7.1 AIR QUALITY

This analysis of the potential air quality impacts of the Competitive Power Ventures (CPV) Sentinel Energy Project (CPVS, or proposed project) has been conducted according to California Energy Commission (CEC) power plant sitting requirements. It also addresses South Coast Air Quality Management District (SCAQMD) permitting requirements for Determination of Compliance/Authority to Construct (DOC/ATC). The analysis is organized as follows:

- Section 7.1.1, Affected Environment, describes elements of the local environment surrounding the proposed project that are relevant to evaluation of the air quality impacts. These include topography, climate, and existing air quality. 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 in the proposed project vicinity are summarized. Air pollutants emitted by the project may travel in the atmosphere over long distances, but for practical purposes, the project air quality study area can be considered to be the Salton Sea Air Basin, which includes the eastern portions of San Diego County, the south-central portion of San Bernardino County, the western half of Riverside County, and all of Imperial County

- Section 7.1.2, Environmental Consequences, evaluates the maximum potential air quality impacts due to the proposed project's emissions of nitrogen oxides (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), volatile organic compounds (VOC), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). Estimated emissions of these pollutants are presented for the construction phase of the proposed project, as well as for operation of the installed equipment over a full range of operating modes, including commissioning, startups and shutdowns, and normal operation with operable pollution control systems. The modeling analysis conducted for nitrogen dioxide (NO_2), CO, sulfur dioxide (SO_2), and PM_{10} is presented; the results show that the proposed project, with the planned emission control systems, will neither cause an exceedance of the California and National Ambient Air Quality Standards (CAAQS and NAAQS), nor contribute significantly to an existing exceedance. Additional modeling results demonstrate that the proposed project will not cause plume impacts to visibility within nearby Class I areas that are above applicable significant impact thresholds.

- Section 7.1.3, Cumulative Impacts Analysis and Protocol, addresses the cumulative impacts of the proposed project emissions with other existing sources on and near the proposed project site and the combined impacts of these sources with other potential new sources of air pollution in the area around the proposed project site.

- Section 7.1.4, Mitigation Measures, describes the proposed project emission offsets strategy, including emission reduction credits (ERCs) that are proposed to offset proposed project sources.

- Section 7.1.5, Best Available Control Technology Analysis, provides an analysis of best available control technology (BACT) for gas-fired turbines in a simple cycle configuration, black start engine, and emergency firewater pump, and explains how the use of selective catalytic reduction (SCR) with ammonia injection will meet NO_x BACT requirements and how the use of an oxidation catalyst meets the CO BACT requirements.

- Section 7.1.6, Laws, Ordinances, Regulations, and Standards (LORS), describes all applicable laws, ordinances, regulations, and standards.
- Section 7.1.7, Involved Agencies and Agency Contacts, lists the agency personnel contacted during preparation of the air quality assessment.
- Section 7.1.8, Permits Required and Permitting Schedule, lists the permits required and provides a permit schedule.
- Section 7.1.9, References, lists the references used to conduct the air quality assessment.

Some air quality data are presented in other sections of this application for certification (AFC), including an evaluation of toxic air pollutants (see Section 7.6, Public Health) and information related to the fuel characteristics, heat rate, and expected capacity factor of the proposed facility (see Chapter 2.0, Facility Description and Location).

7.1.1 Affected Environment

This section describes the regional climate and meteorological conditions that influence transport and dispersion of air pollutants and the existing air quality within the proposed project region. The data presented in this section are representative of the proposed project site.

The proposed project will be a newly constructed power plant located approximately 8 miles northwest of downtown Palm Springs in Riverside County, California. The 37-acre proposed project site is within the upper Coachella Valley, roughly 100 miles east of Los Angeles. The proposed project vicinity is extensively developed for wind energy and electric transmission infrastructure. This location and the configuration of the plant have been selected to best match operating needs for the transmission grid and the competitive power market. The location of the proposed project site minimizes impacts on visual resources and takes advantage of nearby access to a natural gas fuel supply, water for cooling, and a tie-in location to the Southern California Edison (SCE) transmission system at the Devers substation, which is located to the west of the site.

The proposed project site is located in the Salton Sea Air Basin of the SCAQMD. Nearby towns are Palm Springs, North Palm Springs (unincorporated), and Desert Hot Springs. The site is located southwest of Desert Hot Springs, approximately 1 mile east of State Route 62 (Twenty-nine Palms Highway), 1 mile north of Interstate 10 [I-10], and 2 miles west of Indian Avenue. Power Line Road runs along the south side of the property. Approximately one quarter mile from the west border of the site is Diablo Road with several residences on the west side of Diablo Road. Figure 7.1-1 shows the topography within a 6- and 10-mile radius of the proposed project site.

7.1.1.1 Climate and Meteorology

Meteorological (short-term) and climatological (long-term) conditions influence ambient air quality. The proposed project site is located in the north-central portion of Riverside County, 8 miles northwest of downtown Palm Springs, at the east end of the San Gorgonio Pass. This area is part of the Salton Sea Air Basin, which includes the hottest and driest portions of California, including the eastern portions of San Diego County, the south-central portion of San Bernardino County, the western half of Riverside County, and all of Imperial County. It is separated from the coastal regions by the San Jacinto and Santa Rosa mountain ranges, which also provide a climatological boundary. The San Gorgonio Pass has a maximum elevation of about 2,500 feet and represents a passageway between the interior and coastal portions of Southern California.

The differences between the seasons in the Salton Sea Air Basin are marked mainly by differences in temperature and not by substantial rainfall during any season. The seasonal temperature differences are partly attributable to the lack of marine influences. The January mean maximum temperature in Palm Springs for the 30-year period from 1961 to 1990 is 70 degrees Fahrenheit (°F), while the July mean maximum temperature is 109°F. Diurnal temperature differences are also large, with maximum-minimum differences ranging from 30 to 35°F.

During the winter, the semi-permanent, subtropical high-pressure system over the eastern Pacific Ocean moves south, allowing the passage of frontal systems that bring most of the area's annual precipitation, which totals about 5 inches. Monthly mean values of precipitation at Palm Springs range from 1 inch in January to 0.05 inch in June. During the summer, migrating storm systems are blocked by the semi-permanent Pacific high-pressure system, and rain associated with these storms is scarce.

The relative humidity in the air quality study area during the summer is very low, averaging 30 to 60 percent in the early morning hours, and 10 to 20 percent during the late afternoon, with humidity below 10 percent common during the hottest part of the day. These conditions promote intense heating during the day and marked cooling at night in summer.

Desert regions are inclined to be windy, since little friction is generated between the moving air and the low, sparse vegetative cover. In addition, the rapid daytime heating of the lower air over the desert leads to convective activity. This exchange of lower and upper air tends to accelerate surface winds during the warm part of the day when convection is at a maximum. In addition, topographic channeling of the generally westerly flow through San Gorgonio Pass intensifies wind speeds in the air quality study area. The generally high wind speeds in this area have led to extensive local development of wind energy facilities. During the winter, the surface heating is not as intense, and the rapid cooling in the surface layers at night retards this exchange of momentum. As a result, winds are generally calmer in winter, except during passage of frontal storm systems.

The annual average pattern of joint wind speed and wind direction frequencies in the area is illustrated graphically in the wind rose presented in Figure 7.1-2. The wind rose is based on meteorological data collected from 1988 to 1991 by Wintec Energy adjacent to the proposed project site. During all seasons, the prevailing wind direction is predominantly from the west and west northwest, which occur over 50 percent of the time. Of that 50 percent, the wind speeds are greater than 10.8 meters per second (m/s) 42 percent of the time. Wind rose and joint frequency distribution tables for all quarters of the year are presented in Appendix I-1. A detailed discussion of the meteorological data used to support dispersion modeling for evaluation of the proposed project air quality impacts is presented in Section 7.1.2.

Ambient temperature and precipitation data have been collected over the period 1971–2000 at the Palm Springs National Weather Service station, the closest long-term meteorological station to the proposed project site. A summary of these data are presented in Table 7.1-1. The data indicate that July and August are usually the warmest months of the year. In the fall and spring, the afternoon temperatures are mild (in the 60s and 70s), while nights are cooler (in the 50s and 60s). In the winter, temperatures are cool in the afternoon and crisp at night. December and January are usually the coldest months. The annual average rainfall is approximately 5.23 inches, with 3.95 inches falling between November and March.

7.1.1.2 Existing Air Quality

Ambient air quality standards have been set by both the federal government and the State of California to protect public health and welfare with an adequate margin of safety. Pollutants for which NAAQS or CAAQS have been set are often referred to as "criteria" air pollutants. The term is derived from the comprehensive health and damage effects review that culminates in pollutant-specific air quality criteria documents, which precede the establishment of NAAQS and CAAQS. These standards are reviewed on a

legally prescribed frequency and revised as new health and welfare effects data warrant. Each NAAQS or CAAQS is based on a specific averaging time over which the concentration is measured. Different averaging times are based upon protection against short-term, high-dosage effects or longer-term, low-dosage effects. NAAQS may be exceeded no more than once per year. CAAQS are not to be exceeded.

The ambient air quality in Riverside County is monitored at a number of permanent air quality monitoring stations operated by SCAQMD and California Air Resources Board (CARB). The monitoring stations within Riverside County that are closest to the proposed project site are the Palm Springs-Fire Station located approximately 6.4 miles south-southeast of the proposed project site and the Indio-Jackson Street station about 25.5 miles to the southeast of the proposed site. The Palm Springs station measures all criteria pollutant concentrations except SO_2. The Riverside-Rubidoux monitoring station is the closest station that monitors ambient SO_2 and is considered to be the most representative of the SCAQMD monitoring locations for characterizing conditions at the proposed project site. The Indio-Jackson Street station only monitors PM_{10}, $PM_{2.5}$, and O_3. The next closest and next most representative station, the Banning Airport station, is approximately 25 miles west of the proposed site and thus closer to the large concentration of emission sources within the South Coast Air Basin to the west, and is situated in a narrow gap between high terrain to the north and south that results in stronger wind channeling than occurs at the proposed project site. Banning data are considered be significantly less representative of site conditions than either Palms Springs or Indiio; thus, Banning data are not presented in the tables of this section.

The criteria pollutants monitored at these stations include ozone (O_3), PM_{10}, $PM_{2.5}$, CO, NO_2, SO_2, and lead (Pb). Air quality measurements taken at these stations are presented in Tables 7.1-2 through 7.1-8. For the air quality impact analysis described in Section 7.1.2.3, the maximum recorded concentration from the most recent 5 years (2002–2006) at any of these monitoring stations were used to represent background air quality levels.

Ozone

Table 7.1-2a shows that the federal 1-hour O_3 NAAQS of 0.12 parts per million (ppm) has been exceeded in each of the last 3 years at the Palm Springs-Fire Station monitoring station (four times in 2005 with a maximum concentration of 0.139 ppm), and zero times at the Indio Jackson Street station. The more stringent state O_3 CAAQS of 0.09 ppm was also exceeded each year for the past 3 years at the Palm Springs-Fire Station (41 times in 2005) monitoring station and at the Indio-Jackson Street monitoring station (23 times in 2004).

The federal 8-hour O_3 NAAQS of 0.08 ppm has also been exceeded frequently at both monitoring stations. The federal standard requires maintaining 0.08 ppm as a 3-year average of the fourth-highest daily maximum values. Therefore, the number of days that the maximum concentration exceeds the standard concentration is not the number of violations of the standard for the year. The ozone data from the Palm Springs and Indio monitoring stations are presented in Tables 7.1-2a and 7.1-2b, respectively. As supported by the data in Table 7.1-2a, the proposed project site is located in an area that is in extreme nonattainment of the state 1-hour O_3 standard.

Particulates

PM_{10}

Particulates in the air are caused by a combination of (1) windblown fugitive dust or road dust; (2) particles emitted from combustion sources (primarily carbon particles); and (3) organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, SO_x, and NO_X. Respirable particulate matter is referred to as PM_{10}, which has a diameter of equal to or less than 10 microns. It can contribute to increased respiratory disease, lung damage, cancer, premature death, reduced visibility, and surface

soiling. In 1987, the U.S. Environmental Protection Agency (U.S. EPA) adopted standards for PM_{10} and phased out the total suspended particulate (TSP) standards that had previously been in effect.

The Coachella Valley within the Salton Sea Air Basin is designated as federal serious nonattainment for PM_{10}. Concentration data for this pollutant in micrograms per cubic meter ($\mu g/m^3$) that were recorded within the most recent 3 years at the Palm Springs-Fire Station monitoring station are summarized in Table 7.1-3a. This table shows that the 24-hour average CAAQS for PM_{10} (50 $\mu g/m^3$) is frequently exceeded in the proposed project area. The federal 24-hour average PM_{10} NAAQS of 150 $\mu g/m^3$ was not exceeded during 2004–2006, with one exception in 2006. The maximum recorded 24-hour PM_{10} concentration of 226 $\mu g/m^3$ on July 16, 2006, is assumed to be an anomaly due to a natural event that will be excluded. The next highest concentration in 2006 was 73 $\mu g/m^{3,}$ and this value is presented in the table. The annual PM_{10} data at Palm Springs are also presented in Table 7.1-3a.

Monitoring data recorded within the most recent 3 years at the Indio-Jackson Street monitoring station are summarized in Table 7.1-3b. This table shows that the 24-hour average CAAQS for PM_{10} (50 $\mu g/m^3$) is frequently exceeded at this station. The federal 24-hour average PM_{10} NAAQS of 150 $\mu g/m^3$ was not exceeded during 2004–2006, with one exception in 2006 and one exception in 2004. The maximum recorded 24-hour PM_{10} concentration of 314 $\mu g/m^3$ on July 16, 2006, is assumed to be an anomaly due to a natural event that will be excluded. The next highest concentration in 2006 was 122 $\mu g/m^{3,}$ and this value is presented in the table. The annual PM_{10} data at the Indio Jackson station are also presented in Table 7.1-3b. As shown by these tables, the Salton Sea Air Basin has not been in attainment of the state PM_{10} standards during the last 3 years.

Prior to July 2003, the annual geometric mean PM_{10} concentration was referred to as the state annual average. Since then, the state annual average has been changed to match the federal standards (i.e., annual arithmetic mean), which is called the national annual average and calculated as the arithmetic average of the four arithmetic quarterly averages. The federal annual PM_{10} standard was revoked by the U.S. EPA in 2006 due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution. However, the measured annual geometric and arithmetic mean concentrations recorded at the twp nearest air monitoring stations to the proposed project site have been above the California PM_{10} ambient air quality standard of 20 $\mu g/m^3$. The maximum annual arithmetic mean concentration recorded was 54. $\mu g/m^3$ at Indio in 2006.

$PM_{2.5}$

Fine particulates result from fuel combustion in motor vehicles and industrial sources, residential and agricultural burning, and atmospheric reactions involving NO_x, SO_x, and organics. Fine particulates are referred to as $PM_{2.5}$ and have a diameter equal to or less than 2.5 microns. The potential health effects of $PM_{2.5}$ are considered more serious than those of PM_{10}. In 1997, U.S. EPA established annual and 24-hour NAAQS for $PM_{2.5}$ for the first time. The standard regulating the 3-year average of the 98th percentile of 24-hour $PM_{2.5}$ concentrations (35 $\mu g/m^3$) became effective on December 17, 2006.

The $PM_{2.5}$ data presented in Table 7.1-4a for the Palm Springs-Fire Station monitoring station show that the federal 24-hour average NAAQS of 35 $\mu g/m^3$ is not exceeded. The highest 24-hour $PM_{2.5}$ concentration of 27.1 $\mu g/m^3$ was measured during 2004. The annual average $PM_{2.5}$ data at Palm Springs are also presented in this table. The annual arithmetic mean concentrations are below the California $PM_{2.5}$ ambient air quality standard of 12 $\mu g/m^3$. The maximum recorded annual arithmetic mean concentration was 8.9 $\mu g/m^3$ in 2004, which is also below the federal annual $PM_{2.5}$ NAAQS of 15 $\mu g/m^3$.

The $PM_{2.5}$ data presented in Table 7.1-4b for the Indio-Jackson Street monitoring station show that the federal 24-hour average NAAQS of 35 $\mu g/m^3$ has been exceeded once in the past three years. The highest 24-hour $PM_{2.5}$ concentration of 44.3 $\mu g/m^3$ was measured during 2005. The annual average $PM_{2.5}$ data at the Indio Jackson Street station are also presented in this table. The annual arithmetic mean

concentrations are below the California $PM_{2.5}$ ambient air quality standard of 12 µg/m^3. The maximum recorded annual arithmetic mean concentration was 10.8 µg/m^3 in 2004, which is also below the federal annual $PM_{2.5}$ NAAQS of 15 µg/m^3.

Carbon Monoxide

CO is a product of incomplete combustion, principally from automobiles and other mobile sources of pollution. CO emissions from wood-burning stoves and fireplaces can also be important sources of this pollutant. Health effects resulting from exposure to high CO levels can include chest pain in heart patients, headaches, and reduced mental alertness.

Recorded CO monitoring data for the Palm Springs-Fire Station monitoring station are provided in Table 7.1-5. The data in this table indicate that maximum 1-hour average CO levels comply with the NAAQS and CAAQS of 20.0 ppm. This limit has not been exceeded in the last 3 years. The maximum 1-hour concentration was 2.3 ppm in 2006. This table also shows that maximum recorded 8-hour average CO levels comply with the NAAQS and CAAQS of 9.0 ppm within the last 3 years. The maximum 8-hour concentration was 0.85 ppm in 2006. As supported by this table, the Riverside County portion of the Salton Sea Air Basin is in attainment for CO.

Nitrogen Dioxide

Nitrogen oxide emissions are primarily generated from the combustion of fuels. Nitrogen oxides include) and NO_2. Because nitric oxide converts to NO_2 in the atmosphere over time and NO_2 is the more toxic of the two, NO_2 is the listed criteria pollutant. The control of NO_2 also is important because of this pollutant's role in the atmospheric formation of ozone, the principal component of smog. It also can provoke lung irritation and damage.

Recorded NO_2 concentration data for the Palm Springs-Fire Station monitoring station are provided in Table 7.1-6. As supported by this table, the Salton Sea Air Basin has been in attainment of NO_2 for many years.

Maximum annual average (arithmetic mean) NO_2 levels comply with the federal NAAQS of 0.053 ppm. This limit has not been exceeded in the last 3 years. The maximum annual average concentration was 0.013 ppm in 2004. The data in the table also show that maximum 1-hour average NO_2 levels comply with the CAAQS of 0.25 ppm. This limit also has not been exceeded in the last 3 years. The maximum 1-hour concentration was 0.093 ppm in 2006.

On February 23, 2007, the CARB approved new stricter ambient California standards for NO_2. The new 1-hour standard will be 0.18 ppm not to be exceeded, and the new annual average standard is 0.030 ppm. The Office of Administrative Law must approve the standards before they take effect. A CARB spokesperson stated that the standards are expected to become effective within 6 to 8 months following CARB approval.

Sulfur Dioxide

Sulfur dioxide is produced when any sulfur-containing fuel is burned. It is also emitted by chemical plants that treat or refine sulfur or sulfur-containing chemicals. Natural gas contains trace amounts of sulfur, while fuel oils may contain much larger amounts. SO_2 can increase lung disease and breathing problems for asthmatics. It reacts in the atmosphere to form acid rain, which is destructive to crops and vegetation, as well as to buildings, materials, and works of art.

Summaries of monitored SO_2 concentration data are presented in Table 7.1-7 for the Riverside-Rubidoux monitoring station. The Palm Springs-Fire Station monitoring station does not monitor for SO_2. This table shows that the Salton Sea Air Basin is in attainment for all applicable state and federal ambient standards for SO_2.

The SO_2 data in Table 7.1-7 demonstrates that neither the 24-hour average CAAQS of 0.04 ppm nor the NAAQS of 0.14 ppm has been exceeded in the proposed project vicinity between 2004 and 2006. The maximum 24-hour SO_2 monitored concentration of 0.015 ppm was measured at the Riverside-Rubidoux monitoring station in 2004. The recorded annual average (arithmetic mean) SO_2 concentrations at the monitoring station are also presented in Table 7.1-7 and in all cases are well below the federal ambient air quality standard of 0.03 ppm. The maximum 1-hour average SO_2 levels easily comply with the CAAQS of 0.25 ppm. This limit also has not been exceeded in the last 3 years. The maximum 1-hour concentration was 0.024 ppm at the Riverside-Rubidoux monitoring station in 2005.

Lead

Lead exposure can occur through multiple pathways, including inhalation of air and ingestion of lead in food from water, soil, or dust contamination. Excessive exposure to lead can trigger seizures, mental retardation, or behavioral disorders, and other central nervous system damage. Lead gasoline additives, nonferrous smelters, and battery plants were the most significant contributors to atmospheric lead emissions. Legislation in the early 1970s required gradual reduction of the lead content of gasoline over a period of time, which has dramatically reduced lead emissions from mobile and other combustion sources. In addition, unleaded gasoline was introduced in 1975, and together these controls have essentially eliminated violations of the lead standard for ambient air in urban areas. Measured lead concentration levels at the Riverside-Rubidoux monitoring station are presented in Table 7.1-8. The data in this table supports the attainment status of the Salton Sea Air Basin for lead.

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 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, and 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 entire state is in attainment for visibility-reducing particles, and the Salton Sea Air Basin is in attainment for hydrogen sulfide.

7.1.2 Environmental Consequences

This section describes the analyses conducted to assess the potential air quality impacts from the proposed project. Impacts due to the proposed project would be considered significant if, when combined with background ambient concentrations, they would exceed an ambient air quality standard, or if by themselves they would exceed an applicable SCAQMD significant impact level (for nonattainment pollutants). These standards are discussed in Section 7.1.6. Emissions estimates for both construction and operation of the proposed project are presented in this section. Dispersion model selection and setup are also described (i.e., emissions scenarios and release parameters, building wake effects, meteorological data, and receptor locations) and analysis results are presented.

7.1.2.1 Project Construction Emissions

The primary emission sources during construction of the proposed project would include exhaust from heavy construction equipment and vehicles and fugitive dust generated in areas disturbed by grading, excavating, and erection of facility structures. The projected construction schedule has a duration of 18 months, during which different areas within the proposed project site and nearby temporary laydown

areas would be disturbed at different times. Estimated land disturbance for major construction activities is summarized in Chapter 2, Facility Description and Location.

Construction equipment and vehicle exhaust emissions were estimated using equipment lists and construction scheduling information provided by the project design engineering firm, which are presented in Chapter 2, Facility Description and Location, and Appendix I-2. Equipment-specific emissions factors were used to estimate mass emissions for all criteria pollutants from diesel-fueled construction equipment and vehicles using SCAQMD OFFROAD Emission Factors. Assumptions used in calculating project construction emissions included an 18-month construction period; 7 construction days per week; and a single-shift, 12-hour workday. The list of fueled equipment needed during each month of the construction effort (see Table 7.1-9) served as the basis for estimating pollutant emissions throughout the term of construction and helped to identify the periods of probable maximum short-term emissions. An ultra-low fuel sulfur content of 0.0015 percent by weight (15 ppm) was assumed for all diesel construction equipment operations.

Fugitive dust emissions resulting from onsite soil disturbances were estimated using the *SCAQMD California Environmental Quality Act (CEQA) Air Quality Handbook* (SCAQMD, 1993) emission factors for bulldozing and dirt-pushing, travel on unpaved roads, and handling/storage of aggregate materials. A dust control efficiency of 90 percent for proposed project site and temporary construction area activities was assumed to be achieved for these activities by frequent watering or other measures when required.

Emissions from on-road delivery trucks and worker commute trips were estimated using trip generation information presented in Section 2 of the Project Description and emission factors provided by SCAQMD for Onroad Vehicles from the EMFAC2007 model. Construction workers were assumed to commute to the proposed project site from locations within the greater Palm Springs area.

The short-term maximum emissions were calculated using Month 3 construction equipment. Activities in the third month would include grading, bulldozing, excavating, and onsite pipeline and facility construction. Annual emissions were based on the worst 12 consecutive months of the construction period, which were Months 3–14 of the 18-month schedule.

The emissions from each disturbed area are presented as either area sources for fugitive dust or point sources for combustion emissions for all pollutants. Point sources were selected so that the ozone limiting method (OLM) version of the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) dispersion model could be used to calculate NO_2 emissions. To apply the OLM option in AERMOD to predict NO_2 concentrations, hourly ozone data are required. Hourly ozone data recorded at the SCAQMD Palm Springs-Fire Station monitoring station for the same 4 years as the input meteorological data were used in this analysis.

The equipment point source emissions were calculated by means of the emission spreadsheet in Appendix I-2 and stack parameters for different-sized (horsepower) equipment. These stack parameters were obtained from the *Risk Management Guidance for the Permitting of New Stationary Source Diesel-Fueled Engine,* (CARB, 2000).

Detailed spreadsheets are provided in Appendix I-2, which show the calculation of emissions from all project construction activities and equipment, and the data and assumptions used in these calculations. Tables 7.1-10 and 7.1-11, respectively, present the estimated maximum daily emissions and maximum annual emissions of air pollutants due to project construction.

7.1.2.2 Operational Emissions

The proposed combustion turbines will use pipeline-quality natural gas fuel exclusively. Tables 5.5-1 and 5.2-2 in Chapter 5 presents the expected composition of the natural gas to be supplied to the proposed

project by Southern California Gas Company. Estimated emissions of sulfur oxides for combustion of this fuel by proposed project equipment assumed full oxidation of all fuel sulfur to SO_2 and a natural gas sulfur content of 0.25 grains per 100 dry standard cubic feet (dscf). The emergency firewater pump and the black start engine will use low sulfur diesel fuel. Estimated emissions of sulfur oxides for combustion of this fuel assumed full oxidation of all fuel sulfur to SO_2 and a diesel sulfur content of 15 ppm by weight.

