 2035. The daily $PM_{2.5}$ and PM_{10} emissions within the project area are listed in Tables 3.14.F and 3.14.G, respectively.
- By 2035 the intersections within the proposed project area will be operating during the p.m. peak hour at level of service (LOS) C through F without improvements. The proposed build alternatives would improve the LOS to A through D.

For these reasons, future new or worsened $PM_{2.5}$ and PM_{10} violations of any standards are not anticipated; therefore, the project meets the conformity hot-spot requirements in 40 CFR 93-116 and 93-123 for both $PM_{2.5}$ and PM_{10}. On March 24, 2008, the project was approved and concurred upon by Interagency Consultation by the TCWG as a project not having adverse impacts on air quality and that meets the requirements of Clean Air Act and 40 CFR 93.116.

Table 3.14.F Daily $PM_{2.5}$ Emissions

Traffic Condition	Exhaust Emissions (lbs/day)	Tire Wear (lbs/day)	Brake Wear (lbs/day)	Road Dust (lbs/day)	Total (lbs/day)	Change from No Build (lbs/day)	Change from No Build (%)
Existing	876	76	141	7,414	8,508	-	-
2015 No Build	914	108	199	10,430	11,650	-	-
2015 Alt. 4	961	113	208	11,064	12,345	695	6.0
2015 Alt. 5	944	111	205	10,798	12,057	407	3.5
2015 Alt. 6	954	112	207	10,937	12,209	559	4.8
2015 Alt. 7	952	112	206	10,925	12,195	545	4.7
2015 Alt. 9	959	112	207	11,051	12,329	679	5.8
2035 No Build	883	135	249	13,044	14,310	-	-
2035 Alt. 4	926	141	260	13,837	15,164	853	6.0
2035 Alt. 5	911	139	256	13,505	14,811	500	3.5
2035 Alt. 6	920	140	259	13,678	14,997	686	4.8
2035 Alt. 7	918	140	258	13,664	14,980	670	4.7
2035 Alt. 9	923	140	259	13,821	15,144	834	5.8

Source: *Air Quality Analysis*, LSA Associates, Inc., 2008.
Alt. = Alternative
lbs/day = pounds per day
$PM_{2.5}$ = particulate matter less than 2.5 microns in size

Table 3.14.G Daily PM_{10} Emissions

Traffic Condition	Exhaust Emissions (lbs/day)	Tire Wear (lbs/day)	Brake Wear (lbs/day)	Road Dust (lbs/day)	Total (lbs/day)	Change from No Build (lbs/day)	Change from No Build (%)
Existing	1,528	304	389	74,189	76,410	-	-
2015 No Build	1,345	428	547	104,377	106,697	-	-
2015 Alt. 4	1,421	448	572	110,107	112,548	5,851	5.5
2015 Alt. 5	1,391	442	564	107,887	110,283	3,586	3.4
2015 Alt. 6	1,407	446	569	109,106	111,527	4,830	4.5
2015 Alt. 7	1,405	445	568	108,956	111,374	4,676	4.4
2015 Alt. 9	1,419	447	570	109,904	112,339	5,642	5.3
2035 No Build	1,113	538	685	130,544	132,879	-	-
2035 Alt. 4	1,170	563	715	137,711	140,159	7,279	5.5
2035 Alt. 5	1,149	555	706	134,934	137,344	4,464	3.4
2035 Alt. 6	1,161	560	712	136,458	138,891	6,012	4.5
2035 Alt. 7	1,159	559	710	136,271	138,699	5,820	4.4
2035 Alt. 9	1,167	562	713	137,457	139,898	7,019	5.3

Source: *Air Quality Analysis*, LSA Associates, Inc., 2008.
Alt. = Alternative
lbs/day = pounds per day
PM_{10} = particulate matter less than 10 microns in size

Qualitative Project-level Mobile Source Air Toxics

In addition to the criteria air pollutants for which there are NAAQS, the EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, nonroad mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the CAA. MSATs are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through an engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead federal agency for administering the CAA and has certain responsibilities regarding the health effects of MSATs. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources (66 Federal Register 17229 [March 29, 2001]). This Rule was issued under the authority in Section 202 of the CAA. In its rule, the EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low-emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur-control requirements, and its proposed heavy-duty engine and vehicle standards and highway diesel fuel sulfur control requirements.

