CHAPTER 10
CLIMATE AND AIR QUALITY

This chapter describes the regional climate and air quality of the Salton Sea watershed. This chapter is based upon readily available information at the time of preparation. In addition to a description of existing climate and air quality conditions in the study area, applicable regulatory requirements, significance criteria, sources of data, and data limitations are discussed. This chapter describes the methods used for assessment of the climate and air quality related environmental consequences associated with the alternatives. The results of those assessments and the significance of the identified impacts are discussed, and applicable control and mitigation measures are listed. Issues that would need to be further analyzed in project-level analyses are discussed, and recommended "Next Steps" are listed. Appendix E, Attachments E1 through E12, and Appendix H-3 provide supporting documentation.

STUDY AREA

In California, regional air pollution control districts have been established to oversee the attainment of air quality standards within air basins, as defined by the State. The districts have permitting authority over all stationary sources of air pollutants within their district boundaries, and provide the primary review of environmental documents prepared for projects with air quality issues.

Each district has developed its own program and regulations to attain and maintain air quality standards, while integrating federal and State requirements. The following is a list of the air basins and the air districts associated with the geographic areas in the Salton Sea watershed:

- Air Basins in the U.S. Portion of the Salton Sea watershed are under the jurisdiction of several local agencies: Imperial County Air Pollution Control District (ICAPCD), South Coast Air Quality Management District (SCAQMD), San Diego Air Pollution Control District (SDAPCD), and Mojave Desert Air Quality Management District (MDAQMD); and
- The Mexico portion of the Salton Sea watershed is under the jurisdiction of the Secretaría del Medio Ambiente y Recursos Naturales (SEMARNAT), the Mexican environmental agency (DOE and BLM, 2004).

The primary air quality impacts associated with construction and operations and maintenance of the ecosystem restoration alternatives would occur in the Salton Sea Air Basin. The Salton Sea Air Basin portion of the Salton Sea watershed consists of the Riverside County (Coachella Valley) area at the north end of the Salton Sea, which is under SCAQMD jurisdiction, and to the south, Imperial County, under ICAPCD jurisdiction. The remainder of this chapter will focus on the Salton Sea Air Basin, with much less discussion of climate, air quality, or impacts for the peripheral areas under MDAQMD, SDAPCD, and Mexican jurisdiction.

Figure 10-1 shows the location of each geographic subregion with respect to air basin, air district, and political boundaries.

REGULATORY REQUIREMENTS

Federal Regulations and Standards

National air quality policies are regulated through the federal Clean Air Act (CAA) of 1970 and the 1977 and 1990 amendments. Pursuant to the CAA, the U.S. Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) for six air pollutants: carbon monoxide

(CO), ozone, oxides of nitrogen as nitrogen dioxide (NO_2), oxides of sulfur as sulfur dioxide (SO_2), particulate matter (PM), and lead. These pollutants are referred to as criteria pollutants because numerical health based criteria have been established for each pollutant, which define acceptable levels of exposure. USEPA has revised the NAAQS several times since their original implementation and will continue to do so as the health effects of exposure to pollution are better understood. The current NAAQS, and the California ambient air quality standards (CAAQS), are summarized in Table 10-1. CAAQS are established by the California Air Resources Board (ARB).

Table 10-1
National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
			Primary[c]	Secondary[d]
Ozone	8 hour 1 hour	0.07 ppm 0.09 ppm	0.08 ppm	0.08 ppm
Carbon monoxide	8 hour 1 hour	9.0 ppm 20 ppm	9 ppm 35 ppm	— —
Nitrogen dioxide	Annual arithmetic mean 1 hour	— 0.25 ppm	0.053 ppm —	0.053 ppm —
Sulfur dioxide	Annual arithmetic mean 24 hour 3 hour 1 hour	— 0.04 ppm — 0.25 ppm	0.030 ppm 0.14 ppm — —	— — 0.5 ppm —
PM_{10}	Annual arithmetic mean 24 hour	20 µg/m^3 50 µg/m^3	50 µg/m^3 150 µg/m^3	50 µg/m^3 150 µg/m^3
$PM_{2.5}$	Annual arithmetic mean 24 hour	12 µg/m^3 —	15 µg/m^3 65 µg/m^3	15 µg/m^3 65 µg/m^3
Sulfates	24 hour	25 µg/m^3	—	—
Lead	30-day average calendar quarter	1.5 µg/m^3 —	— 1.5 µg/m^3	— 1.5 µg/m^3
Hydrogen sulfide	1 hour	0.03 ppm	—	—
Vinyl chloride	24 hour	0.01 ppm	—	—
Visibility reducing particles	8 hour	See note[e]	—	—

Source: ARB, 2005.

[a] California standards for ozone, carbon monoxide, sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles) are values that are not to be exceeded. All others are not to be equaled or exceeded.

[b] National standards, other than ozone, particulate matter, and those based on annual averages or annual arithmetic means, 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 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days/calendar year with a 24-hour average concentration above 150 µg/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 3 years, are equal to or less than the standard.

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

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

[e] Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

µg/m^3 = micrograms/cubic meter

ppm = parts per million (by volume).

The standards in Table 10-1 reflect recent changes to the ozone and PM_{10} standards, and the new $PM_{2.5}$ standard (ARB, 2005). The existing federal 1-hour ozone standard was formally revoked in June 2005 (USEPA, 2005a).

Federal Air Quality Designations

Under the 1977 amendments to the CAA, states with air quality that did not achieve the NAAQS were required to develop and maintain state implementation plans (SIPs). These plans constitute a federally

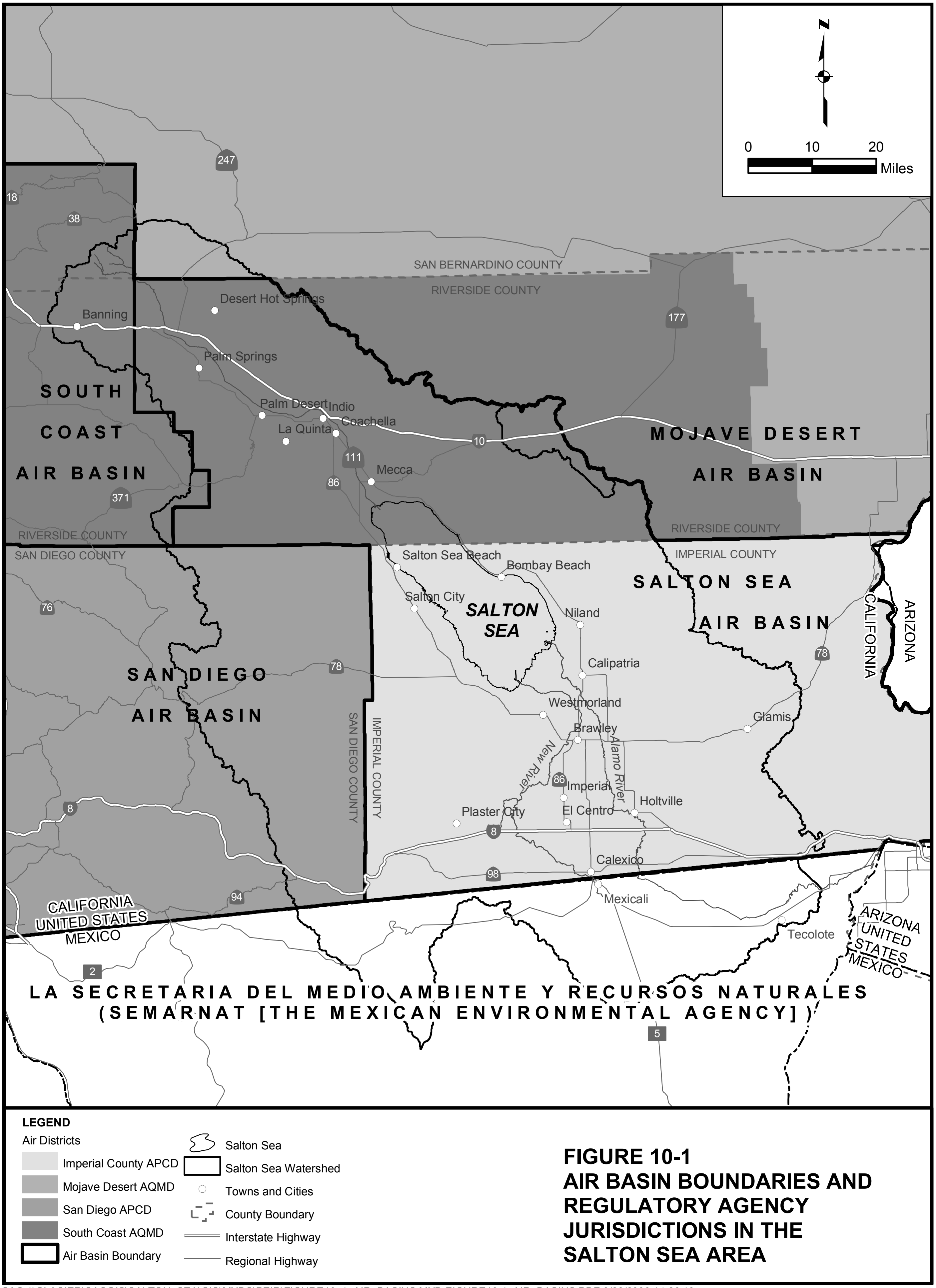

FIGURE 10-1
AIR BASIN BOUNDARIES AND REGULATORY AGENCY JURISDICTIONS IN THE SALTON SEA AREA

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enforceable definition of the state's approach (or "plan") and schedule for the attainment of the NAAQS. Air quality management areas are designated as attainment, nonattainment, or unclassified for individual pollutants depending on whether they achieve the applicable NAAQS and CAAQS for each pollutant. In addition, California can also designate areas as transitional. It is important to note that because the NAAQS and CAAQS differ in many cases, it is possible for an area to be designated as attainment by USEPA (meets the NAAQS) and nonattainment by the ARB (does not meet the CAAQS) for the same pollutant. Also, an area can be designated as attainment for one pollutant (for example, NO_2) and nonattainment for others (for example, ozone and PM_{10}).

Areas that were designated as nonattainment in the past, but have since achieved the NAAQS, are further classified as attainment-maintenance. The maintenance classification remains in effect for 20 years from the date that the area is determined by USEPA to meet the NAAQS. There are numerous classifications of the nonattainment designation, depending on the severity of nonattainment. For example, the ozone nonattainment designation has seven subclasses: basic, transitional, marginal, moderate, serious, severe-15, severe-17, and extreme. Areas that lack monitoring data are designated as unclassified areas. Unclassified areas are treated as attainment areas for regulatory purposes. Current air quality attainment status designations for each county composing the study area are listed and discussed in a later subsection.

Federal General Conformity Requirements

The CAA (1977 amendments) (42 USC 7401 et seq.) state that the federal government is prohibited from engaging in, supporting, providing financial assistance for, licensing, permitting, or approving any activity that does not conform to an applicable SIP.

In the 1990 CAA amendments, USEPA included provisions requiring federal agencies to ensure that actions undertaken in nonattainment or attainment-maintenance areas are consistent with applicable SIPs. The process of determining whether a federal action is consistent with applicable SIPs is called conformity.

These conformity provisions were put in place to ensure that federal agencies would contribute to efforts to attain the NAAQS. The USEPA has issued two conformity guidelines: (1) transportation conformity rules that apply to transportation plans and projects and (2) general conformity rules that apply to all other federal actions. A conformity determination[1] is only required for the alternative that is ultimately selected and approved. The general conformity determination is submitted in the form of a written finding, issued after a minimum 30-day public comment period on the draft determination.

The USEPA General Conformity Rule applies only to federal actions that result in emissions of "nonattainment or maintenance pollutants," or their precursors, in federally designated nonattainment or maintenance areas. The General Conformity Rule establishes a process to demonstrate that federal actions would be consistent with applicable SIPs and would not cause or contribute to new violations of the NAAQS, increase the frequency or severity of existing violations of the NAAQS, or delay the timely attainment of the NAAQS. The emission thresholds that trigger requirements of the conformity rule for federal actions emitting nonattainment or maintenance pollutants, or their precursors, are called *de minimis* levels. The general conformity *de minimis* thresholds are defined in 40 Code of Federal Regulations (CFR) 93.153(b).

The federal General Conformity Rule does not apply to federal actions in areas designated as nonattainment of only the CAAQS.

[1] A conformity determination is a process that demonstrates how an action would conform to the applicable implementation plan. If the emissions cannot be reduced sufficiently, and if air dispersion modeling cannot demonstrate conformity, then either a plan for mitigating or a plan for offsetting the emissions would need to be pursued.

Federal Prevention of Significant Deterioration and New Source Performance Standards

The CAA and amendments also include regulations intended to "prevent significant deterioration" (PSD) of air quality and to establish emissions performance standards for new stationary sources or New Source Performance Standards (NSPSs). Federal PSD and NSPS regulations generally apply to major (very large) stationary sources of emissions, and would not likely apply to the alternatives.

California Standards and Regulations

ARB administers the air quality policy in California. CAAQS were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in Table 10-1, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility-reducing particulates, hydrogen sulfide, and sulfates. The California Clean Air Act (CCAA), which was approved in 1988, requires each local air district in the State to prepare and maintain an Air Quality Management Plan (AQMP) to achieve compliance with CAAQS. These AQMPs also serve as the basis for preparation of the SIP for the State of California. The California Ozone SIP (ARB, 1994) was approved by the USEPA in September 1996 and codified as law in 40 CFR 52, Subpart F.

ARB establishes policy and statewide standards and administers the State's mobile source emissions control program. In addition, ARB oversees air quality programs established by State statute.

Local Regulations and Requirements

In California, regional air pollution control districts have been established to oversee the attainment of air quality standards within air basins, as defined by the State. The districts have permitting authority over all stationary sources of air pollutants within their district boundaries, and act as the primary reviewer of environmental documents associated with air quality issues.

The Salton Sea Air Basin consists of the Riverside County (Coachella Valley) area at the north end of the Salton Sea, which is under SCAQMD jurisdiction, and to the south, Imperial County, under ICAPCD jurisdiction. Each district has developed its own program and regulations to attain and maintain air quality standards, while integrating federal and State requirements. For example, as serious nonattainment areas for national PM_{10} standards, SCAQMD and ICAPCD have adopted regulations that represent Best Available Control Measures, or most stringent measures, for significant sources of fugitive dust. In addition, the air districts in the Salton Sea Air Basin have developed specific air quality guidelines and criteria for compliance with the California Environmental Quality Act (CEQA) (SCAQMD, 1993; ICAPCD, 2005d).

HISTORICAL PERSPECTIVE

In 1917, George Kennan published a book titled, *The Salton Sea, An Account of Harriman's Fight with the Colorado River*. In it, Mr. Kennan provides valuable perspective on the climate and air quality of the Salton Sea area, prior to the Colorado River flood that filled the Salton Sink in 1905 and 1906, forming the Salton Sea.

> "…Sixteen years ago, the region whose productivity now rivals that of the lower Nile was the dried-up bottom of an ancient sea. It was seldom sprinkled by rain; it was scorched by sunshine of almost equatorial intensity, and during the summer months its mirage-haunted air was frequently heated to a temperature of 120 degrees. The greater part of it lay far below the level of the sea; nearly all of it was destitute of water and vegetation; furious dust and sand storms swept across it, and it was regarded, by all the

> early explorers of the Southwest, as perhaps the dreariest and most forbidding desert on the North American continent…”

The flood that formed the Salton Sea was stopped, and the Colorado River returned to its natural channel, in 1906. The irrigation and development of the Imperial Valley recovered, and the irrigated areas expanded, while the newly formed Salton Sea began to evaporate. Irrigated agriculture transformed the desert, and influenced the climate and microclimate of the areas immediately adjacent to the irrigated areas and the Salton Sea, affecting humidity and temperature. Air pollutant emissions from sources such as internal combustion engines and agricultural operations increased as the area underwent development, and cities grew. Dust storms from surrounding desert areas also continued to occur from time to time.

DATA SOURCES

Ambient air quality data used in the air quality impact assessment were obtained from ICAPCD, SCAQMD, USEPA Air Quality System (AQS), and the U.S. Department of the Interior, Geological Survey (USGS). Meteorological data were obtained from the above agencies, as well as the National Weather Service, the National Climatic Data Center, and the California Department of Water Resources’ California Irrigation Management Information System (CIMIS). Preliminary draft wind tunnel test results and other data from sampling of sites at the Salton Sea were obtained from Desert Research Institute (DRI) (see Appendix E, Attachment E3). A summary of the data collected to support this effort is provided in Appendix E, Attachment E8.

DATA LIMITATIONS

While data are available at a number of aerometric monitoring locations in the Salton Sea area, limited data are available from the immediate vicinity of Salton Sea. The only stations along the shore are CIMIS stations, where only meteorological data are collected. Because the CIMIS program is operated to support the agricultural irrigation system, data are collected close to the surface, with the wind measurements taken at a height of 2 meters.[2] Wind data used to assist in the evaluation of air quality impacts are generally taken at a height of 10 meters, to avoid surface influences. Additional limitations include the availability of consistent and complete data sets and quality control information. Use of these data requires careful evaluation to make sure that the information is available, complete, and accurate. Other limitations of the data used in this study are discussed later in this chapter, in the subsection on Environmental Consequences.

EXISTING CONDITIONS

The Existing Conditions described in the PEIR are based on data available through 2005, because complete data for 2006 are not yet available. The pollutants of greatest concern in the Salton Sea Air Basin are ozone and the ozone precursors, nitrogen oxides (NO_x) and volatile organic compounds (VOCs)[3], primarily from vehicle and equipment exhaust, and particulate matter (PM_{10} and $PM_{2.5}$) from soil disturbance and wind erosion (fugitive dust). Agricultural operations and transport of pollutants from Mexico also contribute to air quality issues in the area.

[2] The height of meteorological monitoring stations above ground surface is designated in metric units. Two meters is about 6.6 feet and 10 meters is about 32.8 feet.

[3] The terms VOC (volatile organic compounds), hydrocarbons (HC), and ROG (reactive organic gases) are used synonymously in this document.

Climate and Meteorological Conditions

The climate of the Salton Sea Air Basin area is typical of a desert regime, with large daily and seasonal fluctuations in temperature and relatively high annual average temperatures. High temperatures frequently exceed 100 degrees Fahrenheit (°F) for the summer months. During the winter, temperatures can drop to near freezing (and below freezing at higher elevations). Throughout the year, average daily relative humidity is low, as are average rainfall values. These meteorological data are listed in Table 10-2, which provides data for 2005 for the CIMIS meteorological stations overseen in the Imperial/Coachella Valley region by the Office of Water Use Efficiency (OWUE), California Department of Water Resources (DWR).

Table 10-2
Meteorological Data for the Imperial/Coachella Valley Region (2005)

Station		Temperature (°F)			Relative Humidity (%)			Rain (inches)	Wind (mph)	
CIMIS Number	Name	Max	Min	Avg	Max	Min	Avg		Avg	Max
41	Calipatria/Mulberry	117.1	25.4	70.8	100	0	53.0	13.89	4.55	28.1
68	Seeley	116.9	28.5	73.4	100	6	50.8	4.15	5.08	25.3
87	Meloland	116.2	31.6	72.6	97	9	49.3	3.02	5.19	25.1
118	Cathedral City	112.3	37.4	71.7	100	8	47.5	0.0	6.07	24.9
127	Salton Sea West	112.7	37.4	75.5	100	0	44.3	NA	5.63	26
128	Salton Sea East	116.5	30.5	73.3	100	9	62.1	NA	5.78	32.9
135	Blythe NE	115.8	33.3	72.9	99	6	46.8	0	3.20	14.1
136	Oasis	116.7	38.1	74.3	100	7	49.8	5.64	4.50	24
151	Ripley	115.8	33.3	72.9	99	6	46.79	0	3.20	14.1
162	Indio	120.3	35.8	74.6	95	4	36.7	NA	6.88	22
175	Palo Verde II	112.8	20.5	69.1	100	10	56.8	3.06	4.34	20.3
176	La Quinta	115.8	33.3	72.9	99	6	46.8	0	3.20	14.1
186	UC San Luise	115.8	33.3	72.9	99	6	46.8	0	3.20	14.1

Source: California Irrigation Management Information System (CIMIS) meteorological stations overseen in the Imperial/Coachella Valley region by DWR, http://wwwcimis.water.ca.gov/cimis/.

Note: Period of Record – January 2005 through December 2005.

Avg = average
Max = maximum
Min = minimum
NA = not available

Discussion of meteorological conditions for the Salton Sea Air Basin was obtained from the Imperial County General Plan (County of Imperial, 1993a). Temperature patterns are similar throughout the Salton Sea Air Basin. The climatic condition of the area is governed by large scale warming and sinking of air in the semi-permanent subtropical high-pressure center over the Pacific Ocean. The high-pressure ridge blocks most mid-latitude storms, except in the winter when the high-pressure ridge is weakest and farthest south. The coastal mountains prevent the intrusion of the cool, damp air found in the California coastal regions (IID, 1994).

The flat terrain and strong temperature differentials created by intense heating and cooling patterns produce moderate winds and deep thermal circulation systems. Thus, even though the summers are hot, the general dispersion of local air pollution is greater than in the coastal basins where polluted inversion layers may remain for long periods (IID, 1994).

Daily temperature fluctuations and seasonal variations are generally extreme. Clear skies and rapid heating and cooling of desert soils create high temperatures by day and quick cooling by night. Daily temperatures range from the mid-40s to low-70 °F during winter, and from the low-70s to mid-100s degrees F during summer. The average annual rainfall is about 3 inches, and the average annual air temperature is about 72 °F (IID, 1994).

Microclimate

Near the shore of the Salton Sea, the large body of water moderates the extreme desert climate by creating its own local climate or microclimate. The most notable features of the local microclimate is the Salton Sea's moderating effect on temperature and the creation of localized wind patterns, or lake breezes, caused by the differential heating of the land and water surface.

The Salton Sea also has a seasonal effect on local temperature. Large lakes such as the Salton Sea can retain heat during the cooler months of the year, and influence near shore temperatures. Conversely, the Salton Sea causes a slight cooling effect near shore during warmer months. This moderating effect on temperature occurs even without the aid of the more noticeable lake breeze effect. Productive farmland nearest the shoreline can benefit from the moderating effects of temperature, which can extend growing seasons.

Lake breezes are produced from the differential heating of land and water surfaces and are more pronounced near large water bodies, such as the Salton Sea, that have marked temperature differences compared to the adjacent land. Onshore breezes are created during the day when the land heats more quickly than the adjacent water surface, causing the air over the land to rise and cooler air over the water to move in over the land. At night, the circulation is reversed as the water retains heat while the land cools quickly. Because the temperature differences between the water and land surfaces are what drive the lake breeze circulation, winds are typically strongest during the day close to the shoreline and diminish with distance inland. Through the diurnal lake breeze circulation, a pronounced effect on temperatures near the shoreline can be experienced as cooler air moves onshore during the day.

Local meteorological parameters other than temperature and wind are also affected by the Salton Sea, although their effect on the local climate is less evident.

Regional Wind Patterns

Wind patterns in the Salton Sea area are strongly influenced by topographic features. The Salton Sea is oriented northwest to southeast as a result of major terrain features. The Santa Rosa Mountains to the west run northwest to southeast along and beyond the western side of Salton Sea. The Chocolate Mountains to the east run northwest to southeast on the eastern side of the lake about halfway down the length of Salton Sea. Lesser mountains continue on the eastern edge of the Salton Sea. These terrain features form barriers to air flow and affect the climate and the winds in the area.

Consistent with these terrain features, the Coachella Valley to the northwest and the Imperial Valley to the southeast have an influence on winds in the area as well as the Salton Sea itself. In the absence of strong frontal systems or strong gradients between high and low pressure areas, which would generate a regionally dominant wind direction, winds from the Coachella Valley and Imperial Valley are likely to converge in the vicinity of the Salton Sea, creating complex airflow patterns. As a consequence, winds over the southeastern part of Salton Sea tend to differ from those over the northern part of the Salton Sea.

Because of the dynamics established by the various mountains, valleys, and the water surface, and in response to intense summer time heating, wind conditions vary significantly over short distances at the Salton Sea. Consequently, those stations closest to the Salton Sea were used in this evaluation.

Figures 10-2 and 10-3 present composite annual wind roses for the Indio and Niland stations, respectively. The locations of these stations are illustrated in Figure 10-4.

Meteorological Monitoring Stations

Meteorological monitoring stations in the vicinity of the Salton Sea are operated by the SCAQMD in Riverside County to the north of the Salton Sea, and by the ICAPCD to the south of the Salton Sea. The air districts operate monitoring stations to support the management of air quality in their districts. As such, monitoring stations in these networks are sited and operated consistent with stringent quality guidelines developed by the USEPA.

Meteorological stations are operated at a measurement height of 10 meters to measure unobstructed wind flow, consistent with USEPA requirements. Additional meteorological monitoring stations in the Salton Sea Air Basin are operated by DWR through CIMIS. Because the CIMIS stations are operated for purposes related to irrigation and agriculture, data are collected at a height of 2 meters to better measure evaporation rates. Data collected at 2 meters are not consistent with USEPA monitoring requirements and may reflect surface influences. Data from the existing 10-meter stations are preferred for use in air quality impact analyses, to be consistent with USEPA guidelines. In addition, DWR has recently installed and is currently operating 10-meter stations at two of the CIMIS locations. The desired outcome is to establish a relationship between the 2- and 10-meter measurements, which would allow better use of the data collected at other CIMIS locations.

As indicated previously, Figure 10-4 shows the monitoring stations in the Salton Sea area. For purposes of characterizing conditions near the Salton Sea, wind data from the air districts collected at Indio to the north, and Niland to the south, are considered most representative of the study area. However, the air districts do not collect precipitation and other hydrologic data. The CIMIS stations do not all collect precipitation data. Consequently, precipitation data from the Oasis station to the north, the Westmorland West (through 2003) and Westmorland North (after 2003) stations to the south, and the Calipatria station to the southeast are considered part of the most relevant available data set.