Normal Turbine Operating Emissions

The most important emission sources of the proposed project would be the new combustion turbine generator (CTG) trains. Maximum short-term operational emissions from the CTGs were determined from a comparative evaluation of potential emissions corresponding to turbine commissioning, normal operating conditions, and CTG startup/shutdown conditions. The long-term operational emissions from the CTGs were estimated by summing the emissions contributions from normal operating conditions and CTG startup/shutdown conditions. Estimated annual emissions of air pollutants for the CTGs have been calculated based on the expected operating schedule for the CTGs presented below in Table 7.1-12. Note that somewhat different operating hours and annual startup/shutdown cycles are proposed for the first five and last three CTGs.

Each turbine unit will be equipped with a new stack with the following dimensions:

- Height – 90 feet (ft)
- Diameter – 13.5 ft

The criteria pollutant emission rates and stack parameters provided by the CTG vendors for three load conditions (50 percent, 75 percent, and 100 percent) at three ambient temperatures (17°F, 72°F, and 107°F) are presented in Table 7.1-13. These cases encompass CTG operations with and without evaporative cooling of the inlet air to the turbines. The combined scenarios presented in this table bound the expected normal operating range of each proposed CTG.

Turbine Startup and Shutdown Emissions

The expected emissions and durations associated with CTG startup and shutdown events are summarized in Table 7.1-14. Because hours that include startup and shutdown events would have higher NO_x, CO, and ROC emissions than the normal operating condition with fully functioning SCR and CO oxidation catalyst, they were incorporated (as applicable) into the worst-case short- and long-term emissions estimates in the air quality dispersion modeling simulations for these pollutants.

Additional Emission Sources

The proposed project will include a black start generator engine and an emergency fire pump engine, both powered by diesel fuel. The 2,206 horsepower black start engine will be tested one hour per month. The fire pump engine will be rated at approximately 240 horsepower and will be tested one hour per week. Annual emissions and stack parameters for the testing of the engines are provided in Table 7.1-15. Emission rates shown in this table are based on vendor-supplied emission factors. The engine fuel will be ultra-low sulfur diesel containing a maximum of 15 ppm sulfur. The proposed project will also include two mechanical draft evaporative cooling towers with a total of eight cells. Detailed emissions calculations for all equipment of the operational proposed project are presented in Appendix I-3.

Emissions calculations for all scenarios are provided in Appendix I-3.

Emissions Scenarios for Modeling

Reasonable worst-case project emissions scenarios were developed for each combination of pollutant and averaging time corresponding to an air quality standard or significance limit. Table 7.1-16 presents the worst-case modeling scenarios selected for each averaging time. These scenarios form the basis for the air dispersion modeling analyses presented in Section 7.1.2.4. Some notes regarding the selection of these scenarios and the resulting emission calculations are provided below.

Estimated annual emission totals for all pollutants incorporate the maximum requested numbers of startups and shutdowns, as well as the proposed maximum steady-state operating hours (see Table 7.1-12). For purposes of developing the annual emission estimates, the contributions associated with all normal operating hours were calculated based on assumed 100 percent turbine load and ambient temperature of 72ºF for the specified number of hours per year. The analysis is conservative because no credit was taken for estimated downtime associated with each shutdown.

Short-term emissions were calculated for the pollutant and averaging times corresponding to the ambient air quality standards. The worst-case condition was assumed for purposes of estimating maximum 1-hour emission rates for all pollutants. A startup of all turbines with normal operations for the remaining time would produce the worst-case hourly NO_x and CO emissions. However, SO_2 emissions would be directly proportional to fuel usage. Since the highest maximum fuel usage rate would occur when all are running at 100 percent with an ambient temperature of 72°F, this condition was selected to represent maximum hourly SO_2 emissions. The 3-hour SO_2 emission rate was calculated based on a scenario with all turbines running at 100 percent for the ambient temperature of 72°F. The 8-hour maximum CO emission rate was calculated assuming all turbines had one startup, one shutdown, and the balance of time operating at the worst-case operating condition (running 100 percent and the ambient temperature is 72°F). In each of these worst-case scenarios, it was assumed the fire water pump and the black start engine were tested during the averaging period. The black start engine would not be tested between 9 p.m. and 6 a.m.

The maximum 24-hour emission rate for NO_x (used in modeling the proposed project's impacts to visibility) and the maximum PM_{10} rate for the same averaging period were calculated assuming all turbines undergo two startups and two shutdowns, with the balance of the day spent at the worst-case operating condition (running at 50 percent load and the ambient temperature is 107°F for PM_{10} and 100 percent load and 72°F for NO_x). This assumption clearly results in conservative 24-hour emissions estimates, in that no credit is taken for down time after the first shutdown or after the turbine trip. The SO_2 worst-case 24-hour emission rate was calculated assuming all turbines are running at 100 percent for 24 hours and the ambient temperature is 72°F.

Estimated annual emissions from the firewater pump and black start engine are based on 52 and 12 hours of operation per year at their respective maximum fuel input rates. The black start engine will not be tested between the hours of 9 p.m. and 6 a.m. Cooling tower emissions are assumed to occur for all hours of CTG operation throughout the year.

Note that turbine commissioning impacts are evaluated separately in the modeling due to the temporary, one-time nature of this activity.

Combined Annual Project Emissions

The total combined annual emissions from all emission sources of the proposed project are shown in Table 7.1-17, including the eight CTG units, the firewater pump engine, the blackstart engine, and the two cooling towers. Annual emissions of all pollutants were calculated assuming the CTG hours per year of operation described previously in Table 7.1-12 and the corresponding hours of cooling tower operation. Testing of the firewater pump engine and blackstart engine was assumed for 52 and 12 hours per year, respectively.

Combustion Turbine Commissioning Emissions

Commissioning of each new combustion turbine will be performed in a defined series of tests that will be conducted following its installation at the proposed project facility. The specific tests to be run on each combustion turbine include:

- First fire
- Controlled break in
- Dynamic automatic voltage regulator (AVR)
- Base load AVR
- SCR commissioning
- Full load testing

The duration of all tests may be affected by unforeseen events and therefore can only be only estimated in advance. A maximum of 200 hours of operation during commissioning of each combustion turbine with partially abated emissions is expected over a period not to exceed 1 month. A minimum of one turbine start would be needed for each test. Additional starts may be necessary. The annual frequency of turbine starts during the year when commissioning occurs is not expected to exceed the frequency of turbine starts during operation (refer to Table 7.1-12). Fuel flow monitoring would be conducted for all tests.

CPV Sentinel proposes a commissioning period of approximately 8 months during which all installed equipment would be run and tested. The gas turbine commissioning periods would begin when the turbines first burn natural gas. CPV Sentinel will make every effort to minimize emissions of CO, VOC, and NO_x during the commissioning period. However, not all of the equipment to abate these emissions would be fully operational at the start of the commissioning period. CPV Sentinel requests a maximum of 200 hours of partially abated emissions for each gas turbine.

When it has been installed, the oxidation catalyst in each train will abate CO and VOC emissions from the gas turbine because it is essentially a passive device. While the oxidation catalyst will be in some cases able to be installed prior to initial startup of the combustion turbines, it may not be installed until late in the commissioning period. The SCR catalyst may not be installed at the same time as the oxidation catalyst. NO_x emissions from the gas turbines may be only partially abated during times that the gas turbine burners are being tuned and the SCR system is being tested. Regardless of the fact that the oxidation catalyst and SCR may not be installed until late in the commissioning process, the inherent low emissions of NO_x, CO, and VOC associated with water injection will ensure that the impacts of these emissions are kept to acceptable levels. Dispersion modeling to evaluate the impacts of commissioning tests on local air quality is presented in Section 7.1.2.3.

Conservative, worst-case turbine commissioning emissions were estimated by assuming that the control efficiency of the applicable abatement systems will be essentially zero during the commissioning tests.

The durations and corresponding pollutant emission rates of individual commissioning tests for a single combustion turbine generator are shown in Table 7.1-18. Detailed information regarding the assumed sequence of individual turbine commissioning tests and the associated pollutant emissions is provided in Appendix I-3.

Greenhouse Gas Emissions

In 2006, the California Assembly passed a law (AB32) directing CARB to develop regulations to reduce statewide greenhouse gas emissions to 1990 levels by 2020. Maximum potential greenhouse gas emissions from the proposed project were calculated using the California Climate Action Registry power/utility protocol. The estimated maximum potential greenhouse gas emissions from the proposed project, which includes the eight turbines, one black start engine, and one firewater pump, are presented

in Table 7.1-19. Additional calculation details for the greenhouse gas emissions estimates in this table are provided in Appendix I-4.

7.1.2.3 Air Quality Impacts Analysis

The purpose of the air quality impact analyses is to evaluate whether criteria pollutant emissions resulting from the proposed project would cause or contribute significantly to a violation of a California or national ambient air quality standard or contribute significantly to degradation of air quality related values in Class I areas. Mathematical models designed to simulate the atmospheric transport and dispersion of airborne pollutants are used to quantify the maximum potential impacts of project emissions for comparison with applicable regulatory criteria. Potential impacts of toxic air contaminant emissions from the proposed project are evaluated in Section 7.6, Public Health.

Separate criteria pollutant modeling analyses were conducted to address the air quality effects of emissions from proposed project construction activities and facility operations because these activities would occur at different times. Impacts from construction activities include fugitive dust from grading and excavation of disturbed areas and exhaust combustion products from diesel- and gasoline-fueled construction equipment and vehicles. The impacts from operations would be associated with natural gas combustion in the CTGs.

The air quality modeling methodology described in this section has been documented in a formal modeling protocol, which has been submitted for comments to CEC and SCAQMD. A copy of this protocol is provided in Appendix I-5. The modeling approaches used to assess various aspects of the proposed project's potential impacts to air quality are discussed below.

Model and Model Option Selections

The impacts of project construction and operations on criteria pollutant concentrations in receptor areas within 31 miles (50 kilometers) from the proposed project site were evaluated using the AERMOD (version 04300). AERMOD is appropriate for this AFC 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 use sequential hourly meteorological input data. The regulatory default options were used, including building and stack tip downwash, default wind speed profiles, exclusion of deposition and gravitational settling, consideration of buoyant plume rise, and complex terrain.

For the AERMOD simulations to evaluate construction and operations impacts of NO_2 concentrations, the ozone-limiting method option of the model was used to take into account the role of ambient ozone in limiting the conversion of emitted NO_x (which occurs mostly in the form of NO) to NO_2, the pollutant regulated by ambient standards. The input data to the AERMOD-OLM model includes representative hourly ozone monitoring data for the same years corresponding to the meteorological input record. These simulations used the ozone data from the SCAQMD Palm Springs-Fire Station monitoring site for the years 1988, 1989, 1990, and 1991.

To evaluate whether urban or rural dispersion parameters should be used in the model simulations, an analysis of land use adjacent to the proposed project site was conducted in accordance with Section 7.2.8 of the *Guideline on Air Quality Models* (U.S. EPA-450/2-78-027R and Auer [1978]), U.S. EPA AERMOD implementation guide (2004), and its addendum (2006). Based on the Auer land use classification procedure, more than 50 percent of the area within a 1.86-mile (3-kilometer) radius of the proposed project site is appropriately classified as rural. Thus, according to the U.S. EPA AERMOD implementation guide, the AERMOD rural option was selected. Accordingly, the land use parameter values shown in Table 7.1-20 were used when processing the Wintec Energy meteorological data by means of the AERMET pre-processing program.

Building Wake Effects

The effects of building wakes (i.e., downwash) on the plumes from the proposed project's CTGs and auxiliary boiler were evaluated in the modeling for operational emissions, in accordance with U.S. EPA guidance (U.S. EPA, 1985). Data on the buildings within new and existing areas of the proposed project site that could potentially cause plume downwash effects for the new stacks were determined for different wind directions using the U.S. EPA Building Profile Input Program – Prime (BPIP-Prime) (Version 98086). Twenty-nine structures were identified within the proposed project site to be included in the downwash analysis:

- North cooling tower
- South cooling tower
- CTG1 – CTG8
- SCR1 – SCR8
- Raw water tank 1
- Raw water tank 2
- Seven buildings
- North treated water tank
- South treated water tank

The results of the BPIP-Prime analysis were included in the AERMOD input files to enable downwash effects to be simulated. Input and output electronic files for the BPIP-Prime analysis are included with those from all other dispersion modeling analyses on the digital versatile discs (DVDs) that are being submitted to accompany this AFC.

Meteorological Data

The proposed project site is located at the eastern end of the San Gorgonio Pass in an area surrounded by complex terrain, which influences localized wind flows. The winds are consistently strong and predominantly from the west, as shown in Figure 7.1-2. Due to these strong winds, many wind energy facilities surround the proposed project site. Immediately adjacent to the proposed project is the Wintec Wind Energy facility, where meteorological data were collected to support their wind energy business. The following meteorological parameters were collected: two levels of wind speeds, wind directions, and the horizontal standard deviation of the wind directions (sigma theta), each at 50-foot and 100-foot heights. In addition, temperature was measured at the 50-foot height.

The Wintec Energy data can be considered "onsite" because they were collected next door to the proposed project site, and meet the U.S. EPA criteria (U.S. EPA, 1995) for representativeness, as follows:

- *Proximity*: The data were collected in close proximity to the proposed project site, and thus meet the criteria for proximity.

- *Complexity of Terrain and Exposure of Meteorological Monitoring Site*: Both the proposed project site and the Wintec Energy monitoring station are located at the eastern end of the San Gorgonio Pass and are the same distances from prominent terrain features in the surrounding area.

- *Period of Data Collection*: The 1988 through 1991 data set represents data collection over 4 full years. Although only 1 year of onsite data is required, a 4-year data set was used to better represent project site conditions, as well as to capture worst-case meteorological conditions.

- *Data Quality*: The quality of the Wintec Energy monitoring equipment was good and the site was maintained on a regular basis. Plus the data recovery rate was greater than 90 percent for the years 1988-1991.

The Wintec Energy data were processed following the onsite data procedures set forth in the U.S. EPA *On-Site Meteorological Program Guidance for Regulatory Modeling Applications* (1987). To create the meteorological data input files for AERMOD, the onsite data were processed with National Weather Service (NWS) surface data and upper air data in the AERMET program.

The most representative NWS surface station, with adequate data collection, was determined to be the Dagget-Barstow station. The Palm Springs Airport station is nearer but had insufficient data collection.

Upper air data were obtained from the Desert Rock station in Nevada for 1988–1991. Although Edwards Air Force Base upper air monitoring station is the closest upper air station, data were collected less than 50 percent of the time; therefore, this station was determined to have insufficient data for the air quality analysis. The Desert Rock station is located in the desert, as is the proposed project site, and thus was determined the most representative data source available for use in this modeling analysis.

To create a meteorological input data set for the HARP/ISC modeling used in the Public Health impacts analysis (Section 7.6), the same 1988–1991 Wintec Energy data, Daggett-Barstow, and Desert Rock data were processed with PCRAMMET pre-processing program. Annual average values of surface roughness, albedo, and Bowen ratio were input into PCRAMMET.

Figure 7.1-2 presents the annual wind rose based on the 1988–1991 meteorological data from the Wintec Energy site. Seasonal windroses based on the 4 years of Wintec Energy surface meteorological data are provided as Appendix I-1. Winds for all seasons and all years blow predominantly from the west and northwest, although the directional pattern is more variable during the winter.

Receptor Locations

The receptor grids used in the AERMOD modeling analyses described in this protocol for operational sources were as follows:

- 25-meter (m) spacing along the fence line and extending from the fence line out to 100 meters beyond the property line;
- 100-meter spacing from 100 m to 1 kilometer (km) beyond the property line;
- 500-meter spacing within 1 to 5 km of property line; and
- 1,000-meter spacing within 5 to 10 km of property line.

During the refined modeling analysis for operational proposed project emissions, if a maximum predicted concentration for a particular pollutant and averaging time was located within the portion of the receptor grid with spacing greater than 25 meters, a supplemental dense receptor grid was placed around the original maximum concentration point and the model was rerun. The dense grid will use 25-meter spacing and extended to the next grid point in all directions from the original point of maximum concentration.

Due to the large computation time required to run AERMOD, this receptor grid, with the additional nested grid of more densely spaced points, when necessary, was determined to best balance the need to predict maximum pollutant concentrations and allow the all operational modeling runs to be completed in a timely manner.

A detailed project map and a 7.5- minute U.S. Geological Survey (USGS) map are provided in Figure 7.1-1. Actual Universal Transverse Mercator (UTM) coordinates will be used. The CAAQS and

NAAQS apply to all locations offsite of the proposed project site, i.e., where public access is not under the control of CPV Sentinel. The CAAQS and NAAQS are not evaluated on the property controlled by CPV Sentinel. In other words, the air within a facility's property was not considered ambient air relative to that facility's emissions. Near-field and far-field receptor grids used in the AERMOD analyses are shown in Figures 7.1-3 and 7.1-4, respectively.

Construction Impacts Modeling

Section 7.1.2.1 describes the development of proposed project emissions estimates for the planned 18-month construction period. For purposes of evaluating construction air quality impacts, it is useful to break the construction schedule into a sequence of essentially nonoverlapping phases, each occurring on specific areas of the proposed project site and with characteristic equipment and vehicle requirements. An Excel workbook was created to estimate pollutant emissions from construction activities, with separate worksheets for the equipment exhaust and fugitive dust emissions associated with short-term and annual construction activities. Emissions from worker commuter trips to and from the project site during specific construction activities were also included (see Appendix I-2).

Worst-case modeling was conducted for short-term averaging times using the construction equipment from Month 3 of the estimated schedules of construction equipment use. Annual emissions were modeled based on emissions calculated for Months 3 through 14 of the construction schedule.

All construction activities were assumed to occur during a 12-hour workday. Calculation of annual emissions was based on all construction activities over the consecutive 12-month period that would produce the highest emissions of all pollutants. The OLM option of AERMOD was used to account for the role of ambient ozone levels on the atmospheric conversion rate of NO_x emissions (initially mostly in the form of NO) to NO_2 (the pollutant addressed by ambient standards). The record of hourly ozone measurements at the SCAQMD Palm Springs-Fire Station monitoring station during the same 4 years of the meteorological input data set were used to support the OLM calculations.

Turbine Impact Screening Modeling

As described previously, a screening modeling analysis was performed to determine which CTG operating mode and stack parameters would produce worst-case offsite impacts (i.e., maximum ground-level concentrations for each pollutant and averaging time). Only the emissions from the CTGs with and without evaporative cooling were considered in this preliminary modeling step. The screening modeling used AERMOD, as described in the previous sections. Building wake information and the receptor grid described above were also used. All 4 years of meteorological data were used in the screening analysis.

The AERMOD model simulated the dispersion of natural gas combustion emissions from eight 13.5-foot-diameter (4.15 meters), 90-foot-tall (27.43 meters) stacks for the CTG units. The stacks were modeled as point sources at their proposed locations within the proposed project site. Table 7.1-21 summarizes the combustion CTG screening results for the different CTG operating loads and ambient temperature condition. First, the model was run with unit emissions (1.0 grams per second) from each stack to obtain normalized concentrations that are not specific to any pollutant. CTG and control equipment vendor data used to derive the stack parameters for the different operating conditions evaluated in this screening analysis are included in Appendix I-3.

The maximum ground-level concentrations predicted to occur offsite with unit turbine emission rates for each of the 11 operating conditions shown in Table 7.1-21 were then multiplied by the corresponding turbine emission rates for specific pollutants. The highest resulting concentration values for each pollutant and averaging time were then identified (see bolded values in the bottom section of the table).

The principal purpose of the turbine screening modeling analysis is to select stack parameters for use in subsequent refined modeling. Specifically, the stack parameters associated with the maximum predicted impacts for each pollutant and averaging time were used in all simulations of the refined AERMOD analyses, which are described in the next subsection. Note that the lower exhaust temperatures and flow rates at reduced turbine loads correspond to reduced plume rise, in some cases resulting in higher offsite pollutant concentrations at ground level than the higher baseload emissions. Model input and output files for the screening modeling analysis are included with those from all other modeling tasks on the Air Quality and Public Health Modeling DVDs that are provided separately with this AFC.

Refined Modeling

A refined modeling analysis was performed to estimate offsite criteria pollutant impacts from operational emissions of the proposed project. The modeling was performed as described in the previous sections, using 4 years of hourly meteorological input data. Impacts for each pollutant due to the eight CTGs were modeled assuming the worst-case emissions corresponding to each averaging time and the turbine stack parameters that were determined in the turbine screening analysis (see previous subsection) as well as the maximum contributions from other equipment of the operational proposed project. The maximum mass emission rates that would occur over each averaging time, whether due to turbine startups, normal operations, turbine shutdowns, or a plausible combination of these activities, were used in all refined modeling analyses (see Table 7.1-16). Operational emission rate calculations and assumptions used for all pollutants and averaging times are documented in Appendix I-3.

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 during either 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 onshore environment (shoreline fumigation). In general, this phenomenon will be transient, seldom persisting for as long as an hour.

The U.S. EPA SCREEN3 model (Version 9600043) was used to estimate peak short-term fumigation pollutant concentrations with rural dispersion and stack parameters for one turbine and a unit emission rate of 1 gram/second (g/s). The results from SCREEN3 were multiplied by the maximum emission rate from all turbines combined and scaled for the averaging time of concern.

7.1.2.4 Modeling Results – Compliance with Ambient Air Quality Standards

Air dispersion modeling was performed according to the methodology described in Section 7.1.2.3 to evaluate the maximum increase in ground-level pollutant concentrations resulting from proposed project emissions, and to compare the maximum predicted impacts, including background pollutant levels, with applicable short-term and long-term CAAQS and NAAQS. The impacts from construction activities and plant operations were analyzed separately because they would occur during different time periods. The same 4-year record of hourly meteorological data described in Section 7.1.2.3 was used in the AERMOD modeling to evaluate both construction and operational impacts.

In evaluating both construction and operational impacts, the AERMOD model was used to predict the increases in criteria pollutant concentrations at all receptor concentrations due to project emissions only. Next, the maximum modeled 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 3 years (i.e., 2004 through 2006). These background concentrations

are presented and discussed in Section 7.1.1.2. The resulting total pollutant concentrations were then compared with the most stringent CAAQS or NAAQS.

Construction Impacts

The section on construction emissions of air pollutants described how Month 3 of the construction schedule was selected to represent worst-case emission conditions for the purpose of analyzing peak short-term construction impacts to local air quality. Annual impacts were modeled with the maximum emissions that would occur during any 12 consecutive months of construction (Months 3–14), since this period will have a higher intensity of construction activity than any other during the 18-month schedule. Some notes regarding the modeling results for specific pollutants are provided below.

As reflected in the construction modeling results presented in Table 7.1-22, high PM_{10} background concentrations have been recorded frequently at Riverside County monitoring stations during recent years. Because of the land use characteristics of this area, it is highly probable that these conditions result primarily from high wind episodes and mobile pollution sources. The predicted contribution of the proposed construction activities would be minor by comparison with these sources, but would have the potential to contribute temporarily to elevated levels of PM_{10} and PM2.5 if construction occurs during a period of high background concentrations.

AERMOD with OLM predicted maximum 1-hour and annual NO_2 concentration due to project construction emissions which, when added to conservative background values from the nearest SCAQMD monitoring stations, are below the applicable California and National standards. Predicted maximum impacts for CO and SO_2 are also less than the most stringent ambient standards.

Normal Operational Impacts

As described previously, the emissions and stack parameters used in the AERMOD simulations for the proposed 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. The emissions used for each pollutant and averaging time are explained and quantified in Table 7.1-16. This subsection describes the maximum predicted operational impacts of the proposed project for normal combined cycle operating conditions. Commissioning impacts, which would occur on a temporary, one-time basis and would not be representative of normal operations, were addressed separately, as described in the next subsection.

Table 7.1-23 summarizes the maximum predicted criteria pollutant concentrations due to operation of the proposed project. Table 7.1-23 also shows that the modeled impacts due to the proposed project emissions, in combination with conservative background concentrations, would not cause a violation of any NAAQS and would not significantly contribute to existing violations of the federal and state PM_{10} standards. In addition, as described later, all of the proposed project's operational emissions of nonattainment pollutants and their precursors would be offset to ensure a net air quality benefit.

SCAQMD Rule 1303 establishes incremental concentration limits for nonattainment pollutants due to individual source units. These limits are presented in Table 7.1-23. For 24-hour PM_{10}, the permissible limit is 2.5 $\mu g/m^3$. Modeling results indicate the highest PM_{10} 24-hour offsite concentrations due to the eight individual CTGs would range from a low of 2.149 $\mu g/m^3$ (Unit 7) to a high of 2.399 $\mu g/m^3$ (Unit 2). These values are all below the SCAQMD 24-hour PM_{10} Significant Change level. In addition, the maximum annual PM_{10} value for all eight CTGs combined would be below the SCAQMD annual PM_{10} Significant Change level of 1 $\mu g/m^3$. Other important results of the operational modeling are summarized as follows:

- The locations of predicted maximum impacts vary by pollutant and averaging time, but in all cases would be within 1,000 feet from the proposed project facility fenceline.
- The peak annual NO_2 impact and the annual and 24-hour maxima for both PM_{10} and SO_2 are predicted to occur approximately 1,804 feet east of the property line of the proposed project opposite CTG 7.
- Short-term maxima for NO_2 are predicted to occur adjacent to the fenceline west of the property boundary opposite Unit 1.
- Short-term maxima for SO_2 are predicted adjacent to the fenceline east of the proposed project property boundary opposite Unit 4.
- Short-term maxima for CO are predicted to occur approximately 984 and 1,640 feet south of the proposed project property line boundary in line with all units.
- Maximum 24-hour SO_2 and PM_{10} impacts are predicted to occur approximately 1,312 feet south of proposed project property line boundary in line with all the CTGs.

Figure 7.1-5 shows the locations of the maximum predicted operational impacts for all pollutants and averaging times.

