4.1.7 AIR QUALITY

4.1.7.1 Regional Study Area

The California Air Resources Board (ARB) divides the state into air basins that share similar meteorological and topographical features. Orange County is in the South Coast Air Basin (SCAB), a 6,600-square-mile area comprised of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The SCAB's climate and topography are highly conducive to the formation and transport of air pollution. Peak ozone concentrations in the SCAB over the last two decades have occurred at the base of the mountains around Azusa and Glendora in Los Angeles County and at Crestline in the mountains above the City of San Bernardino.

4.1.7.2 Criteria Air Pollutants

The quality of the ambient air is affected by pollutants emitted into the air from stationary and mobile sources. Stationary sources can be divided into two major subcategories: point sources and area sources. Point sources consist of one or more emission sources at a facility with an identified location and are usually associated with manufacturing and industrial processing plants. Area sources are widely distributed, such as residential water heaters, and produce many small emissions.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources include automobiles, trucks, and buses. Indirect sources are sources that, by themselves, may not emit air contaminants, but which indirectly cause the generation of air pollutants by attracting vehicle trips or consuming energy. Examples of indirect sources include office complexes that generate commuter trips and commercial centers that consume energy resources through the use of natural gas for space heating. Indirect sources also include actions proposed by local governments, such as redevelopment districts, and private projects involving the development of either large buildings or tracts. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment.

There are many potentially dangerous substances present in the ambient air, but only a very few are present in sufficient quantities to be of immediate concern. Pollutants considered to be sufficiently hazardous to health to warrant the establishment of air quality standards by the federal or state government are called "criteria air pollutants." Criteria air pollutants are divided into primary and secondary pollutants. Primary criteria air pollutants are those that are emitted directly from sources, including carbon monoxide (CO), sulfur dioxide (SO_2), and most fine particulate matter (PM_{10}, $PM_{2.5}$), including lead (Pb) and fugitive dust. Primary criteria air pollutants that do not have federal standards but are regulated at the state-level for their contribution to the formation of secondary criteria air pollutants include reactive organic gases (ROGs), oxides of nitrogen (NO_X), and volatile organic compounds (VOCs).

Secondary criteria air pollutants are those pollutants formed by chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants.

The following paragraphs describe these primary and secondary criteria air pollutants and their known health effects.

Primary Criteria Air Pollutants

Carbon Monoxide (CO). Carbon monoxide (CO) is a colorless, odorless, toxic gas produced by the incomplete combustion of carbon substances (e.g., gasoline or diesel fuel). Over 80 percent of the CO emitted in urban areas is contributed by motor vehicles. High levels of CO commonly occur near freeways and busy roadways. The primary adverse health effect associated with CO is the interference of normal oxygen transfer to the blood, which may result in tissue oxygen deprivation.

Sulfur Dioxide (SO_2). Sulfur dioxide (SO_2) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. Fuel combustion is the primary source of SO_2. Fuels such as natural gas contain very little sulfur and, consequently, have very low SO_2 emissions when combusted. By contrast, fuels high in sulfur content, such as coal or heavy fuel oils, can emit large amounts of SO_2 when combusted. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue.

Particulate Matter (PM). Particulate matter (PM) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulate are now recognized. Coarse particulate, or PM_{10}, includes that portion of the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 one-millionths of a meter or 0.0004 inch) or less. Fine particulate, or $PM_{2.5}$, has an aerodynamic diameter of 2.5 microns (i.e., 2.5 one-millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind action on the arid landscape also contributes substantially to the local particulate loading. Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in individuals who are naturally sensitive or susceptible to breathing problems.

Fugitive dust has primarily two public health and safety concerns. The first concern is that of respiratory problems attributable to the suspended particulates in the air. The size of the particles allows them to easily enter the air sacs in the lungs where they may be deposited, resulting in adverse health effects. The second concern is that of motor vehicle accidents caused by reduced visibility during severe wind conditions. Fugitive dust may also cause significant property damage during strong windstorms by acting as an abrasive material agent (much like sandblasting activities). Finally, fugitive dust can result in a nuisance factor due to the soiling of proximate structures and vehicles.

