5.2 Air Quality

This section addresses the air quality impacts of construction and operation of the Blythe Solar Power Project (BSPP or Project). The air quality assessment covers applicable laws, ordinances, regulations and standards (LORS); baseline conditions; emissions from Project construction and operation; dispersion modeling to evaluate the impacts of Project emissions on ambient air quality; cumulative impacts; and control technologies and other measures to mitigate Project impacts. The assessment also provides the information required by the Mojave Desert Air Quality Management District (MDAQMD or District) for issuing a Determination of Compliance (DOC) for the BSPP.

Summary

The Project will consist of four identical power plant units and will be a source of criteria pollutants nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and respirable and fine particulate matter (PM10 and PM2.5). During operation of the BSPP, emissions will come from the equipment at the power blocks (four each of auxiliary boilers, heat transfer fluid (HTF) heaters, emergency fire water pump engines, emergency generator engines, auxiliary cooling towers, and HTF expansion tanks) and maintenance traffic in the four solar fields. Controlled Project emissions will not exceed major source thresholds and the BSPP will not need emission offsets.

Best Available Control Technology (BACT) will be applied for sources that emit NOx, SOx, volatile organic compounds (VOC), PM10, or CO. As BACT, the Applicants propose ultra-low-NOx burners with natural gas fuel for auxiliary boilers and HTF heaters; Tier 3-compliant engines fueled with ultra-low sulfur diesel fuel for emergency fire water pump and generator engines; high-efficiency drift eliminators for auxiliary cooling towers; and two-stage condensing system with carbon absorption for the HTF expansion tank vents.

Modeling showed that the Project's impacts during construction (without background) potentially would exceed the California Ambient Air Quality Standards (CAAQS) for NO_2 and PM10 at or near the facility fenceline. However, the modeling analysis is very conservative, the site is remote, and feasible mitigation measures will be implemented, including a dust control plan. The Project's modeled impacts during operation, when added to background concentrations, are projected to be below the Federal and State standards for all criteria pollutants except 24-hour and annual PM10. The daily and annual PM10 modeled concentrations without background are below the Federal and State standards and represent only five percent and two percent respectively of the standards. However, because the background PM10 concentrations themselves already exceed the applicable standards, 24-hour and annual PM10 exceedances are unavoidable.

Although there is some potential for BSPP to cause short-term exceedances of NO_2 and PM10 ambient air quality standards during construction, the Project will have a long term benefit of reducing greenhouse gas (GHG) and other pollutant emissions compared to fossil-fueled power plants. The Project also will aggressively control PM10 emissions because a film of dust on the mirrors will reduce their efficiency for power production.

With respect to cumulative impacts, each of the cumulative projects will be required to undergo a separate environmental review process and address its own emissions and impacts. If cumulative projects near each other are built on overlapping schedules, there potentially would be cumulative adverse impacts during construction. Virtually all of the cumulative projects are renewable energy facilities and thus would displace electricity generation that otherwise likely would occur with higher-polluting fossil fuels.

This air quality evaluation is intended to support compliance both by the California Energy Commission (CEC) with the requirements of the California Environmental Quality Act (CEQA) and by the Bureau of Land Management (BLM) with the requirements of the National Environmental Policy Act (NEPA). The two agencies are conducting a joint review of the Project and a combined CEQA/NEPA document will be prepared.

This section focuses on criteria pollutant emissions, i.e., those pollutants for which ambient air quality standards have been set to protect health and the environment. There are seven primary criteria pollutants: ozone (O_3), NO_2, CO, SO_2, PM10, PM2.5, and lead. The Project will emit insignificant amounts of lead, and hence it is not discussed further. GHG will be emitted from the combustion of natural gas from the auxiliary boilers and HTF heaters as well as from the combustion of diesel fuel in the emergency fire water pump and generator engines, and these emissions are also discussed in this section. LORS related to Toxic Air Contaminants (TAC) emissions, and their potential impacts on public health are addressed in Section 5.10, Public Health.

5.2.1 LORS Compliance

Construction and operation of the BSPP will be conducted in accordance with the applicable LORS. The applicable Federal, State, and local air quality LORS are summarized in Table 5.2-1 and discussed briefly in text following the table.

Table 5.2-1 Federal, State, and Local LORS Applicable to Air Quality

LORS	Applicability	Where Discussed in AFC
Federal:		
40 Code of Federal Regulations (CFR) Part 51, Subpart W, Determining Conformity of General Federal Actions to State or Federal Implementation Plans	Conformity determinations for Federal actions not related to Federal transportation projects are required for each criteria pollutant or precursor where emissions of the pollutant or precursor in a nonattainment or maintenance area caused by a Federal action would equal or exceed any emission rates specified in the rule.	Section 5.2.1.1
40 CFR Part 60 New Source Performance Standards (NSPS), Subpart A General Provisions	Establishes requirements for notifications, performance testing, recordkeeping and reporting for new sources subject to NSPS standards.	Section 5.2.1.1
40 CFR Part 60 – NSPS, Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	Establishes emission standards for compression ignition internal combustion engines, including emergency generator engines and emergency fire water pump engines.	Sections 5.2.1.1 and 5.2.3
State:		
Title 17 California Code of Regulations (CCR), Section 93115, Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines	Establishes emission limits, operating limits, fuel use restrictions, monitoring and recordkeeping requirements for stationary compression ignition engines, including emergency fire water pump engines.	Sections 5.2.1.2 and 5.2.3.

Table 5.2-1 Federal, State, and Local LORS Applicable to Air Quality

LORS	Applicability	Where Discussed in AFC
California Global Warming Solutions Act of 2006 (Assembly Bill (AB) 32), California Health and Safety Code (HSC) sections 38500 et seq.	Provides the statutory foundation for State-wide measures to reduce greenhouse gas (GHG) emissions and establishes goal to reduce State-wide GHG emissions to 1990 levels by 2020.	Section 5.2.1.2
Senate Bill (SB) 1368, Greenhouse Gas Emissions Performance Standard	Sets emission performance standards for GHG emissions per unit of power output for utilities.	Section 5.2.1.2
Local (MDAQMD):		
Rule 201 – Permit to Construct	Establishes the requirement to obtain an Authority to Construct (ATC) permit for emission sources.	Section 5.2.1.3
Rule 203 – Permit to Operate	Establishes the requirement to obtain a Permit to Operate (PTO) for emission sources.	Section 5.2.1.3
Rule 212 – Standards for Approving Permits	Prohibits air emissions in violation of Sections 41700 and 41701 of the California HSC.	Section 5.2.1.3
Rule 217 – Provisions for Sampling and Testing Facilities	Requires facilities to be maintained as necessary for sampling and testing.	Section 5.2.1.3
Rule 401 – Visible Emissions	Limits visible emissions.	Section 5.2.1.3
Rule 402 – Nuisance	Prohibits the discharge of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to the public; endanger the comfort, repose, health or safety of the public; or cause injury or damage to business or property.	Section 5.2.1.3
Rule 403 – Fugitive Dust	Limits fugitive emissions from certain bulk storage, earthmoving, construction and demolition, and man-made conditions resulting in wind erosion.	Section 5.2.1.3
Rule 404 – Particulate Matter-Concentration	The rule limits particulate matter (PM) emissions to specific concentrations as functions of exhaust flow rate.	Section 5.2.1.3
Rule 407 – Liquid and Gaseous Air Contaminants	This rule limits the CO emissions to 2,000 parts per million (ppm) measured on a dry basis, averaged over a period of 15 consecutive minutes.	Sections 5.2.1.3 and 5.2.3
Rule 409 – Combustion Contaminants	Limits discharge into the atmosphere from fuel burning equipment combustion contaminants exceeding 0.1 grain per cubic foot of gas calculated to 12 percent of carbon dioxide (CO_2) at standard conditions.	Sections 5.2.1.3 and 5.2.3
Rule 431 – Sulfur Compounds of Fuels	Limits discharge into the atmosphere of sulfur compounds from the burning of gaseous, liquid and solid fuels.	Sections 5.2.1.3 and 5.2.3

Table 5.2-1 Federal, State, and Local LORS Applicable to Air Quality

LORS	Applicability	Where Discussed in AFC
Rule 442 – Usage of Solvents	Limits the usage of solvents containing volatile organic compounds (VOC) and non-VOC organic compounds to the limits specified in the rule.	Section 5.2.1.3
Rule 463 – Organic Liquids Storage	Sets standards for storage of organic liquids with a true vapor pressure of 1.5 pounds per square inch or greater.	Section 5.2.1.3
Regulation IX - New Source Performance Standards	Incorporates the Federal NSPS (40 CFR 60) rules by reference.	Section 5.2.1.1
Rule 1157 – Boilers and Process Heaters	This rule limits NOx emissions from boilers, steam generators, and process heaters.	Section 5.2.1.3
Regulation XIII- New Source Review	This regulation establishes the review process and requirements for new projects and modifications to existing projects, including the requirement to provide Best Available Control Technology (BACT), offsets, and ambient air quality modeling.	Sections 5.2.1.3, 5.2.3 and 5.2.4
Rule 1306 – Electric Energy Generating Facilities	This rule allows that a complete AFC will be accepted by the MDAQMD as an application for an ATC/PTO.	Section 5.2.1.3
Rule 1320 – New Source Review of Toxic Air Contaminants	This rule specifies limits for maximum individual cancer risk, cancer burden, and noncancer acute and chronic hazard index from permit units that emit TAC listed in HSC § 39657 and the Federal Clean Air Act (CAA) § 112.	Section 5.10, Public Health
Rule 2002 General Federal Actions Conformity	The purpose of this rule is to implement § 176(c) of the Federal CAA (and regulations under 40 CFR 51, subpart W, with respect to the conformity of general Federal actions to the applicable implementation plan. The rule sets forth policy, criteria, and procedures for demonstrating and assuring conformity of such actions to the applicable implementation plan.	Section 5.2.1.1

5.2.1.1 Federal LORS

The U.S. Environmental Protection Agency (EPA) is responsible for establishing the National Ambient Air Quality Standards (NAAQS) and enforcing the Federal CAA. Various Federal programs have been developed to regulate sources of air pollutants, including stationary, mobile, and area sources. These programs include New Source Review (NSR) and other permitting requirements, as well as emissions standards for new and modified sources. Most of these Federal programs have been delegated to the MDAQMD for implementation in the local area.

Federal Major Source Programs

There are several Federal permitting and CAA programs that are applicable primarily to major sources of emissions. These programs include the Prevention of Significant Deterioration (PSD) regulations; the Operating Permits Program under Title V of the CAA Amendments of 1990; National Emission Standards for Hazardous Air Pollutants (NESHAP), which are codified in two parts: 40 CFR 61 and 40

CFR 63; and the Risk Management Program under Title III of the CAA Amendments of 1990, codified at 40 CFR 68. As will be shown in Section 5.2.4, the emissions from the BSPP are well below the thresholds for these programs, and hence these LORS are not applicable to this Project.

Determining Conformity of General Federal Actions to State or Federal Implementation Plans

Conformity determinations for Federal actions not related to Federal transportation projects are required for each criteria pollutant or precursor where the total of direct and indirect emissions of the criteria pollutant or precursor in a nonattainment or maintenance area caused by a Federal action would equal or exceed any of the emission rates specified in the rule. As discussed in detail in Section 5.2.2.3, the Project site is in an area that is in attainment with all NAAQS, thus the Project is not subject to this rule and not required to develop a conformity determination.

New Source Performance Standards (NSPS)

NSPS are Federal standards promulgated for new and modified sources in designated categories codified in 40 CFR Part 60. NSPS are standards that are progressively tightened over time in order to achieve on-going air quality improvement without unreasonable economic disruption. The NSPS impose uniform requirements on new and modified sources throughout the nation. These standards are based on the best demonstrated technology (BDT) for emission control. BDT refers to the best system of continuous emissions reduction that has been demonstrated to work in a given industry, considering economic costs and other factors, such as energy use. In other words, a new source of air pollution must install the best control system currently in use within that industry.

The format of a NSPS may differ depending on the source category. It can be a numerical emission limit, a design standard, an equipment standard, or a work practice standard. Primary enforcement responsibility of the NSPS rests with EPA, but this authority can be delegated to the states or local air districts. States can adopt an NSPS or impose limitations of their own, as long as the State requirements are at least as stringent as the Federal requirements. The NSPS applicable to the Project are summarized below. Enforcement of the NSPS has been delegated to the MDAQMD.

Subpart A General Provisions

Any source subject to an applicable standard under 40 CFR Part 60 is also subject to the general provisions of Subpart A. Because the Project is potentially subject to Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, the requirements of Subpart A will also apply. BSPP will comply with the applicable notifications, performance testing, recordkeeping and reporting outlined in Subpart A.

Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Subpart IIII is applicable to owners and operators of stationary compression ignition (CI) internal combustion engines that commence construction after July 11, 2005. Relevant to the proposed Project, the rule applies to the fire water pump CI engines and the emergency generator CI engines as follows:

(i) Non-fire pump engines manufactured after April 1, 2006;

(ii) Fire pump engines with less than 30 liters per cylinder manufactured after 2009, or

(iii) Fire pump engines manufactured as a certified National Fire Protection Association (NFPA) fire water pump engine after July 1, 2006.

For the purpose of this rule, “manufactured” means the date the owner places the order for the equipment. Based on the timeline projected for obtaining approval of the Project, the Applicants expect that the engines will be ordered (and thus manufactured) in 2010.

Owners and operators of fire water pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards listed for all pollutants. For a model year 2009 or later 300 horsepower (hp) engines, the limits are 2.6 grams per horsepower-hour (g/hp-hr) for CO, 3.0 g/hp-hr for non-methane hydrocarbons (NMHC) and NOx combined, and 0.15 g/hp-hr for PM. In model years 2009 through 2011, manufacturers of fire water pump stationary CI engines in this engine power category with a rated speed of greater than 2,650 revolutions per minute may comply with the emission limitations for 2008 model year engines. The BSPP will install fire water pump engines meeting these standards.

Owners and operators of non-fire water pump engines must comply with the emission standards listed for all pollutants. For a model year 2006 or later engine with 300 to 600 hp, the limits are 2.6 g/hp-hr for CO, 3.0 g/hp-hr for NMHC and NOx combined, and 0.15 g/hp-hr for PM. The Project will install emergency generator engines meeting these standards.

Although the BSPP is subject to NSPS Subpart IIII, pursuant to §60.4200(c) an owner or operator of an area source (i.e., not a major source) subject to Subpart IIII is exempt from the requirement to obtain a Title V permit under 40 CFR Parts 70 or 71, provided a Title V permit is not required for another reason. As stated above, Project emissions are below the Title V emission thresholds, and thus a Title V permit is not required for the Project.

5.2.1.2 State LORS

The California Air Resources Board (ARB) became part of the California Environmental Protection Agency (CalEPA) in 1991. ARB is responsible for ensuring implementation of the California Clean Air Act, meeting California requirements of the Federal CAA, and establishing California ambient air quality standards (CAAQS). It is also responsible for setting vehicle emission standards and fuel specifications, and for regulating emissions from other sources such as consumer products and certain types of mobile equipment (e.g., lawn and garden equipment, industrial forklifts). ARB also implements the ATCMs promulgated under AB 1807 (Tanner process) and other air toxics programs, as discussed in detail in Section 5.10, Public Health.

Airborne Toxic Control Measure for Stationary Compression Ignition Engines

The California ATCM for CI engines specifies operating requirements and exhaust emission standards for stationary CI engines. Although this is an ATCM, it contains emission standards for criteria pollutants. In addition, it requires the use of ARB diesel fuel (15 parts per million [ppm] sulfur by weight).

For the fire water pumps, the Project will install a new stationary CI engines that will meet the Tier 3 emissions standards for offroad engines and will limit the non-emergency hours of operation to the number of hours necessary to comply with the testing requirements of NFPA 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 2002 edition as required by the ATCM (CCR §93115.6(a)(4)(A)(1)). The facility will limit the hours of operation of the fire water pump engine to one hour per week, not to exceed 50 hours per year, as recommended by NFPA 25, and will install a totalizing hour meter to substantiate compliance with the use limitation.

To drive the emergency generators, the Applicants will install a new stationary CI engine that will meet the Tier 3 emissions standards for offroad engines, will limit the non-emergency hours of operation to no more than 50 hours per year, and will install a totalizing hour meter to substantiate compliance with the

use limitation. The facility will use only ARB diesel fuel in the emergency fire water pump and generator engines and retain purchase records and material safety data sheets (MSDS) to substantiate compliance with the fuel sulfur requirement.

California Global Warming Solutions Act of 2006 (AB 32)

California's major initiatives for reducing climate change or GHG emissions are outlined in AB 32 (signed into law in 2006), 2005 Executive Order (S-3-05), and a 2004 ARB regulation to reduce passenger car GHG emissions. These efforts aim at reducing statewide GHG emissions to 1990 levels by 2020 - a reduction of about 25 percent over business as usual emissions, and then an 80 percent reduction below 1990 levels by 2050. The strategies for making these reductions are outlined in the "Climate Change Proposed Scoping Plan," approved by ARB in December 2008 which includes direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. The Governor's Office of Planning and Research has developed proposed amendments to the CEQA Guidelines to provide guidance analysis and mitigation of the potential effects of GHG emissions under CEQA. These proposed guideline amendments are scheduled to be adopted by January 1, 2010. The Project will comply with the applicable rules and regulations developed to implement AB32.