Turbine Commissioning

Each of the proposed project CTGs could be operated for up to 200 hours with partially abated emissions for purposes of commissioning the new generating equipment. The expected sequence of commissioning tests and the associated emissions during each stage of CTG commissioning are presented in Section 7.1.2.2. Separate modeling was conducted using AERMOD to evaluate maximum short-term effects of these activities in terms of the impacts on offsite 1-hour NO_2 concentrations and 1-hour and 8-hour CO concentrations. These are the pollutants (along with VOCs, which are not modeled) for which emissions would be expected to be significantly higher than during normal operations, owing to the nonoperability of the SCR and oxidation catalyst emission control systems during some of the commissioning tests. Emissions of SO_2 and PM depend primarily on the rate of fuel combustion and would be unaffected by the availability or nonavailability of the SCR and oxidation catalyst. Thus, emissions of these pollutants during commissioning are not expected to exceed the levels that would occur during full-load normal operations of the turbines, and separate modeling for commissioning impacts on SO_2 and PM levels is unnecessary.

Stack exhaust flow rates and temperatures for individual turbine commissioning tests were presented in Table 7.1-18, along with the corresponding NO_x and CO emission rates. Modeling was conducted for the tests that were expected to produce the highest offsite concentrations at ground level, i.e., the test with the highest emission rate in combination with the lowest exhaust flow and temperature. For the NO_x modeling, the emissions and stack parameters for the row labeled Base Load AVR in Table 7.1-18 were used; maximum CO impacts were also evaluated for this same case in Table 7.1-18. CPV Sentinel would accept a permit condition prohibiting execution of the base load AVR test on more than one turbine at a time.

Since the other commissioning tests have lower NO_x and CO emissions, additional modeling was conducted to determine whether testing of multiple units could be conducted simultaneously for tests other than base load AVR. The results obtained from these simulations show that up to three turbines could undergo testing for the second-worst test (Dynamic AVR at 100 percent load) without causing the NO_2 or CO ambient standards to be exceeded. The maximum concentrations predicted for three turbines in the Dynamic AVR/100 percent case (including background) are:

- 1-hour NO_2 309.1 μg/m^3
- 1-hour CO 2,975 μg/m^3
- 8-hour CO 1,152.2 μg/m^3.

Table 7.1-24 shows the results of the simulations for worst-case turbine commissioning test (base load AVR) for a single turbine. The tabulated impacts are the highest concentrations for the indicated averaging periods that are predicted by AERMOD to occur for the worst-case emission condition using 4 years of hourly meteorological input data.

The commissioning modeling results demonstrate that when the maximum incremental commissioning impacts are added to applicable background concentrations and compared with the most stringent state or national ambient standards, no violation of the applicable ambient air quality standards for these pollutants is predicted to occur.

Fumigation Impacts

Potential worst-case fumigation impacts were modeled according to the method described in Section 7.1.2.3. The maximum pollutant concentrations predicted by SCREEN3 model for a unit emission rate were multiplied by the actual turbine emission rate to obtain the peak 1-hour values presented below. The maximum fumigation impact estimated by the SCREEN3 model using the unit emission rate is 0.796 μg/m^3 at a distance of 13.9 miles from the proposed project site. The 1-hour values are multiplied by the U.S. EPA conversion factor to obtain the 3-hour value. As shown in Table 7.1-25, the resulting incremental concentration predictions for fumigation conditions are well below the modeled maximum operational impacts shown in Table 7.1-23.

Impacts for Nonattainment Pollutants and their Precursors

The emission offset program described in the SCAQMD Rules and Regulations was developed to facilitate net air quality improvement when new sources locate within the SCAQMD. Maximum potential project impacts of nonattainment pollutants (PM_{10} and O_3) and their precursors (NO_x, SO_2, and ROC) will be fully mitigated by emission offsets. The emission reductions associated with these 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 proposed project are considered to be significantly overestimated.

Effects on Visibility from Plumes

Modern simple cycle power plants burning natural gas fuel emit PM at levels far below the concentration corresponding to visible smoke. Combustion sources also emit water vapor that sometimes may condense in the atmosphere to form visible plumes. However, the generally warm, dry conditions in Riverside County are not conducive to lengthy visible stack plumes, particularly in the summer months when the plant is most likely to be operating. Evaporative cooling towers are another potentially important source of visible moisture plumes at power plants. Modeling has been conducted to evaluate the potential length, width, and height of the cooling tower plumes and is presented in Section 7.11, Visual Resources.

Sulfur and Nitrogen Deposition Analysis

A screening evaluation of potential impacts to sensitive flora and fauna in the vicinity of the proposed project was also performed. The screening evaluations were accomplished using the maximum predicted incremental annual average NO_2 and SO_2 concentrations due to normal proposed project operational emissions from the AERMOD model as summarized in Table 7.1-23. These modeling results were developed to support the analysis of the proposed project's biological impacts (see Section 7.2, Biological Resources).

Deposition rates due to the emissions from operation of the proposed project were estimated by assuming that, at the locations of the maximum predicted SO_2 and NO_2 ambient concentration impacts, all of the nitrogen and sulfur in these gases are converted to elemental sulfur and nitrogen in the particulate phase, which is then deposited on the ground. This is an extremely conservative assumption that would not physically occur. The deposition rates were calculated by multiplying the maximum modeled airborne concentration by a deposition velocity of 0.02 meters/second (m/s), which is consistent with California Air Pollution Control Officers Association (CAPCOA) guidelines for estimating deposition of particulate emissions from uncontrolled sources (CAPCOA, 1993). The portions of the deposition occurring as elemental nitrogen and sulfur are then calculated from the predictions for NO_2 and SO_2 based on the molecular weight ratios. Since these results were obtained by means of a simple straight-line Gaussian dispersion model, (i.e., AERMOD), they are considered to substantially overpredict actual deposition levels.

Based on the methodology described previously using predicted maximum annual average incremental NO_2 and SO_2 concentrations due to proposed project operations (from Table 7.1-23) and an assumed deposition velocity of 0.02 m/s, the highest predicted elemental nitrogen and sulfur deposition rates, which are predicted to occur within 1,312 feet to the east of the site (the prevailing downwind direction) are as follows:

- Nitrogen: 1.44 kg/hectare/year
- Sulfur: 0.13 kg/hectare/year

The predicted incremental annual average NO_2 and SO_2 concentrations, and thus the nitrogen and sulfur deposition rates, decrease rapidly with distance from the proposed project. The AERMOD receptor grid extends to about 6.5 miles north, east, south, and west of the proposed project site. The highest value among the receptors located at the far extremities of this gridded area are predicted to occur on the eastern edge, where the calculated deposition rates are:

- Nitrogen: 0.072 kg/hectare/year
- Sulfur: 0.0.0066 kg/hectare/year

This information is discussed in Section 7.2, Biological Resources, in terms of the potential for the predicted deposition rates to affect flora and fauna in the vicinity of the proposed project site.

7.1.2.5 Plume Visibility Impacts in Class I Areas

SCAQMD Rule 1303(b)(5)(C)(i) requires a plume visibility analysis if the net emissions increase from a new source exceeds 15 tons per year (tpy) of PM_{10} or 40 tpy of NO_x, provided that the source is located within specified distances to the nearest boundary of a federal Class I area. The proposed project site is within the specified distances from three Class I areas, as shown in Table 7.1-26. In addition, the annual project emissions are expected to exceed the threshold values for both NO_x and PM_{10}. Accordingly, a visibility modeling analysis was conducted per SCAQMD Rule 1303 requirements.

Since the proposed project does not trigger a PSD analysis, the visibility analysis will be conducted in accordance with SCAQMD Rule 1303 requirements and not PSD requirements.

Analysis Methods

The federal authority with jurisdiction in the two Wilderness Areas identified in Table 7.1-26 is the United States Forest Service (USFS), and the National Park Service (NPS) has jurisdiction over Joshua Tree National Park. The visibility analyses for these areas have been conducted in a manner consistent with guidance from the NPS and USFS following the procedures set forth in the *Federal Land Managers'*

Air Quality Related Values Workgroup (FLAG) Phase I Report (USFS, 2000), with any exceptions noted in this document due to SCAQMD requirements.

Tier I Plume Visibility Analysis

For the three Class I areas listed in Table 7.1-26, a visibility modeling analysis was performed to address the proposed project's impacts in terms of plume contrast and color difference index. Initially, a series of Tier I visibility screening analyses were conducted to obtain a conservative evaluation of the proposed project's potential to adversely affect visibility in the San Jacinto Wilderness Area, the San Gorgonio Wilderness Area, and Joshua Tree National Park. The Tier 1 analysis entails use of the U.S. EPA VISCREEN model with simple, worst-case default input assumptions (i.e., extremely stable [Class F]) atmospheric turbulence conditions and a very low wind speed (1.0 meter per second) persisting for 12 consecutive hours in a direction that would transport the proposed turbine plumes toward a hypothetical observer at each Class I area. The only inputs required to execute the Tier I analysis with the default parameter settings are: (1) projected short-term maximum turbine emission rates of fine particulate, and nitrogen oxides, per U.S. EPA *Workbook for Plume Visual Impact Screening and Analysis* (U.S. EPA, 1988 and 1992); (2) the distances between the project stacks and a hypothetical observer at the nearest and farthest park boundaries; and (3) representative background visual range values for the region(s) of concern.

The VISCREEN output for a Class I analysis provides the results of the following plume impact tests:

- Plume perceptibility based on color differences between the plume and a sky or terrain background (ΔE)
- Plume contrast relative to a sky or terrain background (C)

The VISCREEN model calculates the color difference index (ΔE) and the contrast (C) for four different lines of sight corresponding to two types of background (sky and terrain), and two assumed worst-case sun angles (10 degrees and 140 degrees). As part of the standard output, the four lines of sight are calculated for both the observer's view inside the Class I area and the view outside the area. However, it should be noted that both the NPS and the USFS identify only the views inside the Class I area as the criteria for significance in this analysis.

Based upon the FLAG workbook, the significance criterion for the ΔE is less than 2, and a value of 0.05 or higher is considered significant for C. As recommended by the FLAG document, a Tier II screening procedure should be conducted when the potential for impacts greater than the screening criteria is indicated by the results of the Tier I analysis, as described in the *Workbook for Plume Visual Impact Screening and Analysis* (U.S. EPA, 1988 and 1992).

Tier II Plume Visibility Analysis

The Tier II procedure is similar to the Tier I analysis but allows more site-specific input data to be used in place of the extremely conservative default assumptions. Specifically, the frequencies of occurrence of the different dispersion conditions in the proposed project vicinity are established and ranked in terms of increasing values of the dispersion parameter '$\sigma_z u$' (i.e., the product of the wind speed (u) and the plume vertical spread parameter (σ_z) for the appropriate stability class) and the source-receptor distance. In the Tier II analysis, the VISCREEN model is run for the most restrictive combination of wind speed, wind direction, and atmospheric stability that corresponds to a cumulative frequency of 1 percent (in combination with all the other combinations corresponding to lesser dispersion parameter values). A background ozone concentration of 0.065 ppm was incorporated as a representative worst-case 24-hour ozone concentration in the proposed project vicinity.

The available meteorological data were analyzed to incorporate information on the frequency of conditions that may lead to adverse plume impacts in the applicable Class I areas. The required meteorological statistics used for this refinement were derived from 5 years of hourly wind data measured at the Wintec Energy wind farm, very near the proposed project site, and are considered to be the most representative data available to characterize wind conditions at the site (see Section 7.1.2.3).

The Tier II analysis determined frequencies of various combinations of wind speed and stability occurring simultaneously with wind directions within the approximately 30 degree sectors that would carry the proposed project facility plume toward each of the three Class I areas identified for analysis. Separate frequency distributions were developed for four diurnal time periods (midnight–6:00 am, 6:00 am–noon, noon–6:00 pm, and 6:00 pm–midnight). For each 6-hour time period, the joint frequencies were determined for all combinations of the following parameter values:

- Five wind speed categories (0–1 m/s, 1–2 m/s, 2–3 m/s, 3–4 m/s, and 4–5 m/s):
- Six stability classes (Class A [most unstable] through Class F [most stable]; Class G is considered as Class F); and,
- Each of the specific wind direction compass sectors toward the Class I areas from the proposed project site.

Thus, for each time of day and each wind direction sector, 14 possible wind speed/stability combinations were ranked in order of increasing values of the dispersion parameter, $\sigma_z u$ as described above. The combinations included F stability for wind speed classes 1 through 4, E stability with wind speed classes 1 through 5, and D stability with wind speed classes 1 through 5, as specified by the Tier II guidance. Note that the lowest values of the dispersion parameter $\sigma_z u$ correspond to the most restrictive dispersion conditions. Finally, a table was constructed showing the percent frequency of occurrence for each combination of stability and wind speed or, alternatively for each value of $\sigma_z u$.

These data were tabulated in terms of the frequency of each combination, as well as the cumulative frequency of all combinations with lower values of $\sigma_z u$. The meteorological condition for each Class I area with a cumulative frequency of 1 percent or greater, and with a wind speed fast enough to transport the plume to the given Class I area within 12 hours were selected to determine appropriate VISCREEN model input parameters. The nearest boundaries of the San Jacinto Wilderness Area and San Gorgonio Wilderness Area relative to the proposed project site are located in complex terrain. Since the elevation gain from the proposed project to both these Class I areas is greater than 1,640 feet, the worst-case stability class selected from the joint frequency analysis described above may be shifted to one category less stable, per the *Workbook for Plume Visual Impact Screening and Analysis* (U.S. EPA, 1988 and 1992). Thus the VISCREEN model was run with this adjusted stability category in combination with the wind speed determined by the techniques described above. Background visual ranges appropriate for each Class I area are specified in SCAQMD Rule 1303. Accordingly, the background visible range values used in all levels of analysis were:

- 171 km (106.3 miles) for San Jacinto Wilderness Area;
- 180 km (111.8 miles) for Joshua Tree National Park; and,
- 192 km (119.3 miles) for San Gorgonio Wilderness Area.

For the Tier I and II visibility modeling, the maximum 24-hour averaged emission rates of NO_x and PM_{10} from all sources of the operational proposed project were used, in accordance with guidance in the *Workbook for Plume Visual Impact Screening and Analysis* (U.S. EPA, 1988 and 1992).

Tier III Plume Visibility Analysis

Per SCAQMD Rule 1303, if the plume parameters predicted by VISCREEN Tier II analysis are above the screening criteria for locations inside the Class I areas, a Tier III analysis using the U.S. EPA PLUVUE II plume visibility model is required to determine whether a less conservative screening approach would result in predicted significant impacts within the three Class I areas. According to the FLAG guidance, the significant impact levels for the Tier III analysis are more stringent than those for the Tier 1 and Tier II modeling approach. Thus the ΔE and contrast numbers used as significance criteria in the PLUVUE II simulations were 1.0 and 0.02, respectively.

As recommended in the U.S. EPA *Workbook for Plume Visual Impact Screening and Analysis* (U.S. EPA, 1988 and 1992), the meteorology will be examined by season, time of day, stability class, wind direction, and wind speed. Only daylight hours were examined because the plume would not be visible in the dark of night. Full details of the meteorological analysis used to determine realistic worst-case input scenarios are provided with the model input and output files submitted with this AFC (see Appendix I-6. A conservative relative humidity value of 50 percent was used in all of the PLUVUE simulations, although the average humidity in the desert area surrounding the proposed project site is considerably lower.

To ensure that different angles of the sun reflecting off the plumes from the proposed project will be examined, both dawn and dusk hours will be modeled. The U.S. EPA *Workbook for Plume Visual Impact Screening and Analysis* (U.S. EPA, 1988 and 1992) advises that these times of day should produce the worst-case conditions. Full-load turbine stack parameters and maximum 24-hour averaged emission rates of NO_x, SO_2, and PM_{10} from all sources were used in the analysis.

The observer/vista locations that were selected for analysis in the PLUVUE II simulations for the three individual Class I areas were determined in collaboration with the NPS and USFS and are shown in Figures 7.1-6 through 7.1-8. Also in accordance with the recommendation of the NPS, the background ozone level was set to 65 parts per billion (ppb) for all three Class I areas. Background values for NO_2 and coarse particle were set to 0.010 ppm and 30 $\mu g/m^3$, respectively. These values are lower than the actual measured background values for these pollutants, as the PLUVUE II model will not allow higher values for these parameters given the nature of background visual range. Default model deposition and particle size parameters were used.

Analysis Results

The Tier I and Tier II analyses predicted values for the plume parameters ΔE and C that were above the screening criteria for viewer locations inside the three Class I areas. Model input files for the Tier I and Tier II evaluations are provided on the DVDs submitted with this AFC, and details of the Tier II meteorological analysis are shown in Appendix I-6. Based on the Tier I and Tier II results, a Tier III analysis using the U.S. EPA PLUVUE II plume visibility model was performed.

PLUVUE II is a less conservative, more refined approach than VISCREEN for determining visible plume impacts. In preparation for a previous (2001) project at a site adjacent to the proposed project site, air quality staff members at both the NPS and USFS were consulted to identify appropriate observer locations that should be analyzed in the PLUVUE II study. As a result of these consultations, five different combinations of observer and target scenic vistas within Joshua Tree National Park were evaluated in the model simulations, and these are presented in Figure 7.1-6.

For the San Gorgonio and San Jacinto Wilderness Areas, the observer locations were specified by the USFS, but the target vistas were not specified. Hence, a range of wind directions from the proposed project site that would traverse these areas was selected, and multiple appropriate vista targets were chosen along the path of the wind (see Figures 7.1-7 and 7.1-8). The effects of the proposed project plume on the views from all observer points to all target receptors were evaluated for these two Class I

areas. The wind directions chosen to represent potential transport of the proposed project plumes through the San Gorgonio Wilderness Area were 112.5 degrees and 135 degrees. The wind directions selected to model proposed project impacts in the San Jacinto Wilderness Areas were 22.5 degrees, 45 degrees, and 60 degrees.

Following the guidance in the PLUVUE II users manual and discussions with responsible NPS and USFS staff, a range of viewing conditions was used in 120 separate simulations that were completed to provide estimates of the proposed project plume impacts within the three Class I areas. Plume impacts during morning and evening conditions were evaluated using an appropriate worst-case meteorological dispersion condition that was determined from analyzing the Wintec Energy meteorological data set (see Section 7.1.2.3). As recommended in the U.S. EPA *Workbook for Plume Visual Impact Screening and Analysis* (U.S. EPA, 1988 and 1992), the meteorology was examined by season, time of day, stability class, wind speed, and wind direction. Only daylight hours were examined because the plume would not be visible during the night. Full details of the meteorological analysis used to determine realistic worst-case input scenarios are provided in Appendix I-6.

The proposed project site is located in a windy desert valley with the terrain rising sharply towards the Class I Areas. Under stable conditions (stability Classes E and F), the wind blows primarily from the north to northwest, flowing away from all of the Class I areas. As shown in the analysis of the onsite meteorological data (Appendix I-6), the wind blows from the proposed project site toward Joshua Tree National Park during daytime stable conditions only 0.27 percent of the time. During stable conditions, winds blow toward San Jacinto Wilderness Area only 0.76 percent of the time, and toward San Gorgonio Wilderness Area only 1.25 percent of the time. As these conditions occur very infrequently, and coherent plumes from the proposed project could not reach elevated terrain under these conditions, neutral atmospheric stability (Class D) was selected as the worst-case stability class for this analysis. The worst-case wind speed was conservatively chosen to be 1.5 m/s because light winds do occasionally occur within the proposed project vicinity. A relative humidity value of 50 percent was conservatively used in all of the PLUVUE II simulations, although the average humidity in the desert area surrounding the proposed project site is considerably lower. Background visual range and air pollution concentration values used in the simulations were described in the previous subsection.

The results of the PLUVUE II simulations are summarized in Table 7.1-27. Each value in the table represents the highest predicted impact among six values calculated for different plume backgrounds or viewing angles—specifically, white, black or gray backgrounds—and a horizontal and a nonhorizontal view through the plume center.

The model results for all three Class I area indicate that the change in color difference is below the designated significance level (ΔE of 1.0). For San Gorgonio and San Jacinto Wilderness Areas, the results also indicate that the contrast values are below the designated significance level (C of 0.02) for all of the parameter combinations examined. In Joshua Tree National Park, there is only one exceedance of the contrast threshold. This contrast value is predicted to occur in the summer evening scenario for View 3 in the Joshua Tree Class I area for the viewpoint located 21.1 km (13.1 miles) downwind from the proposed project site against a black background. In this simulation, the observer is looking at an angle of 5.5 degrees upward along an azimuth of 311.8 degrees (nearly northwest). The observer elevation is 5,076 feet (1,547 meters), the terrain elevation at the scenic vista target point is 5,134 feet (1,565 meters), and the plume centerline altitude (above the terrain) is 791 feet (241 meters), meaning that the plume centerline elevation would be 1,565 + 241 = 1,806 meters (5,925 feet).

The USGS map of the Joshua Tree area shows that there is no terrain above 1,806 meters in elevation along an azimuth of 311.8 degrees from the View 3 observer past the View 3 vista point. Therefore, the View 3 observer looking through the plume centerline above the View 3 target point would view the plume against sky background only, with a calculated contrast of 0.004. The contrast of 0.040 calculated

for black background by PLUVUE is moot and inapplicable because there is no natural black background against which the plume could be viewed from the View 3 observer location. The black-background contrast value can be disregarded in this case because, in reality, the plume could only appear against sky background for this observer-target combination.

Thus the predicted contrast values resulting from the PLUVUE II simulations in Joshua Tree and the other two Class I areas are below the significance criterion for actual plume backgrounds. This analysis concludes that the operational proposed project would not result in significant plume visibility impacts within these three Class I areas. Electronic input and output files for all PLUVUE II simulations are being submitted with the other air quality and health risk assessment modeling on DVDs accompanying this AFC.

7.1.3 Cumulative Impacts Analysis and Protocol

CEC requirements specify that an analysis may be required to determine the cumulative impacts of the proposed 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. The cumulative impact analysis is intended to assess whether the emissions of the combined effects of these sources may cause or contribute to a violation of any ambient air quality standard.

A cumulative modeling analysis to evaluate the combined effects of pollutant emissions from the proposed project and other new or imminent emission sources within a 6-mile radius (if any) will be performed when sufficient information on these sources becomes available. A request has been made to SCAQMD for information on all new facilities within this radius that are either currently in the permitting process or under construction, or that obtained a Permit to Construct in 2006 or 2007. The required information will include permitted emission rates, source location coordinates, and stack parameters required for inclusion in the cumulative AERMOD simulations. When this information is received, it will be forwarded to CEC for approval as the basis for the full cumulative analysis. The results of the final cumulative impact analysis will be reported under separate cover.

7.1.4 Mitigation Measures

This section discusses the mitigation measures proposed by CPV Sentinel that will be implemented to reduce project-related impacts to air quality.

AIR-1 Emission Reduction Credits

CPV Sentinel is required to provide emissions offsets for maximum potential increases in emissions of nonattainment pollutants in excess of specified thresholds that would result from the operation of the proposed facility. Based on expected project emission levels, the proposed project will be required to supply offsets for NO_x, PM_{10}, SO_2, and VOCs. Estimated annual emissions of these pollutants due to project operations are summarized in Table 7.1-17. CO offsets will not be required because of the current attainment designation of the Salton Sea Air Basin for this pollutant.

Under SCAQMD rules, the proposed project offset requirements for all pollutants other than NO_x will be determined based on the maximum expected monthly emissions (in pounds) divided by 30, i.e., essentially the average day of the worst-case month. The offset ratio for emission reduction credits (ERCs) or Priority Reserve Credits is 1.2 to 1. NO_x RECLAIM credit requirements are calculated based on the annual project emissions of this pollutant using a 1 to 1 ratio. Because the proposed project site is located in the Salton Sea Air Basin, it is not automatically a NO_x RECLAIM source, but may elect to opt into the program for that pollutants.

Table 7.1-28 shows the operating parameters used to estimate emissions offset requirements for the proposed project. Based on these assumptions and the proposed project equipment emissions data presented previously for normal operations and turbine startup/shutdown conditions, the expected offset requirements for the proposed project are shown in Table 7.1-29. The requirements for NO_x have been calculated based on both annual RECLAIM credits and ERCs since the proposed project may obtain credits for these pollutants by either means. Offset requirements for SO_2 and PM_{10} may also be met using Priority Reserve Credits (PRCs). SCAQMD does not require offsets for PM_{10} emissions from evaporative cooling towers of the type that would be used for the proposed project.

The actual mix of emission credits that will be used to offset proposed project emissions will be determined based on availability and market conditions. One option is to create or purchase ERCs. SCAQMD regulations allow the use of interpollutant offsets in situations where one pollutant is a precursor to another. For example, since NO_x and SO_2 contribute to the formation of PM_{10}, extra NO_x and/or SO_2 ERCs could be used to offset some of the proposed project's PM_{10} emissions. Under the current language of SCAQMD Rule 1309.1, the proposed project will be eligible to obtain its required emission credits of SO_2 and PM_{10} from the District's Priority Reserve bank. The proposed project also could elect to opt into the RECLAIM (Regional Clean Air Incentives Market) program and will be eligible to purchase RECLAIM Trading Credits to offset some or all of the project NO_x emissions increases. Still another option available to CPV Sentinel is to create new ERCs by supporting emission reductions at other facilities.

7.1.5 Best Available Control Technology Analysis

In accordance with the requirements of SCAQMD rules, the proposed project will be required to use Best Available Control Technology (BACT) to minimize emissions from the proposed combustion turbines, the black start engine, and the fire water pump. A detailed BACT analysis was conducted to evaluate available control options for the proposed project and is presented in Appendix I-7. A summary of the proposed BACT is provided below.

Table 7.1-30 presents the proposed BACT emission levels for the proposed project, based on the assessment described in Appendix I-7.

7.1.6 Laws, Ordinances, Regulations, and Standards

The applicable laws, ordinances, regulations, and standards (LORS) related to the potential air quality impacts from the proposed project are described below. These LORS are administered (either independently or cooperatively) by the SCAQMD, U.S. EPA Region IX, the CEC, and the CARB.