Ambient Air Quality Monitoring Data

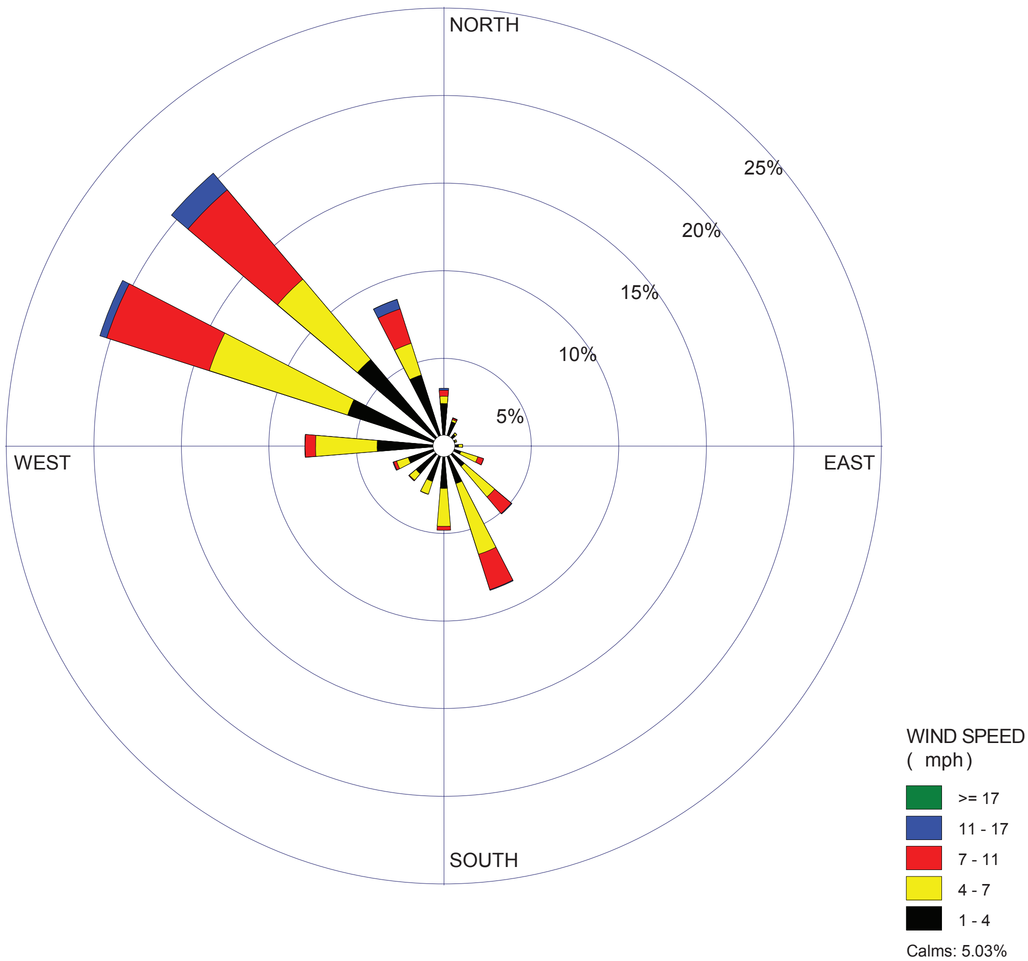
Numerous air quality monitoring stations are located throughout the study area region of influence. Monitoring stations are operated and maintained by local air districts. Imperial County operates and maintains air quality monitoring stations in Brawley, Calexico (3), El Centro, Niland, and Westmorland. Riverside County operates and maintains air quality monitoring stations in the Coachella Valley in Indio and Palm Springs (see Figure 10-4).

Ozone

Ozone air quality monitoring data from 1998 through 2005 for monitoring stations in Imperial and Riverside Counties are summarized in Table 10-3. There are several monitoring stations located within Imperial County. Three ICAPCD stations near the Salton Sea, El Centro – 9th Street, Niland – English Road, and Westmorland – West 1st Street, were chosen to represent ambient ozone air quality conditions in the study area. Two monitoring stations located northwest of the Salton Sea in Riverside County were chosen to represent the background air conditions: the Indio – Jackson Street and the Palm Springs – Fire Station monitoring stations. Although the Palm Springs monitoring station is located at the northwest end of the Salton Sea Air Basin, air is channeled from the area surrounding the monitoring station through the mountains into the immediate Salton Sea vicinity.

WIND ROSE PLOT:
Indio Composite Windrose
Year 2001, 2002, 2003 and 2004

DISPLAY:
Wind Speed
Direction (blowing from)

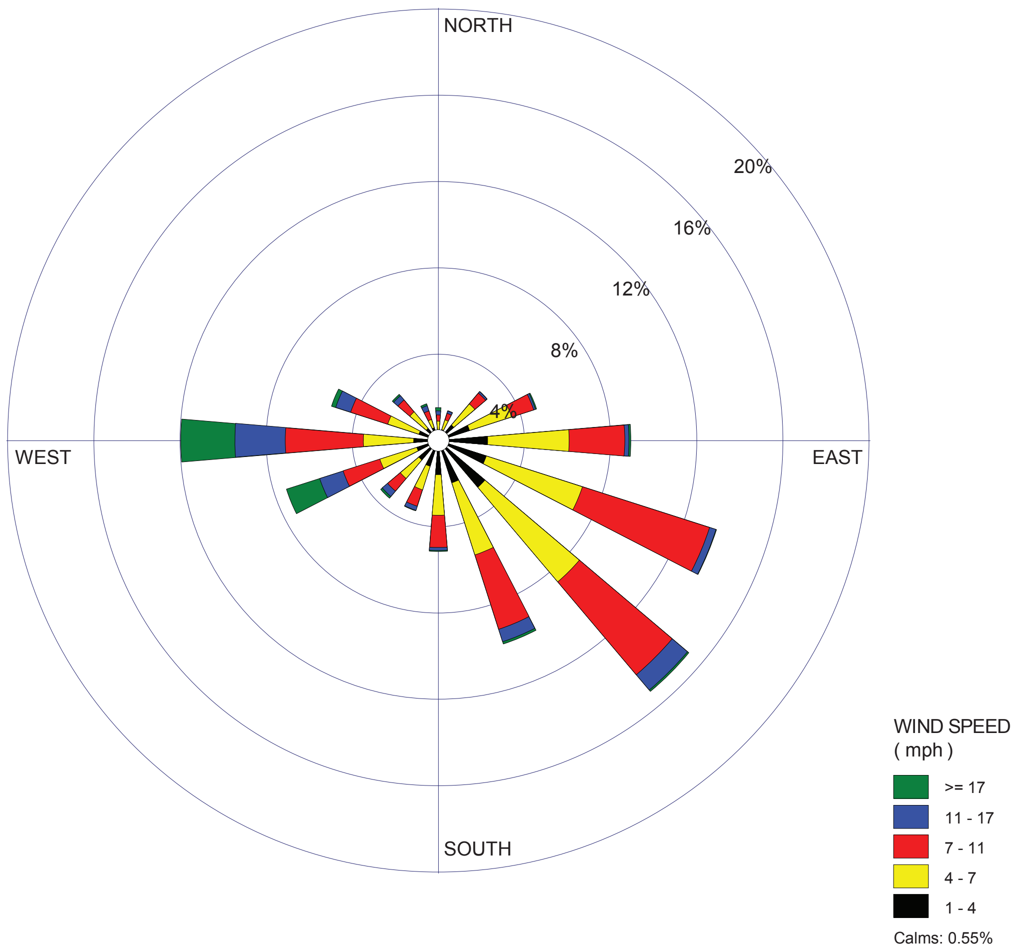


COMMENTS:	DATA PERIOD:	
	2001 2001 2002 2004 Jan 1 - Dec 31 00:00 - 23:00	
	CALM WINDS: 5.03%	TOTAL COUNT: 32307 hrs.
	AVG. WIND SPEED: 4.50 mph	DATE: 7/3/2006

WRPLOT View - Lakes Environmental Software

FIGURE 10-2
COMPOSITE ANNUAL WIND ROSE FOR INDIO 10-METER METEROLOGICAL DATA

WIND ROSE PLOT:	DISPLAY:
Niland Composite Windrose Year 2001, 2002 and 2004	Wind Speed Direction (blowing from)



COMMENTS:	DATA PERIOD:	
	2001 2002 2004 Jan 1 - Dec 31 00:00 - 23:00	
	CALM WINDS: 0.55%	TOTAL COUNT: 25338 hrs.
	AVG. WIND SPEED: 7.06 mph	DATE: 7/3/2006

WRPLOT View - Lakes Environmental Software

FIGURE 10-3
COMPOSITE ANNUAL WIND ROSE FOR NILAND 10-METER METEROLOGICAL DATA

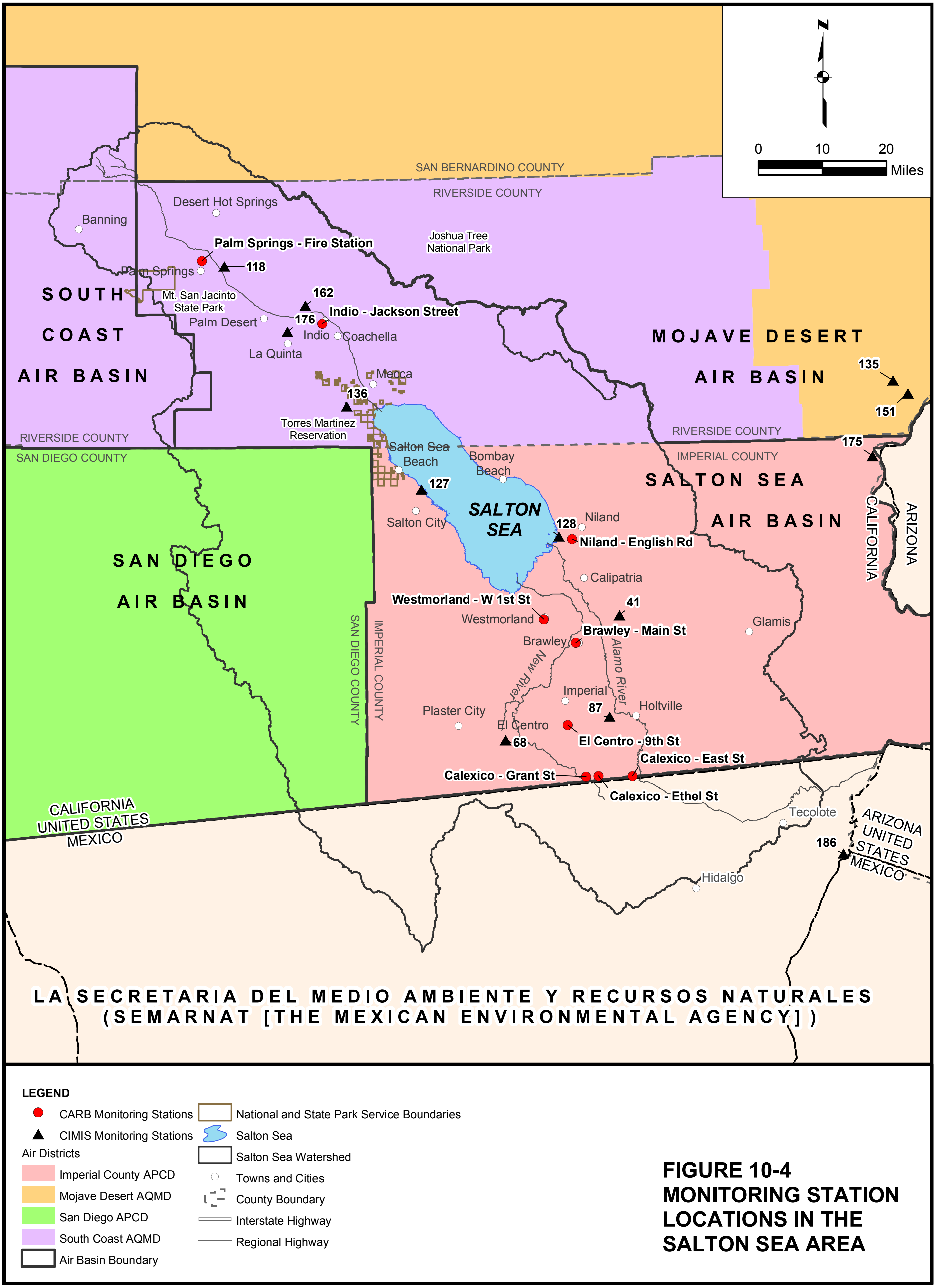


FIGURE 10-4
MONITORING STATION LOCATIONS IN THE SALTON SEA AREA

Table 10-3
Ozone Data Summary for Monitoring Stations in Imperial and Riverside Counties, 1998-2005

Year	Number of Days Standard Exceeded			Ozone Concentrations in ppm				
				1-hour			8-hour	
	State 1-hour	Federal 1-hour	Federal 8-hour	Maximum	3-Year 4th High	EPDC	Maximum	3-Year Average 4th High
CAAQS	—	—	—	—	—	—	0.090	—
NAAQS	—	—	—	—	0.120	—	—	0.080
Imperial County								
2005	11	0	10	0.122	0.121	0.097	0.084	0.115
2004	6	0	0	0.109	0.118	0.083	0.085	0.119
2003	19	2	8	0.144	0.127	0.092	0.087	0.125
2002	19	0	9	0.122	0.116	0.098	0.086	0.121
2001	13	2	2	0.135	0.142	0.086	NA	0.123
2000	NA	NA	NA	NA	NA	NA	NA	NA
1999	24	10	7	0.145	0.142	0.107	0.092	0.129
1998	12	1	8	0.13	0.13	0.100	0.092	0.135
Riverside County								
2005	41	4	35	0.139	0.13	0.116	0.104	0.13
2004	36	1	32	0.125	0.131	0.106	0.104	0.131
2003	54	4	43	0.141	0.133	0.11	0.108	0.135
2002	49	2	46	0.136	0.132	0.124	0.105	0.134
2001	53	6	39	0.137	0.128	0.113	0.1	0.13
2000	40	0	28	0.124	0.133	0.104	0.099	0.138
1999	27	1	20	0.126	0.143	0.107	0.1	0.143
1998	40	8	30	0.173	0.155	0.136	0.107	0.153

Source: ARB, 2006b.
Note:
Data for Imperial County is the maximum value from the El Centro, Niland, and Westmorland monitoring stations.
Data for Riverside County is the maximum value for the Indio and Palm Springs monitoring stations.
EPDC = expected peak day concentration
NA = data not available

Imperial County is a federal and State nonattainment area for ozone. As previously indicated, the new federal 8-hour ozone standards were promulgated by USEPA on July 18, 1997. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The increased stringency of the new 8-hour federal ozone standard is shown by the increased number of days during which this standard would have been exceeded relative to the 1-hour ozone standard. The State ozone standard, which is more stringent, was exceeded more frequently than the federal 8-hour standard. The State standard was violated most frequently in Riverside County at the Palm Springs monitoring station. Violations in Imperial County are less frequent, and most often occur at the El Centro station.

PM_{10}

PM_{10} air quality monitoring data from 1998 through 2005 are summarized in Table 10-4. There are several PM_{10} monitoring stations located within the Imperial County. Located near the Salton Sea, the El Centro – 9th Street Station, Niland – English Road Station, Westmorland – West 1st Street Station, and the Brawley – Main Street Station were chosen to represent ambient PM_{10} air quality conditions in the Salton Sea Air Basin study area. Only part of the Salton Sea Air Basin is located in Riverside County; again, two stations located northwest of the Salton Sea were chosen to represent the background air conditions, the Indio – Jackson Street Station and the Palm Springs – Fire Station monitoring station. The maximum values from any station within the county are reported in Table 10-4 for Imperial and Riverside counties. Violations of both the State and federal 24-hour PM_{10} standards occurred several times from 1998 to 2005 in both counties. In Imperial County, the Westmorland monitoring station, located directly south of the Salton Sea, typically had the largest annual averages; whereas, in Riverside County, the Indio monitoring station had annual averages two times greater than at the Palm Springs monitoring station. The Indio and Westmorland monitoring stations are two of the three monitoring stations closest to the Salton Sea.

Table 10-4
PM_{10} Data Summary for Monitoring Stations in Imperial and Riverside Counties, 1998-2005

Year	Estimated Days Above 24-hour Standard		PM_{10} Concentration in μg/m³						
	Federal > 150 μg/m³	State > 50 μg/m³	Annual Average		3-Year Average		High 24-Hr Average		EPDC
			Nat'l	State	Nat'l	State	Nat'l	State	
Imperial County									
2005	NA	NA	NA	NA	NA	74	77	75	NA
2004	NA	NA	NA	NA	56	74	201	195	NA
2003	19.1	188.4	74.7	73.8	63	74	840	848	524.5
2002	18.3	124.8	57.3	57.5	56	57	297	301	393.3
2001	6.6	81.3	57.5	42.7	52	54	647	634	291.2
2000	13.2	129.8	54.1	53.6	44	54	250	249	174.1
1999	0	122.5	44	44.3	44	44	130	126	NA
1998	0	60.3	38.7	38.7	45	39	90	87	NA
Riverside County (Salton Sea Air Basin portion)									
2005	NA	NA	NA	NA	NA	NA	106	NA	206.1
2004	2.9	74.1	40.2	40.6	50	56	161	161	236
2003	9.1	158.2	56.7	56.1	57	56	309	302	315.4
2002	9	174.1	53.8	53.9	56	54	276	276	308.5
2001	17.6	170.6	59.5	59	56	59	604	604	308.4
2000	8.6	183.2	55.2	55.4	52	55	201	201	171.8
1999	0	19.3	52.7	NA	52	48	119	119	174.3
1998	3.3	146.2	48.1	48.4	53	55	158	158	205.9

Source: ARB (California Almanac of Emissions and Air Quality) www.arb.ca.gov

Notes:

Data for Imperial County is the maximum value from the El Centro, Niland, Westmorland, and Brawley monitoring stations.
Data for Riverside County is the maximum value for the Indio and Palm Springs monitoring stations.
μg/m³ = micrograms/cubic meter
NA = data not available

Carbon Monoxide, Nitrites (as NO_2), and Sulfites (as SO_2)

CO, NO_2, and SO_2 air quality monitoring data from 1998 through 2005 are summarized in Table 10-5. CO concentrations are monitored at the El Centro – 9th Street Station in Imperial County and at the Palm Springs – Fire Station monitoring station in Riverside County. In both counties, neither the State nor the national 8-hour CO standards have been exceeded from 1998 through 2005. Concentrations of NO_2 were also measured at the El Centro and Palm Springs monitoring stations. Annual and 1-hour NO_2 concentrations remain below State and federal standards. SO_2 is not measured at any of the monitoring stations in Riverside County in the Salton Sea Air Basin. The closest SO_2 monitoring station in Imperial Valley is located in Calexico at Ethel Street. Both the 24-hour and the annual SO_2 measurements at the Calexico station are below the State and federal standards. Measured ambient concentrations of CO, NO_2, and SO_2 remain well below all standards in the Salton Sea Air Basin portion of Riverside County and at all monitoring stations in Imperial County.

Table 10-5
Ambient SO_2, NO_2, and CO Concentrations in Imperial and Riverside Counties, 1998-2005

	Concentrations in ppm						
	SO_2		NO_2		CO		
Year	Maximum 24-hour	Maximum Annual Average	Maximum 1-hour	AAM	Maximum 8-hour	Days > State 8-Hour Standard	Days > National 8-hour Standard
CAAQS[a]	0.04	—	0.25	—	9	—	—
NAAQS[b]	0.14	0.03	—	0.053	9	—	—
Imperial County							
2005	0.002	NA	0.065	0.011	NA	NA	NA
2004	0.003	NA	0.067	0.013	NA	NA	NA
2003	0.001	NA	0.071	0.012	2.38	0	0
2002	0.001	NA	0.096	NA	2.93	0	0
2001	0.002	0.001	0.082	NA	7.14	0	0
2000	0.009	0.002	NA	NA	NA	0	0
1999	0.018	0.002	NA	NA	NA	0	0
1998	0.019	0.003	NA	NA	3.5	0	0
Riverside County (Salton Sea Air Basin)							
2005	NA	NA	0.059	0.011	0.65	0	0
2004	NA	NA	0.066	0.013	0.8	0	0
2003	NA	NA	0.067	0.016	1.29	0	0
2002	NA	NA	0.068	0.016	1.14	0	0
2001	NA	NA	0.081	0.017	1.6	0	0
2000	NA	NA	0.064	0.016	1.59	0	0
1999	NA	NA	0.068	0.018	1.75	0	0
1998	NA	NA	0.07	0.016	1.66	0	0

Source: ARB (California Almanac of Emissions and Air Quality) www.arb.ca.gov

[a] CAAQS are not to be exceeded.

[b] NAAQS are not to be exceeded more than once per year (except for annual standards).

AAM = annual arithmetic mean

NA = not available

ppm = parts per million

Current Attainment Status Designations

Current California and federal attainment status designations are listed in Table 10-6 for Imperial and Riverside Counties.

Table 10-6
Federal and California Air Quality Attainment Status Designations by County and Area

County	Area	Pollutant	Federal Status	California Status
Imperial	Calexico	Carbon monoxide	Unclassifiable/attainment	Nonattainment
	All other areas		Unclassifiable/attainment	Unclassified
	All areas	Ozone (1-hour)		Nonattainment
	All areas	Ozone (8-hour)	Subpart 2 – marginal nonattainment	Not applicable
	Imperial Valley[a]	PM_{10}	Nonattainment (serious)	Nonattainment
	All areas	$PM_{2.5}$	Unclassifiable/attainment	Unclassified
	All areas	Nitrogen dioxide	Unclassifiable/attainment	Attainment
	All areas	Sulfur dioxide	Attainment	Attainment
Riverside	Salton Sea Air Basin	Carbon monoxide	Unclassifiable/attainment	Attainment
	Salton Sea Air Basin – Coachella Valley[b]	Ozone (1-hour)		Nonattainment
	All areas	Ozone (8-hour)	Subpart 2 – serious nonattainment	Not applicable
	Salton Sea Air Basin	PM_{10}	Nonattainment (serious)	Nonattainment
	Salton Sea Air Basin – Coachella Valley[b]	$PM_{2.5}$	Unclassifiable/attainment	Unclassified
	All areas	Nitrogen dioxide	Unclassifiable/attainment	Attainment
	All areas	Sulfur dioxide	Unclassifiable/attainment	Attainment

Source: ARB, 2006a.
Notes:
[a] The Imperial Valley covers the western two-thirds of Imperial County.
[b] The Coachella Valley is located immediately north of the Salton Sea and is within the Salton Sea Air Basin in western Riverside County.

The ICAPCD and the SCAQMD have jurisdiction over portions of the Salton Sea Air Basin. The ICAPCD oversees Calexico, Imperial County, and the Imperial Valley in the southeast portion of the Salton Sea Air Basin. The SCAQMD oversees the Riverside County and Coachella Valley portions of the Salton Sea Air Basin, which correspond to the northern portion of the Salton Sea Air Basin. Each district develops its own program to attain and maintain air quality standards while integrating federal and State requirements.

Imperial County Attainment Status and Applicable Plans

Imperial County is designated as a marginal nonattainment area for the federal 8-hour ozone NAAQS. The Imperial Valley (which is the Imperial County portion of the Salton Sea Air Basin) is designated as a federal serious nonattainment area for PM_{10}. All areas of the county are designated as attainment for NAAQS for $PM_{2.5}$, CO, NO_2, and SO_2.

The Salton Sea Air Basin has elevated concentrations of ground-level ozone, which is transported into the basin from urban areas to the west and northwest. Mobile sources, such as vehicles, trains, and construction and farming equipment, are the primary source of ozone precursor emissions (NO_x and ROG[4]) in the air basin (ARB, 2006b).

In 2003, the United States Court of Appeals for the Ninth Circuit stated that the USEPA's conclusion that PM_{10} attainment would be achieved, except for the negative effects of transborder emissions from Mexico, is unsupported. The Court mandated that the USEPA reclassify Imperial Valley from a moderate to a serious nonattainment area (Opinion No. 01-71902, October 9, 2003) (DOE and BLM, 2004). In addition to emissions transported from Mexico, particulate matter emissions in Imperial County come from agricultural and other local sources. The predominant sources include windblown dust from natural and disturbed land areas and dust associated with vehicle travel on paved and unpaved roads. Construction and agriculture also contribute to ambient particulate levels.

Imperial County is designated as a State nonattainment area for ozone and PM_{10}. In addition, the City of Calexico is designated as nonattainment for the State CO standard. The remainder of the county is designated as unclassified for the State CO standard, and the entire county is designated as attainment or unclassified for the remaining CAAQS.

As a result of the area's designation as a federal serious nonattainment area for PM_{10}, the ICAPCD has prepared a number of documents and regulations to support an update of the existing SIP for PM_{10} in the Imperial Valley. In May 2004, ICAPCD published *Development of a Wind Blown Fugitive Dust Model and Inventory for Imperial County, California*, Final Report (ICAPCD, 2004). In August 2005, ICAPCD released their *Imperial County Natural Events Action Plan*, to allow exclusion of certain qualifying natural events from attainment determinations (ICAPCD, 2005a).

The *Draft Final Technical Memorandum Regulation VIII Best Available Control Measures Analysis* was published in October 2005, and used as the basis for rulemaking for regulations to control particulate matter (ICAPCD 2005b). In November 2005, the ICAPCD Board adopted a new series of Regulation VIII rules for dust control (general requirements, construction and earthmoving activities, bulk materials, open areas, and conservation management practices) (ICAPCD, 2005c).

Based on USEPA and ARB comments on the 2004 dust inventory, a revised emissions inventory was published as an Appendix to the October best available control measures analysis: *Appendix A Technical Memorandum: Latest Revisions of the Windblown Dust Study* (ICAPCD, 2005b). ICAPCD has prepared their emissions inventory and best available control measures rulemakings in advance of the development and approval of a SIP, in order to expedite best available control measures emissions reductions.

Riverside County Attainment Status and Applicable Plans

The western Riverside County portion of the Salton Sea Air Basin is designated as a federal serious nonattainment area for the 8-hour ozone NAAQS, and a serious nonattainment area for the PM_{10} NAAQS. All areas of Riverside County are in attainment of the NAAQS for CO, NO_2, and SO_2, and the Coachella Valley is in attainment of the $PM_{2.5}$ NAAQS.

