5.3 AIR QUALITY

Air quality calculations generated by P&D Consultants (July 2003) are provided in Volume II Appendix C of this EIR.

ENVIRONMENTAL SETTING

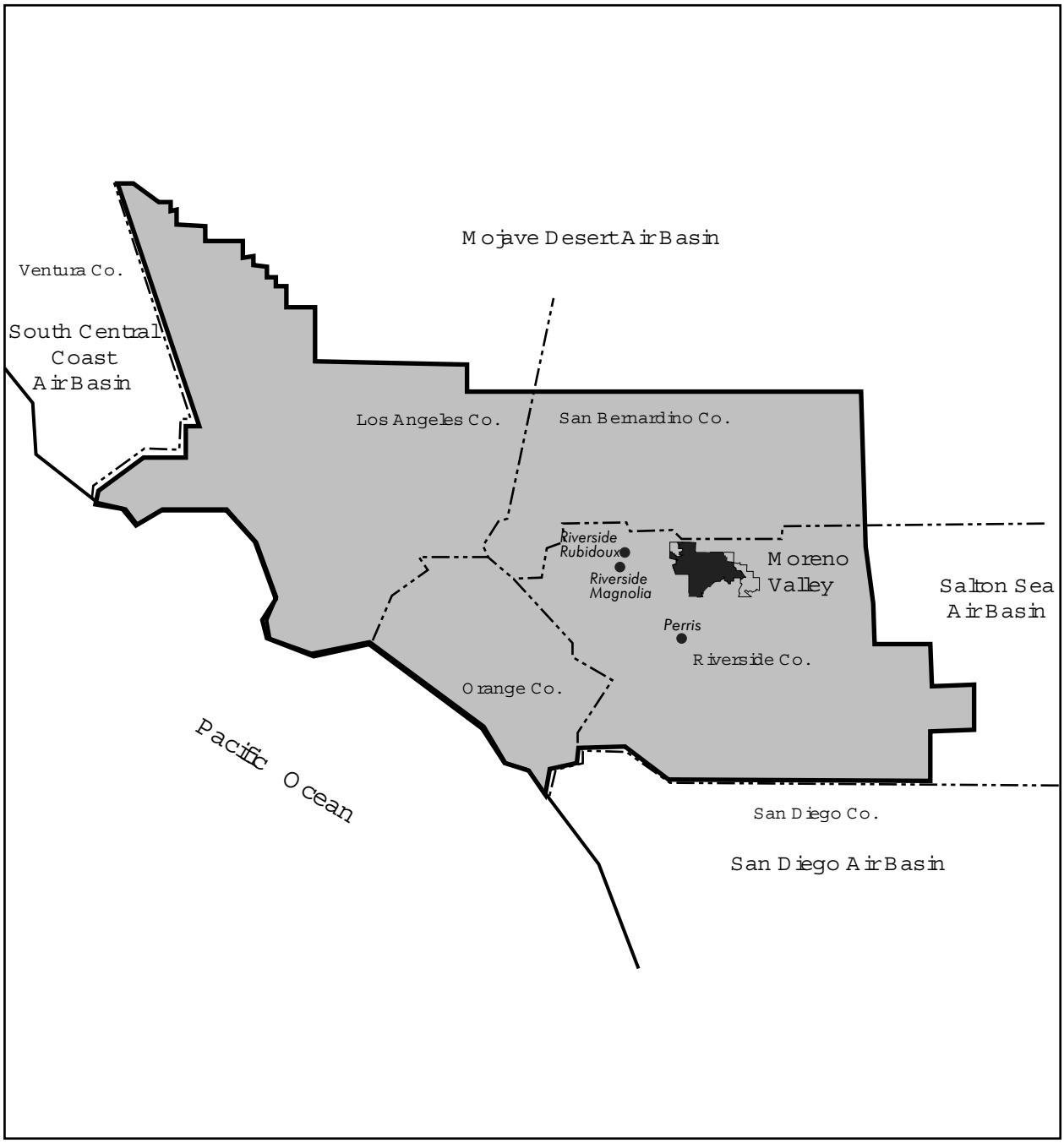
The City of Moreno Valley is located within the South Coast Air Basin (Basin). Air quality within the Basin is administered by the South Coast Air Quality Management District (SCAQMD). The Basin is a 6,600-square mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside counties. **Figure 5.3-1** depicts the location of Moreno Valley within the South Coast Air Basin.

The Basin is a physical unit that, due to low wind speeds and a prevailing inversion layer, retains pollutants for substantial periods. The slow dispersal of pollutants results in high concentrations of primary pollutants including carbon monoxide (CO), hydrocarbons, oxides of nitrogen (NO_X), and fine particulate matter (PM_{10}). The Basin also supports the formation of ozone. The atmospheric haze created by the presence of these pollutants is known as smog.

Climate and Meteorology

The Basin climate is influenced by the semi-permanent high pressure zone off the eastern Pacific Ocean which is responsible for deflecting storms away from the Basin and allowing for the mild climate indigenous to the region. Moreno Valley has an annual average mean temperature for January and July of 51 and 76 degrees Fahrenheit, respectively. During the summer the maximum temperature ranges from approximately 90 to 100 degrees Fahrenheit. According to the California Department of Water resources, rainfall can vary greatly from year to year, but averages from 11 to 14 inches annually within the region.