7.1.6.1 Federal

The federal Clean Air Act (CAA) of 1970, 42 United States Code 7401 et seq., as amended in 1977 and 1990, is the basic federal statute governing air pollution. The provisions of the CAA that are potentially relevant to this project are listed below and discussed in the following sections:

- Air Quality Control Regions
- National Ambient Air Quality Standards
- Prevention of Significant Deterioration
- Acid Rain Program
- New Source Review
- New Source Performance Standards
- Maximum Achievable Control Technology Standards
- Title V Operating Permits

- Risk Management Program

Applicable requirements of the State of California and the local SCAQMD are discussed in Sections 7.1.6.2 and 7.1.6.3, respectively, including regulations that apply to both construction and operations.

Air Quality Control Regions

Because air pollution is a regional problem and not limited to political or state boundaries, the CAA established Air Quality Control Regions (AQCR). This is a method of dividing the country into regional air basins. The proposed project site is located in the Southeast Desert Intrastate AQCR (40 CFR Part 81.167).

National Ambient Air Quality Standards

U.S. EPA, in response to the federal CAA of 1970, established federal NAAQS in 40 CFR Part 50. The federal 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 federal NAAQS. In addition to the federal NAAQS described above, a new federal standard for $PM_{2.5}$ and a revised O_3 standard were promulgated in July 1997. The new federal standards were challenged in a court case during 1998.

The court required revisions in both standards before U.S. EPA could enforce them. The U.S. Supreme Court upheld an appeal of the District Court decision in February 2001. Under an interim policy, the preexisting federal PM_{10} and 1-hour O_3 standards would continue to be implemented for the next several years until any required actions by U.S. EPA were completed. In 1997, U.S. EPA established annual and 24-hour NAAQS for $PM_{2.5}$ for the first time. In 2006, the federal annual PM_{10} standard was revoked by the federal U.S. EPA due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution. The 3-year average of the 98th percentile of 24-hour PM_{10} concentrations (35 $\mu g/m^3$) was effective on December 17, 2006. The State of California has adopted CAAQS that are in some cases more stringent than the federal NAAQS. The state and federal AAQS relevant to the proposed project are summarized in Table 7.1-31.

The U.S. EPA, CARB, and the local air pollution control districts determine air quality attainment status by comparing local ambient air quality measurements from the state or local ambient air monitoring stations with the federal and state AAQS. 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. The proposed project site is designated a federal nonattainment area for O_3 and PM_{10} based on air quality monitoring data showing exceedances of the federal standards. The proposed project vicinity is designated a state nonattainment area for O_3 and PM_{10} based on air quality monitoring data showing exceedances of the state standards. Table 7.1-32 presents the attainment status (both federal and state) for the portion of Riverside County (north portion of Salton Sea Air Basin) that lies within the SCAQMD.

As mentioned above, both U.S. EPA and CARB are involved with air quality management in the Salton Sea Air Basin, along with SCAQMD. The area of responsibility for each of these agencies is described below.

U.S. EPA has ultimate responsibility for ensuring, pursuant to the CAAA, that all areas of the United States meet, or are making progress toward meeting, the federal NAAQS. The State of California falls under the jurisdiction of U.S. EPA Region IX, which is headquartered in San Francisco. U.S. EPA requires that all states submit state implementation plans (SIPs) for nonattainment areas that describe how the federal NAAQS will be achieved and maintained. Attainment plans must be approved by CARB before they are submitted to U.S. EPA.

Regional or local air quality management districts (or air districts) such as SCAQMD are responsible for preparation of plans for attainment of federal and state standards. CARB is responsible for overseeing attainment of the CAAQS, 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 manmade and natural), a projection of future emissions growth, an evaluation of current air quality trends, and an assessment of any rules or control measures needed to attain the federal and state AAQS. This AQMP is submitted to CARB, which then compiles AQMP 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 federal and state AAQS.

Prevention of Significant Deterioration Requirements

In addition to the ambient air quality standards described above (NAAQS), the federal Prevention of Significant Deterioration (PSD) program has been established to protect deterioration of air quality in those areas that already meet NAAQS. Specifically, the PSD program establishes allowable concentration increases for attainment pollutants due to new emission sources that are classified as major sources. These increases allow economic growth, while preserving the existing air quality, protecting public health and welfare, and protecting Class I areas (national parks and wilderness areas).

The PSD regulations define a "major stationary source" as any source type belonging to a list of 28 source categories that emits, or has the "potential to emit" 100 tons per year or more of any pollutant regulated under the CAA, or any other source type that has the potential to emit such pollutants in amounts equal to or greater than 250 tons per year. If a source is considered major for PSD purposes because of one pollutant, then PSD review is applicable for those other pollutants emitted from the source in amounts greater than the PSD significance levels. 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 (AQRVs), i.e., impacts on soils, visibility and vegetation. The proposed project is not subject to these requirements.

The incremental proposed project emissions for CO, SO_2, NO_x, PM_{10}, and VOC are as shown in Table 7.1-33 and compared with the PSD thresholds. The project emissions of all pollutants would be below these PSD significant thresholds. Thus, the project would not trigger PSD requirements.

Acid Rain Program Requirements

Title IV of the CAAA applies to sources of air pollutants that contribute to acid rain formation, including certain sources of SO_2 and NO_X emissions. Title IV is implemented by the U.S. EPA under 40 CFR 72, 73, and 75. Allowances of SO_2 emissions are set aside in 40 CFR 73. Sources subject to Title IV are required to obtain SO_2 allowances, to monitor their emissions, and obtain SO_2 allowances when a new source is permitted. Sources such as the proposed project that use pipeline-quality natural gas are exempt from many of the acid rain program requirements. However, these sources must still estimate SO_2 and

carbon dioxide (CO_2) emissions, and monitor NO_x emissions with certified CEMS. All subject facilities must submit an acid rain permit application to U.S. EPA within 24 months of commencing operation.

New Source Review Requirements

The federal CAA, U.S. EPA regulations, and the California CAA establish the criteria for siting new and modified emission sources. The federally mandated process for permitting new or modified sources in federal nonattainment areas is referred to as Nonattainment New Source Review (NNSR). SCAQMD is responsible for NNSR rule development and enforcement for sources in the Salton Sea Air Basin. The SCAQMD NNSR rules are contained in Regulation XIII, Rules 1301-1313. The rules require that BACT must be applied to any new source with emissions above the levels specified in Regulation XIII, or Rule 2005. Second, all potential emission increases from the sources above specified thresholds must be offset by real, quantifiable, surplus, permanent, and enforceable emission decreases in the form of ERCs, Regulation XIII, Rule 1309 ERCs (see Section 7.1.4). Third, an ambient air quality impact assessment must be conducted to confirm that the proposed project does not cause or contribute to a violation of a federal or state AAQS (see Section 7.1.2.4) or jeopardize public health (see Section 7.6). Finally, CPV Sentinel must certify that all major sources owned or operated in the State of California are either in compliance or on an approved schedule for compliance with applicable air quality regulations.

New Source Performance Standards

New source performance standards (NSPS) have been established by U.S. EPA to limit air pollutant emissions from certain categories of new and modified stationary sources. The NSPS regulations are contained in 40 CFR Part 60 and cover many different industrial source categories. Stationary gas turbines are regulated under Subpart KKKK. The enforcement of NSPS has been delegated to the SCAQMD, and the NSPS regulations are incorporated by reference into the District's Regulation IV Rule 4001. In general, local emission limitation rules or BACT requirements in California are far more restrictive than the NSPS requirements. For example, the controlled NO_X emission rate from the proposed project's gas turbines of less than 0.09 pound (lb) of NO_X per megawatt (MW)-hour will be well below the Subpart KKKK requirement of 0.39 lb of NO_X per MW-hour. Similarly, the projected maximum SO_2 emissions from the proposed project gas turbines will be about 0.005 lb of SO_2 per MW-hour, which is substantially less than the Subpart KKKK requirement of 0.58 lb of SO_2 per MW-hour.

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.

Maximum Achievable Control Technology

The CAAA of 1990, under revisions to Section 112, require a proposed project to list and promulgate national emission standards for hazardous air pollutants (NESHAPS) in order to control, reduce, or otherwise limit the emissions of hazardous air pollutants (HAPs) from major categories and area sources. As these standards are promulgated, they are published in 40 CFR 63.

Stationary gas turbines are on the list of 174 categories of major and area sources that would be henceforth subject to emission standards. The specific Maximum Achievable Control Technology (MACT) standard potentially applicable to new stationary gas turbines is 40 CFR 63 Subpart YYYY. However, since the proposed facility will not be a major source of HAPs, no additional controls under these NESHAPS are required.

Federally Mandated Operating Permits

Title V of the CAA requires U.S. EPA to develop a federal operating permit program that is implemented under 40 CFR 70. This program is administered by SCAQMD under Regulation XXX, Rules 3000-3008. Permits must contain emission estimates based on potential-to-emit, identification of all emission sources and controls, a compliance plan, and a statement indicating each source's compliance status. The permits must also incorporate all applicable federal, state, or Air Quality Control District orders, rules and regulations. Because the facility will be a new proposed stationary source, the proposed project will apply for a new Title V permit.

Consistency with Federal Requirements

The SCAQMD has authority to implement and enforce most applicable federal requirements, including the NSPS, NESHAPS, Title IV Acid Rain, and Title V Federal Operating Permit requirements. CPV Sentinel will apply for the Title V permit that will include Title IV Acid Rain provisions.

Risk Management Plan

Regulations (40 CFR 68) under the CAA are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store more than a threshold quantity of a listed regulated substance to develop a Risk Management Plan, including an offsite-consequence analysis for the worst-case accidental release of a hazardous substance, hazard assessments, and response programs to prevent accidental releases of listed chemicals. Section 112(r)(5) of the CAA discusses the regulated substances. These substances are listed in 40 CFR 68.130. Aqueous ammonia, which will used as a reagent to the proposed project SCR NO_x control system, is a listed substance and its Threshold Quantity for solutions of 20 percent and greater is 20,000 pounds of solution.

7.1.6.2 State

The CARB was created by the Mulford-Carrell Air Resources Act in 1968. The primary responsibilities of the CARB include (1) to develop, adopt, implement, and enforce the state's motor vehicle pollution control program; (2) to administer and coordinate the state's air pollution research program; (3) to adopt and update the state's ambient air quality standards; (4) to review the operations of the local air pollution control districts; and (5) to review and coordinate the state implementation plans for achieving federal ambient air quality standards.

State Implementation Plan

The federal CAA requires each state to prepare a SIP to demonstrate how it will attain the NAAQS within the federally imposed deadlines. In California, local districts adopt new rules to demonstrate attainment of the NAAQS by reducing emissions. CARB reviews the SIP. The relevant SCAQMD Rules and Regulations that have been incorporated into the SIP are presented below under the local LORS.

California Clean Air Act

In 1989, California established state ambient air quality standards, including stringent enforcement of the NAAQS and additional standards for visibility-reducing particles, sulfates, and hydrogen sulfide. Local districts prepare air quality plans to demonstrate how the ambient air quality standards will be attained.

Toxic Air Contaminant Program

The Toxic Air Contaminant Identification and Control Act of 1983 created a state process to identify toxic air contaminants and to control their emissions. CARB identifies and prioritizes the pollutants to be

considered for identification as toxic air contaminants. CARB assesses the potential for human exposure to a substance while the Office of Environmental Health Hazard Assessment (OEHHA) evaluates the corresponding health effects. These agencies prepare a risk assessment report to determine if the substance poses a significant health risk and should be identified as a toxic air contaminant. This program includes the 189 HAPs named by the CAAA. If necessary, CARB develops air toxics control measures to reduce emissions. No measures in this program are applicable to the proposed project, since the project would not exceed the Title V threshold of 10 tpy of any single hazardous air pollutants, or 25 tpy of a combination of HAPs. The HAPs are addressed by the Federal Title V Operating Permit.

Air Toxics Hot Spots Program

As required by the California Health and Safety Code Section 44300 (originally Assembly Bill 2588 – Air Toxics "Hot Spots" Information and Assessment Act), this program was created in 1987 to develop a statewide inventory of air toxics emissions from stationary sources. Applicable facilities must prepare: (1) an emissions inventory plan identifying air toxics; (2) an emission inventory report quantifying air toxics emissions; and (3) a health risk assessment, if air toxics emissions are at high levels. Facilities whose air toxics pose a significant health risk must prepare and implement risk reduction plans. This requirement is applicable only after the start of operations. Section 7.6, Public Health, indicates that air toxics impacts from the proposed project would be insignificant.

Permit to Construct and Permit to Operate

Under Regulation II, SCAQMD administers the air quality regulatory program for the construction, alteration, replacement, and operation of new power plants within its jurisdiction. Regulation II, Rules 201 and 203 incorporate other SCAQMD rules that pertain to sources that may emit air contaminants through the issuance of air permits (i.e., Permit to Construct [PTC] and Permit to Operate [PTO]). This permitting process allows the SCAQMD 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. A PTC allows for the construction of the air pollution source and remains in effect until the PTO application is granted, denied, or canceled. For power plants under the siting jurisdiction of the CEC, the SCAQMD issues a Determination of Compliance (DOC) in lieu of a PTC. The DOC is incorporated into the CEC license. Once the project commences operations and demonstrates compliance with the DOC, SCAQMD will issue a PTO. The PTO specifies conditions that the air pollution source must meet to comply with other air quality standards and will incorporate applicable DOC requirements.

Power Plant Sitting Requirements

Under the CEQA, the CEC has been charged with assessing the environmental impacts of each new power plant and considering the implementation of feasible mitigation measures to prevent potential significant impacts. 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."

The CEC siting regulations require that, unless certain conditions justifying an override are shown, a new power plant can only be approved if the proposed project complies with all federal, state, and local air quality rules, regulations, standards, guidelines, and ordinances that govern the construction and operation of the proposed project. A project must demonstrate that facility emissions will be appropriately controlled to mitigate significant impacts from the project and that it will not jeopardize attainment and maintenance of the state and federal AAQS. Cumulative impacts, impacts due to pollutant interaction, and impacts from noncriteria pollutants must also be considered.

CEC and CARB Memorandum of Understanding

This Memorandum of Understanding establishes requirements of the CEC to assure protection of environmental quality during AFC review.

Consistency with State Requirements

State law invests local air pollution control districts and air quality management districts with the responsibility for regulating emissions from stationary sources. As discussed previously in this section, the proposed project is under the local jurisdiction of the SCAQMD. Compliance with District rules and regulations will ensure compliance with state air quality requirements.

7.1.6.3 Local

The SCAQMD is the local district with authority to implement and enforce air quality regulations. The SCAQMD prepares an Air Quality Plan to define its strategies for attaining the state and federal ambient air quality standards, and its relevant control measures for implementing those strategies (Health and Safety Code Section 40914).

The SCAQMD Rules and Regulations are authorized by Health and Safety Code (H&SC) Section 4000 et seq., and Section 40200 et seq. This section presents the SCAQMD requirements that are applicable to the proposed project. The SCAQMD has the delegated authority for implementing local, state, and federal air quality regulations in Los Angeles, Orange, and the nondesert portions of Riverside and San Bernardino Counties. The proposed project is subject to District regulations that apply to new source review of emissions, prohibitory regulations, and requirements for toxic air pollutants. The following sections evaluate the proposed project's compliance with applicable District requirements.

The proposed project is required to secure a preconstruction Determination of Compliance from the SCAQMD, and to demonstrate continued compliance with regulatory limits. The preconstruction review includes BACT and offsetting of emissions.

Rules and Regulations

The following paragraphs outline the SCAQMD rules and regulations that apply to the proposed project.

Regulation II – Permits

This regulation establishes the framework of the application for construction and operating permits for new or modified equipment that emits air pollutants.

Rule 201 – Permit to Construct

A project shall not construct or modify any nonexempt equipment that emits or controls air pollution without first obtaining a Permit to Construct. For power plant projects subject to CEC licensing, the PTC is effectively replaced by the DOC process.

Rule 202 – Temporary Permit to Operate

This rule allows for new equipment that was issued a PTC to be operated temporarily, upon notification of the Air Pollution Control Officer, until the final PTO is issued. CPV Sentinel does not anticipate the need for a temporary PTO at this time.

Rule 203 – Permit to Operate

This rule prohibits operation of any equipment that emits or controls air pollutants without first obtaining a PTO, except as provided in Rule 202. CPV Sentinel will need to obtain all the required permits prior to installation of the proposed project.

Rule 212 – Standards for Approving Permits

Rule 212 specifies the standard requirements for a PTC and a PTO, including public notification requirements for projects located within 1,000 feet from a school boundary, projects that pose a potential risk of nuisance, or facilities that pose a cancer risk of 10 in a million during a 70-year lifetime. Additionally, RECLAIM facilities that exceed the daily maximums specified in the Rule must conduct public notification to the broadest possible scope of interested parties, including federal, state, and local interested agencies, for a 30-day public comment period. Public notification must include all applicable provisions of 40 CFR Part 51.161(b) and 40 CFR Part 124.10. The proposed project will not be located within 1,000 feet from the outer boundary of a school, but daily estimated emissions will exceed those stated in Rule 212(g). However, the proposed project will not expose an individual to a cancer risk greater than, or equal to, 10 in a million (1×10^{-6}) during a lifetime (70 years), as documented by the Rule 1402 and presented in Section 7.6, Public Health of this AFC. CPV Sentinel will be in compliance with Rule 212 by conducting public notification according to the requirements specified by the Rule, including the 30-day notification and public comment requirements of 40 CFR Part 124.10 and 40 CFR Part 51.161(b).

Rule 218 – Continuous Emission Monitoring

This rule describes the installation, quality control and assurance, and reporting requirements for continuous emission monitoring system (CEMS) to determine the concentration or mass emissions of a source. This rule does not apply to the CEMS required under RECLAIM Regulation XX for NO_X monitoring.

Regulation III – Fees

Rule 301 – Permit Fees

This rule identifies the fees that are applicable to permit modifications, new facilities, and permitted emissions. Review of the fee schedules identifies the fees in Rule 301 for processing of this AFC. CPV Sentinel will submit the required fees with the application for permit modification, in compliance with this rule.

Regulation IV – Prohibitions

This regulation restricts visible emissions, odor nuisance, fugitive dust, various air emissions, fuel contaminants, startup/shutdown exemptions, and breakdown events.

Rule 401 – Visible Emissions

Rule 401 prohibits the discharge of any air contaminant from a single source for more than three minutes in any one hour that produces visible emissions of specified opacity or shade (designated on the Ringlemann Chart). No visible emissions are expected with proper, normal operation of the proposed turbines and engines using natural gas and diesel fuels and the BACT equipment specified in this AFC.

Rule 402 – Nuisance

Rule 402 implements H&SC 41700 to prohibit the discharge from any source of any air contaminant that may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which endangers such persons or public, or which may cause injury or damage to business or property.

No nuisance is expected with proper, normal operation of the proposed turbines and engines utilizing natural gas and diesel fuels with the control equipment specified in this AFC.

Rule 403 – Fugitive Dust

Under this rule CPV Sentinel must prevent, reduce, or mitigate fugitive dust emissions from the proposed project site. CPV Sentinel must use best available control measures to implement this rule. Mitigation may include adding freeboard to haul vehicles, covering loose material on haul vehicles, watering, or using chemical stabilizers on roads or dirt areas, or ceasing all activities. A contingency plan may be required by the U.S. EPA. CPV Sentinel will submit a fugitive dust plan to both the District and the Commission. CPV Sentinel will also implement appropriate measures to control fugitive dust emissions during construction, including (1) use of water or chemical dust suppressants on unpaved surfaces; (2) use of vacuum or water flushing on paved surfaces; (3) covering or maintaining freeboard to haul vehicles; (4) limiting traffic speed on unpaved areas to 15 mph; (5) installing erosion control measures; (6) replanting disturbed areas as soon as possible; (7) using gravel pads and wheel washers as needed; and (8) using wind breaks and dust suppression as needed to control wind erosion.

Rule 403.1- Supplemental Fugitive Dust Control Requirements for Coachella Valley Sources

This rule is supplemental to Rule 403 requirements and requires CPV Sentinel to reduce or prevent PM_{10} entrained from man-made source in the Coachella Valley. CPV Sentinel is required to determine when wind speed conditions exceed 25 miles per hour based on either District forecasts or through use of an on-site anemometer. For projects in the Coachella Valley Blowsand Zone, the rule also requires CPV Sentinel to stabilize new man-made deposits of bulk material within 24 hours of making such bulk material deposits, and stabilize new deposits of bulk material originating from off-site undisturbed natural desert areas within 72 hours. CPV Sentinel's fugitive dust control plan should be prepared in accordance with the Rule 403.1 Implementation Handbook. Since the proposed project is located in the Coachella Valley, the installation and operation of the CTGs is expected to comply with this rule. CPV Sentinel's fugitive dust control plan also needs to follow Fugitive Dust (PM-10) Control Plan guidelines for Riverside County. Only a small portion of the construction laydown area will be located within the Palm Springs City Limit and thus subject to the City's additional dust control requirements.

Rule 407 – Liquid and Gaseous Air Contaminants

Rule 407 prohibits the discharge of CO and sulfur compounds into the atmosphere at specified concentrations (2,000 ppm of CO, and 500 ppm of SO_2) averaged over 15 minutes. The proposed project turbines will meet the CO emission limit of 2,000 ppm with (or without) the installation of the control system, as substantiated by the emission calculations in Appendix I-3. The sulfur emission requirement does not apply per Rule 407 (c)(2), since the fuel complies with the gaseous fuel sulfur content limits of Rule 431.1 (see below). The proposed project will be in compliance with this rule.

Rule 408 – Circumvention

This rule allows the concealment of emissions released to the atmosphere in cases where the only violation involved is of Section 48700 of H&SC or District Rule 402. CPV Sentinel will not circumvent any District rules or regulations.

Rule 431.1 – Sulfur Content of Gaseous Fuels

This rule specifies fuel sulfur content limits applicable to any person who burns gaseous fuels containing sulfur compounds. The rule's limit requirements are based on fuel type. The rule also provides test methods, monitoring, recordkeeping, and reporting requirements. Compliance with this rule is expected with usage of pipeline grade natural gas. The total sulfur compounds are limited to a maximum of 0.20 grains/100 dscf (4 ppmv as hydrogen sulfide [H_2S]), which is less than the rule's 16 ppmv limit for natural gas (calculated as H_2S). The proposed project will therefore be in compliance with this rule.

Rule 475 – Electric Power Generating Equipment

This rule applies to power generating equipment greater than 10 MW installed after May 7, 1976. Requirements establish a limit for combustion contaminants (particulate matter) of 11 lbs/hr or 0.01 grains/scf. Compliance is achieved if either the mass limit or the concentration limit is met. Composite emissions calculations for all turbine operations (cold startup, hot startup, base load, and planned shutdown) indicate that the average rate of PM_{10} emissions per turbine will be less than 11 lb/hr. The proposed project will, therefore, be in compliance with this Rule.

Regulation VII – Emergencies

Rule 701 – Air Pollution Emergency Contingency Actions

This rule requires facilities employing 100 or more people or emitting 100 or more tons of air pollutants (NO_X, SO_X, or VOCs) per year to reduce those pollutants by at least 20 percent upon declaration or prediction of a Stage 2 or 3 episode. Upon declaration of a state of emergency by the Governor, a facility must comply with the Governor's requirements. A power plant may be exempt if it is determined to be an essential service responding to public emergency or utility outage. CPV Sentinel will respond appropriately to the Governor's declaration of a state of emergency.

Regulation IX – Standards of Performance for New Stationary Sources

Standards of Performance for Electric Utility Steam Generating Units for which construction is commenced after September 18, 1978, specifies NO_X, SO_2, PM_{10}, and opacity emission limits; emission monitoring; and reporting requirements for Electric Utility Steam Generating Units. Regulation IX incorporates provisions of Part 60, Chapter I, Title 40 of the Code of Federal Regulations (40 CFR Part 60). It is applicable to all new, modified or reconstructed sources of air pollution. Sections of this regulation apply to small steam generators (Subpart Dc) and stationary gas turbines (Subpart KKKK). These subparts establish limits of particulate matter, SO_2 and NO_2 emissions from the facility, and their corresponding monitoring and testing requirements. The proposed project is expected to be well below these emissions limits with the proposed NO_X SCR controls and use of low-sulfur natural gas fuel.

Regulation XI – Source Specific Standards

Rule 1110.1 – Emissions from Stationary Internal Combustion Engines

This rule generally applies to engines larger than 50 brake-horsepower (bhp) and restricts NO_X and CO emissions from rich-burn or lean-burn engines. Emergency standby engines operating less than 200 hours per year are exempt. The proposed project will operate a 240 horsepower diesel emergency firewater pump engine and a 1,500 kilowatt (2,206 bhp) diesel black start generator.

Rule 1110.2 – Emissions from Gas and Liquid Fueled Engines

This rule establishes NO_X, VOC, and CO emission limits from stationary and portable engines over 50 bhp. Emergency standby engines operating less than 200 hours per year are exempt. The proposed project will operate a 240 horsepower diesel emergency firewater pump engine and a 1,500 kilowatt (2,206 bhp) diesel black start generator.

Rule 1134 Emissions of Oxides of Nitrogen from Stationary Gas Turbines

Rule 1134 applies to stationary gas turbines, which provide guidelines/requirements for controlling NO_X emissions. The proposed project is subject to this rule, unless CPV Sentinel elects to opt into the RECLAIM program (Regulation XX), in which it will be exempt from the requirements of this rule..

Rule 1135 Emissions of Oxides of Nitrogen from Electric Power Generating Systems

Rule 1135 applies to electric power generating systems, which provide guidelines/requirements for controlling NO_X emissions. The proposed project is subject to this rule, unless CPV Sentinel elects to opt into the RECLAIM program (Regulation XX), in which it will be exempt from the requirements of this rule.

Regulation XIII – New Source Review

This regulation requires preconstruction review for new, modified, or relocated facilities to ensure that the facility does not interfere with progress in attainment of the NAAQS, and that future economic growth in the Salton Sea Air Basin is not unnecessarily restricted. This regulation limits the emissions of non-attainment contaminants and their precursors and ozone depleting compounds and ammonia, by requiring the use of BACT. CPV Sentinel intends to comply with all requirements of Regulation XIII.