The entire county is designated as a State nonattainment area for ozone and PM_{10}. The Coachella Valley is unclassified for the State $PM_{2.5}$ standard. All areas of the county are designated as being in attainment for the remaining CAAQS.

Every 3 years, SCAQMD prepares an overall plan for air quality improvement. Each iteration of the plan is an update of the previous plan and has a 20-year horizon. The SCAQMD adopted the Final 2003 AQMP on August 1, 2003. The 2003 AQMP updates the attainment demonstration for the federal standards for ozone and PM_{10}; replaces the 1997 attainment demonstration for the federal CO standard and provides a basis for a

[4] The terms VOC (volatile organic compounds), hydrocarbons (HC), and ROG (reactive organic gases) are used synonymously in this document.

maintenance plan for CO for the future; and updates the maintenance plan for the federal NO_2 standard. This revision to the AQMP also addresses several State and federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2003 AQMP is consistent with and builds upon the approaches taken in the 1997 AQMP and the 1999 Amendments to the Ozone SIP for the South Coast Air Basin for the attainment of the federal ozone air quality standard. However, this revision points to the urgent need for additional emission reductions (beyond those incorporated in the 1997/99 Plan) from all sources, specifically those under the jurisdiction of the ARB and the USEPA (SCAQMD, 2003a). Preparation of the 2007 AQMP is currently underway (SCAQMD, 2005).

The Coachella Valley, located in the Salton Sea Air Basin and under SCAQMD's jurisdiction, has been designated as a serious nonattainment area for PM_{10}. The Coachella Valley PM_{10} SIP (CVSIP), adopted on June 21, 2002, establishes additional controls needed to demonstrate expeditious attainment of the PM_{10} standards. The 2002 CVSIP included a request for extension of the PM_{10} deadline and met all applicable federal CAA requirements, including a Most Stringent Measures analysis, control measures, and attainment demonstration. USEPA approved the 2002 CVSIP on April 18, 2003. At the time of adoption, the SCAQMD committed to revising the 2002 CVSIP with the latest approved mobile source emissions estimates, planning assumptions, and fugitive dust source emission estimates, when they became available. The 2003 CVSIP updates those elements of the 2002 CVSIP; the control strategies and control measure commitments have not been revised and remain the same as in the 2002 CVSIP. The 2003 CVSIP contains updated emissions inventories, emission budgets, and attainment modeling (SCAQMD, 2003b).

Regional Emissions Inventory

Criteria Pollutants

In the Salton Sea Air Basin, ozone and PM_{10} are the primary pollutants of concern, because concentrations of these pollutants have been found to exceed ambient air quality standards. Ozone is a seasonal problem derived from photo-chemical reactions of ROG and NO_x in the presence of sunlight, occurring predominantly from May through October.

Table 10-7 presents the annual average daily emissions rates that represent the estimated 2005 regional emissions inventory for the Salton Sea Air Basin, as compiled by the ARB. Emissions estimates were obtained by querying by year and air basin (ARB, 2006b).

Table 10-7
Estimated 2005 Regional Emissions Inventory
Annual Average Daily Emissions Rates for All Sources in Air Basin (tons/day)

Air Basin	Criteria Pollutant				
	NO_x	PM_{10}	CO	ROG	SO_2
Salton Sea Air Basin	55.4	262.3	200.2	56.5	1.8

Source: ARB, 2006b.

The most prevalent airborne pollutant in the Salton Sea Air Basin is PM in the form of fugitive dust (IID, 1994). In the Salton Sea Air Basin, fugitive windblown dust, wind erosion of exposed soil (from agricultural fields and the desert), and vehicle travel over unpaved roads are the major sources of PM_{10}.

Table 10-8 summarizes the 2005 estimated annual average emissions (in tons/day) for the Salton Sea Air Basin for each of the major PM_{10} emission source categories. Imperial County and Riverside County contributions are shown (ARB, 2006b).

Table 10-8
Estimated 2005 Annual Average Daily PM_{10} Emissions in the Salton Sea Air Basin (tons/day)

PM_{10} Emission Source	Imperial County	Riverside County	Total Salton Sea Air Basin
Farming operations	17.7	1.1	18.8
Construction and demolition	2.0	6.5	8.5
Paved road dust	4.2	5.8	10.0
Unpaved road dust	33.7	1.9	35.6
Fugitive windblown dust	172.8	7.3	180.1
Other sources	6.4	2.9	9.3
Total all sources in basinwide inventory	236.8*	25.5	262.3

Source: ARB, 2006b.

* In the revised 2004 emissions inventory published as an Appendix to the October 2005 ICAPCD best available control measures analysis, emissions estimated for fugitive windblown dust and unpaved road dust in Imperial County were higher than the values in the above ARB estimates. Emissions would not otherwise be expected to vary greatly between years, so these differences are worth noting. According to the revised 2004 estimates, unpaved road dust resulted in about 61 tons/day of PM_{10} and fugitive windblown dust was estimated at 200.9 tons/day. The total 2004 annual average PM_{10} emissions rate reported for Imperial County was 284.2 tons/day (ICAPCD, 2005b).

Toxic Air Contaminants and Sensitive Receptors

In addition to the criteria pollutants, concern about noncriteria pollutants, or toxic air contaminants (TACs) and hazardous air pollutants (HAPs), has increased in recent years. TACs include airborne inorganic and organic compounds that can have both short term (acute) and long term (carcinogenic, chronic, and mutagenic) effects on human health. Exposure to these pollutants may cause or contribute to cancer, birth defects, genetic damage, and other adverse health effects.

Sensitive populations, such as children or the elderly, are more susceptible to the effects of air pollution than are populations at large. Local agencies, such as air districts, have responsibility for evaluating and controlling TAC emissions, especially when these emissions are released from projects located near sensitive receptors. For example, AB 3205 (Health and Safety Code, Section 42301.6 through 42301.9) requires that new or modified sources of toxic air contaminants near schools provide public notice to the parents of school children before a permit to emit air pollutants is issued.

In the Salton Sea Air Basin, TACs or HAPs are generated as a result of various processes, including fuel combustion, windblown dust, mining, farming, pesticide use, and industrial processes. Sensitive receptors are located throughout the air basin.

The California Toxics Inventory (CTI) provides emissions estimates by stationary, areawide, mobile, and natural sources for 33 toxic air contaminants. These compounds were selected based on a list of air toxics used by the USEPA in development of the National Air Toxics Assessment (NATA). In developing the NATA list, the USEPA considered a number of factors, including toxicity-weighted emissions, monitoring data, past air quality modeling analysis, and a review of existing risk assessment literature.

The CTI is developed by speciating ARB estimates of total organic gas (TOG) and PM for area, mobile, and natural sources using the most recent speciation profiles. Speciated emissions for each source category are then reconciled with reported stationary point sources toxics data to establish a complete inventory including stationary, areawide, mobile, and natural sources.

Information on air toxics and the CTI can be found on the ARB web site: http://www.arb.ca.gov/toxics/cti/cti.htm (ARB, 2006c). Table 10-9 presents the air toxics emissions inventory for the entire State, side by side with the inventory for the Salton Sea Air Basin. When compared to the statewide emissions inventory, the Salton Sea Air Basin contributes between 9 and

21 percent of the statewide emissions of several pollutants: 1,3-dichloropropene, arsenic, cadmium, chromium, lead, manganese, mercury, and nickel. Most of the emissions of these substances are reported to come from "areawide sources" in Imperial and Riverside counties. "Areawide" sources are those that do not have specific locations and are spread out over large areas such as paved or unpaved roads, fugitive dust, pesticides, and consumer products.

Table 10-9
2004 California Air Toxics Inventory

Pollutant	Statewide (tons/year)	Salton Sea Air Basin	
		Tons/year	Percentage of Statewide
1,3-Butadiene	3,032	55.3	2
1,3-Dichloropropene	2,243	208.8	9
Acetaldehyde	7,376	136.5	2
Acrolein	2,242	69	3
Acrylonitrile	48	0.06	0
Arsenic	40	3.5	9
Benzene	13,185	225.9	2
Beryllium	1	0	0
Cadmium	22	3.6	17
Carbon tetrachloride	2	0	0
Chloroform	39	0.2	1
Chromium	161	33.3	21
Chromium, hexavalent	1	0.003	1
Diesel engine exhaust, particulate matter	24,498	432.6	2
Dioxins/benzofurans	0.041	0	0
Ethylene dibromide	1	0	0
Ethylene dichloride	7	0	0
Ethylene oxide	39	0.3	1
Formaldehyde	20,251	397	2
Hexachlorobenzene	0	0	0
Hydrazine	1	0	0
Lead	274	58	21
Manganese	1,055	170	16
Mercury	18	2.2	12
Methylene chloride (dichloromethane)	7,637	84.8	1
Nickel	108	10.1	9
Polycyclic aromatic hydrocarbons	2,317	43.3	2
p-Dichlorobenzene	1,880	26.9	1
Perchloroethylene (tetrachloroethene)	6,245	70	1
Polychlorinated biphenyls	0	0	0
Styrene	1,773	11.7	1
Trichloroethylene	370	3.2	1
Vinyl chloride	55	0.06	0

Source: ARB, 2006b.

Odorous Emissions

The presence of odors at the Salton Sea currently affects both visitor and resident populations in the area. Factors contributing to odors at the Salton Sea include water quality, high nutrient levels, and biological factors such as fish, algal, and bird die-offs. Water quality at the Salton Sea is affected by a high concentration of sulfates and other compounds present in the saline Sea, as well as inputs of agricultural drainage. Nutrient-rich runoff entering the Salton Sea produces eutrophic conditions that result in phytoplankton blooms. These microscopic plants float close to the Salton Sea's surface, and offensive odors are created when large numbers of plants die and decompose. Odors resulting from algal bloom die-offs are most prevalent during the summer months, when inputs of freshwater to the Salton Sea are low and temperatures are high (Salton Sea Authority and Reclamation, 2000).

Fish and bird die-offs at the Salton Sea also contribute to the odor problem. Several large die-offs in the past two decades have produced unpleasant odors as fish and birds decompose along the shoreline (Salton Sea Authority and Reclamation, 2000).

Odors produced by decaying algal blooms, and fish and bird die-offs occur predominantly in the southern and eastern portions of the Salton Sea, although all areas of the Salton Sea are subject to these occurrences. The most prevalent odors exist during the summer months when temperatures are high and winds from the southeast are predominant. High winds in the Salton Sea area are most frequent during the months of April and May (Salton Sea Authority and Reclamation, 2000).

ENVIRONMENTAL IMPACTS

Analysis Methodology

The goal of this analysis was to develop information on climate and air quality impacts associated with the alternatives, using documented emissions factors and estimation approaches, the MacDougall Method for estimation of fugitive dust emissions from Exposed Playa areas, and qualitative evaluations. Tables and discussions have been developed to provide screening level results and impacts analysis for the alternatives. The screening level impacts and analysis are based on the emissions estimates and other effects predicted for each alternative, the relevant significance criteria, and assumptions and approaches developed to support the Draft Programmatic Environmental Impact Report (PEIR). The primary purpose of the screening level analysis was to allow comparisons between Existing Conditions, the No Action Alternative, and the alternatives.

For the purposes of the PEIR, priority was placed on analysis of impacts associated with the nonattainment pollutants: PM_{10} and the ozone precursor, NO_x. In any project-level analyses, impacts associated with other criteria pollutants, and in some cases, HAPs, would need to be analyzed.

Additional description of the methodologies for emissions estimation and impact analysis are provided in Appendix E and the associated attachments. Tables to summarize the results of emissions estimation, comparison to relevant significance thresholds, and predicted air quality impacts are provided in Appendix E, Attachment E1. Details of the emissions calculations conducted for construction, operations, and general conformity applicability analysis are presented in Attachment E2. A description of the MacDougall Method approach, assumptions, and results from prediction of playa dust (as PM_{10}) emissions is provided in Attachment E3. Constituents of potential concern in sediments and soils sampled at the Salton Sea, discussion of their potential to affect human health, and recommendations for future study are provided in Attachment E4. Attachment E5 provides additional discussion of potential mitigation measures and applicable regulatory requirements.

Other attachments in Appendix E provide memoranda prepared in support of the PEIR. Attachment E6 is the Executive Summary from the Final Draft Technical Memorandum, *Identify and Outline Measures to*

Control Playa Emissions. For more information, the entire memorandum is included as part of Appendix H-3.

Attachment E7 of Appendix E provides the Draft Technical Memorandum, *Continued Evaluation of Playa Dust Emissions Models*. Results from use of the selected model are further described in Attachment E3, mentioned previously. The Draft Technical Memorandum, *Ongoing Data Management and Air Quality Modeling Preparation*, is provided as Attachment E8.

The Draft Technical Memorandum, *Salton Sea Playa Salt Efflorescence Potential*, is provided as Appendix E, Attachment E9. Attachment E10 is the Draft Technical Memorandum, *Brief Literature Search: the Effects of Dust/Saline Dust on Crops*. The Draft Technical Memorandum, *Description of Microclimate at the Salton Sea*, is provided as Attachment E11.

Attachment E12 of Appendix E is a list of prior air quality technical reports prepared as part of the PEIR effort. Copies of these documents are available at http://www.saltonsea.water.ca.gov/.

Methodology for Estimation of Emissions from Construction

Construction activities would result in air emissions such as fugitive dust, and exhaust from the combustion of fossil fuels in equipment and vehicles. A screening level analysis of construction emissions was used to estimate the impacts of the alternatives. This means that construction emissions were only calculated for the major components of the alternatives, and that emission calculations were focused on two pollutants, NO_x and PM_{10}. PM_{10} emissions estimates include both particulate emissions from diesel-fueled engines (termed diesel PM_{10}) and fugitive dust (fugitive PM_{10}). Project-level analyses would be required to include more detailed information to estimate emissions and would need to include emissions of CO, SO_x, VOCs, and HAPs.

Emissions from construction were estimated for the following components of the alternatives (not all components apply to each alternative):

- Earthmoving to construct canals and Saline Habitat Complex;
- Rock transported and placed for Barriers, Perimeter Dikes, and Saline Habitat Complex;
- Gravel transported and placed for Barriers, Perimeter Dikes, Saline Habitat Complex, and roads;
- Dredging for construction of Barriers and Perimeter Dikes;
- Disturbance of dry land to construct Saline Habitat Complex and roadways; and
- Disturbance of dry land for Air Quality Management.

Chapter 3 and Appendix H-7 of the PEIR summarize material quantities and acreages for these components for each of the alternatives. These material quantities and acreages served as the basis for the emission calculations. NO_x and diesel PM_{10} emissions were estimated for exhaust from construction equipment (such as bulldozers and excavators), marine vessels (tugboats, barges, and dredges), and diesel-fueled trucks (haul trucks and water trucks). In some cases, emissions were estimated for sources without control measures (referred to as uncontrolled emissions) and for the same sources after implementation of recommended controls (referred to as controlled emissions, or emissions after control). For example, uncontrolled and controlled fugitive PM_{10} emissions were calculated for soil disturbance and truck travel on unpaved roads.

Emissions were calculated for construction of Saline Habitat Complex cells as Early Start Habitat, and for a Peak Construction Year, which was assumed to occur between project initiation and the year 2020 (in Phase I). Emission factors from the SCAQMD CEQA Handbook, ARB, and the USEPA were used to estimate emissions. As indicated previously, Appendix E, Attachment E2, provides a more detailed description of the methodology used for the construction emission calculations and the limitations of the analysis. As stated above, the construction emissions reported in this chapter and Appendix E provide a means to compare the impacts of the alternatives, and should not be considered comprehensive. Emissions from construction of these components were only calculated for NO_x, diesel PM_{10}, and fugitive PM_{10}.

Methodology for Estimation of Emissions from Operations and Maintenance

For each alternative, operations and maintenance emissions were estimated for a Peak Operations Year, assumed to occur in Phase IV (2040 to 2078). The Peak Operations Year is assumed to occur after construction of the components is completed. For the purposes of the PEIR, an emissions level equivalent to 10 percent of Peak Construction Year emissions estimates was assumed to be representative of annual emissions associated with operations and maintenance for components in Phase IV (Peak Operations Year). This estimate was based on the assumption that the Peak Operations Year would occur in the later phases of the program, when periodically greater levels of operations and maintenance would be required for some of the large components, such as seepage control measures, repair of slumps in Berms, or rock and gravel replenishment for Barriers and Perimeter Dikes.

In Phase I, an emissions level equivalent to 1 percent of the Peak Construction Year emissions estimates were assumed to be representative of annual emissions associated with operations and maintenance.

Methodology for Estimation of PM_{10} Emissions from Exposed Playa Areas

Under the alternatives being considered for restoration at the Salton Sea, currently wet or flooded areas could become dry and exposed, and thereby become sources of windblown dust. Emissions during high wind events are of particular concern. To support the PEIR, a tool and modeling process were developed to estimate dust emissions in the form of PM_{10} from future Exposed Playa areas at the Salton Sea.

The tool selected was based on the “Empirical Method for Determining Fugitive Dust Emissions from Wind Erosion of Vacant Land,” commonly referred to as the “MacDougall Method” (MacDougall and Uhl, 2003). The MacDougall Method is a tool used to estimate particulate matter emissions that relies heavily on emission factors developed through use of wind tunnel and/or Portable In-Situ Wind Erosion Laboratory (PI-SWERL) study results. The method relies on actual field measurements of soil with and without crust to estimate PM_{10} emissions. Soils with varying crust strengths or stabilities may also be studied.

PI-SWERL and portable wind tunnel testing were conducted at the Salton Sea in September 2005, and the PI-SWERL has since been used to take measurements at the same study locations in January and March 2006 to evaluate seasonal effects.

Preliminary draft PI-SWERL data collected during the September 2005 and January 2006 test periods were used in the current analysis (Etymezian, 2006). Finalized results for the September and January tests were not available at the time of emissions estimation for the PEIR, nor were the finalized March 2006 results available. The draft PI-SWERL data included PM_{10} emission factors (milligrams/square meter second [mg/m^2-s]) at measured shear velocities (meters/second [m/s]). The measured shear velocities were converted to equivalent 10-meter wind speeds. Organized by the converted wind speeds, the emission factors in mg/m^2-s were converted to tons/acre-hour (ton/ac-hr). Organizing the data in this fashion allowed the calculation of the mean emission factor and standard deviation for each wind speed.

The formation of a salt crust on the Exposed Playa can significantly affect wind erosion emission rates, as observed at Owens Lake (Nickling and Brown, 2001). When the crust is relatively hard, as observed in summer and fall months, the crust protects the underlying surface of soil, and remains intact, preventing particles from becoming airborne until very high wind velocities occur. During the winter and early spring months, the crust across the playa is generally softened by more frequent rains, or by lower temperatures and higher humidity. The softer crust can no longer protect the underlying surface to the same degree as the more stable crust, and particles become airborne under relatively lower wind speeds.

Similar seasonal effects on Salton Sea playa were reflected in preliminary DRI September 2005 and January 2006 PI-SWERL data (Etyemezian, 2006), as well as observations by local residents of the area, who reported differences in the appearance of the salt crust during the early winter and early spring, and photographed windborne white dust emanating from Exposed Playa areas on windy days (Kalin, 2006). Visitors to the Salton Sea in January reported that the salt crust appeared “soft” and “puffy,” indicating that the playa was in an unstable condition (Dickey, 2006).

The terms “stable crust” or “stable playa” are used to describe conditions when windblown dust would be least likely to occur. The terms “unstable crust” or “unstable playa” are used to describe conditions when the salt crust becomes softened, and windblown dust would be more likely to occur. For purposes of estimating particulate emissions to support the PEIR, it was assumed that during the months April through November, Exposed Playa at the Salton Sea is in a stable crust condition. For the remaining four months (December, January, February, and March), the Exposed Playa was assumed to be in an unstable crust condition.

Particles become airborne when the wind speed at the land surface reaches a velocity that allows the particles to become loosened from the underlying materials. This is referred to as the “threshold wind velocity.” Based on review of the DRI PI-SWERL data, for stable crust conditions, it was assumed that playa became emissive at wind speeds of 25 miles/hour (mph). For unstable crust conditions, it was assumed that playa became emissive at wind speeds of 15 mph.

A meteorological data set (hourly wind speeds, precipitation, and relative humidity) was developed for the Salton Sea watershed using year 2002 data from two 10-meter surface meteorological stations, the Indio and Niland Stations, within the Salton Sea study area. The Indio Station is located in the north portion of the study area, and the Niland Station is located in the south portion of the study area.

Using the 2002 meteorological data set, the total number of wind event hours for the Indio and Niland meteorological stations were calculated for measured wind speeds in increments of 5 mph. The total number of event hours for a given wind speed increment was then multiplied by the calculated emission factor for that wind speed increment. The total emission factor (tons/acre) is the sum of the individual incremental emission factors.

Results from modeling of the water resources available under each alternative were used to predict acres of Exposed Playa area under the various alternatives and phases analyzed in the PEIR. To support the emissions calculations, the maximum total Exposed Playa area predicted for each alternative was hypothetically divided into north and south portions, by estimating the area north or south of a line corresponding to the Universal Transverse Mercator (UTM) northing coordinate of 3690572 meters. (From the eastern Salton Sea shoreline at Bombay Beach, this line runs east to a point midway between Desert Shores and Salton City on the western shoreline.) The meteorological data from Indio in the north and Niland in the south were used to support the calculations for the north and south portions of the Exposed Playa, respectively. Acres of Exposed Playa estimated for each alternative were classified as either stable or unstable based on the months of the year during which wind events occurred. Once the emission factors were developed, and the total number of event hours calculated from the respective meteorological data, the number of acres in each stability category was multiplied by the appropriate emissions factor and by the number of emissive event hours.

The number of acres of Exposed Playa was evaluated for each of the alternatives during two future phases: Phase I (ending in 2020) and Phase IV (2040-2078). Phases II and III were not analyzed at this time, because analysis of the early and late phases provided “book ends”, or upper and lower bounds, to the range of playa emissions that might be expected over time, under each alternative.

The following assumptions were applied to the calculation of emissions for each alternative and each phase:

- Indio meteorological station wind data are representative of the northern Salton Sea area;
- Niland meteorological station wind data are representative of the southern Salton Sea area;
- Playa exhibits stable crust conditions eight months of the year (April through November);
- Playa exhibits unstable crust conditions four months of the year (December, January, February, and March);
- Stable playa becomes emissive at a threshold wind velocity of 25 mph; and
- Unstable playa becomes emissive at a threshold wind velocity of 15 mph.

No wind speeds reported for the Indio meteorological station exceeded the 15 mph threshold during months when playa have been assumed to be unstable, and no reported data exceeded the 25 mph threshold during the months when the playa have been assumed to be under stable conditions. Therefore, under these assumptions, no emissions were predicted for the northern portions of the Salton Sea represented by Indio meteorological station data. As a result, all predicted emissions would result from exposed acres in the southern portion of the Salton Sea, represented by the Niland meteorological station data, where higher and more frequent winds were reported.

Emissions were first estimated for Exposed Playa assuming no control measures were applied. Then, to estimate fugitive dust emissions associated with Exposed Playa areas after implementation of Air Quality Management, the following control measures were assumed:

- 30 percent of the Exposed Playa area would not be emissive (nonemissive);
- 50 percent of Exposed Playa area would use Air Quality Management methods, such as water efficient vegetation; and
- 20 percent of the Exposed Playa area would use other Air Quality Management measures.

For each alternative except 4 and 7, the total acres were divided into these three categories: nonemissive, water efficient vegetation, and other Air Quality Management measures. For Alternatives 4 and 7, where there would be large areas of Exposed Playa without any long term control measures identified, it was assumed 30 percent of these areas would be nonemissive and 70 percent would be uncontrolled. Alternative 7 also has an area designated as Protective Salt Flat.

Assumptions were also made for the control efficiencies that might be achieved for the various types of control measures. These assumptions include many sources of uncertainty, and project-level analyses would need to develop additional information on the actual control efficiencies that would be achieved in practice. For the purposes of the PEIR, the assumed efficiencies were used consistently in analysis of the alternatives to allow comparison and evaluation of the resulting emission estimates.

Nonemissive area was assumed to be 100 percent controlled, water efficient vegetation was assumed to have a control efficiency of 95 percent, and Other Air Quality Management measures were assumed to have a control efficiency of 85 percent. Protective Salt Flat was also assumed to have a control efficiency of 85 percent. For areas with no identified long term control measures, emissions were assumed to be uncontrolled (0 percent control efficiency).

A detailed description of the approach, assumptions, and results from prediction of playa dust (as PM_{10}) emissions is provided in Appendix E, Attachment E3.

Methodology for General Conformity Applicability Analysis

For the purposes of the PEIR, the alternatives for ecosystem restoration were assumed to require some form of federal action or approval, and were therefore potentially subject to general conformity requirements. For example, federal approvals such as permits related to management of endangered species may be required. The general conformity rule prohibits any federal action that does not conform to the applicable air quality attainment plan or SIP. It is applicable only in areas designed as nonattainment or maintenance for NAAQS. General conformity applicability analysis requires quantification of direct and indirect construction and operations and maintenance emissions for the project, and comparison of these emission levels to baseline emission levels.

A project is exempt from the conformity rule (presumed to conform) if the total net project related emissions increases pass two tests: they are less than the *de minimis* thresholds established by the conformity rule, and they are not regionally significant (emissions are regionally significant if they exceed 10 percent of the total regional emission inventory). A project that produces emissions that exceed conformity thresholds, or that is regionally significant, is required to demonstrate conformity with the SIP through mitigation or other accepted practices, such as dispersion modeling, comparison to SIP requirements, and possibly emission offsetting or revisions to the SIP to accommodate emissions.

The sum of construction and operations and maintenance emissions was developed for each alternative for both the Peak Construction Year and the Peak Operations Year and compared to the comparable emissions estimated for the No Action Alternative. The differences, or "net" emissions increases, were then compared to the applicable significance criteria (that is, the general conformity *de minimis* thresholds and regionally significant emissions levels).