Lead (Pb). In the past, automotive sources were the major contributor of lead emissions to the atmosphere. As a result of EPA's regulatory efforts to reduce the content of lead in gasoline, the contribution of air emissions of lead from the transportation sector, and particularly the automotive sector, has greatly declined over the past two decades. Lead concentrations in southern California once exceeded the state and federal air quality standards by a wide margin, but have not exceeded these air quality standards at any regular monitoring station since 1982. Consequently, the area is designated as an attainment area for lead by both the EPA and ARB. Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs.

Reactive Organic Gases (ROGs). Reactive organic gases (ROGs) are composed of non-methane hydrocarbons which may contribute to the formation of smog. They are sometimes referred to as Non-Methane Organic Gases (NMOGs). Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROG include the

evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROG, but by reactions of ROG to form secondary pollutants.

Oxides of Nitrogen (NO_X). Oxides of nitrogen (NO_X) are colorless, odorless gases formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure (i.e., internal combustion engine emissions). NO_X serves as an integral participant in the process of photochemical smog production. NO_X is a respiratory irritant; however, its health effects are more acute when it forms secondary pollutants such as nitrogen dioxide (NO_2) or ozone (O_3).

Volatile Organic Compounds (VOCs). Volatile organic compounds (VOCs) exist in the ambient air, often as odorous gases produced by the evaporation of hydrocarbon compounds, including gasoline, alcohol, and solvents used in paints. VOCs contribute to the formation of smog and/or may be toxic themselves.

It should be noted that there are no state or federal ambient air quality standards for VOCs because they are not classified as criteria pollutants. VOCs are regulated; however, because a reduction in VOC emissions reduces certain chemical reactions which contribute to the formation of ozone. VOCs are also transformed into organic aerosols in the atmosphere, contributing to higher PM_{10} and lower visibility levels.

Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations of VOC because of interference with oxygen uptake. In general, ambient VOC concentrations in the atmosphere are suspected to cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis, even at low concentrations. Some hydrocarbon components classified as VOC emissions are thought or known to be hazardous. Benzene, for example, is a hydrocarbon component of VOC emissions that is known to be a human carcinogen.

Secondary Criteria Air Pollutants

Ozone (O_3). Ozone (O_3) is a secondary pollutant that is not directly emitted from a particular source. It is one of a number of substances called photochemical oxidants that are formed primarily when reactive organic compounds (ROCs) and NO_X (both byproducts of the internal combustion engine) react with sunlight. O_3 is present in relatively high concentrations in the SCAB, and the damaging effects of photochemical smog are generally related to the concentrations of O_3. O_3 may pose a health threat to those who already suffer from respiratory diseases, as well as healthy people. Additionally, O_3 has been tied to crop damage, typically in the form of stunted plant growth and pre-mature death. O_3 can also act as a corrosive agent resulting in property damage, such as the embrittlement of rubber products.

Nitrogen Dioxide (NO_2). Nitrogen Dioxide (NO_2) is a byproduct of fuel combustion. The principal form of NO_2 produced by combustion is NO. NO reacts with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. An increase in the incidence of bronchitis in children two and three years of age has also been observed at concentrations below 0.3 part per million (ppm). NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. The highest concentrations generally occur during the fall when atmospheric conditions trap ground-level

releases of NO_2 and there is insufficient radiation intensity (sunlight) to oxidize it. NO_2 also contributes to the formation of PM_{10}.

4.1.7.3 Regulatory and Planning Requirements for the South Coast Air Basin

Regulatory Setting

Federal

The federal Clean Air Act (CAA), enacted in 1970 and last amended in 1990, represents the cornerstone of the national air pollution control effort. Basic elements of the CAA include federal ambient air quality standards for major air pollutants, hazardous air pollutants standards, state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

The U.S. Environmental Protection Agency (EPA) has set national ambient air quality standards (NAAQS) for O_3, NO_2, CO, PM_{10}, and airborne lead. An area where the NAAQS for a pollutant is exceeded more than three times in three years can be considered a nonattainment area subject to planning pollution control requirements that are more stringent than normal requirements. The Clean Air Act Amendments of 1990 set out a classification system for nonattainment areas that established attainment dates based on the design value for the area. Under this system, areas with higher baseline readings, or design values, were given more time to achieve compliance with the federal standards.