In February 2006, the FHWA issued guidance[1] to advise FHWA Division offices on when and how to analyze MSATs in the NEPA process for highways. The guidance is described as interim because MSAT science is still evolving. As the science progresses, FHWA will update the guidance. This analysis follows current FHWA guidance.

Between 2000 and 2020, FHWA projects that even with a 64 percent increase in vehicle miles traveled (VMT), these programs will reduce highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 to 65 percent and will reduce highway diesel PM emissions by 87 percent. As a result, the EPA concluded that no further motor vehicle emissions or fuel standards were necessary for additional control of MSATs. The EPA is preparing another rule under authority of

[1] http://www.fhwa.dot.gov/environment/airtoxic/020306guidmem.htm.

CAA Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary 6 MSATs.

California's vehicle emission control and fuel standards are more stringent than federal standards and are effective sooner, so the effect on air toxics of combined State and federal regulations is expected to result in greater emissions reductions, more quickly, than the FHWA analysis shows. The FHWA analysis, with modifications related to use of the California-specific EMFAC model rather than the MOBILE model, would be conservative.

This report includes a basic analysis of the likely MSAT emission impacts of the proposed project. However, available technical tools do not provide for predicting project-specific health impacts of the emission changes associated with the alternatives considered in this report. Due to these limitations, the following discussion is included in accordance with the Council on Environmental Quality regulations (40 CFR 1502.22[b]) regarding unavailable or incomplete information.

Information that is Unavailable or Incomplete

Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling to estimate ambient concentrations resulting from the estimated emissions, exposure modeling to estimate human exposure to the estimated concentrations, and then a final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science, both of which prevent a more complete determination of the MSAT health impacts of the proposed project, as described below:

- **Emissions:** The EPA and California tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While both MOBILE 6.2 and EMFAC (either 2002 or the recently released 2007 version) are used to predict emissions at a regional level, they have limitations when applied at the project level. Both are trip-based models—emission factors are projected based on a typical trip of approximately 7.5 miles and on average speeds for this typical trip. This means that neither model has the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, both models can only approximate emissions from the operating speeds and levels of congestion likely to be present on the largest-scale projects and cannot adequately capture emissions effects of smaller projects. For PM, the MOBILE 6.2 model results are not sensitive to average trip speed; however, PM emissions from the EMFAC model are sensitive to trip speed, so for California conditions, diesel PM emissions are treated the same as other emissions. Unlike MOBILE 6.2, the EMFAC model does not provide MSAT emission factors; off-model speciation of EMFAC's Total Organic Compounds output must be used to generate MSAT emissions. The emissions rates used in both MOBILE 6.2 and EMFAC are based on a limited number of vehicle tests.

These deficiencies compromise the capability of both MOBILE 6.2 and EMFAC 2002/2007 to estimate MSAT emissions. Both are adequate tools for projecting emissions trends and performing relative analyses between alternatives for very large projects, but neither is sensitive enough to capture the effects of travel changes caused by smaller projects or to predict emissions near specific roadside locations.

- **Dispersion:** The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of CO to determine compliance with the NAAQS. The CALINE4 model used in California is an improvement on the CALINE3-based EPA models, but like them was built primarily for CO analysis, has not been specifically validated for use with other materials such as MSATs, and is difficult to use for averaging periods of more than eight hours or so (health risk data for MSATs are typically based on 24-hour, annual, and long-term [30–70 years] exposure). Dispersion models are appropriate for predicting maximum concentrations that can occur at some time at some location within a geographic area, but cannot accurately predict exposure patterns at specific times at specific locations across an urban area to assess potential health risk. The NCHRP is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, FHWA is also faced with a lack of adequate monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

- **Exposure Levels and Health Effects:** Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis limit the ability to reach meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roads and to determine the part of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because insupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emission rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs

Research into the health impacts of MSATs is ongoing. For different emission types, a variety of studies show that some are either statistically associated with adverse health outcomes through epidemiological studies (frequently based on emission levels found in occupational settings) or show that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of the EPA’s efforts. Most notably, the EPA conducted the National Air Toxics Assessment (NATA 1996) to evaluate modeled estimates of human exposure applicable at the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or State level.

