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6.1 AIR QUALITY

This analysis of the potential air quality impacts of the 93 MW Project located in Niland, California, Imperial County, has been conducted according to CEC power plant siting requirements. The analysis also addresses ICAPCD permitting requirements for Determination of Compliance/Authority to Construct (DOC/ATC). The details of the analysis are contained in the following sections:

- Section 6.1.1, Affected Environment, describes the local environment surrounding the Town of Niland. The most representative meteorological data, including wind speed and direction, temperature, relative humidity, and precipitation, and the most representative recent ambient concentration measurements for criteria air pollutants are summarized.
- Section 6.1.2, Environmental Consequences, evaluates the Project's maximum potential air quality impacts due to the Project's emissions of NO_x, CO, sulfur oxides (SO_x), reactive organic compounds (ROCs), particulate matter les than 10 micrometers in diameter (PM_{10}), and particulate matter less than 2.5 emissions micrometers in diameter ($PM_{2.5}$). Emission estimates are presented for these pollutants for Project construction and operation over a range of operating modes, including startup and shutdown. The modeling analysis conducted for nitrogen dioxide (NO_2), CO, sulfur dioxide (SO_2), and PM_{10} is presented; the results show that the Project will not cause or significantly contribute to exceedances of the California National Ambient Air Quality Standards (CNAAQS) or National Ambient Air Quality Standards (NAAQS).
- Section 6.1.3, Cumulative Impacts Analysis, addresses the cumulative impacts of the Project emissions with other potential new sources of air pollution in the Niland area. At present, no such additional projects are planned within 6 miles of the Project Site.
- Section 6.1.4, Mitigation Measures, describes the Project emission offsets strategy, including ERCs that are proposed to offset Project sources.
- Section 6.1.5, LORS, describes all applicable LORS. This section also provides an analysis of BACT for natural gas-fired turbines, and explains how the use of dry low emissions combustors and SCR with ammonia injection meet NO_x requirements for BACT, and how the use of an oxidation catalyst meets the CO BACT requirements.
- Section 6.1.6, Involved Agencies and Agency Contacts, lists the agency personnel contacted during preparation of the air quality assessment.
- Section 6.1.7, Permits and Permitting Schedule, lists the air quality permits required for the Project and provides a permit schedule.
- Section 6.1.8, References, lists the references used to conduct the air quality assessment.

Some air quality data are presented in other sections of this SPPE application, including an evaluation of toxic air pollutants (see Section 6.8, Public Health and Safety) and information related to the fuel characteristics, heat rate, and startup and operating limits (see Section 2.0, Project and Facility Description).

6.1.1 Affected Environment

This section describes the regional climate and meteorological conditions that influence the transport and dispersion of air pollutants, as well as the existing air quality within the Project region. The data presented in this section are representative of the Project Site.

The Project Site is located in northern Imperial Valley about 0.3 mile (0.5 kilometer [km]) northeast of the Town of Niland. The nearest communities other than Niland include Bombay Beach, Calipatria, Westmoreland, and Brawley. The Project Site is below sea level in terrain that slopes gently downward from the northeast to the southwest toward the Salton Sea about 5 miles (8 km) from the Project Site. Terrain elevations as high as the proposed natural gas turbine stacks are found within about 1.2 miles (2 km) to the northeast of the site and the elevation rise continues in this direction to the Chocolate Mountains about 10 miles (17 km) away. Topography within a 6- and 10-mile radius of the Project Site is shown on Figure 6.1-1. The nearest rural residence is within 1,560 feet (475 meters [m]) due east of the site fence line. The nearest Class I area is Joshua Tree National Park, about 32 miles (52 km) to the northwest.

6.1.1.1 Meteorology and Climate

Imperial County is classified as having a desert climate characterized by low precipitation, hot summers, mild winters, low humidity and strong temperature inversions. It is separated from the coastal regions by the San Jacinto and Santa Rosa mountain ranges to the northwest and west. To the north (approximately 85 miles), the San Gorgonio Pass represents a passageway between the interior and coastal portions of southern California. The area's climatic conditions are strongly influenced by the large-scale sinking and warming of air in the semi-permanent subtropical high-pressure center over the eastern Pacific. This high-pressure system effectively blocks out most mid-latitude storms, except in winter when the ridge is weaker and farther south. The coastal mountains on the western edge of the Imperial Valley also have a major influence on climate, serving as a meteorological boundary that effectively removes moisture from the marine air flowing from the Pacific. An annual wind rose representing data collected during the years 1991 to 1995 is presented in Figure 6.1-2, Annual Windrose for all Months 1991-1995, Imperial County Airport. Wind roses for calendar quarters are provided in Appendix B, Air Quality Data, Attachment A, Quarterly Wind Roses for Imperial County Airport.

The generally flat terrain of the valley floor in the Salton Sea area, combined with the strong temperature differentials created by intense solar heating produce moderate winds and deep thermal convection currents. The combination of subsiding air, protective mountains, and distance from the ocean all combine to severely limit precipitation. The valley area experiences surface inversions in the early morning hours almost every day of the year, causing air stagnation. These inversions are usually broken by noon due to solar heating.

Temperature and precipitation means and extremes from the nearest long-term National Weather Service station in El Centro over a 30-year period (1971-2000) are presented in Table 6.1-1, Average Temperatures and Precipitation in Imperial County (1971-2000). The coordinates of this weather station are: latitude 32°46'N, longitude 115°34'W. The hottest month, July, has an average maximum temperature of 107.0°F and an average minimum temperature of 75.8°F. The coldest month, December, has an average maximum temperature of 69.7°F, and an average minimum temperature of 40.5°F.

TABLE 6.1-1
AVERAGE TEMPERATURES AND PRECIPITATION IN IMPERIAL COUNTY (1971-2000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average Max Temperature (ºF)	70.2	74.5	79.3	86.1	94.0	103.4	107.0	105.7	101.1	90.9	78.1	69.7	88.3
Average Min Temperature (ºF)	41.3	44.9	48.7	53.5	60.6	68.4	75.8	76.6	70.6	59.2	47.3	40.5	57.3
Precipitation (in)	0.51	0.36	0.31	0.05	0.03	0.01	0.06	0.32	0.36	0.35	0.17	0.43	2.96

Notes:
ºF = degrees Fahrenheit
in = inches
Max = maximum
Min = minimum
Source: El Centro 2 SSW Weather Station of US Weather Service.

During winter, the semi-permanent, subtropical high pressure system over the Pacific Ocean moves south, allowing the passage of frontal systems that bring most of the area's annual precipitation, which totals about 3 inches on average. Monthly mean precipitation amounts at El Centro range from 0.51 inches in January to 0.01 inches in June. During summer, migrating storm systems are blocked by the semi-permanent Pacific high, and rain associated with these storms is scarce. Relative humidity levels are generally very low. In the summer, relative humidity averages 30 to 50 percent in the early morning and 10 to 20 percent in the afternoon.

Desert regions are inclined to be windy since little friction is generated between the moving air and the low, sparse vegetation cover. In addition, the rapid daytime heating of the lower layer of air over the desert leads to convective activity. This exchange between lower and upper air tends to accelerate surface winds during the warm part of the day when convection is at a maximum. During the winter months the surface heating is not as intense, and the rapid cooling of the surface layers at night retards this exchange of momentum. As a result, winds are generally calmer in winter, except during the passage of frontal storm systems. During all seasons, the prevailing wind direction is predominantly from the west and west-southwest.

6.1.1.2 Existing Air Quality

All ambient air quality data presented in this section were published by the California Air Resources Board (CARB) on the Aerometric Data Analysis and Management system (ADAM) Web site and/or by U.S. Environmental Protection Agency (USEPA) on the Aerometric Information Retrieval System (AIRS) data Web site. Ambient air concentrations of ozone (O_3), NO_2, SO_2, CO, PM_{10}, and $PM_{2.5}$ and airborne lead are recorded at monitoring stations throughout Imperial County. The region surrounding the Project Site is a remote, desert-like environment with a very sparse population. Each monitoring station in the region, in general, only records measurements for one or two criteria pollutants. Therefore, existing air quality data are necessarily represented using data from several different monitoring stations. The monitoring stations were generally positioned to represent area-wide ambient conditions rather than the localized impacts of any particular facility or area. In remote, rural areas of the county, pollutant

concentrations are not expected to vary significantly from one location to the next since the emission sources are few and widely distributed. However, concentrations of pollutants emitted by industrial and vehicular sources are generally higher in the most populated areas of El Centro and Calexico than in the rest of the county.

Ambient concentrations of O_3 and PM_{10} are recorded at the Niland monitoring station located on English Street, approximately 2.5 miles southwest of the Project Site. The El Centro station, the next closest station that monitors NO_2 and CO, is located about 32 miles to the south, of the Project Site. Calexico – Ethel Street (40 miles to the south) is the closest station that monitors ambient SO_2 and lead levels, and the Brawley monitoring station (19 miles to the south) was the closest location measuring $PM_{2.5}$. To the extent that monitoring data from the El Centro and Calexico stations have been used here to characterize conditions at the Project Site, this practice would almost certainly overestimate pollutant levels at Niland, because of the much lower population and level of development of this area compared to the other monitoring stations.

Ozone (O_3)

Ozone is an end product of complex reactions between ROC and NO_x in the presence of intense ultraviolet radiation. ROC and NO_x emissions from vehicles and stationary sources, combined with daytime wind flow patterns, mountain barriers, a persistent temperature inversion, and intense sunlight, generally result in the highest O_3 concentrations. For purposes of both state and federal air quality planning, the entire Salton Sea air basin is classified as a nonattainment area with respect to both state and national ambient standards for O_3.

Table 6.1-2, Ozone Levels at Niland, shows the measured O_3 levels at the Niland station during the last four years for which data are available. Note that O_3 data collection began at this station in 2001. As seen in the tables, the 1-hour O_3 NAAQS of 0.12 ppm has not been exceeded at Niland at any time, and the maximum recorded concentration thus far was 0.105 ppm in 2001. The more stringent state O_3 CNAAQS of 0.09 ppm was exceeded in 2 of the last 4 years (five times in 2002), but zero times in 2003 and 2004.

TABLE 6.1-2
OZONE LEVELS AT NILAND (ppm)

Niland - English Road Station, Imperial County	2000	2001	2002	2003	2004
Maximum 1-Hour Average	NA	0.105	0.102	0.090	0.092
Number of Days Exceeding California 1-Hour Standard (0.09 ppm)	NA	2	5	0	0
Number of Days Exceeding National 1-Hour Standard (0.12 ppm)	NA	0	0	0	0
Maximum 8-Hour Average	NA	0.086	0.092	0.075	0.081
Number of Days Exceeding National 8-Hour Standard (0.08 ppm) [1]	NA	1	5	0	0

Sources: CARB ADAM Web site (www.arb.ca.gov/adam/welcome.html);
USEPA AIRS Web site (www.epa.gov/air/data/index.html)

[1]Number of days with an 8-hour average exceeding federal standard concentration of 0.08 ppm. The regulatory standard is to maintain 0.08 ppm as a 3-year average of the fourth-highest daily maximum. Therefore, number of days exceeding standard concentration is not the number of violations of the standard for the year.

NA = not applicable

ppm = parts per million

$\mu g/m^3$ = micrograms per cubic meter

The federal 8-hour O_3 NAAQS requires that the 3-year average of the fourth-highest values for individual years be maintained at or below 0.08 ppm. Therefore, the number of days in each year with maximum 8-hour concentrations above the standard concentration in Table 6.1-2, Ozone Levels at Niland, does not equate to the number of violations. However, the highest 3-year (2000-2002) average of the fourth-highest 8-hour concentrations at the Niland station was 0.092 ppm, which is higher than the allowable 0.08 ppm.

O_3 data completeness at Niland for each year was 97 percent for 2001, 99 percent for 2002, 97 percent for 2003, and 100 percent for 2004. Ozone data were not recorded at this site in 2000.

Nitrogen Dioxide (NO_2)

NO_2 is formed primarily from reactions in the atmosphere between NO (nitric oxide) and oxygen or ozone. NO is formed during high-temperature combustion processes, when the nitrogen and oxygen in the combustion air combine. Although NO is much less harmful than NO_2, it can be converted to NO_2 in the atmosphere within a matter of hours, or even minutes, under certain conditions. The control of NO and NO_2 emissions is also important because of the role of both compounds in the atmospheric formation of O_3.

Historical data presented in Table 6.1-3, Nitrogen Dioxide Levels at El Centro – 9th Street, show NO_2 levels at the El Centro station for the years 2001 through 2004. This station is the closest monitoring location to the Project Site for NO_2 concentrations. For purposes of both state and federal air quality planning, the Salton Sea air basin is in attainment with regard to NO_2. During the last 4 years, there have been no violations of the CNAAQS 1-hour standard (0.25 ppm) at the El Centro station. The highest 1-hour concentration recorded was 0.096 ppm in 2002. The table also shows that there were no violations of the annual NAAQS (0.053 ppm) at this station during this period.

NO_2 data completeness for each year was 19.3 percent for 2001, 62 percent for 2002, 82 percent for 2003, and 78 percent for 2004. Data on NO_2 concentrations were not collected at this station in for 2000.

TABLE 6.1-3
NITROGEN DIOXIDE LEVELS AT EL CENTRO – 9TH STREET (ppm)

El Centro – 9th Street Station – Imperial County	2000	2001	2002	2003	2004
Maximum 1-Hour Average	NA	0.082	0.096	0.071	0.067
Maximum Annual Average	NA	0.019	0.011	0.012	0.013
Days Over State Standard (0.25 ppm, 1-hour)	NA	0	0	0	0

Sources: CARB ADAM Web site (www.arb.ca.gov/adam/welcome.html);
USEPA AIRS Web site (www.epa.gov/air/data/index.html)
NA = not applicable
ppm = parts per million

Carbon Monoxide (CO)

Carbon monoxide is a product of incomplete combustion, and is emitted principally from automobiles and other mobile sources of pollution, although it is also a product of combustion from stationary sources (both industrial and residential) burning fossil fuels. Peak CO levels

occur typically during winter months due to a combination of higher emission rates and stagnant weather conditions.

Table 6.1-4, Carbon Monoxide Levels at El Centro – 9th Street, shows the available data on maximum 1-hour and 8-hour average CO levels recorded at the El Centro station during the period from 2000 to 2004 (the closest station providing CO monitoring data). Carbon monoxide data collection at the El Centro station began in 2001. As indicated by this table, the maximum 1-hour average CO levels comply with the NAAQS and CNAAQS (30.0 ppm and 20.0 ppm, respectively) and the maximum 8-hour values comply with the NAAQS and CNAAQS of 9.0 ppm. However, the maximum values occurring at the El Centro monitoring stations have occasionally approached these standards rather closely in recent years. Thus, the use of the El Centro data to represent conditions at Niland is very conservative, since the latter location is much less densely populated and is close to almost no combustion emission sources. The maximum 1-hour and 8-hour CO concentrations since 2001 have been 16.0 ppm and 6.1 ppm, respectively, both in 2001.

Data completeness for CO concentrations at the El Centro station for each year was 87.9 percent for 2001, 94.7 percent for 2002, 68 percent for 2003, and 83 percent for 2004. CO concentration data were not collected at this site for 2000.

TABLE 6.1-4
CARBON MONOXIDE LEVELS AT EL CENTRO – 9TH STREET (ppm)

El Centro – 9th Street Station, Imperial County	2000	2001	2002	2003	2004
Maximum 1-Hour Average	NA	16.0	6.4	14.3	0.3
Maximum 8-Hour Average	NA	6.1	2.9	2.6	0.3
Days Over the 8-Hour California Standard (9 ppm)	NA	0	0	0	0
Days Over the 8-Hour Federal Standard (9 ppm)	NA	0	0	0	0

Sources: CARB ADAM Web site (www.arb.ca.gov/adam/welcome.html);
USEPA AIRS Web site (www.epa.gov/air/data/index.html)
NA = not applicable
ppm = parts per million

Sulfur Dioxide (SO_2)

SO_2 is produced by the combustion of any sulfur-containing fuel. It is also emitted by chemical plants that treat or refine sulfur or sulfur-containing chemicals. Natural gas contains nearly negligible sulfur, while fuel oils may contain much larger amounts. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of California, depending on local fuel characteristics, weather, and topography. The Salton Sea air basin is considered to be in attainment for SO_2 for purposes of state and federal air quality planning.

Background SO_2 data are provided in Table 6.1-5, Sulfur Dioxide Levels at Calexico-Ethel Street, for the Calexico – Ethel Street station which is the only monitoring station in Imperial County that collects SO_2 data. The maximum 1-hour average SO_2 levels presented in Table 6.1-5 show that the CNAAQS of 0.25 ppm has not been exceeded in the past 5 years; the maximum 1-hour value during this period was nearly an order of magnitude below the standard (0.026 ppm in 2000). The 3-hour federal secondary standard of 0.5 ppm has not been exceeded, and the maximum measured concentration was only 0.022 ppm in 2000.

SO_2 data completeness at Calexico-Ethel Street for each year was 86.5 percent for 2000, 89.9 percent for 2001, 92 percent for 2002, 95 percent for 2003, and 95 percent for 2004.

TABLE 6.1-5
SULFUR DIOXIDE LEVELS AT CALEXICO-ETHEL STREET (ppm)

Calexico – Ethel Street Station, Imperial County	2000	2001	2002	2003	2004
Highest 1-hour average	0.026	0.003	0.002	0.001	0.003
Highest 3-hour average	0.022	0.003	0.001	0.001	0.003
Highest 24-hour average	0.011	0.002	0.001	0.001	0.003
Annual Average	0.003	0.001	0.001	0.001	0.001
Days Over 1-hour State Standard (0.25 ppm)	0	0	0	0	0
Days Over 24-hour State Standard (0.04 ppm)	0	0	0	0	0
Days Over 3-hour Federal Standard (0.5 ppm)	0	0	0	0	0
Days Over 24-hour Federal Standard (0.14 ppm)	0	0	0	0	0
Days Over the Annual Federal Standard (0.03 ppm)	0	0	0	0	0

Sources: CARB ADAM Web site (www.arb.ca.gov/adam/welcome.html);
USEPA AIRS Web site (www.epa.gov/air/data/index.html)
ppm = parts per million

The SO_2 data in Table 6.1-5, Sulfur Dioxide Levels at Calexico-Ethel Street, show that neither the 24-hour CNAAQS of 0.04 ppm nor the 24-hour NAAQS of 0.14 ppm has been exceeded in the past 5 years. The highest recorded 24-hour average concentration was 0.011 ppm in 2000. The annual SO_2 monitoring data in the table demonstrate that the annual arithmetic mean concentrations have also been well below the NAAQS of 0.03 ppm for all years, with a maximum level of 0.003 ppm in 2000.