Nonattainment classifications and compliance dates vary by pollutant. Ozone nonattainment areas were designated as marginal, moderate, serious, severe, or extreme. Following the 1990 amendment, Marginal Ozone nonattainment areas were given 3 years to come into attainment with the standards, moderate areas were given 6 years, and serious areas were given 9 years. Furthermore, following the 1990 amendment, Severe-15 areas were required to develop plans that would bring the areas into attainment within 15 years, and severe-17 areas were given 17 years. Up to 20 years was provided for areas classified as extreme.

Carbon monoxide and PM_{10} nonattainment areas were designated as either moderate or serious. Moderate CO areas were required to demonstrate attainment by December 31, 1995, and serious CO areas were given an additional 5 years past that date. Moderate PM_{10} areas were required to demonstrate attainment by December 31, 1994, and serious PM_{10} areas were required to demonstrate attainment by the end of 2001.

State

In addition to federal requirements, each air basin must meet California Clean Air Act (CCAA) requirements. According to the CCAA, air pollution control districts must design their air quality attainment plans to achieve a reduction in basin-wide emissions of 5 percent or more per year (or 15 percent or more in a three-year period) for all non-attainment pollutants and their precursors. For emission reduction accounting purposes, the ARB established a seven-year initial reporting period (1988 to 1994) with reporting intervals every three years thereafter. New Air Quality Management Plans (AQMPs) were adopted by the air districts in 1989 to meet federal standards and in 1991 to meet California standards. These AQMPs were revised in 1994 and 1997, and the EPA approved the 1994 AQMP in 1996 as part of the State Implementation Plan.

Under federal conformity regulations, all federal or federally funded transportation projects must conform to the State Implementation Plan and must not impede progress toward attainment of the federal standards. To establish conformity, emissions from future projects must be accounted for in the future baseline emissions inventories, such that the attainment demonstrations include these future emissions. For transportation projects, planning is now underway to year 2030.

The ARB has established state ambient air quality standards to protect public health and welfare. Standards have been set for O_3, CO, NO_2, SO_2, $PM_{10,}$ sulfates, airborne lead, hydrogen sulfide, and vinyl chloride, at levels designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases. The ARB carries out control program oversight activities, while local air pollution control districts, such as the South Coast Air Quality Management District (SCAQMD), have primary responsibility for air quality planning and enforcement. The ARB designates the attainment status of areas with respect to the state air quality standards, based on criteria adopted by the ARB and contained in Title 17 of the California Code of Regulations.

State and national air quality standards alike consist of two parts: an allowable concentration of a pollutant and an averaging time over which the concentration is to be measured. The allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops, and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (e.g., one hour), or to a relatively lower average concentration over a longer period (e.g., 8 hours, 24 hours, or 1 month). For some pollutants, there is more than one air quality standard, reflecting both its short-term and long-term effects.

Regional

The SCAQMD is the air pollution control agency for the SCAB. In addition to federal requirements, the SCAB and other air basins throughout the state must meet CCAA requirements. According to the CCAA, air pollution control districts must design their air quality attainment plans to achieve a reduction in basin-wide emissions of 5 percent or more per year (or 15 percent or more in a three-year period) for all non-attainment pollutants and their precursors. For emission reduction accounting purposes, the ARB established a seven-year initial reporting period (1988 to 1994) with reporting intervals every three years thereafter.

The SCAQMD and the Southern California Association of Governments (SCAG) jointly prepare the AQMP for the SCAB. The AQMP contains measures to meet state and federal requirements. When approved by the ARB and the EPA, the AQMP becomes part of the State Implementation Plan. New AQMPs were adopted by the air districts in 1989 to meet federal standards and in 1991 to meet California standards. These AQMPs were revised in 1994 and 1997, and the EPA approved the 1994 AQMP in 1996 as part of the State Implementation Plan.

After the EPA announced that it had concerns about the ozone control strategies in the 1997 AQMP, the SCAQMD revised its AQMP in 1999 to address the EPA issues. The revised plan, known as the 1997/1999 AQMP, was approved by the EPA on May 10, 2000 and replaced the 1994 AQMP as the federally enforceable State Implementation Plan for the SCAB. The most recent AQMP was prepared by the SCAQMD and SCAG in 2003, and the SCAQMD adopted the revised plan as the 2003 AQMP on August 1, 2003. ARB approved the 2003 AQMP in October 2003 and forwarded it to the EPA for review and approval. The 2003 AQMP was adopted by the EPA on April 9, 2004.