GHG Emissions Performance Standard (SB 1368)

On January 25, 2007, the California Public Utilities Commission (PUC) adopted an interim GHG Emissions Performance Standard to implement the requirements of SB 1368. The Emissions Performance Standard (EPS) is a facility-based emissions standard requiring that all new long-term commitments for baseload generation to serve California consumers be with power plants that have emissions no greater than 1,100 pounds of CO_2 per megawatt-hour. "New long-term commitment" refers to new plant investments (new construction), new or renewal contracts with a term of five years or more, or major investments by the utility in its existing baseload power plants.

The PUC implemented SB 1368, which prohibits load-serving entities (LSEs), which includes investor-owned utilities, energy service providers, and community choice aggregators, from entering into a long-term financial commitment for baseload generation unless they comply with a GHG emissions performance standard. To help mitigate climate change, the PUC has long anticipated capping GHG emissions in order to ensure LSEs make long-term commitments to energy resources that have GHG emissions profiles that are at least as clean as California's existing portfolio. The PUC approved a policy statement indicating its intent regarding GHG emissions in October 2005.

Since then, Governor Schwarzenegger signed into law SB 1368 and AB 32, which requires reporting and verification of statewide GHG emissions. The PUC is implementing the EPS according to SB 1368 and may revisit the EPS once an emissions cap is operational in California.

The PUC has jurisdiction over the energy commitments of investor-owned utilities. SB 1368 gives additional authority to the PUC to implement and enforce the EPS for electric service providers (competitive retail providers delivering energy to consumers within the service territories of the investor-owned utilities) as well as any potential community choice aggregators (CCAs) that may form in the future (there are currently no CCAs operating in California, though a number are in the planning stages). SB 1368 also grants specific authority to the CEC to implement and enforce an EPS for the municipal utilities in California. The PUC and the CEC are working closely together to ensure that the standards adopted are as consistent as possible.

The EPS of 1,100 pounds of CO_2 per megawatt-hour is the baseline for combined cycle gas turbine power plants. As a solar energy generating facility with minimal combustion sources, BSPP will be significantly less than the requirement by emitting approximately five pounds per megawatt-hour.

5.2.1.3 Local LORS

The local air quality LORS applicable to BSPP are administered by the MDAQMD.

MDAQMD Rule 201 Permit to Construct

Rule 201 applies to sources which may cause the issuance of air contaminants or the use of which may eliminate, reduce or control the issuance of air contaminants, and requires a District permit prior to construction. In accordance with Rule 1306, the AFC serves as an application for the pre-construction permit for this Project.

MDAQMD Rule 203 Permit to Operate

Rule 203 requires that a PTO must be obtained for the operation of any device which may emit air contaminants or the use of which may reduce or control these emissions. The BSPP will comply with this rule by obtaining a PTO from the MDAQMD as needed and by operating the equipment according to the conditions specified in the permit.

MDAQMD Rule 212 Standards for Approving Permits

An ATC or PTO shall be denied unless the applicant shows that the equipment, the use of which may emit air contaminants, or the use of which may eliminate, reduce or control air contaminant emissions, is so designed, controlled, or equipped with such air pollution equipment that it may be expected to operate without emitting air contaminants in violation of §§ 41700 or 41701 of the California HSC or of MDAQMD rules. The equipment for the Project will be equipped with BACT and is expected to comply with this rule.

MDAQMD Rule 217 Provisions for Sampling and Testing Facilities

The MDAQMD Air Pollution Control Officer (APCO) may require the applicant or permittee to provide and maintain such facilities as are necessary for sampling and testing. In the event of such requirements, the APCO shall notify the applicant in writing of the required size, number and location of sampling ports; the size and location of the sampling platform, the access to the sampling platform, and the utilities for operating the sampling and testing equipment. The platform and access shall be constructed in accordance with the General Industry Safety Orders of the State of California. The Project will maintain the testing and sampling facilities as specified by the APCO, if requested.

MDAQMD Rule 218 Stack Monitoring

This rule requires a facility to provide, properly install, maintain in calibration, in good working order and in operation, a stack monitoring system to measure air contaminants when that facility installs, operates or uses any equipment which emits 900,000 kilograms (992 tons) per year of carbon monoxide (CO) or 90,000 kilograms (99 tons) per year or more of any air contaminant except CO. Emissions from the Project will not exceed these thresholds and thus the Project is not subject to this rule.

MDAQMD Rule 219 Equipment Not Requiring a Permit

The BSPP will employ a number of devices that will emit air pollutants that are exempt from permit pursuant to one or more exemptions listed in Rule 219, including 300-gallon diesel fuel storage tanks, water trucks used for mirror washing, HTF piping fugitives, lube oil reservoir(s), heating ventilation and air conditioning (HVAC) systems, and storage tanks for water treatment chemicals.

MDAQMD Rule 401 Visible Emissions

A person is not allowed to discharge into the atmosphere, from any single source of emissions whatsoever, any air contaminant for a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke which is as dark or darker in shade as that designated as No. 1 on the Ringelmann Chart. The Project boilers, heaters, and emergency engines will be equipped with BACT and combust clean fuels and, consequently, compliance with this rule is expected.

MDAQMD Rule 402 Nuisance

A person must not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. Due to the application of BACT on each emission source and the distance from the emission sources to any potential receptors, compliance with this rule is expected.

MDAQMD Rule 403 Fugitive Dust

The purpose of this rule is to reduce the amount of particulate matter (PM) entrained in the ambient air as a result of man-made fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions. The provisions of this rule apply to any activity or man-made condition capable of generating fugitive dust.

Project construction is considered a large operation that will involve bulk storage of soils, earthmoving, construction and demolition, and man-made conditions that have the potential for fugitive dust emissions. The Applicants or their contractors will follow the fugitive dust control strategy outlined in a Construction Dust Control Plan that will be prepared for the Project (see AQ-SC3 in Section 5.2.5).

Project operations will involve routine vehicle travel within the solar collector field in order to wash the mirrors, and earthmoving during contaminated soil management associated with the bioremediation of HTF spills. These operations have the potential for fugitive dust emissions. The Applicants or their contractors will follow the fugitive dust control strategy outlined in the Operations Dust Control Plan that will be prepared for the Project (see AQ-SC7 in Section 5.2.5).

MDAQMD Rule 404 Particulate Matter - Concentration

A person is a not allowed to discharge into the atmosphere from any source operation, PM in excess of the concentration limits shown in the rule. The boilers, HTF heaters, auxiliary cooling towers, emergency generator and fire water pump engines will emit PM, and are subject to and will comply with this rule.

MDAQMD Rule 407 Liquid and Gaseous Air Contaminants

A person is not allowed to discharge into the atmosphere from any source CO exceeding 2,000 ppm measured on a dry basis, averaged over a minimum of 15 consecutive minutes. The provisions of this rule do not apply emissions from internal combustion engines and, therefore, are not applicable to the emergency generator or fire water pump engines. The boilers and heaters proposed for the Project will burn pipeline natural gas and use state-of-the-art emission controls, and thus compliance with this rule is expected.

MDAQMD Rule 409 Combustion Contaminants

A person is not allowed to discharge into the atmosphere from the burning of fuel, combustion contaminants exceeding 0.23 gram per cubic meter (0.1 grain per cubic foot) of gas calculated to 12 percent of carbon dioxide (CO_2) at standard conditions averaged over a minimum of 25 consecutive minutes. The boilers and heaters proposed for the Project will burn pipeline natural gas and use state-of-the-art emission controls, and the emergency fire water pump and generator engines will use ARB diesel fuel and thus compliance with this rule is expected.

MDAQMD Rule 431 Sulfur Content of Fuels

A person is not allowed to burn any gaseous fuel containing sulfur compounds in excess of 800 ppm calculated as hydrogen sulfide (H_2S) at standard conditions, or any liquid or solid fuel having a sulfur content in excess of 0.5 percent by weight. The BSPP will use pipeline natural gas fuel for the boilers and heaters to comply with the sulfur requirement in this rule. Ultra-low sulfur diesel fuel will be used in the emergency generator and fire water pump engines to comply with the rule.

MDAQMD Rule 442 Usage of Solvents

VOC emissions to the atmosphere from all VOC-containing materials, emissions units, equipment or processes subject to this rule are not allowed in excess of 1,190 pounds per month per facility. Discharges of non-VOC organic solvents in excess of 600 pounds per day calculated on a 30-day rolling average are also prohibited. Normal operations at the BSPP will not involve the routine use of organic solvents, except for the potential use of organic solvents in maintenance activities such as thinning paint or wipe cleaning. The use of such solvents will comply with standards of this rule.

MDAQMD Rule 463 Storage of Organic Liquids

This rule limits the storage of organic liquids with true vapor pressures of 77.5 mm Hg (1.5 psi) absolute or greater under actual storage conditions, unless such tank is a pressure tank maintaining working pressures sufficient at all times to prevent organic vapor loss to the atmosphere, or is designed and equipped with an approved vapor control device. The BSPP will have insulating mineral oil (transformers), hydraulic oil (steam turbine and other equipment), and lubricating oil onsite, all of which have a true vapor pressure less than 1.5 psi at actual storage conditions. The Project also will store diesel onsite in 300-gallon tanks, which has a vapor pressure of 0.008 psia (0.40 mm of mercury). HTF will be stored in 15,900 gallon tanks. The vapor pressure of HTF is 0.019 mmHg at 80°F. Because these vapor pressures are below prescribed limits, the Project will comply with this rule.

HTF is also present in the solar field piping and may be contained in expansion and overflow vessels. HTF in the piping and expansion and overflow vessels is not subject to the rule as it is not in storage under those circumstances.

MDAQMD Rule 474 Fuel Burning Equipment

A person is not allowed to discharge into the atmosphere from any non-mobile fuel burning equipment with a rated heat input exceeding 1,175 million British Thermal Units (MMBtu) per hour NOx in excess of 125 ppm by volume when operated on gaseous fuel, or 225 ppm by volume when operated on liquid and/or solid fuels. The rated heat capacity of the HTF heaters and auxiliary boilers do not exceed the rule applicability threshold, thus this rule does not apply to the Project.

MDAQMD Rule 475 Electric Power Generating Equipment

The purpose of this rule is to limit emissions of NOx and PM from non-mobile, Electric Power Generating Equipment. The rule applies to non-Mobile Electric Power Generating Equipment having a

maximum rated heat input of more than 50 MMBtu per hour. Because the boilers are rated at 35 MMBtu per hour and will not be used to generate electricity, the rule does not apply to the proposed Project.

MDAQMD Rule 476 Steam Generating Equipment

The purpose of this rule is to limit emissions of NOx and PM from non-Mobile, Steam Generating Equipment. The rule applies to non-Mobile Steam Generating Equipment having a maximum heat input rate of more than 50 MMBtu. The NOx emission limits of this rule do not apply to Steam Generating Equipment which is subject to a NOx emission limit in District Rule 1157 or 1158. Because the boilers are rated at only 35 MMBtu per hour, the rule does not apply to the proposed Project.

MDAQMD Regulation IX Standards of Performance for New Stationary Sources (NSPS)

Provisions of 40 CFR Part 60, in effect June 28, 1995, are adopted by reference into the MDAQMD rules. Compliance with NSPS is discussed in Section 5.2.1.1.

MDAQMD Rule 1157 Boilers and Process Heaters

The purpose of this rule is to limit NOx emissions from boilers, steam generators and process heaters of greater than 5 MMBtu per hour rated input capacity used in industrial, institutional, and commercial operations with several listed exceptions. The rule specifies NOx and CO limits for boilers, steam generators, and process heaters by size and process function.

The auxiliary boilers and HTF heaters will burn natural gas exclusively and, as shown in the Control Technology Assessment (Section 5.2.3), the low-NOx burners will limit NOx emissions to less than 30 ppm by volume and good combustion practice will limit CO emissions to less than 400 ppm by volume for each boiler. These emissions comply with the emission limits specified in this rule.

MDAQMD Rule 1158 Electric Power Generating Facilities

The purpose of this rule is to limit NOx emissions from Electric Power Generating Facilities. This rule applies to all existing electrical generating steam boilers, including any auxiliary boiler used in conjunction with an electrical generating steam boiler, combined-cycle turbine units and to replacement units that are located within the Federal Ozone Non-attainment Area. The proposed Project will install new steam boilers. and, as shown in Section 5.2.3, the Project site is in attainment with the Federal ozone standard. Therefore, the rule does not apply to the proposed Project.

MDAQMD Rule 1160 Internal Combustion Engines

The purpose of this rule is to establish limits for emissions associated with emergency, portable, standby, or stationary internal combustion engines. This rule is applicable to any stationary internal combustion engines rated at 500 hp or more. The emergency fire water pump and generator engines are rated at 300 hp each and, therefore, are not subject to the emission limitations set forth by this rule.

MDAQMD Regulation XIII New Source Review

This regulation sets forth pre-construction review requirements for new, modified, or relocated facilities to ensure that the operation of such facilities does not interfere with progress in attainment of the NAAQS, and that future economic growth within the District is not unnecessarily restricted. The specific air quality goal of this regulation is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors. In addition to nonattainment air contaminants, this regulation also limits emission increases of ammonia and Ozone Depleting Compounds (ODCs)

from new, modified or relocated facilities by requiring the use of BACT. The rules of Regulation XIII provide for the requirements listed below.

BACT: An applicant must provide BACT for any new permit unit that has the potential to emit 25 pounds per day (lb/day) or more of any nonattainment pollutant, or for any facility that has the potential to emit 25 tons per year (tpy) or more of any nonattainment pollutant. While each of the devices will emit less than 25 pounds per day per pollutant and the Project will emit less than 25 tpy per pollutant, the Applicants have applied current BACT to each of the permitted devices proposed for the Project. The manner in which the Project will comply with BACT is addressed in more detail in the Control Technology Assessment provided in Section 5.2.3.

Offsets: An applicant must provide offsets for new or modified stationary source of H_2S, SOx, NOx, CO or VOC for the source's potential to emit (in tpy) when the source's potential to emit equals or exceeds the offset trigger levels shown in Table 5.2-2. If offsets are required, they must be provided at specified ratios. As shown in Section 5.2.4, Project emissions do not exceed these thresholds and thus offsets are not required by this rule for the Project.

Table 5.2-2 Offset Thresholds

Pollutant	Offset Threshold (tpy)
NOx	25
SOx	25
VOC[1]	25
CO	100
H_2S	10
[1] MDAQMD uses the terms VOC and ROC interchangeably. The term "VOC" will be used here to mean both VOC and ROC.	

MDAQMD Rule 1306 Electric Energy Generating Facilities

This rule allows that a complete AFC will be accepted by the MDAQMD as an application for an ATC/PTO. Accordingly, the Applicants will provide the MDAQMD with a copy of the AFC for the Project.

MDAQMD Rule 1320 New Source Review for Toxic Air Contaminants

This rule specifies the requirements for preconstruction review and ensures proper emissions control of all new, modified, relocated or reconstructed facilities that emit or have the potential to emit any Hazardous Air Pollutant (HAP), TAC, or Regulated Toxic Substance. Applicability of and compliance with this rule is discussed in Section 5.10, Public Health.

MDAQMD Rule 2002 General Federal Actions Conformity

The purpose of this rule is to implement § 176(c) of the Federal CAA (42 U.S.C. § 7506(c)) and regulations under 40 CFR 51, subpart W, with respect to the conformity of general Federal actions to the applicable implementation plan. This rule sets forth policy, criteria, and procedures for demonstrating and assuring conformity of such actions to the applicable implementation plan. As discussed in detail in Section 5.2.2.3, the Project site is in an area that is in attainment with all NAAQS; thus, the Project is not subject to this rule and not required to develop a conformity determination.

5.2.1.4 Involved Agencies

Under the AFC process, the BSPP must obtain a Determination of Compliance (DOC) from the MDAQMD. Contact information for this agency is provided in Table 5.2-3.

Table 5.2-3 Agency and Agency Contacts

Agency Contact	Phone/E-mail	Permits/Issue
Alan De Salvio Supervising Air Quality Engineer MDAQMD 14306 Park Avenue Victorville, CA 92392-2310	760-245-1661 adesalvio@mdaqmd.gov	DOC/ATC/PTO

5.2.1.5 Required Permits and Permit Schedule

Table 5.2-4 lists the air quality-related permits that are required for the Project. As noted above, under the CEC licensing process, the MDAQMD will issue a DOC; a DOC is equivalent to the ATC issued by the MDAQMD for other sources. Once the project is built, the MDAQMD will issue a PTO in conjunction with the CEC. Additional applications are not required. This table also provides the schedule for when applications for these permits are needed.