Other Analyses

In addition to the above analyses, a qualitative evaluation of the potential for odorous emissions was conducted. Sources of odorous emissions at the Salton Sea in each alternative would include the following:

- Water quality and stratification. The Salton Sea is a hypereutrophic water body characterized by high nutrient concentrations, high algal biomass, low clarity, frequent very low dissolved oxygen, fish kills, and noxious odors. High levels of nutrients from agricultural drainage and municipal discharges, combined with warm temperatures, would continue to contribute to extremely high levels of biological productivity in the Salton Sea. The high productivity would continue to impair water quality, resulting in nuisance algal blooms, anoxia, and production of hydrogen sulfide and ammonia; and
- Fish and algal die-offs. Large die-offs would produce unpleasant odors as fish decompose along the shoreline. Odors would also result from algal bloom die-offs. Odors resulting from algal bloom die-offs would continue to be most prevalent during the summer months, when inputs of freshwater to the Salton Sea would be low and ambient temperatures would be high. Odors from algal and fish die-offs would be expected to occur predominantly in the southern and eastern portions of the Salton Sea, although all areas would potentially be subject to these occurrences.

Concerns associated with some of the alternatives include the potential for increased stratification, combined with continual sediment release of odorous, oxygen-depleting compounds, such as hydrogen sulfide and ammonia. A severely stratified Salton Sea would allow for prolonged periods of hypolimnetic anoxia and build up of high hydrogen sulfide and ammonia concentrations below the thermocline. Upon mixing, the high concentrations of hydrogen sulfide and ammonia would severely deplete the water column of dissolved oxygen, increase surface water concentrations of these odorous compounds, and result in odor incidents. Depleted levels of dissolved oxygen and anoxic conditions in surface waters would also result in fish die-offs.

Hydrogen sulfide and ammonia production and subsequent build-up are proportional to the duration and strength of thermal stratification and the extent of algal growth. The alternatives include different sizes of lakes or water bodies, levels of wind fetch, and water depths, and, hence, differ with regard to their stratification and algal growth potential. Re-aeration, as caused by wind mixing, is key to the avoidance of anoxic conditions in surface water, even under conditions of eutrophication.

The results of water quality modeling (see Chapter 6) indicate that alternatives that include shallower water bodies would result in better mixing of the water column, decrease the summer stratification periods, and generally weaken the stratification potential compared to Existing Conditions. Alternatives with deeper water bodies are predicted to result in a significant increase in the number of days when the water bodies are stratified, allowing concentrations of hydrogen sulfide and ammonia to build up over longer periods of time. Mixing events would be less frequent than under Existing Conditions, but the concentrations of hydrogen sulfide and ammonia released to surface waters and air would be much higher. Furthermore, alternatives with deeper water bodies in the north are predicted to experience more stratification (both stronger and for a greater duration) than alternatives with water bodies in the south, due to greater average depths and lower winds in the north. Water bodies in the south would tend to be shallower, and the higher winds in the south would provide more energetic mixing and aeration.

In summary, all alternatives are predicted to result in changes in water quality, and may result in odorous emissions, such as hydrogen sulfide and ammonia. Water bodies in all alternatives would remain eutrophic. Alternatives with deeper water bodies in the northern part of the basin would become thermally stratified and produce substantial amounts of anoxic water. Mixing of those waters to the surface would occur and result in localized fish and invertebrate die-offs.

In addition to the qualitative evaluation of potential odor impacts, potential impacts on microclimate near the shoreline of the Salton Sea were described on a qualitative basis. More information on microclimate is provided in Appendix E, Attachment E11.

Significance Criteria

The following significance criteria were based on CEQA and air quality regulatory agency guidance and used to determine if changes as compared to Existing Conditions and the No Action Alternative would:

- Conflict with or obstruct implementation of an applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase in any criteria pollutant for which the alternative's region of influence is nonattainment under an applicable federal or State ambient air standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

An additional issue of concern was raised in the scoping comments. Therefore, the following significance criterion was added:

- Substantially modify the existing microclimate characteristics adjacent to the Salton Sea.

In addition to local significance thresholds, the local air districts have adopted general conformity regulations. The general conformity process, including comparison of net emissions increases to *de minimis* thresholds, is intended to demonstrate that the alternatives:

- Will not cause or contribute to new violations of federal air quality standards;
- Will not increase the frequency or severity of existing violations of federal air quality standards; or
- Will not delay the timely attainment of federal air quality standards.

Significance thresholds for toxic air contaminants or health effects are also defined by some air districts. Emissions of toxic air contaminants would be significant if the emissions exceeded acceptable levels or contributed significantly to the area's excess lifetime cancer risk values, cancer burden, or health hazard indices.

The significance criteria for each area used in this PEIR are presented below. To determine the significance of impacts, when more than one threshold was listed, this analysis used the more stringent significance threshold established by the SCAQMD or the ICAPCD for any given pollutant. Further, the general conformity *de minimis* levels were used as thresholds of significance for annual emissions estimates in tons/year, in addition to their use in determining the applicability of general conformity requirements.

SCAQMD

The SCAQMD has established construction related thresholds of significance for the portion of Riverside County that is in the SCAQMD. This portion includes Coachella Valley, part of the Salton Sea Air Basin. Construction related emissions in excess of any of the criteria listed in Table 10-10 are considered significant in this area.

Table 10-10
Construction Emissions Thresholds of Significance for the Portion of the Salton Sea Air Basin within the South Coast Air Quality Management District (Riverside County, Coachella Valley)

Pollutant	Daily Threshold (pound)
ROC	75
NO_x	100
CO	550
PM_{10}	150
SO_x	150

In addition to the thresholds listed above, the SCAQMD requires that some of the significance criteria established for stationary sources be used to evaluate the potential impacts of construction sites. The significance criteria for the impacts of air toxics released at construction sites are listed in Table 10-11 below. The significance thresholds for allowable changes in ambient air quality concentrations at construction sites are the same as those listed in the last column of Table 10-12, except for PM_{10}, where the second number listed is the allowable change in 24-hour PM_{10} concentration for construction sites, that is, 10.4 $\mu g/m^3$.

The SCAQMD has also established operational significance criteria for alternatives located in the Riverside County portion of the Salton Sea Air Basin. There are three types of operational significance criteria. Projects with peak operations related emissions or impacts that exceed any of the criteria listed in Table 10-11 would be considered significant. Projects with net emissions increases (operations and construction) greater than the *de minimis* thresholds listed in the general conformity column in Table 10-11 would be considered significant and would require a general conformity demonstration.

Table 10-11
Operational Significance Thresholds for the Riverside County Portion of the Salton Sea Air Basin

Pollutant	SCAQMD NSR[a] (Rules 1303 and 1401)	Local Significance Thresholds[b] (pounds/day)	General Conformity[c] (tons/year)
ROC	NA	55	50
NO_x	40 tons/year	55	50
CO	NA	550	NA
PM_{10}	15 tons/year	150	70
SO_x	NA	150	NA
Cancer risk with TBACT without TBACT	 10^{-5} or 10 in 1 million 10^{-6} or 1 in 1 million	NA	NA
Cancer burden	0.5	NA	NA
Acute HHI	1.0	NA	NA
Chronic HHI	1.0	NA	NA

a SCAQMD Rule 1303, Section (b)5(C)(I); Rule 1401, Section (d)
b SCAQMD, CEQA Air Quality Handbook, November 1993
c SCAQMD Rule 1901; 40 CFR 51, General Conformity
HHI = Health Hazard Index
NA = not applicable
NSR = New Source Review (applicable to stationary sources only)
ROC = reactive organic compound
TBACT = Toxics Best Available Control Technology

In addition to the criteria presented in Table 10-11, the listed allowable changes in pollutant concentrations listed in Table 10-12 also constitute significance criteria for projects in the Salton Sea Air Basin.

Table 10-12
Most Stringent Ambient Air Quality Standard and Allowable Change in Concentration*

Air Contaminant	Averaging Time	Most Stringent Air Quality Standard	Significant Change in Air Quality Concentration
NO_2	1-hour Annual	25 pphm (500 $\mu g/m^3$) 5.3 pphm (100 $\mu g/m^3$)	1 pphm (20 $\mu g/m^3$) 0.05 pphm (1 $\mu g/m^3$)
CO	1-hour 8-hour	20 ppm (23 mg/m^3) 9.0 ppm (10 mg/m^3)	1 ppm (1.1 mg/m^3) 0.45 ppm (0.50 mg/m^3)
PM_{10}	24-hour Annual arithmetic mean/annual geometric average	50 $\mu g/m^3$ 20 $\mu g/m^3$ (annual arithmetic mean)	2.5 $\mu g/m^3$ (operation) 10.4 $\mu g/m^3$ (construction sites) 1 $\mu g/m^3$ (annual geometric average)
Sulfate	24-hour	25 $\mu g/m^3$	1 $\mu g/m^3$

* SCAQMD Rule 1303 and SCAQMD Air Quality Significance Thresholds (http://www.aqmd.gov/ceqa/hdbk.html)
pphm = parts per hundred million

ICAPCD

The study area is located in a federally designated nonattainment area for PM_{10} and ozone. Therefore, the general conformity rule is applicable in the study area for project related emissions of PM_{10}, and for emissions of ROC (or ROG) and NO_x as precursors to ozone. Table 10-13 presents *de minimis* thresholds for the Imperial Valley contained in ICAPCD Rule 925, General Conformity. Exceedance of *de minimis* thresholds would require that a general conformity demonstration be performed.

In addition, the ICAPCD has established CEQA guidelines and recommended threshold criteria for determining the significance of impacts (ICAPCD, 2005d). Therefore, there are two types of operational significance criteria in the Imperial Valley. The local significance thresholds in the guidelines relate primarily to operations, whereas general conformity criteria apply to both operations and construction emissions from mobile and stationary sources. Both types of significance criteria are listed in Table 10-13. ICAPCD has not established significance criteria for toxic air contaminant emissions or associated health effects.

With regard to construction related impacts, PM_{10} is the pollutant of greatest concern. ICAPCD recommends that CEQA analyses of construction impacts should emphasize implementation of effective and comprehensive control measures. Standard mitigation measures listed in the guidelines for construction equipment and fugitive PM_{10} control should be implemented at all sites. In addition, all discretionary mitigation measures listed in the guidelines should be implemented at construction sites greater than 4 acres in size.

Table 10-13
Local Significance Thresholds for the ICAPCD

Pollutant	Local Tier I Thresholds (pounds/day)[a]	Local Tier II Thresholds (pounds/day)[a]	General Conformity[b] (tons/year)
ROG	Less than 55	55 and greater	100 (VOC)
NO_x	Less than 55	55 and greater	100
CO	Less than 550	550 and greater	NA
PM_{10}	Less than 150	150 and greater	70
SO_x	Less than 150	150 and greater	NA
Significance finding	Potentially significant impact	Significant impact	If exceeded, require general conformity demonstration

[a] ICAPCD CEQA Air Quality Handbook, 2005
[b] ICAPCD Rule 925, General Conformity
NA = not applicable because Imperial County is in attainment of the NAAQS standard for CO

Application of Significance Criteria

The following significance criteria have been applied to the alternatives:

- Fugitive dust (PM_{10}) emissions from construction would exceed local air district significance thresholds;
- HAPs in fugitive dust associated with construction would expose sensitive receptors to substantial pollutant concentrations;
- Exhaust (NO_x) emissions from construction would exceed local air district significance thresholds;
- Exhaust (diesel PM_{10}) emissions from construction would expose sensitive receptors to substantial pollutant concentrations;
- Fugitive dust (PM_{10}) emissions from operations and maintenance would exceed local air district CEQA significance thresholds;

- Exhaust (NO_x) emissions from operations and maintenance would exceed local air district significance thresholds;
- Fugitive dust (PM_{10}) emissions from Exposed Playa, after implementation of planned Air Quality Management, would exceed local air district significance thresholds;
- HAPs associated with fugitive dust emissions from Exposed Playa, after implementation of planned Air Quality Management, would expose sensitive receptors to substantial pollutant concentrations;
- Net emissions increase of nonattainment pollutants (PM_{10}, NO_x) would exceed general conformity *de minimis* thresholds or regional significance levels;
- Odorous emissions associated with changes in water quality would affect a substantial number of people; and
- Changes would substantially modify the existing microclimate characteristics adjacent to the shoreline.

Summary of Assumptions

The assumptions related to the descriptions of the alternatives are described in Chapter 3. The general assumptions used in the climate and air quality impact analyses are summarized in Table 10-14.

The analysis summarized in this chapter and Appendix E is programmatic in nature. Additional analyses would be completed during project-level studies. Emissions were only estimated for construction of the large components of the alternatives and estimates of emissions associated with operations and maintenance were based on assumptions. Therefore, project-level analyses would need to consider a more extensive list of emissions and sources. For example, the following types of emissions and sources were not included as part of this programmatic analysis, but would be considered for project-level analyses:

- Emissions generated during construction of less major facilities, such as Sedimentation/Distribution Basins and pipelines, were not estimated.
- Emissions generated by water trucks traveling on unpaved roads to refilling locations were not included in calculations of construction fugitive dust. In addition, exhaust emissions for this water truck travel were not estimated;
- Emissions of entrained road dust generated by trucks traveling on paved roads to transport construction materials (e.g., rock, gravel) from quarries to the Salton Sea were not included in calculations of construction fugitive dust;
- Emissions of fugitive dust from storage piles and material handling were not estimated;
- Emissions of fugitive dust generated by land-based construction equipment traveling on unpaved roads were not estimated;
- Exhaust and fugitive dust emissions generated by trucks used to haul miscellaneous construction related materials, supplies, and resources, such as fencing and fuels, to the Salton Sea and construction sites were not estimated;
- Exhaust emissions from water trucks to control unpaved road dust for placement of materials were not estimated; and
- Emissions generated by employee commute vehicles were not included.

Table 10-14
Summary of Assumptions for Climate and Air Quality

Assumptions Common to All Alternatives

1. All proposed and adopted air quality plans would be implemented as currently proposed and adopted. No further projections beyond the timeframes included in existing proposed and adopted plans were included.
2. The following control measures for fugitive dust emissions during construction were assumed:
   - To control fugitive dust emissions from dry land disturbed to construct Saline Habitat Complex cells and roads, a 2-hour surface watering interval would be implemented, with an estimated control efficiency of 74 percent (WRAP, 2004);
   - To control fugitive dust emissions associated with truck and vehicle travel on unpaved roads, watering twice a day would be implemented, with an estimated control efficiency of 55 percent (WRAP, 2004);
   - To be conservative, no control was assumed for dry land disturbed to construct water efficient vegetation for Air Quality Management. The nature of this construction may preclude use of watering trucks in the constructable areas for at least some portion of the construction period, for example, after areas have been prepared for planting; and
   - Use of chemical stabilizers for control of fugitive dust from construction has not been proposed at this time, because impacts of chemicals on Habitat and Air Quality Management areas are unknown, and may represent unacceptable conditions.
3. To estimate exhaust emissions generated during construction of each alternative, the following assumptions were made:
   - Land-based construction equipment would be required to meet Tier 4 emissions standards;
   - Diesel engines used on marine vessels would be required to meet Tier 2 emissions standards; and,
   - For the diesel-fueled haul trucks, the emission factors used are from the model EMFAC2002 and represent model year trucks from 1965-2012 in the South Coast Air Basin (SCAQMD, 2006, http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html).
4. For construction of components, the impact analysis assumed that the transport distance for rock and gravel by truck would be 10 miles one way on paved roads from a quarry or staging site. Placement of rock and gravel by truck assumed an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site. If these travel distances are increased in project-level analyses, emissions associated with transport and placement of construction materials would increase proportionally.
5. To estimate emissions associated with operations and maintenance for each alternative, an emissions level equivalent to 10 percent of Peak Construction Year emissions estimates was assumed to be representative of annual emissions associated with operations and maintenance for components in Phase IV (Peak Operations Year). In Phase I, an emissions level equivalent to 1 percent of the Peak Construction Year emissions estimates were assumed to be representative of annual emissions associated with operations and maintenance.
6. To estimate fugitive dust emissions associated with Exposed Playa areas after implementation of Air Quality Management, the following control measures were assumed, as described in Appendix H-3:
   - 30 percent of the Exposed Playa would not be emissive (nonemissive);
   - 50 percent of the Exposed Playa would use Air Quality Management, such as water efficient vegetation (assumed 95 percent control efficiency); and
   - 20 percent of the Exposed Playa would use other Air Quality Management measures (assumed 85 percent control efficiency).
7. The calculations conducted to support these air quality impact analyses involved many interim calculation values, as presented in spreadsheets in Appendix E. The resulting emissions estimates used in evaluations of impacts have been rounded to reflect significant figures that are similar to the number of significant figures in the thresholds used in these evaluations.

Table 10-14
Summary of Assumptions for Climate and Air Quality

	Assumptions Specific to the Alternatives
No Action Alternative	1. The four-step air quality mitigation and monitoring plan outlined in the 2003 Imperial Irrigation District (IID) Water Conservation and Transfer Project Mitigation, Monitoring, and Reporting Program would be implemented under the No Action Alternative, and should be considered for any alternative. 2. As required under local air district regulations and requirements, landowners would implement dust control for any exposed areas outside of the study area that should become emissive (e.g., any areas above -235 feet mean sea level (msl) or below -248 feet msl in the No Action Alternative). Dust control measures implemented by landowners would not likely be 100 percent effective in reducing fugitive dust emissions from these exposed areas, resulting in additional emissions not covered by the 4-step plan or the restoration program. In Appendix E, Attachment E3, “uncontrolled” emissions estimated for those areas designated as “landowner responsible” represent emissions before control, and therefore do not reflect emissions reductions that would be achieved with implementation of dust control measures. “Controlled” emissions have also been estimated for these areas, assuming a level of control similar to those assumed for the alternatives. The emissions associated with these landowner responsible areas are not included in the values used in comparisons of the alternatives to the No Action Alternative.
Alternatives 1, 2, 3, 4, 5, 6, 7, and 8	1. For the Early Start Habitat that would be implemented as part of each alternative, the following construction activities were assumed to occur: • Up to 2,100 acres of dry land would be disturbed per year; • Up to 2,000 acres of Saline Habitat Complex under construction per year; • Up to 100 acres of roadways and canals under construction per year; • Transport and placement of rock and gravel and grading of material would occur at the same rates and travel distances described for the Alternative 1 Peak Construction Year; and • The Early Start Habitat would not be implemented as part of the No Action Alternative.

In addition to the nonattainment pollutants that were evaluated in this analysis (PM_{10} and the ozone precursor, NO_x), project-level analysis would evaluate impacts associated with other criteria pollutants, and in some cases, HAPs.

The emissions predicted for the Exposed Playa areas under each alternative are estimates based on a set of conservative assumptions about the variability of future inflows, the future emissivity of Exposed Playa, meteorological conditions, and control efficiencies for the placeholder technologies. Further, the emissions estimates are based on preliminary data from limited studies of playa stability and emissivity conducted to date at the Salton Sea, a predictive model, and currently proven control measures. Additional research is recommended to further study the amount and composition of the fugitive dust emitted from playa at the Salton Sea, and the conditions (meteorological, crustal, and others) that result in stable versus emissive conditions. Additional studies are needed to better characterize playa conditions and emissions and identify the best control measures.

Analysis of soil and sediment samples taken at the Salton Sea indicates potentially significant levels of constituents of concern. Therefore, fugitive dust generated at the Salton Sea may contain levels of compounds of potential concern that are higher than the natural background levels. Human and animal exposure and health effects could occur through inhalation, dermal contact, or ingestion of dust. Likewise, alternatives would result in particulate emissions from diesel-fueled engines (diesel PM_{10}), hydrogen sulfide, ammonia, and other pollutants of concern identified in the programmatic study. Available information was not sufficient to conduct human exposure or health effects studies for these pollutants in the timeframe of the PEIR.

Summary of Impact Assessment

Table 10-15 summarizes the assessment of the alternatives as compared to the Existing Conditions and the No Action Alternative.

No Action Alternative

As described in Chapter 3, this alternative would involve construction and operations and maintenance activities for the Sedimentation/Distribution Basins, Air Quality Management, Pupfish Channels, and Salton Sea. The construction activities would be identical under the No Action Alternative-CEQA Conditions and the No Action Alternative-Variability Conditions. Defining the future air quality in the Salton Sea Air Basin under the No Action Alternative is an inherently challenging task. There are several major variables at play, each with varying degrees of uncertainty. These variables include future population growth in the region, the extent of various emissions sources, emissivity of each source, and the success of the local jurisdictions and others in implementing effective air emissions control measures over the coming decades. Pollutant transport from Mexico also influences air quality compliance in the region.

An understanding of the potential future air quality conditions is essential to evaluating the impacts and benefits of alternatives. Therefore, emissions and conditions that may affect future air quality in the basin have been projected. The two most substantial changes are related to implementation of the Quantification Settlement Agreement (QSA), as described in Chapter 4, and the ongoing development and implementation of AQMPs and SIPs.

QSA Implementation

Implementation of the QSA and the related IID Water Conservation and Transfer Project would reduce inflows to the Salton Sea, resulting in an increase in the amount of playa exposed over the next 75 years. The IID Water Conservation and Transfer Project EIR/EIS and addendum projected an increase in exposed playa of about 45,000 acres over the 75-year period compared to the Future Baseline for that project (IID and Reclamation, 2002b).

To mitigate the potential air quality impacts from Exposed Playa, the IID Water Conservation and Transfer Project Mitigation Monitoring and Reporting Plan included a four-step air quality mitigation and monitoring plan (four-step air quality plan), as summarized below:

1. **Restrict Access**. Public access, especially off-highway vehicle access, would be limited, to the extent legally and practicably feasible, to minimize disturbance of natural crusts and soils surfaces in future exposed shoreline areas. Prevention of crust and soil disturbance is viewed as the most important and cost-effective measure available to avoid future dust impacts. IID or other governmental entities own or control most of the lands adjacent to and under the Salton Sea. Fencing and posting would be installed on these lands in areas adjacent to private lands or public areas to limit access.
2. **Research and Monitor**. A research and monitoring program would be implemented incrementally as the Salton Sea recedes. The research phase would focus on development of information to help define the potential for problems to occur in the future as the Salton Sea elevation is reduced slowly over time. Research would accomplish the following:
   a. Study historical information on dust emissions from exposed shoreline areas.
   b. Determine how much land would be exposed over time and who owns it.