Attainment Status

Carbon Monoxide (CO). The 8-hour CO levels in the SCAB are roughly two times the state and federal standards. The 8-hour averages are trending slightly downward and the 1-hour average has generally trended downward in the past five years; however, the SCAB is classified as a serious nonattainment area for CO. The EPA deadline for attainment was to be December 31, 2000, however, the SCAB was granted an extension. The SCAB has not had more than one violation of the federal CO standard in the past two years. Therefore, the SCAB has met the criteria for CO attainment. However, the SCAB is still formally designated as a non-attainment area for CO until EPA designates it otherwise.

Sulfur Dioxide (SO_2). Federal and state SO_2 standards have not been exceeded in the SCAB for the past five years. The SCAB is considered to be in attainment by the EPA and ARB.

Particulate Matter (PM). In July 1997, the EPA promulgated a new 8-hour standard for fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). In 1999, a federal court ruling (*American Trucking Associations, Inc., et al.*, v. *United States Environmental Protection Agency*) blocked implementation of these standards. In February 2001, the United States Supreme Court upheld the standards but remanded some issues back to the Circuit Court. In March 2002, the Circuit Court upheld the standards. EPA announced its final air quality designations for the new $PM_{2.5}$ standard on December 17, 2004, designating the SCAB as a non-attainment area. EPA will issue implementation guidance for $PM_{2.5}$ plans before the end of 2005. The SCAQMD will have three years to submit a plan showing measures to meet the $PM_{2.5}$ standards. EPA is also developing guidance on how the new $PM_{2.5}$ standard will be implemented. Both the PM_{10} and $PM_{2.5}$ standards will apply once the new standards are fully implemented.

On June 20, 2002, the ARB revised the state's PM_{10} annual average standard to 20 micrograms per cubic meter (µg/m3) and established an annual average standard for $PM_{2.5}$ of 12 $\mu g/m^3$. These standards were approved by the Office of Administrative Law in June 2003 and are now effective. However, adequate technology to assess $PM_{2.5}$ impacts has not yet been developed, and PM_{10} emissions must be used as an indicator of potential $PM_{2.5}$ impacts. SCAQMD has not yet altered the recommended significance thresholds or analysis techniques based on these revised standards.

PM_{10} levels in the SCAB are currently four to ten times the state standard and the SCAB is currently in serious non-attainment for this pollutant. Attainment of all federal PM_{10} health standards is to be achieved by December 31, 2006.

Lead (Pb). Federal and state lead emissions have not been exceeded in the SCAB since 1982. The SCAB is considered to be in attainment for lead emissions.

Ozone (O_3). On April 15, 2004, the EPA released its list of 8-hour ozone non-attainment areas and identified a deadline for each non-attainment area to attain the standard. Areas with the highest 8-hour concentrations and the greatest number of days exceeding the new standard were given the longest time to reach attainment. The SCAB was designated by EPA as severe non-attainment for the new 8-hour ozone standard. Additionally, the EPA designated the SCAB as extreme non-attainment for 1-hour ozone. Attainment of all federal O_3 standards are to be achieved by November 15, 2010.

The SCAQMD now has until 2007 to submit a plan showing measures that would reduce ozone levels to below the federal 8-hour standard by June 15, 2021. As a part of the designation, the EPA announced that the 1-hour ozone standard would be revoked in June 2005. Thus, the

8-hour ozone standard attainment deadline of 2021 will supersede and replace the current 1-hour ozone standard attainment deadline of 2010.

Nitrogen Dioxide (NO_2). The national nitrogen dioxide (NO_2) standard was regularly exceeded in Los Angeles County until 1992, and the SCAB was the only NO_2 non-attainment area in the nation in 1998. NO_2.has steadily declined in maximum one-hour readings, number of violations, and maximum annual average concentrations over the last several years in the SCAB. The SCAB is a nonattainment area for NO_2 for purposes of state and federal air quality planning. Although the federal NO_2 standard has not been exceeded for four years, EPA has not formally changed the area's designation.