Particulate Matter (PM_{10})

Particulates in the air are caused by a combination of windblown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and nitrogen oxides. In 1984, CARB adopted standards for PM_{10}, and phased out the total suspended particulate (TSP) standards that had previously been in effect. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of respirable particulates related to human health effects. In 1987, USEPA also replaced national TSP standards with PM_{10} standards. For air quality planning purposes, the Salton Sea air basin is considered to be in nonattainment of both federal and state PM_{10} standards. However, the state demonstrated that Imperial County would have met the federal standard if not for emissions coming into the area from outside the United States.

Table 6.1-6, Particulate Matter (PM_{10}) Levels at Niland, shows the maximum PM_{10} levels recorded at the Niland monitoring station during the period from 2000 through 2004 and the arithmetic annual averages for the same period. (The arithmetic annual average is simply the arithmetic mean of the daily observations.) PM_{10} is monitored on both a state and federal level; California uses a gravimetric or beta attenuation method, while federal standards are based on an inertial separation and gravimetric analysis. This accounts for the slightly differing 24-hour concentrations listed in Table 6.1-6 that were recorded by means of the state and federal samplers. At the Niland station, the maximum 24-hour PM_{10} levels exceed the CNAAQS state

standard of 50 micrograms per cubic meter (µg/m^3) many times per year. The maximum daily concentration was 406 µg/m^3 (state samplers) in 2003. The maximum annual arithmetic mean concentration recorded at El Centro was 48 µg/m^3 in 2000, which is below the federal standard of 50 µg/m^3, but above the state standard of 30 µg/m^3. Because of the low population density and low level of industrial development in Imperial County, high dust levels recorded at the Niland station and other monitoring stations in the county are almost certainly correlated with high wind conditions, agricultural tillage, and burning. As note previously, transport of emissions across the border with Mexico has also been identified as an important contributing factor to the area's particulate air quality problems.

Particulate concentration data completeness at the Niland station for each year was 94 percent for 2000, 87 percent for 2001, 99 percent for 2002, 95 percent for 2003, and 82 percent for 2004.

TABLE 6.1-6
PARTICULATE MATTER (PM_{10}) LEVELS AT NILAND (µg/m^3)

Niland – English Road Station, Imperial County	2000	2001	2002	2003	2004
Maximum (federal testing samplers)	214.0	377.0	127.0	402.0	141.0
Maximum (state testing samplers)	214.0	370.0	128.0	406.0	138.0
Annual Arithmetic Mean	48.0	43.0	40.4	44	47.5
Estimated Number of Days Exceeding Federal Standard	2	1	0	3	0
Estimated Number of Days Exceeding California Standard	20	12	14	19	24

Sources: CARB ADAM Web site (www.arb.ca.gov/adam/welcome.html);
USEPA AIRS Web site (www.epa.gov/air/data/index.html)
µg/m^3 = micrograms per cubic meter
PM_{10} = particulate matter less than 10 micrometers in diameter

Fine Particulates ($PM_{2.5}$)

The $PM_{2.5}$ data in Table 6.1-7, Particulate Matter ($PM_{2.5}$) Levels at Brawley (the closest station providing PM_{10} monitoring data), show that the national 24-hour average NAAQS of 65 µg/m^3 has not been exceeded at the Brawley – Main Street station in the past 5 years. The 24-hour $PM_{2.5}$ background concentration was below the national standard of 65 µg/m^3. The maximum recorded 24-hour average value was 55.4 µg/m^3, measured at the Brawley monitoring station in 2000. The annual $PM_{2.5}$ data are also presented in the table. The maximum annual arithmetic mean recorded was 12.3 µg/m^3, which is below the national standard of 15 µg/m^3 but slightly above the California standard of 12 µg/m^3.

Data completeness for $PM_{2.5}$ measurements in each year at the Brawley station was 62.3 percent for 2000, 73 percent for 2001, 69.7 percent for 2002, 86 percent for 2003, and 81 percent for 2004.

TABLE 6.1-7
PARTICULATE MATTER ($PM_{2.5}$) LEVELS AT BRAWLEY (µg/m^3)

Brawley – Main Street Station, Imperial County	2000	2001	2002	2003	2004
Maximum	55.4	42.2	25.9	32.9	42.0
Annual Arithmetic Mean	12.3	11.1	10.2	9.1	9.1
Estimated Number of Days Exceeding Federal Standard	0	0	0	0	0

Sources: CARB ADAM Web site (www.arb.ca.gov/adam/welcome.html);
USEPA AIRS Web site (www.epa.gov/air/data/index.html)
µg/m^3 = micrograms per cubic meter $PM_{2.5}$ = particulate matter less than 2.5 emissions micrometers in diameter

Airborne Lead (Pb)

Lead (Pb) pollution has historically been emitted predominantly from the combustion of fuels. However, legislation in the early 1970s required gradual reduction of the lead content of gasoline. Coupled with the introduction of unleaded gasoline in 1975, lead levels have been dramatically reduced throughout the U.S., and violations of the ambient standards for this pollutant have been virtually eliminated.

Table 6.1-8, Lead Levels at Calexico – Ethel Street, shows the recorded 24-hour and quarterly lead concentration averages at the Calexico – Ethel Street station for the years 2000 through 2004. Both state and federal standards limit long-term average lead concentrations to 1.5 $\mu g/m^3$, although NAAQS pertains to a quarterly average, while CNAAQS applies to a 30-day average. The maximum recorded 24-hour level was 0.14 $\mu g/m^3$ during 2003. The maximum quarterly average at the Calexico – Ethel Street station was 0.02 $\mu g/m^3$ in both 2000 and 2001. Both maxima are far below the state and federal standards for lead.

TABLE 6.1-8
LEAD LEVELS AT CALEXICO – ETHEL STREET ($\mu g/m^3$)

Calexico – Ethel Street, Imperial County	2000	2001	2002	2003	2004
Maximum 24- hour Average	0.08	0.05	0.06	0.14	0.04
Maximum Quarterly Average	0.02	0.02	0.01	0.02	0.02

Sources: CARB ADAM Web site (www.arb.ca.gov/adam/welcome.html);
USEPA AIRS Web site (www.epa.gov/air/data/index.html)
$\mu g/m^3$ = micrograms per cubic meter

Particulate Sulfates

Particulate sulfates are the product of further oxidation of SO_2. Sulfate compounds consist of primary and secondary particles. Primary sulfate particles are directly emitted from open pit mines, dry lakebeds, and desert soils. Fuel combustion is another source of sulfates, both primary and secondary. Secondary sulfate particles are produced when oxides of sulfur (SO_X) emissions are transformed into particles through physical and chemical processes in the atmosphere. Particles can be transported long distances. The Salton Sea air basin is in attainment with the state standard for sulfates; there is no federal standard.

Other State-Designated Criteria Pollutants

Along with sulfates, California has designated hydrogen sulfide and visibility-reducing particles as criteria pollutants, in addition to the federal criteria pollutants. The Salton Sea air basin remains unclassified for both pollutants.

6.1.2 Environmental Consequences

This section evaluates the potential air quality impacts of the Project. Project impacts would be considered significant if the pollutant concentrations resulting from the Project, when combined with background concentrations, exceed an ambient air quality standard. Emissions estimates for all aspects of both construction and operation of the Project are presented. Dispersion model selection and the selection of model input data are also described (i.e., emissions scenarios and

release parameters, building wake effects, meteorological data, and receptor locations) and analysis results are presented.

6.1.2.1 Construction Emissions

The primary emission sources during construction will include exhaust from heavy construction equipment and vehicles and fugitive dust generated in areas disturbed by grading, excavating, and erection of facility structures. The construction schedule calls for the Project Site to be disturbed during various construction phases. Note that the existing Niland Substation south of the proposed power plant site has been previously developed and fenced off, and was not included in the area potentially disturbed by construction of the Project.

Construction equipment and vehicle exhaust emissions were estimated using equipment lists, fuel usage estimates and construction scheduling information provided by the project design engineering firm (see Appendix B, Air Quality Data, Attachment B, Supporting Information for Estimation of Project Construction Emissions). Equipment-specific emissions factors were used to estimate mass emissions for all criteria pollutants from diesel- and gasoline-fueled construction equipment (USEPA 2004; USEPA 1995a,b). For calculations of construction emissions the assumptions were made that the construction of the Project would occur over a 9-month period with an 8-hour workday and a 5-day workweek. The Project engineering contractor provided a list of equipment needed during each month of the construction effort. This list provided the basis for estimating pollutant emissions throughout the term of construction, and helped to identify the periods of probable maximum short-term emissions. An ultralow fuel sulfur content of 0.0015 percent by weight (15 ppm) was assumed for all diesel equipment operations.

Fugitive dust emissions resulting from onsite soil disturbances were estimated using USEPA emission factors for bulldozing and dirt-pushing, travel on unpaved roads and handling/storage of aggregate materials. A dust control efficiency of 90 percent was assumed to be achieved for these activities by frequent watering when required. In addition, a particulate emission factor of 1.2 ton/acre/month was used to estimate dust emissions due to earth-moving related to the installation of the pipelines to connect the site with water and natural gas sources to the north and east.

Emissions from on-road delivery truck and worker commute trips were estimated using emission factors developed by means of the EMFAC 2002 model, with inputs representing Imperial County. Construction workers were assumed to commute to the site from the El Centro area.

Detailed spreadsheets are provided in Appendix B, Air Quality Data, Attachment B, Supporting Information for Estimation of Project Construction Emissions, showing the calculation of emissions from all Project construction activities and equipment. Table 6.1-9, Daily Maximum Criteria Pollutant Construction Emissions, and Table 6.1-10, Total Project Construction Emissions of Criteria Pollutants, respectively, present the estimated maximum daily emissions and total emissions of air pollutants over the 9-month construction project.

TABLE 6.1-9
DAILY MAXIMUM CRITERIA POLLUTANT CONSTRUCTION EMISSIONS (lbs/day)

Activity	ROC	CO	NO_x	PM_{10}	SO_x
Onsite Combustion Emissions					
Construction – Diesel Equipment	7.13	36.46	77.82	4.24	0.10
Construction – Gasoline Equipment	0.87	18.07	0.47	0.03	0.02
Construction - Trucks	0.11	0.42	1.78	0.04	0.00
Construction Combustion Subtotal (lbs)	***8.11***	***54.95***	***80.07***	***4.31***	***0.12***
Onsite Fugitive Dust Emissions					
Vehicle Travel on Unpaved Road and Parking Lot	-	-	-	4.41	-
Grading /Bulldozing	-		-	5.45	-
Earth Loading/Storage	-	-	-	0.00	-
Subtotal of On-site Emissions (lbs)	***8.11***	***54.95***	***80.07***	***14.17***	***0.12***
Offsite On-Highway Emissions					
Passenger Vehicle - Combustion Emissions	9.12	76.29	8.50	0.30	0.01
Delivery Truck - Combustion Emissions	0.80	3.20	13.48	0.32	0.02
Passenger Vehicle - Paved Road Dust	-	-	-	54.56	-
Delivery Truck - Paved Road Dust	-	-	-	10.22	-
Subtotal of Off-Site Emissions (lbs)	***9.92***	***79.49***	***21.98***	***65.40***	***0.03***
Total Max. Daily Emissions	**18.03**	**134.44**	**102.05**	**79.57**	**0.15**

Notes:
- = not applicable
CO = carbon monoxide
lbs = pounds
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
ROC = reactive organic compounds
SO_x = sulfur oxide(s)

TABLE 6.1-10
TOTAL PROJECT CONSTRUCTION EMISSIONS OF CRITERIA POLLUTANTS

Activities	ROC	CO	NO_x	PM_{10}	SO_x
Onsite Combustion Emissions (lbs)					
Construction - Diesel	545	2,960	5,409	351	7
Construction - Gasoline	35	723	19	1	1
Construction - Trucks	3	11	45	1	0
Onsite Fugitive Dust Emissions (lbs)					
Vehicle Travel on Unpaved Road	-	-	-	684	-
Grading /Bulldozing	-	-	-	227	-
Earth Loading/Storage	-	-	-	0.1	-

TABLE 6.1-10
TOTAL PROJECT CONSTRUCTION EMISSIONS OF CRITERIA POLLUTANTS

Activities	ROC	CO	NO_x	PM_{10}	SO_x
Water Line Construction	-	-	-	384	-
Natural Gas Line		-	-	996	-
Subtotal of On-Site Emissions (lbs)	***583***	***3,694***	***5,473***	***2,644***	***7.6***
Offsite On-Highway Emissions (lbs)					
Passenger Vehicle – Combustion Emissions	2,462	20,597	2,296	82	4
Delivery Truck – Combustion Emissions	216	864	3,638	86	5
Passenger Vehicle – Paved Road Dust	-	-	-	9,821	-
Delivery Truck – Paved Road Dust	-	-	-	1,839	-
Subtotal of Off-site Emissions (lbs)	***2,678***	***21,461***	***5,934***	***11,827***	***9***
Total Project Emissions (lbs)	**3,261**	**25,155**	**11,407**	**14,471**	**16.6**
Total Project Emissions (tons)	**1.6**	**12.6**	**5.7**	**7.2**	**0.01**

Notes:
- = not applicable
CO = carbon monoxide
lbs = pounds
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
ROC = reactive organic compounds
SO_x = sulfur oxide(s)

6.1.2.2 Operational Emissions

The most important emission sources of the Project will be the two simple-cycle CTG burning natural gas. Annual operational emissions from each of the two Project natural gas turbines were estimated by summing the emissions corresponding to normal operating conditions, maintenance emissions controls, and turbine startup/shutdown conditions. Estimated annual emissions of air pollutants for each turbine have been calculated based on 2,980 hours of normal operation, up to 20 hours of maintenance (operation without SCR and CO catalyst), and up to 250 startup and shutdown events (for a total of 3,200 hours per unit)

The criteria pollutant emission rates provided by the turbine vendor for three load conditions (50 percent, 75 percent, and 100 percent) are presented in Table 6.1-11, Individual CTG Operating Load Scenarios and 1-Hour Operating Emission Rates. These three scenarios bound the expected normal operating range of these turbines at the Project facility.

The Project will also include one nominal 175 -horsepower (hp) emergency diesel fire water pump engine and one nominal 1500 hp natural gas-fired black-start engine. These two units will be tested for 30 minutes per week and 1 hour per month for emergency preparedness, respectively. IID will accept a condition prohibiting testing of both emergency units on the same day. There are no other operational sources of air pollutants at the Project. The Project will not require a cooling tower.

TABLE 6.1-11
INDIVIDUAL CTG OPERATING LOAD SCENARIOS AND 1-HOUR OPERATING EMISSION RATES

Load	Exhaust Flow (acfm)	Exit Velocity (m/s)	Exit Temp (°F)	NO_x Normal Ops (lbs/hr)	NO_x Maintenance Ops (lbs/hr)	CO Normal Ops (lbs/hr)	CO Maintenance Ops (lbs/hr)	SO_2 Normal Ops (lbs/hr)	SO_2 Maintenance Ops (lbs/hr)	ROC Normal Ops (lbs/hr)	ROC Maintenance Ops (lbs/hr)	PM_{10} Normal Ops (lbs/hr)	PM_{10} Maintenance Ops (lbs/hr)
100%	586,814	22.5	837	3.975	39.75	5.81	24.20	0.83	0.83	1.11	3.32	3.0	3.0
75%	498,645	19.1	871	3.139	31.39	4.59	19.11	0.66	0.66	0.87	2.62	3.0	3.0
50%	370,672	14.2	956	2.453	24.53	3.58	14.93	0.51	0.51	0.68	2.05	3.0	3.0

Note: Maintenance rates are uncontrolled emission rates.
ºF = degrees Fahrenheit
% = percent
acfm = actual cubic feet per minute
CO = carbon monoxide
CTG = combustion turbine generator
lbs/hr = pounds per hour
m/s = meters per second
NO_x = nitrogen oxide(s)
Ops = operations
PM_{10} = particulate matter less than 10 micrometers in diameter
ROC = reactive organic compounds
SO_2 = sulfur dioxide

The expected emissions and durations associated with individual turbine startup and shutdown events are summarized in Table 6.1-12, Criteria Pollutant Emissions for Each CTG During Startup and Shutdown. Based on vendor information, each turbine startup is expected to take 10 minutes, followed by a 30-minute warmup period, and each turbine shutdown will take 8 minutes to be completed. Because hours that include startup and shutdown events will have higher NO_x, CO and ROC emissions than the normal operating condition with functioning SCR and CO catalyst, they were incorporated into the worst-case short- and long-term emissions estimates for each turbine in the model simulations pertaining to these pollutants.

TABLE 6.1-12
CRITERIA POLLUTANT EMISSIONS FOR EACH CTG DURING STARTUP AND SHUTDOWN

Pollutant	Startup/Warmup 10 minutes/30 minutes		Shutdown 8 minutes
	Startup Total lbs per Event	Warmup Total lbs per Event	Total lbs per Event
NO_X	3.0	10.93	2.20
CO	5.60	7.50	3.70
ROC	1.10	1.11	0.60
SO_2	0.138	0.415	0.111
PM_{10}	0.67	1.50	0.53

Notes:
SO_2 emissions were estimated from the 0.83 lb/hr emission rate at full load over the indicated hour fractions for startup, warmup and shutdown.
CO = carbon monoxide
CTG = combustion turbine generator
lbs = pounds
NOx = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
ROC = reactive organic compounds
SO_2 = sulfur dioxide

Table 6.1-13, Criteria Pollutant Sources and Emission Totals for the Worst-Case Plant-Wide Emissions Scenarios Corresponding to all Averaging Times, shows the equipment operations and pollutant emissions used to develop the worst-case emissions scenarios for each averaging time and pollutant combination addressed in the ambient air quality standards. Some notes regarding the selection of these scenarios and the resulting emission calculations are provided below.