The EPA is in the process of assessing the risks of various kinds of exposure to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment (http://www.epa.gov/iris). The following toxicity information for the six prioritized MSATs was taken from the IRIS database Weight of Evidence Characterization summaries. The following information, from the EPA's IRIS database, represents the EPA's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures:

- Benzene is characterized as a known human carcinogen and may result in decreased lymphocyte counts.
- The potential carcinogenicity of acrolein cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure. However, acrolein may result in nasal lesions.
- Formaldehyde is a probable human carcinogen, based on limited evidence in humans and sufficient evidence in animals. It may also result in respiratory health impact.
- 1,3-butadiene is characterized as carcinogenic to humans by inhalation and may also result in ovarian atrophy.
- Acetaldehyde is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure. It may also result in degeneration of the olfactory epithelium.
- Diesel exhaust (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. DE, as reviewed in this document, is the combination of diesel particulate matter (DPM) and DE organic gases. The PM fraction of DE DPM has been identified by the California Air Resources Board as a toxic air contaminant due to long-term cancer risk.

Other studies have addressed MSAT health impacts in proximity to roadways. The Health Effects Institute, a nonprofit organization funded by the EPA, FHWA, and industry, has undertaken a major series of studies to research near-road MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roads is related to adverse health outcomes, particularly respiratory problems.[1] Much of this research is not specific to MSATs; instead, it surveyed the full spectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, these studies do not provide information that would be useful to alleviate the uncertainties listed above and allow for a more comprehensive evaluation of the health impacts specific to the proposed project.

Because of the uncertainties outlined above, a reliable quantitative assessment of the effects of air toxic emission impacts on human health cannot be made at the project level. While available tools do allow reasonable prediction of relative emission changes between alternatives for larger projects, the amount of MSAT emissions from the project alternatives and MSAT concentrations or exposures created by each project alternative cannot be predicted with sufficient accuracy to be useful in estimating health impacts. (As noted above, the current emission model is not capable of serving as a meaningful emission analysis tool for smaller projects.) Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have significant adverse impacts on the human environment.

A quantitative analysis of MSAT emissions in the project area is provided below. The concentrations and duration of exposures are uncertain; therefore, the health effects from these emissions cannot be estimated.

MSAT Analysis Methodology

The basic procedure for analyzing emissions for on-road MSATs is to calculate emission factors using EMFAC2007 and apply the emission factors to speed and VMT data specific to the project. EMFAC2007 is the latest emission inventory model developed by the ARB and approved by FHWA that calculates emission inventories for motor vehicles operating on roads in California. The emission

[1] South Coast Air Quality Management District, Multiple Air Toxic Exposure Study-II (2000); Highway Health Hazards, The Sierra Club (2004) summarizing 24 studies on the relationship between health and air quality); NEPA's Uncertainty in the Federal Legal Scheme Controlling Air Pollution from Motor Vehicles, Environmental Law Institute, 35 ELR 10273 (2005) with health studies cited therein.

factors information used in this analysis is from EMFAC2007 and is specific to the Riverside County portion of the Basin.