The portion of Riverside County within the Salton Sea Air Basin is a nonattainment region for O_3, and PM_{10}. Precursors to nonattainment pollutants are also considered nonattainment for regulatory purposes of SCAQMD review. Therefore, SCAQMD considers the following pollutants to be nonattainment:

- Reactive organic gases (ROG) as a precursor to O_3 and the organic fraction of suspended particulate matter;
- NO_X as a precursor to O_3, NO_2 and the nitrate fraction of suspended particulate matter;
- SO_X as a precursor to SO_2, SO_4, and the sulfate fraction of suspended particulate matter; and,
- Inorganic gases such as ammonia (NH_3), hydrogen fluoride (HF), and hydrogen chloride (HCl) as precursors to particulate matter.

Under NSR (Regulation XIII), Rule 1303 (Requirements), there are four specific requirements that apply to an applicable permit unit: (1) Installation of BACT (1303(a)); (2) modeling to substantiate that there will be no significant increase in an air quality concentration (1303(b)(1)); (3) obtaining emission offsets for the proposed increase in facility emissions (1303(b)(2)); and (4) facility compliance verification (1303 (b)(3)).

This regulation applies to all new or modified existing permit units that may cause the issuance of any nonattainment air contaminant (or precursor), halogenated hydrocarbon, or ammonia. The proposed project is expected to have emissions of NO_X, CO, SO_X, ROG, and PM_{10}. For RECLAIM facilities, this rule only applies to those nonattainment pollutants, or their precursors, not regulated under the RECLAIM program. The proposed project is not automatically a RECLAIM facility for NO_x, and SO_2, but could elect to opt into this program. The Regulation XIII requirements for CO, SO_x, ROG, PM_{10}, and NH_3 will apply.

1. Since CO and PM_{10} emissions are below BACT limits, the proposed project should not cause a significant increase in ambient air concentrations of CO, PM_{10}, or sulfates. However, a detailed air quality modeling analysis for CO, PM_{10}, and sulfates is required under this rule. Modeling for ROC and SO_X is not required by this rule. A Health Risk Assessment (HRA) for emissions of toxic contaminants is discussed in Section 7.6, Public Health.

2. Under Rule 1304 (d)(2)(B), emission offsets will be required if the permit units (i.e., the project) post-modification potential-to-emit (PTE) for an individual criteria pollutant is greater than actual emissions discounted to BACT levels, based on actual process rate data during the previous 2 years. No 2-year internal offsets will be available to apply toward the new gas turbines, firewater pump, and black start engine; therefore, CPV

Sentinel will provide all the ERCs needed for the new equipment emissions according to the provisions of Rules 1303(b)(2) and 1309.

3. Pursuant to Rule 1303 (b)(4) and Regulation II (Permits), CPV Sentinel shall certify that its facility complies with all applicable rules and regulations of SCAQMD. The new gas turbines will be considered a major modification as defined by Rule 1302. CPV Sentinel shall also certify the other sources operated by CPV Sentinel are in compliance with applicable federal emissions standards. Statewide compliance certification will also be required.

Regulation XIV – Toxics

Rule 1401 – New Source Review of Carcinogenic Air Contaminants

The SCAQMD regulates air toxic contaminants from new, modified, or relocated permit units by specifying limits for the maximum individual cancer risk and excess cancer cases that may result from exposure to carcinogenic air contaminants from these sources.

Requirements for BACT for Toxics (T-BACT), maximum individual cancer risk (MICR), and risk assessment guidelines for toxic pollutants are the primary provisions of SCAQMD Rule 1401. The proposed modifications to CPV Sentinel's facility permit will trigger increases of Rule 1401 toxic pollutants, along with combustion pollutants. Emissions of organic hazardous air pollutants will be reduced by the CO oxidation catalyst at a rate of 85 percent for formaldehyde and 55 percent for other species. The CO oxidation catalyst is proposed as T-BACT for compliance with this rule. The proposed project would not cause an incremental cancer risk of 10 in 1 million, as documented in Section 7.6 of this AFC.

Regulation XVII – Prevention of Significant Deterioration

This regulation establishes preconstruction requirements for stationary sources to ensure the air quality in attainment areas does not significantly deteriorate while maintaining a margin for future growth. It establishes maximum allowable increases over ambient baseline concentrations for each pollutant.

Rule 1703 – PSD Analysis

The SCAQMD Rule in 1703(a)(2) requires that each permit unit is constructed using BACT for each criteria air contaminant for which there is federally significant net emission increase. Since the proposed project will not trigger the federal Major Source emission threshold of 250 tons per year for any pollutant, this project will not be subject to the PSD rule.

Regulation XX – Regional Clean Air Incentives Market

The RECLAIM is a program designed to distribute emission allocations (or credits) for two primary non-attainment pollutants: NO_X and SO_x. A facility under the program may emit NO_X and/or SO_2 only according to the amount of credits in the facility's possession. Facilities in the South Coast Air Basin that emit more than 4 tons per year of NO_X or SO_2 are automatically included in the program. Other facilities may opt into the RECLAIM program, including facilities in the Salton Sea Air Basin. Regulation XX sets specific NO_X and/or SO_2 requirements for RECLAIM facilities and exempts the facilities from other NO_X and/or SO_2 requirements in a number of command and control rules according to Tables 1 and 2 in Rule 2001. The proposed project may elect to operate as a RECLAIM NO_X facility per Rule 2001. If so, CPV Sentinel will comply with the CEMS, record-keeping, and reporting requirements per Rule 2012.

Rule 2005 – New Source Review for RECLAIM

Similar to Regulation XIII, Rule 2005 defines the pre-construction review requirements for new RECLAIM facilities and modifications to existing RECLAIM facilities. The requirements of Rule 2005 are virtually identical to Rule 1303, except for different offset NO_X requirements. NO_X emission increases

must be below the facility's current RECLAIM Trading Credit (RTC) allocation or additional RTCs must be provided by CPV Sentinel. RECLAIM facilities have no Community Bank for NO_X. Compliance certification requirements are identical to Rule 1303. CPV Sentinel will need to obtain a RECLAIM permit and comply with BACT, modeling, and emissions offsetting requirements. As presented in this AFC, CPV Sentinel has conducted dispersion modeling of the potential air impacts to substantiate that operational emissions of NO_X will not significantly affect air quality. CPV Sentinel will apply BACT to the turbines and SCR to control NO_X, and will offset the NO_X emissions by ERCs or RECLAIM credits.

Regulation XXX – Federal Operating Permits (Title V, Part 70)

Regulation XXX administers the 40 CFR Part 70 Federal Permitting Program, established by Title V of the CAAA, within the SCAQMD jurisdiction. The proposed project will be a Title V major source. Regulation XXX defines the permit application and issuance, and the compliance requirements of the program. The proposed project will require obtaining a new Title V permit, and U.S. EPA Region IX review is required. Regulation XXX integrates the Title V permit with the RECLAIM permit so that the proposed project can't proceed without the other. CPV Sentinel will apply for Title V permit.

Regulation XXXI – Acid Rain Permit

Title IV of the federal CAAA establishes acid rain permitting for qualifying facilities. Regulation XXXI integrates the Title IV program with the RECLAIM program. The regulation requires a facility to obtain emission allowances for SO_X emissions, and requires monitoring of SO_x NO_X, and CO_2. CPV Sentinel will apply for RECLAIM permit to incorporate revisions to Title IV.

7.1.6.4 Industry

No industry-based air quality LORS are applicable to the proposed project.

Table 7.1-34 presents the applicable federal, state, local regulations that the proposed project must adequately address as part of the permitting process.

7.1.7 Involved Agencies and Agency Contacts

Agency contacts regarding the air quality assessment of the proposed project are as follows:

Agency/Address	Contact/Title	Telephone
Air Quality – California Energy Commission 1519 Ninth Street Sacramento, CA 95814	Joe Loyer, Associate Mechanical Engineer	(916) 654-4287
Air Quality – South Coast Air Pollution Control District 21865 Copley Dr, Diamond Bar, CA 91765	Tom Chico, Senior Modeler	(909) 396-3149
Air Quality – U.S. Environmental Protection Agency 75 Hawthorne Street San Francisco, CA 94105	Carol Bohnenkamp, Regional Modeler Gerardo Rios, Chief, New Source Review Section	(415) 744-1500
Air Quality – California Air Resources Board P.O. Box 2815 Sacramento, CA 95812	Michael Tollstrup, Chief, Project Assessment Branch Stationary Source Division	(916) 322-6026

7.1.8 Permits Required and Permitting Schedule

Permits Required and Permit Schedule

Responsible Agency	Permit	Approval Schedule
South Coast Air Quality Management District (SCAQMD)	Permit to Construct/Permit to Operate	Application to be filed concurrent with AFC filing. 180-day application review period will be requested.

Under Regulation II, SCAQMD regulates the construction, alteration, replacement, and operation of new power plants. The proposed project is required to obtain a preconstruction Determination of Compliance from the SCAQMD. Regulation II, Rules 201 and 203 incorporates other SCAQMD rules pertaining to sources that may emit air contaminants through the issuance of air permits (i.e., Permit to Construct and Permit to Operate). This permitting process allows the SCAQMD 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. A Permit to Construct (PTC) allows for the construction of the air pollution source and remains in effect until the Permit to Operate (PTO) is granted, denied, or canceled. For power plants under the siting jurisdiction of the CEC, the SCAQMD issues a Determination of Compliance in lieu of a PTC. The DOC is incorporated into the CEC license. When the proposed project commences operation and demonstrates compliance with the DOC, SCAQMD will issue a PTO. The PTO specifies conditions that the air pollution source must meet to comply with other air quality standards and will incorporate applicable DOC requirements. The final DOC should be issued within 6 months after receipt of complete applications.

7.1.9 References

This section lists the references used to conduct the air quality assessment.

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Western Regional Climate Center, 2007. Desert Research Institute, Las Vegas, NV. URL: http://www.wrcc.dri.edu/.

Table 7.1-1
Climatological Normals – Historical Average Temperature and Precipitation Data (1971-2000) for Palm Springs, California

Month	Highest Mean Temperature (°F)	Lowest Mean Temperature (°F)	Mean Temperature (°F)	Mean Precipitation (in.)
January	63.3	50.1	57.3	1.27
February	66.8	57.0	61.0	1.15
March	72.9	58.9	65.2	0.63
April	78.9	63.6	71.8	0.08
May	86.0	71.7	78.7	0.06
June	92.0	81.1	86.8	0.05
July	95.6	87.8	92.1	0.19
August	96.2	85.9	91.5	0.40
September	89.7	79.7	85.9	0.39
October	81.2	70.1	76.0	0.11
November	70.1	57.1	64.0	0.29
December	63.4	51.0	56.7	0.61
Annual	96.2	50.1	73.9	5.23

Source: Western Regional Climate Center, Desert Research Institute, Reno, NV http://www.wrcc.dri.edu

Table 7.1-2a
Concentration Data Summary for Ozone (O_3) at Palm Springs-Fire Station

Year	Highest Concentration for O_3 (ppm)		Estimated Number of Days Exceeding Standards		
	1-hour	8-hour	Federal 1-hr	Federal 8-hr	State 1-hr
2006	0.126	0.109	2	23	37
2005	0.139	0.116	4	35	41
2004	0.125	0.106	1	32	36

Notes:

The federal 8-hour average O_3 standard is 0.08 ppm. On June 15, 2005, the 1-hour ozone standard (0.12 ppm) was revoked for all areas except the 8-hour ozone nonattainment Early Action Compact Areas (EAC). The proposed project site is not located within one of the EAC areas that are still subject to the 1-hour ozone standard.
The state O_3 standards are 1-hour average (0.09 ppm) and 8-hour average (0.07 ppm).
Monitoring Site Address: Palm Springs-Fire Station, 590 E Racquet Club Ave, Palm Springs, CA 92262
Source: CARB-California Air Quality Data website (http://www.arb.ca.gov/aqd/aqdpage.htm)

Table 7.1-2b
Concentration Data Summary for Ozone (O_3) at Indio-Jackson Street

Year	Highest Concentration for O_3 (ppm)		Estimated Number of Days Exceeding Standards		
	1-hour	8-hour	Federal 1-hr	Federal 8-hr	State 1-hr
2006	0.103	0.090	0	7	5
2005	0.114	0.095	0	18	18
2004	0.111	0.099	0	18	23

Notes:
The federal 8-hour average O_3 standard is 0.08 ppm. On June 15, 2005, the 1-hour ozone standard (0.12 ppm) was revoked for all areas except the 8-hour ozone nonattainment Early Action Compact Areas (EAC). The proposed project site is not located within one of the EAC areas that are still subject to the 1-hour ozone standard.
The state O_3 standards are 1-hour average (0.09 ppm) and 8-hour average (0.07 ppm).
Monitoring Site Address: Indio-Jackson Street, 46990 Jackson Street, Indio, CA 92201
Source: CARB-California Air Quality Data website (http://www.arb.ca.gov/aqd/aqdpage.htm)

Table 7.1-3a
Concentration Data Summary for Particulate Matter (PM_{10}) at Palm Springs-Fire Station

Year	Highest 24-hour Concentration for PM_{10} ($\mu g/m^3$)		Annual Arithmetic Mean for PM_{10} ($\mu g/m^3$)	Estimated Number of Days Exceeding Standards	
	Federal	State	State	Federal 24-hour	State 24 hour
2006	73[1]	71[2]	27.8	7[3]	20
2005	66	64	25.4	0	13
2004	79	78	NA	0	NA

Notes:
The federal PM_{10} standard is 24-hour average: 150 $\mu g/m^3$.
The state PM_{10} standards are annual arithmetic mean: 20 $\mu g/m^3$ and 24-hour average: 50 $\mu g/m^3$.
Monitoring Site Address: Palm Springs-Fire Station, 590 E Racquet Club Av, Palm Springs, CA 92262
Source: California Air Resources Board -California Air Quality Data website (http://www.arb.ca.gov/aqd/aqdpage.htm)
NA = There were insufficient (or no) data available to determine the value.
[1] Value listed is second highest 24-hour concentration. The data for the sample collected (226 $\mu g/m^3$ on 7/16/06) is anticipated to be excluded in accordance with U.S. EPA's Natural Events Policy. U.S. EPA allows one exceedance of the standard per year.
[2] Value listed is second highest 24-hour concentration. The data for the sample collected (226 $\mu g/m^3$ on 7/16/06) is anticipated to be excluded in accordance with U.S. EPA's Natural Events Policy.
[3] Value presented is number of days in the year when 24-hour values would be estimated to exceed the level of the 24-hour standard if monitoring took place every day. Currently, PM_{10} monitoring occurs every 6 days.

Table 7.1-3b
Concentration Data Summary for Particulate Matter (PM_{10}) at Indio-Jackson Street

Year	Highest 24-hour Concentration for PM_{10} ($\mu g/m^3$)		Annual Arithmetic Mean for PM_{10} ($\mu g/m^3$)	Estimated Number of Days Exceeding Standards[3]	
	Federal	State	State	Federal 24-hour	State 24 hour
2006	122[1]	122[2]	54.9	3	180
2005	106	106	45.4	0	122
2004	161	161	40.6	3	74

Notes:
The federal PM_{10} standard is 24-hour average: 150 $\mu g/m^3$.
The state PM_{10} standards are annual arithmetic mean: 20 $\mu g/m^3$ and 24-hour average: 50 $\mu g/m^3$.
Monitoring Site Address: Indio-Jackson Street, 46990 Jackson Street, Indio, CA 92201
Source: California Air Resources Board -California Air Quality Data website (http://www.arb.ca.gov/aqd/aqdpage.htm)
[1] Value listed is second highest 24-hour concentration. The data for the sample collected (313 $\mu g/m^3$ on 7/16/06) is anticipated to be excluded in accordance with U.S. EPA's Natural Events Policy. U.S. EPA allows one exceedance of the standard per year.
[2] Value listed is second highest 24-hour concentration. The data for the sample collected (314 $\mu g/m^3$ on 7/16/06) is anticipated to be excluded in accordance with U.S. EPA's Natural Events Policy.
[3] Values presented are number of days in the year when 24-hour values would be estimated to exceed the level of the 24-hour standard if monitoring took place every day. Currently, PM_{10} monitoring occurs every 6 days.

Table 7.1-4a
Concentration Data Summary for Particulate Matter ($PM_{2.5}$) at Palm Springs-Fire Station

Year	Highest 24-hour Concentration for $PM_{2.5}$ ($\mu g/m^3$)	Annual Arithmetic Mean for $PM_{2.5}$ ($\mu g/m^3$)		Estimated Number of Days Exceeding Standards
	Federal	Federal	State	Federal
2006	24.7	7.7	NA	NA
2005	26.1	8.4	NA	NA
2004	27.1	8.9	8.8	0

Notes:
The federal $PM_{2.5}$ standards are 24-hour average (35 $\mu g/m^3$) and annual arithmetic mean (15 $\mu g/m^3$).
The state $PM_{2.5}$ standard is annual arithmetic mean: 12 $\mu g/m^3$.
Monitoring Site Address: Palm Springs-Fire Station, 590 E Racquet Club Av, Palm Springs, CA 92262
Source: California Air Resources Board-California Air Quality Data website (http://www.arb.ca.gov/aqd/aqdpage.htm)
NA = There were insufficient data available to determine the value.

Table 7.1-4b
Concentration Data Summary for Particulate Matter ($PM_{2.5}$) at Indio-Jackson Street

Year	Highest 24-hour Concentration for $PM_{2.5}$ ($\mu g/m^3$)	Annual Arithmetic Mean for $PM_{2.5}$ ($\mu g/m^3$)		Estimated Number of Days Exceeding Standards
	Federal	Federal	State	Federal
2006	24.2	9.6	NA	0
2005	44.3	10.3	NA	0
2004	28.5	10.8	9.7	0

Notes:
The federal $PM_{2.5}$ standards are 24-hour average (35 $\mu g/m^3$) and annual arithmetic mean (15 $\mu g/m^3$).
The state $PM_{2.5}$ standard is annual arithmetic mean: 12 $\mu g/m^3$.
Monitoring Site Address: Indio-Jackson Street, 46990 Jackson Street, Indio, CA 92201
Source: California Air Resources Board-California Air Quality Data website (http://www.arb.ca.gov/aqd/aqdpage.htm)
NA = There were insufficient data available to determine the value.

Table 7.1-5
Concentration Data Summary for Carbon Monoxide (CO) at Palm Springs-Fire Station

Year	Highest Concentration for CO (ppm)		Estimated Number of Days Exceeding Standards (days)			
	1-hour	8-hour	Federal 1-hour	Federal 8-hour	State 1-hour	State 8-hour
2006	2.3	0.85	0	0	0	0
2005	2.1	0.80	0	0	0	0
2004	2.1	0.80	0	0	0	0

Notes:
The federal CO standards are 1-hour average (35 ppm) and 8-hour average (9 ppm).
The state CO standards are 1-hour average (20 ppm) and 8-hour average (9 ppm).
Monitoring Site Address: Palm Springs-Fire Station, 590 E Racquet Club Av, Palm Springs, CA 92262
Source: U.S. EPA, 2006b

Table 7.1-6
Concentration Data Summary for Nitrogen Dioxide (NO_2) at Palm Springs-Fire Station

Year	Highest 1-hour Concentration for NO_2 (ppm)	Annual Average for NO_2 (ppm)	Estimated Number of Days Exceeding Standards (days)	
			Federal	State
2006	0.093	0.010	0	0
2005	0.059	0.012	0	0
2004	0.066	0.013	0	0

Notes:
The federal NO_2 standards is annual average: 0.053 ppm
The state NO_2 standards is 1-hour average: 0.25 ppm
Monitoring Site Address: Palm Springs-Fire Station, 590 E Racquet Club Av, Palm Springs, CA 92262
Source: California Air Resources Board -California Air Quality Data website (http://www.arb.ca.gov/aqd/aqdpage.htm)

Table 7.1-7
Concentration Data Summary for Sulfur Dioxide (SO_2) at Riverside-Rubidoux Station

Year	Highest Concentration for SO_2 (ppm)			Annual Average for SO_2 (ppm)	Estimated Number of Days Exceeding Standards (days)				
	1-hour	3-hour	24-hour		Federal 3-hour	Federal 24-hour	Federal Annual Mean	State 1-hour	State 24-hour
2006	0.012	0.004	0.002	0.001	0	0	0	0	0
2005	0.024	0.012	0.011	0.004	0	0	0	0	0
2004	0.017	0.016	0.015	0.004	0	0	0	0	0

Notes:
The federal SO_2 standards are annual average (0.03 ppm,) and 24-hour average (0.14 ppm)
The state SO_2 standards are 24-hour average (0.04 ppm), 3-hour average (0.50 ppm) and 1-hour average (0.25 ppm).
Monitoring site: Riverside-Rubidoux, 5888 Mission Blvd. Rubidoux, Riverside County, CA
Source: U.S. EPA, 2006b

Table 7.1-8
Summary of Recent Lead (Pb) Concentration Data at Riverside-Rubidoux Station

Year	Highest 24-hour Concentration for Lead ($\mu g/m^3$)	Estimated Number of Days Exceeding Federal and State Standards (days)
2006	0.02	0
2005	0.03	0
2004	0.05	0

Notes:
The federal lead standard is quarterly average: 1.5 $\mu g/m^3$.
The state lead standard is 30 days average: 1.5 $\mu g/m^3$.
Monitoring site: Riverside-Rubidoux, 5888 Mission Blvd., Rubidoux, Riverside County, CA
Source: U.S. EPA, 2006b

Table 7.1-9
Estimated Schedules of Construction Equipment Usage

	Construction Equipment	Percent Usage	Average Units On Site Per Month																		Total Months
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	Pickup truck	75%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	36
2	1-Ton Flatbed Truck	50%		1	1	1	1	1	1	1	1	1	1	2	4	4	4	4	8	8	55
3	Farm Tractor	70%																1	1	1	3
4	Forklift	50%			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	39
5	Fuel/Lube Truck	70%	1	1	1	1	1														5
6	Service Truck	50%	1	2	2	1	1														8
7	500-Ton Truck Crane	25%							1	1	1	1	1	1							6
8	Crawler Crane	50%				1	1	1	1	1	1	1	1	1	1	1					11
9	Hydraulic Crane (65 Ton)	65%				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
10	Hydraulic Crane (45 Ton)	65%				1	1	1	1	1	1	1	1	1	1	1	1	1	1		24
11	Articulating Boom Manlift	65%				1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	68
12	Air Compressor	25%					1	1	1	1	1	1	1	1	1	1	1	1	1		13
13	Backhoe Loader	75%					2	2	2	2	2	2	2	2	2	2	2	2	2	1	35
14	Trencher	45%													1	1	1	1	1	1	6
15	Wheel Loader	70%	1	1	1	1										1	1	1	1		11
16	Elevating Scrapers	90%	4	6	1	2															30
17	Dump Truck (30 Ton)	75%	1	1	1	1															6
18	Crawler Excavator	85%	1	1	1	1	1	1	1	1	1	1	1								21
19	Dozer	90%			1	1															2
20	Dozer with Ripper	90%		2																	4
21	Vibratory Roller	90%		4	4	1	1	1	1	1	1	1	1								22

Table 7.1-9
Estimated Schedules of Construction Equipment Usage

	Construction Equipment	Percent Usage	Average Units On Site Per Month																		Total Months
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
22	Walk Behind Vibratory Roller	90%					1	1	1	1	1	1	1	1	1	1					17
23	Dump Truck	35%					1	1	1	1	1	1	1	1	1	1	1	1			12
24	Motor Grader	90%			1	1	1	1	1	1	1							1	1	1	14
25	Jumping Jacks Compactors	50%			4	3	2	1	1	1	1	1	1	1	1	1	1	1	1		24
26	Vibratory Plate Compactors	50%			5	2	2	2	2	2	2	2	2	1	1	1	1	1	1		24
27	Water Truck	50%	1	3	3	2															9
28	Concrete Pumper Truck	15%						1	2	2	2	2	2	2	2	2	2	2	2		23
29	Welder	25%					2	2	2	2	2	2	2	2	2	2	2	1	1		42
30	Light Plant	30%			2	2	2	2	2	2	2	2	2	2	2	2	2				26
Total:			11	23	31	27	27	25	27	27	27	26	26	24	26	27	25	24	27	18	**611**

Table 7.1-10
Daily Maximum Construction Emissions of Criteria Pollutants (pounds/day)

Activity	PM_{10}	$PM_{2.5}$	CO	ROC	NO_x	SO_x
Onsite Combustion Emissions						
Diesel Construction Equipment	6.80	6.26	61.37	18.37	110.19	0.11
Dump trucks, pickup trucks and worker vehicles	0.02	0.00	0.32	0.05	0.76	0.001
Construction Combustion Subtotal (lbs)	***6.8***	***6.3***	***61.4***	***18.4***	***110.2***	***0.1***
Onsite Fugitive Dust Emissions						
Vehicle Travel on Unpaved Roads and Parking Lot	1.55	0.33				
Earth clearing/Bulldozing	1.46	0.30				
Earth Loading/Storage	2.46	0.51				
Subtotal of Onsite Emissions (lbs)	***5.5***	***1.1***				
Offsite On-Highway Emissions						
Worker Passenger Vehicle – Combustion Emissions	0.02	0.01	2.19	0.24	0.23	0.002
Worker Passenger Vehicle – Paved Road Dust	1.29	0.22				
Subtotal of Offsite Emissions (lbs)	***1.29***	***0.22***	***2.19***	***0.24***	***0.23***	***0.002***
Total Max. Daily Emissions (lbs)	**13.6**	**7.6**	**63.6**	**18.6**	**110.4**	**0.1**

Notes:
PM_{10} = particulate matter less than 10 micrometers in diameter
$PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter
ROC = reactive organic compounds
CO = carbon monoxide
NO_x = nitrogen oxide(s)
SO_x = sulfur oxide(s)

Table 7.1-11
Maximum Annual Construction Emissions of Criteria Pollutants (ton/year)