TABLE 6.1-13
CRITERIA POLLUTANT SOURCES AND EMISSION TOTALS FOR THE WORST-CASE PLANT-WIDE EMISSIONS SCENARIOS CORRESPONDING TO ALL AVERAGING TIMES

Averaging Time	Operating Equipment	Pollutant	SOURCES			
			Turbine No. 1	Turbine No. 2	Diesel Fire Pump	Black-start Engine
			Emissions in lbs – Entire Period			
1-hour	Both turbines operating in maintenance mode, black-start engine (1 hour) OR fire pump tested (½ hour) at normal operating load.	NO_x	39.75	39.75	0.74	1.60
		CO	24.20	24.20	0.08	7.99
		SO_2	0.83	0.83	0.03	0.01
3-hour	Both turbines operating in maintenance mode, black-start engine (1 hour) OR fire pump (½ hour) tested at normal operating load.	SO_2	2.49	2.49	0.03	0.01
8-hour	Both turbines operating in maintenance mode for 4 hours with two startups, one shutdown, and remaining time in normal operating mode and black-start engine (1 hour) OR fire pump (½ hour) tested at normal operating load.	CO	141.41	141.41	0.08	7.99
24-hour	Both turbines operating with four startups, three shutdowns, and remaining time in normal operating mode and black-start engine (1 hour) OR fire pump (½ hour) tested at normal operating mode.	PM_{10}	73.07	73.07	0.02	0.11
		SO_2	19.89	19.89	0.03	0.01
Annual	Both turbines operating with 250 startups, 250 shutdowns, 20 hours of maintenance and remaining time (2,980 hours) in normal operating mode and black-start engine (12 hours) AND fire pump (26 hours) tested at normal operating load.	NO_x	16,673	16,673	19.20	19.24
		PM_{10}	9,675	9,675	0.52	1.32
		SO_2	2,652.5	2,652.5	0.78	0.12

Notes:
CO = carbon monoxide
lbs = pounds
NOx = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
SO_2 = sulfur dioxide

SO_2 emission rates were calculated assuming that 100 percent conversion of the fuel sulfur to SO_2. The maximum natural gas turbine SO_2 emission rates for the 1-hour, 3-hour, 24-hour, and annual averaging periods were conservatively calculated assuming a natural gas fuel sulfur

concentration of 0.75 grains per 100 standard cubic feet of natural gas, the maximum allowed under the SCGC tariff. A diesel sulfur fuel content of 0.05 percent was used for the diesel fire water pump engine emission calculations.

Worst-case 1-hour and 3-hour NO_x and CO emission rates for the two turbines correspond to maintenance operations (i.e., operation without the benefit of SCR and CO catalyst emissions controls). Short-term turbine SO_2 emission rates are the same for normal operations and maintenance operations because SO_2 is solely a function of fuel consumption rate and is unaffected by the post-combustion controls. CO is the only criteria pollutant with an 8-hour average ambient air quality standard. The maximum 8-hour emission scenario for both turbines consists of two startups and one shutdown, as well as 4 hours of maintenance operation and the remainder of the period in normal operation.

The scenario selected to represent conservative but potential maximum 24-hour average emission rates for SO_2 and particulate matter assumes four startups and three shutdowns for both turbines with the remainder of the day in normal full-load operating mode.

Annual emissions of all pollutants were calculated for each turbine assuming 250 startups and 250 shutdown events in addition to 20 hours of maintenance operation. Estimated maximum annual emissions for the Project are presented in Table 6.1-14, Annual Emissions.

TABLE 6.1-14
ANNUAL EMISSIONS

Pollutant	Emissions (tons/year)[1,2]
SO_2	2.65
NO_x	16.67
ROC	4.07
PM_{10}[3]	9.68
CO	21.99
Lead	Negligible[4]

Notes:

1 Includes emissions from two turbines and 26 hours per year testing of the emergency diesel fire pump driver and 12 hours per year testing of the black-start engine.
2 Turbine missions based on 250 startups and shutdowns, 20 hours maintenance, and 2,980 hours of normal full-load operations for both turbines
3 PM_{10} emissions includes both filterable (front-half) and condensable (back-half) particulates.
4 Lead emissions are 'non-detect' from AP-42 for natural gas-fired combustion turbines and the black-start engine and the diesel fire pump will operate no more than 12 and 26 hours per year, respectively.

CO = carbon monoxide
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
ROC = reactive organic compounds
SO_2 = sulfur dioxide

Turbine Commissioning

The commissioning of the GE model LM6000 SPRINT PD natural gas turbines will entail several relatively short periods of operation prior and during installation and testing of the SCR and CO catalyst systems. During these test periods, emissions of NO_x and CO will be higher than the normal operating emissions scenarios previously discussed because these controls will be either partially or completely inoperative.

Turbine commissioning activities can be broken down into four separate test periods as described below. The first two tests occur prior to SCR system and oxidation catalyst installation, when the combustor is being tuned (mapping). For this testing phase, NO_x emissions will be higher because the NO_x emissions control system would not be functioning and because the combustor burners would not be tuned for optimum performance. CO emissions would also be higher because combustor performance would not be optimized and the CO emissions control system would not be functioning. The third test occurs when the combustor has been tuned but the SCR and oxidation catalyst installation is not complete, and other parts of the turbine operating system are being checked out. Because the control system installation would not be complete, NO_x and CO emissions would again be higher than for normal operations. However because the mapping activities are performed at low loads with consequently reduced mass flows, these emissions are enveloped by the calculated basis of full power in spec but uncontrolled emissions from the SCR. The final test occurs with the SCR and oxidation catalysts fully operational; however, the potential for elevated NO_x and CO emissions exists during parts of this test as well.

Commissioning activities and expected emissions are discussed in more detail below. At the conclusion of the commissioning period, operational emissions rates will be at the controlled rates discussed previously in this section. The required CEMS for NO_x and CO will be operable during the commissioning period to document actual emissions during this period.

The four commissioning tests are likely to include Full Speed No Load Tests (FSNL)**,** Minimum Load Tests, Full Speed, No Load Tests (SCR Not Operational), and Multiple Load Tests (SCR and Oxidation Catalyst Fully Operational). During the commissioning tests the worst-case NO_x and CO emission rates for each turbine is expected to be 39.75 lb/hour and 24.20 lb/hour, respectively. Actual test durations will vary, but total commissioning emissions for each turbine are not expected to exceed totals based on these worst-case hourly rates over 200 hours of testing for each turbine (i.e., 15,900 lbs of NO_x and 9,680 lbs of CO).

Appendix B, Air Quality Data, Attachment C, Supporting Information for Estimation of Project Operations Emissions, presents supporting technical information and calculation spreadsheets used to develop emissions data for the operational Project.

6.1.2.3 Air Dispersion Modeling

The purpose of the air dispersion modeling analysis is to demonstrate that criteria air pollutant emissions from the Project would not cause or contribute significantly to a violation of a state or national ambient air quality standard. Potential impacts of non-criteria pollutant emissions from the Project are evaluated in Section 6.8, Public Health and Safety. The criteria pollutant modeling addresses emissions from both construction activities and facility operations after construction. Impacts from construction activities include fugitive dust from grading and excavating disturbed areas and emissions associated with exhaust combustion products from diesel- and gasoline-fueled construction equipment. The impacts from operations are associated with natural gas combustion in the two turbines and the periodic black-start engine tests, as well as diesel fuel combustion during tests of the emergency fire pump engine. A fumigation modeling analysis was also performed to predict maximum ground-level concentrations from facility operations under specialized meteorological conditions that may produce short-term elevated ground-level pollutant concentrations.

Separate modeling analyses were performed for the construction and operational emissions associated with the Project because these activities would occur during different time periods. The air quality modeling methodology used for the Project was previously described in a modeling protocol submitted to CEC and ICAPCD (URS 2005). See Appendix B, Air Quality Data, Attachment D, Revised Air Quality Modeling Protocol, for a copy of the protocol. The modeling approaches used to assess various aspects of the Project's potential impacts to air quality are discussed below.

Model and Model Option Selections

The modeling was conducted using USEPA's Industrial Source Complex model (ISCST3) (Version 02035) for both construction and operational emissions (USEPA 1995a). The ISCST3 model is appropriate for this application because it has the ability to assess dispersion of emission plumes from multiple point, area or volume sources in flat, simple, and complex terrain and to utilize sequential hourly meteorological input data. The short-term version of the model was used for modeling concentrations of pollutants having short-term (i.e., 1-, 3-, 8-, and 24-hour) ambient standards. Modeling for pollutants governed by annual ambient air quality standards (i.e., NO_2, SO_2, and PM_{10}), modeling was conducted using ISCST3 with the PERIOD option to predict annual average impacts. The ISCST3 model was run with the following additional user input specifications:

- Final plume rise
- Stack-tip downwash
- Buoyancy-induced dispersion
- Calms processing
- Default wind profile exponents
- Default vertical potential temperature gradients
- Rural dispersion coefficients

Review of aerial photographs and U.S. Geological Survey (USGS) topographic maps, and site visits indicate that the area surrounding the Project is more than 90 percent rural; therefore, rural dispersion coefficients were used in the modeling analyses for this Project.

Building Wake Effects

The effect of building wakes (i.e., downwash) on the stack plumes was evaluated for the turbines, black-start engine, and emergency diesel fire water pump emissions (downwash is not applicable to area sources; i.e., construction emissions) in accordance with USEPA guidance (USEPA 1985). Direction-specific building data were generated for stacks below good engineering practice (GEP) stack height using USEPA's Building Profile Input Program – Prime (BPIP-Prime) (Version 98086; USEPA 1995b). Eight buildings and two water tanks were identified in the Project layout to be included in the downwash analysis, including the following:

- Raw water tank
- Demineralized water tank

- Turbine inlet 1
- Turbine inlet 2
- SCR/Catalyst housing 1
- SCR/Catalyst housing 2
- Chiller
- Administration building
- Fire water pump building
- Black-start engine building

The results of the BPIP-Prime analysis were included in the ISCST3 input files to enable downwash effects to be simulated. The ISCST3 model considers direction-specific downwash using both the Huber-Snyder and Schulman-Scire algorithms, as evaluated in the BPIP-Prime program. Input and output electronic files for the BPIP-Prime analysis are included with those from all other dispersion modeling analyses on the compact disks that are being submitted to accompany this application.

Meteorological Data

The modeling analyses for the Project used 5 years of hourly meteorological data collected at the nearest long-term meteorological station to the Project Site, the Imperial County Airport. The Imperial County Airport is located approximately 28 miles south-southwest of the Project site, and is the closest meteorological station to the Project site. Hourly meteorological data from 1991 through 1995 were selected as the 5 consecutive years with the highest data capture currently available for this station (greater than 90 percent) for all years.

The proximity and terrain similarities between the Project site and the Imperial County Airport station proved that the meteorological data are suitable for use in this air quality assessment of emission sources at the Niland site. Other meteorological stations were examined and determined not to be representative.

As discussed in Section 6.1.1, the topography of the Salton Sea - Imperial Valley area is a wide, relatively flat valley with terrain elevations below sea level. The Chocolate Mountains provide the terrain boundaries of the Valley to the north, east, and southeast and a number of mountain ranges bound the valley on the west side. The Imperial Valley is approximately 13 miles across at the northern edge of the Salton Sea and expands to more than 54 miles wide along the southern border with Mexico. The Project site is located in the northeastern portion of the Valley approximately 12 miles south and southwest of the Chocolate Mountains and 5 miles east of the Salton Sea. The Imperial County Airport is located in the southern central portion of the valley, approximately 19 miles south of the Salton Sea, and 28 miles south-southwest of the Project.

The other significant terrain features surrounding the Imperial County Airport and the Project are the Chocolate Mountains, approximately 30 miles northeast of the airport, and the Sand Hills, approximately 25 miles to the east of the airport. The highest point in the Chocolate Mountains is just below 3,000 feet. The highest point in the Sand Hills is just below 600 feet. The Santa

Rosa Mountains, Fish Creek Mountains, and Coyote Mountains form the western terrain boundary of the Imperial Valley. The highest points in these mountains are more then 4,800 feet, more than 2,300 feet, and more than 2,400 feet, respectively. These terrain features are located approximately 44 miles to the northwest, 24 miles to the west-northwest, and 24 miles to the west, respectively, of the airport. These terrain features are located approximately 33 miles to the west, 32 miles to the southwest, and 38 miles to the southwest, respectively, of the Project site.

The terrain immediately surrounding the Imperial County Airport and the Project site can be categorized as flat, or gradually sloping, desert and irrigated farm lands, with very little inhabited lands. Thus the near field land use is the same and the far field significant terrain features are similar. Additionally, there are no significant terrain features in the area between the Imperial County Airport and Niland that would cause differences in wind or temperature conditions in these areas. Therefore the 5 years of meteorological data selected from the Imperial County Airport were determined to be representative for the Project.

The next closest meteorological stations with appropriate data for air quality modeling are located in Palm Springs and Blythe. These two stations are automated surface observing systems (ASOS) as is the Imperial County airport site. The Palm Springs station is approximately 72 miles to the northwest at the Palm Springs Airport in the Coachella Valley. The topography at this ASOS location is somewhat similar to that in Imperial Valley in that the Coachella Valley is orientated in a northwest to southeast direction. However, the Coachella Valley is approximately 8 miles wide at the Palm Springs Airport. This narrow valley with high terrain on both sides tends to act as a funnel and increase the wind speeds in this area. In fact, the Palm Springs area has hundreds of windmills used to harness this somewhat constant wind energy and convert it to electrical power. The meteorological conditions at the Palm Springs airport are not similar to the conditions at the Project site, and thus are not appropriate for use in the permit modeling for the Project.

The Blythe station is located approximately 54 miles to the northeast of the Project site at the airport. The Blythe ASOS station is located approximately 2 miles west of the Colorado River at the southern edge of the Parker Valley. This Valley is oriented in a north-northeast to south-southwest direction. Terrain features in the Blythe vicinity include the Dome Rock Mountains to the east (across the Colorado River in Arizona), the Big Maria Mountains to the north, the McCoy Mountains to the west-northwest, and the Mule Mountains to the southwest. These significant terrain features would make the meteorological conditions at Blythe quite dissimilar to those at the Project site. Thus, the data recorded at the Blythe ASOS station would not be appropriate for use in the permit modeling for the Project.

The next closest NWS stations to the Project site are at the Daggett/Barstow Airport and San Diego Lindberg Airport. Both of these NWS stations are over 100 miles away (146 miles for Daggett, 106 miles for San Diego) and neither has climate or terrain similar to the conditions at the Project site. Therefore, these two sites do not have representative meteorological conditions acceptable for use in the permit modeling for the Project.

Data from the Imperial County Airport were recently used to support modeling for the proposed Salton Sea Unit 6 geothermal project application to CEC, which is located about 7 miles southwest of the Project site. The 5 years of meteorological data selected from the Imperial

County Airport are representative of conditions at the Project site, thus are appropriate for use in impact analysis modeling presented in this Application.

Receptor Locations

Receptors were placed at off-property locations to evaluate the impacts of the Project (see Figure 6.1-3, Near-field Model Receptor Grid, and Figure 6.1-4, Far-field Model Receptor Grid). Receptor spacing varies according to distance from the Project property boundary. To ensure that the location of highest impact was identified, the receptor spacing was closest at the Project property boundary and increased with distance from the boundary. Receptors were placed as far as 10 kilometers from the property boundary. The following receptor spacing was used in the modeling analysis:

- 25-meter spacing extending around the property boundary and out to 100 meters beyond the boundary
- 100-meter spacing between 100 meters and 1 kilometer of the property boundary
- 500-meter spacing between 1 kilometer and 5 kilometers of the property boundary
- 1,000-meter spacing between 5 kilometers and 10 kilometers of the property boundary

An additional set of model receptors was used to ensure that the highest maximum pollutant concentrations would be captured. Specifically, a grid of finely spaced receptors was placed around the locations of the predicted maximum concentration for each pollutant and each averaging time (except those occurring along the property line where the receptor spacing was already sufficiently dense). This fine grid used a receptor spacing of 25 meters and extended 1 km in each direction from the maximum concentrations on the original grid. The receptor spacing in this refined grid is shown in Figure 6.1-5, Refined Fine Receptor Grid.

The receptor locations were designated using Universal Transverse Mercator (UTM) coordinates (NAD 27). Receptor elevations were obtained from the USGS 7.5-minute electronic terrain data.

Construction Impacts Modeling

Section 6.1.2.1, Construction Emissions, describes the development of Project construction emissions estimates. Since construction equipment and operations will move continuously around the site, the corresponding emissions were represented as composite volume and area sources for purposes of the dispersion modeling, rather than as point sources at fixed locations. Based on projected equipment usage over the 9-month construction period, maximum equipment usage is expected to occur in the second month. Accordingly, maximum emissions estimates were developed for short-term averaging times (1 to 24 hours) using the equipment mix for this month. The equipment usage during this month was assumed to be concentrated within the portion of the Project Site where the power block and building areas will be constructed. These emissions were represented in the dispersion model simulations as four uniformly spaced volume sources. For the modeling to estimate annual impacts, all emissions occurring over the full 9-month construction project were assumed to be evenly spread over an area source covering the entire site.

The O_3 limiting method was used to estimate maximum 1-hour NO_2 impacts from the construction activities only. Measured ozone concentration data for the same hours

corresponding to the highest modeled NO_x concentrations were used to estimate the atmospheric conversion of emitted NO to NO_2.