This analysis focuses on six MSAT pollutants identified by the EPA as being the highest-priority MSATs.[1] The six pollutants are: DPM, acrolein, acetaldehyde, formaldehyde, benzene, and 1,3-butadiene. EMFAC2007 provides emission factor information for DPM but does not provide emission factors for the remaining five MSATs. Each of the remaining five MSATs, however, is a constituent of motor vehicle reactive organic gas (ROG) emissions, and EMFAC2007 provides emission factors for ROG. ARB has supplied Caltrans with "speciation factors" for each of the remaining five MSATs not directly estimated by EMFAC2007. Each speciation factor represents the portion of total ROG emissions that is estimated to be a given MSAT. For example, if a speciation factor of 0.03 is provided for benzene, its emissions level is estimated to be 3 percent of total ROG emissions, utilizing the speciation factor as a multiplier once total ROG emissions are known. This analysis used the ARB-supplied speciation factors to estimate emissions of the aforementioned five MSATs as a function of ROG emissions.

The University of California at Davis (UCD), in cooperation with Caltrans, developed a spreadsheet tool that incorporates EMFAC2007 emission factors; ARB speciation factors; and project-specific traffic activity data such as VMT, speed, travel times, and traffic volumes. The spreadsheet tool applies the traffic activity data to the emission factors and estimates MSAT emissions for base case (with "No Build" alternative) and "Build" alternative scenarios. Results were produced for the Existing (2007) and future No Build and Build (2035) conditions.

MSAT Analysis Results

The emission factors from EMFAC2007 are pollutant emissions in grams per mile of vehicle travel. Multiplying these emission factors by the number of VMT in the project area provides an estimate of the total emissions from vehicles traveling through the project area. Tables 3.14.H and 3.14.I present the ADT volumes for

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1 U.S. Environmental Protection Agency (2001) Control of Emissions of Hazardous Air Pollutants from Mobile Sources: Final Rule. *Federal Register*, Vol. 66, No. 61, pp. 17230–17273. March 29.

Table 3.14.H Vehicle Miles Traveled within MCP Study Area

Alternative	Auto VMT	Truck VMT	Total VMT
Existing	11,534,779	1,293,513	12,828,292
2015 No Build	16,232,347	1,819,420	18,051,767
2015 Alternative 4	16,886,064	1,943,921	18,829,984
2015 Alternative 5	16,711,557	1,887,518	18,599,075
2015 Alternative 6	16,834,930	1,915,628	18,750,557
2015 Alternative 7	16,797,944	1,914,427	18,712,371
2015 Alternative 9	16,825,461	1,943,391	18,768,852
2035 No Build	20,301,797	2,275,548	22,577,345
2035 Alternative 4	21,119,400	2,431,261	23,550,661
2035 Alternative 5	20,901,144	2,360,719	23,261,863
2035 Alternative 6	21,055,447	2,395,875	23,451,322
2035 Alternative 7	21,009,188	2,394,374	23,403,562
2035 Alternative 9	21,043,604	2,430,599	23,474,203

Source: Iteris, 2007.
MCP = Mid County Parkway
VMT = vehicle miles traveled

Table 3.14.I Vehicle Miles Traveled within SCAG Region

Alternative	Auto VMT	Truck VMT	Total VMT
Existing	349,700,131	26,674,632	376,374,763
2015 No Build	375,470,343	34,193,787	409,664,129
2015 Alternative 4	375,679,116	34,191,498	409,870,614
2015 Alternative 5	375,619,803	34,177,333	409,797,136
2015 Alternative 6	375,580,300	34,183,075	409,763,375
2015 Alternative 7	375,602,641	34,179,632	409,782,274
2015 Alternative 9	375,595,736	34,189,122	409,784,858
2035 No Build	469,600,758	42,766,169	512,366,927
2035 Alternative 4	469,861,870	42,763,307	512,625,177
2035 Alternative 5	469,787,688	42,745,590	512,533,278
2035 Alternative 6	469,738,281	42,752,772	512,491,053
2035 Alternative 7	469,766,224	42,748,466	512,514,690
2035 Alternative 9	469,757,587	42,760,335	512,517,921

Source: Iteris, 2007.
SCAG = Southern California Association of Governments
VMT = vehicle miles traveled

existing conditions as well as future conditions in 2035 with and without the proposed project alternatives for the MCP region and SCAG region, respectively.