Table 5.2-4 Permits Required and Permit Schedule

Permit/Approval	Schedule
DOC/ATC	An application will be submitted to the MDAQMD shortly after the AFC is submitted. The MDAQMD will work within the timeframes of the CEC's licensing process to issue the DOC.
PTO	Once the equipment becomes operational, a PTO must be obtained by the operator. This is normally issued by the MDAQMD following notification of the District and demonstration of compliance with any conditions of the ATC such as performance testing.

5.2.2 Affected Environment

The BSPP site is located approximately eight miles west of Blythe, in Riverside County, California approximately two miles north of Highway I-10. Access to the site is via the Mesa Drive exit from I-10. The Project will be located on public land within a BLM right-of-way consisting of approximately 9,400 acres of flat, desert terrain. The Project site is within the jurisdiction of the MDAQMD.

5.2.2.1 Climate and Topography

The Project site is located in California's Colorado Desert, which is a part of the larger Sonoran Desert that extends across southwest North America. The Colorado Desert region encompasses approximately seven million acres, reaching from the Mexican border in the south to the higher-elevation Mojave Desert in the north and from the Colorado River in the east to the Peninsular mountain range in the west. The majority of the Colorado Desert is classified as a "low desert" and lies at a relatively low elevation, below 1,000 feet, with the lowest point of the desert floor at 275 feet below sea level in the Salton Trough. Although the highest peaks of the Peninsular Range reach elevations of nearly 10,000 feet, most of the region's mountains do not exceed 3,000 feet. These ranges block moist coastal air and rains, producing an arid climate.

The Colorado Desert's climate distinguishes it from other deserts. The region experiences higher summer daytime temperatures than higher-elevation deserts and almost never experiences frost. The mean maximum temperatures in July and August exceed 100 degrees Fahrenheit (^{o}F). In addition, the Colorado Desert, especially toward the southern portion of the region, experiences two rainy seasons per year, in the winter and late summer, while the more northerly Mojave Desert has only winter rains. During the summer the Project Site will be generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The Colorado Desert is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time the reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south.

The most significant large-scale phenomena affecting air quality in the Project area are the transport winds from the west and southwest. These prevailing winds are due to the proximity of the Mojave Desert Air Basin (MDAB) to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north; air masses pushed onshore in southern California by differential heating are channeled through the MDAB. These winds are responsible for bringing ozone and other pollutants through the San Gorgonio Pass from the Los Angeles Basin.

5.2.2.2 Meteorological Data

For air quality impact analyses, hourly meteorological data are used for modeling purposes. Hourly surface meteorological data that are characteristic of the Project site are available from the Blythe Airport Meteorological Site located approximately three miles southeast of the Project site and operated by the ARB, and from the Blythe Monitoring site, located at 445 W. Murphy Street, approximately 10 miles east of the Project site. Three years of data for the years 2006 through 2008 were used in the impact analyses.

Winds

The closest meteorological monitoring stations to the BSPP site is the Blythe Airport monitoring station approximately three miles southeast of the site. The Blythe Airport monitoring stations is expected to have similar wind flow patterns to the Project site based on its proximity to the site. A wind rose for the Blythe Airport monitoring station for 2003 to 2007 is presented in Appendix E.1.

Temperature

Temperatures in the Project area can be very hot during the summer months and moderately cold during the winter months. Table 5.2-5 summarizes daily maximum and minimum temperatures and extreme high and low temperatures by month from the years 1913 to 2008.

Precipitation

Average annual precipitation in the Project area based on the Blythe Airport data record for the period of 1913 to 2008, is less than four inches. Table 5.2-6 summarizes precipitation data (rainfall) for the area. No snowfall was reported for Blythe Airport between 1913 and 2008.

Table 5.2-5 Climate Temperature Data for Blythe Airport, California

Month	Temperature (°F)					Mean Number of Days			
	Monthly Averages			Record Extremes		Max. Temp.		Min. Temp.	
	Daily Max.	Daily Min.	Monthly	Record High	Record Low	90°F & Above	32°F & Below	32°F & Below	0°F & Below
Jan	66.7	41.5	54.1	89	20	0	0	2.7	0
Feb	72	45.4	58.7	93	22	0.2	0	0.8	0
Mar	78.4	50.2	64.3	100	30	3.1	0	0.1	0
Apr	86.4	56.5	71.5	107	38	11.6	0	0	0
May	95.2	64.4	79.8	114	43	23.8	0	0	0
Jun	104.5	72.7	88.6	123	46	29	0	0	0
Jul	108.4	81	94.7	123	62	30.9	0	0	0
Aug	106.6	80.2	93.4	120	62	30.6	0	0	0
Sep	101.3	73	87.2	121	51	28.4	0	0	0
Oct	89.8	60.9	75.3	111	27	17.6	0	0	0
Nov	75.8	48.6	62.2	95	27	0.8	0	0.1	0
Dec	66.7	41.2	53.9	87	24	0	0	1.8	0
Year[1]	87.7	59.6	73.6	123	20	176	0	6	0

1. Totals may not match the data in the columns due to rounding errors.
Source: WRCC 2009

Table 5.2-6 Precipitation Data for Blythe Airport, California

Month	Rainfall (1913 – 2008) (Inches)				Mean Number of Days			
	Mean	Highest Month	Lowest Month	Highest Daily	0.01 inches or More	0.10 inches or More	0.50 inches or More	1.0 inches or More
Jan	0.47	2.48	0	1.64	3	1	0	0
Feb	0.44	3.03	0	1.66	2	1	0	0
Mar	0.36	2.15	0	1.52	2	1	0	0
Apr	0.16	3	0	2.67	1	0	0	0
May	0.02	0.22	0	0.22	0	0	0	0
Jun	0.02	0.91	0	0.91	0	0	0	0
Jul	0.24	2.44	0	1.4	1	0	0	0

Table 5.2-6 Precipitation Data for Blythe Airport, California

Month	Rainfall (1913 – 2008) (Inches)				Mean Number of Days			
	Mean	Highest Month	Lowest Month	Highest Daily	0.01 inches or More	0.10 inches or More	0.50 inches or More	1.0 inches or More
Aug	0.64	5.92	0	3	2	1	0	0
Sep	0.37	2.14	0	1.9	1	1	0	0
Oct	0.27	1.89	0	1.61	1	1	0	0
Nov	0.2	1.84	0	1.04	1	0	0	0
Dec	0.39	3.33	0	1.42	2	1	0	0
Year[1]	3.59	---	---	3	17	8	2	1

1. Totals may not match the data in the columns due to rounding errors.

Source: WRCC 2009

5.2.2.3 Ambient Air Quality Data

The Project site is located in the MDAB and is under the jurisdiction of the MDAQMD. NAAQS and CAAQS are shown in Figure 5.2-1. The attainment status of the Project area with respect to the NAAQS and CAAQS is summarized in Table 5.2-7.

The Blythe monitoring station (445 W. Murphy Street) is the closest monitoring station to the Project site, approximately 10 miles east of the site. Due to its location and similarity of terrain, the Blythe monitoring site is expected to provide data that are most representative of the Project site.

Table 5.2-8 lists nine additional monitoring sites: Niland (7711 English Road), Brawley (220 Main Street), Westmoreland (570 Cook Street), El Centro (150 9th Street), Calexico (1029 Ethel St), Palm Springs (590 E. Racquet Club Avenue), Barstow (1301 W. Mountain View), Riverside (5888 Missions Boulevard) and Victorville (14306 Park Avenue). Because the closest sites do not monitor the full range of pollutants, for each pollutant, data from the closest three of these ten monitoring stations are presented in the following tables to comply with CEC guidelines with respect to reporting monitoring data from three sites. Table 5.2-8 summarizes the pollutants monitored and the approximate distance from the Project site for each of these monitoring stations.

Annual windroses for each of the monitoring stations listed in Table 5.2-8, except Brawley, are provided in Appendix E.1. As discussed, it is likely that the wind flow pattern at the Project site would be similar to that of the Blythe Airport. A comparison of the windrose for the Blythe Airport with the windroses for the eight additional monitoring stations listed in Table 5.2-8 for which windroses are available, the dominant wind direction at the Project site is substantially different from that at the available monitoring stations. There are significant differences among the monitoring sites in local prevailing wind flow, terrain influence on wind flow, distance from the Project site, and upwind / downwind influences that affect background air quality concentrations (e.g., upwind urban areas). Because of these factors, the available monitoring stations, other than Blythe, likely do not provide truly representative background data for the Project site. However, consistent with CEC guidelines, monitoring data are presentedfor each pollutant from the three closest monitoring sites.

Table 5.2-7 Summary of Attainment Status of the Project Area

Pollutant	Attainment Status	
	Federal Standards	California Standards
Ozone – one-hour	No longer applies	Moderate Non-attainment
Ozone – eight-hour	Unclassified/ Attainment	Non-attainment
CO – eight-hour	Unclassified / Attainment	Unclassified
NO_2	Unclassified/ Attainment	Attainment
SO_2	Unclassified	Attainment
PM10	Unclassified	Non-attainment
PM2.5	Unclassifiable / Attainment	Unclassified/ Attainment
Source: ARB 2009		

Table 5.2-8 Air Quality Monitoring Stations Closest to the Project Site

Monitoring Site	Pollutant						Distance Away		Agency
	CO	NO_2	O_3	PM_{10}	PM2.5	SO_2	(Miles)	Direction	
Blythe			X				10	E	ARB
Niland			X	X			54	SW	ARB
Brawley			X	X	X		64	SW	ICAPCD
Westmoreland			X	X			65	SW	ICAPCD
El Centro	X		X	X	X		74	SW	ICAPCD
Calexico	X	X	X	X	X	X	78	SW	ICAPCD
Palm Springs	X	X	X	X	X		102	W	SCAQMD
Barstow	X	X	X	X			155	NW	MDAQMD
Riverside	X	X	X	X	X	X	154	W	SCAQMD
Victorville	X	X	X	X	X	X	157	WNW	MDAQMD

Tables 5.2-9 through 5.2-14 provide summaries of air quality data collected at the air quality monitoring stations and the number of times that the NAAQS and CAAQS were exceeded for each parameter for the years 2006 through 2008. Note that because the Project site is a substantial distance from many of these monitoring stations and may be in a different regulatory jurisdiction, the monitoring stations may indicate non-attainment status when the Project site itself is in an attainment area.

The Project will be a source of ozone precursor pollutant emissions (i.e., NOx and VOC). The MDAB is unclassified / attainment for the Federal eight-hour ozone standards, and moderate non-attainment and non-attainment for the California one-hour and eight-hour ozone standards, respectively. Ambient ozone monitoring data presented in Table 5.2-9.

Table 5.2-9 Ozone Data for Stations Nearest to the Project Site

Site	# Days > 1-Hr CAAQS	Highest 1-Hr Obs (ppm)	# Days > 8-hr NAAQS	Highest 8-Hr Obs (ppm)
Calendar Year 2008				
Blythe	0	0.074	0	0.071
Niland	0	0.065	3	0.085
Brawley	0	0.065	0	0.060
Calendar Year 2007				
Blythe	0	0.092	0	0.075
Niland	0	0.082	7	0.082
Brawley	0	0.082	0	0.069
Calendar Year 2006				
Blythe	0	0.078	0	0.059
Niland	0	0.063	3	0.080
Brawley	0	0.063	0	0.049
Reference: ARB 2009.				

The Project area is unclassified for the national 24-hour PM10 standards and non-attainment for the California 24-hour PM10 standards. The California standard was exceeded 26 days at Niland, 49 days at Brawley and 48 days at Westmoreland during the 2006 to 2008 period. Table 5.2-10 provides PM10 data from the three closest monitoring stations.

Table 5.2-10 PM10 Data for Stations Nearest to the Project Site

Site	# Days > 24-Hr NAAQS	# Days > 24-hr CAAQS	Annual Average ($\mu g/m^3$)	Highest 24-Hr Average, ($\mu g/m^3$)
Calendar Year 2008				
Niland	0	8	31.0	129.7
Brawley	0	7	33.2	137.0
Westmoreland	0	10	38.5	138.0
Calendar Year 2007				
Niland	1	13	38.9	160.0
Brawley	2	26	56.4	291.0
Westmoreland	2	20	48.8	222.0
Calendar Year 2006				
Niland	0	5	34.9	113.0
Brawley	0	16	45.1	127.0
Westmoreland	1	18	ND	162.0
ND – Insufficient data to determine valid value, so value not reported by ARB. Reference: ARB 2009.				

The Project area is unclassified for the California 24-hour PM2.5 standards and is unclassifiable / attainment for the Federal PM2.5 standards. The Federal standard was exceeded seven days at the Calexico site during the 2006 to 2008 period. Table 5.2-11 provides PM2.5 data from the three closest monitoring stations.

Table 5.2-11 PM2.5 Data for Stations Nearest to the Project Site

Site	# Days > 24-Hr NAAQS	National Annual Average ($\mu g/m^3$)	National Highest 24-Hr Average ($\mu g/m^3$)
Calendar Year 2008			
Brawley	0	8.2	32.7
El Centro	0	ND	26.7
Calexico	1	10.4	37.1
Calendar Year 2007			
Brawley	0	ND	19.5
El Centro	0	8.5	30.5
Calexico	1	ND	52.7
Calendar Year 2006			
Brawley	0	ND	33.8
El Centro	0	8.8	68.4
Calexico	5	12.5	68.8
ND – Insufficient data to determine valid value, so value not reported by ARB. Reference: ARB 2009.			

Available NO_2, CO and SO_2 data are presented in Tables 5.2-12, 5.2-13, and 5.2-14, respectively; these pollutants are all classified as attainment for both the California and Federal standards. The data presented in each of the tables are for the three closest monitoring sites to the Project location that monitors these pollutants. It is unlikely that the Project site would experience ambient concentrations in excess of those for the three closest monitoring sites given the limited number of emission sources near the Project site.

Table 5.2-12 NO_2 Data for Stations Nearest to the Project Site

Site	Highest 1-Hr Observation (ppm)	# Days >1-Hr CAAQS	Annual Average (ppm)
Calendar Year 2008			
Calexico	6.34	0	0
Palm Springs	0.049	0	0.009
Barstow	0.081	0	0.019
Calendar Year 2007			
Calexico	7.53	0	0
Palm Springs	0.063	0	0.010
Barstow	0.073	0	0.020
Calendar Year 2006			
Calexico	2.59	0	0
Palm Springs	0.093	0	0.010
Barstow	0.082	0	0.022
Reference: ARB 2009.			

Table 5.2-13 CO Data for Stations Nearest to the Project Site

Site	Highest 8-Hr Observation, (ppm)	# Days > 1- or 8-Hr NAAQS	# Days > 1- or 8-Hr CAAQS
Calendar Year 2008			
El Centro	1.17	0	0
Calexico	3.99	0	0
Palm Springs	0.54	0	0
Calendar Year 2007			
El Centro	1.67	0	0
Calexico	4.50	0	0
Palm Springs	0.79	0	0
Calendar Year 2006			
El Centro	2.59	0	0
Calexico	5.80	1	1
Palm Springs	0.85	0	0
Reference: ARB 2009.			

Table 5.2-14 SO_2 Data for Stations Nearest to the Project Site

Site	Highest 1-Hr Observation (ppm)	# Days >1-Hr CAAQS	Annual Average (ppm)
Calendar Year 2008			
Calexico	0.007	ND	0.001
Riverside	0.003	ND	0.001
Victorville			
Calendar Year 2007			
Calexico	0.004	ND	0.001
Riverside	0.004	ND	0.002
Victorville			
Calendar Year 2006			
Calexico	0.041	ND	0.001
Riverside	0.003	ND	0.001
Victorville	002	ND	0.001
[1]ND – Insufficient data to determine valid value, so value not reported by ARB. Reference: ARB 2009.			

5.2.3 Control Technology Assessment

MDAQMD Regulation XIII requires an applicant for an ATC or PTO to apply BACT to any new or modified source which results in an emission increase of 25 pounds per day or more of NOx, SOx, PM10, or VOC. BACT is applied on a pollutant-specific basis. While the proposed equipment will not emit pollutants in excess of 25 pounds per day per pollutant, BACT is proposed by the Applicants for the BSPP.

BACT is applied on a pollutant-specific basis. BACT means the most stringent emission limitation or control technique which:

- Has been achieved in practice for such category or class of source; or
- Is contained in any state implementation plan (SIP) approved by the EPA for such category or class of source (unless demonstrated to the satisfaction of the Air Pollution Control Officer (APCO) or designee to be not presently achievable); or
- Is any other emission limitation or control technique, found by the APCO or designee to be technologically feasible for such class or category of sources or for a specific source and cost-effective as compared to measures listed in the SIP.