The topography and climate of Southern California combine to make the Basin an area of high air pollution potential. During the summer months, a warm air mass frequently descends over the cool, moist marine layer. The warm upper layer forms a cap over the cool marine layer, which prevents pollution from dispersing upwards. This inversion allows pollutants to accumulate within the lower layer. Light winds during the summer further limit ventilation.



Source: SCAQMD CEQA Manual, 1993

South Coast Air Basin Boundary

County Boundaries

Air Quality Monitoring Station

Not to Scale

North

Figure 5.3-1
South Coast Air Basin

Because of the low average wind speeds in the summer and a persistent daytime temperature inversion, emissions of hydrocarbons and oxides of nitrogen have an opportunity to combine with sunlight in a complex series of reactions. These photochemical reactions produce ozone, a particularly damaging pollutant.

Moreno Valley's air quality is greatly influenced by pollutants transported from other portions of the Basin. The prevailing winds in the Basin transport pollutants generated in the densely urbanized coastal areas (Orange County and Los Angeles County) as far east as Moreno Valley within a period of a few hours. Sometimes the inversion layer will trap pollutants in the Basin, exacerbating the air quality situation.

Air Quality Standards

The State of California and the federal government have established air quality standards and emergency episode criteria for various pollutants. Generally, state regulations have stricter standards than those at the federal level. Air quality standards are set at concentrations that provide a sufficient margin of safety to protect public health and welfare. Episode criteria define air pollution concentrations at the level where short-term exposures may begin to affect the health of a portion of the population particularly susceptible to air pollutants. The health effects are progressively more severe and widespread as pollutant concentrations increase. The state and federal standards for the most important pollutants and the health effects associated with the most important pollutants are presented in **Table 5.3-1**.

The South Coast Air Basin has some of the worst air quality problems in the nation. Despite implementing many strict controls, the basin still fails to meet state and federal air quality standards for four of the criteria pollutants including ozone, nitrogen dioxide (NO_X), carbon monoxide (CO), and fine particulate matter (PM10). Because the state and federal standards are not achieved, the basin is considered a "non-attainment" area for those pollutants.

Air Quality Management Plan

In accordance with federal Clean Air Act requirements, the State of California must submit a State Implementation Plan (SIP) to demonstrate how non-attainment areas will meet a number of federal health-based standards by specific deadlines.

To bring the South Coast Air Basin in compliance with the SIP, the South Coast Air Quality Management District (SCAQMD) adopted a revised Air Quality Management Plan (AQMP) on August 1, 2003. The 2003 update of the South Coast Air Quality Management Plan is the region's plan for attaining federal and state clean air standards. It outlines the air pollution control measures needed to meet federal standards for ozone by 2010, and for fine particulates, by 2006. It also demonstrates how the federal standard for carbon monoxide will be maintained. The plan also takes a preliminary look at what will be needed to achieve more stringent proposed standards for ozone and ultrafine particulates ($PM_{2.5}$).

TABLE 5.3-1
CALIFORNIA AND FEDERAL AIR QUALITY STANDARDS

Air Pollutant	State Standard	Federal Primary Standard	Most Relevant Health Effects
	Concentration/ Averaging Time	Concentration/ Averaging Time	
Ozone	0.09 ppm, 1-hr. avg.> 	0.12 ppm, 1-hr. avg.> 0.08 ppm, 8-hr. avg.>	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals. (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	9.0 ppm, 8-hr. avg.> 20 ppm, 1-hr. avg.>	9 ppm, 8-hr. avg.> 35 ppm, 1-hr. avg.>	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide	0.25 ppm, 1-hr. avg.>	0.053 ppm, ann. avg.>	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide	0.04 ppm, 24-hr. avg.> 0.25 ppm, 1-hr. avg.>	0.03 ppm, ann. avg.> 0.14 ppm, 24-hr. avg.>	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM_{10})**	20 $\mu g/m^3$, ann. geometric mean> 50 $\mu g/m^3$, 24-hr. average >	50 $\mu g/m^3$, ann. arithmetic mean > 150 $\mu g/m^3$, 24-hr. avg. >	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children; (c) Increased risk of premature death from heart or lung diseases in elderly
Suspended Particulate Matter ($PM_{2.5}$)**	12 $\mu g/m^3$, ann. arithmetic mean > 65 $\mu g/m^3$, 24-hr avg.>	15 $\mu g/m^3$, ann. arithmetic mean > 65 $\mu g/m^3$, 24-hr avg.>	
Sulfates	25 $\mu g/m^3$, 24-hr avg.=		(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 $\mu g/m^3$, 30-day avg.=	1.5 $\mu g/m^3$, calendar quarter>	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount such that the extinction coefficient is greater than 0.23 inverse kilometers (to reduce the visual range to less than 10 miles) at relative humidity less than 70 percent, 8-hour average (10am-6pm)		Visibility impairment on days when relative humidity is less than 70 percent
Hydrogen Sulfide	0.03 ppm 1-hr. avg.>		(a) Iritation to eyes and respiratory tract; (b) Conjuctivitis, pain, lacrimation, and photophobia may persist for several days; (c) Coughing, pain in breathing, pain in nose and throat; (d) Repeated exposure causes headache, dizziness, and digestive disturbances; (e) Collapse and death.[1]