Vehicle emissions vary by speed. Generally, emissions are higher on a grams-per-mile basis for slower speeds. For some pollutants, including VOC, emissions increase with speed at speeds greater than 50 mph. Vehicle speeds were estimated by dividing the total VMT for each alternative by the total vehicle hours traveled (VHT) for each alternative. Average speeds would actually be in the 35 to 39 mph range.

As described above, emission factors for DPM and ROG have been obtained for the South Coast Air Basin portion of Riverside County using EMFAC2007. The spreadsheet tool developed by UCD was then utilized in applying the emission factors, speciation factors from ARB, and the traffic activity data. The results of the MSAT analyses for existing conditions and the MCP No Build and Build Alternatives are shown in Tables 3.14.J and 3.14.K.

Table 3.14.J MSAT Emissions for the MCP Study Area (lbs/day)

Alternative	DPM	Benzene	1,3-Butadiene	Acetaldehyde	Acrolein	Formaldehyde
Existing	290.0	176.0	33.8	61.9	7.6	176.0
2015 No Build	219.6	104.2	17.7	45.5	4.0	119.6
2015 Alt. 4	233.6	108.3	18.5	48.2	4.1	126.1
2015 Alt. 5	226.3	106.8	18.3	46.9	4.1	123.2
2015 Alt. 6	230.4	107.7	18.4	47.7	4.1	124.9
2015 Alt. 7	229.9	107.5	18.4	47.6	4.1	124.6
2015 Alt. 9 TWS DV	235.1	108.0	18.5	48.4	4.1	126.4
2035 No Build	113.8	52.9	7.3	25.8	1.6	64.0
2035 Alt. 4	121.0	54.7	7.6	27.4	1.7	67.7
2035 Alt. 5	118.4	54.2	7.5	26.8	1.7	66.4
2035 Alt. 6	119.3	54.5	7.6	27.0	1.7	66.9
2035 Alt. 7	119.1	54.4	7.6	27.0	1.7	66.8
2035 Alt. 9 TWS DV	121.8	54.7	7.6	27.5	1.7	67.9

Source: *Air Quality Analysis,* LSA Associates, Inc., 2008.
Alt. = Alternative
DPM = diesel particulate matter
lbs/day = pounds per day
MCP = Mid County Parkway
MSAT = Mobile Source Air Toxics
TWS DV = Temescal Wash Area Design Variation

Table 3.14.K MSAT Emissions for the SCAG Region (lbs/day)

Alternative	DPM	Benzene	1,3-Butadiene	Acetaldehyde	Acrolein	Formaldehyde
Existing	5,980.4	5,165.3	991.9	1,516.7	224.9	4,574.0
2015 No Build	4,095.9	2,364.8	401.2	897.8	90.3	2,444.4
2015 Alt. 4	4,098.0	2,366.0	401.4	898.2	90.4	2,445.6
2015 Alt. 5	4,097.3	2,365.5	401.3	898.1	90.4	2,445.2
2015 Alt. 6	4,096.9	2,365.3	401.3	898.0	90.4	2,445.0
2015 Alt. 7	4,097.1	2,365.4	401.3	898.0	90.4	2,445.1
2015 Alt. 9 TWS DV	4,097.2	2,365.5	401.3	898.0	90.4	2,445.1
2035 No Build	2,147.1	1,204.5	164.7	500.8	36.6	1,284.1
2035 Alt. 4	2,148.2	1,205.1	164.7	501.1	36.6	1,284.7
2035 Alt. 5	2,147.8	1,204.9	164.7	501.0	36.6	1,284.5
2035 Alt. 6	2,147.7	1,204.8	164.7	501.0	36.6	1,284.4
2035 Alt. 7	2,147.8	1,204.9	164.7	501.0	36.6	1,284.4
2035 Alt. 9 TWS DV	2,147.8	1,204.9	164.7	501.0	36.6	1,284.4