The process for determining BACT differs between major and non-major (i.e., minor source) polluting facilities. Major polluting facilities that are subject to NSR are required by the CAA to have the Lowest Achievable Emission Rate (LAER), with little or no regard for cost, and consistent with the EPA's LAER policy as to what is achieved in practice. For non-major polluting facilities, economic and technical feasibility are considered when establishing the class or category of sources and the applicable BACT requirements. Further, the permitting staff may consider unusual equipment-specific and site-specific characteristics of the proposed project that would warrant reconsideration of the minor source BACT requirement for the new equipment. Some examples include:

- Technical infeasibility of the control technology: a particular control technology may not be required as BACT if the applicant demonstrates that it is not technically feasible to install and operate it to meet a specific BACT emission limitation in a specific situation.
- Operating schedule and project length: if the equipment will operate much fewer hours per year than what is typical, or for a much shorter project length, it can affect what is considered "Achieved in Practice".
- Availability of fuel or electricity: some BACT determinations may not be feasible if a project will be located in an area where natural gas or electricity is not available.
- Process requirements: some BACT determinations specify a particular type of process equipment. The permitting authority may consider requirements of the proposed process equipment that would make the BACT determination not technically feasible.

EPA guidance for a "top-down" BACT analysis requires reviewing all possible control options starting with the best control efficiency. In the course of the BACT analysis, one or more options may be eliminated from consideration because they are demonstrated to be technically infeasible or have unacceptable energy, economic, or environmental impacts on a case-by-case (site-specific) basis. The steps recommended for a "top-down" BACT review are:

1) Identify Available Control Technologies;
2) Eliminate Technically Infeasible Options;
3) Rank Remaining Technologies;
4) Evaluate Remaining Technologies (in terms of economic, energy, and environmental impacts); and
5) Select BACT (the most efficient technology that cannot be rejected for economic, energy, or environmental impact reasons).

Publicly available information on emission control technologies was reviewed for step one of this analysis. The South Coast Air Quality Management District's (SCAQMD) Major Source BACT Guidelines, the SCAQMD's Non-Major Source Guidelines, the Bay Area Air Quality Management District (BAAQMD) BACT Guidelines, the ARB's BACT database, and EPA's RACT/BACT/LAER Clearinghouse (RBLC) were reviewed to determine BACT for each source type. These guidelines are examples of past determinations that help in determining BACT for new permit applications. The EPA-recommended five-step process was used to select BACT.

5.2.3.1 BACT Determination for Boilers and Heaters

The Project will utilize four 35 MMBtu/hr auxiliary boilers and four 35 MMBtu/hr HTF heaters. These units will be used to assist in start up of the facility and to provide freeze protection for the HTF. The boilers and heaters emit criteria pollutants (NOx, SOx, CO, VOC, PM10 and PM2.5) due to the combustion of natural gas. Because the auxiliary boilers and the HTF heaters will have similar emissions, the BACT analyses for those units are combined. Air pollution reduction efforts within the past several years have resulted in lower emission standards for boilers and heaters; therefore, the database review was focused only on determinations from 2003 and later.

NOx

The technologies employed for NOx emissions control are listed below in descending order of effectiveness:

- Selective Catalytic Reduction (SCR)

- Ultra-low-NOx burners
- Low-NOx burners with flue gas circulation
- Flue gas circulation
- Good combustion practice

SCR was mentioned as an alternative control technology for boilers by the BAAQMD in their BACT guidance document. SCR is known to successfully control NOx to very low concentrations in large furnaces and boilers, although there is little evidence that this technology has been applied to boilers in the size range of the proposed units. One key limitation relative to the technical feasibility of SCR for the proposed boiler is that the temperature of the exhaust gas (~300°F) will be below the low end of the proper temperature range for the SCR catalyst (~500°F). SCR also requires a substantial capital investment for the catalyst bed, additional power for operations (additional blower horsepower is required to overcome the pressure drop in the catalyst bed), and the use of hazardous aqueous or anhydrous ammonia as the reducing agent.

Based on the database review of boilers with similar heat rates, SCR is not used for NOx control on boilers in the size range of the proposed units, as evidenced by the large number of applications cited that use low-NOx or ultra-low-NOx burner technologies. Due to the temperature inconsistency, limited number of hours of steady state operation, the significant number of hours of operation at low-load, higher cost, additional energy requirements, the need to use a hazardous material (ammonia), and lack of evidence that SCR is used on boilers or heaters in the size range of the proposed units, SCR is determined to be infeasible for these devices.

The next most effective NOx control option is the use of ultra-low NOX burners. The auxiliary boilers will be equipped with ultra-low NOx burners with a stack NOx concentration of 9 ppm at three percent oxygen with a recommended averaging period of 15 minutes. The HTF heaters will also emit 9 ppm NOx or less. The use of ultra-low-NOx burners and the emission limit of 9 ppm represent BACT for the proposed auxiliary boilers and HTF heaters.

CO and VOC

The technologies employed for CO and VOC emissions control in boilers and heaters are listed below in descending order of effectiveness:

- Oxidation catalyst
- Good combustion practice

Oxidation catalysts are known to successfully control CO and VOC to very low concentrations in large furnaces and boilers, although there is little evidence that this technology has been applied to boilers or heaters in the size range of the proposed units. Oxidation catalysts are mentioned as an alternative control technology by the BAAQMD in their BACT guidance document for larger combustion sources (i.e., greater than 50 MMBtu/hour). Oxidation catalysts require a substantial capital investment for the catalyst bed, and additional power for operations (additional blower horsepower is required to overcome the pressure drop in the catalyst bed).

Based on the database review of process heaters and boilers with similar heat rates, it appears that oxidation catalysts are not used for CO and VOC control on boilers or heaters in the size range of the proposed units. Due to the limited hours of operation of the boilers and heaters, the significant number of hours of operation at low-load, substantially higher cost, additional energy requirements, and lack of evidence that oxidation catalysts are used on boilers or heaters in this size range, oxidation catalysts are determined to be infeasible for these devices.

The next most effective CO and VOC control option is the use of good combustion practices. Good combustion practice is recommended as BACT for this application. A recent BACT analysis for the proposed Reliant San Gabriel Generating Station proposed a CO limit of 25 ppm at three percent oxygen with a 15-minute averaging period. The facility was granted a permit in March of 2008, but these emissions levels have not been demonstrated through performance testing. Hence these levels should not be considered as achieved in practice.

Based on several recent BACT determinations, 50 ppm at three percent oxygen is recommended as BACT for CO emissions. Good combustion practice is recommended as BACT for VOC, with no specific concentration recommended. A one-hour averaging period is recommended. The auxiliary boilers and HTF heaters will burn only pipeline-quality natural gas and will achieve BACT using good combustion practices during normal operation as well as during startup and shutdown.

PM10/PM2.5 and SOx

The technologies employed for PM10/PM2.5 and SOx emissions control for boilers are listed below in descending order of effectiveness:

- Pipeline-quality natural gas fuel
- Low-sulfur fuel
- Good combustion practices

The use of the top-ranked technology, the use of low-sulfur pipeline natural gas in conjunction with good combustion practice is recommended for the control of PM10/PM2.5 and SOx emissions. A specific emission limit or concentration is not recommended.

Summary of Proposed BACT for Boilers and HTF Heaters

Based on this review, the proposed BACT for the auxiliary boilers and HTF heaters is presented in Table 5.2-15.

Table 5.2-15 Proposed BACT for the Boilers and Heaters

Pollutant	Emission Limit[1]	Technology	Reference
NOx	9.0 ppm at 3 percent O_2, 15-min avg.	Ultra low-NOx burner	SCAQMD Part D BACT for Non-major polluting facilities
CO	50 ppm at 3 percent O_2, 1-hr avg.	Ultra low-NOx burner, good combustion practice	SCAQMD Part D BACT for Non-major polluting facilities
VOC	None	Pipeline-quality natural gas	Various
PM10/PM2.5	None	Pipeline-quality natural gas	Various
Sox	None	Pipeline-quality natural gas	Various
1. The emission limits for NOx and CO would not apply during start up, shutdown or malfunction.			

5.2.3.2 BACT Determination for Emergency Diesel Generator and Fire Water Pump Engines

The Project will include four emergency diesel generators and four diesel fire water pump engines, each rated at 300 hp. Each of these emergency diesel engines will each operate for a maximum of 50 hours per year for maintenance and testing.

NOx, VOC, and CO

The technologies employed for NOx, VOC and CO emissions control for internal combustion engines are listed below in descending order of effectiveness:

- Catalytic converter
- Oxidation catalyst
- NSPS- or ATCM-compliant engine

Catalytic converters and oxidation catalysts have been proposed and used on a limited number of diesel engines in California; however, neither have been used on emergency engine installations due to the high cost and limited environmental benefit (due to the low number of hours of operation). Catalytic converters and oxidation catalysts are, therefore, determined to be infeasible for this application.

NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, has been adopted for non-road engines that limit emissions of these pollutants, which varies depending upon the size, intended use and date of manufacture of the engine. A review of the EPA BACT/LAER Clearinghouse indicates that compliance with the NSPS is BACT. Compliance with the applicable NSPS is feasible and has been achieved in practice. The fire water pump engines fit into the fire water pump engine category for engines constructed 2009 and later, with horsepower greater than or equal to 300 and less than 600. The emergency generator engines fit into the stationary, non-fire water pump engine category for engines constructed 2009 and later, with horsepower greater than or equal to 300 and less than 600. Compliance with the applicable NSPS is determined to be BACT for this application. The NSPS emission limits for the fire water pump engines and emergency generator engines are presented in Table 5.2-16.

Title 17, CCR §93115, the California ATCM for Stationary CI Engines, provides standards for new stationary emergency standby diesel-fueled engines. The California emission standards specified in 13 CCR §2423 and the PM emission limits specified in 17 CCR §93115 are at least as stringent as the requirements for a NSPS-compliant engine. Therefore, compliance with the California emission standards and limits provides an equivalent level of control for the emergency diesel generators and fire water pump engines.

PM10 and PM2.5

The technologies employed for PM10 and PM2.5 emissions control for internal combustion engines are listed below in descending order of effectiveness:

- Diesel particulate trap
- NSPS-compliant engine

Diesel particulate traps have been proposed and used on a limited number of diesel engines; however, they have not been used on emergency engine installations due to the high cost and limited environmental benefit (due to the low number of hours of operation). Diesel particulate traps are,

therefore, determined to be infeasible for this application. NSPS- or ATCM-compliant engines are recommended as BACT for this application.

SOx

Emissions of SOx are dependent upon the amount of sulfur in the fuel. A review of the EPA RBLC indicates that the lowest sulfur content fuel commercially available contains 15 ppm sulfur (S). The use of diesel fuel with a sulfur content of 15 ppm is recommended as BACT for this application.

Summary of BACT for Emergency Engine

Based on this review, the proposed BACT for the emergency fire water pump and generator engines are presented in Table 5.2-16.

Table 5.2-16 Proposed BACT for the Emergency Engines

Description	CO (g/bhp-hr)	NMHC + NOx (g/bhp-hr)	PM (g/bhp-hr)	Sox
Fire Water Pump (300 ≤ hp < 600)	2.6	3.0	0.15	15 ppm S fuel
Emergency Generator (300 ≤ hp < 600)	2.6	3.0	0.15	15 ppm S fuel

5.2.3.3 BACT Determination for Cooling Tower

BSPP will utilize dry cooling for the primary steam cycle, but will employ an auxiliary cooling tower to remove residual heat for the Balance-of-Plant (BOP) equipment. The Project will have four auxiliary cooling tower units. Because cooling towers provide direct contact between the cooling water and the air passing through the tower, some of the liquid water may be entrained in the air stream and be carried out of the tower as "drift" droplets. Particulate matter (PM10/PM2.5) is generated when the drift droplets evaporate and leave fine particulate matter formed by precipitation/crystallization of dissolved solids. Emissions from the cooling tower, and hence the BACT determination, are limited to PM10/PM2.5. The technology available for control of PM10/PM2.5 from cooling towers is a high-efficiency drift eliminator.

The use of a high-efficiency drift eliminator on a wet cooling tower is BACT. The drift elimination efficiency level that a supplier is willing to guarantee differs depending on the type of cooling tower involved, which in turn is dictated by the specific requirements of the application for which cooling is required. For the cooling tower, drift eliminators with a vendor-guaranteed efficiency of 0.0005 percent represents BACT for PM10/PM2.5 for a vertically-oriented cooling tower proposed for the BSPP facility.

5.2.3.4 BACT Determination for HTF Expansion Tank/ Ullage System Emissions

The HTF expansion tanks are blanketed with nitrogen gas to keep the headspace in the expansion tanks non-explosive. The nitrogen may become saturated with VOC as it is in contact with the HTF and any volatile HTF breakdown products. When the HTF heats and expands, the nitrogen gas which is potentially saturated with VOC is vented. VOCs can generally be controlled through the use of the following technologies, depending on a number of factors, including flow rate, VOC concentration, moisture content, and the specific properties of the VOC involved. These technologies are not listed in order of control efficiency.

- Closed Vapor System

- Thermal oxidation
- Regenerative thermal oxidation (RTO)
- Carbon adsorption
- Catalytic oxidation
- Refrigerated condenser
- A combination of technologies, such as a carbon adsorber concentrator followed by an oxidation technology

In a closed vapor system, when the HTF heats and expands, the VOC-saturated nitrogen will be captured, compressed, and stored in a small pressurized tank. When the HTF cools and contracts, the nitrogen is replaced from the pressurized tank. Ideally, this design serves to conserve nitrogen and completely eliminates VOC emissions from the expansion tanks. There have been some concerns raised by some engineering contractors regarding the safety of a closed vapor system such as this. While this approach almost completely eliminates VOC emissions and has been proposed at other solar thermal facilities, this has not been applied to full scale facility, and hence, not achieved in practice. Therefore a closed vapor system cannot be considered BACT.

Thermal oxidation uses high temperature combustion (1,200 °F – 2,400 °F) to control air pollutants in vapor streams. Capital equipment costs vary according to system size. Fuel requirements (costs) are generally higher than other oxidation technologies. Thermal oxidation usually works best when operated continuously; intermittent operation is impractical due to long heat up times for the combustion chamber, and frequent thermal cycling stresses the refractory and shortens equipment life. Thermal oxidation is assumed to have a control efficiency of 95 or greater, but requires the combustion of fuel and thus would be a source of secondary (combustion) pollutants. Because the HTF venting is not a continuous process, the thermal oxidation is not well suited to the application and has been eliminated from further consideration as BACT.

RTO uses two or more heat exchangers to carry out oxidation and heat recovery. RTOs typically consume less energy than other oxidation processes and can recover 90 to 95 percent of the heat generated by oxidation. RTO control efficiencies are typically greater than 95 percent and can exceed 99 percent in some installations. RTOs are ideal for low- to moderate-VOC concentrations, high gas volume, continuous operations. Because the HTF venting is not a continuous process, the RTO is not well suited to the application and has been eliminated from further consideration as BACT.

Carbon adsorption is a process where an activated carbon with high surface area is used to capture air pollutants. Single carbon beds typically are designed for 95 percent control, and multiple beds in series can achieve control efficiencies of 98 percent or more. Adsorption of the hydrocarbons proceeds until the carbon is saturated or spent. Then the carbon must either be regenerated or replaced. Carbon adsorption can be an expensive control technology for high concentration and/or high volume vapor streams.

Catalytic oxidation uses a metal catalyst to lower the temperature range for oxidation of VOC to 550°F - 650°F. Therefore, catalytic oxidation can be more cost-effective than direct thermal oxidation for vapor streams with low heat content. Control efficiencies are comparable to thermal oxidation. Similar to thermal oxidation, catalytic oxidation requires the combustion of fuel and thus would be a source of secondary (combustion) pollutants. The catalyst bed is prone to poisoning under certain circumstances.

The combination of carbon adsorption followed by an oxidation technology is ideally suited to a vent stream with high gas volumes and low VOC concentrations, which matches the source parameters of the HTF ullage system. Because the principle mechanism for emissions control is carbon adsorption, the control efficiency is expected to be the same as carbon adsorption alone. The difference between

this alternative and carbon alone is the manner in which the carbon is regenerated. With the combination technology, the carbon is regenerated onsite with hot air and the resulting air/vapor stream processed in a thermal oxidizer to destroy VOC. Like all other thermal oxidizers, this technology causes emissions of secondary pollutants from the combustion of fuel and VOC. Typically, the selection of this technology over carbon alone is due to an economic advantage of onsite regeneration (as opposed to offsite regeneration for a fee that is typical of carbon alone).

A refrigerated or water-cooled condenser is a control option that can be used to condense the VOC vapors leaving the HTF expansion tanks. The control efficiency of a refrigerated or water-cooled condenser depends on the vapor pressure of the VOC and the temperature of the coolant. Control efficiencies are typically lower than other VOC control technologies. Due to the very low vapor pressure of HTF at ambient temperature, the control efficiency of a water-cooled condenser is expected to exceed 99 percent for HTF; however, byproducts of thermal degradation of the HTF may include benzene and other light hydrocarbons. The control efficiency of a water-cooled condenser for benzene would be substantially lower. Because the control efficiency of the water-cooled condenser for benzene is substantially lower than either the carbon adsorption or the oxidation technologies, the water-cooled condenser doesn't satisfy BACT and is rejected for this application.