Activity	PM_{10}	$PM_{2.5}$	CO	ROC	NO_x	SO_x
Onsite Combustion Emissions						
Diesel Construction Equipment	0.91	0.84	8.18	2.54	14.67	0.02
Dump trucks, pickup trucks and worker vehicles	0.001	0.001	0.108	0.012	0.042	0.000
Construction Combustion Subtotal (tpy)	***0.9***	***0.8***	***8.2***	***2.5***	***14.7***	***0.0***
Onsite Fugitive Dust Emissions						
Vehicle Travel on Unpaved Roads and Parking Lot	0.03	0.01				
Earth clearing/Bulldozing	1.12	0.23				
Earth Loading/Storage	0.15	0.03				
Subtotal of Onsite Emissions (tpy)	***1.3***	***0.3***				
Offsite On-Highway Emissions						
Worker Passenger Vehicle – Combustion Emissions	0.003	0.002	0.394	0.043	0.041	0.000
Worker Passenger Vehicle – Paved Road Dust	0.23	0.04				
Subtotal of Offsite Emissions (tpy)	***0.24***	***0.04***	***0.39***	***0.04***	***0.04***	***0.000***
Total Max. Annual Emissions (tpy)	**2.4**	**1.2**	**8.6**	**2.6**	**14.7**	**0.0**

Notes:
CO = carbon monoxide
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 micrometers in diameter
$PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter
ROC = reactive organic compounds
SO_x = sulfur oxide(s)
tpy = tons per year

Table 7.1-12
Maximum Proposed CTG Operating Schedules

Operating Conditions (CTGs 1 through 5)	**Annual Numbers**
Number of Startups/Shutdown Cycles per CTG	300
Startup/Shutdown Time (hours)	177
Total CTG Normal Operating Hours	2,628
Operating Conditions (CTGs 6 through 8)	
Number of Startups/Shutdown Cycles per CTG	350
Startup/Shutdown Time (hours)	206
Total CTG Normal Operating Hours	3,200

Table 7.1-13
1-Hour Operating Emission Rates and Stack Parameters for CTG Operating Load Scenarios

Case No.	**100**	**101**	**102**	**103**	**104**	**105**	**106**	**107**	**108**	**109**	**110**
Ambient Temperature (°F)	17	17	17	72	72	72	72	107	107	107	107
Stack Diameter (ft)	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
Exhaust Flow (lb/hr)	1,703,900	1,438,227	1,138,130	1,636,078	1,599,844	1,371,797	1,089,457	1,556,054	1,479,392	1,273,593	1,016,749
CTG Load Level (percent)	**100**	**75**	**50**	**100**	**100**	**75**	**50**	**100**	**100**	**75**	**50**
Evaporative Cooler	NONE	NONE	NONE	YES	NONE	NONE	NONE	YES	NONE	NONE	NONE
Exhaust Temperature (°F)	744.1	744.6	762.4	785.9	791.8	771.2	786.7	799.7	813.6	791.8	806.2
Exit Velocity, ft/minute	6031.0	5092.7	4089.7	5992.0	5887.0	4964.8	3992.6	5762.0	5538.6	4686.5	3784.4
NO_x Emissions per Turbine Unit											
ppmvd @ 15% O_2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
lb/hr	7.92	6.25	4.59	7.92	7.75	6.08	4.47	7.53	7.15	5.63	4.16
CO Emissions per Turbine Unit											
ppmvd @ 15% O_2	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
lb/hr	11.58	9.14	6.71	11.58	11.32	8.88	6.53	11.00	10.45	8.23	6.08
VOC Emissions per Turbine Unit											
ppmvd @ 15% O_2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
lb/hr as methane (CH_4)	2.21	1.74	1.28	2.21	2.16	1.70	1.25	2.10	2.00	1.57	1.16
PM_{10} Emissions per Turbine Unit											
lb/hr	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
SO_x Emissions per Turbine Unit											
lb/hr	0.61	0.48	0.36	0.61	0.60	0.47	0.35	0.58	0.55	0.44	0.32

Notes:
A natural gas fuel sulfur content of 0.25 grains per 100 dry standard cubic feet was used to estimate CTG emissions of SO_2
CO = carbon monoxide
CTG = combustion turbine generator
lb/hr = pounds per hour
NO_x = nitrogen oxide
O_2 = oxygen
PM_{10} = particulate matter 10 microns in diameter
ppmvd = parts per million by volume, dry
SO_X = sulfur oxides
VOC = volatile organic compounds

Table 7.1-14
Criteria Pollutant Emission Rates During CTG Startup and Shutdown (per turbine)

Pollutant	Startup (25 minutes duration)		Shutdown (10 minutes duration)	
	Maximum Instantaneous Emission Rate (lb/hr)	Total Emissions (lb/event)	Maximum Instantaneous Emissions Rate (lb/hr)	Total Emissions (lb/event)
NO_X	59.76	24.90	34.95	6.00
CO	38.15	15.89	203.88	35.00
VOC	10.32	4.30	17.48	3.00
SO_2	0.42	0.17	0.12	0.02
PM_{10}	6.00	2.50	6.00	1.03

Note:
CO = carbon monoxide
NO_x = nitrogen oxide
PM_{10} = particulate matter 10 microns in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Table 7.1-15
Emergency Engine Emission Parameters

Pollutant	Emergency Fire Pump Engine		Black Start Engine	
	Emissions		Emissions	
	lb/hr	lb/yr	lb/hr	lb/yr
NO_X	2.06	107.30	17.86	214.29
CO	0.31	16.23	11.57	138.89
VOC	0.53	27.51	3.31	39.68
SO_X	0.001	0.06	4.52	54.27
PM_{10}	0.07	3.85	0.66	7.94
Source Parameters	Annual emissions based on 52 hours of operation Stack height: 50 feet Stack Diameter: 0.373 feet Stack exhaust flow rate at full firing: 1,227 ACFM Stack exhaust temperature at full firing: 891 ºF		Annual emissions based on 12 hours of operation Stack height: 50 feet Stack diameter: 0.67 feet Stack exhaust flow Rate at full firing: 11,071 ACFM Stack exhaust temperature at full firing: 762.8 ºF	

Table 7.1-16
Criteria Pollutant Sources and Emission Totals for the Worst-Case Project Emissions Scenarios for All Averaging Times

Averaging Time	Operating Equipment	Pollutant	Emissions in pounds – Entire Period			
			Eight CTGs	Fire Water Pump	Black Start Engine	Cooling Tower (8 cells)
1-hour	**NO_x:** One startup (all turbines) with remainder at normal operations (100% load, 72ºF); **CO:** One startup (all turbines) with remainder at normal operations (100% load, 72ºF); **SO_2:** Full-load turbine operation at 72ºF ambient temperature. **All:** includes test of fire pump and black start engine.	NO_x	236.2	2.06	17.86	-
		CO	356.7	0.31	11.57	-
		SO_2	4.9	0.001	4.52	-
3-hour	**SO_2:** Continuous full-load (all turbines) at 72ºF ambient temperature, plus test of fire pump and black start engine.	SO_2	14.8	0.001	4.52	
8-hour	**CO:** One startup, one shutdown (all turbines) with remainder at normal operations (100% load, 7ºF), plus test of fire pump and black start engine.	CO	1,093.8	0.31	11.57	-
24-hour	**NO_x:** Two startups, two shutdowns (all turbines) with remainder at normal operations (100% load, 72ºF). **SO_2** Continuous full-load (all turbines) at 72ºF ambient temperature. **PM_{10}**: Two startups, two shutdowns (all turbines) with remainder at normal operations (50% load, 107ºF). **All:** includes test of fire pump and black start engine.	PM_{10}	1,152.0	0.07	0.7	18.8
		NO_x	1,941.1	2.06	17.86	-
		SO_2	115.4	0.001	4.52	-

Table 7.1-17
Estimated Total Project Annual Emissions of Criteria Pollutants

Pollutant	Emissions (tons/year)[1,2]
SO_2	7.23
NO_x	129.55
ROC	34.46
PM_{10}[3]	73.84
CO	196.56
Lead[4]	<0.6

Notes:
[1] Includes emissions from eight new CTG units
[2] CTG emissions based on 2,805 hours of operation (2,628 hours normal operation), plus 300 starts and 300 shutdowns for Units 1-5 and 3,406 hours of operation (3,200 hours normal operation), plus 350 starts and 350 shutdowns for Units 6-8
[3] PM_{10} emissions includes both filterable (front-half) and condensable (back-half) particulates
[4] Lead emissions are 'non-detect' from AP-42 for CTGs firing natural gas
CO = carbon monoxide
NO_x = nitrogen oxides
PM_{10} = particulate matter less than 10 micrometers in diameter
ROC = reactive organic compounds
SO_2 = sulfur dioxide

Table 7.1-18
Durations and Criteria Pollutant Emissions for Commissioning of a Single CTG

Activity	Duration (hours)	CTG Load (%)	Exhaust Temp (ºF)	Exhaust Flow Rate (acfm)	Pollutant Emission Rates				
					NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)	SO_2 (lb/hr)	PM_{10} (lb/hr)
First Fire	28	0	859	163,836	11.13	45.44	1.16		6
Controlled Break in	20	5	864	226,630	20.92	30.27	0.73		6
Dynamic AVR	40	10-100	752-868	289,675-873,543	48.99	75.3	4.8		6
Base Load AVR	16	100	767	873,543	168.06	305.63	14.94		6

Notes:
CTG = combustion turbine generator
AVR = automatic voltage regulator
SCR = selective catalytic reduction

Table 7.1-19
Maximum Potential Greenhouse Gas Emissions from the Proposed Project

Emission Rate (metric tons/year)			
8 turbines	1 black start engine	1 firewater pump	Total CO_2 Equivalent
1,149,260	1.08	0.70	1,149,262

Table 7.1-20
AERMET Land Use Characteristics

Land Use Characteristic	Spring	Summer	Autumn	Winter
Albedo	0.3	0.28	0.28	0.28
Bowen Ratio	3.0	4.0	6.0	6.0
Surface Roughness (m)	0.3	0.3	0.3	0.3

Table 7.1-21
Turbine Screening Modeling Results

Stack Parameters Normal and Operational Emissions per Turbine											
Case		**CASE 100**	**CASE 101**	**CASE 102**	**CASE 103**	**CASE 104**	**CASE 105**	**CASE 106**	**CASE 107**	**CASE 108**	**CASE 109**	**CASE 110**
Ambient Temperature		**17°F – 80% RH**			**72°F – 40% RH**				**107°F – 18% RH**			
CTG Load Level		**100%**	**75%**	**50%**	**100%**	**100%**	**75%**	**50%**	**100%**	**100%**	**75%**	**50%**
Evaporative Cooler Status		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
Stack Outlet Temperature (°F)		744.1	744.6	762.4	785.9	791.8	771.2	786.7	799.7	813.6	791.8	806.2
Stack Exit Velocity (ft/second)		100.52	84.88	68.16	99.87	98.12	82.75	66.54	96.03	92.31	78.11	63.07
Stack Outlet Temperature (°K)		668.8	669.0	678.9	692.0	695.3	683.8	692.4	699.7	707.4	695.3	703.3
Stack Exit Velocity (m/s)		30.64	25.87	20.78	30.44	29.91	25.22	20.28	29.27	28.14	23.81	19.22
Emission Per Turbine												
NO_x (lb/hr)		7.94	6.261	4.595	7.94	7.77	6.085	4.473	7.544	7.172	5.637	4.165
CO (lb/hr)		11.6	9.145	6.711	11.601	11.344	8.889	6.534	11.019	10.47	8.234	6.084
SO_2 (lb/hr)		0.61	0.483	0.354	0.612	0.6	0.469	0.345	0.58	0.55	0.434	0.321
PM_{10} (lb/hr)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
NO_x (gram/second [g/s])		1.0	0.7889	0.58	1.0	0.9785	0.7667	0.56	0.9505	0.9037	0.71	0.52
CO (g/s)		1.4611	1.1523	0.85	1.4617	1.4293	1.12	0.82	1.3884	1.319	1.04	0.77
SO_2 (g/s)		0.0771	0.0609	0.04	0.0771	0.0753	0.0591	0.04	0.0732	0.0696	0.05	0.04
PM_{10} (g/s)		0.756	0.756	0.756	0.756	0.756	0.756	0.756	0.756	0.756	0.756	0.756
Screening Model Results – Maximum X/Q concentrations ($\mu g/m^3/(g/s)$) predicted from AERMOD												
1 hour		27.4	34.58	35.97	26.77	27.18	30.18	36.22	27.66	28.56	32.88	37.28
3 hour		22.7	28.0	31.36	22.15	22.51	28.23	31.58	22.95	23.92	29.77	32.86
8 hour		20.87	24.97	28.24	20.35	20.67	24.74	27.83	21.14	22.02	26.01	31.08
24 hour		11.98	14.54	19.04	11.68	11.92	14.57	19.29	12.21	12.77	15.4	20.37
Annual		1.58	1.82	2.19	1.56	1.58	1.84	2.22	1.6	1.64	1.91	2.31
Maximum predicted offsite pollutant concentrations due to eight turbine emissions for each averaging time												
NO_x	**1 hour**	**27.41**	27.28	20.83	26.20	26.560	23.14	20.41	26.29	25.81	23.35	19.56
	annual	**1.58**	1.44	1.27	1.53	1.55	1.41	1.25	1.52	1.48	1.36	1.21
CO	**1 hour**	**40.03**	39.85	30.42	38.26	38.85	33.80	29.82	38.40	37.67	34.11	28.58
	8 hour	**30.49**	28.77	23.88	29.09	29.55	27.71	22.91	29.35	29.04	27.00	23.83
SO_2	**1 hour**	**2.11**	2.10	1.61	2.02	2.05	1.785	1.575	2.03	1.99	1.80	1.51
	3 hour	**1.75**	1.70	1.40	1.67	1.70	1.67	1.37	1.68	1.66	1.63	1.33
	24 hour	**0.92**	0.89	0.85	0.88	0.90	0.86	0.84	0.90	0.89	0.84	0.82
	Annual	**0.12**	0.11	0.10	0.118	0.12	0.11	0.10	0.12	0.11	0.10	0.09
PM_{10}	**24 hour**	9.06	10.99	14.39	8.83	9.01	11.02	14.58	9.23	9.65	11.64	**15.40**
	Annual	1.19	1.38	1.66	1.18	1.19	0.39	1.68	1.21	1.24	1.44	**1.75**

Notes:
Bold = highest concentration for that pollutant and averaging time
All particulate matter (PM) emissions from CTGs are assumed to be both PM_{10} and $PM_{2.5}$
CO = carbon monoxide
ºF = degrees Fahrenheit
g/s =
ug/m^3 = micrograms per cubic meter
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 microns in diameter
SO_2 = sulfur dioxide
% = percent

Table 7.1-22
Maximum Modeled Criteria Pollutant Impacts due to Proposed Project Site Grading, Laydown, Building, and Pipeline Excavation Emissions (Short-Term Impact Estimates Based on Month 3 Construction Activities)

Pollutant	Averaging Period	Maximum Modeled Impact ($\mu g/m^3$)	Background[1] ($\mu g/m^3$)	Maximum Total Predicted Concentration ($\mu g/m^3$)	Most Stringent AAQS ($\mu g/m^3$)	UTM Coordinates	
						East (m)	North (m)
Construction Impacts –							
CO	1 hour	95.3	2,645	2,738.3	23,000	539,692	3,754,952
	8 hour	23.1	944.4	946.5	10,000	539,692	3,754,952
NO_2	1 hour[2]	145.5	174.8	320.3	470[4]	539,540	3,754,714
	Annual[2]	7.69	24.5	32.2	100[4]	539,490	3,754,886
PM_{10}	24 hour	3.41	161[3]	164.4	50	539,535	3,754,715
	Annual	1.03	54.9[3]	55.9	20	539,490	3,754,886
$PM_{2.5}$	24 hour	1.17	44.3	45.5	35	539,490	3,755,035
	Annual	0.56	10.8	11.4	12	539,490	3,754,886
SO_2	1 hour	0.21	62.9	63.1	655	539,692	3,755,071
	3 hour	0.15	41.6	41.8	1,300	539,692	3,755,071
	24 hour	0.02	39.4	39.4	105	539,692	3,754,952
	Annual	0.01	10.7	10.7	80	539,490	3,754,886

Notes:
1 Background represents the maximum values measured at the monitoring stations described in previous sections, for 2004-2006.
2 Results for NO_2 during construction used OLM with ambient ozone data collected at the Palm Springs-Fire Station monitoring station for the years 1988 through 1991.
3 PM_{10} and $PM_{2.5}$ background levels exceed ambient standards.
4 In February 2007, the CARB approved new, more stringent CAAQS for NO_2. In the units used in this table, the new standards, which are expected to take effect fully in late 2007, are 338 $\mu g/m^3$ (1 hour) and 56 $\mu g/m^3$ (annual).

$\mu g/m^3$ = micrograms per cubic meter
AAQS = Most stringent ambient air quality standard for the averaging period
CO = carbon monoxide
NA = Not applicable
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.
SO_2 = sulfur dioxide
UTM = Universal Transverse Mercator

Table 7.1-23
AERMOD Refined Modeling Results for the Operational Project

Pollutant	Averaging Period	Maximum Predicted Impact ($\mu g/m^3$)	SCAQMD Significant Change ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)[1]	Total Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)	Maximum UTMX NAD27 (m)	Maximum UTMY NAD27 (m)
NO_2	1-hour[2]	**161.3**	20	174.8	**336.1**	NA	470[5]	539,	3,754,
	Annual[2]	**0.75**	1	24.5	**25.3**	100	100[5]	539,375	3,754,875
SO_2	1-hour	**44.3**	NA	62.9	**107.2**	NA	655	539,692	3,755,071
	3-hour	**38.3**	NA	41.6	**79.9**	1300	NA	539,692	3,755,048
	24-hour	**1.06**	NA	39.4	**40.5**	365	105	539,625	3,754,250
	Annual	**0.04**	NA	10.7	**10.7**	80	NA	540,375	3,754,875
CO	1-hour	**169.2**	1,100	2,645	**2,814**	40,000	23,000	539,625	3,754,375
	8-hour	**47.2**	500	44.4	**991.6**	10,000	10,000	539,625	3,754,200
PM_{10}	24-hour[3,4]	**16.7**	2.5 (NA)	161	**177.7**	150	50	539,625	3,754,325
	Annual[3,4]	**0.63**	1	54.9	**55.5**	NA	20	540,300	3,754,900
$PM_{2.5}$	24-hour	**16.7**	NA	44.3	**61.0**	35	NA	539,625	3,754,325
	Annual	0.63	NA	10.8	**11.4**	15	12	540,300	3,754,900

Notes:
1 Background represents the maximum values measured at the monitoring stations identified in Section 7.1.1.2.
2 Results for NO_2 during operations used ozone limiting method (OLM) with ambient ozone data collected at the Palm Spring-Fire Station monitoring station for the years 1988 through 1991.
3 PM_{10} and $PM_{2.5}$ background levels exceed ambient standards.
4 All PM_{10} emissions from proposed project sources were also considered to be $PM_{2.5}$.
5 In February 2007, the CARB approved new, more stringent CAAQS for NO_2. In the units used in this table, the new standards, which are expected to take effect fully in late 2007, are 338 $\mu g/m^3$ (1-hour) and 56 $\mu g/m^3$ (annual).

Table 7.1-24
Proposed Project Commissioning Modeling Results

Modeling Scenario	Pollutant	Averaging Period	Maximum Estimated Impact ($\mu g/m^3$)	Background[2] ($\mu g/m^3$)	Total Predicted Concentration ($\mu g/m^3$)	Most Stringent Standard ($\mu g/m^3$)
Worst-case turbine commissioning tests[1]	CO	1 hour	205.5	2,645	2,851	23,000
		8 hour	166.0	944.4	1,110.4	10,000
	NO_2	1 hour	109.8	174.8	284.6	470[3]

Notes:
1 Indicated maximum impacts are the higher of the maxima obtained from separate simulations for worst-case commissioning emissions for any of the eight turbines.
2 Background represents the maximum values measured at the monitoring stations presented in Section 7.1.1.2.
3 In February 2007, the CARB approved new, more stringent CAAQS for NO_2. In the units used in this table, the new 1-hour standard, which is expected to take effect fully in late 2007, is 338 µg/m3.
$\mu g/m^3$ = micrograms per cubic meter
CO = carbon monoxide
NO_2 = nitrogen dioxide

Table 7.1-25
Proposed Project Operations Fumigation Impact Summary

Pollutant	Source	Inversion Impact 1 Unit ($\mu g/m^3$)	Inversion Impact 8 Units ($\mu g/m^3$)	Distance to Maximum Impact (meters)
NO_2 1 hour[1]	Normal Operation Turbine	0.7955	6.364	22,440
CO 1 hour[2]	Normal Operation Turbine	1.16	9.291	22,440
SO_2 1 hour[3]	Normal Operation Turbine	0.061	0.49	22,440
SO_2 3 hour[4]	Normal Operation Turbine	0.055	0.439	22,440

Notes:
[1] NO_2 modeled with turbine in normal operation, 1.0 g/s emissions (1 Unit), and stack parameters for 100% load at 17°F (Case 100).
[2] CO modeled with turbine in normal operation, 1.46 g/s emissions (I Unit), and stack parameters for 100% load at 17°F (Case 100).
[3] SO_2 modeled with turbine in normal operation, 0.077 g/s emissions (1 Unit), and stack parameters for 100% load at 17°F (Case 100).
[4] SO_2 1-hour results multiplied by 0.9 to convert to 3-hour.
% = percent
$\mu g/m^3$ = micrograms per cubic meter
CO = carbon monoxide
NO_2 = nitrogen dioxide
SO_2 = sulfur dioxide

Table 7.1-26
Class I Areas Near the Proposed Project Site

Class I Area	Distance from Proposed Project to Class I Area (km/miles)	SCAQMD Rule 1303 Required Analysis Distance (km/miles)
San Jacinto Wilderness Area	9/5.6	28/17.4
Joshua Tree National Park	12/7.5	29/18
San Gorgonio Wilderness Area	14/8.7	32/19.9

Table 7.1-27
Summary of Results of PLUVUE II Plume Visibility Impact Simulations

Class I Area	Parameter	Autumn		Spring		Summer		Winter		Maximum For All Times
		Evening	Morning	Evening	Morning	Evening	Morning	Evening	Morning	
Joshua Tree National Park	contrast	0.014	0.005	0.013	0.004	0.0191	0.006	0.01	0.004	0.019
San Jacinto Wilderness Area	contrast	0.01	0.007	0.009	0.008	0.011	0.003	0.009	0.008	0.011
San Gorgonio Wilderness Area	contrast	0.009	0.006	0.007	0.007	0.005	0.006	0.005	0.008	0.009
Joshua Tree National Park	ΔE	0.292	0.309	0.268	0.356	0.924	0.314	0.204	0.356	0.924
San Jacinto Wilderness Area	ΔE	0.482	0.694	0.465	0.736	0.498	0.714	0.501	0.736	0.736
San Gorgonio Wilderness Area	ΔE	0.372	0.392	0.27	0.446	0.222	0.405	0.256	0.66	0.66

Note: Contrast predicted with a black background was excluded because the plume could only appear against sky background for this observer-target combination.

Table 7.1-28
Basis for Estimating Emission Credit Requirements to Offset Proposed Project Emissions

Emission Source[4]	Annual Operating Hours @`100% Capacity	Annual Startups and Shutdowns (CTGs only)	Daily Operating Hours at 100% Capacity for Worst Month	Daily Startups/Shutdowns for Worst Month (CTGs only)
CTGs 1-5	2,628	300	15	2
CTGs 6-8	3,200	350	22	2
Cooling Tower for CTGs 1-5	2,628	300	15	2
Cooling Tower for CTGs 6-8	3,200	350	22	2
Black Start Engine	12		One 1-hour test one day each week	
Firewater Pump Engine	52		One 1-hour test each month	

Table 7.1-29
Estimated Emission Offset Requirements for the Proposed Project Emissions

Pollutant	CTGs	Fire and Blackstart Engine	Total Emission Credits Required	Note
NO_X (lbs/year)	258,896	243	259,139	If RECLAIM
NO_x (lbs/day)	1,084		1,933	If ERCs
VOC(lbs/day)	514.09	0.17	515.17	ERCs
PM_{10} (lbs/day)	1,107.82	0.03	1,107.85	Priority Reserve
SO_X (lbs/day)	107	0.00	107.0	Priority Reserve

Notes:
CTG = combustión turbina generador
ERCs = emisión reduction credits
Lbs/day = pounds per day
NO_x = oxides of nitrogen
PM_{10} = particulate matter less than or equal to 10 microns in diameter
SOx = oxides of sulfur
VOC = volatile organic compound

Table 7.1-30
Summary of Proposed BACT

Pollutant	Control Technology	Concentration
Combustion Turbines		
NO_x	Water injection and SCR with ammonia injection	2.5 ppmvd at 15 percent O_2 (1-hour average)
CO	Catalytic oxidation	6.0 ppmvd at 15 percent O_2 (1-hour average)
ROC	Catalytic oxidation	2.0 ppmvd at 15 percent O_2 (1-hour average)
SO_2	Pipeline quality natural gas	NA
PM_{10}	Pipeline quality natural gas	NA
Ammonia slip	Operational limitation	5.0 ppmvd at 15 percent O_2
Emergency Firewater Pump Engine (240 horsepower)		
NO_x	U.S. EPA Tier II	3.9 g/brake horsepower (bhp)-hour
CO	U.S. EPA Tier II	0.59 g/bhp-hour
ROC	U.S. EPA Tier II	1.00 g/bhp-hour
SO_2	U.S. EPA Tier II	Diesel fuel with sulfur content no greater than 0.0015% by weight
PM_{10}	U.S. EPA Tier II	0.14 g/bhp-hour
Black Start Engine (2,206 horsepower)		
NO_x	U.S. EPA Tier II	5.4 g/kilowatt (kW)-hour
CO	U.S. EPA Tier II	3.5 g/kW-hour
ROC	U.S. EPA Tier II	1.0 g/kW-hour
SO_2	U.S. EPA Tier II	Diesel fuel with sulfur content no greater than 0.0015% by weight
PM_{10}	U.S. EPA Tier II	0.20 g/kW-hour

Notes:

BACT = Best Available Control Technology
CO = carbon monoxide
NA = not applicable
NO_x = nitrogen oxides
O_2 = oxygen
PM_{10} = particulate matter less than or equal to 10 microns in diameter
ppm = parts per million
SCR = Selective catalytic reduction
ROC = reactive organic compounds
SO_2 = sulfur dioxide

Table 7.1-31
National and California Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS[1]		CAAQS[2]
		Primary[3,4]	Secondary[3,5]	Concentration[3]
Ozone (O_3)	1-Hour	Revoked [6]	Same as Primary Standard	0.09 ppm (180 µg/m^3)
	8-Hour	0.08 ppm		0.07 ppm (137 µg/m^3)
Carbon Monoxide (CO)	8-Hour	9 ppm (10 mg/m^3)	None	9.0 ppm (10 mg/m^3)
	1-Hour	35 ppm (40 mg/m^3)		20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual Average	0.053 ppm (100 µg/m^3)	Same as Primary Standard	-
	1-Hour	-		0.25 ppm (470 µg/m^3)
Sulfur Oxides (SO_2)	Annual Average	0.03 ppm (80 µg/m^3)	-	-
	24-Hour	0.14 ppm (365 µg/m^3)	-	0.04 ppm (105 µg/m^3)
	3-Hour	-	0.5 ppm (1300 µg/m^3)	-
	1-Hour	-	-	0.25 ppm (655 µg/m^3)
Suspended Particulate Matter (PM_{10})	24-Hour	150 µg/m^3	Same as Primary Standard	50 µg/m^3
	Annual Arithmetic Mean	Revoked [7]		20 µg/m^3
Fine Particulate Matter ($PM_{2.5}$) [8]	24-Hour	35 µg/m^3	Same as Primary Standard	-
	Annual Arithmetic Mean	15 µg/m^3		12 µg/m^3
Lead (Pb)	30-Day Average	-	-	1.5 µg/m^3
	Quarterly Average	1.5 µg/m^3	Same as Primary Standard	-
Hydrogen Sulfide (HS)	1-Hour	No Federal Standards		0.03 ppm (42 µg/m^3)
Sulfates (SO_4)	24-Hour			25 µg/m^3
Visibility Reducing Particles	8-Hour (10 am-6 pm, Pacific Standard Time)			In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Notes:

1. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
2. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility-reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
5. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
6. On June 15, 2005, the 1-hour ozone standard (0.12 ppm) was revoked for all areas except the 8-hour ozone nonattainment Early Action Compact Areas.
7. Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the agency revoked the annual PM_{10} standard in 2006 (effective December 17, 2006).
8. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective December 17, 2006).