TABLE 5.3-1
CALIFORNIA AND FEDERAL AIR QUALITY STANDARDS

Vinyl Chloride	0.01 ppm 24-hr. avg.>		(a) Iritation to eyes and respiratory tract; (b) Acute exposure causes dizziness, drowsiness, headaches, and giddiness; (c) Acute exposure to extremely high levels of vinyl chloride has caused loss of consciousness, lung and kidney irritation, and inhibition of blood clotting in humans and cardiac arrhythmias in animals.[2]

* For readers convenience in picking out standards quickly, concentration appears first; e.g. "0.12 ppm, 1-hr. avg.>" means 1-hr. avg> 0.12 ppm
** New and stricter state standards for PM are proposed and adopted by ARB. They include: PM 10 annual average of 20 ug/m^3 and new PM 2.5 annual average of 12 ug/m^3.
[1] Source: USACE http://el.erdc.usace.army.mil/workshops/04jun-wots/kaluschue.pdf
[2] Source: EPA http://www.epa.gov/ttn/atw/hlthef/vinylchl.html
Source: South Coast Air Quality Management District, Air Quality Management Plan, 2003.

Regulatory Framework

The Federal Clean Air Act established national air quality objectives. The Clean Air Act requires any region that does not meet federal air quality standards to prepare plans for bringing the area in to compliance. The State of California enacted the California Clean Air Act (CCAA) in 1988. The CCAA established air quality standards that are more stringent than the federal standards and requires regional emissions to be reduced by 5 percent or more per year until the region is in compliance. The South Coast Air Quality Management District is the agency responsible for developing the regional air quality plan.

The California Air Resources Board (CARB) is responsible for statewide air quality regulations and the Environmental Protection Agency is responsible for federal air quality regulations. Recent actions by both agencies will substantially reduce harmful emissions. The CARB and the EPA adopted new low sulfur standards for diesel fuel that will allow advanced emission control devises to be placed on existing and new generation diesel engines. The new fuels and advanced emission control devises will dramatically reduce emissions of sulfur and particulates. The new low sulfur diesel fuel standard will be phased in beginning in mid-2006. The CARB also adopted tougher exhaust standards for large diesel engines that are calculated to reduce nitrogen oxide and particulate emissions by 90 percent. The tougher diesel exhaust standards will take effect beginning with the 2007 model year. On October 23, 2003, the CARB passed additional regulations aimed at reducing emissions from ships, off-road construction equipment, diesel trucks, lawn and garden equipment and chemical based consumer products.

Air Quality Monitoring

As depicted on **Figure 5.3-1**, Moreno Valley is located within the South Coast Air Quality Management District in the central portion of the Basin. The South Coast Air Basin is designated as a non-attainment area for federal and state ozone and PM_{10} standards, meaning that air quality standards are being exceeded. The planning area is located in the vicinity of three monitoring stations operated by the AQMD: the Perris, Riverside-Rubidoux, and the Riverside-Magnolia stations. The Perris station is

considered to best represent the air quality conditions in Moreno Valley. The Perris and the Riverside-Magnolia stations monitor ozone and particulate matter levels, while the Riverside-Rubidoux station monitors ozone, particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide levels. Therefore, the Perris and Riverside-Rubioux station data is used to represent the air quality conditions of Moreno Valley.

Ozone

Ozone (O_3) is a pungent, colorless gas typical of southern California smog. Elevated ozone concentrations result in reduced lung function, particularly during vigorous physical activity. Ozone levels typically peak during the summer and early fall months. **Table 5.3-2** depicts the Perris air quality monitoring station ozone data. The number of days that the state 1-hour ozone levels are exceeded in the Perris station has increased slightly between 1998 and 2002, while the days on which the national 1-hour ozone levels were exceeded have decreased slightly. State 1-hour ozone level standard was exceeded 38 times in 1998 and 59 times in 2002. However, the national 1-hour ozone standard was exceeded 8 times in 1998, while in 2002 it was exceeded 4 times. As depicted in **Table 5.3-2**, the national 1-hour ozone standard was not exceeded at all in 1999. Additionally, the highest 1-hour ozone measurement in 1998 was 0.149 parts per million (ppm), while in 2002 the highest measurement was 0.147 ppm.

TABLE 5.3-2
HIGHEST FOUR DAILY MAXIMUM HOURLY OZONE MEASUREMENTS AND NUMBER OF DAYS ABOVE THE HOURLY STANDARDS AT PERRIS (1998-2002)
(parts per million)

Year	1998	1999	2000	2001	2002
High	Aug 04 0.149	Aug 13 0.112	Jul 22 0.164	Aug 11 0.152	Aug 12 0.147
2nd High	Jul 16 0.147	Aug 14 0.111	Jul 27 0.147	Jun 08 0.151	Jun 18 0.125
3rd High	Aug 06 0.139	Jul 29 0.109	Jul 20 0.141	Jul 28 0.149	Jul 08 0.125
4th High	Jul 17 0.137	Jun 30 0.106	Jul 30 0.140	May 31 0.148	Jul 31 0.125
*Days over State Standard	38	10	65	73	59
*Days over National Standard	8	0	15	19	4
**Year Coverage	99	100	100	100	100

Source: California Air Resources Board, 2003.
Notes:
* The number of days at least one measurement was greater than the level of the state hourly standard (0.09 parts per million) of the national hourly standard (0.12 parts per million). The number of days above the standard is not necessarily the number of violations of the standard for the year.
** Year Coverage indicates how extensive monitoring was during the time of year when high pollutant concentrations are expected. Year coverage ranges from 0 to 100. For example, a Year Coverage of 75 indicates that monitoring occurred 75% of the time when high pollutants concentrations are expected. For the current year, Year Coverage will be 0 at the beginning year and will increase as the data for the year become available. Year Coverage is blank when the data history at the site is insufficient to determine when high concentrations are expected.