BSPP is proposing to use two-stage condensing system with carbon absorption to reclaim usable HTF liquids and control VOC emissions to a maximum of 1.5 lb/day from each HTF vent. The mixture of gas containing VOCs from the expansion vessel enters the ullage system, which contains a certain level of HTF at any time. The HTF vapor within the gas mixture condenses and is recirculated to the HTF cycle. If necessary, the HTF content of the first ullage vessel is cooled by recirculation via an air cooler. Leaving the first ullage vessel, residual mixture of gas enters the second ullage vessel, where it will be further condensed. The content of the second ullage vessel is cooled by recirculation via a second air cooler. By cooling, the hydrocarbons within the gaseous mixture condense to a large extent and are collected in the ullage drain vessel. Residual gaseous components are vented to the vessel pit through a series of two active carbon beds, which are expected to reduce VOC emissions by 98 percent. The volume of collected liquid residuals and vented gas will depend upon the final operating temperature during the previous day of operation and the temperature of the system overnight.

5.2.4 Environmental Impacts

This section provides a discussion of air quality impacts from criteria pollutant emissions from the BSPP. Section 5.10, Public Heath, provides a discussion of the impacts to public health from potential Project emissions of TAC.

5.2.4.1 Emission Estimates

This section provides the criteria pollutant emissions estimates for the proposed BSPP emission sources. Emissions have been estimated for the two phases of the Project: construction and operation, each of which is discussed below. Commissioning of Project emission sources is not expected to cause emissions that are higher than or different from normal operating emissions; therefore, commissioning is not considered as a separate phase of Project development.

Construction

During the construction of the BSPP, there will be emissions similar to those associated with any large industrial construction project. Onsite emissions will arise primarily from heavy-duty vehicles and equipment. Onsite fugitive dust emissions will be generated during site preparation and during construction. Offsite emissions will occur from construction worker vehicles and material delivery trucks.

The construction-related emissions are transient in nature and may cause some unavoidable localized short-term impacts.

The BSPP will include construction of the solar facility (power block and solar array, as well as other ancillary facilities such as the administration buildings, warehouses, parking lot, and re-routed drainage channels), an approximately 10-mile natural gas supply pipeline, and an electric transmission line to a substation approximately five miles to the southwest. Construction of the BSPP solar power plant will require approximately 69 months. Construction of Project elements including the electric transmission line and natural gas supply pipeline will occur concurrently.

Table 5.2-17 summarizes maximum daily and annual onsite emissions during construction of the solar facility. These emissions were modeled and the results are provided in Section 5.2.4.4. Table 5.2-18 summarizes maximum daily offsite emissions from vehicles traveling to the site and from equipment used in the construction of the natural gas supply line and the transmission line. Details of the construction emission calculations are provided in Appendix E.2.

Table 5.2-17 Maximum Daily Construction Emissions

Phase of Construction	NOx (lb/day)	VOC (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Power Plant	898	96	499	1.94	381	108
Roadway (offsite)	218.56	25.14	95.70	0.47	33.10	13.82
Transmission Line (offsite)	13.87	1.58	16.06	0.03	2.84	1.16
Natural Gas Pipeline (offsite)	0.00	0.00	0.00	0.00	0.00	0.00

Table 5.2-18 Maximum Annual Construction Emissions

Phase of Construction	NOx (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM10 (tpy)	PM2.5 (tpy)
Power Plant	104.21	11.26	58.79	0.23	42.88	12.39

Operations

Criteria pollutant emissions (i.e., NOx, SOx, CO, VOC, PM10 and PM2.5) are expected from the devices of each power plant unit during normal facility operations. BSPP will use four power generating units (Units #1-Unit #4) at the facility, each of which includes:

- One 35 MMBtu per hour natural gas-fired auxiliary boiler used for start up;
- One 35 MMBtu per hour natural gas-fired HTF heater used for freeze protection;
- One 300-hp diesel-fired emergency fire water pump engine;
- One 300-hp diesel-fired emergency generator engine;
- One two-cell wet cooling tower;
- One HTF expansion/ullage system; and
- Maintenance vehicles.

Summaries of emission calculation methodologies and emission estimates are provided in this section. Detailed operation emission calculations are provided in Appendix E.3. The emissions were calculated for each unit at the BSPP, and the emissions from the four units were summed to estimate emissions for the Project.

Auxiliary Boiler Emissions: Combustion of natural gas results in the emissions of NOx, SOx, CO, VOC, PM10, and PM2.5. The assumptions made regarding auxiliary boiler operation used as the basis for emission calculations include:

- One 35 MMBtu per hour per power plant unit, a total of four identical boilers for BSPP;
- Pipeline-quality natural gas will be the only fuel used by the boilers;
- All boilers will be equipped with ultra-low-NOx burners;
- Daily operation of each boiler is limited to 15 hours per day at 25 percent load and two hours per day at full load;
- Annual operation of each boiler is limited to 5,000 hours per year with a duty cycle of 10 percent at full load and 90 percent at 25 percent load; and
- 100 percent of the PM10 emissions are PM2.5.

The criteria pollutant emission factors used for the NOx, CO, and SOx emission estimates are based on the Control Technology Assessment (see Section 5.2.3); the PM10 and VOC emission factors are taken from EPA AP-42 emissions factors for natural gas combustion (EPA, 1998). Boiler criteria pollutant emissions for a single auxiliary boiler are shown in Table 5.2-19. A complete discussion of the methods and assumptions used to estimate boiler emissions, along with calculations, is provided in Appendix E.3. Based on maximum annual operation, the boiler will operate at an average capacity factor of 18.6 percent.

Table 5.2-19 Auxiliary Boiler Criteria Pollutant Emissions (One Boiler)

Pollutant	Emissions		
	(lb/hr)	(lb/day)	(tpy)
NOx	0.39	2.24	0.32
VOC	0.18	1.01	0.14
CO	1.32	7.56	1.07
PM10	0.35	2.01	0.28
PM2.5	0.35	2.01	0.28
SOx	0.01	0.06	0.01

HTF Heater Emissions: Combustion of natural gas results in the emissions of NOx, SOx, CO, VOC, PM10 and PM2.5. The assumptions made regarding the HTF heater operation used as the basis for emission calculations include:

- One 35 MMBtu per hour HTF heater per power plant unit, a total of four HTF heaters for the Project;
- Pipeline-quality natural gas will be the only fuel used by the HTF heaters;
- All of the HTF heaters will be equipped with ultra-low-NOx burners;

- Operation of each HTF heater is limited to 10 hours per day and 500 hours per year; and
- 100 percent of the PM10 emissions are PM2.5.

Similar to the auxiliary boiler, the criteria pollutant emission factors used for the NOx, CO, and SOx emission estimates are based on the Control Technology Assessment (see Section 5.2.3); the PM10 and VOC emission factors are taken from EPA AP-42 emissions factors for natural gas combustion (EPA, 1998). The criteria pollutant emissions for one HTF heater are shown in Table 5.2-20. A complete discussion of the methods and assumptions used to estimate HTF heater emissions, along with the calculations, are provided in Appendix E.3. Based on 500 hours per year of operation at full load, the boiler will operate at an average capacity factor of 5.7 percent.

Table 5.2-20 HTF Heater Criteria Pollutant Emissions (One HTF Heater)

Pollutant	Emissions		
	(lb/hr)	(lb/day)	(tpy)
NOx	0.39	3.89	0.10
VOC	0.18	1.75	0.04
CO	1.32	13.15	0.33
PM10	0.35	3.50	0.09
PM2.5	0.35	3.50	0.09
SOx	0.01	0.10	0.002

Emergency Diesel-Fired Engine Emissions: Combustion of diesel fuel results in the emissions of the criteria pollutants. The assumptions made regarding emergency engine operation for the Project used as the basis for emission calculations include:

- One 300-hp diesel-fired fire water pump engine per generating unit, a total of four fire water pump engines for the Project;
- One 300-hp diesel-fired emergency generator engine power plant unit, a total of four emergency generator engines for the Project;
- All engines will use ultra-low sulfur (15 ppm) diesel fuel;
- All engines have Tier 3 Certification;
- The diesel fire water pump engine hours are based upon up to one one-hour test per week, not to exceed 50 hours per year per engine, and do not reflect emergency use;
- The diesel fire emergency generator engine hours are based upon up to one one-hour test per week per engine, not to exceed 50 hours per year, and do not reflect emergency use; and
- 100 percent of the PM10 emissions are PM2.5.

Emission estimates for NOx, CO, VOC and PM10 are based on emission factors for EPA Tier 3 certified engines, as determined by the Control Technology Assessment (see Section 5.2.3). Note that under Tier 3, the emission standard for non-methane hydrocarbons (NMHC) is combined with NOx. For these emission estimates, the NOx fraction is assumed to be 95 percent of the combined emissions with the balance NMHC (ARB, 2003). NMHC is assumed to be equivalent to VOC. Emission estimates for SOx are based on estimated fuel use of 15.3 gallons per hour for each engine with a heating value of

137,000 Btu per gallon, and fuel sulfur content of 15 ppm. The criteria pollutant emissions for one fire water pump engine are shown in Table 5.2-21 and the criteria pollutant emissions for one emergency generator are shown in Table 5.2-22. A discussion of the methods and assumptions used to estimate fire water pump engine emissions and emergency generator emissions are provided in Appendix E.3.

Table 5.2-21 Emergency Fire Water Pump Engine Criteria Pollutant Emissions (One Fire Water Pump Engine)

Pollutant	Emissions		
	(lb/hr)	(lb/day)	(tpy)
NOx	1.88	1.88	0.05
VOC	0.10	0.10	0.002
CO	1.72	1.72	0.04
SOx	0.10	0.10	0.002
PM10	0.10	0.10	0.002
PM2.5	0.003	0.003	0.0001

Table 5.2-22 Emergency Generator Engine Criteria Pollutant Emissions (One Engine)

Pollutant	Emissions		
	(lb/hr)	(lb/day)	(tpy)
NOx	1.88	1.88	0.05
VOC	0.10	0.10	0.002
CO	1.72	1.72	0.04
SOx	0.10	0.10	0.002
PM10	0.10	0.10	0.002
PM2.5	0.003	0.003	0.0001

Cooling Tower PM10/PM2.5 Emissions: BSPP will utilize dry cooling for the primary steam cycle, but will employ an auxiliary cooling tower to remove residual heat from BOP equipment. Because cooling towers provide direct contact between the cooling water and the air passing through the tower, some of the liquid water may be entrained in the air stream and be carried out of the tower as "drift" droplets. Particulate matter (PM10/PM2.5) is generated when the drift droplets evaporate and leave fine particulate matter formed by precipitation/crystallization of dissolved solids. Dissolved solids found in cooling tower drift can consist of mineral matter, chemicals used for corrosion inhibition, etc. The assumptions made regarding cooling tower operation that were used as the basis for the emission calculations include:

- One cooling tower unit for each power plant unit, a total of four cooling tower units for the Project;
- Circulation rate of 6,034 gallons per minute;

- Cooling tower blowdown will contain a maximum of 2,000 milligrams per liter (mg/L) Total Dissolved Solids (TDS);
- The cooling towers will be equipped with a drift eliminator with drift losses of less than or equal to 0.0005 percent by weight based on circulation flow rate;
- Each cooling tower will have a maximum run time of 16 hours per day; and 3,700 hours per year; and
- 100 percent of the PM formed is PM10/PM2.5 emissions.

Particulate matter emissions are calculated according to the method described in EPA's Compilation of Air Pollutant Emission Factors (AP-42), Section 13.4 Wet Cooling Towers (EPA, 1995). Cooling tower PM10 emissions are shown in Table 5.2-23. A discussion of the methods and assumptions used to estimate cooling tower emissions can be found in Appendix E.3.

Table 5.2-23 Cooling Tower Emissions (One Cooling Tower)

Pollutant	Emissions		
	(lb/hr)	(lb/day)	(tpy)
PM10	0.03	0.48	0.06
PM2.5	0.03	0.48	0.06

HTF Expansion Tank Emissions: The total uncontrolled VOC emissions from the HTF expansion/ullage tank vent were estimated based on data provided by an existing solar plant (Kramer Junction Solar Energy Generating System [SEGS] facility), extrapolated to account for HTF system size. The assumptions made regarding HTF Expansion Tank operation that were used as the basis for the emission calculations include:

- One HTF ullage tank system for each power plant unit, a total of four for the Project;
- The VOC emissions are controlled with two carbon adsorption canisters in series with an overall control efficiency of 98 percent;
- VOC emissions would be limited to a maximum 0.75 lb/hr or 1.5 lb/day after pollution control;
- The HTF ullage tank would be vented two hours per day maximum; and
- The maximum annual operation would be limited to 400 hours per year.

The controlled and uncontrolled emissions are presented in Table 5.2-24. A more detailed explanation of the emissions calculations is provided in Appendix E.3. For these emission estimates, it is assumed that there will no VOC emissions from waste load out of heavy ends from the ullage system as the heavy ends are expected to have a vapor pressure that is substantially lower than the HTF fluid itself, and the vapor pressure of HTF at ambient conditions is negligible.

Table 5.2-24 HTF Vent VOC Emissions for One HTF Ullage System

Source	Emissions		
	(lb/hr)	(lb/day)	(tpy)
HTF Vent	0.75	1.50	0.15

Fugitive VOC Emissions: Fugitive VOC emissions may occur in the HTF piping in the solar field from fugitive components such as pumps, seals, flanges and valves. The fugitive VOC emissions are expected low due to the very low vapor pressure of the HTF; these emissions are based on component count data from the Beacon Solar Energy Project extrapolated to account for the relative difference in project (HTF system) size. The assumptions made for the fugitive emission calculations include:

- Fugitive emissions can occur 24 hours per day, 365 days per year; and
- Fugitive emissions only consist of VOCs.

The fugitive pollutant emission factors were taken from the EPA 1995 Protocol for Equipment Leak Emission Estimates for Oil and Gas Production. Since the HTF has a very low vapor pressure, the values for Heavy Oil were used to calculate the emissions. The fugitive emissions are presented in Table 5.2-25. A more detailed explanation of the emissions calculations are provided in Appendix E.3.

Table 5.2-25 Fugitive VOC Emissions for One Power Plant Unit

	Hourly Emissions (lb/hr)	Daily Emissions (lb/day)	Annual Emissions (tpy)
Fugitive VOC	0.18	4.38	0.80

VOC Emissions from Land Treatmen: The facility will use a land treatment unit an onsite to either use bioremediation or land farming, on an as-needed basis, to remediate HTF-contaminated soils. Land treatment will be conducted at ambient temperatures. At ambient temperatures, the vapor pressure of the HTF is negligible and, therefore, the expected VOC emissions are negligible and have not been estimated for this application.

Maintenance Vehicle Emissions: The facility will require periodic vehicle travel over the unpaved portions of the solar field to perform routine maintenance including mirror washing, maintenance inspections and repairs of the piping network, herbicide application and dust suppressant application. Criteria pollutant emissions are expected from the combustion of fuels in the vehicles and fugitive particulate matter (PM) emissions are expected from vehicle traffic in the solar fields. PM emissions are minimized through the implementation of an Operations Dust Control Plan, including the periodic application of a polymer-type dust suppressant.

The emissions were calculated as the anticipated miles traveled multiplied by an emission factor for each pollutant. The fugitive PM10 and PM2.5 emission factors take into account unpaved road dust. Vehicle emissions are shown in Table 5.2-26; and more detailed calculations are provided in Appendix E.3.

Table 5.2-26 Motor Vehicle Combustion Criteria and Fugitive Pollutant Emissions for Travel at One Power Plant Unit

Vehicle	Hourly Emissions (lb/hr)								
	CO	VOC	NOx	SOx	Exh. PM10	Fug. PM10	Diesel PM	Exh. PM2.5	Fug. PM2.5
Mirror Wash Truck[1]	0.16	0.012	0.05	0.000	0.007	3.35	0.007	0.006	0.34
Soil Stabilizer Application[1]	0.16	0.012	0.05	0.000	0.007	3.35	0.007	0.006	0.34
Weed Abatement[1]	0.16	0.012	0.05	0.000	0.007	3.35	0.007	0.006	0.34
Water Trucks	0.18	0.013	0.05	0.000	0.008	3.67	0.008	0.007	0.37
Maintenance Vehicles	0.02	0.012	0.16	0.000	0.001	5.07	0.000	0.001	0.51
Total	0.35	0.04	0.25	0.00	0.02	12.08	0.01	0.01	1.21
Vehicle	**Daily Emissions (lb/day)**								
	CO	**VOC**	**NOx**	**SOx**	**Exh. PM10**	**Fug. PM10**	**Diesel PM**	**Exh. PM2.5**	**Fug. PM2.5**
Mirror Wash Truck[1]	1.28	0.09	0.36	0.001	0.05	26.76	0.05	0.05	2.68
Soil Stabilizer Application[1]	1.28	0.09	0.36	0.001	0.05	26.76	0.05	0.05	2.68
Weed Abatement[1]	1.28	0.09	0.36	0.001	0.05	26.76	0.05	0.05	2.68
Water Trucks	0.21	0.02	0.06	0.000	0.01	4.40	0.01	0.01	0.44
Maintenance Vehicles	0.31	0.19	2.51	0.003	0.02	81.04	0.00	0.02	8.11
Total	1.80	0.30	2.93	0.005	0.08	112.20	0.06	0.08	11.23
Vehicle	**Annual Emissions (tpy)**								
	CO	**VOC**	**NOx**	**SOx**	**Exh. PM10**	**Fug. PM10**	**Diesel PM**	**Exh. PM2.5**	**Fug. PM2.5**
Mirror Wash Truck	0.09	0.007	0.03	0.000	0.004	1.93	0.004	0.004	0.19
Soil Stabilizer Application	0.02	0.002	0.01	0.000	0.001	0.43	0.001	0.001	0.04
Weed Abatement	0.02	0.002	0.01	0.000	0.001	0.43	0.001	0.001	0.04
Water Trucks	0.04	0.003	0.01	0.000	0.002	0.80	0.002	0.002	0.08
Maintenance Vehicles	0.06	0.034	0.46	0.001	0.004	14.79	0.000	0.003	1.48
Total	0.23	0.047	0.51	0.001	0.011	18.38	0.007	0.010	1.84

[1]The activities mirror washing, soil stabilizer application, and weed abatement will each occur during an eight-hour day but only one activity will occur on a given day. Hourly and daily emissions totals therefore only account for one of the activities.