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase I	II	III	IV	Comments	Next Steps
Criterion: Construction fugitive dust (PM_{10}) emissions exceed local significance thresholds of 150 pounds/day (daily threshold) or 70 tons/year (annual threshold).							
No Action Alternative	Existing Conditions	L	L	L	L	Construction PM10 emissions well below thresholds in Peak Construction Year (Phase I).	Project-level analyses would need to do more detailed emissions estimation, impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternative 1	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM10 emissions more than 5 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		
Alternative 2	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM10 emissions more than 10 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		
Alternative 3	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM10 emissions more than 20 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		
Alternative 4	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions below thresholds in Peak Construction Year. However, if summed with diesel PM10 emissions, would exceed daily threshold. Annual construction PM10 emissions more than 5 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternative 5	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM10 emissions more than 30 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		
Alternative 6	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions greatly exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM_{10} emissions more than 150 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		
Alternative 7	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions greatly exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM_{10} emissions more than 200 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		
Alternative 8	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions greatly exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM_{10} emissions more than 150 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		
Criterion: Hazardous air pollutants (HAPs) in fugitive dust (PM_{10}) emissions associated with construction expose sensitive receptors to substantial pollutant concentrations.							
No Action Alternative	Existing Conditions	S	S	S	S	The No Action Alternative would result in fugitive dust emissions during construction. Analytical results indicate potentially significant levels of constituents of concern in the sediment and soil samples taken at the Salton Sea. Additional study recommended, as described in Appendix E, Attachment E4.	Project-level analyses would need to do more detailed emissions estimation, exposure and health impact analysis, and mitigation planning. Control of fugitive dust would reduce human exposures.
	No Action Alternative	NA	NA	NA	NA		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternatives 1 - 8	Existing Conditions	S	N	N	N	All alternatives result in fugitive dust emissions during construction. Analytical results indicate potentially significant levels of constituents of concern in the sediment and soil samples taken at the Salton Sea. Additional study recommended - see Appendix E, Attachment E4.	Same as No Action Alternative.
	No Action Alternative	U	U	U	U		
Criterion: Construction exhaust (NO_x) emissions exceed local significance thresholds of 100 pounds/day or 50 tons/year.							
No Action Alternative	Existing Conditions	L	L	L	L	Construction NOx emissions well below thresholds in Peak Construction Year (Phase I).	Project-level analyses would need to do more detailed emissions estimation, impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternative 1	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions below thresholds in Peak Construction Year. Annual construction NOx emissions about 2 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		
Alternative 2	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed daily thresholds in Peak Construction Year. Annual construction NOx emissions about 4 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		
Alternatives 3, 5, and 7	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions greatly exceed thresholds in Peak Construction Year. Annual construction NOx emissions more than 100 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		
Alternative 4	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in Peak Construction Year. Annual construction NOx emissions more than 20 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase I	II	III	IV	Comments	Next Steps
Alternatives 6 and 8	Existing Conditions	S	N	N	N	Greater impacts than under No Action Alternative and Existing Conditions. Emissions greatly exceed thresholds in Peak Construction Year. Annual construction NOx emissions more than 200 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		
Criterion: Diesel PM_{10} emissions associated with construction expose sensitive receptors to substantial pollutant concentrations.							
No Action Alternative	Existing Conditions	S	S	S	S	The No Action Alternative would result in diesel PM10 emissions during construction. The State lists particulate emissions from diesel-fueled engines as air toxics with carcinogenic impacts in exposed human populations. Additional study recommended - see Appendix E, Attachment E4.	Project-level analyses would need to do more detailed emissions estimation, exposure and health impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternatives 1 - 8	Existing Conditions	S	N	N	N	All alternatives result in diesel PM10 emissions during construction. The State lists particulate emissions from diesel-fueled engines as air toxics with carcinogenic impacts in exposed human populations. Additional study recommended - see Appendix E, Attachment E4.	Same as No Action Alternative.
	No Action Alternative	S	N	N	N		
Criterion: Operations and maintenance related fugitive dust (PM_{10}) emissions exceed local significance thresholds of 150 pounds/day or 70 tons/year.							
No Action Alternative	Existing Conditions	L	L	L	L	Operations PM10 emissions well below thresholds in all phases, including the Peak Operations Year.	Project-level analyses would need to do more detailed emissions estimation, impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternative 1	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions well below thresholds in all phases, including the Peak Operations Year. Annual operations PM10 emissions more than 5 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternative 2	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions below thresholds in all phases, including the Peak Operations Year. Annual operations PM10 emissions more than 10 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		
Alternative 3	Existing Conditions	L	N	N	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions under thresholds in Phase I, but exceed daily thresholds in Peak Operations Year. Annual operations PM10 emissions more than 20 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	N	N	S		
Alternative 4	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions well below thresholds in all phases, including the Peak Operations Year because long term Air Quality Management actions are not included in this alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		
Alternative 5	Existing Conditions	L	N	N	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions under thresholds in Phase I, but exceed daily thresholds in Peak Operations Year. Annual operations PM10 emissions more than 30 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	N	N	S		
Alternatives 6 and 8	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, including the Peak Operations Year. Annual operations PM10 emissions more than 150 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Alternative 7	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, including the Peak Operations Year based upon the type of Air Quality Management methods used in this alternative. Annual operations PM10 emissions more than 200 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase I	II	III	IV	Comments	Next Steps
Criterion: Operations and maintenance related exhaust (NO_x) emissions exceed local significance thresholds of 55 pounds/day or 50 tons/year.							
No Action Alternative	Existing Conditions	L	L	L	L	Operations NOx emissions well below thresholds in all phases, including the Peak Operations Year (Phase IV).	Project-level analyses would need to do more detailed emissions estimation, impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternative 1	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions well below thresholds in all phases, including the Peak Operations Year. Annual operations NOx emissions similar to, but slightly higher than, No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		
Alternative 2	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions well below thresholds in all phases, including the Peak Operations Year. Annual operations NOx emissions more than 3 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		
Alternative 3	Existing Conditions	S	N	N	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed daily threshold in Phase I, and exceed both thresholds in Peak Operations Year. Annual operations NOx emissions more than 100 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	N	N	S		
Alternative 4	Existing Conditions	L	N	N	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions under thresholds in Phase I, but exceed daily thresholds in Peak Operations Year. Annual operations NOx emissions more than 15 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	N	N	S		
Alternatives 5 and 7	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, including the Peak Operations Year. Annual operations NOx emissions more than 100 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase I	II	III	IV	Comments	Next Steps
Alternatives 6 and 8	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, including the Peak Operations Year. Annual operations NOx emissions more than 200 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Criterion: Fugitive dust (PM_{10}) emissions associated with exposed playa, after air quality management and control measures, exceed local significance thresholds of 150 pounds/day or 70 tons/year.							
No Action Alternative	Existing Conditions	L	L	L	L	Playa PM10 emissions well below thresholds in Phase I, but over thresholds in Phases III and Iv. Did not analyze Phase II.	Project-level analyses would need to do more detailed emissions studies and estimation, control measure identification, impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternatives 1 and 2	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, even with assumption of aggressive Air Quality Management and control measures. In Phase I, annual playa PM_{10} emissions up to 5 times greater than No Action Alternative. In Phase IV, annual emissions similar to, but greater than, No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Alternative 3	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed daily threshold in Phase I, and exceed both thresholds in Phase IV, even with assumption of aggressive Air Quality Management and control measures. In both phases, annual playa PM_{10} emissions up to 2 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Alternative 4	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, and greatly exceed thresholds in Phase IV, due to the lack of aggressive Air Quality Management and control measures. In both phases, annual playa PM_{10} emissions more than 25 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternatives 5 and 6	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, even with assumption of aggressive Air Quality Management and control measures. In Phase I, annual playa PM_{10} emissions more than 5 times greater than No Action Alternative. In Phase IV, annual emissions more than 2 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Alternative 7	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, and greatly exceed thresholds in Phase IV, even with assumption of limited Air Quality Management and control measures. In Phase I, annual playa PM_{10} emissions more than 90 times greater than No Action Alternative. In Phase IV, annual emissions more than 15 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Alternative 8	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed daily threshold in Phase I, and exceed both thresholds in Phase IV, even with assumption of aggressive Air Quality Management and control measures. In Phase I, annual playa PM_{10} emissions more than 3 times greater than No Action Alternative. In Phase IV, annual emissions similar to, but greater than, No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Criterion: Hazardous air pollutants (HAPs) in fugitive dust (PM_{10}) emissions associated with playa expose sensitive receptors to substantial pollutant concentrations.							
No Action Alternative	Existing Conditions	S	S	S	S	The No Action Alternative is predicted to result in fugitive dust emissions from Exposed Playa areas, even after aggressive Air Quality Management and control measures are implemented. Analytical results indicate potentially significant levels of constituents of concern in the sediment and soil samples taken at the Salton Sea.	Project-level analyses would need to do more detailed emissions estimation, exposure and health impact analysis, and mitigation planning. Control of fugitive dust would reduce human exposures.
	No Action Alternative	NA	NA	NA	NA		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase I	II	III	IV	Comments	Next Steps
Alternatives 1 - 8	Existing Conditions	S	S	S	S	All alternatives are predicted to result in fugitive dust emissions from Exposed Playa areas, even after aggressive Air Quality Management and control measures are implemented. Analytical results indicate potentially significant levels of constituents of concern in the sediment and soil samples taken at the Salton Sea.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Criterion: Net Emissions increase of nonattainment pollutants exceed General Conformity *de minimis* thresholds of 70 tons/year (PM_{10}) and 50 tons/year (NO_x).							
No Action Alternative	Existing Conditions	NA	NA	NA	NA	Not Applicable.	Not Applicable.
	No Action Alternative	NA	NA	NA	NA		
Alternative 1	Existing Conditions	S	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. NO_x emissions below the threshold in Peak Construction Year and Peak Operations Year. PM_{10} emissions above threshold in Peak Construction Year, but slightly below the threshold in the Peak Operations Year.	Project-level analyses would need to do more detailed emissions estimation, impact analysis, and mitigation planning.
	No Action Alternative	S	L	L	L		
Alternative 2	Existing Conditions	S	N	N	S	Greater impacts than under No Action Alternative and Existing Conditions. NO_x emissions below the threshold in Peak Construction Year and Peak Operations Year. PM_{10} emissions above threshold in Peak Construction Year and the Peak Operations Year, even with aggressive dust control measures.	Same as Alternative 1.
	No Action Alternative	S	N	N	S		
Alternative 3	Existing Conditions	S	N	N	S	Greater impacts than under No Action Alternative and Existing Conditions. NO_x emissions exceed thresholds in Peak Construction Year, even with requirements for low emission equipment. PM_{10} emissions exceed threshold even with aggressive dust control. Exceedances of thresholds are not as great in Peak Operations Year.	Same as Alternative 1.
	No Action Alternative	S	N	N	S		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternative 4	Existing Conditions	S	N	N	S	Greater impacts than under No Action Alternative and Existing Conditions. NO_x emissions above the threshold in Peak Construction Year and below in the Peak Operations Year. PM_{10} emissions above threshold in Peak Construction Year and greatly exceed the threshold in the Peak Operations Year, primarily due to the lack of designated Air Quality Management for Exposed Playa.	Same as Alternative 1.
	No Action Alternative	S	N	N	S		
Alternative 5	Existing Conditions	S	N	N	S	Greater impacts than under No Action Alternative and Existing Conditions. NO_x emissions greatly exceed thresholds in Peak Construction Year, even with requirements for low emission equipment. PM_{10} emissions exceed threshold even with aggressive dust control. Exceedances of thresholds are not as great in Peak Operations Year.	Same as Alternative 1.
	No Action Alternative	S	N	N	S		
Alternatives 6 and 8	Existing Conditions	S	N	N	S	Greater impacts than under No Action Alternative and Existing Conditions. NO_x and PM_{10} emissions greatly exceed thresholds in Peak Construction Year, even with requirements for low emission equipment and aggressive dust control. Exceedances of thresholds are not as great in Peak Operations Year.	Same as Alternative 1.
	No Action Alternative	S	N	N	S		
Alternative 7	Existing Conditions	S	N	N	S	Greater impacts than under No Action Alternative and Existing Conditions. NO_x and PM_{10} emissions greatly exceed thresholds in Peak Construction Year, even with requirements for low emission equipment and aggressive dust control. Exceedances of thresholds are not as great in Peak Operations Year, but PM_{10} emissions still greatly exceed the threshold.	Same as Alternative 1.
	No Action Alternative	S	N	N	S		
Criterion: Net emissions increase of nonattainment pollutants exceed General Conformity *de minimis* thresholds of 70 tons/year (PM_{10}) and 50 tons/year (NO_x).							

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase I	II	III	IV	Comments	Next Steps
No Action Alternative	Existing Conditions	S	S	S	S	Odorous emissions, such as hydrogen sulfide and ammonia, may occur. In early phases, impacts similar to Existing Conditions. In later phases, after fish are no longer present, impacts may be less than under Existing Conditions.	Project-level analyses would need to do more detailed emissions estimation, exposure and health impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternatives 1 - 4	Existing Conditions	S	B	B	B	Impacts associated with Brine Sink similar to those associated with the No Action Alternative. Impacts associated with shallower water bodies would be less than those associated with the No Action Alternative and Existing Conditions.	Same as No Action Alternative.
	No Action Alternative	S	B	B	B		
Alternatives 5 - 8	Existing Conditions	S	S	S	S	Impacts associated with Brine Sink similar to those associated with the No Action Alternative. Impacts associated with deeper water bodies would be similar or greater than those associated with the No Action Alternative and Existing Conditions.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Criterion: Changes substantially modify the existing microclimate characteristics adjacent to the Salton Sea.							
No Action Alternative	Existing Conditions	S	S	S	S	The No Action Alternative is predicted to result in potentially significant changes in microclimate of shoreline areas where water levels are predicted to recede. Larger scale climatic impacts are not predicted to occur as a result of the alternatives.	Project-level analyses would need to do more detailed microclimatic impact analysis and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternatives 1 - 8	Existing Conditions	S	S	S	S	All alternatives are predicted to result in potentially significant changes in microclimate of shoreline areas where water levels are predicted to recede, with lesser impacts on shoreline areas that will remain adjacent to water bodies. Larger scale climatic impacts are not predicted to occur as a result of the alternatives.	Same as No Action Alternative.
	No Action Alternative	U	U	U	U		

Legend for Types of Benefits or Impacts in Each Phase:
S = Significant Impact
O = No Impact
L = Less Than Significant
B = Beneficial Impact
NA = Not Analyzed and U= Unknown

c. Conduct sampling to determine the composition of "representative" shoreline sediments and the concentrations of ions and minerals in salt mixtures at the Salton Sea. Review results from prior sampling efforts. Identify areas of future exposed shoreline with elevated concentrations of toxic substances relative to background.

d. Analyze to predict response of Salton Sea salt crusts and sediments to environmental conditions, such as rainfall, humidity, temperature, and wind.

e. Implement a meteorological, PM_{10}, and toxic air contaminant monitoring program to begin under existing conditions and continue as the IID Water Conservation and Transfer Project is implemented. Monitoring would take place both near the sources (exposed shoreline caused by the Project) and near the receptors (populated areas) in order to assess the source-receptor relationship. The goal of the monitoring program would be to observe PM_{10} problems or incremental increases in toxic air contaminant concentrations associated with the increased exposure of seabed to provide a basis for mitigation efforts.

f. If incremental increases in toxic air contaminants (such as arsenic or selenium, for example) are observed at the receptors and linked to emissions from exposed shoreline, conduct a health risk assessment to determine whether the increases exceed acceptable thresholds established by the governing air districts and represent a significant impact.

g. If potential PM_{10} or health effects problem areas are identified through research and monitoring and the conditions leading to PM_{10} emissions are defined, study potential dust control measures specific to the identified problems and the conditions at the Salton Sea.

3. **Create or Purchase Offsetting Emission Reduction Credits.** This step would require negotiations with the local air pollution control districts to develop a long term program for creating or purchasing offsetting PM_{10} emission reduction credits. Credits would be used to offset emissions caused by the IID Water Conservation and Transfer Project, as determined by monitoring (see Step 2, above).

4. **Direct Emission Reductions at the Salton Sea**. If sufficient offsetting emission reduction credits are not available or feasible, Step 4 of this mitigation plan would be implemented. It would include either one, or a combination of the following:

   a. Implementing feasible dust mitigation measures. This includes the potential implementation of new (and as yet unknown or unproven) dust control technologies that may be developed at any time during the term of the IID Water Conservation and Transfer Project Proposed Project.

   b. If feasible, supplying water to the Salton Sea to re-wet emissive areas exposed by the IID Water Conservation and Transfer Project, based on the research and monitoring program (Step 2 of this plan). This approach could use and extend the duration of the Salton Sea Habitat Conservation Strategy. If, at any time during the Project term, feasible dust mitigation measures are identified, these could be implemented in lieu of other dust mitigation measures or the provision of mitigation water to the Salton Sea. Thus, it is anticipated that the method or combination of methods could change from time to time over the Project term.

The No Action Alternative includes implementation of this four-step air quality plan.

The enforcement, monitoring, and funding of implementation of the four-step air quality plan is established under a set of related documents, permits, agreements, and laws as described below.

IID Water Conservation and Transfer Project EIR/EIS, Addendum, and Mitigation, Monitoring, and Reporting Program

These documents, prepared by IID, describe the four-step air quality plan as mitigation for the impacts of exposing playa due to the reduction of inflows to the Salton Sea incidental to the transfer of water. However, it should be noted that even with implementation of this plan, the EIR/EIS for the IID Water Conservation and Transfer Project concluded that the air quality impact resulting from this project would be potentially significant and unavoidable.

State Water Resources Control Board Order

As a responsible agency for the IID Water Conservation and Transfer Project, the State Water Resources Control Board (SWRCB) acknowledged and accepted the incremental implementation of the four-step air quality plan to mitigate potential air quality impacts from the Exposed Playa through SWRCB Order 2002-0013 (SWRCB, 2002). To develop an adequate baseline, the SWRCB Order requires that Step 2 of the plan, research and monitoring, be implemented within six months of the effective date of the approval – December 20, 2002. Further, the SWRCB Order stated that the ICAPCD and the SCAQMD have jurisdiction over different parts of the Salton Sea geographical region. The SWRCB Order delegated to the Chief of the Division of Water Rights the authority to determine, in consultation with the ICAPCD, the SCAQMD, and the ARB, whether any mitigation measure identified as part of the four-step plan is feasible. With implementation of the feasible mitigation measures, the SWRCB stated that they believe that the impacts to air quality due to exposed shoreline would be less than significant. Nonetheless, the Final EIR/EIS states that dust emissions from shoreline exposure are a potentially significant, unavoidable impact. The SWRCB Order concludes that IID could mitigate the air quality impacts to less than significant levels. However, to the extent that impacts are unmitigable and unavoidable, the SWRCB found that the critical importance of a reliable Colorado River water supply outweighs the impacts. The SWRCB Order also specified that IID must comply with all applicable requirements of the ICAPCD and the SCAQMD SIPs and PM_{10} rules.

QSA Agreements and Legislation

As part of the QSA, an Environmental Cost Sharing Agreement (ECSA) was executed between the Coachella Valley Water District (CVWD), IID, and the San Diego County Water Authority (SDCWA) to apportion the costs of implementing mitigation measures required under the EIR/EIS for that Project, including implementation of the four-step air quality plan. In September 2003, the California Legislature passed three bills related to the QSA and restoration of the Salton Sea as identified in Chapter 1. Collectively, these bills create funding mechanisms for mitigation of the QSA's impacts on the Salton Sea, assure that implementation of the QSA will be consistent with Salton Sea restoration, and provide significant funding for Salton Sea restoration planning.

The QSA implementing legislation allocates environmental responsibility among the water agencies and the State for environmental mitigation requirements related to implementation of the QSA, including the IID Water Conservation and Transfer Project. The legislation provides a mechanism to implement funding of mitigation costs by authorizing the California Department of Fish and Game to enter into a joint powers agreement (JPA) with CVWD, IID, and SDCWA for the purpose of financing environmental mitigation costs. The legislation also limits the costs for environmental mitigation (including air quality mitigation) to be paid by IID, CVWD, and SDCWA to a total of $133,000,000.

Under a separate agreement forming a JPA between the State of California acting by and through the Department of Fish and Game, CVWD, IID, and SDCWA, the State of California has accepted responsibility for mitigation costs associated with the IID Water Conservation and Transfer Project, including mitigation for air quality and biological resources that exceed the $133,000,000.

> SB 654 established a mechanism to implement and allocate environmental mitigation cost responsibility among IID, CVWD, SDCWA, and the State for the implementation of the 1998 IID/SDCWA Transfer Agreement and the IID/CVWD Acquisition Agreement. Costs for environmental mitigation requirements up to and not to exceed a present value of $133,000,000 shall be borne by IID, CVWD and SDCWA, with the balance to be borne by the State. (QSA JPA Creation and Funding Agreement, Recital F, 2003)

Mitigation requirements for emissions resulting from exposed acres under the IID Water Conservation and Transfer Project were not for a specific number of acres, any specific location(s), or a specific Salton Sea elevation.

Adoption and Implementation of AQMPs and SIPs

Under existing conditions, ambient air quality standards for several air pollutants are not being achieved in portions of the Salton Sea watershed, as presented earlier in this chapter. In the Salton Sea Air Basin, the air pollutants of greatest concern are ozone and the ozone precursors, NO_x, VOCs, and PM_{10}. Ozone and ozone precursors are primarily generated from vehicle and equipment exhaust. PM_{10} is generated primarily from soil disturbance and wind erosion (fugitive dust). Agricultural operations and transport of pollutants from Mexico also affect air quality in the area.

For areas not meeting standards, the responsible air districts must prepare plans with control measures sufficient to attain national standards by predetermined attainment dates. Once standards are achieved, plans are required to ensure compliance with standards is maintained. Air quality agencies must quantify emissions from existing sources and forecast future emissions to support development of AQMPs and SIPs. These plans must be consistent with population forecasts and growth assumptions in the applicable county and local general plans. The schedule for air quality plans is established by the federal CAA; for example, SIPs for the new 8-hour ozone standard and the $PM_{2.5}$ standard are due in 2007.

As noted previously, under the No Action Alternative, emissions from playa under the baseline for the IID Water Conservation and Transfer Project (to -235 feet msl), plus emissions from the playa exposed due to projects approved after the QSA approval, would not fall under the QSA related mitigation responsibilities of the State of California. These uncontrolled emissions would be the responsibility of the land owners, and may add to air quality issues in Salton Sea Air Basin. As a result, the AQMPs and SIPs under development would need to include these emissions in the emissions inventories used to support attainment planning in the future. This analysis of air quality conditions under the No Action Alternative assumes that SIPs will be developed and implemented to evaluate and control significant sources of emissions. It is further assumed that local jurisdictions will be in compliance with their SIPs and that the air basins within the study area will reach attainment for the applicable standards by the legislated deadlines.

Among air pollutants, PM_{10} is a possible exception to the general assumption of long term attainment. While it is subject to the SIP process, fugitive windblown dust emissions from vacant lands pose challenges. Unlike concentrated sources of pollutants that are more readily identified and controlled, fugitive dust emissions are difficult to detect, locate, regulate, and control. However, it is anticipated that the SIP process will reduce PM concentrations to lower levels, and maintain these levels, by identifying and addressing significant PM sources.

It should also be noted that forecasts of future air quality conditions under the No Action Alternative rely upon available air quality planning documents, which typically have a planning horizon of about 5 to 20 years. The study period for the PEIR is 75 years. While consistency with air quality planning documents is critical, they may have limited value when trying to predict actual air quality conditions in 75 years. In the absence of long term air quality planning documents, the pollutants and emissions sources described above are expected to continue, and air emissions will very likely increase in the future, along with the forecasted population growth and increased development in the study area. Likewise, air quality planning documents may be expected to evolve as growth and development occur.

Description of the No Action Alternative

As described in Chapter 3, this alternative would involve construction and operations and maintenance activities for the Sedimentation/Distribution Basins, Air Quality Management, Pupfish Channels, and Brine Sink. The construction activities would be identical under the No Action Alternative–CEQA Conditions and the No Action Alternative–Variability Conditions.

Under the No Action Alternative, it is assumed that the IID Water Conservation and Transfer Program four-step air quality plan to identify and control emissions from the Exposed Playa resulting from the QSA projects would be implemented. Impacts to air quality resulting from the IID Water Conservation and Transfer Project (below -235 feet msl and above -248 feet msl) would be mitigated in accordance with the JPA Agreement.

Emissions from the playa exposed by projects approved before the IID Water Conservation and Transfer Project, plus emissions from the playa that may be exposed due to projects approved after the QSA approval (above -235 feet msl and below -248 feet msl), are not included in the analysis of impacts of the No Action Alternative, nor would they be included in the QSA related air quality mitigation. These uncontrolled emissions would be the responsibility of the land owners, and may add to air quality issues in the Salton Sea Air Basin. It is assumed that the land owners would comply with all applicable air quality management requirements. Under the No Action Alternative–CEQA Conditions, the area that is the responsibility of the landowners is located above the elevation -235 feet msl. Under the No Action Alternative–Variability Conditions, the area which is the responsibility of the landowners is located above the elevation -235 feet msl and below -248 feet msl. The area of Exposed Playa predicted to result from the IID Water Conservation and Transfer Project would be located between -235 feet msl and -248 feet msl under both the No Action Alternative–CEQA Conditions and the No Action Alternative–Variability Conditions; therefore, the area to be analyzed under the No Action Alternative would be the same for both sets of conditions.

The following analyses for air quality describe impacts of facility construction, facility operations and maintenance, fugitive dust emissions associated with Exposed Playa areas, general conformity, odorous emissions, and microclimate.

Construction Emissions

Construction of components in this alternative would result in air emissions such as fugitive dust, and exhaust from the combustion of fossil fuels in equipment and vehicles. For the No Action Alternative, emissions from construction were estimated for the following:

- Earthmoving to construct canals and roads;
- Gravel transported and placed for roads; and
- Disturbance of dry land for construction of Air Quality Management, such as water efficient vegetation.

Under the No Action Alternative, most of the construction activity is associated with building Air Quality Management areas. Lesser levels of activity are associated with building canals, roads, and other associated facilities.

Construction related emissions have been analyzed for an estimated Peak Year of Construction, assumed to occur in Phase I for each alternative. Under the No Action Alternative, construction of facilities, primarily for Air Quality Management, would continue as needed to mitigate air quality impacts in Phases II, III, and IV.

For the No Action Alternative, the following activities were assumed to occur during the Peak Construction Year:

- Up to 3,100 acres of dry land would be disturbed;
- Up to 2,000 acres of water efficient vegetation for Air Quality Management under construction;
- Up to 1,100 acres of roadways and canals under construction;
- Transport and placement of 1/30 of the total gravel (cubic yards) estimated for roadways (based on the assumed construction of 1/30 of the total roadways each year for 30 years). Transport distance for gravel would be 10 miles one way on paved roads, and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site; and
- Grading and/or movement of one-half of the total material (cubic yards) estimated to construct canals (based on the assumed construction of one-half of the canals each year for 2 years). Construction completed using a mix of land-based construction equipment.

Emissions estimated for construction and operations and maintenance of each alternative are summarized in Appendix E, Attachment E1. Figures 10-5, 10-6, and 10-7 present bar graphs of the annual average (tons/year) PM_{10} and NO_x emissions for each alternative in Phase I and Phase IV. These figures serve the following functions:

- Provide a tool for comparing the emissions from the alternatives to the No Action Alternative;
- Illustrate the relative contributions of emissions from construction to the total emissions estimated for each alternative; and
- Compare the estimated emissions to annual significance thresholds (the more stringent general conformity *de minimis* levels for the Riverside County portion of the Salton Sea Air Basin were used as thresholds of significance for annual emissions estimates in tons/year).

Construction Fugitive Dust Emissions

For the No Action Alternative, fugitive dust emissions (PM_{10}) from construction were estimated for activities that would disturb dry land, and for truck travel on unpaved roadways. Impacts associated with fugitive dust from construction of the components in the No Action Alternative would be greater than under Existing Conditions. However, even under the Peak Construction Year (Phase I), fugitive dust emissions from construction of components would not exceed the local significance threshold for PM_{10} from construction, 150 pounds/day, nor would they exceed the annual threshold, 70 tons/year. Construction fugitive dust emissions would continue in Phases II through IV, but would lessen over time, as Air Quality Management areas are completed. These impacts would be identical under the No Action Alternative–CEQA Conditions and No Action Alternative–Variability Conditions.

Construction Exhaust (NO_x and diesel PM_{10}) Emissions

For the No Action Alternative, emissions rates for NO_x and diesel PM_{10} were estimated for exhaust from construction equipment (such as bulldozers and excavators) and diesel-fueled trucks. Impacts associated with NO_x and diesel PM_{10} emissions from construction of the components in the No Action Alternative would be greater than emissions under Existing Conditions. However, the NO_x emissions would be below the applicable local significance thresholds, 100 pounds/day or 50 tons/year, even in the Peak Construction Year (Phase I).