Turbine Impact Screening Modeling

Screening modeling was performed to determine which turbine operating modes produced "worst-case" impacts; i.e., maximum ground-level concentrations for each pollutant and averaging time. The screening modeling used the ISCST3 (Version 02035) as described in the previous subsections. Building wake information and the receptor grid described above were also used. All 5 years of meteorological data were used in the screening analysis. Meteorological data from 1992 produced the highest ground-level concentrations identified in the screening modeling for the 3-hour averaging time, as did 1991 data for the 8-hour averaging time and 1995 data for the 24-hour and annual averaging time periods. Meteorological data from 1993 produced the highest results for the 1-hour averaging time period. Stack parameters corresponding to the 50 percent load turbine operating scenario produced the highest offsite pollutant concentrations.

The ISCST3 model simulated natural gas combustion emissions from two, 13-foot-diameter (3.96 m), 60-foot-tall (18.3 m) stacks. The stacks were modeled as point sources at their proposed locations. Table 6.1-15, Turbine Screening Model Results All Scenarios All Years, details the combustion turbine screening results for the different turbine operating loads and for the 5 years of meteorological input data. Stack parameters for the operating conditions shown in Table 6.1-11, Project Operating Load Scenarios and 1-Hour Operating Emission Rates, were supplied by the turbine vendor and are included in Appendix B, Air Quality Data, Attachment C, Supporting Information for Estimation of Project Operations Emissions.

TABLE 6.1-15
TURBINE SCREENING MODEL RESULTS ALL SCENARIOS ALL YEARS
($\mu g/m^3$ per grams per second of emissions)

Scenario		100% load	75% load	50% load
1991	1 hour	11.85	13.45	26.17
	3 hour	5.56	6.20	12.73
	8 hour	3.41	3.37	**6.37**
	24 hour	1.36	1.60	2.20
	Annual	0.138	0.156	0.222
1992	1 hour	14.97	17.63	21.89
	3 hour	4.99	5.96	**12.75**
	8 hour	2.14	2.68	4.78
	24 hour	1.22	1.32	2.78
	Annual	0.160	0.185	0.288
1993	**1 hour**	20.95	23.53	**27.74**
	3 hour	6.98	7.84	12.48
	8 hour	2.62	3.28	5.91
	24 hour	0.87	1.16	2.25
	Annual	0.169	0.196	0.322

TABLE 6.1-15
TURBINE SCREENING MODEL RESULTS ALL SCENARIOS ALL YEARS
($\mu g/m^3$ per grams per second of emissions)

Scenario		100% load	75% load	50% load
1994	1 hour	15.57	18.23	23.19
	3 hour	6.14	8.46	12.49
	8 hour	3.54	3.41	5.27
	24 hour	1.67	1.76	2.95
	Annual	0.182	0.189	0.297
1995	1 hour	12.42	14.90	21.95
	3 hour	4.83	7.31	12.45
	8 hour	2.75	3.54	6.23
	24 hour	1.44	1.80	**3.14**
	Annual	0.182	0.206	**0.336**

Notes:
% = percent

The screening modeling results shown in Table 6.1-15, Turbine Screening Model Results All Scenarios All Years, were used to identify the turbine stack parameters that led to the highest predicted ground-level concentration per pound of pollutant emitted for each averaging time. The resulting worst-case turbine operating conditions are summarized in Table 6.1-16, Natural Gas Turbine Stack Parameters Corresponding to Maximum Predicted Ground Level Pollutant Concentrations.

TABLE 6.1-16
NATURAL GAS TURBINE STACK PARAMETERS CORRESPONDING TO MAXIMUM PREDICTED GROUND LEVEL POLLUTANT CONCENTRATIONS

Pollutant	Averaging Time	Operating Condition
NO_2	1 hour	50 percent load, year 1993
	Annual	50 percent load, year 1995
CO	1 hour	50 percent load, year 1993
	8 hour	50 percent load, year 1991
SO_2	1 hour	50 percent load, year 1993
	3 hour	50 percent load, year 1992
	24 hour	50 percent load, year 1995
	Annual	50 percent load, year 1995
PM_{10}	24 hour	50 percent load, year 1995
	Annual	50 percent load, year 1995

Notes:
CO = carbon monoxide
NO_2 = nitrogen dioxide
PM_{10} = particulate matter less than 10 micrometers in diameter
SO_2 = sulfur dioxide

In all subsequent modeling analyses, emissions from the two natural gas turbines were modeled using the stack parameters of the worst-case operating scenarios discussed above. Specifically, stack parameters corresponding to the 50 percent load operating condition were used to represent emissions from both turbines in the refined modeling analyses presented in the following subsections. However, pollutant emission rates corresponding to 100 percent load conditions were assumed in the modeling analyses.

Refined Modeling

A refined modeling analysis was performed to estimate offsite criteria pollutant impacts from operational emissions of the Project. The modeling was performed as described in the previous sections and used 5 years of meteorological data. The turbines were modeled at the worst-case emissions and operating conditions determined in the screening analysis. Emissions from the black-start engine and the emergency diesel fire water pump were also included in this analysis. Emission rates and modeling parameters used for the black-start engine and the diesel fire water pump are included in Appendix B, Air Quality Data, Attachment C, Supporting Information for Estimation of Project Operations Emissions.

Fumigation Analysis

Fumigation may occur when a plume that was originally emitted into a stable layer of air is mixed rapidly to ground-level when unstable air below the plume reaches plume height. Fumigation can cause relatively high ground-level concentrations for some elevated point sources. Fumigation can occur during the breakup of the nocturnal radiation inversion by solar warming of the ground surface (inversion breakup fumigation), or by the transport of pollutants from a stable marine environment to an unstable inland environment (shoreline fumigation).

A fumigation analysis was performed using the USEPA model SCREEN3 (Version 96043). The SCREEN3 model was used to calculate concentrations from inversion breakup fumigation; no shoreline fumigation was performed for the Project Site. A unit emission rate was used (1 gram per second) in the fumigation modeling to represent the plant emissions and the model results were given in terms of predicted maximum concentrations that were then scaled to reflect plant emissions for each pollutant. Inversion breakup fumigation concentrations were calculated for hourly, 3-hour, 8-hour, and 24-hour averaging times using USEPA-approved conversion factors. These multiple-hour model predictions are very conservative since inversion breakup fumigation is a transitory condition that would most likely affect a given plume for only a few minutes at a time. Input and output electronic files for the fumigation modeling analysis are included in the modeling CDs submitted with this application.

6.1.2.4 Modeling Results - Compliance with Ambient Air Quality Standards

Air dispersion modeling was performed according to the methodology described in Section 6.1.2.3, Air Dispersion Modeling, to evaluate the maximum increase in ground-level pollutant concentrations resulting from the Project emissions, and to compare the maximum predicted impacts, including background pollutant levels, with applicable short-term and long-term NAAQS. The impacts from construction activities and plant operations were analyzed separately because they will occur during different time periods. The same 5-year record of hourly meteorological data described in Section 6.1.2.3, Air Dispersion Modeling, was used in

the modeling to evaluate both construction and operational impacts. In each case, the ISCST3 model predicted the increases in criteria pollutant concentrations at all receptor concentrations due to Project emissions only. Next, the maximum incremental increases for each pollutant and averaging time were added to the maximum background concentrations, based on air quality data collected at the most representative monitoring stations during the last 5 years (i.e., 2000 through 2004). These background concentrations are presented and discussed in Section 6.1.1.2, Existing Air Quality. The resulting total pollutant concentrations were then compared with the most stringent CNAAQS or NAAQS. Modeled criteria pollutant impacts for the construction and operational phases of the Project are summarized in Table 6.1-17, ISCST3 Modeling Results.

TABLE 6.1-17
ISCST3 MODELING RESULTS

Pollutant	Averaging Period	Maximum Modeled Impact ($\mu g/m^3$)	PSD Significant Impact Level[1] ($\mu g/m^3$)	Background[2] ($\mu g/m^3$)	Maximum Total Predicted Concentration ($\mu g/m^3$)	Most Stringent NAAQS ($\mu g/m^3$)	UTM Coordinates East (m)	UTM Coordinates North (m)
Construction Impacts								
CO	1 hour	1,604	NA	18,400	20,004	23,000	640,070	3,679,076
	8 hour	886	NA	8,131	9,017	10,000	640,050	3,679,016
NO_2	1 hour[3]	260	NA	180.5	440.5	470	640,070	3,679,096
	Annual	5.4	NA	35.9	41.4	100	640,030	3,679,096
PM_{10}	24 hour	44	NA	406	450[4]	50	640,026	3,679,027
	Annual	7	NA	48.0	56[4]	20	639,772	3,679,211
SO_2	1 hour	4	NA	68.1	72.1	655	640,070	3,679,076
	3 hour	3	NA	57.2	60.2	1,300	640,050	3,679,056
	24 hour	0.4	NA	28.8	31.5	105	640,026	3,679,027
	Annual	0.01	NA	8.0	8.05	80	640,030	3,679,096
Routine Plant Operation Impacts								
CO	1 hour[5]	198.5	2,000	18,400	18,598.5	23,000	639,887	3,678,948
	8 hour[6]	17.4	500	8,131	8,148.4	10,000	641,400	3,679,500
NO_2	1 hour[5]	141.9	NA	180.5	322.4	470	640,001	3,679,191
	Annual[7]	0.1	1	35.9	36.0	100	641,975	3,679,800
PM_{10}	24 hour[8]	1.30	5	406	407.3[4]	50	641,525	3,679,525
	Annual[7]	0.05	1	48.0	48.05[4]	20	642,575	3,680,100
$PM_{2.5}$	24 hour[8,9]	1.30	NA	55.4	56.7	65	641,525	3,679,525
	Annual[7,9]	0.05	NA	12.3	12.35	12	642,575	3,680,100

TABLE 6.1-17
ISCST3 MODELING RESULTS

Pollutant	Averaging Period	Maximum Modeled Impact ($\mu g/m^3$)	PSD Significant Impact Level[1] ($\mu g/m^3$)	Background[2] ($\mu g/m^3$)	Maximum Total Predicted Concentration ($\mu g/m^3$)	Most Stringent NAAQS ($\mu g/m^3$)	UTM Coordinates East (m)	UTM Coordinates North (m)
SO_2	1 hour[5]	4.15	NA	68.1	72.25	655	639,929	3,679,165
	3 hour[10]	1.39	25	57.2	58.59	1,300	641,525	3,679,525
	24 hour[8]	0.36	5	28.8	29.16	105	641,525	3,679,525
	Annual[7]	0.01	1	8.0	8.01	80	642,575	3,680,100

Notes:
1 Source: 40 CFR 52.21.
2 Background represents the maximum values measured at El Centro 9th St. (CO, NO_2), Niland (PM_{10}), Brawley ($PM_{2.5}$), or Calexico (SO_2) monitoring stations, 2001-2004, depending on pollutant.
3 Results for 1-hour NO_2 during construction used OLM to estimate NO_2 impacts.
4 PM_{10} background levels exceed ambient standards.
5 Maximum hourly impact based on two turbines under maintenance conditions and either one-half hour of diesel fire pump operation or 1 hour of black-start engine, whichever was higher by pollutant.
6 Maximum 8-hour impact based on two turbines for 4 hours under maintenance conditions, two startups and one shutdown, with remainder of period at normal operating condition and either one-half hour of diesel fire pump operation or 1 hour of black-start engine, whichever was higher by pollutant.
7 Annual impact based on 2,980 hours of normal operation, 20 maintenance hours, 250 startups, and 250 shutdowns for both turbines and 12 hours of black-start engine operation and 26 hours of diesel fire pump engine operation.
8 Maximum 24-hour impact based on four startups, three shutdowns and remainder of period at normal operations for both turbines and 1 hour of black-start engine or one-half hour of fire pump engine, whichever was higher by pollutant.
9 All operational Project equipment PM_{10} emissions assumed to be $PM_{2.5}$.
10 Maximum 3-hour impact based on 3 hours of maintenance operation for both turbines and one-half hour of fire pump engine.

$\mu g/m^3$ = micrograms per cubic meter
CO = carbon monoxide
ISCST3 = USEPA's Industrial Source Complex model, Version 02035
m = meters
NA = Not applicable
NAAQS = Most stringent ambient air quality standard for the averaging period
NO_2 = nitrogen dioxide
OLM = ozone limiting method
PM_{10} = particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter. All PM emissions during operation assumed to be $PM_{2.5}$
PSD = Prevention of Significant Deterioration
SO_2 = sulfur dioxide
UTM = Universal Transverse Mercator

Construction Impacts

For the construction phase of the Project, the predicted maximum short-term and long-term impacts for all pollutants except annual PM_{10} were predicted to occur on or within 140 feet east of the east plant fence line. This result reflects the relatively low source release heights that characterize construction equipment exhaust and dust-generating activities. Specifically, the predicted maximum 1-hour CO and SO_2 concentrations are predicted to occur on IID property 43 meters (140 feet) east of the eastern plant fence line and 35 meters (115 feet) north of the proposed office building/warehouse area. The predicted maximum 1-hour NO_2 concentration is predicted to occur on IID property 43 meters (164 feet) east of the eastern plant fence line and 55 meters (180 feet) north of the proposed office building/warehouse area. The predicted maximum 3-hour SO_2 concentration is predicted to occur on IID property 25 meters (82 feet)

east of the eastern plant fence line and 15 meters (50 feet) north of the proposed office building/warehouse area.

The predicted maximum 8-hour impact for CO occurs 25 meters (82 feet) east to the eastern plant fence line. The predicted maximum 24-hour impacts for all pollutants occur on the eastern plant fence line, adjacent to the proposed office building/ warehouse area of the Project. The predicted maximum annual impacts for NO_2, PM_{10} and SO_2 also occur on the east plant fence line, 55 meters (180 feet) north of the office building/warehouse area. The predicted maximum annual impact for PM_{10} occurs just north of the construction parking area.

As reflected in the construction modeling results in Table 6.1-17, ISCST3 Modeling Results, very high PM_{10} background concentrations have been recorded occasionally at the Niland station during recent years. Because of the land use characteristics of this area, it is highly probable that these conditions result either from high wind episodes or from periods with heavy agricultural tillage or burning. The contribution of the proposed construction activities would be minor by comparison with these sources, but would have the potential to temporarily contribute to existing violations of the state and federal PM_{10} standards if construction occurs during a period of high background concentrations.

The highest hourly NO_x concentrations predicted by the ISCST3 model for each year of meteorological data plus the maximum background NO_2 value recorded at the El Centro 9th Street monitoring station in the last 4 years (Table 6.1-3, Nitrogen Dioxide Levels at El Centro – 9th Street) were above the California 1-hour NO_2 standard. However, this result corresponds to an assumption of full conversion of NO to NO_2 in the Niland emission plumes, which would not occur in the sparsely settled area around Niland. Therefore, the Ozone Limiting Method (OLM) was applied to the NO_2 modeling results to provide a more reasonable characterization of plume chemistry in this area. Hourly ozone data recorded from the El Centro 9th Street monitoring station by ICAPCD for the same 5 years as the input meteorological data were used to identify the ozone concentrations for the same hours in each year for which the maximum 1-hour NO_x concentrations due to construction activities were predicted to occur.

When the OLM calculation is completed, the peak predicted NO_2 concentration due to project construction emissions, plus the highest recorded NO_2 background level at the El Centro monitoring station from 2001 through 2004, resulted in total concentrations that are below the 1-hour California standard. Considering the conservatism of using ozone data and the highest recorded background NO_2 data from the much more populated and industrialized city of El Centro, it is highly probable that actual maximum hourly NO_2 concentration will be much lower than the model-predicted value of 440.5 ug/m^3.

Normal Plant Operations

As described previously, the emissions used in the model simulations for the Project operations were selected to ensure that the maximum potential impacts would be addressed for each pollutant and averaging time corresponding to an ambient air quality standard.

As shown in the lower part of Table 6.1-17, ISCST3 Modeling Results, maximum modeled concentrations due to the operational plant are below the federal Prevention of Significant Deterioration (PSD) significant impact levels (SILs) for all criteria pollutants. Although the Project emissions will be well below the levels that trigger PSD review (see Section 6.1.5.2,

Prevention of Significant Deterioration Requirements), these SILs are often used as a measure of the potential impacts of proposed new sources in California. Table 6.1-17 also shows that the modeled impacts due to normal operations of the Project would not cause a violation of any NAAQS and would not significantly contribute to the existing violations of the federal and state PM_{10} standards. In addition, as described later, all of the Project's operational emissions of nonattainment pollutants and their precursors will be offset to result in a net air quality benefit.

Predicted maximum pollutant concentrations resulting from operations of the Project are spread over a larger area than the corresponding values for the construction phase. Figure 6.1-6, Locations of Maximum Predicted Ground-Level Pollutant Concentrations for the Operational Project, shows the locations of the maximum predicted operational impacts for all pollutants and averaging times.

Potential worst-case fumigation impacts were modeled as described in Section 6.1.2.3, Air Dispersion Modeling, and, as shown in Table 6.1-18, Project Operations Fumigation Impact Summary, the resulting incremental concentration predictions are all below the maximum operational impacts shown in the lower part of Table 6.1-17, ISCST3 Modeling Results.

TABLE 6.1-18
PROJECT OPERATIONS FUMIGATION IMPACT SUMMARY[1]

Pollutant	Source	Inversion Impact ($\mu g/m^3$)[2]	Distance to Max. Impact (m)
NO_2 1 hour[3]	Maintenance Turbine	14.87	14,233
NO_2 1 hour[2]	Normal Operation Turbine	1.487	14,233
	TOTAL NO_2 1 hour	16.36	
CO[4] 1 hour	Turbines	9.05	14,233
CO[5] 8 hour	Turbines	6.61	14,233
PM_{10}[6] 24 hour	Turbines	1.14	14,233
SO_2[7] 1 hour	Turbines	0.31	14,233
SO_2 3 hour	Turbines	0.31	14,233
SO_2 24 hour	Turbines	0.31	14,233

Notes:
1 1-hour SCREEN3 results multiplied by 0.9 to convert to 3 hour; 0.7 to convert to 8 hour; 24-hour inversion impacts were converted using a factor of 0.4.
2 NO_2 modeled with all turbines in normal operation, 0.501 g/s and stack parameters of 50 percent load.
3 Maintenance turbine NO_2 emission rate of 5.01 g/s and 50 percent load.
4 CO modeled with all turbines in maintenance, 3.05 g/s and stack parameters of 50 percent load.
5 CO modeled with 4 hours in maintenance, 2 startups, 1 shutdown and 1 remaining time in normal operations, 2.23 g/s and stack parameters of 50 percent load.
6 Turbines modeled with 0.38 g/s PM_{10} each.
7 SO_2 modeled with all turbines at 0.10 g/s emissions and 50 percent load.
$\mu g/m^3$ = micrograms per cubic meter
CO = carbon monoxide
M = meters
NO_2 = nitrogen dioxide
PM_{10} = particulate matter less than or equal to 10 microns in diameter
SO_2 = sulfur dioxide

Impacts for Nonattainment Pollutants and their Precursors

The emission offset program described in the ICAPCD Rules and Regulations was developed to facilitate net air quality improvement when new sources locate within the district. Project impacts on the concentration levels of nonattainment pollutants (PM_{10} and O_3) and their

precursors (NO_x and ROC) will be fully mitigated by emission offsets. The offsets have not been accounted for in the modeled impacts noted above. Thus, the impacts indicated in the foregoing presentation of model results for the Project are significantly overestimated.