Offsite Delivery Vehicle Emissions

BSPP will require deliveries of various supplies, materials, and services to the facility on a regular basis. For example, BSPP will require water treatment chemicals, HTF fluid, lube oil, weed abatement chemicals, worker uniforms, replacement parts, and other items delivered to the facility to conduct normal operations. These deliveries will result in truck travel on paved roads.

The combustion of fuel in offsite delivery vehicle engines results in the generation of CO, VOC, NOx, SOx, PM10, and PM2.5 emissions. Motor vehicle brake and tire wear and travel on paved roads with entrained road dust results in the generation of fugitive PM10 and PM2.5 emissions. The assumptions made regarding the offsite vehicle emissions from delivery vehicles for the Project used as the basis for emission calculations include:

- BSPP will have 20 miscellaneous deliveries to the facility per month (240 trips per year);
- The round trip distance per trip is 344 miles; and
- The delivery trucks are heavy-duty diesel-fueled vehicles.

Offsite delivery vehicle criteria pollutant emissions are shown in Table 5.2-27.

Table 5.2-27 Offsite Delivery Truck Criteria Pollutant Emissions for the Project

Emissions	CO	VOC	NOx	SOx	Exh. PM10	Fug. PM10	Diesel PM	Exh. PM2.5	Fug. PM2.5
Daily (lb/day)	13.46	3.55	48.10	0.05	2.07	1.49	2.07	0.06	0.78
Annual (tpy)	0.40	0.11	1.44	0.00	0.06	0.04	0.06	0.00	0.02

Summary of Operational Criteria Pollutant Emissions

The criteria pollutant emissions for the Project are summarized in Table 5.2-28. Detailed emissions breakdowns are provided in Appendix E.3.

Table 5.2-28 Summary of Project Criteria Pollutant Emissions

Emission Period	Pollutant					
	NOx	VOC	CO	PM10	PM2.5	SOx
Hourly Emissions (lb/hr)	18.53	5.96	24.51	15.81	4.94	0.10
Daily Emissions (lb/day)	41.36	35.63	99.50	137.06	36.09	0.63
Annual Emissions (tpy)	2.26	4.61	6.44	20.12	3.58	0.41

Although new PM10 emissions are predicted from the operation of this Project according to the calculations and assumptions provided herein, the BSPP may potentially reduce overall PM10 emissions in this region. By its nature, a solar energy project must keep dust to a minimum through the use of dust control measures, as a film of dust on the mirrors will reduce their efficiency for power production. Experience at the existing solar thermal facilities has been that PM10 emissions from driving in the solar field are (as it must be) negligible. Dust control is achieved by a combination of soil stabilizers, water from the mirror washing, and compaction of the driving surface over time. These mitigation measures will be utilized by the proposed Project. Therefore, the emission estimates and impact analyses for PM10 and PM2.5 should be considered very conservative.

Greenhouse Gas Emissions

The BSPP auxiliary boilers, HTF heaters, emergency fire water pump and emergency generator engines will emit greenhouse gases (GHG). The methodology used to calculate GHG emissions from

each of these sources is explained below. The total GHG emissions for the Project are shown in Table 5.2-29. Additional details of the calculations are provided in Appendix E.3.

Auxiliary Boilers and HTF Heaters

GHG emissions from operation of the auxiliary boilers and the HTF heaters are based on the maximum predicted usage of the units by the Project and the emission factors listed in Tables C.7 and C.8 of the California Climate Action Registry General Reporting Protocol, Version 3.1 (CCAR, 2009).

Fire Water Pump and Emergency Generator Engines

GHG emissions from operation of the emergency diesel-fueled fire water pump and emergency generator engines are based on the estimated usage by the Project (50 hrs/yr), the estimated fuel consumption for each engine, and the emission factors listed in Tables C.7 and C.8 of the GRP (CCAR, 2009). Emissions do not reflect emergency use.

Onsite and Offsite Vehicles

GHG emissions from the onsite maintenance trucks, mirror wash trucks, weed abatement and soil stabilizer application trucks are based on the calculated distance traveled per day, fuel milage estimates for each vehicle type and the emission factors for gasoline and diesel combustion listed in Tables C.3 of the GRP (CCAR, 2009). GHG emissions from the offsite delivery trucks are based on the round-trip distance from the suppliers (assumed to be Riverside, California), the estimated fuel usage for a heavy-duty diesel vehicles, and the emission factors for diesel combustion listed in Tables C.3 of the GRP (CCAR, 2009). Emissions of N_2O and CH_4 for all vehicles are based on the emission factor in Table C.4 of the GRP (average given for all model years for heavy duty diesel vehicles) and the estimated mileage.

CO_2 Equivalents

CO_2 equivalents (CO_2e) are calculated using the global warming potential (GWP) provided in Appendix C, Table C.1 of the GRP (GRP 2009) in the column labeled GWP. The GWP of methane is 21 times that of CO_2 and the GWP of N_2O is 310 times that of CO_2.

Table 5.2-29 Project GHG Summary

Source	Emissions (Metric Tons/year CO_2e)
Auxiliary Boiler	12,100
HTF Heater	3,720
Fire Pump Engine	30
Emergency Generator	30
Maintenance Vehicles	70
Delivery Vehicles	150
Project Total	16,100
Note: Individual emissions are rounded to the nearest 10 and total emissions are rounded to the nearest 100 MT/yr CO2e	

As a comparison, a new 250 MW gas-fired combustion turbine power plant would have the potential to emit on the order of one million metric tons of CO_2e per year. Hence, the development of new renewable energy projects will assist the State of California to meet the GHG reduction goals provided in AB 32 while still providing the power needs of all Californians.

5.2.4.2 Air Quality Impacts Analysis

The Class II air dispersion modeling analysis was conducted in accordance with the EPA Guideline on Air Quality Models (GAQM; as incorporated in Appendix W of 40 CFR Part 51; EPA, 2005). Background information on the use of the model, a description of the setup of the model for construction activities, construction modeling results, a description of the setup of the model for operational activities, operational modeling results, cumulative modeling results and an evaluation of Project impacts on soils and vegetation are provided in this section.

AERMOD Application Methodology

The AERMOD model (version 07026) was applied with a three-year sequential hourly meteorological data set, consistent with Appendix B of the CEC's Guidelines (CEC, 2000). The surface data consisted of three years of hourly surface observations (2002 - 2004) from the Blythe Airport, located approximately 3 miles southeast of the Project site. The Blythe Airport meteorological tower has an anemometer height of 10 meters. Concurrent upper air sounding data were obtained for the Mercury Desert Rock Airport in Mercury, Nevada. The meteorological data were processed into AERMOD-ready format using the AERMOD meteorological processor, AERMET (version 06341). Note that although more recent meteorological data were available (i.e., 2005 – 2008), these years were not used because of the poor data recovery of the upper air data at Mercury Desert Rock Airport.

AERMOD was applied with the EPA-recommended default options. Model iterations were conducted for each year of meteorological data to identify the maximum impacts over all three years for the pertinent averaging periods.

Receptor Locations

A comprehensive Cartesian receptor grid extending to approximately 10 kilometers (km) from the center of the Project site was used in the AERMOD modeling to assess maximum ground-level pollutant concentrations. Based on preliminary modeling, the 10-km receptor grid was found to be sufficient to resolve the maximum impacts and any significant impact area(s).

The Cartesian receptor grid consisted of the following receptor spacing from the Project fence line:

- 100 to 4,000 meters at 100-meter increments;
- Beyond 4,000 meters to 5,000 meters at 200-meter increments; and
- Beyond 5 km to 10 km at 500-meter increments.

Discrete receptors were placed approximately every 50 meters along the facility fence line for increased resolution of impacts along this boundary. Note that this fence line is within the property boundary.

For the construction modeling, preliminary modeling showed that the maximum impacts would occur at the fence line due to the low-level nature of all sources being modeled. Therefore, a smaller receptor grid was used to reduce the amount of time needed for the runs to complete. The spacing described above was used, but the construction modeling grid extended from the fence line to 5 km rather than the 10 km used for the normal operations modeling.

The AERMAP receptor locations (operation emissions) and the AERMAP domain are shown in Figure 5.2.2 (near-field portion of the receptor grid) and Figure 5.2.3 (far-field receptors). Terrain elevations from the National Elevation Dataset (NED) acquired from the United States Geological Service (USGS) National Map Seamless Server (USGS, 2009) were processed with AERMAP to develop the receptor terrain elevations and corresponding hill height scale required by AERMOD. All of the NED files were from Universal Transverse Mercator (UTM) Zone 11 and referenced to North American Datum (NAD) 83. All receptors were also referenced to NAD83. The NED files are included in the modeling archive in Appendix E.4 of this AFC.

Meteorological Data and Terrain Processing

AERMET was applied to create the two meteorological data files for each modeling year required for input to AERMOD. The two files created by AERMET are:

- SURFACE: a file with boundary layer parameters such as sensible heat flux, surface friction velocity, convective velocity scale, vertical potential temperature gradient in the 500-meter layer above the planetary boundary layer, and convective and mechanical mixing heights. Also provided are values of Monin-Obukhov length, surface roughness, albedo, Bowen ratio, wind speed, wind direction, temperature, and heights at which measurements were taken.
- PROFILE: a file containing multi-level meteorological data with wind speed, wind direction, temperature, sigma-theta (σ_θ) and sigma-w (σ_w). Not all data need to be available at all levels. For this application involving Mercury Desert Rock Airport upper air data, the profile file contains a single level of wind data (10 meters) and multiple levels of aloft temperature data.

AERMET requires specification of site surface characteristics including surface roughness (z_o), albedo (r), and Bowen ratio (B_o). The required surface parameters for input to AERMET were developed in accordance with the guidance provided by EPA in the recently revised AERMOD Implementation Guide (AIG) (EPA, 2009) using the EPA AERSURFACE preprocessing program following instructions provided in the *AERSURFACE User's Guide* (EPA, 2008).

AERSURFACE incorporates algorithms to compute site surface characteristics from digital land cover data compliant with AIG recommendations using the following methodology:

1. The determination of the surface roughness length should be based on an inverse distance-weighted geometric mean for a default upwind distance of one km relative to the measurement site. Surface roughness length may be varied by sector to account for variations in land cover near the measurement site; however, the sector widths should be no smaller than 30 degrees. As discussed below, three sectors were used in this analysis.
2. The determination of the Bowen ratio will be based on a simple unweighted geometric mean (i.e., no direction or distance dependency) for a representative domain, with a default domain defined by a 10 km by 10 km region centered on the measurement site.
3. The determination of the albedo should be based on a simple unweighted arithmetic mean (i.e., no direction or distance dependency) for the same representative domain as defined for Bowen ratio, with a default domain defined by a 10 km by 10 km region centered on the measurement site.

In addition, the AIG specifies that the determination of the representativeness of meteorological data for a particular application also depends on a comparison of the surface characteristics (z_o, r, and B_o) between the meteorological monitoring site and the project site, coupled with a determination of the importance of any differences relative to predicted concentrations. In this case, the southern edge of the BSPP will be less than 3 miles from the Blythe Airport, with no intervening terrain in between the site

and the airport, and with similar landcover. Therefore, based on the proximity of the source and airport and the similarity in terrain and landcover, the Blythe Airport can be deemed representative of the proposed BSPP site and was used in this dispersion modeling analysis. The relative locations of the project site and the Blythe Airport are shown in Figure 5.2.4.

The current version of AERSURFACE (Version 08009) supports the use of land cover data from the USGS National Land Cover Data 1992 archives (NLCD92) (USGS, 1992). The NLCD92 archive provides data at a spatial resolution of 30 meters based on a 21-category classification scheme applied over the continental U.S. Visual inspection of recent satellite images (2005) in the area of Blythe Airport (see Figure 5.2.5), compared to the 1992 land cover images (Figure 5.2.6) indicate that there have been no significant changes in land use cover, confirming that the use of the 1992 data was reasonable.

As recommended in the AIG for surface roughness, the one-km area was broken down into sectors for the analysis. Two sectors were identified for this analysis based upon visual observation of the land-use surrounding the airport as shown on aerial photographs (see Figure 5.2.7).

In AERSURFACE, the various land cover categories are linked to a set of seasonal surface characteristics. As such, AERSURFACE requires specification of the seasonal category for each month of the year. The following five seasonal categories are offered by AERSURFACE:

1. Midsummer with lush vegetation;
2. Autumn with unharvested cropland;
3. Late autumn after frost and harvest, or winter with no snow;
4. Winter with continuous snow on ground; and
5. Transitional spring with partial green coverage or short annuals.

The designations used in this AFC are summarized in Table 5.2.31.

In addition, for Bowen ratio, the land use values are linked to three categories of surface moisture corresponding to average, wet and dry conditions. The surface moisture condition for the site may vary depending on the meteorological data period for which the surface characteristics will be applied. AERSURFACE applies the surface moisture condition for the entire data period. Therefore, if the surface moisture condition varies significantly across the data period, then AERSURFACE can be applied multiple times to account for those variations. As recommended in the AERSURFACE User's Guide, the surface moisture condition for each month was determined by comparing precipitation for the period of data to be processed to the 30-year climatological record, selecting "wet" conditions if precipitation was in the upper 30th-percentile, "dry" conditions if precipitation was in the lower 30th-percentile, and "average" conditions if precipitation was in the middle 40th-percentile. The monthly designations of surface moisture input to AERSURFACE are also summarized in Table 5.2.30.

The base elevation used for Blythe Airport was 120.4 meters (395 feet) above sea level. A three-year wind rose is provided as Figure 5.2.8.

Table 5.2-30 AERSURFACE Season and Bowen Ratio Condition Designations

Month	Season	Bowen Ratio Category		
		2002	2003	2004
January	Autumn	Dry	Average	Dry
February	Autumn	Average	Wet	Wet
March	Autumn	Average	Average	Wet
April	Autumn	Average	Average	Wet
May	Summer	Average	Average	Average
June	Summer	Average	Average	Average
July	Summer	Average	Average	Average
August	Summer	Average	Average	Average
September	Summer	Wet	Average	Average
October	Summer	Average	Average	Wet
November	Autumn	Average	Wet	Wet
December	Autumn	Average	Average	Average

Ambient Background Concentrations Used in the AERMOD Analysis

The background air quality concentrations used in the NAAQS/CAAQS analysis are listed in Table 5.2-31.

Selection of appropriate monitors for use with developing representative background concentrations was difficult for this analysis for two reasons:

- While the Project site is in a part of Riverside County designated attainment for PM10, the PM10 monitors available are all located to the west in parts of Riverside County or other counties that are designated non-attainment for PM10.

- The closest monitors available for CO and NOx are located in Calexico, CA, and reflect the urban / industrial location of Calexico and adjoining Mexicali. By contrast, the Project site in an open desert area approximately 10 miles west of Blythe. Additionally, the international border crossing between Mexicali and Calexico is subject to a constant lineup of idling vehicles waiting to enter California and is the location of a significant source of CO and NOx emissions from idling vehicles.

Because of the two factors listed above, the CO and NOx monitoring data from Palm Springs, CA were used instead of Calexico because it is the next closest monitor with acceptable data capture. The background data used in the modeling analysis is shown in Table 5.2-31.