Table 5.3-3 depicts the Riverside-Rubidoux air quality monitoring station ozone data. The number of days that the state and national 1-hour ozone levels are exceeded in the Riverside-Rubidoux station has decreased slightly between 1998 and 2002. State 1-hour ozone level standard was exceeded 70 times in 1998 and 56 times in 2002. The national 1-hour ozone standard was exceeded 32 times in 1998, while in 2002 it was exceeded 12 times. Additionally, the highest 1-hour ozone measurement in 1998 was 0.195 parts per million (ppm), while in 2002 the highest measurement was 0.155 ppm.

TABLE 5.3-3
HIGHEST FOUR DAILY MAXIMUM HOURLY OZONE MEASUREMENTS AND NUMBER OF DAYS ABOVE THE HOURLY STANDARDS AT RIVERSIDE-RUBIDOUX (1998-2002)
(parts per million)

Year	1998	1999	2000	2001	2002
High	Aug 30 0.195	Jul 11 0.142	May 27 0.140	Aug 25 0.143	Sep 22 0.155
2nd High	Jul 16 0.193	Jun 13 0.131	Sep 17 0.133	Aug 05 0.140	Jul 07 0.148
3rd High	Jul 26 0.166	Aug 21 0.131	Aug 13 0.129	Aug 18 0.138	Aug 10 0.144
4th High	Aug 08 0.166	Jun 12 0.122	Oct 01 0.123	Sep 23 0.132	Jul 08 0.139
*Days over State Standard	70	38	42	41	56
*Days over National Standard	32	3	7	7	12
**Year Coverage	98	98	100	100	95

Source: California Air Resources Board, 2003.
Notes:
* The number of days at least one measurement was greater than the level of the state hourly standard (0.09 parts per million) of the national hourly standard (0.12 parts per million). The number of days above the standard is not necessarily the number of violations of the standard for the year.
** Year Coverage indicates how extensive monitoring was during the time of year when high pollutant concentrations are expected. Year coverage ranges from 0 to 100. For example, a Year Coverage of 75 indicates that monitoring occurred 75% of the time when high pollutants concentrations are expected. For the current year, Year Coverage will be 0 at the beginning year and will increase as the data for the year become available. Year Coverage is blank when the data history at the site is insufficient to determine when high concentrations are expected.

As illustrated in **Tables 5.3-2** and **5.3-3**, although ozone levels have continued to show slight improvement at the Riverside-Rubidoux monitoring station and slight decline in the Perris monitoring station between 1998 and 2002, the state ozone standard was exceeded an average of 49 days each year at the both stations.

Particulate Matter

Particulate matter (PM_{10}) is a major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, or mists. The size of the particles (10 microns or smaller) allows them to enter the air sacs deep in the lungs where they may be deposited, resulting in adverse health effects. PM_{10} also causes visibility reduction. Particulate matter is generated by wind blowing dry soils from sites disturbed by construction,

agriculture and other activities, vehicle exhaust, fireplaces, wildfires, waste burning, industrial sources, pollen and spores.

Table 5.3-4 depicts the PM_{10} data for the Perris air quality monitoring station. According to the table, PM_{10} levels have increased since 1998. The daily PM_{10} levels exceeded the annual state standard 14 times in 1998, while in 2002, PM_{10} level exceeded the state standard 24 times. The highest daily PM_{10} concentration in 1998 was 98.0 micrograms per cubic meter ($\mu g/m^3$), while in 2001 PM_{10} level reached up to 100.0 $\mu g/m^3$. However, the federal annual standard was not exceeded at all in between 1998 and 2002.

TABLE 5.3-4
HIGHEST FOUR DAILY PM_{10} MEASUREMENTS AND ANNUAL STATISTICS AT PERRIS (1998-2002)
(micrograms per cubic meter)

Year	1998	1999	2000	2001	2002
High	Oct 08 98.0	Nov 02 112.0	Mar 31 87.0	Oct 16 86.0	Sep 23 100.0
2nd High	Oct 20 81.0	Dec 08 98.0	Oct 09 75.0	May 01 79.0	Sep 05 79.0
3rd High	Sep 14 76.0	Nov 14 92.0	Dec 08 75.0	Aug 17 78.0	Feb 07 76.0
4th High	Dec 31 66.0	Jan 18 91.0	Dec 02 73.0	Nov 21 77.0	Nov 22 72.0
Measured:					
*Days over State Standard	14	30	13	16	24
*Days over National Standard	0	0	0	0	0
Calculated:					
*Days over State Standard	79	180	78	96	144
*Days over National Standard	0	0	0	0	0
***State Annual Average	33	44	36	36	41
***National Annual Average	34	50	41	40	45
**3-Year National Average	No data	No data	No data	44	42
****Year Coverage	86	100	96	97	No data