Turbine Commissioning

Each natural gas turbine of the Project could be operated for up to 200 hours for purposes of commissioning the generating equipment. Emissions for these operations are assumed to be well represented by the same emissions data used for the maintenance hours during the operational phase of the Project; i.e., the rates corresponding to operation at 100 percent capacity without the operable SCR or CO catalyst.

Impacts from the emissions of NO_x and CO during turbine commissioning may be evaluated by simply using the maximum predicted incremental concentrations developed for the screening modeling results reported in Table 6.1-15, Turbine Screening Model Results All Scenarios All Years. The maximum 1-hour screening impact shown in this table is 27.74 µg/m^3 per gram per second of emissions (year 1993). Therefore, the maximum 1-hour emission rates of 39.75 lbs/hr (5.01 g/s) of NO_x and 24.2 lbs/hr (3.05 g/s) of CO during uncontrolled operations (as discussed in 6.1.2.2) would produce maximum hourly concentrations during commissioning of 139 µg/m^3 and 84.6 µg/m^3, respectively.

The maximum 8-hour screening impact shown in Table 6.1-15, Turbine Screening Model Results All Scenarios All Years, is 6.37 µg/m^3 per gram per second of emissions (year 1991). Therefore, the maximum 8-hour CO emission rate of 24.2 lbs/hr (3.05 g/s) would produce a maximum ground-level concentration during commissioning of 19.4 µg/m^3.

Table 6.1-19, Project Commissioning Modeling Results, shows that when these incremental commissioning impacts are added to applicable background concentrations and compared to the most stringent state or national ambient standards, no violations of the ambient air quality standards for these pollutants are predicted to occur during turbine commissioning.

TABLE 6.1-19
PROJECT COMMISSIONING MODELING RESULTS

Pollutant	Averaging Period	Maximum Modeled Impact (µg/m^3)	Background[1] (µg/m^3)	Total Predicted Concentration (µg/m^3)	Most Stringent Standard (µg/m^3)
Commissioning Impacts					
CO	1 hour	84.6	18,400	18,485	23,000
	8 hour	19.4	8,131	7,908	10,000
NO_2	1 hour	139	180.5	320	470

Notes:
[1] Background represents the maximum value measured at El Centro 9th St. monitoring stations, 2001-2004.
NAAQS = Most stringent ambient air quality standard for the averaging period.
µg/m^3 = micrograms per cubic meter
CO = carbon monoxide
NO_2 = nitrogen dioxide

6.1.2.5 Effects on Visibility from Plumes

Combustion sources emit water vapor that sometimes may condense in the atmosphere to form visible plumes. Cooling towers are another source of visible plumes often associated with power plants. The Project will be designed to have neither of these potential impacts to visibility.

There will be no cooling tower at the Project facility. The combustion turbines will have stack exit temperatures between 837ºF and 956ºF and stack moisture content ranging from 4.3 percent to 4.5 percent. These combinations of stack exit temperatures and moisture have been shown in visible plume modeling analyses conducted by CEC staff to be too high and too dry to produce visible plumes that will impact visibility. Specifically, CEC staff modeled three GE LM 6000 turbines proposed for the San Francisco Electric Reliability Project (SFERP) (04-AFC-1). The results of the CEC staff analysis reported in the Preliminary Staff Assessment for SFERP (CEC 2005) conclude that little or no visible plume will occur from the turbine exhaust over the operating range of that plant.

Comparing the Project exhaust parameters to SFERP exhaust parameters (SFERP AFC Table 8.1A-1) shows that the Project exhaust will have a higher temperature and contain less moisture than SFERP exhaust for every comparable operating scenario (e.g., full load operation at an ambient temperature of 50°F). Therefore, the Project will have even less potential to generate visible plumes than SFERP.

6.1.2.6 Class I Area Impacts

ICAPCD Rule 207D.6.f requires an applicant for an Authority to Construct permit to address the potential of the Project to impact air quality, including visibility, of any Class I federal area. Dispersion, deposition and visibility impairment modeling was performed using the CALPUFF model (version 5.7 - 030402) to assess impacts at the closest Class I Area, Joshua Tree National Park (JTNP), the nearest point of which is about 52 kilometers northwest of Niland. Even though the Project will not be a PSD facility, CALPUFF modeling procedures incorporating PSD requirements for evaluation of air quality related values were used for this analysis.

The CALPUFF model was run to assess both long-range deposition of nitrogen and sulfur compounds, and potential visibility impairment in JTNP. The source parameters used in the CALPUFF modeling incorporated the same stack parameters as the ISCST3 simulations described previously. The maximum 24-hour NO_x, SO_2, and PM_{10} 24-hour plant emissions rates were incorporated in the visibility analysis and the annual equipment emission rates were used to evaluate sulfur and nitrogen deposition. The black-start engine and the fire pump emission sources were also included along with the turbine emission in the modeling analysis for evaluation of annual impacts.

Three receptor rings for JTNP were used: one ring at the closest distance to the park (52.3 km), one ring at the farthest point from the park (130.4 km), and one ring at the point of highest elevation in the park (111 km). The actual elevation at the closest point to the park (609 m) was used for all receptors along the closest ring. The actual elevation at the farthest point (1,268 m) was used for all receptors on the farthest ring. The ring through the point of highest terrain in the park used that elevation (1,772 m) for all receptors on that ring, per *Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long Range Impacts (*December 1998*).*

Hourly ozone data were used in the CALPUFF analysis. The recorded data were from the ICAPCD El Centro 9th Street monitoring station from 1991 to 1995. The background ammonia concentration used in the modeling came from the *Federal Land Managers Air Quality Related Values Workgroup, (FLAG) Phase I Report* (December 2000*)*. The value for arid land (1 part per billion [ppb]) was used for this parameter.

The CALPUFF modeling used an extended meteorological data set for the same 5 years (1991 to 1995) of Imperial County Airport surface data and Tucson upper air data as the ISCST3 modeling. The Imperial County Airport is located approximately 28 miles south of the Project. The additional parameters include hourly solar radiation used in the chemical transformation calculations and relative humidity used in the visibility calculations. The land use around the Project Site was represented as irrigated agricultural land.

The CALPUFF model output was processed by the CALPOST post-processor program to assess the following impacts of the Project at JTNP: dry deposition, wet deposition, and visibility impairment. The dry deposition calculations incorporate model-predicted contributions of the Project's predicted impacts on SO_2, sulfate ion (SO_4), nitrate ion (NO_3), nitric acid (HNO_3), and NO_x. The wet deposition calculations incorporate the same pollutants except for NO_x. The visibility analysis included the impacts of the Project on nitrates, sulfates, and particulate levels. The JTNP seasonal hygroscopic and non-hygroscopic extinction coefficients were also obtained from the FLAG guidance document.

The deposition fluxes for all nitrogen compounds (dry and wet) were summed, as were all sulfur compound deposition fluxes. The totals were converted from grams per square meter per second to kilograms per hectare per year of elemental nitrogen or sulfur in the CALPOST (post-processing program ver. 5.4 – 030402) using the recommended conversion factors presented in Section 3.3 of the IWAQM guidance document. The deposition results are presented in Table 6.1-20, CALPUFF Visibility and Deposition Results, along with the predicted impacts on visibility. All CALPUFF electronic input and output files are included in a CD accompanying this application.

TABLE 6.1-20
CALPUFF VISIBILITY AND DEPOSITION RESULTS

Maximum Extinction Change		**Allowable Limit**	
1.93 %		5%	
Maximum Annual Predicted Nitrogen Deposition	**Allowable Limit**	**Maximum Annual Predicted Sulfur Deposition**	**Allowable Limit**
0.0037 kg/ha/yr	0.005 kg/ha/yr	0.00112 kg/ha/yr	0.005 kg/ha/yr

Notes:
% = percent
kg/ha/yr = kilograms per hectare per year

CALPUFF deposition modeling results indicate that the sulfur deposition rate due to emissions of the Project will be 0.0037 kilograms per hectare per year (kg/ha/yr), which is below the Deposition Analysis Threshold (DAT) for individual sources established by the National Park Service of 0.005 kg/ha/yr. CALPUFF nitrogen deposition rate is predicted to be 0.00112 kg/ha/yr, a value which is well below the DAT of 0.005 kg/ha/yr. The deposition impacts from the Project in JTNP are thus predicted to be below a level of significance.

The modeling results in Table 6.1-20, CALPUFF Visibility and Deposition Results, indicate that there will zero days during the year for which the Project will cause an incremental change in light extinction equal to or greater than 5 percent from the background level (the significance threshold for a single source). The highest predicted change in light extinction is 1.93 percent. Based on these results, the Project will not cause significant visibility degradation at JTNP.

6.1.3 Cumulative Impacts

CEC requirements specify that an analysis is required to determine the cumulative impacts of the Project and other projects within a 6-mile radius that have received construction permits but are not yet operational or that are in the permitting process or can be expected to do so in the near future. Based on review of ICAPCD and CDC information, there are no such projects planned within 6 miles from the proposed site of the Project. The Salton Sea Unit 6 geothermal project has been permitted but not yet constructed at a location about 7 miles southwest from the Project Site.

6.1.4 Mitigation Measures

ICAPCD Rule 207 requires that Project operational emissions above 137 lbs/day of NO_x, ROC, CO, PM_{10} and SO_x be offset by emission reductions from other sources.

Based on emissions data presented in Section 6.1.2.2, Operational Emissions, maximum daily emissions of NO_x, CO and PM_{10} from the Project could exceed the 137 lbs/day trigger for the worst-case operating scenario. Per Rule 207.C.2.g, offsets for CO are not required if it can be demonstrated by modeling that the Project's emissions will not cause or contribute to violations of the ambient standards for that pollutant. Modeling results presented in Section 6.1.2.3, Air Dispersion Modeling, provide this demonstration for CO. However, emissions offsets will be required for the Project's NO_x and PM_{10} emissions. In addition, IID will commit to offsetting Project emissions of VOC as a measure to mitigate the effect of these emissions on the ozone nonattainment condition in Imperial County.

Based on this reasoning, IID is proposing to provide offsets sufficient to cover the Project's entire annual emissions of NO_x, ROC and PM_{10} because of the nonattainment status of Imperial County for both PM_{10} and O_3. ERCs already banked by IID with ICAPCD are shown in Table 6.1-21, IID Credits Currently in the ICAPCD ERC Bank. IID will surrender appropriate banked ERCs in the amounts of 16.7 tons of NO_x, 4.17 tons of ROC, and 9.68 tons of PM_{10}, as shown in Table 6.1-22, Proposed Offset Package for the Project.

TABLE 6.1-21
IID CREDITS CURRENTLY IN THE ICAPCD ERC BANK (tons)

	NO_x	ROC	PM_{10}	SO_2
Credits banked by IID for reductions at combustion sources	77.47	1.28	9.27	52.08
Banked credits purchased from El Toro Export			15.4[1]	
Total ERCs Held by IID	**77.47**	**1.28**	**24.67**	**52.08**

Notes:
[1] Credits generated from dust control cartridges installed in hay bale compression facility.
ERC = emission reduction credit
ICAPCD = Imperial County Air Pollution Control District
IID = Imperial Irrigation District
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
ROC = reactive organic compounds
SO_2 = sulfur dioxide

TABLE 6.1-22
PROPOSED OFFSET PACKAGE FOR THE PROJECT

Parameter	Tons/Year		
	NO_x	ROC	PM_{10}
Project Emissions	16.70	4.17	9.68
Required Credits Based on 1.2 to 1 Ratio	20.04	5.0	11.62
Proposed Offsets	20.04	5.00	11.62
Source(s) of Credits – Banked Credits (Same Pollutant)	20.04 tons of banked NO_x ERCs	1.28 tons of banked ROC ERCs	9.27 tons of approved banked combustion PM_{10} credits 2.35 tons provided in the form of 4.70 tons of El Toro Export PM_{10} credits (based on an assumed at 2:1 ratio)
Source of Credits – Proposed Inter-pollutant Trade	NA	3.72 tons provided in the form of 7.44 tons of banked NO_x credits, based on an inter-pollutant ratio of 2:1	NA

Notes:
ERCs = emission reduction credits
NA = not applicable
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
ROC = reactive organic compounds

Note that only ERCs that have already been banked with ICAPCD are proposed as offsets for this Project. Copies of the banked ERC certificates are included in Appendix B, Air Quality Data, Attachment E, Certificates for Banked Emission Reduction Credit to Offset Project Emissions. An inter-pollutant ratio of 2:1 has been applied for the use of banked NO_x credits to offset a portion of the Project's small ROC emissions. ICAPCD has agreed in writing (see Appendix B, Air Quality Data, Attachment F, Letter from Imperial County Air Pollution Control District Regarding Approval of Emission Reduction Package) that a 2:1 ratio for NO_x to ROC will be adequate. This value has been assumed in compiling Table 6.1-22, Proposed Offset Package for the Project. The District has also agreed that an offset ratio of 2 to 1 is appropriate for the use of credits purchased from El Toro Export which resulted from implementation of fugitive dust control technology in a hay bale compression facility. This additional level of offsets is offered to address concerns regarding the use of fugitive dust control measures for offsetting combustion source emissions.

All ERCs used to offset emissions for the Project will be from emission reductions at sources located within 50 miles of the Project Site. Thus, per ICAPCD Rule 207C.3, the applicable offset ratio will be 1.2 to 1 (in addition to the factors described above for interpollutant trades), and the Project offset requirements have been estimated on this basis. However, it is noted that CEC has recently required only a 1 to 1 ratio in cases where the emissions offset threshold of the local air district is not exceeded, which is the case for the Niland ROC emissions which are below the 137 lbs/day threshold. Thus, the offset requirements for this pollutant may be overstated by 20 percent in this analysis.

6.1.5 Laws, Ordinances, Regulations, and Standards (LORS)

The applicable LORS related to the potential air quality impacts from the Project are described below. These LORS are administered (either independently or cooperatively) by USEPA Region IX, CEC, CARB, and ICAPCD.

6.1.5.1 Ambient Air Quality Standards

USEPA, in response to the federal Clean Air Act (CAA) of 1970, established NAAQS in 40 Code of Federal Regulations (CFR) 50. The NAAQS include both primary and secondary standards for six "criteria" pollutants. These criteria pollutants are O_3, CO, NO_2, SO_2, PM_{10}, and Pb. Primary standards were established to protect human health, and secondary standards were designed to protect property and natural ecosystems from the effects of air pollution.

The 1990 Clean Air Act Amendments (CAAA) established attainment deadlines for all designated areas that were not in attainment with the NAAQS. In addition to the NAAQS described above, a new federal standard for $PM_{2.5}$ and a revised O_3 standard were promulgated in July 1997. In 1988, as part of the California Clean Air Act, the State of California adopted the CNAAQS that are in some cases more stringent than the NAAQS. The CNAAQS and NAAQS are summarized in Table 6.1-23, Relevant National and California National Ambient Air Quality Standards.

TABLE 6.1-23
RELEVANT NATIONAL AND CALIFORNIA NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California NAAQS[1,2]	NAAQS[3,2] Primary	NAAQS[3,2] Secondary
O_3	8 hour[4]	0.07 ppm (137 μg/m^3)	0.08 ppm (157 μg/m^3)	Same as primary standard
	1 hour	0.09 ppm (180 μg/m^3)	See footnote "4"	
CO	8 hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	
	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
NO_2[5]	Annual (arithmetic mean)		0.053 ppm (100 μg/m^3)	Same as primary standard
	1 hour	0.25 ppm (470 μg/m^3)		
SO_2	Annual (arithmetic mean)		0.03 ppm (80 μg/m^3)	
	24 hour	0.04 ppm (105 μg/m^3)	0.14 ppm (365 μg/m^3)	
	3 hour			0.05 ppm (1,300 μg/m^3)
	1 hour	0.25 ppm (655 μg/m^3)		
Respirable Particulate Matter (PM_{10})[6]	Annual (arithmetic mean)	20 μg/m^3	50 μg/m^3	Same as primary standard
	24 hour	50 μg/m^3	150 μg/m^3	
Fine Particulate Matter ($PM_{2.5}$)[6,7]	Annual (arithmetic mean)	12 μg/m^3	15 μg/m^3	Same as primary standard
	24 hour		65 μg/m^3	
Sulfates	24 hour	25 μg/m^3		

TABLE 6.1-23
RELEVANT NATIONAL AND CALIFORNIA NATIONAL AMBIENT AIR QUALITY STANDARDS

Visibility Reducing Particles	1 observation	See footnote "8"	No federal standard	No federal standard

Notes:
[1] Title 17, California Code of Regulations, CNAAQS for O_3, (as volatile organic compounds), CO, SO_2 (1-hour), NO_2, and particulate matter (PM_{10}), are values that are not to be exceeded. The visibility standard is not to be equaled or exceeded.
[2] Concentrations are expressed first in units in which they were promulgated. Equivalent units are given in parentheses and based on a reference temperature of 25° C and a reference pressure of 760 mm of mercury. All measurements of air quality area to be corrected to a reference temperature of 25° C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of natural gas.
[3] 40 CFR 50. NAAQS, other than those for ozone and based on annual averages, are not to be exceeded more than once a year. The 80-hour ozone standard is based on a 3-year average of the fourth-highest daily maximum.
[4] New federal 8-hour ozone and fine particulate matter ($PM_{2.5}$) standards were promulgated by USEPA on July 18, 1997. The federal 1-hour ozone standard was revoked by USEPA on June 15, 2005. California 8-hour standard is expected to be officially implemented in early 2006.
[5] NO_2 is the compound regulated as a criteria pollutant; however, emissions are usually based on the sum of all oxides of nitrogen (NO_x).
[6] CARB established new standards for PM_{10} and $PM_{2.5}$ in June 2002.
[7] Annual federal standard is 3-year average. The 24-hour federal standard is 3-year average of 98th percentile.
[8] In sufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70 percent. "Prevailing visibility" is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

$\mu g/m^3$ = micrograms per cubic meter
CO = carbon monoxide
mg/m^3 = milligrams per cubic meter
NAAQS = National Ambient Air Quality Standard
NO_2 = nitrogen dioxide
O_3 = ozone
PM_{10} = particulate matter less than 10 micrometers in diameter
$PM_{2.5}$ = particulate matter less than 2.5 emissions micrometers in diameter
ppm = parts per million
SO_2 = sulfur dioxide

USEPA, CARB, and the local air pollution control districts determine the air quality attainment status of designated areas by comparing local ambient air quality measurements from the state or local ambient air monitoring stations with the National and California NAAQS. Those areas that meet ambient air quality standards are classified as "attainment" areas; areas that do not meet the standards are classified as "nonattainment" areas. Areas that have insufficient air quality data may be identified as unclassifiable areas. These attainment designations are determined on a pollutant-by-pollutant basis. Imperial County has been designated as a federal and state nonattainment area for O_3 and PM_{10}. The District's status for all other criteria pollutants is considered to be attainment. Table 6.1-24, Federal and State Attainment Status for Imperial County, presents the county's attainment status with respect to both the national and California ambient air quality standards.