Table 5.2-31 Maximum Yearly Monitored Background Concentrations 2005-2007

Pollutant	Period	Measure	Value ($\mu g/m^3$)				Monitor Location
			2005	2006	2007	Max.	
SO_2	one-hour	1st-high	47.2	503.0	36.7	503.0	1029 Ethel St, Calexico High School, Calexico, CA[1]
		2nd-high	36.7	424.4	31.4	424.4	
	three-hour	1st-high	28.8	434.9	26.2	434.9	
		2nd-high	26.2	172.9	18.3	172.9	
	24-hour	1st-high	18.3	99.6	10.5	99.6	
		2nd-high	7.9	49.8	10.5	49.8	
	Annual	Mean	2.6	5.2	2.6	5.2	
CO	one-hour	1st-high	2,415	2,645	1,725	2,645	Fs-590 Racquet Club Ave, Palm Springs, CA
		2nd-high	2,300	2,070	1,725	2,300	
	eight-hour	1st-high	920	1,035	920	1,035	
		2nd-high	805	920	805	920	
NO_2	one-hour	1st-high	111.0	174.9	118.5	174.9	
	Annual	Mean	22.6	20.7	18.8	22.6	
PM10	24-hour	1st-high	77	116	162	162	7711 English Road, Niland, CA
		2nd-high	63	104	108	108	
	Annual	Mean	26	28	30	30	
PM2.5	24-hour	1st-high	44.3	26.4	26.7	44	46-990 Jackson St., Indio, CA
		2nd-high	25	21.4	26.5	27	
		98th%	25	21.4	26.5	27	
	Annual	Mean	10.6	9.9	9.9	10.6	

[1]The reported SO_2 backgrounds at Calexico in 2005 were obviously wrong (0.001 ppm for all periods). Therefore, the numbers listed in 2008 are the partial (2/3 of the year) results from 2008.

NO_2 Modeling with the Ozone Limiting Method (OLM)

To complete the Ambient Air Quality Impacts Analysis (AQIA) for NO_2, the modeled ground-level concentrations resulting from NOx emissions must be converted to NO_2. For the BSPP AQIA, the ozone limiting method (OLM) was applied as implemented in AERMOD with the use of hourly ozone concentrations from the most representative monitor. In using the OLM in AERMOD, conversion of NOx emissions to NO_2 concentrations are limited based on the availability of ozone as determined by the ambient background levels.

Monitoring data for ozone are available at the Blythe monitoring station; however, ozone monitoring at the Blythe station did not begin until May 2003. Therefore, ozone monitoring from Niland, California was used for 2002 and January through April of 2003, and Blythe monitoring data were used from May 2003 through 2004. All missing hourly ozone data were filled using the average hourly concentration

over the three years of data. Figure 5.2.9 shows the background monitor locations for all criteria pollutants plus ozone relative to the Project site.

Impacts from BSPP Construction

This section provides a description of how the construction activities are modeled and provides the modeling results.

Construction of BSPP is expected to require 69 months and will include the construction of the solar field and four power blocks. Due to the very large area involved in construction that will be disturbed (approximately 7,030 acres), the construction activities will be staged to minimize the generation of fugitive dust from exposed bare land during Project construction. Specifically, a "just in time" construction approach will be taken in which the amount of bare ground disturbed at any given time due to grubbing, scraping, and grading will be limited by the rate in which the solar mirror troughs can be assembled at an onsite manufacturing facility and installed.

Construction Source Configuration and Model Setup

Construction-related air emissions will include exhaust and fugitive dust from vehicle and construction equipment, windblown fugitive dust from grading and other soil disturbing activities, emplacement of foundations, and the installation of the solar panels. Criteria pollutant emissions were modeled to determine maximum air quality impacts. The maximum modeled concentrations were then added to ambient background concentrations and compared to the applicable standards.

Construction-related emissions were modeled using the AERMOD model (version 07026). Emissions of criteria pollutants for the construction sources were modeled using multiple area sources (shown in Figure 5.2-10). The area sources represented:

- Power block construction;
- Surveying and grubbing activities (i.e., brush removal and coarse grading);
- Scraping, grading, and foundation emplacement;
- Solar panel installation; and
- Traffic to and from the laydown area to the various construction sites.

Because of the "just in time" construction approach, only a limited area of the Project site will be undergoing construction activities on a given day. A worst-case modeling scenario was developed involving Solar Field Unit 2 and associated power block, as shown in Figure 5.2-10. The modeling scenario selected is conservative for several reasons:

1. The grubbing, scraping and grading, and mirror installation modeling sources are aligned on the northern property fence line downwind of the prevailing wind direction.

2. The vehicle sources and power block source is nearby, again aligned along the prevailing wind direction.

3. The compactness modeling sources will maximize the local emission flux from the individual sources.

4. Solar Field Unit 2 in the closest power unit to the elevated terrain to the northwest of the Project site and will maximize potential terrain influences in the modeling.

The power block construction emission source was represented by a rectangular area source 170 meters by 615 meters (104,550 square meters [m^2]). The area source represents the entire power block area. The construction emission flux for this source was calculated based on the equipment and operations on a typical day during the month with peak construction emissions. The area source represents emissions from construction equipment with vertical exhaust pipes. For fugitive particulate emissions, the power block emission source had a second overlaid area source representing low-level emissions from paved and unpaved roadway travel and other construction activities that produces fugitive emissions (e.g., scraping, grading and vehicular traffic in unpaved areas).

The grubbing, scraping and grading, and solar panel installation emission sources were each represented by adjoining square area sources 200 meters on a side (40,000 m^2). The three area sources represent the typical area that will be under construction during any given 24-hour period. The construction emission flux was calculated based on the equipment and operations in an area of this size on a typical day during the month with peak construction emissions. As with the power block construction source, each area source represents emissions from construction equipment with vertical exhaust pipes. For fugitive dust sources, each area source had a second overlaid area source representing fugitive dust generated from vehicle travel on the paved and unpaved roads and other construction activities that would produce fugitive dust emissions (e.g. scraping, grading and wind-blown fugitives from storage piles). As shown in Figure 5.2-10, the three area sources representing the solar field construction were placed in a north-south orientation along the fenceline downwind of the predominant wind direction.

Vehicular traffic to and from the laydown area was represented by a polygon area source with a total area of approximately 714,900 m^2. This area source represents emissions from haul trucks and construction equipment with vertical exhaust pipes travelling to and from the laydown/manufacturing area at the southern end of the Project property to and from the various construction areas. For fugitive emissions, the roadways emission source had a second overlaid area source representing fugitive dust generated from vehicle traffic on the paved and unpaved roadways. As shown in Figure 5.2.10, the poly-area source covers the roadway area from the laydown area to the assumed construction area in Solar Field Unit 2. The base elevation chosen for this source was the elevation at the mid-point of the entire source (161.5 m).

Buoyancy and mechanical turbulence from the hot exhaust and mobility of the construction equipment and haul trucks was simulated by use of a constant initial vertical dimension in the area source algorithm. Fugitive dust emissions from onsite motor vehicles were modeled as low-level area sources since these emissions would almost all occur near ground level.

The large construction equipment was assumed to have a release height of 3.7 m. The initial vertical depth of the diesel exhaust plume for construction activities was estimated as being four times the release (exhaust) height. This height (14.8 m) takes into account the plume rise of the hot diesel exhaust, mechanical mixing on the site introduced by the movement of heavy equipment, and structure wake turbulence introduced by buildings and structures on the Project site. The initial area source vertical standard deviation for the construction equipment is calculated by taking this vertical depth and dividing by 2.15 for an initial sigma-z of 6.88 meters, consistent with EPA modeling guidance for AERMOD (EPA, 2004).

A release height of 2.0 meters was assumed for the fugitives from onsite vehicles sources, with an initial plume height of 15 feet (4.57 m). Following EPA AERMOD guidance (EPA, 2004), the initial area source vertical standard deviation for construction combustion emissions is estimated as the plume depth divided by 2.15, or 2.13 m.

Construction Modeling Results and Conclusions

The results of the construction modeling are provided in Table 5.2-32. All impacts, when added to the appropriate ambient backgrounds, are below their respective NAAQS/CAAQS with the exception of the one-hour NO_2, 24-hour PM10, and annual PM10. For these three pollutants and averaging times, Project impacts alone are below their respective CAAQS with maximum project impacts of 297.0 micrograms per cubic meter (µg/m^3) for one-hour NO_2, 17.1 µg/m^3 for 24-hour PM10, and 3.07 µg/m^3 for annual PM10.

Table 5.2-32 NAAQS/CAAQS Analysis for Project Construction

Pollutant	Averaging Period	Concentrations (µg/m^3)				
		AERMOD Result	Ambient Background[2]	Total [3,4]	CAAQS	NAAQS
NO_2 [1]	1-hr	297	174.9	472	339	--
	Annual	11.0	22.6	33.6	57	100
CO	1-hr	243	2645	2888	23,000	40,000
	8-hr	80.0	1035	1115	10,000	10,000
PM10	24-hr	17.1	162	179	50	150
	Annual	3.07	30.0	33.1	20	--
PM2.5	24-hr	6.73	27.0	33.7	--	35
	Annual	1.16	10.6	11.8	12	15
SO_2	1-hr	1.06	503.0	504	665	--
	3-hr	0.35	434.9	435	--	1,300
	24-hr	0.14	99.6	99.7	105	365
	Annual	0.025	5.2	5.3	--	80

[1] Modeled NO_2 concentrations as determined with the OLM.

[2] From Table 5.2-32. These values correspond to the highest monitored values from 2005 – 2007, except for PM2.5, which is the 98th percentile value over three years.

[3] Modeled concentration plus ambient background.

[4] Result reflects 10-hour days from March through September and eight-hour days from October through February.

In the case of PM10 impacts, the maximum modeled 24-hour average for PM10 exceeds the CAAQS when background concentrations are added because the PM10 air quality monitoring station data used imply that the CAAQS are already exceeded in this area. However, the monitoring data used are from the Niland monitoring station in Imperial County that is likely to experience higher PM10 concentrations than the Project area due to the heavy agricultural activity in the vicinity of Niland. Actual project impacts from 24-hour PM10 represent only 34.2 percent of the CAAQS and only 9.5 percent of the total impact when background is considered. Similarly, the Project's annual PM10 impacts represent only 15.4 percent of the CAAQS for annual PM10 and only 9.3 percent of the total impact to the annual PM10 concentrations.

In the initial modeling runs for one-hour NO_2, multiple hours were modeled to exceed the CAAQS one-hour NO_2 concentration of 339 µg/m^3. Upon investigation, the vast majority of the NO_2 construction impacts exceeding the CAAQS were found to occur during the first and last hour of the modeled construction day (ending hours 8 A.M. and 5 P.M.), when low mechanical mixing heights, low dispersion potential, and low wind speed, as computed by AERMET, produce high modeled concentrations using AERMOD. This was found to be especially true during the winter months when there are fewer daylight hours.

To evaluate the effectiveness of limiting construction operating hours, AERMOD was rerun limiting the hours of construction to 10-hour days (7 A.M. through 5 P.M.) during the non-winter months (March through September), and eight-hour days (8 A.M. through 4 P.M.) during the winter months (October through February). The AERMOD "maxifile" option was used to identify each hour in which the construction impacts, when added to the ambient background, exceeded the CAAQS for one-hour NO_2. In these sensitivity runs, over the 3-year period modeled, only 44 hours (0.2%) were found to exceed the one-hour NO_2 CAAQS when ambient background was added to the modeled impacts. All of these impacts occur in a small area just north of the solar field construction sources, either along the fenceline or at one of fifteen gridded (non-fenceline) receptors within 300 m of the fence. Because of the success in reducing peak impacts by limiting construction activities to daylight hours, the Applicants are proposing mitigation measure AQ-SC5(H).

The modeling is highly conservative for a number of reasons and likely overestimates substantially the actual worst case impacts that will occur during construction.

1. The emissions scenario assumes all equipment identified in the draft construction plan for the worst-case month operate for all construction hours during the day. In reality, only a portion of the specified equipment will be operating at any given time, particularly for the first and last hours of the construction day when the worst-case impacts occur.

2. The actual construction schedule is unknown and it is unlikely that the construction activities represented in the modeling scenario occur in such a compact fashion with alignment along the peak wind direction during worst-case meteorological conditions.

3. Given the size of the Project area and the duration of the construction (69 months), it is highly improbable that the worst-case emissions will coincide with the worst-case meteorological conditions while construction activities occur at the property fenceline.

4. The assumed background concentrations are most likely not representative of the ambient concentrations at the Project site but in fact significantly overestimate air quality background concentrations at the site.

The impacts during construction are therefore less than significant due to the following reasons. :

1. The conservativeness of the modeling assumptions listed above;

2. The limited number of hours in which exceedences occur (less than one percent of the hours modeled),

3. The location of the peak impacts along the northern fenceline of the Project, away from areas of general public access; and

4. The limited duration of the worst-case construction activities that will produce the peak impacts during construction.

Impacts from BSPP Operation

This section provides a description of how the operational activities are modeled and provides the modeling results.

Significance Criteria

EPA has established Significant Impact Levels (SILs) for air quality impacts analyses. A SIL for a given pollutant and averaging period is defined as an ambient concentration produced by a source below which the source is assumed to have an insignificant impact. In accordance with standard modeling procedures for ambient air quality standards compliance analyses, if modeling of Project sources alone (proposed ancillary combustion equipment, cooling tower, and maintenance vehicle emissions) indicates that the maximum modeled concentrations for a specific pollutant are below the SILs, no further analysis is required for that pollutant. If modeling indicates that the SIL for any pollutant / averaging period is exceeded, then a cumulative modeling study is required to determine the combined impact of the Project sources plus other major nearby background sources for compliance with the NAAQS/CAAQS. Additionally, the CEC requires that cumulative modeling be performed for all criteria pollutants against their respective CAAQS. The maximum concentrations determined through cumulative modeling are then summed with representative background concentrations to account for non-modeled source contributions for NAAQS/CAAQS compliance. These criteria for the impact analyses are shown in Table 5.2-33.

Table 5.2-33 Ambient Air Quality Impact Criteria (µg/m^3)

Pollutant	Averaging Period	Class II SILs	CAAQS	NAAQS	
				Primary	Secondary
NO_2	one-hour	--	339	--	--
	Annual	1	57	100	100
CO	one-hour	2,000	23,000	40,000	NA
	eight-hour	500	10,000	10,000	NA
PM10	24-hour	5	50	150	150
	Annual	1	20	--	--
PM2.5	24-hour	--	--	35	35
	Annual	--	12	15	15
SO_2	one-hour	--	655	--	--
	three-hour	25	--	NA	1,300
	24-hour	5	105	365	NA
	Annual	1	--	80	NA

Source Configuration

Air quality modeling from Project operation was conducted with AERMOD to demonstrate compliance with the NAAQS and CAAQS and in the local (Class II) area. The BSPP includes four power blocks, each of which have the following air emission sources that were included in the modeling analysis:

- Auxiliary boiler;
- HTF heater;
- Emergency generator engine;
- Emergency fire water pump engine; and
- 2-cell auxiliary cooling tower.

The stack parameters and emissions data for the power block equipment are listed in Table 5.2-34.

Table 5.2-34 Stack Parameters for BSPP Ancillary Equipment

Parameter	Auxiliary Boiler	Emergency Generator	Fire-Water Pump	HTF Heater	Cooling Tower [2]
Unit #1 Coordinates(m)[1]	709,489, 3,729,071	709,394, 3,729,058	709,487, 3,728,898	709,509, 3,729,201	709,423, 3,729,020
Unit #2 Coordinates(m)[1]	705,807, 3,728,966	705,712, 3,728,952	705,806, 3,728,791	705,827, 3,729,096	705,741, 3,728,914
Unit #3 Coordinates(m)[1]	707,008, 3,727,441	706,914, 3,727,450	706,997, 3,727,614	707,036, 3,727,314	706,940, 3,727,489
Unit #4 Coordinates(m)[1]	710,357, 3,727,540	710,266, 3,727,547	710,345, 3,727,707	710,386, 3,727,416	710,291, 3,727,586
Unit #1 Stack Base Elevation (ft)	470	470	470	470	470
Unit #2 Stack Base Elevation (ft)	575	575	575	575	575
Unit #3 Stack Base Elevation (ft)	528	528	528	528	528
Unit #4 Stack Base Elevation (ft)	445	445	445	445	445
Stack Height (ft)	50	10	10	80	22.4
Stack Diameter (ft)	3	0.5	0.5	3	12
Exit Temperature (^{o}F)	300	770	770	300	90.4
Exit Velocity (ft/sec)	5.9	107.4	107.4	5.9	27.0

1. Coordinates for UTM Zone 11 referenced to Datum NAD83.
2. Each auxiliary cooling tower has 2 cells and each was modeled as a single stack. Coordinate provided is the westernmost of the two cells.

The stack parameters used in the modeling are based on operation of the ancillary equipment at 100 percent load with the exception of the auxiliary boiler. The auxiliary boiler will often operate in a low-load (25 percent) capacity. A conservative "envelope" approach was used to model this source, using the maximum emission rate over all loads coupled with the source parameters for the boiler at 25 percent load. As the Project consists of four power blocks with identical emission sources, each type of source is listed only once, with the coordinates (Easting and Northing) for the source in each power block given at the top of the table. Unit #1 is the northeastern power unit and Unit #2 is the northwestern unit. Unit #3 is the southwestern power unit and Unit #4 is the southeastern.