Source: *Air Quality Analysis,* LSA Associates, Inc., 2008.
Alt. = Alternative
DPM = diesel particulate matter
lbs/day = pounds per day
MCP = Mid County Parkway
MSAT = Mobile Source Air Toxics
TWS DV = Temescal Wash Area Design Variation

The MSAT analysis indicates that a substantial decrease in MSAT emissions can be expected between the existing (2007) and future (2015 and 2035) no build conditions. This decrease is prevalent throughout the highest-priority MSATs and the analyzed alternatives. This decrease is also consistent with the EPA and FHWA projections of a substantial reduction in on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde between 2000 and 2020. Based on the analysis for this project, reductions in MSATs expected by 2035 are: 63 percent of DPM, 71 percent of benzene, 78 percent of 1,3-butadiene, 61 percent of acetaldehyde, 81 percent of acrolein, and 65 percent of formaldehyde. These projected reductions are achieved while total VMT increases by 60 percent between 2007 and 2035. As shown in Table 3.14.J, implementation of the MCP Build Alternatives would result in a slight increase in MSAT emissions compared to the No Build Alternatives within the MCP study area. However, as shown in Table 3.14.K within the SCAG region, the proposed project's increase in MSAT emissions would be negligible.

In summary, while the MCP project alternative would result in a small increase in localized MSAT emissions, the EPA's vehicle and fuel regulations, coupled with fleet turnover, would cause substantial reductions over time that would cause regionwide MSAT levels to be substantially lower than they are today.

No Build Alternatives

Under Alternative 1A, the planned street network would be constructed except for improvements to Cajalco Road and Ramona Expressway. Under Alternative 1A, there would be no improvements to east-west travel on Cajalco Road and Ramona Expressway; therefore, there would be no improvement in traffic circulation. Because Alternative 1A would not improve traffic movement in the project vicinity, the total pollutants emitted by motor vehicles in the project vicinity would not decrease under Alternative 1A.

Under Alternative 1B, the planned street network would be developed according to the Circulation Element of the county and city General Plans. Traffic circulation would be similar under Alternative 1B as compared to the MCP Build Alternatives. Similar to the MCP Build Alternatives, Alternative 1B would improve traffic movement in the MCP study area and lower the total pollutants emitted by motor vehicles. However, as discussed earlier in Section 3.6, Traffic and Transportation/ Pedestrian and Bicycle Facilities, several intersections between I-15/I-215 and I-215/ SR-79 would experience more congestion under Alternative 1B than under the MCP

Build Alternatives. Therefore, the total pollutants emitted by motor vehicles in these locations would be greater under Alternative 1B compared to the MCP Build Alternatives.

Discussion of Impacts Relative to MSHCP Amendment

Air quality was determined not to be a topic of concern and was therefore not analyzed in the Multiple Species Habitat Conservation Plan (MSHCP) EIR/EIS. An amendment to the MSHCP to provide coverage for Alternative 9 TWS DV (the Locally Preferred Alternative) would not change the conclusion of the MSHCP EIR/EIS related to air quality.

3.14.3.2 Temporary Impacts

Build Alternatives

Short-term air pollutant emissions associated would occur as a result of construction activities and would include fugitive dust from grading/site preparation, equipment exhaust, and use of emulsified asphalt paving materials. No phase of construction would require more than 5 years to complete. Therefore, a detailed construction emission analysis was not required for conformity purposes for the MCP Build Alternatives.

Exhaust Emissions

Construction activities produce combustion emissions from various sources such as grading equipment, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting construction crews. Exhaust emissions during construction of the MCP Build Alternatives would vary daily as construction activity levels change. The use of construction equipment on site would result in localized exhaust emissions. Caltrans Standard Specifications for Construction (Sections 10 and 18 for dust control and Section 39-3.06 for asphalt concrete plant) would be adhered to in order to reduce emissions as a result of construction equipment.