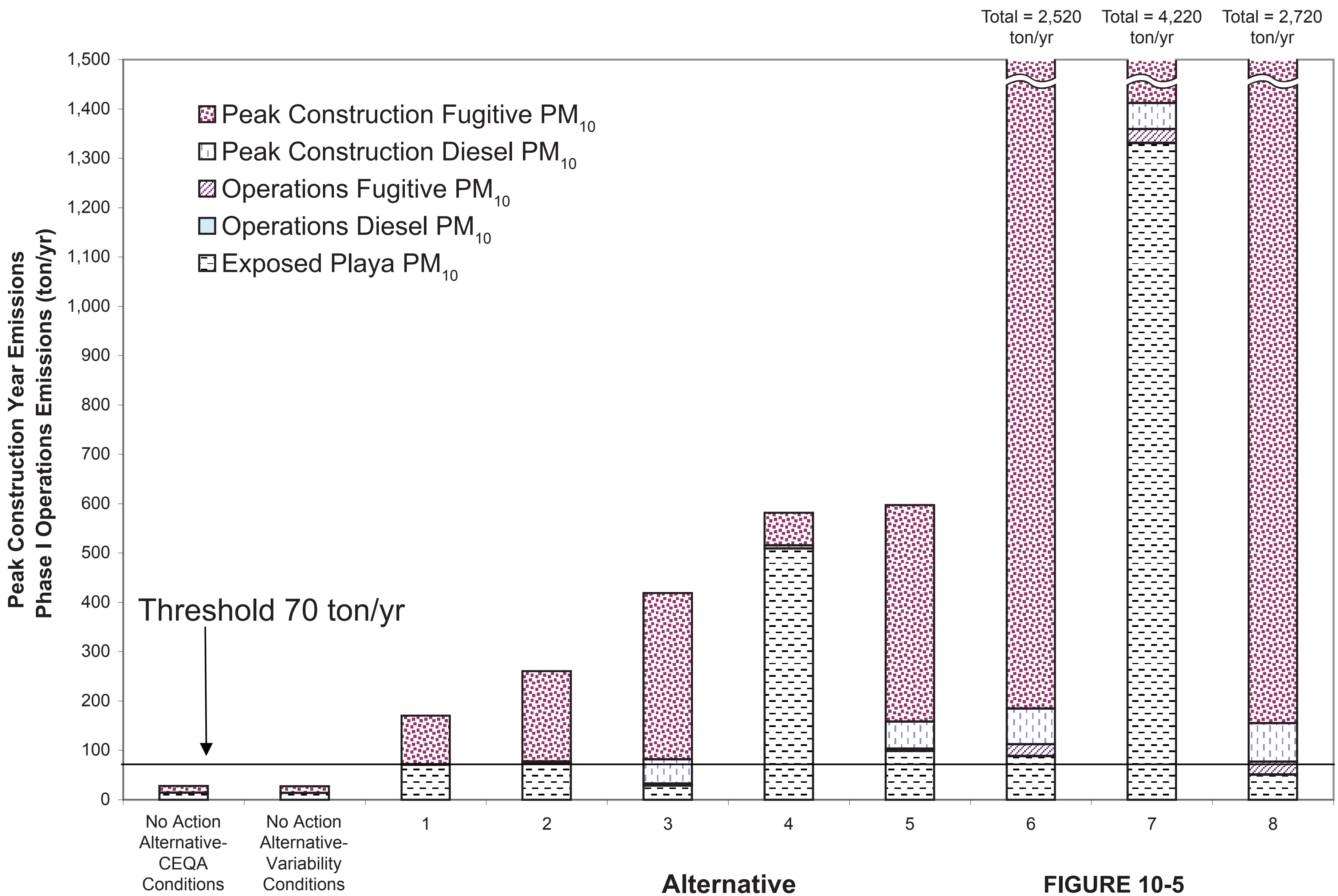


FIGURE 10-5
PHASE I (INITIATION TO 2020)
PM_{10} EMISSIONS

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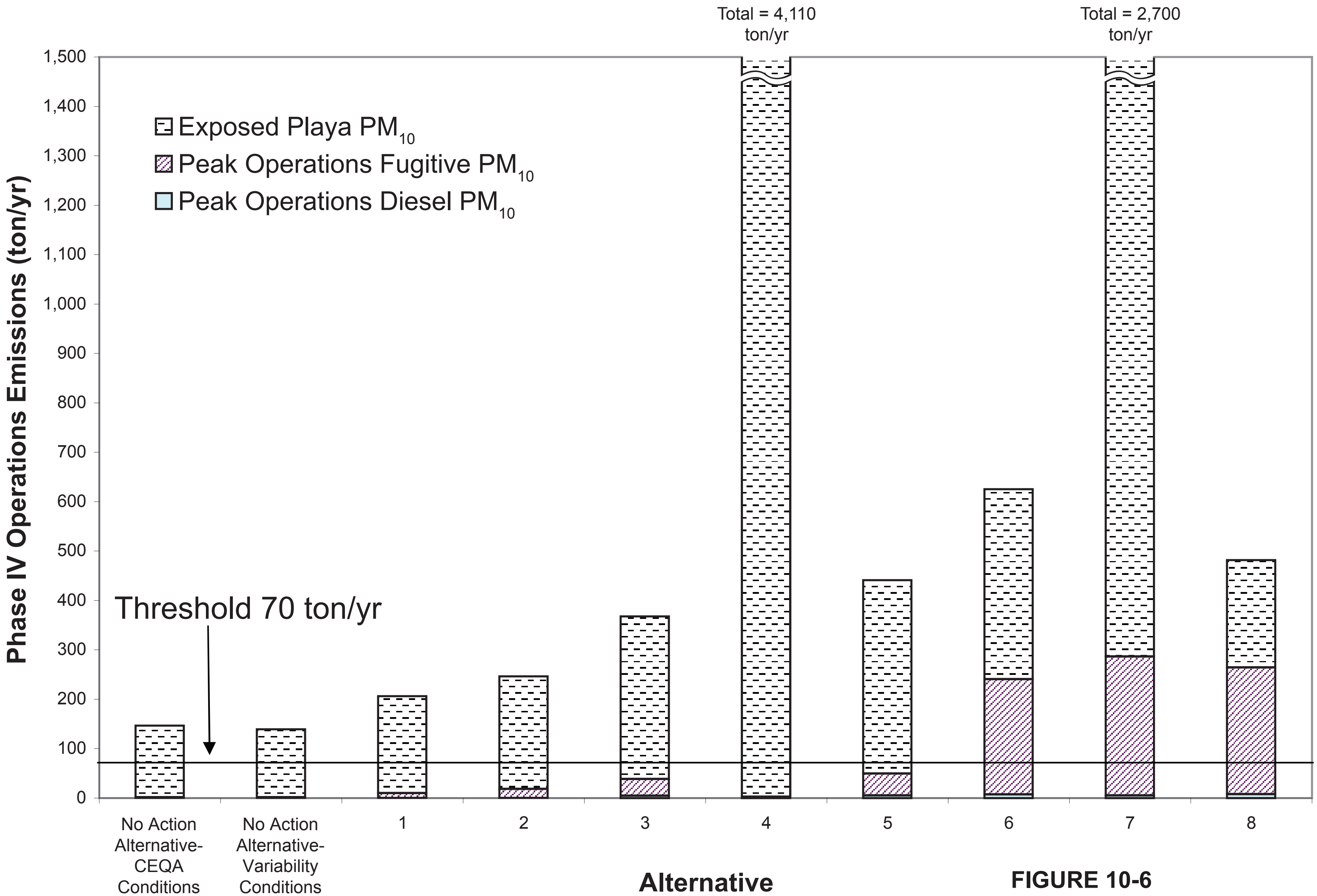

FIGURE 10-6
PHASE IV (2040 TO 2078)
PM_{10} EMISSIONS

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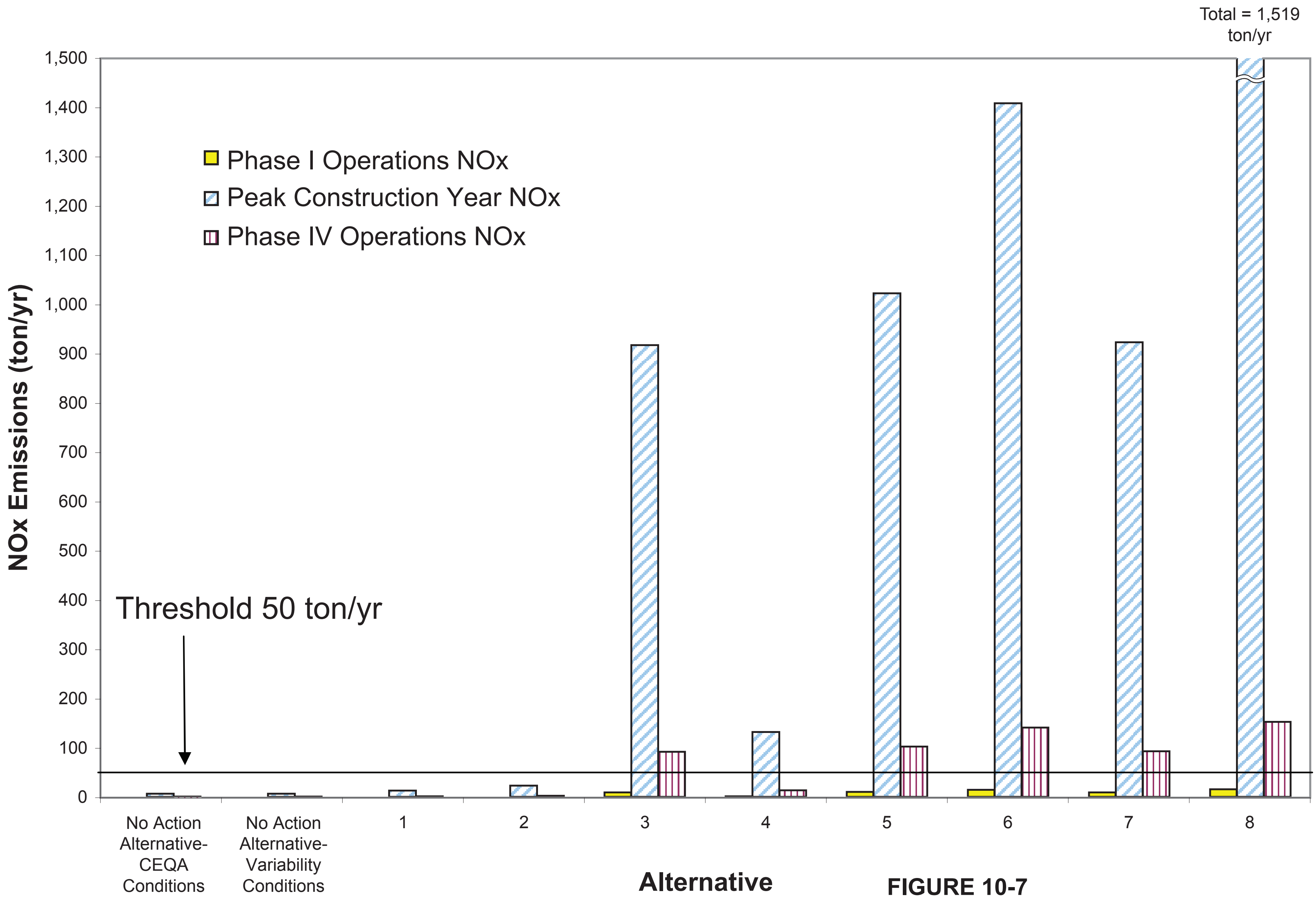

FIGURE 10-7
PHASE I (INITIATION TO 2020) AND PHASE IV (2040 TO 2078) NOx EMISSIONS

ES112005003SAC figure_10_7.ai 10/03/06 tdaus

Operations and Maintenance Related Emissions

Operations and maintenance activities have the potential to contribute air emissions such as fugitive dust and exhaust from the combustion of fossil fuels in equipment and vehicles. Emissions were estimated for activities used to operate and maintain the components (for example, roads, canals, and Air Quality Management). Appendix E, Attachment E2 contains the operations and maintenance emission calculations.

Operations and Maintenance Related Fugitive Dust Emissions

Operations and maintenance of the components would result in air emissions in the form of fugitive PM_{10} from earthmoving activities, material and equipment transport, and travel on unpaved roadways. Assumptions used to estimate emissions and impacts are discussed in Table 10-14.

Impacts associated with fugitive dust emissions from operations and maintenance of the components in the No Action Alternative would be greater than impacts under Existing Conditions. PM_{10} emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as canals, roads, and Air Quality Management areas are completed, and maintenance requirements increase. The PM_{10} emissions would be below the applicable local significance thresholds, 150 pounds/day or 70 tons/year, even in the Peak Operations Year (Phase IV).

Operations and Maintenance Related Exhaust (NO_x) Emissions

Impacts associated with NO_x emissions from operations and maintenance of the components in the No Action Alternative would be greater than impacts under Existing Conditions. NO_x emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as canals, roads, and Air Quality Management areas are completed, and maintenance requirements increase. The NO_x emissions would be below the applicable local significance thresholds, 55 pounds/day or 50 tons/year, even in the Peak Operations Year (Phase IV).

Fugitive Dust Emissions Associated with Exposed Playa Areas

To support the PEIR, the MacDougall Method was used to estimate fugitive dust (PM_{10}) emissions from future Exposed Playa areas at the Salton Sea. The results provide preliminary estimates of playa dust emissions before and after implementation of control measures.

The limitations, assumptions, and approaches used in this dust emissions estimation process are further described in the subsection on Analysis Methodology. Appendix E, Attachment E3 provides the detailed evaluation of Exposed Playa dust emissions.

Impacts associated with fugitive dust from Exposed Playa in the No Action Alternative would be greater than impacts under Existing Conditions. Fugitive dust emissions from Exposed Playa in Phase I are not predicted to exceed the local significance thresholds for PM_{10}, 150 pounds/day or 70 tons/year. However, these types of emissions are predicted to continue in Phases II through IV, and would become even more significant over time, as greater areas of playa are exposed. Even with the implementation of an aggressive Air Quality Management program for dust control, fugitive dust emissions from Exposed Playa in Phase IV are predicted to exceed the local significance thresholds, as shown in Figure 10-6. This represents a significant impact as compared to the Existing Conditions. The Salton Sea level would recede more quickly under Variability Conditions than under CEQA Conditions. Ultimately, the exposed area assigned to the ecosystem restoration program is the same under both sets of conditions, because responsibility for mitigation of any emissive areas exposed below -248 feet msl are assigned to the landowners. As a result, the impacts predicted for Phase IV would be very similar under the No Action Alternative–CEQA Conditions and No Action Alternative–Variability Conditions.

General Conformity Applicability Analysis

General conformity requirements would not be applicable to the No Action Alternative unless the activities associated with Air Quality Management or other mitigation activities involve federal funding or some other federal action.

Odorous Emissions

In earlier phases, the No Action Alternative would not be greatly different than Existing Conditions, with regard to water column stratification and build up of hydrogen sulfide, ammonia, and other eutrophication byproducts that may be released during mixing events. In later phases, the No Action Alternative would result in shallower water bodies, slightly better mixing, and reduction in the amount of anoxic water produced. In addition, when fish are no longer present in the Salton Sea, odor impacts associated with stratification, followed by summer and fall mixing, would be less than impacts under Existing Conditions.

Microclimate

There are several meteorological and physical parameters that have been found to have effects on the weather and climate in the area near a large body of water. These localized effects are referred to as the local microclimate. The microclimate of an area includes evapotranspiration, relative humidity, temperature, precipitable water, rainfall, wind speed and direction, vegetation, and the interaction of these parameters.

Microclimate impacts associated with the No Action Alternative would be greater than impacts under Existing Conditions.

Under the No Action Alternative, shallower depths, smaller water surfaces, and higher salinity would affect all of the microclimate parameters near the existing shoreline, and in particular, evapotranspiration. Also, changes in vegetation would likely result from the construction of components and dust control measures. Changes in vegetative cover would also affect evapotranspiration. Existing native and agricultural vegetation immediately adjacent to the existing Salton Sea may also be affected.

By reducing water surfaces, less water is available for microclimatic interactions in the atmosphere. The change in interaction between the water surface and sunlight would result in changes to the microclimate parameters, including reductions in relative humidity, evapotranspiration, precipitable water, and rainfall.

Temperature effects would vary because water acts as an insulator, and reduced inflow results in less water to cover the ground. Dry ground absorbs heat from sunlight faster than water surfaces, thereby increasing air temperatures during daylight hours. Because the ground does not insulate as well as water, temperatures would drop faster at night. This would result in larger diurnal temperature swings, with higher temperatures during the day and potentially lower temperatures at night.

Vegetation would increase under the alternatives in areas where plants are used in Air Quality Management, or where native vegetation or agricultural crops are encouraged to grow. However, native vegetation in some areas immediately adjacent to the Salton Sea may decrease, because less moisture would be available to sustain plant growth.

The No Action Alternative would have an undetermined effect on wind speed and direction. In some cases, wind speed would be reduced in areas where more vegetation is planted. Conversely, wind speed would increase in areas where existing vegetation dies due to decreased water or water vapor availability. As changes in total surface area occur, the local wind patterns could change significantly if the lake breeze circulation is weakened or is no longer driven by the differential heating of the land surface and water surface.

Alternative 1 – Saline Habitat Complex I

As described in Chapter 3, this alternative would involve construction and operations and maintenance activities for the Sedimentation/Distribution Basins, Air Quality Management, Pupfish Channels, Saline Habitat Complex, and Brine Sink.

Construction Emissions

Construction of components in this alternative would result in air emissions such as fugitive dust, and exhaust from the combustion of fossil fuels in equipment and vehicles. For Alternative 1, emissions from construction were estimated for the following:

- Earthmoving to construct canals and Saline Habitat Complex;
- Rock transported and placed for the Saline Habitat Complex;
- Gravel transported and placed for the Saline Habitat Complex and roads;
- Disturbance of dry land to construct Saline Habitat Complex cells and roads; and
- Disturbance of dry land for Air Quality Management, such as water efficient vegetation.

Under Alternative 1, most of the construction activity is associated with building Saline Habitat Complex cells and Air Quality Management areas. Lesser levels of activity are associated with building canals, roads, and other associated facilities.

Construction related emissions have been analyzed for the Early Start Habitat and for an estimated peak year of construction, assumed to occur in Phase I. Under Alternative 1, construction of facilities would continue in Phases II, III, and IV, but at lower levels of activity.

For Alternative 1, the following activities were assumed to occur during the Peak Construction Year:

- Up to 6,600 acres of dry land would be disturbed;
- Up to 4,000 acres of water efficient vegetation for Air Quality Management under construction;
- Up to 2,500 acres of Saline Habitat Complex under construction;
- Up to 100 acres of roadways under construction;
- Transport and placement of 1/20 of the total rock and gravel (cubic yards) estimated for Saline Habitat Complex (based on the assumed construction of 1/20 of the total habitat area each year for 20 years). Transport distance for rock and gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to placement location at construction site;
- Grading and/or movement of 1/20 of the total material (cubic yards) estimated to construct Saline Habitat Complex (based on the assumed construction of 1/20 of the total habitat area each year for 20 years). Construction completed using a mix of land-based construction equipment; and
- Transport and placement of 1/30 of the total gravel (cubic yards) estimated for roadways (based on the assumed construction of 1/30 of the total roadways each year for 30 years). Transport distance for gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site.

Construction Fugitive Dust Emissions

Impacts associated with fugitive dust from construction of the components in Alternative 1 would be greater than impacts under the No Action Alternative and Existing Conditions. Even with an aggressive watering schedule for dust control, fugitive dust emissions from construction of components in Phase I would exceed the local significance thresholds for PM_{10} from construction, 150 pounds/day or 70 tons/year. Based on screening level analysis, the primary contributor to construction fugitive dust emissions would be truck travel on unpaved roads.

The local significance thresholds are predicted to be exceeded during both the Early Start Habitat and the Peak Construction Year (Phase I). Figure 10-5 shows that construction fugitive dust emissions would contribute about half of the total PM_{10} emissions for Alternative 1 in Phase I. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Construction fugitive dust emissions would continue in Phases II through IV, but would become less than significant over time, as Saline Habitat Complex cells and Air Quality Management areas are completed.

Construction Exhaust (NO_x and diesel PM_{10}) Emissions

Impacts associated with NO_x and diesel PM_{10} emissions from construction of the components in Alternative 1 would be greater than impacts under the No Action Alternative and Existing Conditions. The NO_x emissions would be below the applicable local significance thresholds, 100 pounds/day or 50 tons/year, even in the Peak Construction Year. The diesel PM_{10} emissions alone (without including fugitive dust) would not exceed the applicable local significance thresholds for PM_{10}, 150 pounds/day or 70 tons/year. Construction exhaust emissions would continue in Phases II through IV, but would lessen over time, as Saline Habitat Complex cells and Air Quality Management areas are completed.

Operations and Maintenance Related Emissions

Operations and maintenance activities have the potential to contribute air emissions such as fugitive dust and exhaust from the combustion of fossil fuels in equipment and vehicles. Emissions were estimated for activities used to operate and maintain the components (for example, Saline Habitat Complex, canals, and Air Quality Management).

Operations and Maintenance Related Fugitive Dust Emissions

Impacts associated with fugitive dust emissions from operations and maintenance of the components in Alternative 1 would be greater than impacts under the No Action Alternative and Existing Conditions. PM_{10} emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as Saline Habitat Complex cells and Air Quality Management areas are completed, and maintenance requirements increase. The PM_{10} emissions would be below the applicable local significance thresholds, 150 pounds/day or 70 tons/year, even in the Peak Operations Year (Phase IV).

Operations and Maintenance Related Exhaust (NO_x) Emissions

Impacts associated with NO_x emissions from operations and maintenance of the components in Alternative 1 would be greater than impacts under the No Action Alternative and Existing Conditions. NO_x emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as Saline Habitat Complex cells and Air Quality Management areas are completed, and maintenance requirements increase. The NO_x emissions would be below the applicable local significance thresholds, 55 pounds/day or 50 tons/year, even in the Peak Operations Year (Phase IV).

Fugitive Dust Emissions Associated with Exposed Playa Areas

Impacts associated with fugitive dust from Exposed Playa in Alternative 1 would be greater than impacts under the No Action Alternative and Existing Conditions. Even with the implementation of an aggressive Air Quality Management program for dust control, fugitive dust emissions from Exposed Playa in Phase I would be predicted to exceed the local significance thresholds for PM_{10}, 150 pounds/day or 70 tons/year. This represents a significant impact as compared to the Existing Conditions and the No Action

Alternative. Figure 10-5 shows that playa emissions would contribute about half of the total PM_{10} emissions for Phase I. As shown in Figure 10-6, playa emissions would continue in Phases II through IV, and would become even more significant over time, as greater areas of playa are exposed.

General Conformity Applicability Analysis

The net emissions increase estimated for the nonattainment pollutant NO_x in Alternative 1 would be less than the applicable *de minimis* thresholds for both the Peak Construction Year (Phase I) and the Peak Operations Year (Phase IV). Likewise, these emissions are not regionally significant. The net emissions increase estimated for the nonattainment pollutant PM_{10} in Alternative 1 would be slightly less than the applicable *de minimis* thresholds in the Peak Operations Year (Phase IV). However, the net increase is estimated to be greater than the applicable *de minimis* thresholds in the Peak Construction Year (Phase I). This represents a significant impact as compared to the No Action Alternative.

Odorous Emissions

Impacts associated with odorous emissions from the Brine Sink are predicted to be similar to those described for the No Action Alternative. Odorous conditions from the Saline Habitat Complex cells, however, would be reduced relative to the No Action Alternative and Existing Conditions, because wind mixing would reduce stratification and the build up of odorous eutrophication byproducts.

As the Saline Habitat Complex cells are completed, odorous emissions associated with Alternative 1 would be less than those under Existing Conditions and the No Action Alternative. This would represent a beneficial effect.

Microclimate

Microclimate impacts associated with Alternative 1 would be greater than impacts under Existing Conditions. Available information is not sufficient to allow comparison of the microclimatic impacts of Alternative 1 to the No Action Alternative.

Alternative 2 – Saline Habitat Complex II

As described in Chapter 3, this alternative would involve construction and operations and maintenance activities for the Sedimentation/Distribution Basins, Air Quality Management, Saline Habitat Complex, Shoreline Waterway, Saltwater Conveyance, and Brine Sink.

Construction Emissions

Construction of components in this alternative would result in air emissions such as fugitive dust, and exhaust from the combustion of fossil fuels in equipment and vehicles. For Alternative 2, emissions from construction were estimated for the following:

- Earthmoving to construct canals and Saline Habitat Complex;
- Rock transported and placed for the Saline Habitat Complex;
- Gravel transported and placed for the Saline Habitat Complex and roads;
- Disturbance of dry land to construct Saline Habitat Complex and roads; and
- Disturbance of dry land for Air Quality Management, such as water efficient vegetation.

Under Alternative 2, most of the construction activity is associated with building Saline Habitat Complex cells and Air Quality Management areas. Lesser levels of activity are associated with building canals, roads, and other associated facilities.

Construction related emissions have been analyzed for the Early Start Habitat and for an estimated Peak Year of Construction, assumed to occur in Phase I for each alternative. Under Alternative 2, construction of facilities would continue in Phases II, III, and IV, but at lower levels of activity.

For Alternative 2, the following activities were assumed to occur during the Peak Construction Year:

- Up to 9,100 acres of dry land would be disturbed;
- Up to 4,000 acres of water efficient vegetation for Air Quality Management under construction;
- Up to 5,000 acres of Saline Habitat Complex under construction;
- Up to 100 acres of roadways under construction;
- Transport and placement of 1/20 of the total rock and gravel (cubic yards) estimated for Saline Habitat Complex (based on the assumed construction of 1/20 of the total habitat area each year for 20 years). Transport distance for rock and gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site;
- Grading and/or movement of 1/20 of the total material (cubic yards) estimated to construct Saline Habitat Complex (based on the assumed construction of 1/20 of the total habitat area each year for 20 years). Construction completed using a mix of land-based construction equipment; and
- Transport and placement of 1/30 of the total gravel (cubic yards) estimated for roadways (based on the assumed construction of 1/30 of the total roadways each year for 30 years). Transport distance for gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site.

Construction Fugitive Dust Emissions

Impacts associated with fugitive dust from construction of the components in Alternative 2 would be greater than impacts under the No Action Alternative and Existing Conditions. Even with an aggressive watering schedule for dust control, fugitive dust emissions from construction of components in Phase I would exceed the local significance thresholds for PM_{10} from construction. Based on screening level analysis, the main contributor to construction fugitive dust emissions would be truck travel on unpaved roads.

The local significance thresholds for PM_{10} are predicted to be exceeded during both the Early Start Habitat and the Peak Construction Year (Phase I), with the emissions in the Peak Construction Year (Phase I) estimated to be more than twice those estimated for the Early Start Habitat. Figure 10-5 shows that fugitive dust emissions would contribute more than half of the total PM_{10} emissions for Alternative 2 in Phase I. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Construction fugitive dust emissions would continue in Phases II through IV, but would become less than significant over time, as Saline Habitat Complex cells and Air Quality Management areas are completed.