µg/m^3 = micrograms per cubic meter; mg/m^3 = milligram per cubic meter; ppm = parts per million

Source: U.S. EPA-NAAQS (http://www.epa.gov/air/criteria.html); CARB-CAAQS (http://www.arb.ca.gov/aqs/aaqs2.pdf)

Table 7.1-32
Attainment Status for Riverside County (north portion of Salton Sea Air Basin) with respect to Federal and California Ambient Air Quality Standards

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

Notes:
Source: National Area Designations and Proposed 2006 State Area Designations, CARB (http://www.arb.ca.gov/desig/adm/adm.htm)
Notes:
CO = carbon monoxide
NO_2 = nitrogen dioxide
SO_2 = sulfur dioxide
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

Table 7.1-33
PSD Emission Threshold Triggers for New Stationary Sources

Pollutant	Significant Thresholds (tpy)	Project Emissions (tpy)	PSD Triggered by Project?
CO	250	196.56	No
SO_2	250	7.23	No
NO_x	250	129.55	No
PM_{10}	250	73.84	No
VOCs	250	34.46	No

Notes:
Source: SCAQMD rule 1702 (http://www.aqmd.gov/rules/reg/reg17/r1702.pdf)
Project emissions include all emissions from natural gas.
Notes:
tpy = tons per year
CO = carbon monoxide
SO_2 = sulfur dioxide
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 microns in diameter
VOCs = volatile organic compounds

Table 7.1-34
Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description	Regulating Agency	Section Reference
FEDERAL			
Clean Air Act 160-169A and implementing regulations, Title 42 United States Code (USC) 7470-7491 (42 USC 7470-7491; Title 40 Code of Federal Regulations (CFR) Parts 51 and 52 (40 CFR Parts 51 and 52) Prevention of Significant Deterioration Program)	Requires prevention of significant deterioration (PSD) review and facility permitting for construction of new or modified major stationary sources of air pollution. PSD review applies to pollutants for which ambient concentrations are lower than NAAQS.	SCAQMD, with U.S. EPA Region IX oversight	7.1
CAA 171-193, 42 USC 7501 et seq. (New Source Review)	Requires new source review (NSR) facility permitting for construction or modification of stationary sources. NSR applies to pollutants for which ambient concentrations are higher than NAAQS.	SCAQMD, with U.S. EPA Region IX oversight	7.1
CAA 401 (Title IV), 42 USC 7651 (Acid Rain Program)	Requires reductions in NO_X and SO_2 emissions.	SCAQMD, with U.S. EPA Region IX oversight	7.1.2
CAA 501 (Title V), 42 USC 7661 (Federal Operating Permits Program)	Establishes comprehensive permit program for major stationary sources.	SCAQMD, with U.S. EPA Region IX oversight	7.1.6 7.1.8
CAA 111, 42 USC 7411, 40 CFR Part 60 (New Source Performance Standards, or NSPS)	Establishes national standards of performance for new stationary sources.	SCAQMD, with U.S. EPA Region IX oversight	7.1
STATE			
H&SC 44300-44384; Title 17 of the California Code of Regulations (17 CCR 93300-93347 (Toxic "Hot Spots" Act)	Requires preparation and biennial updating of facility emission inventory of hazardous substances; health risk assessments.	SCAQMD, with CARB oversight	7.6, Public Health

Table 7.1-34 Laws, Ordinances, Regulations, and Standards			
Applicable LORS	**Description**	**Regulating Agency**	**Section Reference**
H&SC 41700 (Nuisance)	Provides that no person shall discharge from any source quantities of air contaminants or material which cause injury, detriment, nuisance, or annoyance to considerable number of persons or to the public which endanger the comfort, repose, health or safety or which can cause injury or damage to business or property.	SCAQMD, with CARB oversight	7.1 7.6
California Public Resources Code 25523(a); 20 CCR 1752, 2300-2309 and Div. 2, Chap. 5, Art. 1, Appendix B, Park (k) (CEC and CARB Memorandum of Understanding)	Requires that CEC's decision on the AFC include requirements to assure protection of environmental quality; AFC is required to address air quality protection.	CEC	7.1.2 7.1.3
LOCAL			
SCAQMD Rule 201 Permit to Construct	Requires a Permit to Construct before construction of an emission source occurs.	SCAQMD, with CARB and U.S. EPA Region IX oversight	7.1.8
SCAQMD Rule 203 Permit to Operate	Prohibits operation of any equipment that emits or controls air pollutants without first obtaining a permit to operate, except as provided in Rule 202.	SCAQMD	7.1.8
SCAQMD Rule 212 Standards for Approving Permits	Specifies the standard requirements for a Permit to Construct and Permit to Operate, including public notification requirements.	SCAQMD	7.1.8
SCAQMD Rule 218 Continuous Emission Monitoring	Describes the installation, quality control and assurance, and reporting requirements for continuous emissions monitoring (CEMS) to determine the concentration of mass emissions of a source.	SCAQMD	7.1.6
SCAQMD Rule 301 Permit Fees	Identifies fees that are applicable to permit modifications, new facilities, and permitted emissions.	SCAQMD	7.1.8

Table 7.1-34
Laws, Ordinances, Regulations, and Standards

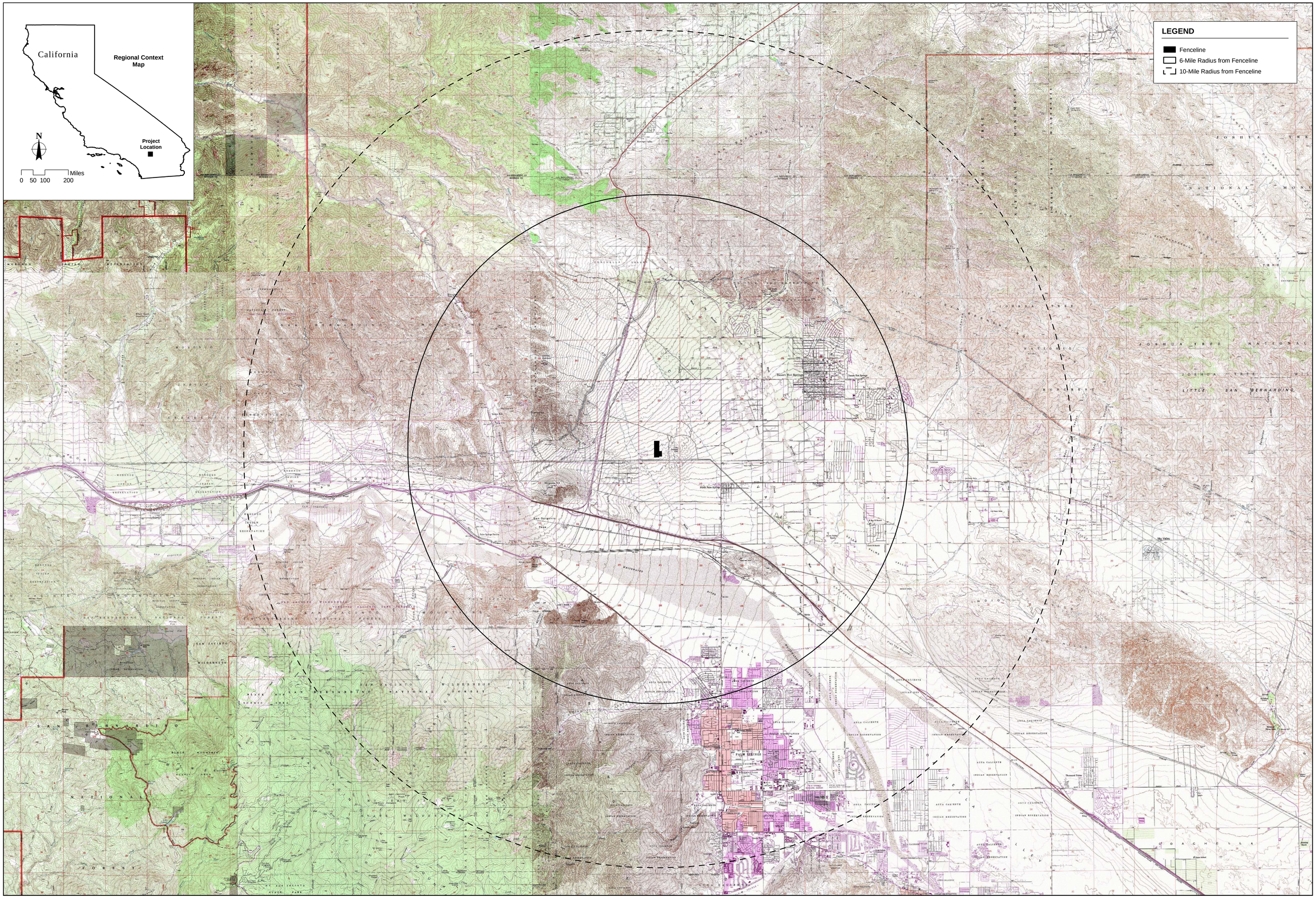
Applicable LORS	Description	Regulating Agency	Section Reference
SCAQMD Rule 401 Visible Emissions	Prohibits the discharge of any air contaminant from a single source for more than 3 minutes in any one hour that produces visible emissions of specified opacity or shade designed on the Ringlemann Chart.	SCAQMD	7.1.2
SCAQMD Rule 402 Nuisance (H&SC 41700)	Prohibits the discharge from any source of any air contaminant that may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which endangers such persons or public or which may cause injury or damage to business or property.	SCAQMD	7.1 7.6
SCAQMD Rule 403 Fugitive Dust	Visible fugitive dust is restricted to the proposed project property line. PM_{10} emissions are limited to less than 50 ug/m^3. Bulk materials may not be tracked onto public roads. Best available control measures must be employed for mitigation. Contingency plan may be required by the U.S. EPA.	SCAQMD	7.1.2 7.1.3
Rule 403.1 Supplemental Fugitive Dust Control Requirements for Coachella Valley Sources	Requires determining when wind speed conditions exceed 25 miles per hour. Projects in the Coachella Valley Blowsand Zone are also required to stabilize new man-made deposits of bulk material. The Fugitive dust control plan should be in accordance with the Rule 403.1 Implementation Handbook.	SCAQMD	7.1.2 7.1.3
SCAQMD Rule 407 Liquid and Gaseous Air Contaminants	Prohibits the discharge of CO and sulfur compounds into the atmosphere at specified concentrations.	SCAQMD	7.1.2 7.1.3
SCAQMD Rule 408 Circumvention	Allows the concealment of emissions released to the atmosphere in cases where the only violation is Health and Safety Code 48700 or Rule 402.	SCAQMD	7.1.8

Table 7.1-34
Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description	Regulating Agency	Section Reference
SCAQMD Rule 431.1 Sulfur Content of Gaseous Fuels	Specifies fuel sulfur content limits; test methods, monitoring, recordkeeping and reporting.	SCAQMD	2.0
SCAQMD Rule 431.2 Sulfur Content of Liquid Fuels	Establishes sulfur content of 0.05% by weight for diesel fuel.	SCAQMD	2.0
SCAQMD Rule 475 Electric Power Generating Equipment	Establishes limit on particulate matter of 11 lb/hr or 0.01 grains/scf.	SCAQMD	7.1.2 7.1.3
SCAQMD Rule 701 Air Pollution Emergency Contingency Actions	Employers of 100 people or more, or emitting 100 tons or more of air pollutants must reduce pollutants by 20% upon Stage 2 or 3 episode, or a state of emergency issued by Governor.	SCAQMD	7.1.6
SCAQMD Regulation IX Standards of Performance for New Stationary Sources (NSPS)	Establishes emission limits, monitoring and reporting requirements for electric utility steam generating units under NSPS Subpart Da; and for stationary gas turbines under Subpart KKKK.	SCAQMD, with U.S. EPA Region IX oversight	7.1
SCAQMD Rule 1110.1 Emissions from Stationary Internal Combustion Engines	Establishes NO_X and CO limits from rich-burn or lean-burn engines. Engines operating less than 200 hours per year are exempt.	SCAQMD	7.1.2 7.1.3
SCAQMD Rule 1110.2 Emissions from Gas and Liquid Fueled Engines.	Establishes NO_X, VOC and CO emission limits from stationary and portable engines over 50 bhp. Engines operating less than 200 hours per year are exempt.	SCAQMD	7.1.2 7.1.3
SCAQMD Rule 1135 Emissions of Oxides of Nitrogen from Electric Power Generating Systems	Establishes guidelines for controlling NO_X emissions. (SCAQMD Regulation XX RECLAIM facilities are exempt).	SCAQMD	7.1.2
SCAQMD Regulation XIII – New Source Review	Requires pre-construction review for new, modified or relocated facilities to ensure that the facility does not interfere with progress in attainment of the NAAQD. Limits emissions of non-attainment contaminants and their precursors, ozone depleting compounds and ammonia; requires BACT, modeling, emission offsetting, and compliance verification.	SCAQMD, with CARB and U.S. EPA Region IX oversight	7.1

Table 7.1-34
Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description	Regulating Agency	Section Reference
SCAQMD Regulation XIV Rule 1401 – New Source Review of Toxic Air Contaminants	Specifies risk limits which may result from exposures to carcinogenic air contaminants; requires BACT for toxics at certain level.	SCAQMD, with CARB and U.S. EPA Region IX oversight	7.1
SCAQMD Regulation XVII, Rule 1703 PSD Analysis	Establishes preconstruction requirements for sources to ensure air quality in attainment areas does not significantly deteriorate while maintaining a margin for future growth; Requires BACT for each criteria pollutant for which there is a federally significant net emission increase.	SCAQMD, with U.S. EPA Region IX oversight	7.1
SCAQMD Regulation XX – Regional Clean Air Incentives Market (RECLAIM)	Distributes emission allocations for NO_X and SO_x for facilities emitting over 4 tons per year. Sets specific requirements for RECLAIM facilities.	SCAQMD	7.1.2 7.1.3
SCAQMD Rule 2005 New Source Review for RECLAIM	Defines pre-construction review for RECLAIM facilities, including offsetting using RECLAIM Trading Credits (RTC).	SCAQMD, with U.S. EPA Region IX oversight	7.1
SCAQMD Regulation XXX – Federal Operating Permits (Title V)	Administers the 40 CFR Part 70 Federal Permitting Program; defines permit application and issuance, and the compliance requirements of the program. Integrates with RECLAIM permit.	SCAQMD, with CARB and U.S. EPA Region IX oversight	7.1.8
SCAQMD Regulation XXXI – Acid Rain Permit	Establishes acid rain permitting required by Title IV of CAA. Integrates with RECLAIM permit.	SCAQMD, with CARB and U.S. EPA Region IX oversight	7.1.8
INDUSTRY			
None Applicable	None Applicable		None Applicable



N

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Scale in Feet

1:48,000

Source: USGS TOPO! (24K quads: San Gorgonio Mountain 1988, Catclaw Flat 1988, Morongo Valley 1972, Yucca Valley South 1994, Joshua Tree South 1994, Cabazon 1988, White Water 1988, Desert Hot Springs 1978, Seven Palms Valley 1978, East Deception Canyon 1988, Lake Fulmor 1988, San Jacinto Peak 1988, Palm Springs 1988, Cathedral City 1981, Myoma 1978).

TOPOGRAPHY WITHIN A 6- AND 10- MILE RADIUS OF THE PROPOSED PROJECT SITE

June 2007
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CPV Sentinel, LLC
Riverside County, California

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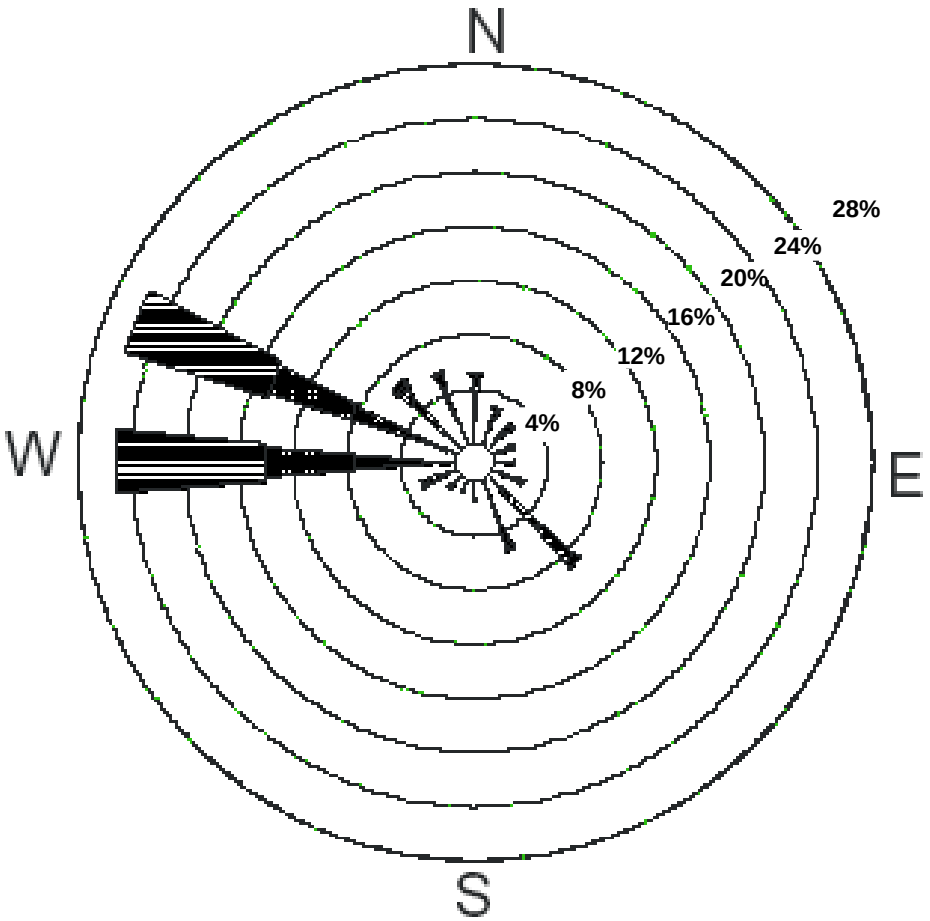
FIGURE 7.1-1

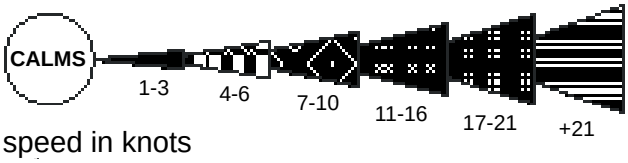
6/18/07 rk...\T:\CPV Sentinel (Ocotillo)\7.01 Air Quality\Fig 7.1-1 aq_6and10_mile_radiusBW.ai

G:\gis\projects\1577\28067168\mxd\aq_6and10_mile_radius.mxd



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

CALM WINDS 0.00%



Wind speed in knots

WIND ROSE FOR 1988-1991

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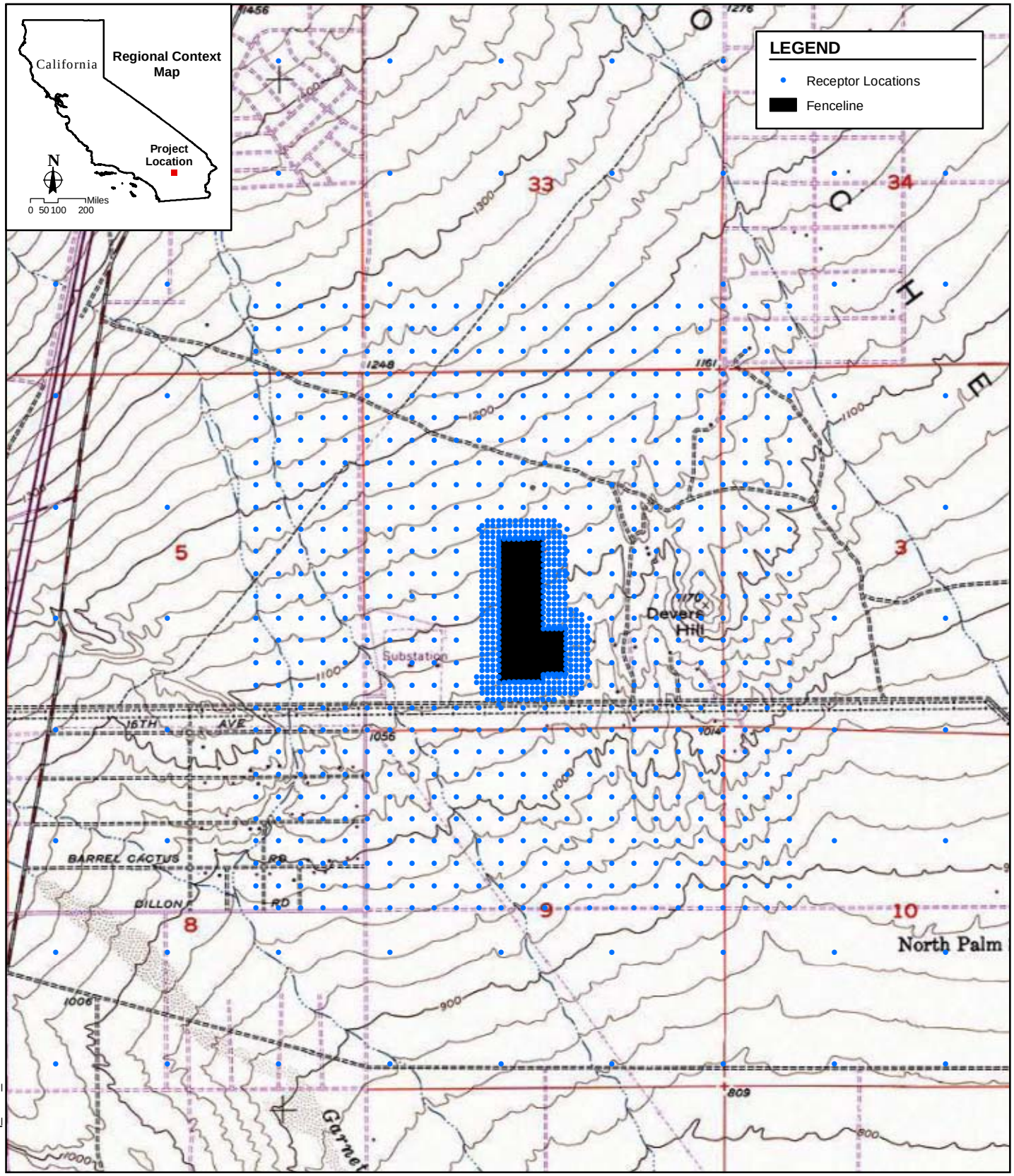
FIGURE 7.1-2

G:/GIS/projects/1577/28067168/mxd/

6/21/07 vsa/hk...\T:\CPV Sentinel (Ocotillo)\7.01 Air Quality\Fig 7.1-2 aq windrose.ai



N

0 2,000 4,000

Scale in Feet
1:24,000

Source: USGS TOPO!
(Desert Hot Springs quad 1978).