Fugitive Dust

The SCAQMD has established Rule 403 for reducing fugitive dust emissions (PM_{10}). The Best Available Control Measures (BACM), as specified in the SCAQMD Rule 403, would be incorporated into the project commitments for the selected MCP Build Alternatives. With the implementation of the standard construction measures (providing 50 percent effectiveness) such as frequent watering (e.g., minimum twice per day), fugitive dust emissions from construction activities would not result in adverse air quality impacts.

Naturally Occuring Asbestos

The project is located in Riverside County, which is not among the counties listed as containing serpentine and ultramafic rock. Therefore, the impact from naturally occurring asbestos during project construction would be minimal to none.

No Build Alternatives

Under Alternative 1A, the planned street network would be constructed except for improvements to Cajalco Road and Ramona Expressway. Under Alternative 1B, the planned street network would be developed according to the Circulation Element of the county and city General Plans.

Similar to the MCP Build Alternatives, air pollutant emissions, such as fugitive dust from grading/site preparation and equipment exhaust, would occur over the short term from construction of other transportation improvement projects included in the MCP No Build Alternatives. Because the No Build Alternatives would be constructed in Riverside County, which is not among the counties listed as containing serpentine and ultramafic rock, the impact from naturally occurring asbestos would be minimal to none during construction. As with the MCP Build Alternatives, SCAQMD and Caltrans standard measures to reduce or minimize air pollutant emissions associated with construction activities would be followed during construction of the MCP No Build Alternatives. Therefore, construction-related air quality impacts would be similar for the MCP Build and No Build Alternatives.

3.14.4 Avoidance, Minimization, and/or Mitigation Measures

The operation of the MCP project will not result in adverse long-term air quality impacts; therefore, no avoidance, minimization or mitigation measures are required. However, construction of the MCP project may result in adverse impacts related to fugitive dust and construction equipment and vehicle emissions. The standard conditions and SCAQMD Rule 403 described below would substantially reduce potential adverse short-term air quality impacts during construction of Alternative 9 TWS DV.

3.14.4.1 Standard Conditions

SCAQMD Standard Specifications

The following SCAQMD standard measures would reduce or minimize air pollutant emissions associated with construction activities for all MCP Build Alternatives:

SC-1 During construction, the Riverside County Transportation Commission (RCTC) shall ensure that the construction contractor shall adhere to the requirements of South Coast Air Quality Management District (SCAQMD) rules and regulations on cutback and emulsified asphalt paving materials.

SC-2 To reduce fugitive dust emissions during construction, the Riverside County Transportation Commission (RCTC) shall ensure that the construction contractor shall adhere to the requirements of South Coast Air Quality Management District (SCAQMD) Rule 403. The Best Available Control Measures (BACMs) specified in SCAQMD's Rule 403 will be incorporated into the project construction.

Caltrans Standard Specifications

Caltrans Standard Specifications for Construction (Sections 10 and 18 for dust control and Section 39-306 for asphalt concrete plant) will be adhered to during construction to reduce emissions as a result of construction equipment operations and construction activities and to reduce fugitive dust. These standard Caltrans specifications are listed below and would apply to all MCP Build Alternatives.

SC-3 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that all disturbed areas, including storage piles, not being actively utilized for construction purposes shall be effectively stabilized for dust emissions using water, chemical stabilizers/suppressants, or vegetative ground cover, as appropriate.

SC-4 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that all on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized for dust emissions using water or chemical stabilizers/suppressants.

SC-5 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that all land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled for fugitive dust emissions by utilizing applications of water or by presoaking.

SC-6 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that when materials are transported off site, all material shall be covered or effectively wetted to limit visible dust emissions, or at least 15.2 centimeters (6 inches) of freeboard space from the top of the container will be maintained.

SC-7 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that all operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. The use of blower devices is expressly prohibited.

SC-8 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that, following the addition of materials to or the removal of materials from the surface of outdoor storage piles, those piles shall be effectively stabilized for fugitive dust emissions utilizing sufficient water or chemical stabilizers/suppressants.