Construction Exhaust (NO_x and diesel PM_{10}) Emissions

Impacts associated with NO_x and diesel PM_{10} emissions from fuel combustion in construction equipment in Alternative 2 would be greater than impacts under the No Action Alternative and Existing Conditions. The NO_x emissions would exceed the applicable local daily significance threshold of 100 pounds/day in the Peak Construction Year. The diesel PM_{10} emissions alone (without including fugitive dust) would not exceed the applicable local significance thresholds, 150 pounds/day or 70 tons/year for PM_{10}.

Construction exhaust emissions would continue in Phases II through IV, but would lessen over time, as Saline Habitat Complex cells and Air Quality Management areas are completed.

Operations and Maintenance Related Emissions

Operations and maintenance activities have the potential to contribute air emissions such as fugitive dust and exhaust from the combustion of fossil fuels in equipment and vehicles. Emissions were estimated for activities used to operate and maintain the components (for example, Saline Habitat Complex, canals, and Air Quality Management).

Operations and Maintenance Related Fugitive Dust Emissions

Impacts associated with fugitive dust emissions from operations and maintenance of the components in Alternative 2 would be greater than impacts under the No Action Alternative and Existing Conditions. PM_{10} emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as Saline Habitat Complex cells and Air Quality Management areas are completed, and maintenance requirements increase. The PM_{10} emissions would be below the applicable local significance thresholds, 150 pounds/day or 70 tons/year, even in the Peak Operations Year (Phase IV).

Operations and Maintenance Related Exhaust (NO_x) Emissions

NO_x emissions would result from combustion of fuels in construction equipment (such as bulldozers and excavators) and vehicles. Impacts associated with NO_x emissions from operations and maintenance of the components in Alternative 2 would be greater than impacts under the No Action Alternative and Existing Conditions. NO_x emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as Saline Habitat Complex cells and Air Quality Management areas are completed, and maintenance requirements increase. The NO_x emissions would be below the applicable local significance thresholds, even in the Peak Operations Year (Phase IV).

Fugitive Dust Emissions Associated with Exposed Playa Areas

Impacts associated with fugitive dust from Exposed Playa in Alternative 2 would be greater than impacts under No Action Alternative and Existing Conditions. Even with the implementation of an aggressive Air Quality Management program for dust control, fugitive dust emissions from Exposed Playa in Phase I would be predicted to exceed the local significance thresholds for PM_{10}. This represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Figure 10-5 shows that Exposed Playa emissions would contribute about one-third of the total PM_{10} emissions for Phase I. As shown in Figure 10-6, Exposed Playa emissions would continue in Phases II through IV, and would become even more significant over time, as greater areas of playa are exposed.

General Conformity Applicability Analysis

The net emissions increase estimated for the nonattainment pollutant NO_x in Alternative 2 would be less than the applicable *de minimis* thresholds for both the Peak Construction Year (Phase I) and the Peak Operations Year (Phase IV). Likewise, these emissions are not regionally significant.

The net emissions increase estimated for the nonattainment pollutant PM_{10} in Alternative 2 would be greater than the applicable *de minimis* thresholds in both the Peak Construction and Operations Years. This represents a significant impact as compared to the No Action Alternative.

Odorous Emissions

Impacts associated with odorous emissions from Alternative 2 are predicted to be similar to those described for Alternative 1.

Microclimate

Microclimatic impacts associated with Alternative 2 would be greater than impacts under Existing Conditions. Available information is not sufficient to allow comparison of the microclimatic impacts of Alternative 2 to the No Action Alternative.

Alternative 3 – Concentric Rings

As described in Chapter 3, this alternative would involve construction and operations and maintenance activities for the Sedimentation/Distribution Basins, Air Quality Management, First and Second rings, and Brine Sink.

Construction Emissions

Construction of components in this alternative would result in air emissions such as fugitive dust, and exhaust from the combustion of fossil fuels in equipment and vehicles. For Alternative 3, emissions from construction were estimated for the following:

- Earthmoving to construct canals;
- Rock transported and placed for the Perimeter Dikes;
- Gravel transported and placed for the Perimeter Dikes and roads;
- Dredging for construction of the Perimeter Dikes;
- Disturbance of dry land for Air Quality Management, such as water efficient vegetation;
- Disturbance of dry land to construct roads; and
- Disturbance of dry land to construct Saline Habitat Complex under the Early Start Habitat.

Under Alternative 3, most of the construction activity is associated with building the First and Second rings and the Air Quality Management areas. Lesser levels of activity are associated with building canals, roads, and other associated facilities.

Construction related emissions have been analyzed for the Early Start Habitat and for an estimated peak year of construction, assumed to occur in Phase I for each alternative. Under Alternative 3, construction of the Second Ring would occur in Phase II, but after this, construction levels would decrease.

For Alternative 3, the following activities were assumed to occur during the Peak Construction Year:

- Up to 4,100 acres of dry land would be disturbed;
- Up to 4,000 acres of water efficient vegetation for Air Quality Management under construction;
- Up to 100 acres of roadways under construction;
- Transport and placement of 1/10 of the total rock and gravel (cubic yards) estimated for construction of the Perimeter Dikes for the First and Second rings (based on the assumed construction of 1/10 of the initial Ring each year for 5 years of Phase I, the remaining Ring would be constructed in Phase II). Transport distance for rock and gravel by truck would be 10 miles one way on paved roads. Placement of rock and gravel by truck assumes an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site. About 10 percent of the rock and 20 percent of the gravel would be placed by truck. Barges would be used to place 90 percent of the rock, and 80 percent of the gravel;

- Dredging of 1/4 of the amount of sediment estimated for construction of the Perimeter Dikes for the First and Second rings (based on the assumed removal of 1/4 of the required sediment/year for 4 years); and
- Transport and placement of 1/30 of the total gravel (cubic yards) estimated for roadways (based on the assumed construction of 1/30 of the total roadways each year for 30 years). Transport distance for gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site.

Construction Fugitive Dust Emissions

Impacts associated with fugitive dust from construction of the components in Alternative 3 would be greater than impacts under the No Action Alternative and Existing Conditions. Even with an aggressive watering schedule for dust control, fugitive dust emissions from construction of components in Phase I would exceed the local significance thresholds for PM_{10} from construction. Based on the screening level analysis, the main contributor to construction fugitive dust emissions would be truck travel on unpaved roads.

The local significance thresholds for PM_{10} are predicted to be exceeded during both the Early Start Habitat and the Peak Construction Year (Phase I), with the emissions in the Peak Construction Year (Phase I) estimated to be four times those estimated for the Early Start Habitat. Figure 10-5 shows that fugitive dust emissions from construction would contribute the majority of the total PM_{10} emissions for Alternative 3 in Phase I. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Construction fugitive dust emissions would again be high in Phase II during construction of the Perimeter Dikes for the Second Ring, but would become less than significant over time, as facilities are completed.

Construction Exhaust (NO_x and diesel PM_{10}) Emissions

Impacts associated with NO_x and diesel PM_{10} emissions from fuel combustion in construction equipment in Alternative 3 would be greater than impacts under the No Action Alternative and Existing Conditions. In addition to land-based construction equipment and trucks, this alternative includes use of marine equipment, such as tugboats, barges, and dredges. Even with requirements for low-emission equipment, exhaust emissions from construction of components in Phase I would greatly exceed the local significance thresholds for NO_x. Figure 10-7 shows the magnitude of the NO_x exceedance as compared to the threshold. Diesel PM_{10} emissions would exceed the daily PM_{10} threshold, and are potentially significant for this reason alone, even without taking into account the toxicity of these emissions. Based on screening level analysis, the primary contributors to construction diesel PM_{10} and NO_x emissions would be diesel-fueled marine vessels used to place rock and gravel and construct the First and Second rings.

Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Construction exhaust emissions would again be high in Phase II during construction of the Second Ring, but would become less than significant over time, as facilities are completed.

Operations and Maintenance Related Emissions

Operations and maintenance activities have the potential to contribute air emissions such as fugitive dust and exhaust from the combustion of fossil fuels in equipment and vehicles. Emissions were estimated for activities used to operate and maintain the components (for example, Saline Habitat Complex, canals, and Air Quality Management).

Operations and Maintenance Related Fugitive Dust Emissions

Impacts associated with fugitive dust emissions from operations and maintenance of the components in Alternative 3 would be greater than impacts under the No Action Alternative and Existing Conditions. PM_{10} emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as First and Second rings and Air Quality Management areas are completed, and maintenance requirements increase. The PM_{10} emissions would exceed the applicable daily local significance threshold, but would fall below the annual threshold, in the Peak Operations Year (Phase IV).

Operations and Maintenance Related Exhaust (NO_x) Emissions

NO_x emissions would result from combustion of fuels in construction equipment (such as bulldozers and excavators) and vehicles.

Impacts associated with NO_x emissions from operations and maintenance of the components in Alternative 3 would be greater than impacts under the No Action Alternative and Existing Conditions. NO_x emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as Saline Habitat Complex cells and Air Quality Management areas are completed, and maintenance requirements increase. The NO_x emissions would exceed the applicable local significance thresholds, in the Peak Operations Year (Phase IV). Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Fugitive Dust Emissions Associated with Exposed Playa Areas

Impacts associated with fugitive dust from Exposed Playa in Alternative 3 would be greater than impacts under the No Action Alternative and Existing Conditions. Even with the implementation of an aggressive Air Quality Management program for dust control, fugitive dust emissions from Exposed Playa in Phase I would be predicted to exceed the local significance thresholds for PM_{10}. This represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Figures 10-5 and 10-6 show that emissions from Exposed Playa would contribute a small portion of the total PM_{10} emissions in Phase I but would contribute the majority of the total PM_{10} emissions in Phase IV. Exposed Playa emissions would continue in Phases II through IV, and would become even more significant over time, as greater areas of playa are exposed.

General Conformity Applicability Analysis

The net emissions increase estimated for the nonattainment pollutant NO_x in Alternative 3 would greatly exceed the applicable *de minimis* thresholds in the Peak Construction Year, and would also exceed the threshold in the Peak Operations Year, but to a lesser extent.

The net emissions increase estimated for the nonattainment pollutant PM_{10} in Alternative 3 would be greater than the applicable *de minimis* threshold in the Peak Construction Year (Phase I) and the Peak Operations Year (Phase IV). Exceedance of these thresholds represents a significant impact.

Odorous Emissions

Impacts associated with odorous emissions from the Brine Sink in Alternative 3 are predicted to be similar to those described for the No Action Alternative. Impacts would generally be similar to those described for Alternative 1. However, with regard to the Concentric Rings, the greater depth of the circular water bodies, as compared to Saline Habitat Complex cells, would increase the probability of stratification and buildup of odorous eutrophication byproducts, such as hydrogen sulfide and ammonia. When compared to Existing Conditions or the No Action Alternative, the Concentric Ring water bodies would have improved water quality and would be less likely to develop anoxic waters that would result in substantial odorous emissions.

Microclimate

Microclimatic impacts associated with Alternative 3 would be greater than impacts under Existing Conditions. Available information is not sufficient to allow comparison of the microclimatic impacts of Alternative 3 to the No Action Alternative.

Alternative 4 – Concentric Lakes

As described in Chapter 3, this alternative would involve construction and operations and maintenance activities for the Sedimentation/Distribution Basins; First, Second, Third, and Fourth lakes; and Brine Sink.

Construction Emissions

Construction of components in this alternative would result in air emissions such as fugitive dust, and exhaust from the combustion of fossil fuels in equipment and vehicles. For Alternative 4, emissions from construction were estimated for the following:

- Earthmoving to construct canals and the First through Fourth lakes;
- Rock transported and placed for formation of the First through Fourth lakes with Geotube® Berms;
- Gravel transported and placed for roads and other facilities;
- Dredging for construction of the First through Fourth lakes;
- Disturbance of dry land to construct Saline Habitat Complex under the Early Start Habitat; and
- Disturbance of dry land to construct roads.

Under Alternative 4, most of the construction activity is associated with building the Geotube® Berms and First through Fourth lakes. Lesser levels of activity are associated with building canals, roads, and other associated facilities.

Construction related emissions have been analyzed for the Early Start Habitat and for an estimated peak year of construction, assumed to occur in Phase I for each alternative. Under Alternative 4, construction of facilities would continue in Phases II, III, and IV.

For Alternative 4, the following activities were assumed to occur during the Peak Construction Year:

- Up to 100 acres of dry land would be disturbed;
- Up to 100 acres of roadways under construction;
- Transport and placement of 1/8 of the total rock (cubic yards) and 1/8 of the dredging (cubic yards) estimated for construction of the Geotube® Berms to form the Concentric Lakes (based on the assumed construction and installation of 1/8 of the Geotube® Berms/year for 8 construction years in the project timeframe, as the water recedes). Transport distance for rock by truck would be 10 miles one way on paved roads. Placement of rock by truck assumes an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site. About 10 percent of the rock would be placed by truck, and 90 percent of the rock would be placed by barge; and
- Transport and placement of 1/30 of the total gravel (cubic yards) estimated for roadways and other facilities (based on the assumed construction of 1/30 of the total roadways and other facilities each year for 30 years). Transport distance for gravel would be 10 miles one way on

paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site.

Construction Fugitive Dust Emissions

Impacts associated with fugitive dust from construction of the components in Alternative 4 would be greater than impacts under the No Action Alternative and Existing Conditions. This alternative is unique in that the fugitive PM_{10} emissions associated with construction of the Early Start Habitat are actually higher than the fugitive PM_{10} emissions estimated for the Peak Construction Year, primarily because more of the construction under the Early Start Habitat occurs on dry land. The local significance thresholds for PM_{10} would be exceeded during the Early Start Habitat. Fugitive dust emissions from construction of components in the Peak Construction Year would also be greater than the local significance thresholds for PM_{10} from construction, 150 pounds/day or 70 tons/year. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Based on screening level analysis, the primary contributor to the fugitive dust emissions would be truck travel on unpaved roads.

Construction Exhaust (NO_x and diesel PM_{10}) Emissions

Impacts associated with NO_x and diesel PM_{10} emissions from fuel combustion in construction equipment in Alternative 4 would be greater than impacts under the No Action Alternative and Existing Conditions. In addition to land-based construction equipment and trucks, this alternative includes use of marine equipment, such as tugboats, barges, and dredges. Even with requirements for low-emission equipment, exhaust emissions from construction of components in Phase I would exceed the local significance thresholds for NO_x. The sum of the diesel PM_{10} emissions and fugitive PM_{10} emissions would exceed the daily and annual local significance thresholds for PM_{10}. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Under Alternative 4, construction exhaust emissions would continue in Phases II, III, and IV. The primary contributors to NO_x and diesel PM_{10} emissions would be marine vessels used for dredging and material movement.

Operations and Maintenance Related Emissions

Operations and maintenance activities have the potential to contribute air emissions such as fugitive dust and exhaust from the combustion of fossil fuels in equipment and vehicles. Emissions were estimated for activities used to operate and maintain the components (for example, Saline Habitat Complex, canals, and Geotube® Berms).

Operations and Maintenance Related Fugitive Dust Emissions

Impacts associated with fugitive dust emissions from operations and maintenance of the components in Alternative 4 would be greater than impacts under the No Action Alternative and Existing Conditions. PM_{10} emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as First through Fourth lakes are completed, and maintenance requirements increase. The PM_{10} emissions would be below the applicable local air district significance thresholds, even in the Peak Operations Year (Phase IV).

Operations and Maintenance Related Exhaust (NO_x) Emissions

Impacts associated with NO_x emissions from operations and maintenance of the components in Alternative 4 would be greater than impacts under the No Action Alternative and Existing Conditions. NO_x emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as Saline Habitat Complex cells and Air Quality Management areas are completed, and maintenance requirements increase. In the Peak Operations Year (Phase IV), the NO_x emissions would exceed the applicable daily local significance threshold, but would be below the annual threshold.

Fugitive Dust Emissions Associated with Exposed Playa Areas

Impacts associated with fugitive dust from Exposed Playa in Alternative 4 would be greater than impacts under the No Action Alternative and Existing Conditions. This alternative includes an irrigation water supply of 60,000 acre-feet/year and irrigation canals to provide water for two years to the Exposed Playa following construction. However, the information provided by the Imperial Group, as included in Appendix I, did not define long term irrigation facilities, such as the use of water efficient vegetation. Therefore, this alternative does not include a long term program for air quality management. Thirty percent of the Exposed Playa has been assumed to be non-emissive, and 70 percent has been assumed to be potentially emissive and uncontrolled. Fugitive dust emissions from Exposed Playa in Phase I are predicted to exceed the local significance thresholds for PM_{10}. Figures 10-5 and 10-6 show that the majority of the PM_{10} emissions from Alternative 4 would be from Exposed Playa. This represents a significant impact as compared to the Existing Conditions and the No Action Alternative. These conditions would continue in Phases II through IV, and would become more significant over time, as greater areas of playa are exposed. If a long term air quality management program were included in this alternative, the emissions would be reduced.

General Conformity Applicability Analysis

The net emissions increase estimated for the nonattainment pollutant NO_x in Alternative 4 would exceed the applicable *de minimis* thresholds in the Peak Construction Year.

The net emissions increase estimated for the nonattainment pollutant PM_{10} in Alternative 4 would be much greater than the applicable *de minimis* threshold in the Peak Construction Year (Phase I) and would be even higher in the Peak Operations Year (Phase IV). Exceedance of these thresholds represents a significant impact.

Odorous Emissions

Impacts associated with odorous emissions from the Brine Sink in Alternative 4 are predicted to be similar to those described for the No Action Alternative. The Concentric Lakes would have a similar depth as the Saline Habitat Complex cells in Alternatives 1 and 2, and would have the same low probability of stratification and buildup of odorous eutrophication byproducts. As a result, Alternative 4 would be expected to have impacts that are less than those under Existing Conditions and the No Action Alternative.

Microclimate

Microclimatic impacts associated with Alternative 4 would be greater than impacts under Existing Conditions. Available information is not sufficient to allow comparison of the microclimatic impacts of Alternative 4 to the No Action Alternative.

Alternative 5 – North Sea

As described in Chapter 3, this alternative would involve construction and operations and maintenance activities for the Sedimentation/Distribution Basins, Air Quality Management, Saline Habitat Complex, Shoreline Waterway, Saltwater Conveyance, Marine Sea, Marine Sea Recirculation Canal, and Brine Sink.

Construction Emissions

Construction of components in this alternative would result in air emissions such as fugitive dust, and exhaust from the combustion of fossil fuels in equipment and vehicles. For Alternative 5, emissions from construction were estimated for the following:

- Earthmoving to construct canals and Saline Habitat Complex;
- Rock transported and placed for Barriers and Saline Habitat Complex;
- Gravel transported and placed for Barriers, Saline Habitat Complex, and roads;
- Dredging for construction of Barriers;
- Disturbance of dry land to construct Saline Habitat Complex and roads; and
- Disturbance of dry land for Air Quality Management, such as water efficient vegetation.

Under Alternative 5, most of the construction activity is associated with building Barriers, Saline Habitat Complex, and Air Quality Management. Lesser levels of activity are associated with building canals, roads, and other associated facilities.

Construction related emissions have been analyzed for the Early Start Habitat and for an estimated peak year of construction, assumed to occur in Phase I for each alternative. Under Alternative 5, construction of facilities would continue in Phases II, III, and IV, but at lower levels of activity.

For Alternative 5, the following activities were assumed to occur during the Peak Construction Year:

- Up to 6,600 acres of dry land would be disturbed;
- Up to 4,000 acres of water efficient vegetation for Air Quality Management under construction;
- Up to 2,500 acres of Saline Habitat Complex under construction;
- Up to 100 acres of roadways under construction;
- Transport and placement of 1/5 of the total rock and gravel (cubic yards) estimated for construction of the Barriers (based on the assumed construction of 1/5 of the Barriers each year for 5 years). Transport distance for rock and gravel by truck would be 10 miles one way on paved roads. Placement of rock and gravel by truck assumes an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site. About 10 percent of the rock and 20 percent of the gravel would be placed by truck. Barges would be used to place 90 percent of the rock, and 80 percent of the gravel;
- Dredging of one-half of the amount of sediment estimated for construction of the Barriers (based on the assumed removal of one-half of the required sediment/year for 2 years);
- Transport and placement of 1/20 of the total rock and gravel (cubic yards) estimated for Saline Habitat Complex (based on the assumed construction of 1/20 of the total Saline Habitat Complex each year for 20 years). Transport distance for rock and gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site;
- Grading and/or movement of 1/20 of the total material (cubic yards) estimated to construct Saline Habitat Complex (based on the assumed construction of 1/20 of the total habitat area each year for 20 years). Construction completed using a mix of land-based construction equipment; and
- Transport and placement of 1/30 of the total gravel (cubic yards) estimated for roadways (based on the assumed construction of 1/30 of the total roadways each year for 30 years). Transport

distance for gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site.

Construction Fugitive Dust Emissions

Impacts associated with fugitive dust from construction of the components in Alternative 5 would be greater than impacts under the No Action Alternative and Existing Conditions. Even with an aggressive watering schedule for dust control, fugitive dust emissions from construction of components in Phase I would exceed the local significance thresholds for PM_{10} from construction. Based on screening level analysis, the main contributor to construction fugitive dust emissions would be truck travel on unpaved roads.

The local significance thresholds for PM_{10} are predicted to be exceeded during both the Early Start Habitat and the Peak Construction Year (Phase I), with the emissions in the Peak Construction Year (Phase I) estimated to be five times those estimated for the Early Start Habitat. Figure 10-5 shows that fugitive dust emissions from construction would contribute more than half of the total PM_{10} emissions for Alternative 5 in Phase I. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Construction fugitive dust emissions would become less than significant over time, as the Barriers, Saline Habitat Complex cells, and Air Quality Management areas are completed.

Construction Exhaust (NO_x and diesel PM_{10}) Emissions

Impacts associated with NO_x and diesel PM_{10} emissions from fuel combustion in construction equipment in Alternative 5 would be greater than impacts under the No Action Alternative and Existing Conditions. In addition to land based construction equipment and trucks, this alternative includes use of marine equipment, such as tugboats, barges, and dredges. Even with requirements for low-emission equipment, exhaust emissions from construction of components in Phase I would greatly exceed the local significance thresholds for NO_x. Figure 10-7 shows the magnitude of the exceedance. Diesel PM_{10} emissions would exceed the daily PM_{10} threshold and are potentially significant for this reason alone, even without taking into account the toxicity of these emissions. The main contributor to both the NO_x emissions and diesel PM_{10} emissions would be the use of barges to place rock and gravel for the Barrier. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Operations and Maintenance Related Emissions

Operations and maintenance activities have the potential to contribute air emissions such as fugitive dust and exhaust from the combustion of fossil fuels in equipment and vehicles. Emissions were estimated for activities used to operate and maintain the components (for example, Saline Habitat Complex, canals, and Air Quality Management).

Operations and Maintenance Related Fugitive Dust Emissions

Impacts associated with fugitive dust emissions from operations and maintenance of the components in Alternative 5 would be greater than impacts under the No Action Alternative and Existing Conditions. PM_{10} emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as facilities are completed, and maintenance requirements increase. The PM_{10} emissions would exceed the applicable daily local significance threshold of 150 pounds/day, but would be below the annual threshold of 70 tons/year in the Peak Operations Year (Phase IV).

Operations and Maintenance Related Exhaust (NO_X) Emissions

Impacts associated with NO_x emissions from operations and maintenance of the components in Alternative 5 would be greater than impacts under the No Action Alternative and Existing Conditions. NO_x emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as maintenance requirements increase. The NO_x emissions would exceed the applicable local air district significance thresholds in the Peak Operations Year (Phase IV). Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Fugitive Dust Emissions Associated with Exposed Playa Areas

Impacts associated with fugitive dust from Exposed Playa in Alternative 5 would be greater than impacts under the No Action Alternative and Existing Conditions. Even with the implementation of an aggressive Air Quality Management program for dust control, fugitive dust emissions from Exposed Playa in Phase I are predicted to exceed the local significance thresholds for PM_{10}. This represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Figure 10-5 shows that Exposed Playa emissions would contribute about one-fourth of the total PM_{10} emissions for Phase I. As shown in Figure 10-6, Exposed Playa emissions would continue in Phases II through IV, and would become even more significant over time, as greater areas of playa are exposed.

General Conformity Applicability Analysis

The net emissions increase estimated for the nonattainment pollutants NO_x and PM_{10} in Alternative 5 would greatly exceed the applicable *de minimis* thresholds in the Peak Construction Year (Phase I), and would also exceed the thresholds in the Peak Operations Year (Phase IV). Exceedances of these emissions thresholds represent significant impacts.

Odorous Emissions

Impacts associated with odorous emissions from the Brine Sink are predicted to be similar to those described for the No Action Alternative. In the Saline Habitat Complex cells, odorous conditions related to stratification, build up of eutrophication byproducts, and mixing would be much improved over those that occur in the Salton Sea under Existing Conditions. However, in later phases, the number of days that the remnant sea would be stratified is expected to increase, resulting in increased build up of hydrogen sulfide and ammonia below the thermocline. Less frequent mixing events are predicted, but impacts from mixing are predicted to be much more severe, resulting in anoxic conditions, high concentrations of odorous compounds in surface water that may be released to ambient air, and dead fish.

As a result, odor impacts associated with Alternative 5 would be greater than impacts under No Action Alternative and Existing Conditions. This would be a potentially significant impact, and may be unavoidable.

Microclimate

Microclimatic impacts associated with Alternative 5 would be greater than impacts under Existing Conditions. Only minimal changes would be expected in areas bordered by the Marine Sea. In the areas not bordered by the Marine Sea, impacts would be expected to be similar to those described previously for Alternative 1. Available information is not sufficient to allow comparison of the microclimatic impacts of Alternative 5 to the No Action Alternative.

Alternative 6 – North Sea Combined

As described in Chapter 3, this alternative would involve construction and operations and maintenance activities for the Sedimentation/Distribution Basins, Air Quality Management, Pupfish Channels, Saline Habitat Complex, Shoreline Waterway, Saltwater Conveyance, Marine Sea, Marine Sea Mixing Zone, Marine Sea Recirculation Canal, and Brine Sink.