Ambient Air Quality Standards

Air quality impacts of a project, combined with existing background air quality levels, must be compared to the applicable ambient air quality standards (AAQS) to gauge their significance. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. The standards are designed to protect sensitive persons most susceptible to further respiratory distress, such as persons with respiratory illnesses or impaired lung function caused by other illness, the elderly, and young children.

Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. The SCAQMD's CEQA Air Quality Handbook defines land uses considered to be sensitive receptors as long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, child care centers, and athletic facilities. California standards are generally stricter than national standards, but have no penalty for non-attainment. California and national ambient air standards are shown on Table 4.1.7-1.

4.1.7.4 SAMP Study Area Existing Conditions

The SCAQMD is responsible for monitoring air quality in the SCAB and for adopting controls, in conjunction with ARB, to improve air quality. The SCAQMD has established 38 "source-receptor" areas (SRAs) for monitoring air pollution, based on topographical and meteorological barriers. The SAMP Study Area is located in SRA 21, Capistrano Valley, which is in the southernmost portion of Orange County and extends from the mountains to the coast. The SCAQMD does not maintain a monitoring station in this SRA. The SCAQMD monitoring station for this forecast area, known as Inland Orange County, is in SRA 19 (i.e., the Saddleback Valley).

Overall, air quality improved considerably throughout the SCAB in the 1990s. In 1990, the peak ozone concentration in SRA 19 was 0.19 parts per million (ppm) and the state ozone standard was exceeded 32 times. In 2002, the peak reading at that same station was 0.136 ppm and the State standard was exceeded only nine times. These improvements have occurred despite extensive population growth in Orange County during the past 12 years.

TABLE 4.1.7-1
AMBIENT AIR QUALITY STANDARDS

Air Pollutant	State Standard	Federal Standard	
		Primary	Secondary
Ozone (O_3)	0.09 ppm, 1-hr avg.	0.12 ppm, 1-hr avg. 0.08 ppm, 8-hr avg.	0.12 ppm, 1-hr avg. 0.08 ppm, 8-hr avg.
Respirable Particulate Matter (PM_{10})	50 $\mu g/m^3$, 24-hr avg. 20 $\mu g/m^3$ AGM	150 $\mu g/m^3$, 24-hr avg. 50 $\mu g/m^3$ AAM	150 $\mu g/m^3$, 24-hr avg. 50 $\mu g/m^3$ AAM
Fine Particulate Matter ($PM_{2.5}$)	No 24-hr., State std. 12 $\mu g/m^3$ AGM	65 $\mu g/m^3$, 24-hr avg. 15 $\mu g/m^3$ AAM	65 $\mu g/m^3$, 24-hr avg. 15 $\mu g/m^3$ AAM
Carbon Monoxide (CO)	9.0 ppm, 8-hr avg. 20 ppm, 1-hr avg.	9 ppm, 8-hr avg. 35 ppm, 1-hr avg.	None
Nitrogen Dioxide (NO_2)	0.24 ppm, 1-hr avg.	0.053 ppm, annual avg.	0.053 ppm, annual avg.
Sulfur Dioxide (SO_2)	0.25 ppm, 1-hr 0.04 ppm, 24-hr avg.	0.03 ppm, annual avg. 0.14 ppm, 24-hr avg.	0.5 ppm, 3-hr avg.
Lead (Pb)	1.5 $\mu g/m^3$, monthly avg.	1.5 $\mu g/m^3$, calendar quarter	1.5 $\mu g/m^3$
Visibility-Reducing Particles	Extinction coefficient of 0.23 per km, visibility of 10 miles at relative humidity less than 70%, 1 observation	—	—
Sulfates (SO_4)	25 $\mu g/m^3$, 24-hr avg.	—	—
Hydrogen Sulfide (H_2S)	0.03 ppm, 1-hr avg.	—	—
Vinyl Chloride	0.010 ppm, 24-hr avg.	—	—

ppm = parts per million by volume
$\mu g/m^3$ = micrograms per cubic meter
AAM = annual arithmetic mean
AGM = annual geometric mean

Source: California Air Resources Board 2004

Pending EPA designation of $PM_{2.5}$ non-attainment areas, the SCAQMD is monitoring levels of concentrations of $PM_{2.5}$ in the SCAB. Where readings are available, the $PM_{2.5}$ concentrations are shown in Table 4.1.7-2 for informational purposes. Readings for SRA 19 for five years, together with the applicable state and national standards, are also presented in this table.