TABLE 6.1-24
FEDERAL AND STATE ATTAINMENT STATUS FOR IMPERIAL COUNTY

Pollutant	Federal Attainment Status	State Attainment Status
Ozone	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM_{10}	Nonattainment	Nonattainment
$PM_{2.5}$	Attainment	Unclassified
Lead	Attainment	Unclassified

Notes:
CO = carbon monoxide
NO_2 = nitrogen dioxide
PM_{10} = particulate matter less than 10 micrometers in diameter
$PM_{2.5}$ = particulate matter less than 2.5 emissions micrometers in diameter
SO_2 = sulfur dioxide

As mentioned above, both USEPA and CARB are involved with air quality management in Imperial County, along with ICAPCD. The area of responsibility for each of these agencies is described below.

USEPA has ultimate responsibility for ensuring, pursuant to the CAAA, that all areas of the United States meet, or are making progress toward meeting, NAAQS. The state of California falls under the jurisdiction of USEPA Region IX, which is headquartered in San Francisco. USEPA requires that all states submit State Implementation Plans (SIPs) for nonattainment areas that describe how NAAQS will be achieved and maintained. USEPA has delegated this attainment responsibility to the CARB.

The CARB, in turn, has delegated attainment responsibility to regional or local air quality management districts (or air pollution control districts), such as ICAPCD. CARB is responsible for attainment of the CNAAQS, implementation of nearly all phases of California's motor vehicle emissions program, and oversight of the operations and programs of the regional air districts.

Each air district is responsible for establishing and implementing rules and control measures to achieve air quality attainment within its district boundaries. The air district also prepares an air quality management plan (AQMP) that includes an inventory of all emission sources within the district (both man-made and natural), a projection of future emissions growth, an evaluation of current air quality trends, and any rules or control measures needed to attain the NAAQS. This AQMP is submitted to CARB, which then compiles AQMPs from all air districts within the state into the SIP. The responsibility of the air districts is to maintain an effective permitting system for existing, new, and modified stationary sources, to monitor local air quality trends, and to adopt and enforce such rules and regulations as may be necessary to achieve the NAAQS.

6.1.5.2 Prevention of Significant Deterioration (PSD) Requirements

In addition to the ambient air quality standards described above, the federal PSD program has been established to protect deterioration of air quality in those areas that already meet national

ambient air quality standards. Specifically, the PSD program specifies allowable concentration increases for attainment pollutants due to new emission sources. These increases allow economic growth while preserving the existing air quality, protecting public health and welfare, and protecting Class I areas (selected national parks and wilderness areas). The PSD regulations require major stationary sources to undergo a preconstruction review that includes an analysis and implementation of BACT, a PSD increment consumption analysis, an ambient air quality impact analysis, and analysis of air quality related values. The PSD regulations specify annual emission increase thresholds, which trigger PSD review. These trigger levels are shown in Table 6.1-25, PSD Threshold Triggers, along with the projected annual emissions for the Project. None of the PSD emissions thresholds are equaled or exceeded by the plant. Therefore, PSD regulations do not apply to the Project.

TABLE 6.1-25
PSD THRESHOLD TRIGGERS

Pollutant	Significant Thresholds (tpy)	Project Emissions Increase (tpy)	PSD Triggered by Project?
SO_2	100	2.65	No
NO_x	100	16.70	No
VOC	100	4.17	No
PM_{10}	100	9.68	No
CO	100	22.04	No
Pb	0.6	(negligible)	No

Project emissions include all emissions from natural gas turbines, black-start engine, and emergency diesel fire pump driver.
Notes:
CO = carbon monoxide
NO_x = nitrogen oxide(s)
Pb = lead
PM_{10} = particulate matter less than 10 micrometers in diameter
PSD= prevention of significant deterioration
SO_2 = sulfur dioxide
tpy = tons per year
VOC = volatile organic compound

6.1.5.3 Acid Rain Program Requirements

Title IV of the CAAA applies to sources of air pollutants that contribute to acid rain formation, including sources of SO_2 and NO_x emissions. The ICAPCD has received delegation from USEPA for Title IV implementation under its Title V Operating Permit program in Regulation IX. The Acid Rain Program provisions of Part 72, Chapter I, Title 40 of the Code of Federal Regulations (40 CFR Part 72), with the exception of Sections 72.41 through 72.43, 72.60 through 72.69, 72.74, and 72.91 through 72.93, are incorporated in Rule 901 as part of the Rules and Regulations of ICAPCD. Allowances of SO_2 emissions are set aside in 40 CFR 73. Affected sources are required to obtain SO_2 allowances, monitor their emissions, and obtain SO_2 allowances when a new source is permitted. Sources such as the Project that use pipeline-quality natural gas as the exclusive fuel are exempt from many of the acid rain program requirements. However, IID will be required to estimate SO_2 and CO_2 emissions from the Project and monitor NO_x emissions with a certified CEMS, and thus must submit an acid rain permit application within 12 months after commencement of plant operations.

6.1.5.4 New Source Performance Standards

New Source Performance Standards (NSPS) have been established by USEPA to limit air pollutant emissions from certain types of new and modified stationary sources. NSPS regulations are contained in 40 CFR 60 and cover many different industrial source categories. Stationary natural gas turbines are regulated under Subpart GG. The enforcement of NSPS has been delegated to ICAPCD, and NSPS regulations are incorporated by reference into the District's Regulation 10. In general, local emission limitation rules or BACT requirements in California are far more restrictive than NSPS requirements. For example, the controlled NO_x emissions from the Project's stationary natural gas turbines will be less than or equal to 2.5 ppmvd at 15 percent O_2, significantly below the NSPS limit.

NSPS fuel requirements for SO_2 will be satisfied by the use of natural gas, and emissions and fuel monitoring that will be performed to meet the requirements of BACT will comply with NSPS, acid rain, and other regulatory requirements.

USEPA has recently proposed Subpart KKKK, a new performance standard which, if promulgated, would apply to the Project's stationary natural gas turbines in lieu of Subpart GG and would impose lower limits on NO_x and SO_2. However, the controlled NO_x emission rate from the Project's stationary natural gas turbines of less than 0.086 lb of NO_x per MW-hour will be well below the proposed Subpart KKKK requirement of 0.39 lb of NO_x per MW-hour. The projected SO_2 emissions from the Niland stationary natural gas turbines are less than 0.03 lb of SO_2 per MW-hour, which is substantially less than the proposed Subpart KKKK requirement of 0.58 lb of SO_2 per MW-hour.

6.1.5.5 Federally Mandated Operating Permits

Title V of CAA requires USEPA to develop a federal operating permit program that is implemented under 40 CFR 70. This program is administered by ICAPCD under Regulation IX, Rule 900. Each major source, Phase II acid rain facility, and other source types designated by USEPA must obtain a Part 70 permit. Permits must contain emission estimates based on potential-to-emit, identification of all emissions sources and controls, a compliance plan, and a statement indicating each source's compliance status. The permits must also incorporate all applicable federal requirements. The Project would not produce annual emissions high enough to be a major facility and thus would not be required to obtain a Title V Operating Permit.

6.1.5.6 Power Plant Siting Requirements

Under the Warren-Alquist Act, CEC has been charged with assessing the environmental impacts of each new power plant over 50 MW and considering the implementation of feasible mitigation measures to prevent potential impacts. California Environmental Quality Act (CEQA) Guidelines (Title 14, California Administrative Code, Section 15002(a)(3)) state that the basic purpose of CEQA is to "prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible."

CEC's siting regulations require the evaluation of the Project's compliance with all federal, state, and local air quality rules, regulations, standards, guidelines, and ordinances that govern the construction and operation of the project. A project must demonstrate that project emissions will

be appropriately mitigated to ensure that the impacts from the project are insignificant and will not jeopardize attainment and maintenance of the NAAQS. Cumulative impacts, impacts due to pollutant interaction, and impacts from noncriteria pollutants must also be considered.

6.1.5.7 Air Toxics "Hot Spots" Program

As required by the California Health & Safety Code Section 4430, all facilities with criteria air pollutant emissions in excess of 10 tons per year are required to submit air toxic "Hot Spots" emissions information. This requirement is applicable only after the start of operation. Section 6.8, Public Health and Safety, indicates that there will be insignificant air toxics impacts from the Project.

6.1.5.8 Determination of Compliance, Authority to Construct, and Permit to Operate

Under Regulation II, Rule 201, ICAPCD administers the air quality regulatory program for the construction, alteration, replacement, and operation of new power plants. As part of the SPPE process, the Project will be required to obtain a preconstruction DOC from ICAPCD. Regulation II, Rule 201 incorporates other ICAPCD rules that pertain to sources that may emit air contaminants through the issuance of air permits (i.e., ATC and Permit to Operate [PTO]). This permitting process allows ICAPCD to adequately review new and modified air pollution sources to ensure compliance with all applicable prohibitory rules and to ensure that appropriate emission controls are used. Projects that are reviewed under CEC's SPPE process must obtain an ATC from the local air district (in this case, ICAPCD) prior to construction of the new power plant. ATC remains in effect until the PTO application is granted, denied, or canceled. Once the Project commences operations and demonstrates compliance with ATC, ICAPCD will issue a PTO. PTO specifies conditions that the air plant must meet to comply with all applicable air quality rules, regulations, and standards.

6.1.5.9 New Source Review Requirements

ICAPCD's NSR rule (Regulation II, Rule 207) establishes the criteria for siting new and modified emission sources and this rule is applicable to the Project. ICAPCD has been delegated authority for NSR rule development and enforcement according to the terms of Rule 207. There are three basic requirements within the NSR rules. First, BACT must be applied to any new source with potential emissions above specified threshold quantities. Second, all potential emission increases of nonattainment pollutants or precursors from the proposed source above specified thresholds must be offset by real, quantifiable, surplus, permanent, and enforceable emission decreases in the form of ERCs. Third, an ambient air quality impact assessment must be conducted to confirm that the Project does not cause or contribute to a violation of a national or California NAAQS or jeopardize public health. In addition, Rule 207D.6.f requires that ATC must address the potential to impact air quality (including visibility) in any Class 1 federal area.

6.1.5.10 Imperial County Air Pollution Control District Requirements

Local districts have principal responsibility for developing plans for meeting NAAQS and CAAQS; developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards; implementing permit programs

established for the construction, modification, and operation of sources of air pollution; enforcing air pollution statutes, regulations and prohibitory rules governing non-vehicular sources; and developing programs to reduce emissions from indirect sources. The following paragraphs outline ICAPCD rules and regulations that apply to the Project.

Rule 109, Source Sampling – Outlines facility design requirements for source sampling from any facility emitting pollutants for which emission limits have been established. IID will construct the facility to meet and comply with ICAPCD requirements of Rule 109.

Rule 111, Equipment Breakdown – This rule details the notification and corrective action requirements necessary in an equipment breakdown situation. As operator of the Project, IID will comply with these requirements.

Rule 201, Permits Required – An Authority to Construct and Permit to Operate will be required for the Project. IID will submit the required application materials for these permits to ICAPCD.

Rule 207, New and Modified Stationary Source Review – This rule outlines the emission standards, the offset requirements and conditions, the required demonstrations that the new source or modification will not cause or contribute to violations of the ambient air quality standards, procedures for power plants under the CEC process, methods for calculating project emissions, and required air quality analysis procedures. Compliance with the specific provisions of this rule is discussed below.

207.C.1 BACT. An applicant must apply BACT to any new or modified emissions unit that has a potential to emit 25 lbs per day or more of any nonattainment pollutant or its precursors. For emergency standby equipment, only those emissions that occur during routine operation for equipment maintenance purposes are required to be considered for the purpose of determining whether BACT is required. In addition, a new emission unit with a potential to emit exceeding the following levels must also apply BACT (see Table 6.1-26, BACT Threshold Triggers for New Emission Units).

TABLE 6.1-26
BACT THRESHOLD TRIGGERS FOR NEW EMISSION UNITS

Pollutant	lbs/Day
CO (CO attainment areas only)	550
Pb	3.3
Asbestos	0.04
Beryllium	0.0022
Mercury	0.55
Vinyl Chloride	5.5
Fluorides	16
Sulfuric Acid Mist	38
Hydrogen Sulfide	55
Total Reduced Sulfur Compounds	55

Notes:
BACT = best available control technology
CO = carbon monoxide
Pb = lead
lbs = pounds

Federal requirements pertaining to control of pollutants subject to PSD review (i.e., attainment pollutants) were promulgated by USEPA in 40 CFR 42.21 (j). This regulation defines BACT as emission limits "based on the maximum degree of reduction for each pollutant." BACT determinations are made on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs. Federal requirements pertaining to control of nonattainment pollutants, or lowest achievable emission rate (LAER), were promulgated by USEPA under 40 CFR 51.165 (a). This regulation defines LAER as the emissions limit based on either (1) the most stringent emission rate contained in a SIP, unless the [source] demonstrates the rate is not achievable, or (2) the most stringent emissions limitation that is achieved in practice. The federal LAER does not consider the cost impacts of control.

For any emissions unit, BACT for a new emission unit or modification is the more stringent of:

1. The most effective emission control device, emission limit, or technique which has been achieved in practice for such class or category of source unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such limitations are not achievable
2. Any other alternative emission control device, emission control technique, basic equipment, fuel, or process determined to be technologically feasible and cost-effective by the Air Pollution Control Officer.
3. Under no circumstances shall BACT be determined to be less stringent than the emission control required by any applicable provision of laws or regulations of the district, state and federal government, or the most stringent emissions limitation which is contained in the implementation plan of any state, unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such limitations are not technologically achievable. In no event shall the application of BACT result in the emissions of any pollutant which exceeds the emissions allowed by any applicable New Source Performance Standard (40 CFR, part 60) or National Emission Standard for Hazardous Air Pollutants (40 CFR, part 61)."

The majority of pollutant emissions from the Project will be from the natural gas turbines, which will be fired exclusively on natural gas and be equipped with dry low NO_x combustors and SCR for the control of NO_x emissions and an oxidation catalyst for control of CO emissions. Aqueous ammonia at a concentration not to exceed 20 percent in water will be used as the reagent for the SCR control system. The BACT levels for the Project turbines are shown in Table 6.1-27, Summary of BACT.

TABLE 6.1-27
SUMMARY OF BACT

Pollutant	Control Technology	Concentration ppm @ 15 percent O_2 dry
NO_x	Dry low emissions combustors and SCR with ammonia injection	2.5[1]
CO	Catalytic oxidation	6[1]
ROC	Catalytic oxidation	2[1]
SO_x	Pipeline quality natural gas	NA, Pipeline quality natural gas
PM_{10}	Pipeline quality natural gas	NA, Pipeline quality natural gas

TABLE 6.1-27
SUMMARY OF BACT

Pollutant	Control Technology	Concentration ppm @ 15 percent O_2 dry
Ammonia Slip		5[1]

Notes:
[1] 3-hour averaging period
BACT = best available control technology
CO = carbon monoxide
lbs/hr = pounds per hour
NA = not applicable
NO_x = nitrogen oxide(s)
O_2 = oxygen
PM_{10} = particulate matter less than 10 micrometers in diameter
ppm = parts per million
ROC = reactive organic compounds
SCR = selective catalytic reduction
SO_x = sulfur oxide(s)

Testing of the two planned emergency equipment units, a diesel fire water pump engine, and a natural gas-fired black-start engine will be conducted periodically to confirm the equipment's operability. Neither unit will be run long enough for these tests to result in daily emissions of 25 lbs of any nonattainment pollutant or precursor. Thus, BACT will not be required under Rule 207 for the fire water pump engine or the black-start engine.

Appendix B, Air Quality Data, Attachment G, BACT Assessment, provides a formal BACT evaluation for the Project.