NEAR-FIELD MODEL RECEPTOR GRID

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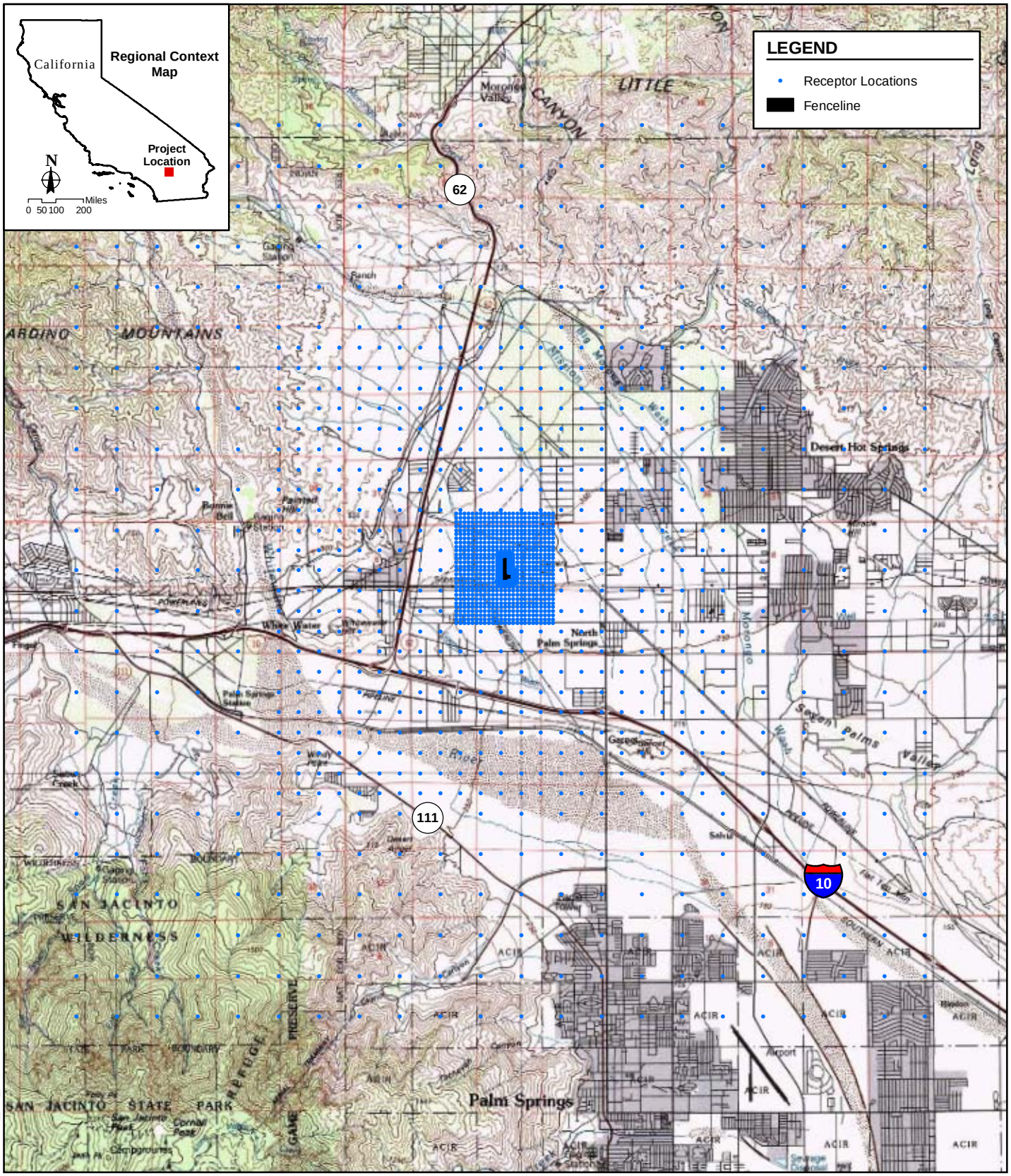
FIGURE 7.1-3

G:/GIS/projects/1577/28067168/mxd/aq_near_field.mxd

6/11/07 vsa...\T:\CPV Sentinel (Ocotillo)\7.01 Air Quality\Fig 7.1-3 aq_near_field.ai



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Scale in Feet
1:132,000

Source: USGS TOPO!
(100K quads: Big Bear Lake 1982, Palm Springs 1984).

FAR-FIELD MODEL RECEPTOR GRID

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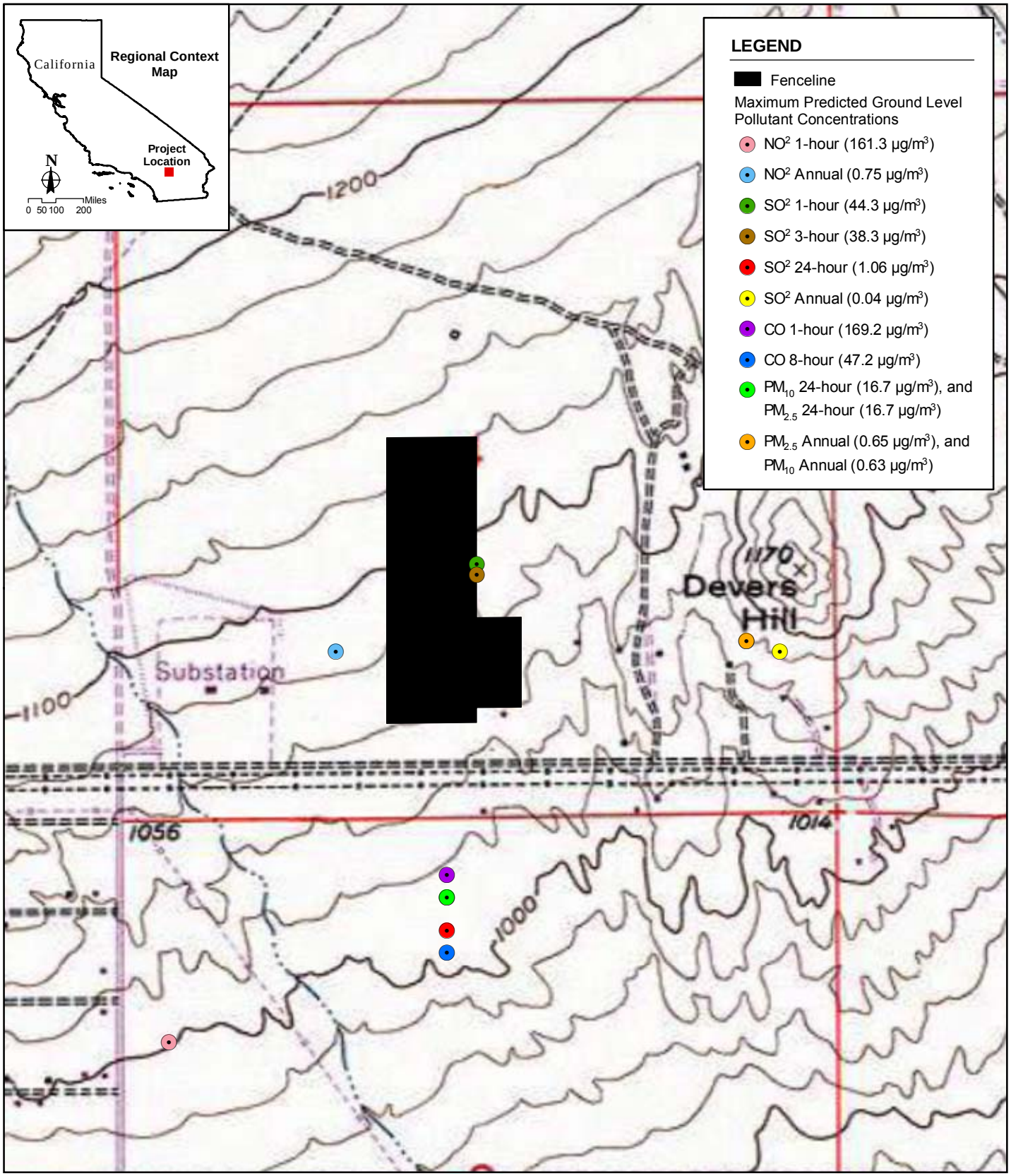
FIGURE 7.1-4

G:/GIS/projects/1577/28067168/mxd/aq_far_field.mxd

6/11/07 vsa...\T:\CPV Sentinel (Ocotillo)\7.01 Air Quality\Fig 7.1-4 aq_far_field.ai



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Scale in Feet
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Source: USGS TOPO!
(Desert Hot Springs quad 1978).

LOCATIONS OF MAXIMUM PREDICTED GROUND LEVEL POLLUTANT CONCENTRATIONS FOR THE OPERATIONAL PROJECT

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FIGURE 7.1-5

G:/GIS/projects/1577/28067168/mxd/aq_max_pollutant.mxd

6/18/07 vsa...\T:\CPV Sentinel (Ocotillo)\7.01 Air Quality\Fig 7.1-5 aq_max_pollutant.ai

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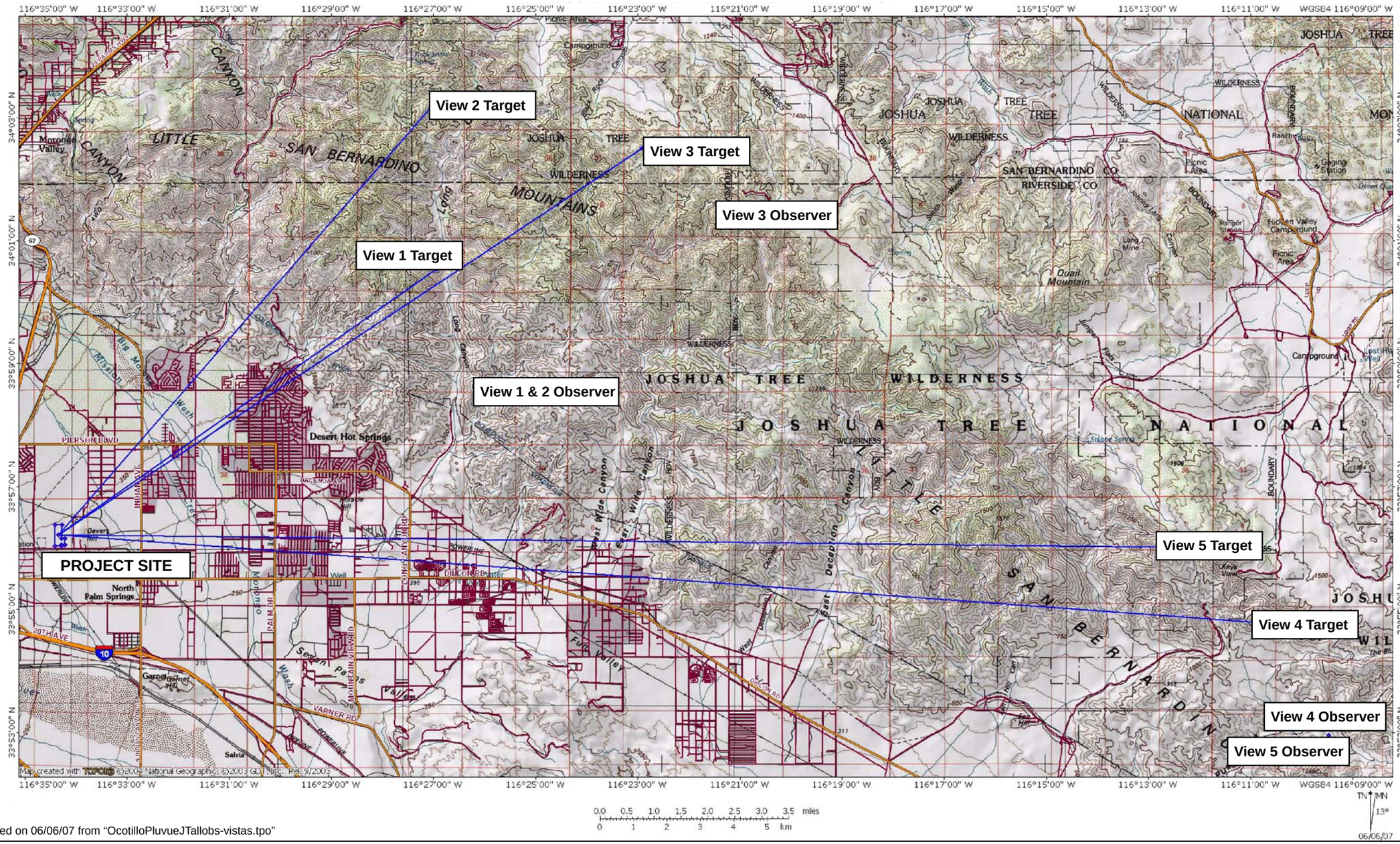

Source:
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N

0 130 260

Scale in Feet
1:24,000

JOSHUA TREE PLUVUE II OBSERVER/VISTA LOCATIONS

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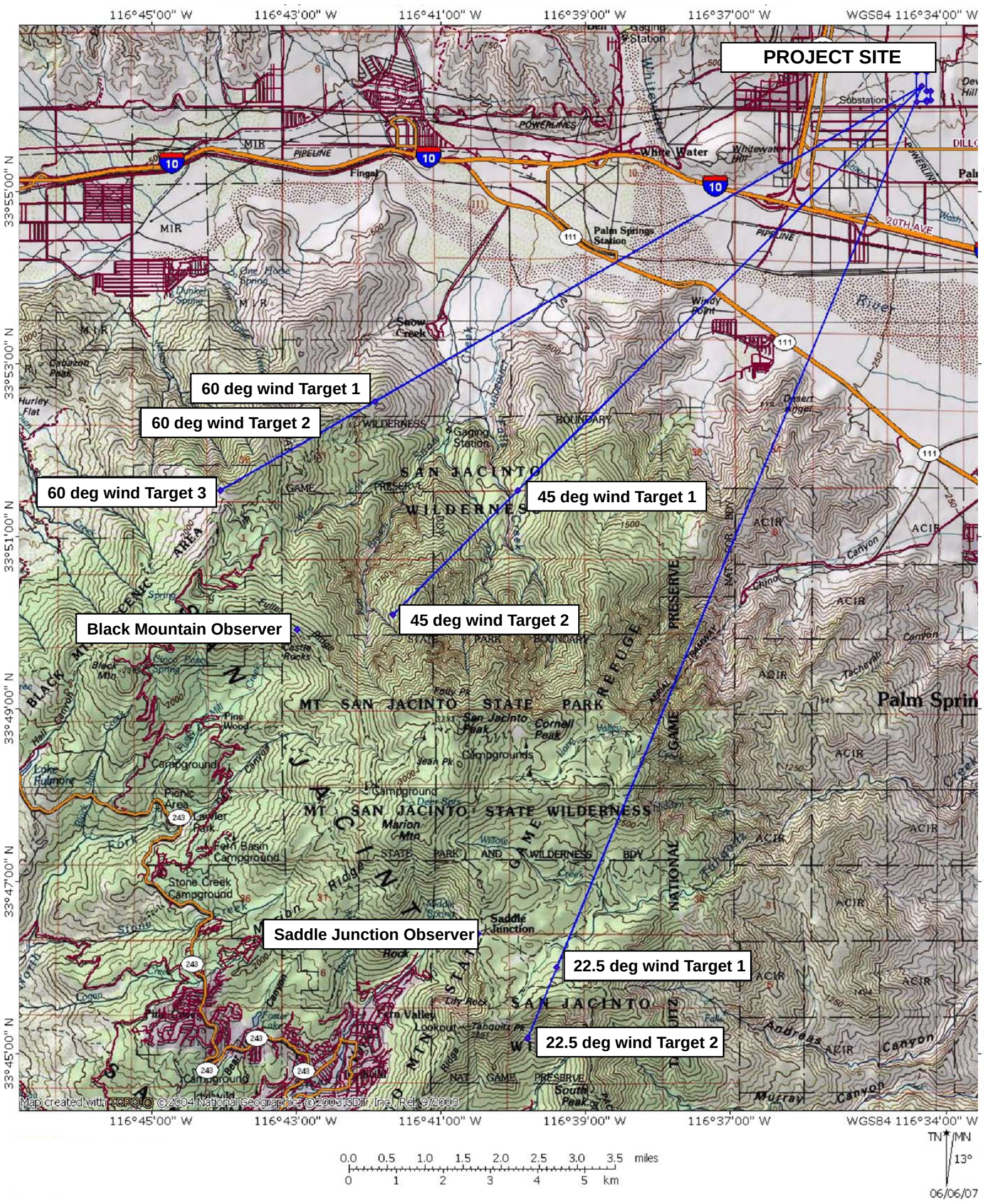
FIGURE 7.1-6

6/18/07 vsa...\T:\CPV Sentinel (Ocotillo)\7.01 Air Quality\JFig 7.1-6_Joshua_Tree_PLUVUE_II.ai

G:/GIS/projects/1577/28067168/mxd/San_Jacinto_Wilderness_Area_PLUVUE_II.mxd



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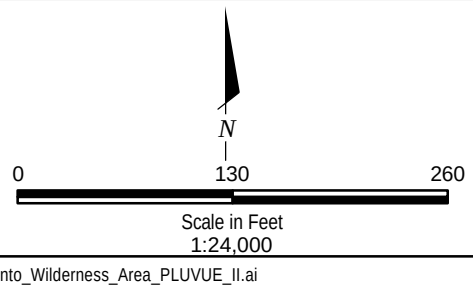

SAN JACINTO WILDERNESS AREA PLUVUE II
OBSERVER/VISTA LOCATIONS

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Riverside County, California

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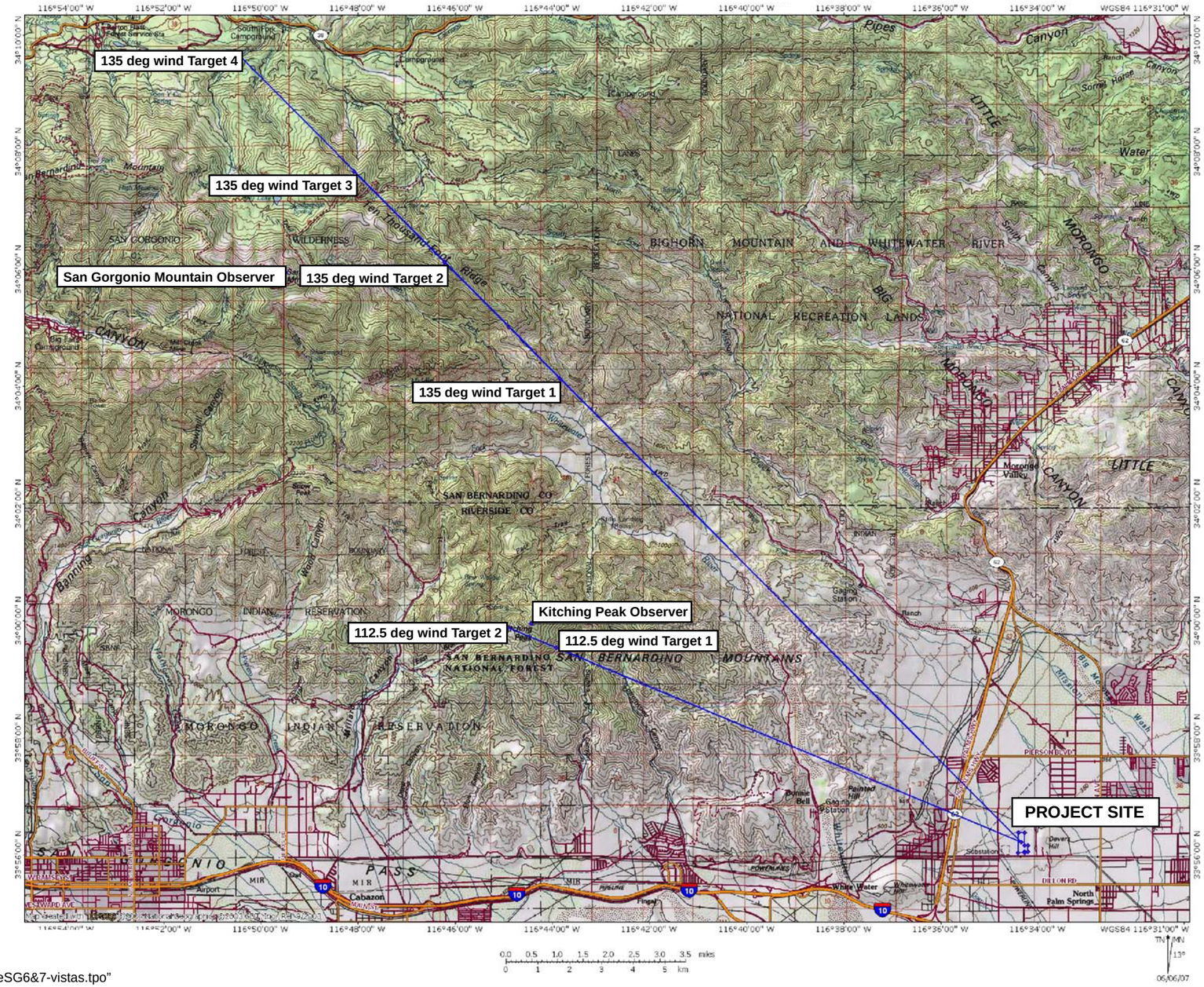
FIGURE 7.1-7

6/18/07 vsa...\T:\CPV Sentinel (Ocotillo)\7.01 Air Quality\Fig 7.1-7 San_Jacinto_Wilderness_Area_PLUVUE_II.ai

G:/GIS/projects/1577/28067168/mxd/San_Gorgonio_Wilderness_Area_PLUVUE_II.mxd



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0 130 260

Scale in Feet
1:24,000

SAN GORGONIO WILDERNESS AREA PLUVUE II
OBSERVER/VISTA LOCATIONS

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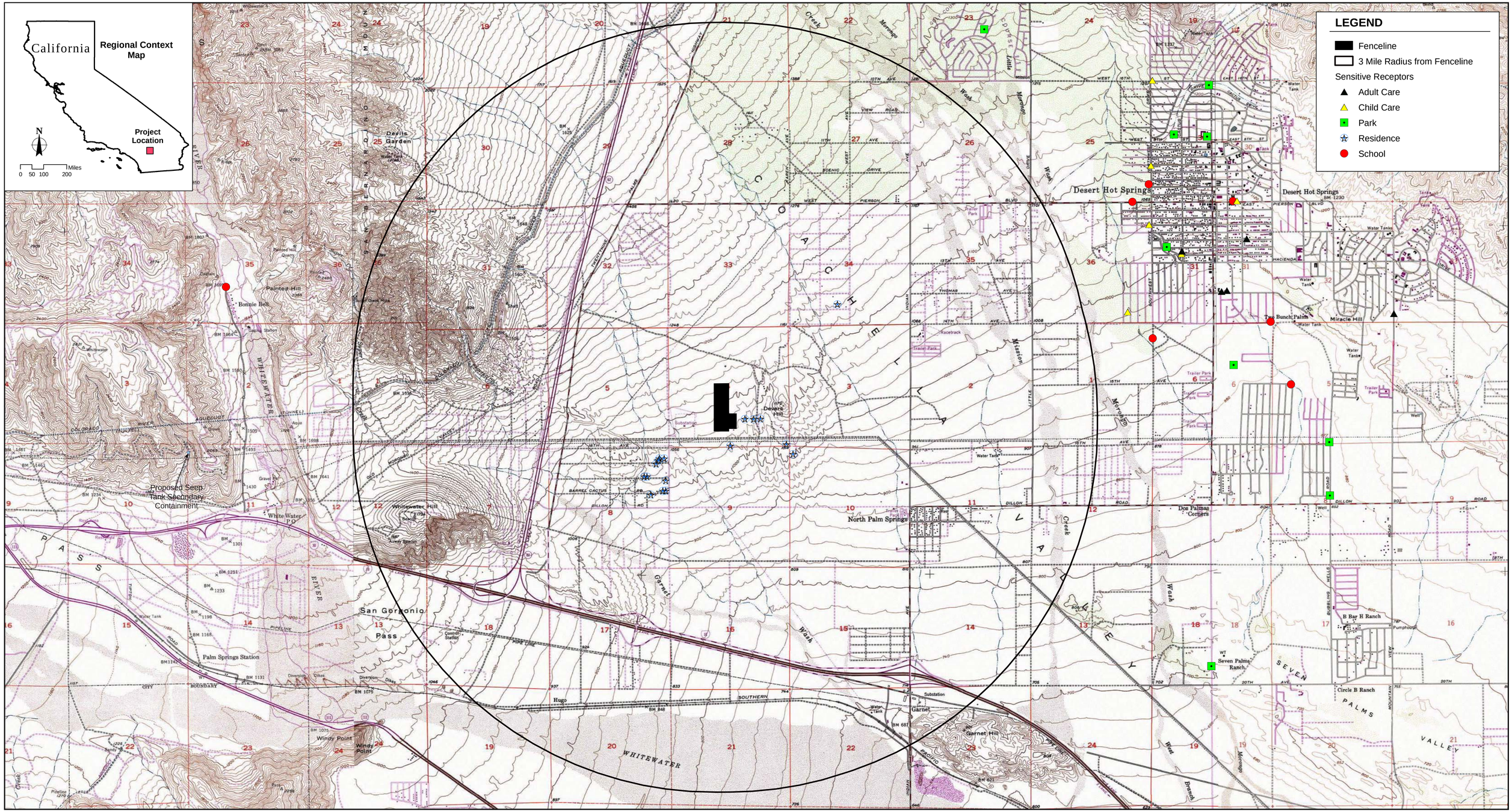
FIGURE 7.1-8

6/18/07 vsa...\T:\CPV Sentinel (Ocotillo)\7.01 Air Quality\Fig 7.1-8 San_Gorgonio_Wilderness_Area_PLUVUE_II.ai



N

0 2,000 4,000

Scale in Feet

1:24,000

Source: USGS TOPO! (24K quads: White Water 1988, Desert Hot Springs 1978, Seven Palms Valley 1978).

SENSITIVE RECEPTORS WITHIN 3 MILES OF THE CPV SENTINEL ENERGY PROJECT

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CPV Sentinel, LLC
Riverside County, California

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FIGURE 7.6-1

6/11/07 vsa...\T:\CPV Sentinel (Ocotillo)\7.01 Air Quality\Fig 7.6-1 public_health_sensitive_receptors.pdf

G:\gis\projects\1577\28067168\mxd\public_health_sensitive_receptors.mxd