Source: California Air Resources Board, 2003.
Notes:
* Measured days are those days that an actual measurement was greater than the level of the state daily standard (50 micrograms per cubic meter) or the national daily standard (150 micrograms per cubic meter). Measurements are typically collected every six days. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.
** The 3-year statistics include data from the listed year and the two years before the listed year.
*** The state annual average is a geometric mean of all measurements. The national annual average is an arithmetic average of the 4 arithmetic quarterly averages.
**** Year Coverage indicates how extensive monitoring was during the time of year when high pollutant concentrations are expected. Year coverage ranges from 0 to 100. For example, a Year Coverage of 75 indicates that monitoring occurred 75% of the time when high pollutant concentrations are expected. For the current year, Year Coverage will be 0 at the beginning of the year and will increase as the data for the year become available. Year Coverage is blank when the data history at the site is insufficient to determine when high concentrations are expected.

Table 5.3-5 depicts the PM_{10} data for the Riverside-Rubidoux air quality monitoring station. According to the table, PM_{10} levels have also increased significantly in this station since 1998. The daily PM_{10} levels exceeded the annual state standard 42 times in 1998, while in 2002, PM_{10} level exceeded the state standard 81 times. The highest daily PM_{10} concentration in 1998 was 116.0 micrograms per cubic meter ($\mu g/m^3$), while in 2002 PM_{10} level reached as high as 130.0 $\mu g/m^3$. However, the federal annual standard was not exceeded at all in between 1998 and 2002.

TABLE 5.3-5
HIGHEST FOUR DAILY PM_{10} MEASUREMENTS
AND ANNUAL STATISTICS
AT RIVERSIDE-RUBIDOUX (1998-2002)
(micrograms per cubic meter)

Year	1998	1999	2000	2001	2002
High	Oct 20 116.0	Nov 02 153.0	Dec 05 139.0	Oct 16 136.0	Nov 25 130.0
2nd High	Nov 25 111.0	Sep 21 134.0	Dec 23 139.0	Aug 17 133.0	Nov 01 102.0
3rd High	Jul 16 109.0	Mar 01 119.0	Dec 02 131.0	Oct 25 131.0	Oct 20 100.0
4th High	Aug 21 107.0	Jan 18 118.0	Dec 29 126.0	Oct 19 117.0	Sep 23 99.0
Measured:					
*Days over State Standard	42	46	68	76	81
*Days over National Standard	0	0	0	0	0
Calculated:					
*Days over State Standard	202	265	264	264	257
*Days over National Standard	0	0	0	0	0
***State Annual Average	48	64	54	54	53
***National Annual Average	55	73	55	65	60
**3-Year National Average	61	65	62	65	61
****Year Coverage	91	100	100	100	No data

Source: California Air Resources Board, 2003.
Notes:
* Measured days are those days that an actual measurement was greater than the level of the state daily standard (50 micrograms per cubic meter) or the national daily standard (150 micrograms per cubic meter). Measurements are typically collected every six days. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.
** The 3-year statistics include data from the listed year and the two years before the listed year.
*** The state annual average is a geometric mean of all measurements. The national annual average is an arithmetic average of the 4 arithmetic quarterly averages.
**** Year Coverage indicates how extensive monitoring was during the time of year when high pollutant concentrations are expected. Year coverage ranges from 0 to 100. For example, a Year Coverage of 75 indicates that monitoring occurred 75% of the time when high pollutant concentrations are expected. For the current year, Year Coverage will be 0 at the beginning of the year and will increase as the data for the year become available. Year Coverage is blank when the data history at the site is insufficient to determine when high concentrations are expected.

Carbon Monoxide, Nitrogen Dioxide, and Sulfur Dioxide

According to the California Air Resources Board, the Riverside-Rubidoux air monitoring station has not exceeded carbon monoxide (CO), nitrogen dioxide (NO_2), or sulfur dioxide (SO_2) state and/or national standards within the years 1998-2002.

Sensitive Receptors

High concentrations of air pollutants pose health problems for the general population, particularly young children playing outdoors, the elderly and the sick. Locations where these people congregate are considered sensitive receptor areas. Examples of sensitive receptor areas include schools, community centers, parks hospitals, convalescent homes and nursing homes.

Objectionable Odors

Construction activities and certain types of land uses, such as heavy industrial, commercial and agricultural uses may create objectionable odors in the study area. The South Coast Air Quality Management District (SCAQMD) Rule 402 prohibits such emissions. Any mobile or stationary source generating an objectionable odor is subject to Rule 402 and may be reported to the SCAQMD.

Moreno Valley General Plan

Circulation Element Objectives 5.3, 5.4, 5.8 and 5.9 and related policies and Programs 5-4, 5-5, 5-6, 5-9 through 5-16 serve to control vehicular emissions by limiting the number of vehicle miles traveled, enhancing circulation and relieving traffic congestion. They encourage walking, bicycling, mass transit, transportation demand management, intelligent transportation systems and road improvements that allow for the efficient movement of vehicles.