207.C.2 Offsets. Rule 207C.2 requires that offsets be provided for a new or modified stationary source with a daily potential to emit equal to or exceeding the following levels shown in Table 6.1-28, Offset Requirement Thresholds:

TABLE 6.1-28
OFFSET REQUIREMENT THRESHOLDS

Pollutant	lb/Day
ROC	137
NO_x	137
SO_x	137
PM_{10}	137
CO (See Section C.2.g.)	137

Notes:
CO = carbon monoxide
lb = pounds
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
ROC = reactive organic compound
SO_x = sulfur oxide(s)

As described in Section 6.1.2.2, Operational Emissions, maximum daily emissions of all criteria pollutants from the Project could exceed the 137 lbs/day trigger for NO_x, CO, and PM_{10} for the worst-case operating scenario. ERCs required for compliance with Rule 207.C.2 have already been banked by IID with ICAPCD. The offset package that will be used to offset Project

emissions is shown in Section 6.1.4, Mitigation Measures, and the certificates of ownership for these ERCs are provided in Appendix B, Air Quality Data, Attachment E, Certificates for Banked Emission Reduction Credit to Offset Project Emissions.

207.D.9 Power Plants. This section shall apply to all power plants proposed to be constructed in the Air Pollution Control District and for which a Notice of Intention (NOI) or Application for Certification (AFC) has been accepted by CEC. It describes the actions to be taken by ICAPCD to provide information to CEC and CARB to ensure that the Project will conform to the District's rules and regulations. After the application has been submitted to CEC and other responsible agencies, including ICAPCD, the Air Pollution Control Officer is required to conduct a determination of compliance review. This determination shall consist of a review identical to that which would be performed if an application for an Authority to Construct had been received for the power plant. If the information contained in the application for the certification does not meet the requirements of this regulation, then the Air Pollution Control Officer shall, within 20 calendar days of receipt of the application for certification, so inform the California Energy Commission, and the application for certification shall be considered incomplete and returned to the applicant for resubmittal.

Although not expressly covered in Rule 207.D.9, in the case of an application for SPPE, the CEC license does not functionally serve as the Authority to Construct, as is the case with an AFC project. Instead, after determining that the Project can be built without causing any significant adverse impacts, CEC turns permitting of the small power plant over to ICAPCD, which proceeds with the Authority to Construct and Permit to Operate processes, as with any new source.

207.F Ambient Air Quality Standards. In no case may emissions from a new or modified emission unit, cause or make worse the violation of an Ambient Air Quality Standard. The Air Pollution Control Officer may require an applicant to use an air quality model to estimate the effects of a new or modified emissions unit. Air quality models used for this purpose must be consistent with the requirements contained in the most recent edition of USEPA Guidelines on Air Quality Models, OAQPS 1.2-080 (November 2005), unless the Air Pollution Control Officer finds that such model is inappropriate for use. After making such a finding, the Air Pollution Control Officer may designate an alternate model only after allowing for public comment and only with the concurrence of the California Air Resources Board and the Environmental Protection Agency. All modeling costs associated with the siting of a new or modified emissions unit shall be borne by the applicant.

As described in Section 6.1.2.4, Modeling Results – Compliance with Ambient Air Quality Standards, an air quality modeling analysis has been conducted to demonstrate that the Project will not cause or make worse the violation of any air quality standard.

Rule 209, Implementation Plans – This rule allows that an Authority to Construct for a new stationary source or modification, subject to Rule 207, may be granted only if all APCD regulations contained in SIP are being carried out in accordance with that plan.

Rule 216, Construction of Major Stationary Sources that Emit Hazardous Air Pollutants – This rule requires all owners and operators of stationary sources that emit hazardous air pollutants (HAPs) to install best available control technology for toxic best available control technology (TBACT) to any constructed or reconstructed major source. All TBACT determinations shall be controlled to a level that the Air Pollution Control Officer has determined

to be, at a minimum, no less stringent than new source maximum achievable control technology (MACT) as required by the federal CAA.

Rule 301/302, Permit Fees – This rule and the fee schedules in rule 302 establish the filing and permit review fees for specific types of new sources, as well as annual renewal fees and penalty fees for existing sources.

Rule 309, Air Toxics "Hot Spots" Information and Assessment – Requires annual fees for facilities subject to the AB2588 Program (see Section 6.1.5.7, Air Toxics "Hot Spots" Program).

Rule 400, Fuel Burning Equipment—Oxides of Nitrogen –This rule limits the emission levels of oxides of nitrogen from any source to no more than 140 lbs per hour of nitrogen oxides, calculated as NO_2. The Project's maximum NO_x emissions will be well below this level.

Rule 401, Opacity of Emissions – This rule applies to the opacity of discharges from any single source. Emissions from the sources of the Project will be below threshold opacity levels described in this rule.

Rule 403, General Limitations on the Discharge of Air Contaminants – This rule applies to the discharge of air contaminants, combustion contaminants, and particulate matter into the atmosphere. The relevant limit for the Project is expressed in Rule 403.B.4, which states that combustion contaminants (meaning particulate matter) from new or existing stationary electrical utility generating units, excepting emergency standby generators, in concentrations at the point of discharge of 0.01 grains per dry standard cubic foot of natural gas, calculated to 3 percent O_2 for boilers, and 15 percent O_2 for natural gas turbines. The proposed Niland natural gas turbines will easily comply with this requirement with a PM_{10} emission rate of approximately 0.0015 grains per dry standard foot of exhaust gas.

Rule 407, Nuisances – This rule states that there shall be no discharge of such quantities of any pollutant or material which could cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property.

Rule 900, Procedures for Issuing Permits to Operate for Sources Subject to Title V of the Federal Clean Air Act Amendments of 1990 – Describes requirements for affected facilities to obtain federal operating permits pursuant to 40 CFR Part 70.

Rule 901, Acid Deposition Control – Describes requirements for power generation facilities subject to the Acid Rain Permits program pursuant to 40 CFR Part 75.

Table 6.1-29, Applicable LORS, summarizes the LORS pertaining to air quality aspects of the Project, and references the subsection where the Project's compliance with each requirement is discussed.

TABLE 6.1-29
APPLICABLE LORS

LORS	Applicability	Section
Federal		
40 CFR 50	NAAQS	Section 6.1.2.4, Modeling Results – Compliance with Ambient Air Quality Standards, and Section 6.1.5.1, Ambient Air Quality Standards
40 CFR 52.21	PSD	Section 6.1.5.2, Prevention of Significant Deterioration Requirements
40 CFR 73	Acid rain	Section 6.1.5.3, Acid Rain Program Requirements
40 CFR 60 Subpart GG	NSPS	Section 6.1.5.4, New Source Performance Standards
40 CFR 70	Federally mandated operating permits	Section 6.1.5.5, Federally Mandated Operating Permits
State		
Title 17, California Code of Regulations	CNAAQS	Section 6.1.2.4, Modeling Results – Compliance with Ambient Air Quality Standards, and Section 6.1.5.1, Ambient Air Quality Standards
California Administrative Code, Title 14, Section 15002(a)(3)	Power plant siting requirements	Section 6.1.5.6, Power Plant Siting Requirements
California Health and Safety Code Section 4430	Air toxics “Hot Spots” emission inventory	Section 6.1.5.7, Air Toxics “Hot Spots” Program
Local		
ICAPCD Regulation I, Rule 109	Source sampling	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation I, Rule 111	Equipment breakdown	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation II, Rule 201	Permits required	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation II, Rule 207	New and modified stationary source review	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation II, Rule 209	Implementation plans	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation II, Rule 216	Construction of major stationary sources that emit hazardous air pollutants	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation III, Rule 301/302	Permit fees/fee schedules	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation III, Rule 309	Air toxics hot spots information and assessment	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation IV, Rule 400	Oxides of nitrogen	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation IV, Rule 401	Opacity	

TABLE 6.1-29
APPLICABLE LORS

LORS	Applicability	Section
ICAPCD Regulation IV, Rule 403	General limitations on the discharge of air contaminants	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation IV, Rule 405	Sulfur compounds emissions standards, limitations and prohibitions	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation IV, Rule 407	Nuisances	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation IX, Rule 900	Procedures for Title V permits	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements
ICAPCD Regulation IX, Rule 901	Acid rain permits	Section 6.1.5.10, Imperial County Air Pollution Control District Requirements

Notes:
CFR = Code of Federal Regulations
ICAPCD = Imperial County Air Pollution Control District
LORS = laws, ordinances, regulations, and standards

6.1.6 Involved Agencies and Agency Contacts

Agencies and individuals contacted in connection with the air quality assessment of the Project are as follows in Table 6.1-30, Involved Agencies and Agency Contacts.

TABLE 6.1-30
INVOLVED AGENCIES AND AGENCY CONTACTS

Agency	Contact/Title	Telephone
California Energy Commission	Keith Golden Air Quality Specialist 1516 Ninth Street Sacramento, CA 95814	(916) 654-4287
U.S. Environmental Protection Agency	Allan Zabel Senior Counsel - Air and Toxics U.S. Environmental Protection Agency, Region 9 75 Hawthorne Street (ORC-2) San Francisco, CA 94105 (415) 972-3902	(415) 972-3902
	Joseph Lapka Region 9 Air Permits Office United States Environmental Protection Agency 75 Hawthorne Street San Francisco, CA 94105	415-947-4226
Imperial County Air Pollution Control District	Brad Poiriez Air Pollution Control Senior Manager 150 S. 9th Street El Centro, CA 92243	(760) 482-4606

TABLE 6.1-30
INVOLVED AGENCIES AND AGENCY CONTACTS

Agency	Contact/Title	Telephone
	Reyes M. Romero Deputy Air Pollution Control Officer 150 S. 9th Street El Centro, CA 92243	
	Jesus A. Ramirez Air Pollution Control Engineer 150 S. 9th Street El Centro, CA 92243	
	Matthew Dessert Air Pollution Control Analyst 150 S. 9th Street El Centro, CA 92243	

6.1.7 Permits and Permitting Schedule

Under Regulation II of its Rules and Regulations, ICAPCD regulates the construction, alteration, replacement, and operation of new stationary emissions sources and modifications to existing sources. The Project will be required to obtain a preconstruction DOC from ICAPCD as part of CEC's review of the Project as an SPPE. Following completion of CEC's SPPE review, air quality permitting authority for this Project will be transferred entirely to ICAPCD.

Regulation II incorporates other District rules pertaining to sources that may emit air contaminants through the issuance of air permits (i.e., ATC and PTO). This permitting process allows ICAPCD to adequately review new and modified air pollution sources to ensure compliance with all applicable prohibitory rules and to ensure that appropriate emission controls will be used. An ATC allows for the construction of the air pollution source and remains in effect until the PTO application is granted, denied, or canceled. ATC should be issued within 3 to 6 months following submittal by the applicant of a complete application. Once the Project has completed construction and commences operations, ICAPCD will require verification that conforms to ATC application and then issues a PTO. PTO specifies conditions that the air pollution source must meet to comply with all air quality standards and regulations and will incorporate applicable DOC requirements

6.1.8 References

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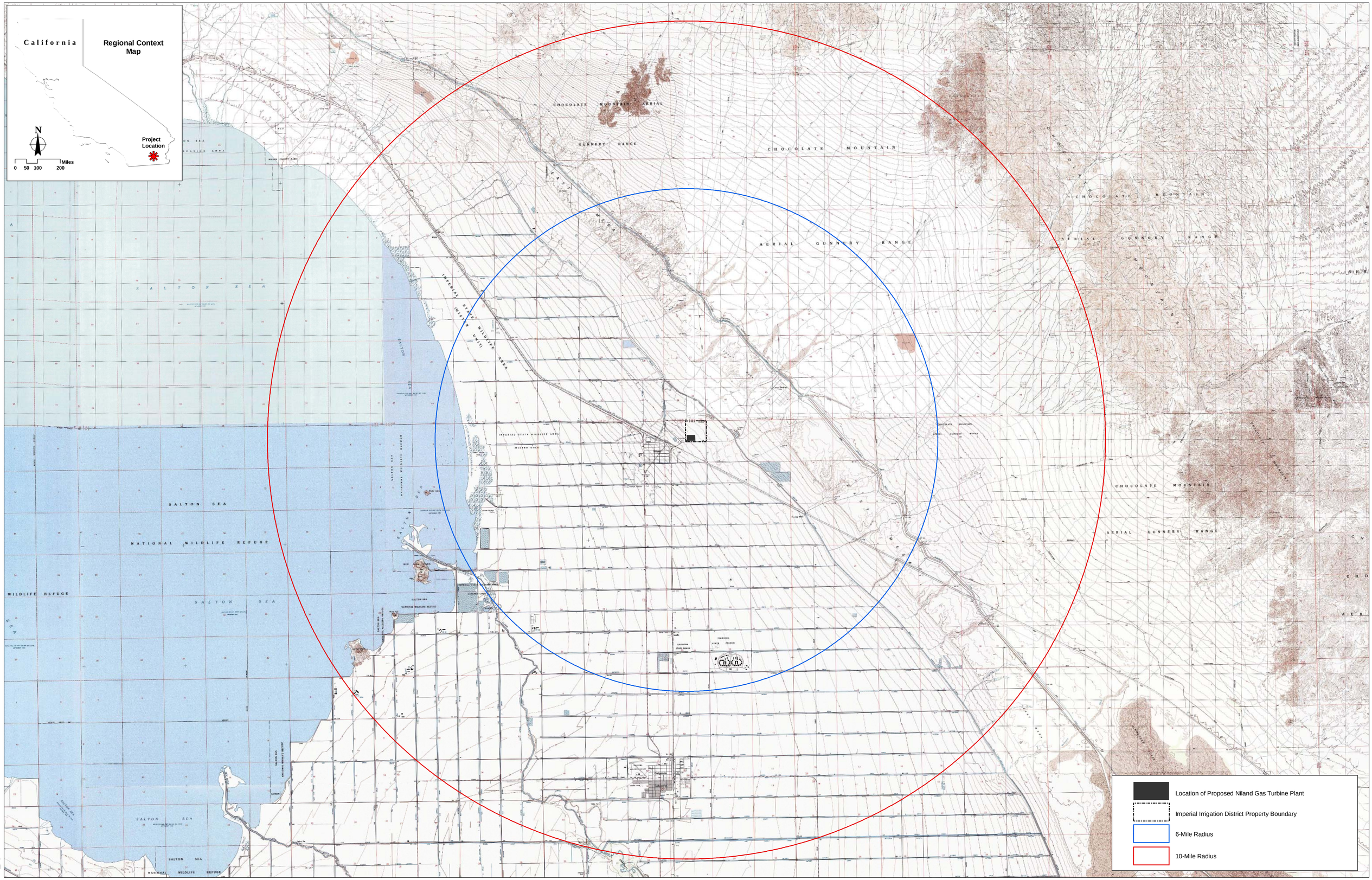


G:\gis\projects\1577\22238280\mxds\niland_quad_10mile_fig6.1-1.mxd

0 2000 4000 6000 8000 Feet

SCALE: 1" = 4000' (1:48,000)

N

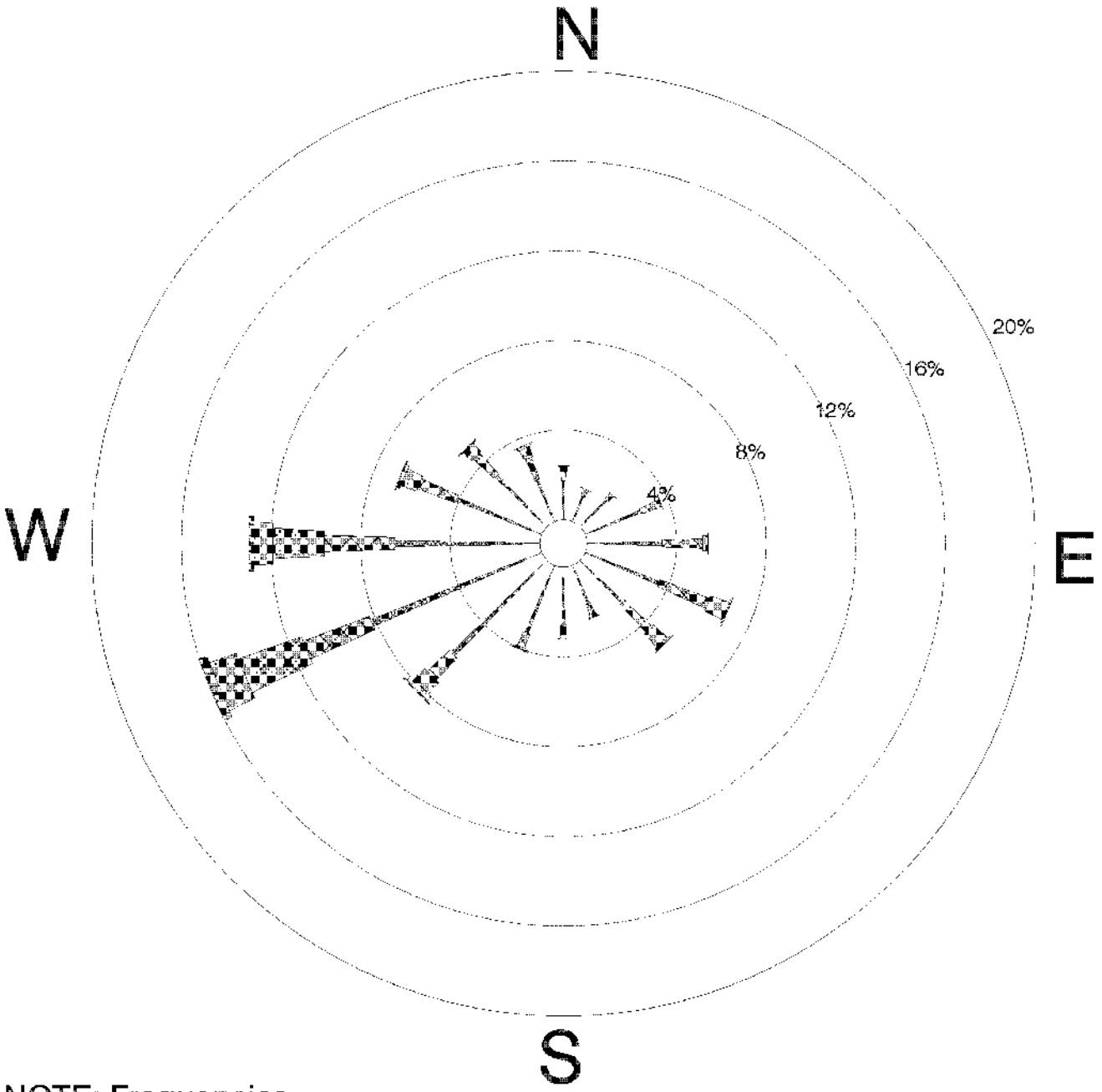
SOURCES:
USGS (7.5 Niland, Wister, Iris, Iris Wash quads);
Imperial Irrigation District (site plan).