Construction Emissions

Construction of components in this alternative would result in air emissions such as fugitive dust, and exhaust from the combustion of fossil fuels in equipment and vehicles. For Alternative 6, emissions from construction were estimated for the following:

- Earthmoving to construct canals, Saline Habitat Complex, and habitat contours;
- Rock transported and placed for the Barriers, Perimeter Dikes, and Saline Habitat Complex;
- Gravel transported and placed for the Barriers, Perimeter Dikes, Saline Habitat Complex, and roads;
- Dredging for construction of the Barriers and Perimeter Dikes;
- Disturbance of dry land to construct Saline Habitat Complex cells and roads; and
- Disturbance of dry land for Air Quality Management, such as water efficient vegetation.

Under Alternative 6, most of the construction activity is associated with building the Barriers, Perimeter Dikes, Saline Habitat Complex, and Air Quality Management. Lesser levels of activity are associated with building canals, roads, and other associated facilities.

Construction related emissions have been analyzed for the Early Start Habitat and for an estimated peak year of construction, assumed to occur in Phase I for each alternative. Under Alternative 6, construction of facilities would continue in Phases II, III, and IV, but at lower levels of activity.

For Alternative 6, the following activities were assumed to occur during the Peak Construction Year:

- Up to 6,600 acres of dry land would be disturbed;
- Up to 4,000 acres of water efficient vegetation for Air Quality Management under construction;
- Up to 2,500 acres of Saline Habitat Complex under construction;
- Up to 100 acres of roadways under construction;
- Transport and placement of 1/5 of the total rock and gravel (cubic yards) estimated for construction of the Barriers and Perimeter Dikes (based on the assumed construction of 1/5 of the Barriers and Perimeter Dikes each year for 5 years). Transport distance for rock and gravel by truck would be 10 miles one way on paved roads. Placement of rock and gravel by truck assumes an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site. For the Barriers, about 10 percent of the rock would be placed by truck, and 20 percent of the gravel. Barges would be used to place 90 percent of the rock, and 80 percent of the gravel for the Barriers. For the Perimeter Dikes, about 80 percent of the rock would be placed by truck, and 100 percent of the gravel. Barges would be used to place 20 percent of the rock for the Perimeter Dikes;
- Dredging of one-half of the amount of sediment estimated for construction of the Barriers and Perimeter Dikes (based on the assumed removal of one-half of the required sediment/year for 2 years);
- Transport and placement of 1/20 of the total rock and gravel (cubic yards) estimated for Saline Habitat Complex (based on the assumed construction of 1/20 of the total Saline Habitat Complex each year for 20 years). Transport distance for rock and gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to placement location at construction site;
- Grading and/or movement of 1/20 of the total material (cubic yards) estimated to construct Saline Habitat Complex (based on the assumed construction of 1/20 of the total habitat area each year for 20 years). Construction completed using a mix of land based construction equipment; and

- Transport and placement of 1/30 of the total gravel (cubic yards) estimated for roadways (based on the assumed construction of 1/30 of the total roadways each year for 30 years). Transport distance for gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site.

Construction Fugitive Dust Emissions

Impacts associated with fugitive dust from construction of the components in Alternative 6 would be greater than impacts under the No Action Alternative and Existing Conditions. Even with an aggressive watering schedule for dust control, fugitive dust emissions from construction of components in Phase I would greatly exceed the local significance thresholds for PM_{10} from construction. Based on screening level analysis, the main contributor to construction fugitive dust emissions would be truck travel on unpaved roads.

The local significance thresholds for PM_{10} are predicted to be exceeded during both the Early Start Habitat and the Peak Construction Year (Phase I), with the emissions in the Peak Construction Year (Phase I) estimated to be more than 25 times those estimated for the Early Start Habitat. Figure 10-5 shows that fugitive dust emissions would contribute the majority of the total PM_{10} emissions for Alternative 6 in Phase I. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Construction fugitive dust emissions would become less than significant over time, as the Barriers, Perimeter Dikes, Saline Habitat Complex cells, and Air Quality Management areas are completed.

Construction Exhaust (NO_x and diesel PM_{10}) Emissions

Impacts associated with NO_x and diesel PM_{10} emissions from fuel combustion in construction equipment in Alternative 6 would be greater than impacts under the No Action Alternative and Existing Conditions. In addition to land based construction equipment and trucks, this alternative includes use of marine equipment, such as tugboats, barges, and dredges. Even with requirements for low-emission equipment, exhaust emissions from construction of components in Phase I would greatly exceed the local significance thresholds for NO_x. Figure 10-7 shows the magnitude of the NO_x exceedance as compared to the threshold. Similarly, diesel PM_{10} emissions would greatly exceed the local significance PM_{10} thresholds, and are potentially significant for this reason alone, even without taking into account the toxicity of these emissions. Based on screening level analysis, the main contributor to construction NO_x and diesel PM_{10} emissions would be diesel-fueled marine vessels used to place rock and gravel. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Operations and Maintenance Related Emissions

Operations and maintenance activities have the potential to contribute air emissions such as fugitive dust and exhaust from the combustion of fossil fuels in equipment and vehicles. Emissions were estimated for activities used to operate and maintain the components (for example, Saline Habitat Complex, canals, and Air Quality Management).

Operations and Maintenance Related Fugitive Dust Emissions

Impacts associated with fugitive dust emissions from operations and maintenance of the components in Alternative 6 would be greater than impacts under the No Action Alternative and Existing Conditions. PM_{10} emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as facilities are completed, and maintenance requirements increase. The PM_{10} emissions would exceed the local air district significance thresholds in the Peak Operations Year (Phase IV). Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Operations and Maintenance Related Exhaust (NO_x) Emissions

Impacts associated with NO_x emissions from operations and maintenance of the components in Alternative 6 would be greater than impacts under the No Action Alternative and Existing Conditions. NO_x emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as maintenance requirements increase. The NO_x emissions would exceed the applicable local air district significance thresholds in the Peak Operations Year (Phase IV). Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Fugitive Dust Emissions Associated with Exposed Playa Areas

Impacts associated with fugitive dust from Exposed Playa in Alternative 6 would be greater than impacts under the No Action Alternative and Existing Conditions. Even with the implementation of an aggressive Air Quality Management program for dust control, fugitive dust emissions from Exposed Playa in Phase I are predicted to exceed the local significance thresholds for PM_{10}. This represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Exposed playa conditions would continue in Phases II through IV, and would become even more significant over time, as greater areas of playa are exposed. Figure 10-6 shows that Exposed Playa emissions contribute to the majority of the Phase IV PM_{10} emissions.

General Conformity Applicability Analysis

The net emissions increase estimated for the nonattainment pollutants NO_x and PM_{10} in Alternative 6 would greatly exceed the applicable *de minimis* thresholds in the Peak Construction Year (Phase I), and would also exceed the thresholds in the Peak Operations Year (Phase IV). Exceedances of these emissions thresholds represent significant impacts.

Odorous Emissions

Similar to Alternative 5, odor impacts associated with Alternative 6 would be greater than impacts under No Action Alternative and Existing Conditions. This would be a potentially significant impact, and may be unavoidable.

Microclimate

Microclimatic impacts associated with Alternative 6 would be greater than impacts under Existing Conditions. Only minimal changes would be expected in areas bordered by the Marine Sea or Marine Sea Mixing Zone. In the areas not bordered by the Marine Sea or Marine Sea Mixing Zone, impacts would be expected to be similar to those described previously for Alternative 1. Available information is not sufficient to allow comparison of the microclimatic impacts of Alternative 6 to the No Action Alternative.

Alternative 7 – Combined North and South Lakes

As described in Chapter 3, this alternative would involve construction and operations and maintenance activities for the Sedimentation/Distribution Basins, Air Quality Management using Protective Salt Flat on Exposed Playa below -255 feet msl, Exposed Playa without Air Quality Management above -255 feet msl, Saline Habitat Complex, Recreational Saltwater Lake, Recreational Estuary Lake, Marine Sea Recirculation Canal, IID Freshwater Reservoir, two treatment plants, and Brine Sink.

Construction Emissions

Construction of components in this alternative would result in air emissions such as fugitive dust, and exhaust from the combustion of fossil fuels in equipment and vehicles. For Alternative 7, emissions from construction were estimated for the following:

- Earthmoving to construct canals and Saline Habitat Complex;
- Rock transported and placed for the Barriers, Perimeter Dikes, and Saline Habitat Complex;
- Gravel transported and placed for the Barriers, Perimeter Dikes, Saline Habitat Complex, and roads; and
- Disturbance of dry land to construct Saline Habitat Complex cells and roads.

Under Alternative 7, most of the construction activity is associated with building the Barriers, Perimeter Dikes, and Saline Habitat Complex. Lesser levels of activity are associated with building canals, roads, and other associated facilities.

Construction related emissions have been analyzed for the Early Start Habitat and for an estimated peak year of construction, assumed to occur in Phase I for each alternative. Under Alternative 7, construction of facilities would continue in Phases II, III, and IV, but at lower levels of activity.

For Alternative 7, the following activities were assumed to occur during the Peak Construction Year:

- Up to 2,600 acres of dry land would be disturbed;
- No acres of water efficient vegetation for Air Quality Management;
- Up to 2,500 acres of Saline Habitat Complex under construction;
- Up to 100 acres of roadways under construction;
- Transport and placement of 1/5 of the total rock and gravel (cubic yards) estimated for construction of the Barriers and Perimeter Dikes (based on the assumed construction of 1/5 of the Barriers and Perimeter Dikes each year for 5 years). Transport distance for rock and gravel by truck would be 10 miles one way on paved roads. Placement of rock and gravel by truck assumes an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site. For the Barriers, about 10 percent of the rock and 20 percent of the gravel would be placed by truck. Barges would be used to place 90 percent of the rock, and 80 percent of the gravel for the Barriers. For the Perimeter Dikes, about 80 percent of the rock and 100 percent of the gravel would be placed by truck. Barges would be used to place 20 percent of the rock for the Perimeter Dikes;
- Transport and placement of 1/20 of the total rock and gravel (cubic yards) estimated for Saline Habitat Complex (based on the assumed construction of 1/20 of the total Saline Habitat Complex each year for 20 years). Transport distance for rock and gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site;
- Grading and/or movement of 1/20 of the total material (cubic yards) estimated to construct Saline Habitat Complex (based on the assumed construction of 1/20 of the total habitat area each year for 20 years). Construction completed using a mix of land based construction equipment; and
- Transport and placement of 1/30 of the total gravel (cubic yards) estimated for roadways (based on the assumed construction of 1/30 of the total roadways each year for 30 years). Transport distance for gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site.

Construction Fugitive Dust Emissions

Impacts associated with fugitive dust from construction of the components in Alternative 7 would be greater than impacts under the No Action Alternative and Existing Conditions. Even with an aggressive watering schedule for dust control, fugitive dust emissions from construction of components in Phase I would greatly exceed the local significance thresholds for PM_{10} from construction. Based on screening level analysis, the main contributor to construction fugitive dust emissions would be truck travel on unpaved roads.

The local significance thresholds for PM_{10} are predicted to be exceeded during both the Early Start Habitat and the Peak Construction Year (Phase I), with the emissions in the Peak Construction Year (Phase I) estimated to be more than 30 times those estimated for the Early Start Habitat. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Construction fugitive dust emissions would become less than significant over time, as the Barriers, Perimeter Dikes, Saline Habitat Complex cells, and Air Quality Management areas are completed.

Construction Exhaust (NO_x and diesel PM_{10}) Emissions

Impacts associated with NO_x and diesel PM_{10} emissions from fuel combustion in construction equipment in Alternative 7 would be greater than impacts under the No Action Alternative and Existing Conditions. In addition to land based construction equipment and trucks, this alternative includes use of marine equipment, such as tugboats and barges. Even with requirements for low-emission equipment, exhaust emissions from construction of components in Phase I would greatly exceed the local significance thresholds for NO_x. Figure 10-7 shows the magnitude of the exceedance in comparison to the annual threshold. Diesel PM_{10} emissions would exceed the daily local significance threshold for PM_{10}, and are potentially significant for this reason alone, even without taking into account the toxicity of these emissions. The main contributor to both the NO_x emissions and diesel PM_{10} emissions would be the use of barges to place rock and gravel for the Barrier. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Operations and Maintenance Related Emissions

Operations and maintenance activities have the potential to contribute air emissions such as fugitive dust and exhaust from the combustion of fossil fuels in equipment and vehicles. Emissions were estimated for activities used to operate and maintain the components (for example, Saline Habitat Complex, canals, Barriers, and Perimeter Dikes).

Operations and Maintenance Related Fugitive Dust Emissions

Impacts associated with fugitive dust emissions from operations and maintenance of the components in Alternative 7 would be greater than impacts under the No Action Alternative and Existing Conditions. PM_{10} emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as facilities are completed, and maintenance requirements increase. The PM_{10} emissions would exceed the local air district significance thresholds in the Peak Operations Year (Phase IV). Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Operations and Maintenance Related Exhaust (NO_x) Emissions

Impacts associated with NO_x emissions from operations and maintenance of the components in Alternative 7 would be greater than impacts under the No Action Alternative and Existing Conditions. NO_x emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as maintenance requirements increase. The NO_x emissions would exceed the applicable local air district significance thresholds in the Peak Operations Year (Phase IV). Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Fugitive Dust Emissions Associated with Exposed Playa Areas

Impacts associated with fugitive dust from Exposed Playa in Alternative 7 would be greater than impacts under the No Action Alternative and Existing Conditions. This alternative includes about 63,000 acres of

Protective Salt Flat, with an estimated control efficiency of 85 percent, and also includes about 40,000 acres of Exposed Playa area with no identified long term program for air quality management. Of this 40,000 acres of Exposed Playa, 30 percent have been assumed to be non-emissive, and up to 70 percent have been assumed to be potentially emissive. An additional 11,000 acres with no identified long term program for air quality management would need to be evaluated if the IID reservoir is not built (emissions were not estimated for this area in the PEIR). Fugitive dust emissions from Exposed Playa in Phase I are predicted to greatly exceed the local significance thresholds for PM_{10}. This represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Figure 10-5 shows that Exposed Playa emissions would contribute a large portion of the total PM_{10} emissions for Phase I. As shown in Figure 10-6, Exposed Playa emissions would continue in Phases II through IV, and would become even more significant over time, as greater areas of playa are exposed.

General Conformity Applicability Analysis

The net emissions increase estimated for the nonattainment pollutants NO_x and PM_{10} in Alternative 7 would greatly exceed the applicable *de minimis* thresholds in the Peak Construction Year (Phase I), and would also exceed the thresholds in the Peak Operations Year (Phase IV). Exceedances of these emissions thresholds represent significant impacts.

Odorous Emissions

Similar to Alternative 5, odor impacts associated with Alternative 7 would be greater than impacts under No Action Alternative and Existing Conditions. This would be a potentially significant impact, and may be unavoidable.

Microclimate

Microclimatic impacts associated with Alternative 7 would be greater than impacts under Existing Conditions. Only minimal changes would be expected in areas bordered by the Recreational Saltwater and Recreational Estuary Lakes and Saline Habitat Complex. In the areas not bordered by water bodies, impacts would be expected to be similar to those described previously for Alternative 1. Available information is not sufficient to allow comparison of the microclimatic impacts of Alternative 7 to the No Action Alternative.

Alternative 8 – South Sea Combined

As described in Chapter 3, this alternative would involve construction and operations and maintenance activities for the Sedimentation/Distribution Basins, Air Quality Management, Saline Habitat Complex, Shoreline Waterway, Marine Sea, Marine Sea Recirculation Canal, and Brine Sink.

Construction Emissions

Construction of components in this alternative would result in air emissions such as fugitive dust, and exhaust from the combustion of fossil fuels in equipment and vehicles. For Alternative 8, emissions from construction were estimated for the following:

- Earthmoving to construct canals and Saline Habitat Complex;
- Rock transported and placed for the Barriers, Perimeter Dikes, and Saline Habitat Complex;
- Gravel transported and placed for the Barriers, Perimeter Dikes, Saline Habitat Complex, and roads;
- Dredging for construction of the Barriers and Perimeter Dikes;
- Disturbance of dry land to construct Saline Habitat Complex cells and roads; and
- Disturbance of dry land for Air Quality Management, such as water efficient vegetation.

Under Alternative 8, most of the construction activity is associated with building the Barriers, Perimeter Dikes, Saline Habitat Complex, and Air Quality Management. Lesser levels of activity are associated with building canals, roads, and other associated facilities.

Construction related emissions have been analyzed for the Early Start Habitat and for an estimated peak year of construction, assumed to occur in Phase I for each alternative. Under Alternative 8, construction of facilities would continue in Phases II, III, and IV, but at lower levels of activity.

For Alternative 8, the following activities were assumed to occur during the Peak Construction Year:

- Up to 6,600 acres of dry land would be disturbed;
- Up to 4,000 acres of water efficient vegetation for Air Quality Management under construction;
- Up to 2,500 acres of Saline Habitat Complex under construction;
- Up to 100 acres of roadways under construction;
- Transport and placement of 1/5 of the total rock and gravel (cubic yards) estimated for construction of the Barriers and Perimeter Dikes (based on the assumed construction of 1/5 of the Barriers and Perimeter Dikes each year for 5 years). Transport distance for rock and gravel by truck would be 10 miles one way on paved roads. Placement of rock and gravel by truck assumes an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site. For the Barriers, about 10 percent of the rock and 20 percent of the gravel would be placed by truck. Barges would be used to place 90 percent of the rock, and 80 percent of the gravel for the Barriers. For the Perimeter Dikes, about 80 percent of the rock and 100 percent of the gravel would be placed by truck. Barges would be used to place 20 percent of the rock for the Perimeter Dikes;
- Dredging of one-half of the amount of sediment estimated for construction of the Barriers and Perimeter Dikes (based on the assumed removal of one-half of the required sediment/year for 2 years);
- Transport and placement of 1/20 of the total rock and gravel (cubic yards) estimated for Saline Habitat Complex Berms (based on the assumed construction of 1/20 of the total Saline Habitat Complex each year for 20 years). Transport distance for rock and gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site;
- Grading and/or movement of 1/20 of the total material (cubic yards) estimated to construct Saline Habitat Complex (based on the assumed construction of 1/20 of the total habitat area each year for 20 years). Construction completed using a mix of land based construction equipment; and
- Transport and placement of 1/30 of the total gravel (cubic yards) estimated for roadways (based on the assumed construction of 1/30 of the total roadways each year for 30 years). Transport distance for gravel would be 10 miles one way on paved roads and an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site.

Construction Fugitive Dust Emissions

Impacts associated with fugitive dust from construction of the components in Alternative 8 would be greater than impacts under the No Action Alternative and Existing Conditions. Even with an aggressive watering schedule for dust control, fugitive dust emissions from construction of components in Phase I would greatly exceed the local significance thresholds for PM_{10} from construction. Based on screening level analysis, the main contributor to construction fugitive dust emissions would be truck travel on unpaved roads.

The local significance thresholds for PM_{10} are predicted to be exceeded during both the Early Start Habitat and the Peak Construction Year (Phase I), with the emissions in the Peak Construction Year (Phase I) estimated to be more than 30 times those estimated for the Early Start Habitat. Figure 10-5 shows that fugitive dust emissions from construction would contribute the majority of the total PM_{10} emissions for Alternative 8 in Phase I. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Construction fugitive dust emissions would become less than significant over time, as the Barriers, Perimeter Dikes, Saline Habitat Complex cells, and Air Quality Management areas are completed.

Construction Exhaust (NO_x and diesel PM_{10}) Emissions

Impacts associated with NO_x and diesel PM_{10} emissions from fuel combustion in construction equipment in Alternative 8 would be greater than impacts under the No Action Alternative and Existing Conditions. In addition to land based construction equipment and trucks, this alternative includes use of marine equipment, such as tugboats, barges, and dredges. Even with requirements for low-emission equipment, exhaust emissions from construction of components in Phase I would greatly exceed the local significance thresholds for NO_x. Figure 10-7 shows the magnitude of the exceedance. Diesel PM_{10} emissions would exceed the local significance PM_{10} thresholds and are potentially significant for this reason alone, even without taking into account the toxicity of these emissions. The main contributor to both the NO_x emissions and diesel PM_{10} emissions would be the use of barges to place rock and gravel for the Barrier. Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Operations and Maintenance Related Emissions

Operations and maintenance activities have the potential to contribute air emissions such as fugitive dust and exhaust from the combustion of fossil fuels in equipment and vehicles. Emissions were estimated for activities used to operate and maintain the components (for example, Saline Habitat Complex, canals, and Air Quality Management).

Operations and Maintenance Related Fugitive Dust Emissions

Impacts associated with fugitive dust emissions from operations and maintenance of the components in Alternative 8 would be greater than impacts under the No Action Alternative and Existing Conditions. PM_{10} emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as facilities are completed, and maintenance requirements increase. The PM_{10} emissions would exceed the local air district significance thresholds in the Peak Operations Year (Phase IV). Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Operations and Maintenance Related Exhaust (NO_x) Emissions

Impacts associated with NO_x emissions from operations and maintenance of the components in Alternative 8 would be greater than impacts under the No Action Alternative and Existing Conditions. NO_x emissions associated with operations and maintenance would be the lowest in Phase I, but would increase over time, as maintenance requirements increase. The NO_x emissions would exceed the applicable local air district significance thresholds in the Peak Operations Year (Phase IV). Exceedance of these thresholds represents a significant impact as compared to the Existing Conditions and the No Action Alternative.

Fugitive Dust Emissions Associated with Exposed Playa Areas

Impacts associated with fugitive dust from Exposed Playa in Alternative 8 would be greater than impacts under No Action Alternative and Existing Conditions. Even with the implementation of an aggressive Air Quality Management program for dust control, fugitive dust emissions from Exposed Playa in Phase I are predicted to exceed the local significance thresholds for PM_{10}. This represents a significant impact as compared to the Existing Conditions and the No Action Alternative. Figure 10-5 shows that Exposed Playa emissions would contribute a small portion of the total PM_{10} emissions for Phase I. As shown in Figure 10-6, Exposed Playa emissions would continue in Phases II through IV, and would become even more significant over time, as greater areas of playa are exposed.

General Conformity Applicability Analysis

The net emissions increase estimated for the nonattainment pollutants NO_x and PM_{10} in Alternative 8 would greatly exceed the applicable *de minimis* thresholds in the Peak Construction Year (Phase I), and would also exceed the thresholds in the Peak Operations Year (Phase IV). Exceedances of these emissions thresholds represent significant impacts.

Odorous Emissions

Odor impacts associated with Alternative 8 would be greater than impacts under the No Action Alternative and Existing Conditions. This would be a potentially significant impact, and may be unavoidable.

However, odor impacts associated with Alternative 8 would be less than impacts under Alternatives 5, 6, or 7. Alternatives with deeper water bodies in the north are predicted to experience more stratification (both stronger and for a greater duration) than alternatives with water bodies in the south, due to greater average depths and lower winds in the north. Water bodies in the south would tend to be shallower, and the higher winds in the south would provide more energetic mixing and aeration.

Microclimate

Microclimatic impacts associated with Alternative 8 would be greater than impacts under Existing Conditions. Only minimal changes would be expected in areas bordered by the Marine Sea. In the areas not bordered by the Marine Sea, impacts would be expected to be similar to those described previously for Alternative 1. Available information is not sufficient to allow comparison of the microclimatic impacts of Alternative 8 to the No Action Alternative.

NEXT STEPS

During project-level analyses, proposed projects must require implementation of current best available control measures and most stringent measures, and all feasible PM_{10} mitigation measures. Recommended measures are described in ICAPCD and SCAQMD regulations and handbooks, as summarized in Appendix E, Attachment E5. Other considerations would be to use methods other than haul trucks to deliver materials to construction sites (for example, trains or conveyors), or to even further increase watering frequency during construction, pave gravel roads on site, or use chemical stabilizers that may provide higher control efficiencies. Methods for control of dust during construction of Air Quality Management areas should be identified.

Additional research is recommended to further study the amount and composition of the fugitive dust emitted during construction activities at the Salton Sea. Project-level analyses would need to include detailed emissions estimation, exposure assessment, and health impact analyses. Potential impacts of fugitive dust on agricultural productivity should also be analyzed. Control of fugitive dust from construction would reduce human and agricultural exposures to PM_{10} and constituents of potential concern.

Additional study is recommended to further analyze the amount of diesel PM_{10} that would be emitted during construction activities, and the location of these emissions relative to sensitive receptors. To reduce emissions of NO_x and PM_{10}, further consideration may be given to use of other transportation methods to deliver materials to the construction sites (for example, trains or conveyors). Project-level analyses would need to do more detailed emissions estimation, exposure assessment, and health impact analyses for diesel PM_{10} and other HAPs.

Emissions estimates for Exposed Playa areas are based on the limited studies of playa stability and emissivity conducted to date at the Salton Sea, a predictive model, and currently proven control measures. Additional research is recommended to further study the amount and composition of the fugitive dust emitted from playa at the Salton Sea, and the conditions (meteorological, crustal, and others) that result in stable versus emissive conditions. Project-level analyses would need to do more detailed emissions estimation, exposure assessment, and health impact analyses. Potential impacts of dust on agricultural productivity should also be analyzed.

Project-level analyses must require implementation of current best available control measures and most stringent measures on all exposed emissive areas, and should include all feasible PM_{10} mitigation measures. Additional site-specific studies are needed to better characterize playa conditions and emissions and identify the best control measures. The results from these studies should be included with any recommended action, even if emission controls were not evaluated in the specific PEIR alternative. In Alternatives 4 and 7, some of the Exposed Playa areas had no identified long term program for air quality management. With identification and implementation of control measures, the fugitive dust emissions predicted for these areas would be substantially reduced, and the benefits of such measures should be quantified in project-level studies.

To comply with general conformity regulations, prior to implementation, alternatives would be required to demonstrate conformity with the applicable SIP through mitigation or other accepted practices.

With regard to odorous emissions, project-level analyses would need to do more detailed emissions estimation, exposure and health impact analysis, and mitigation planning. Measures to reduce the incoming nutrient loading, or remove or bind nutrients from Salton Sea water, may assist in reducing odorous air emissions and fish die-offs.

Project level analyses would need to do more detailed evaluation of microclimatic conditions and effects of the alternatives on agricultural lands adjacent to the Salton Sea.