Each of the land use alternatives as well as Safety Element Objective 6.6 and related policies promote land use patterns that reduce trip distances and thereby reduce air pollution. The plan locates commercial sites and parks close to residential areas (particularly higher density areas) and provides adequate areas for job-generating land uses. Safety Element Objective 6.7 and related policies support regional air quality strategies, park and ride facilities and express bus service. Policy 6.7.4 requires heavy industrial sites to be separated from residential areas and sensitive receptors.

Objective 7.5 and related policies concerning energy conservation would also reduce air emissions. Policy 7.5.5 encourages solar power and other forms of renewable energy. Policy 7.5.3 calls for the placement of commercial, industrial and multiple family uses in areas of high transit potential.

Existing Regulations

Rule 403 is an existing AQMD regulation that requires watering and other actions to reduce the amount of fugitive dust particles released into the air due to grading, construction, demolition and other activities.

Title 24 regulations are statewide building design and construction standards that improve the energy efficiency of new buildings. Energy efficiency reduces the demand for electric generation, natural gas and other fuels. Energy efficient buildings also reduce the air emissions associated with electric generation and combustion of natural gas and other fuels.

THRESHOLD FOR DETERMINING SIGNIFICANCE

For the purposes of this EIR, a significant impact would occur if implementation of General Plan Alternatives 1, 2, or 3 would:

- *Violate any Federal, State, or local ambient air quality standard;*
- *Substantially contribute to an existing air quality violation;*
- *Conflict with the SCAQMD Air Quality Management Plan or SCAG Growth Management Plan;*
- *Create objectionable odors; or*
- *Expose sensitive receptors to substantial pollutant concentrations.*

ENVIRONMENTAL IMPACT

Air quality impacts from future development allowed under the three General Plan Land Use Alternatives can be divided into two types; short-term impacts and long-term impacts. Short-term impacts are associated with construction activities and long-term impacts are associated with the continued operation of developed land uses and the associated increase in vehicular trips.

Short-Term Impacts

General Plan Alternatives 1, 2, and 3

Future development in the planning area will generate construction impacts associated with the following construction activities: 1) construction equipment emissions; 2)

emissions from workers' vehicles traveling to and from the construction sites; and 3) dust from grading and earth-moving operations. Construction related air quality impacts will occur periodically throughout implementation of the General Plan, regardless of which Land Use Alternative is selected. Construction activity will primarily generate PM_{10}, CO, and NO_X. In addition, reactive organic gases (ROGs) will be released during the use of architectural coatings, exterior paints and asphalt.

The three General Plan Land Use Alternatives identify future allowed land uses; however, no specific development is proposed. Construction emissions for specific development projects will vary depending on the size of the project, amount of grading required, type and quantity of construction equipment, building floor area or number of residential units to be constructed. As such, construction related emissions cannot be accurately determined at this general plan level of analysis. However, general construction emissions output calculations were performed to describe a typical construction related emissions output per day. The demolition, grading, and building construction emissions calculations were based on a daily development of approximately 4.5 acres within the planning area. These calculations are contained in Volume II Appendix C of this EIR. **Table 5.3-6** depicts a summary of the construction related emissions anticipated to occur with a typical project that could occur under the General Plan.

TABLE 5.3-6
TYPICAL CONSTRUCTION RELATED EMISSIONS

Pollutant	Total Emissions (lbs/day)
PM_{10}	18
ROG	113
NOx	154
CO	141

Source: P&D Consultants, July 2003.

As depicted in **Table 5.2-6**, the demolition, grading, and building construction activities of a typical development project allowed under the General Plan may result in an average of 18 pounds per day of PM_{10} emissions, 113 pounds per day of ROG emissions, 154 pounds per day of NO_X emission, and 141 pounds per day of CO emissions for one project. However, more than one project is likely to be under construction at one time.

The South Coast Air Basin currently fails to meet state and federal air quality standards for four of the criteria pollutants including ozone, nitrogen dioxide, carbon monoxide, and fine particulate matter. Therefore, the addition of construction related emissions to the air basin could violate the existing federal, State, and local air quality standards for ozone, nitrogen dioxide, carbon monoxide, and fine particulate matter and contribute to an existing air quality violation. This is considered a significant impact.

The PM_{10} emissions associated with construction activities can be reduced by approximately 50 percent with implementation of the SCAQMD Rule 403 construction regulations. Also, implementation of the aforementioned new state and AQMD regulations on construction equipment, diesel fuels and diesel exhaust will substantially reduce short-term impacts on air quality. Implementation of Mitigation Measures AQ1, AQ2, and AQ3 will further reduce the construction related air quality impact; however, the impact associated with construction related emissions is anticipated to remain significant and unavoidable.

Long-Term Impacts

General Plan Alternatives 1, 2, and 3

New development that would occur pursuant to any of the three General Plan Alternatives would impact regional air quality. The major sources of new air pollution would result from: 1) on-site emissions from the use of natural gas for space heating, cooking and water heating; 2) emissions from vehicles traveling to and from the planning area; 3) emissions from the combustion of fossil fuels at power plants to produce the electricity used within the planning area; and 4) stationary source emissions from industrial and commercial uses.

Table 3-1 in the *Section 3.0 Project Description* of this EIR summarizes the level of development expected to occur with implementation of the three General Plan Land Use Alternatives. As depicted, approximately 76,420 dwelling units and 100,437,000 square feet of non-residential development may occur under the Alternative 1. Implementation of Alternative 2 is expected to generate approximately 83,324 dwelling units and 97,409,000 square feet of non-residential development. Under Alternative 3, approximately 82,728 dwelling units and 90,257,000 square feet of non-residential development would occur.