SC-9 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that traffic speeds on unpaved roads shall be limited to 24 kilometers per hour (kph) (15 miles per hour [mph]).

SC-10 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.

SC-11 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that wheel washers for all exiting trucks shall be installed, or all trucks and equipment shall be washed off before leaving the site.

SC-12 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that wind breaks shall be installed at windward side(s) of construction areas.

SC-13 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that excavation and grading activities shall be suspended when winds exceed 32 kilometers per hour (kph) (20 miles per hour [mph]).

SC-14 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall ensure that areas subject to excavation, grading, and other construction activity shall be limited consistent with other construction activities underway.

Compliance with the above standard SCAQMD and Caltrans measures would substantially reduce fugitive dust ($PM_{2.5}$ and PM_{10}) and equipment emissions generated during construction.

3.14.4.2 Standard Measures for Construction Impacts

The following measures applicable to all MCP Build Alternatives will be implemented by the RCTC during construction to reduce air pollutants generated by construction vehicles and equipment exhaust during the project construction phase:

AQ-1 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative. This applies to both inactive and active sites during workdays, weekends, holidays, and windy conditions.

AQ-2 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall install wind fencing and phase grading operations and operate water trucks for stabilization of surfaces under windy conditions.

AQ-3 During construction, the Riverside County Transportation Commission (RCTC), through the construction contractor, shall, when hauling material and operating nonearthmoving equipment, prevent spillage and limit speeds to 24 kilometers per hour (kph) (15 miles per hour [mph]). Limit speed of earthmoving equipment to 16 kph (10 mph).

Mobile and Stationary Source Controls

AQ-4 During construction, the Riverside County Transportation Commission (RCTC) shall require that the construction contractor reduce use, trips, and unnecessary idling from heavy equipment.

AQ-5 During construction, the Riverside County Transportation Commission (RCTC) shall require that the construction contractor maintain and tune engines per manufacturers' specifications to perform at United States Environmental Protection Agency (EPA) certification levels and to perform at verified standards applicable to retrofit technologies. Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications.

AQ-6 During construction, the Riverside County Transportation Commission (RCTC) shall require that the construction contractor prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations.

AQ-7 During construction, the Riverside County Transportation Commission (RCTC) shall require that leased equipment be 1996 model or newer unless cost exceeds 110 percent or average lease cost, and require that 75 percent or more of total horsepower of owned equipment to be used be 1996 or newer models.

AQ-8 During construction, the Riverside County Transportation Commission (RCTC) shall require that the construction contractor utilize United States Environmental Protection Agency (EPA) registered particulate traps and other appropriate controls to reduce emissions of diesel particulate matter (DPM) and other pollutants at the construction site.

Administrative Controls

AQ-9 During construction, the Riverside County Transportation Commission (RCTC) and its contractors shall identify where implementation of mitigation measures for short-term air quality impacts is rejected based on economic infeasibility.

AQ-10 Prior to construction, the Riverside County Transportation Commission (RCTC) shall require that the construction contractor prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking. (Suitability of control devices is based on whether there is reduced normal availability of the construction equipment due to increased downtime and/or power output, whether there may be damage caused to the construction equipment engine, or whether there may be a risk to nearby workers or the public.)

AQ-11 During construction, the Riverside County Transportation Commission (RCTC) shall require that the construction contractor utilize the cleanest available fuel engines in construction equipment and identify opportunities for electrification, and use low sulfur fuel (diesel with 15 parts per million [ppm] or less) in engines where alternative fuels such as biodiesel and natural gas are not possible.

AQ-12 Prior to construction, the Riverside County Transportation Commission (RCTC) shall require that the construction contractor develop a construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow.

AQ-13 Prior to construction, the Riverside County Transportation Commission (RCTC) shall require that the construction contractor identify sensitive receptors in the project area, such as children, the elderly, and the infirm, and specify the means by which impacts to these populations will be minimized. For example, construction equipment and staging zones shall be located away from sensitive receptors and away from fresh air intakes to building and air conditioners.