Pollutant concentrations, particularly those of particulates, vary somewhat from year to year, depending on meteorological conditions. Although readings in SRA 19 for 1998 to 2002 (the most recent published data) are basically unchanged for ozone and carbon monoxide, concentrations of the two pollutants have declined since 1998. For all other pollutants, the observed concentration levels are basically unchanged over the past five-year period. The area experiences relatively low ozone pollution compared to elsewhere in the SCAB. Notwithstanding, concentrations of ozone are the highest in Orange County; state and national standards are regularly exceeded. As is the case throughout Orange County, carbon monoxide levels have not exceeded state and national standards in the period. Particulate readings are relatively constant and well below national PM_{10} standards, although they exceed state standards. The new national $PM_{2.5}$ standard would have been exceeded occasionally in SRA 19.

TABLE 4.1.7-2
SADDLEBACK VALLEY (INLAND ORANGE COUNTY) SRA 19
AIR QUALITY DATA SUMMARY

Pollutant Standards	1998	1999	2000	2001	2002
Ozone (O3)					
State standard (1-hr avg. 0.09 ppm)					
National standard (1-hr avg. 0.12 ppm)					
National standard (8-hr avg. 0.08 ppm)					
Maximum 1-hr concentration (in ppm)	0.16	0.01	0.13	0.125	0.136
Maximum 8-hr concentration (in ppm)	0.11	0.08	0.11	0.098	0.095
Number of days state standard exceeded	15	2	3	10	9
Number of days national 1-hr standard exceeded	1	0	1	1	2
Number of days national 8-hr standard exceeded	3	0	2	2	2
Carbon Monoxide (CO)					
State standard (1-hr avg. 20 ppm)					
National standard (1-hr avg. 35 ppm)					
State standard (8-hr avg. 9.0 ppm)					
National standard (8-hr avg. 9.0 ppm					
Maximum concentration 1-hr period (in ppm)	6.0	4.0	5.0	3.0	3.0
Maximum concentration 8-hr period (in ppm)	3.1	2.5	3.3	2.38	3.6
Number of days state/national 1-hr standard exceeded	0	0	0	0	0
Number of days state/national 8-hr standard exceeded	0	0	0	0	0
Nitrogen Dioxide (NO_2)[a.]					
State standard (1-hr avg. 0.25 ppm)					
National standard (0.0534 AAM in ppm)					
Annual arithmetic mean (in ppm)	0.0200	0.020	0.0205	0.0182	0.0187
Percent national standard exceeded	0	9	0	0	0
Maximum 1-hr concentration	0.12	0	0.11	0.08	0.11
Number of days state 1-hr standard exceeded	0	0.12 0	0	0	0
Suspended Particulates (PM_{10})					
State standard (24-hr avg. 50 µg/m3)					
National standard (24-hr avg. 150 µg/m3)					
Maximum 24-hr concentration	70	111	98[b.]	60	80
Percent samples exceeding state standard	10.2	10	3	5	8.3
Percent samples exceeding national standard	0	0	0	0	0
Suspended Particulates ($PM_{2.5}$)					
National standard (24-hr avg. 65 µg/m3)					
Maximum 24-hr concentration		56.6	94.7[2]	53.4	58.5
Percent samples exceeding national standard	NM	0	0	0	0

Note: 2002 data is the most current data available from the SCAQMD.
ppm = parts per million
µg/m3 = micrograms per cubic meter
NM = Mot Monitored. PM2.5 monitoring began in 1999.
a. Readings are from SRA 18 (North Orange County; NO_2 not monitored in SRA 19)
b. Year 2000 PM_{10} and $PM_{2.5}$ readings are from special monitoring station set up on temporary basis in SRA 19 and were only PM2.5 readings that year in SRA 19. PM_{10} readings were from some monitoring station for comparison purposes.

Source: SCAQMD Air Quality Data–1998 through 2002.