The City currently implements, and will continue to implement state-mandated air quality regulations. The General Plan also provides residential land use in close proximity to commercial centers and employment centers. This allows people to walk to work, and shopping, which will result in a reduction of the number of vehicular trips generated by implementation of the General Plan, and reduction in the associated air pollution.

Table 5.3-7 depicts the estimated daily emissions associated with buildout of Land Use Alternative 1, which includes both stationary and mobile emissions. **Table 5.3-7** also summarizes the difference between existing and Alternative 1 estimated daily emissions. The planning area is anticipated to generate over 57,838 pounds per day of PM_{10}, 26,196 pounds per day of ROG, 11,738 pounds per day of NO_X, and 116,908 pounds per day of CO. As depicted in **Table 5.3-7**, this is a decrease of approximately 2,385 pounds per day of ROG, 17,101 pounds per day of NO_X, and 141,723 pounds per day of CO.

TABLE 5.3-7
COMPARISON OF ESTIMATED EXISTING AND ALTERNATIVE 1
DAILY AVERAGE PROJECT EMISSIONS (LBS/DAY)

Pollutant	Existing			Buildout			Net Change
	Stationary Source Emissions	Mobile Source Emissions	Total	Stationary Source Emissions	Mobile Source Emissions	Total	
PM_{10}	615	12,557	13,172	1,300	56,538	57,838	44,666
ROG	7,715	20,866	28,581	16,332	9,864	26,196	(2,385)
NO_x	1,075	27,764	28,839	2,852	8,886	11,738	(17,101)
CO	5,289	253,342	258,631	11,345	105,563	116,908	(141,723)

( ) = decrease
Notes: All emission levels provided in Table 5.3-7 are unmitigated; mitigated emission levels are discussed in the *Section 7.0 Cumulative Impacts.*
Source: P&D Consultants, July 2003.

Table 5.3-8 depicts the estimated daily emissions associated with buildout of General Plan Alternative 2, which includes both stationary and mobile emissions. **Table 5.3-8** also summarizes the difference between existing and Alternative 2 estimated daily emissions. The planning area is anticipated to generate over 52,535 pounds per day of PM_{10}, 26,776 pounds per day of ROG, 10,814 pounds per day of NO_X, and 107,699 pounds per day of CO. As depicted in **Table 5.3-8**, this is a decrease of approximately 1,805 pounds per day of ROG, 18,025 pounds per day of NO_X, and 150,932 pounds per day of CO.

Table 5.3-9 depicts the estimated daily emissions associated with buildout of General Plan Alternative 3, which includes both stationary and mobile emissions. **Table 5.3-9** also summarizes the difference between existing and Alternative 3 estimated daily emissions. The planning area is anticipated to generate over 50,977 pounds per day of PM_{10}, 26,383 pounds per day of ROG, 10,554 pounds per day of NO_x, and 104,763 pounds per day of CO. As depicted in **Table 5.3-9**, this is a decrease of approximately 2,198 pounds per day of ROG, 18,285 pounds per day of NO_x, and 153,868 pounds per day of CO.

TABLE 5.3-8
COMPARISON OF ESTIMATED EXISTING AND ALTERNATIVE 2
DAILY AVERAGE PROJECT EMISSIONS (LBS/DAY)

Pollutant	Existing			Buildout			Net Change
	Stationary Source Emissions	Mobile Source Emissions	Total	Stationary Source Emissions	Mobile Source Emissions	Total	
PM_{10}	615	12,557	13,172	1,417	51,118	52,535	39,363
ROG	7,715	20,866	28,581	17,779	8,997	26,776	(1,805)
NO_x	1,075	27,764	28,839	2,805	8,009	10,814	(18,025)
CO	5,289	253,342	258,631	12,192	95,507	107,699	(150,932)

( ) = decrease
Notes: All emission levels provided in Table 5.3-9 are unmitigated; mitigated emission levels are discussed in the *Section 7.0 Cumulative Impacts.*
Source: P&D Consultants, July 2003.

TABLE 5.3-9
COMPARISON OF ESTIMATED EXISTING AND ALTERNATIVE 3
DAILY AVERAGE PROJECT EMISSIONS (LBS/DAY)

Pollutant	Existing			Buildout			Net Change
	Stationary Source Emissions	Mobile Source Emissions	Total	Stationary Source Emissions	Mobile Source Emissions	Total	
PM_{10}	615	12,557	13,172	1,407	49,570	50,977	37,805
ROG	7,715	20,866	28,581	17,653	8,731	26,383	(2,198)
NO_x	1,075	27,764	28,839	2,781	7,773	10,554	(18,285)
CO	5,289	253,342	258,631	12,110	92,653	104,763	(153,868)

( ) = decrease
Notes: All emission levels provided in Table 5.3-5 are unmitigated; mitigated emission levels are discussed in the *Section 7.0 Cumulative Impacts.*
Source: P&D Consultants, July 2003.

As depicted in **Tables 5.3-7** through **5.3-9**, implementation of Alternative 3 would result in the least air quality emissions, while implementation of Alternative 1 would result in the most emissions. As a result, implementation of Alternative 3 would generally be the most environmentally superior General Plan Alternative in terms of total air emissions.