Topography within a 6- and 10-Mile Radius of the Project Site

Niland Gas Turbine Plant
Imperial Irrigation District

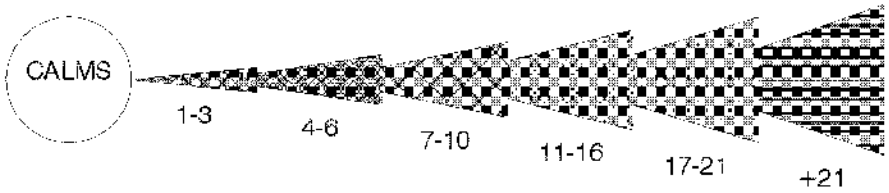
URS

FIGURE 6.1-1



NOTE: Frequencies indicate direction from which the wind is blowing.

CALM WINDS 9.94%



Windrose for All Months 1991-1995
Imperial County Airport

Niland Gas Turbine Plant
Imperial Irrigation District

URS

FIGURE 6.1-2

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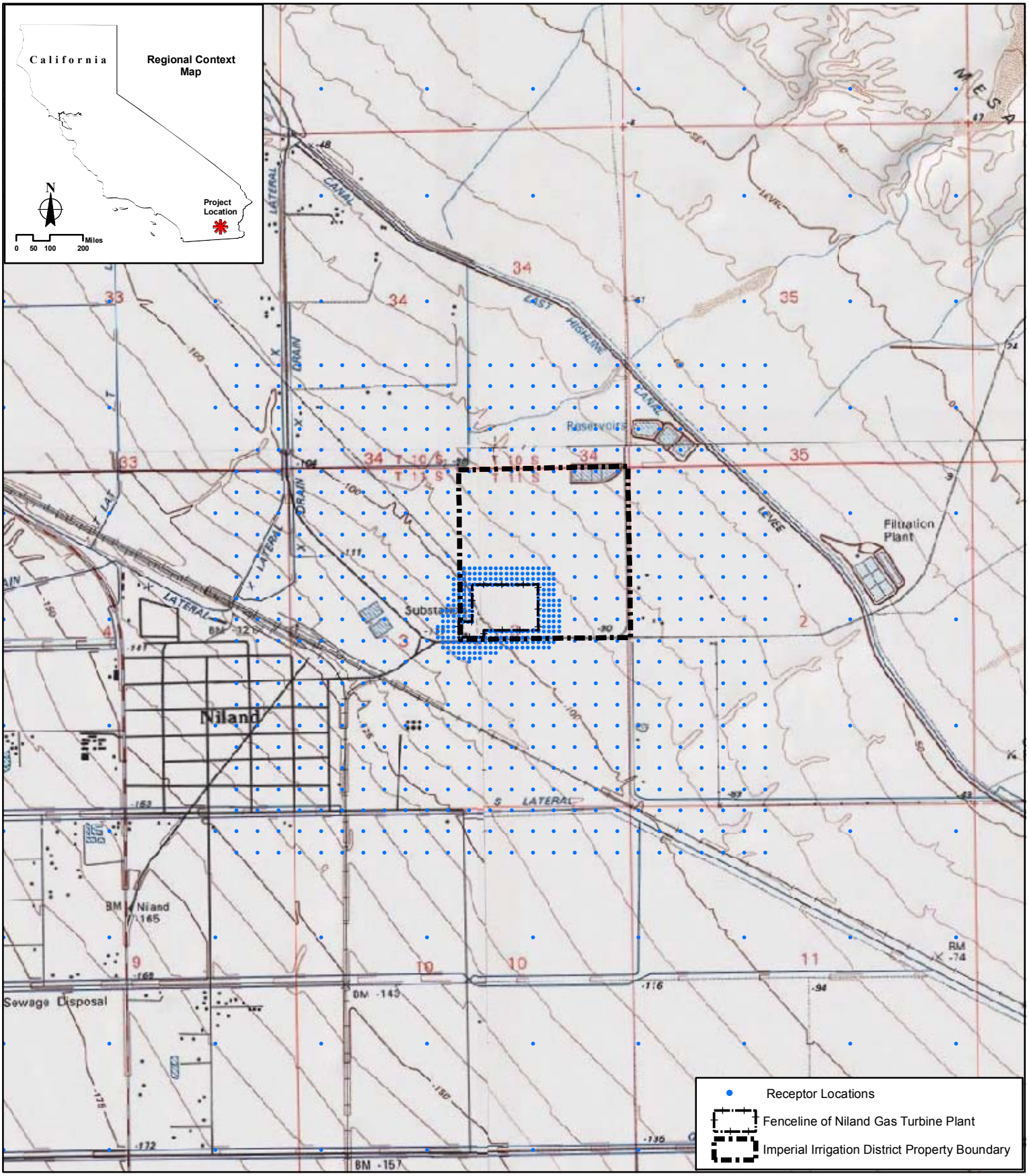


Near-field Model Receptor Grid

Niland Gas Turbine Plant
Imperial Irrigation District

0 500 1,000 2,000 Feet
SCALE: 1" = 2000'

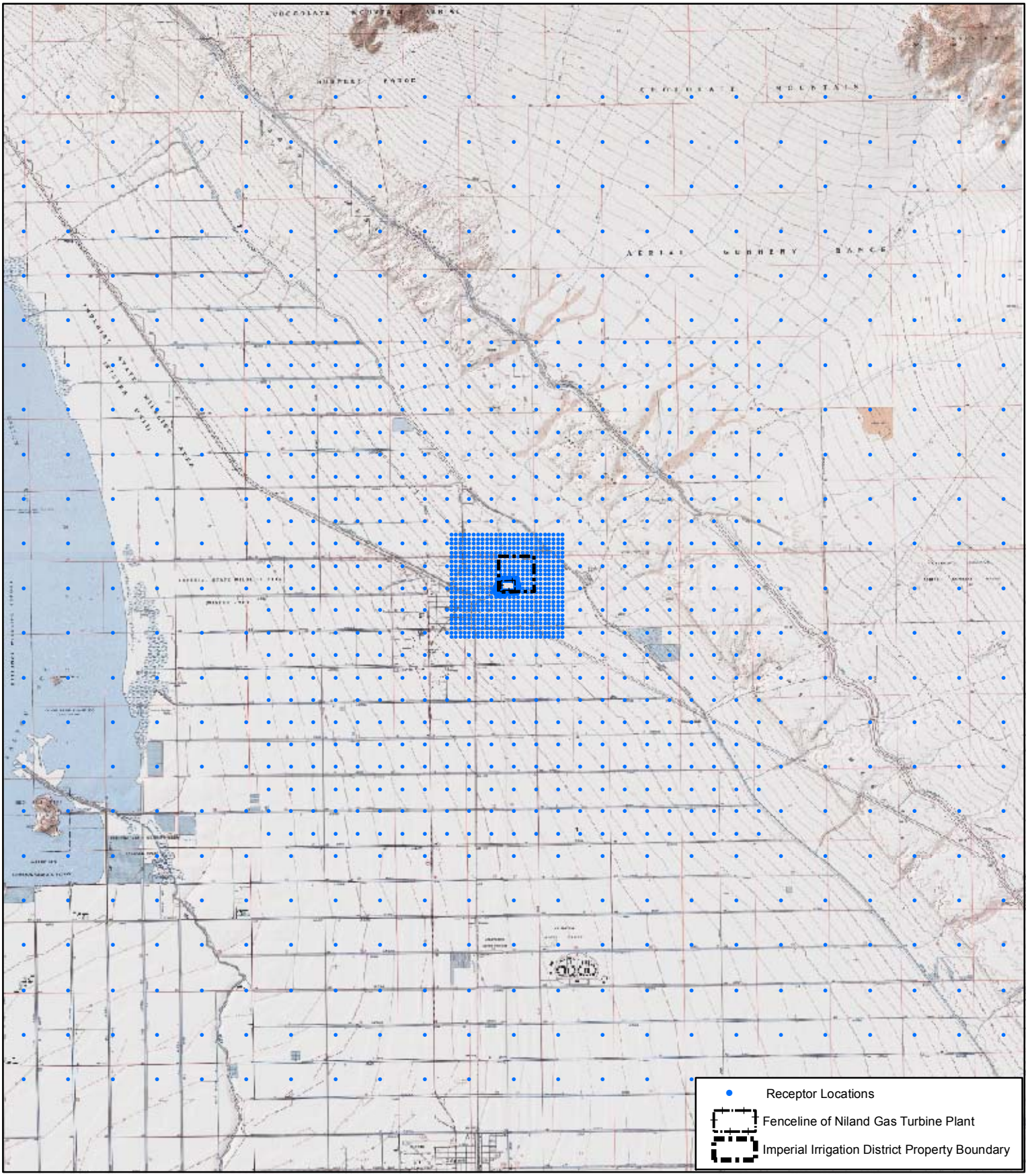
N

SOURCES:
USGS (7.5 Niland, Wister, Iris, Iris Wash quads);
Imperial Irrigation District (site plan).

URS

FIGURE 6.1-3

G:\gis\projects\1577\22238280\mxds\niland_near_field_receptors_fig6.1-3.mxd



G:\gis\projects\1577\22238280\mxds\niland_far_field_receptors_fig6.1-4.mxd

0 2,375 4,750 9,500 Feet

SCALE: 1" = 9500'

N

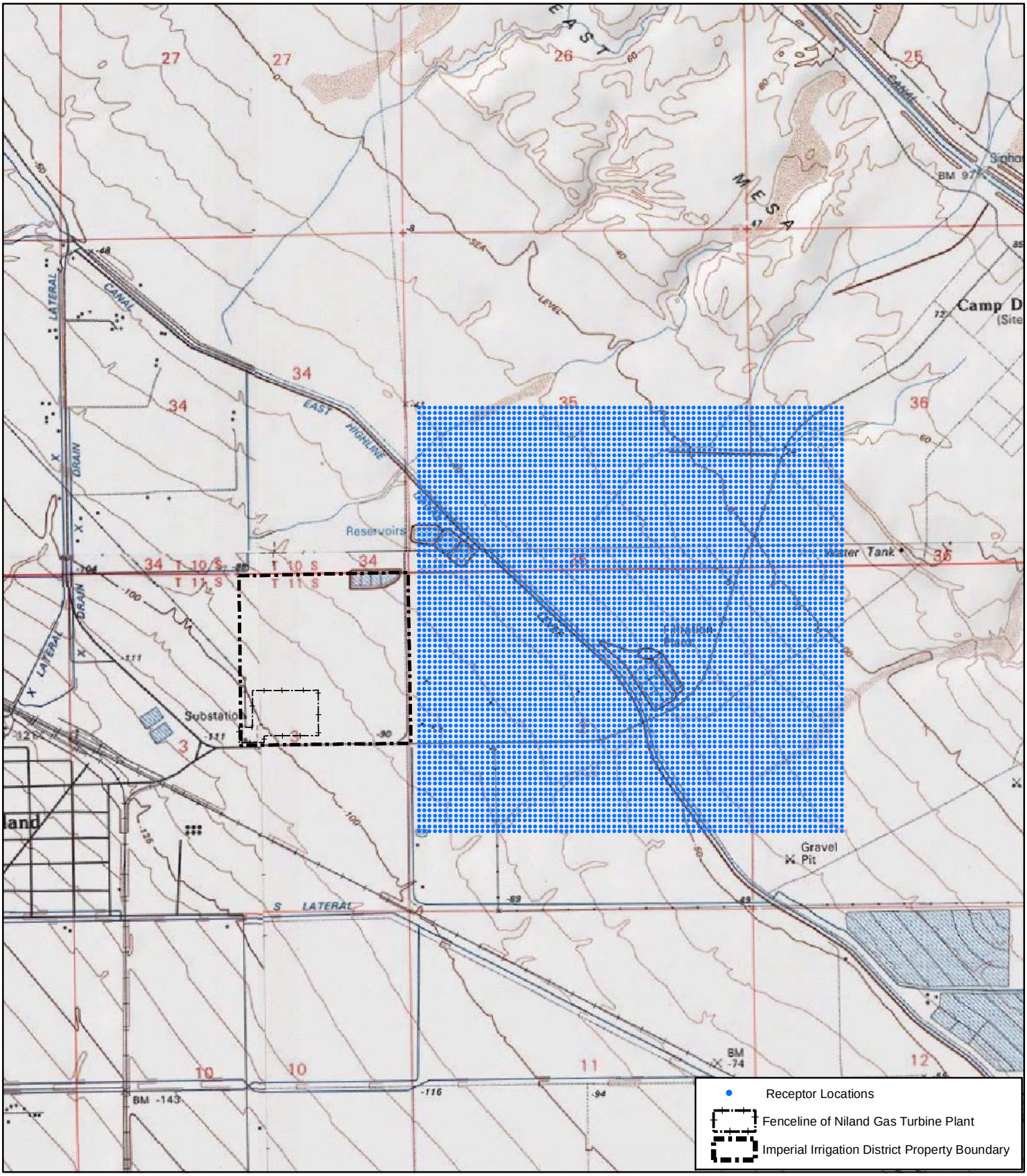
SOURCES:
USGS (7.5 Niland, Wister, Iris, Iris Wash quads);
Imperial Irrigation District (site plan).

Far-field Model Receptor Grid

Niland Gas Turbine Plant
Imperial Irrigation District

URS

FIGURE 6.1-4



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Refined Fine Receptor Grid

Niland Gas Turbine Plant
Imperial Irrigation District

0 500 1,000 2,000 Feet

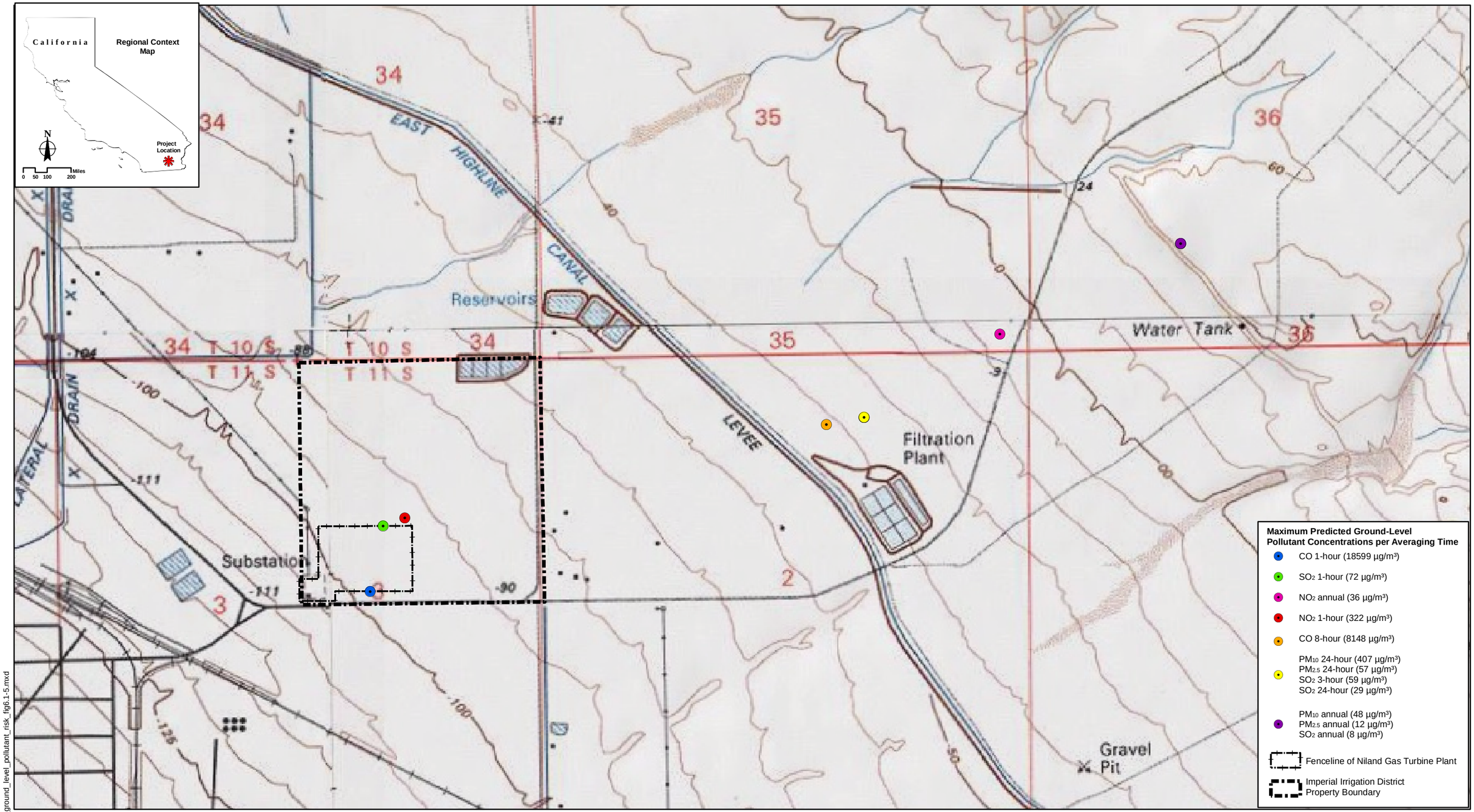
SCALE: 1" = 2000'

N

SOURCES:
USGS (7.5 Niland, Wister, Iris, Iris Wash quads);
Imperial Irrigation District (site plan).

URS

FIGURE 6.1-5



0 250 500 1,000 Feet

SCALE: 1" = 1000'

N

SOURCES:
USGS (7.5 Niland, Wister, Iris, Iris Wash quads);
Imperial Irrigation District (site plan).

Locations of Maximum Predicted Ground-Level Pollutant Concentrations for the Operational Project

Niland Gas Turbine Plant
Imperial Irrigation District

URS

FIGURE 6.1-6

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