The South Coast Air Basin currently fails to meet state and federal air quality standards for four of the criteria pollutants including ozone, nitrogen dioxide, carbon monoxide, and fine particulate matter. Although emission levels are anticipated to decrease for

ROG, NO_X, and CO by the buildout of any of the three General Plan Alternatives due to stricter air quality standards and better technology, implementation of any of the three General Plan Alternatives could still significantly contribute to the existing air quality violations. As a result, implementation of the General Plan could violate the existing federal, State, and local air quality standard and conflict with the SCAQMD Air Quality Management Plan or SCAG Growth Management Plan. Implementation of Mitigation Measures AQ1 through AQ10 would reduce the air quality impacts; however, the long-term air quality impact is anticipated to remain significant and unavoidable due to cumulative effects in combination with air emissions within the South Coast Air Quality Basin.

Sensitive Receptors

General Plan Alternatives 1, 2, and 3

Future development according to any of the three General Plan Alternatives has the potential to increase the exposure of sensitive receptors, including residents, in the planning area to increased air pollutant levels associated with carbon monoxide (CO). Section 5.2 *Traffic/Circulation* of this EIR provides an analysis of roadway and intersection operations for General Plan buildout. As depicted in Section 5.2, implementation of the proposed General Plan could result in several intersections operating at Level of Service (LOS) E or worse. These intersections would have the potential to create localized CO "hot spot" impacts. Typically, if a sensitive receptor is located within 500 feet of an intersection operating at LOS worse than E, a significant impact would occur. Therefore, implementation of the General Plan may result in a significant impact associated with sensitive receptors.

Concentrations of air pollutants such as carbon monoxide and particulates are much higher adjacent to freeways than the concentrations of pollutants in areas located far from freeways. The land use plan for Alternatives 1 and 3 would allow new residential development adjacent to State Route 60 (from Moreno Beach Drive east), while Alternative 2 would allow commercial, office and business park development adjacent to the freeway. Therefore, both Alternatives 1 and 3 would expose more sensitive receptors to air pollution from freeway traffic than would be the case under Alternative 2.

Implementation of Mitigation Measure AQ10 would reduce the impact; however, the impact associated with sensitive receptors would remain significant and unavoidable. Mitigation Measure AQ10 requires that studies shall be conducted on the identified street segments to determine if any additional traffic controls, pavement width or other operational system improvements are needed to achieve the desired level of service.

Objectionable Odors

General Plan Alternatives 1, 2, and 3

Future construction activity allowed according to the three proposed General Plan Alternatives could generate objectionable odors. These odors would be short-term in nature. Future industrial and commercial uses could also generate objectionable odors. Any objectionable odor may be reported to the AQMD, which resolves complaints through investigation within one business day of the received complaint, and issuance of Notices to Comply/Notices of Violation, when necessary. These existing regulations will avoid any significant impacts associated with objectionable odors associated with implementation of any of the three General Plan Alternatives. Implementation of the General Plan will not result in a significant objectionable odors impact.

MITIGATION MEASURES

AQ1. Grading activities shall comply with South Coast Air Quality Management District Rule 403 regarding the control of fugitive dust **(Policy 6.7.5)**.

AQ2. Building construction shall comply with the energy conservation requirements of Title 24 of the California Administrative Code **(Policy 6.7.6)**.

AQ3. Cooperate with regional efforts to establish and implement regional air quality strategies and tactics **(Policy 6.7.1)**.

AQ4. Encourage the financing and construction of park-and-ride facilities **(Policy 6.7.2)**.

AQ5. Encourage express transit service from Moreno Valley to the greater metropolitan areas of Riverside, San Bernardino, Orange and Los Angeles Counties **(Policy 6.7.3)**.

AQ6. Coordinate with Caltrans and RCTC regarding the integration of Intelligent Transportation Systems (ITS) consistent with the principles and recommendations referenced in the Inland Empire ITS Strategic Plan **(Policy 5.4.2)**.

AQ7. Ensure that all new developments make adequate provision for bus stops and turnout areas for both public transit and school bus service **(Policy 5.8.4)**.

AQ8. Integrate bikeways, consistent with the Bikeway Plan, with the circulation system and maintain Class II and III bikeways as part of the City's street system **(Policy 5.10.2)**.

AQ9. Implement Transportation demand management (TDM) strategies that reduce congestion in the peak travel hours. Examples include carpooling, telecommuting, and flexible work hours **(Program 5-12)**.

AQ10. Conduct studies of specified arterial segments to determine if any additional improvements will be needed to maintain an acceptable LOS at General Plan build-out. Generally, these segments will be studied as new developments are proposed in their vicinity. Measures will be identified that are consistent with the Circulation Element designation of these roadway segments, such as additional turn lanes at intersections, signal optimization by coordination and enhanced phasing, and travel demand management measures. The arterial segments that require further study are shown on General Plan Figure 5-1 *(Road segments listed in Table 5.2-6 for Alternative 1, Table 5.2-8 for Alternative 2 and Table 5.2-10 for Alternative 3 of the EIR for the General Plan Update)*. **(Program 5-6)**

IMPACT AFTER MITIGATION

Significant and unavoidable.

NOTES AND REFERENCES

None.