A Good Engineering Practice (GEP) stack height analysis was conducted to evaluate the potential for building downwash from the power block sources. Point sources with heights below GEP are considered to be subject to building downwash and require building dimensions to be input to AERMOD. The GEP stack height analysis was conducted using the EPA Building Profile Input Program (BPIP) (version 04274) that performs the GEP calculation for a multi-building complex on a stack-by-stack basis. The stack locations and building included in the GEP analysis for a single power block are shown in Figure 5.2-11. Each of the four power blocks has similarly oriented buildings. A summary of the GEP analysis is provided in Table 5.2-35. The stack heights of the ancillary equipment that is part of the Project will be less than their respective GEP formula heights and subject to building downwash. Therefore, building dimensions developed by BPIP for all stacks were input to the dispersion model. The BPIP input and output files are provided on the modeling archive CD in Appendix E.4.

In addition to the emission sources associated with the power block, the Project will require periodic vehicular travel over the unpaved portions of the solar field to perform routine maintenance including mirror washing, maintenance inspections and repairs of the piping network, herbicide application, soil stabilizer application and water application for dust suppression. Criteria pollutant emissions from the combustion of fuels in the vehicles and fugitive PM10 and PM2.5 emissions are expected from vehicle traffic in the solar field. The emissions are included in the modeling in the form of eight area sources laid over the solar arrays. The site includes four power plant units. Each power plant unit contains one power block in the center of the unit with a large rectangular solar array to the west and another to the east. The southern power units also have a smaller rectangular solar array to the south of the power block. Each area source covers at least one of these solar arrays for the purpose of modeling vehicular emissions within the arrays.

A release height of 2.0 m was assumed for the fugitive onsite vehicles sources, with an initial plume height of 15 feet (4.57 m). Following EPA guidance (EPA, 2004), the initial area source vertical standard deviation for construction combustion emissions was estimated as the plume depth divided by 2.15, or 2.13 m. Each of the sources covers represents a solar array area of between approximately 1,635,600 m^2 and 2,950,000.4 m^2. The total combined area covered by the area sources is approximately 20,459,200 m^2. The stack parameters for the solar field maintenance vehicle area sources are listed in Table 5.2-36. For the northern sources, #1 refers to the solar field maintenance field to the west of the power block while #2 refers to the solar field maintenance field to the east of the power block. For the southern sources, #1 refers to the solar field maintenance fields to the west and south of the power block while #2 refers to the solar field maintenance field to the east of the power block.

Table 5.2-35 Summary of GEP Analysis

Emission Source	Model Source Name	Stack Height (m)	Controlling Buildings or Structures	Building Height (m)	Projected Width (m)	GEP Formula Height (m)
Auxiliary Boiler #1	AUXBOIL1	15.24	Power Unit #1 Air Cooled Condenser (ACC)	36.58	78.17	91.44
Auxiliary Boiler #2	AUXBOIL2	15.24	Power Unit #2 ACC	36.58	78.17	91.44
Auxiliary Boiler #3	AUXBOIL3	15.24	Power Unit #3 ACC	36.58	78.17	91.44
Auxiliary Boiler #4	AUXBOIL4	15.24	Power Unit #4 ACC	36.58	78.17	91.44
Emergency Generator #1	EMERGEN1	3.05	Power Unit #1 ACC	36.58	106.65	91.44
Emergency Generator #2	EMERGEN2	3.05	Power Unit #2 ACC	36.58	106.93	91.44
Emergency Generator #3	EMERGEN3	3.05	Power Unit #3 ACC	36.58	105.22	91.44
Emergency Generator #4	EMERGEN4	3.05	Power Unit #4 ACC	36.58	103.73	91.44
Fire-Water Pump #1	FIRPUMP1	3.05	Power Unit #1 ACC	36.58	78.17	91.44
Fire-Water Pump #2	FIRPUMP2	3.05	Power Unit #2 ACC	36.58	78.17	91.44
Fire-Water Pump #3	FIRPUMP3	3.05	Power Unit #3 ACC	36.58	78.17	91.44
Fire-Water Pump #4	FIRPUMP4	3.05	Power Unit #4 ACC	36.58	78.17	91.44
HTF Heater #1	HTFHEAT1	24.38	Power Unit #1 ACC	36.58	78.17	91.44
HTF Heater #2	HTFHEAT2	24.38	Power Unit #2 ACC	36.58	78.17	91.44
HTF Heater #3	HTFHEAT3	24.38	Power Unit #3 ACC	36.58	78.17	91.44
HTF Heater #4	HTFHEAT4	24.38	Power Unit #4 ACC	36.58	78.17	91.44
Cooling Tower #1	COOL1_1-COOL2_1	6.84	Power Unit #1 ACC	36.58	95.95-90.91	91.44
Cooling Tower #2	COOL1_2-COOL2_2	6.84	Power Unit #2 ACC	36.58	96.64-92.02	91.44
Cooling Tower #3	COOL1_3-COOL2_3	6.84	Power Unit #3 ACC	36.58	94.54-89.79	91.44
Cooling Tower #4	COOL1_4-COOL2_4	6.84	Power Unit #4 ACC	36.58	93.11-87.88	91.44

Table 5.2-36 Source Parameters for the Maintenance Vehicle Area Sources

Source Description	Source Name in AERMOD	Release Height (m)	Initial Dispersion (m)	Area (m^2)
NE#1 Maintenance Vehicles	MAIN_NE1	2.00	2.13	2,845,949
NE#2 Maintenance Vehicles	MAIN_NE2	2.00	2.13	2,870,043
NW#1 Maintenance Vehicles	MAIN_NW1	2.00	2.13	2,950,028
NW#2 Maintenance Vehicles	MAIN_NW2	2.00	2.13	1,701,733
SW#1 Maintenance Vehicles	MAIN_SW1	2.00	2.13	2,828,496
SW#2 Maintenance Vehicles	MAIN_SW2	2.00	2.13	2,696,196
SE#1 Maintenance Vehicles	MAIN_SE1	2.00	2.13	2,931,189
SE#2 Maintenance Vehicles	MAIN_SE2	2.00	2.13	1,635,570

Modeled Impacts from Normal Operations

The worst-case normal operations emissions from the Project were modeled along with vehicular emissions from the solar field maintenance vehicles. The maximum air quality impacts due to emissions from the Project sources are summarized in Table 5.2-37. The maxima over the three years modeled is noted and compared to the EPA SILs. Hourly OLM was used to represent more accurately the conversion of NOx to NO_2 for comparison to the California one-hour NO_2 standard. As shown in Table 5.2-38, all maximum modeled pollutant concentrations are less than their respective SILs. Therefore, no significant adverse air quality impacts are expected during operations.

Table 5.2-37 Maximum Modeled Concentrations for PHPP Normal Operations

Pollutant	Averaging Period	Maximum AERMOD Concentration ($\mu g/m^3$)			Overall Maximum ($\mu g/m^3$)	EPA SIL ($\mu g/m^3$)
		2002	2003	2004		
NO_2 [1]	1-hr	66.3	67.3	65.6	67.3	--
	Annual	0.03	0.03	0.03	0.03	1
CO	1-hr	67.2	67.8	67.2	67.8	2,000
	8-hr	21.6	18.4	22.5	22.5	500
PM10	24-hr	2.77	3.12	2.97	3.12	5
	Annual	0.69	0.67	0.65	0.69	1
PM2.5	24-hr	0.41	0.53	0.53	0.53	N/A
	Annual	0.08	0.08	0.08	0.08	N/A
SO_2	1-hr	0.21	0.21	0.21	0.21	--
	3-hr	0.10	0.13	0.10	0.13	25
	24-hr	0.01	0.01	0.01	0.01	5
	Annual	0.0005	0.0004	0.0005	0.0005	1

[1] Modeled NO_2 concentrations as determined with the OLM.

The maximum modeled concentrations for Project emissions are summed with ambient background concentrations for comparison to the CAAQS. As shown in Table 5.2-38, the total concentrations comprised of maximum modeled plus maximum background are below the CAAQS for all pollutants with the exception of the 24-hour and annual PM10 CAAQS, for which the ambient background concentration used for this analysis already exceeds the standard and Project contributions are relatively small (6.2% and 3.5% of the 24-hour and annual PM10 CAAQS, respectively).

Table 5.2-38 CAAQS Modeling Results for Project Normal Operations

Pollutant	Averaging Period	Concentrations ($\mu g/m^3$)			
		AERMOD Result	Ambient Background [2]	Total [3]	CAAQS/NAAQS
NO_2 [1]	1-hr	67.30	174.9	242	339
	Annual	0.03	22.6	22.6	57
CO	1-hr	67.77	2645	2,710	23,000
	8-hr	22.50	1035	1,060	10,000
PM10	24-hr	3.12	162.0	165	50
	Annual	0.69	30.0	30.7	20
PM2.5	24-hr	0.53	27.0	27.5	35
	Annual	0.08	10.6	10.7	12
SO_2	1-hr	0.21	503	503	655
	3-hr	0.13	434.9	435	1,300
	24-hr	0.01	99.6	99.6	105
	Annual	0.0005	5.2	5.2	80

[1] Modeled NO_2 concentrations as determined with the OLM.
[2] Highest value from Table 5.2-32.
[3] Modeled concentration plus ambient background, rounded to three significant figures or less.

Other Related Analyses - Vegetation and Soils

The Project site is in an area consisting of primarily desert and desert shrub-land. Criteria for evaluating impacts on soils and vegetation are provided in EPA's “A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils and Animals” (EPA 1980). Table 5.2-39 lists the EPA-recommended criteria for the gaseous pollutants emitted directly from the proposed Project. These criteria are established for sensitive vegetation and crops exposed to the effects of the gaseous pollutants through direct exposure. Adverse impacts on soil systems result more readily from the secondary effects of these pollutants' impacts on the stability of the soil system. These impacts could include increased soil temperature and moisture stress and/or increased runoff and erosion resulting from damage to vegetative cover. In Table 5.2-39, the total modeled air concentrations for the proposed Project plus ambient background concentrations are compared to these criteria to evaluate impacts on both soils and vegetation. All total concentrations are well below the recommended significance criteria. Therefore, the potential for adverse impacts to either soils or vegetation is negligible.

Table 5.2-39 Soils and Vegetation Analysis

Pollutant	Averaging Period	AERMOD Predicted Concentrations (mg/m^3)				Background Value ($\mu g/m^3$)	Max Plus Background[3] ($\mu g/m^3$)	Significance Level for Impacts to Soil and Vegetation ($\mu g/m^3$)
		2002	2003	2004	Max.			
SO_2	one-hour	0.21	0.21	0.21	0.21	503.0	503	917
	three-hour	0.10	0.13	0.10	0.13	434.9	435	786
	Annual	0.0005	0.0004	0.0005	0.0005	5.2	5.2	18
CO	1-week[1]	21.6	18.4	22.5	22.5	1,035	1,060	1,800,000
NO_2	4-hour[2]	66.3	67.3	65.6	67.3	174.9	242	3,760
	eight-hour[2]	66.3	67.3	65.6	67.3	174.9	242	3,760
	1-month[2]	66.3	67.3	65.6	67.3	174.9	242	564
	Annual	0.03	0.03	0.03	0.03	22.6	22.6	94

Short-term numbers based on maximum concentration, annual concentrations are highest annual average concentration.

[1] Used eight-hour CO runs for this period.

[2] Used one-hour NO_X runs for these periods.

[3] Total rounded to three significant figures or less.

5.2.4.3 Cumulative Impacts

The cumulative projects that may contribute to adverse impacts on air quality were presented in Section 5.1.3, Cumulative Evaluation Approach. The impacts of the BSPP must be considered together with those of other past, present, and reasonably foreseeable future projects in the area that may produce related or cumulative impacts.

Cumulative Impacts During Construction

As shown in Section 5.1.2, Cumulative Evaluation Approach, there are 18 projects (19 including the BSPP itself), identified within a 50-mile radius of the Project site with which BSPP may have cumulative impacts. According to available information, the construction schedule for most or all of these projects will overlap for at least some period of the construction schedule proposed for BSPP.

As discussed in more detail in Section 5.2.5, the Applicants have proposed six mitigation measures (AQ-SC1 through AQ-SC6) to minimize and control emissions from the equipment and operations during the construction period. The use of these mitigation measures will reduce the impacts during the construction period to less than significant. It is assumed that the other 18 projects in the vicinity of the BSPP would also use mitigation to the extent practical to minimize their impacts during construction.

While there are 19 projects within 50 miles of the BSPP site, most (15 of 18) of the projects are solar energy projects which require large tracts of land. As demonstrated by BSPP, the impacts of a solar power project are highly localized. For pollutants that have potential localized impacts, such as NOx

and PM10, the distance between the projects suggests that the localized impacts would not be cumulatively significant. Three of the projects are transmission lines, which by their nature tend to distribute emissions over large areas, also indicating that localized impacts would be less than significant.

Cumulative Impacts During Operation

During operation, the BSPP is predicted to have insignificant impacts for all criteria pollutants. While modeled 24-hour and annual PM10 impacts are above the CAAQS, the exceedance is due to the background concentration of PM10 exceeding the standard. Project impacts are less than ten percent of the CAAQS for PM10.

Of the 19 cumulative projects (including BSPP), nine projects are solar photovoltaic projects and three are transmission line projects for which there will be little or no operational emissions. Of the remaining six projects, five are solar thermal projects which would be expected to have emissions similar to BSPP. Due to the large geographic area these projects occupy and the minimal emissions, each of these projects is expected to have insignificant impacts individually and cumulatively with BSPP during operations.

The remaining project, Blythe Energy Project II (BEP II), is a proposed combined-cycle power plant located about five miles east of the BSPP. The BEP II, if built, will be required to provide emissions offsets pursuant to non-attainment NSR rules and the Acid Rain rules. BEP II was required to obtain a PSD permit which required that the applicant demonstrate through modeling that the project will not cause or contribute to a violation of the NAAQS. Given that the modeled BSPP air quality impacts are less than the EPA significant impact levels (SILs), and therefore by definition, are deemed to have an insignificant air quality impacts, there will be no cumulative impact due to BSPP air emissions at the location of peak impacts of BEP II.

5.2.5 Mitigation Measures

The Applicants propose the following measures to mitigate potential air quality impacts to less than significant.

5.2.5.1 Construction Phase Mitigation Measures

AQ-SC1 Air Quality Construction Mitigation Manager (AQCMM): The project owner will designate and retain an onsite AQCMM who will be responsible for directing and documenting compliance with Mitigation Measures AQSC3, AQ-SC4 and AQ-SC5 for the entire project site and linear facility construction. The onsite AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates will have full access to all areas of construction on the project site and linear facilities, and will have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM will not be terminated without written consent of the Compliance Project Manager (CPM).

AQ-SC2 Air Quality Construction Mitigation Plan (AQCMP): The project owner will provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance with Mitigation Measures AQ-SC3, AQ-SC4, AQ-SC5 and AQ-SC6.

AQ-SC3 Construction Fugitive Dust Control: The AQCMM will submit documentation to the CPM in each Monthly Compliance Report (MCR) that demonstrates compliance with the following mitigation measures for the purposes of preventing all fugitive dust plumes from leaving the project. Any deviation from the following mitigation measures will require prior CPM notification and approval.

A. All unpaved roads and disturbed areas in the project and linear construction sites will be watered as frequently as necessary to comply with the dust mitigation objectives of Condition of Certification AQ-SC4. The frequency of watering can be reduced or eliminated during periods of precipitation.

B. No vehicle will exceed 10 miles per hour within the construction site.

C. Visible speed limit signs will be posted at the construction site entrances.

D. All construction equipment vehicle tires will be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.

E. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.

F. All unpaved exits from the construction site will be graveled or treated to prevent track-out to public roadways.

G. All construction vehicles will enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the District.

H. Construction areas adjacent to any paved roadway will be provided with sandbags or other measures as specified in the Construction Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.

I. All paved roads within the construction site will be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

J. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas will be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways.

K. All soil storage piles and disturbed areas that remain inactive for longer than 10 days will be covered or will be treated with appropriate dust suppressant compounds.

L. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions will be provided with a cover or the materials will be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.

M. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) will be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition will remain in place until the soil is stabilized or permanently covered with vegetation.

AQ-SC4 Dust Plume Response Requirement: The AQCMM or an AQCMM Delegate will monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to 1) impact an actual non-project structure; 2) be transported 200 feet beyond the centerline of the construction of linear facilities; or 3) be transported within 100 feet upwind of any regularly occupied structures not owned by the project owner indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMP will include a section in the AQCMP detailing how the additional mitigation measures will be accomplished within the time limits specified. The AQCMM or Delegate will implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed:

Step 1: The AQCMM or Delegate will direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.

Step 2: The AQCMM or Delegate will direct implementation of additional methods of dust suppression if Step 1, specified above, fails to result in adequate mitigation within 30 minutes of the original determination.

Step 3: The AQCMM or Delegate will direct a temporary shutdown of the activity causing the emissions if Step 2, specified above, fails to result in effective mitigation within one hour of the original determination. The activity will not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The owner/operator may appeal to the CPM any directive from the AQCMM or Delegate to shut down an activity, if the shutdown will go into effect within one hour of the original determination, unless overruled by the CPM before that time.

AQ-SC5 Diesel-Fueled Engines Control: The AQCMM will submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with the following mitigation measures for the purposes of controlling diesel construction-related emissions. Any deviation from the following mitigation measures will require prior CPM notification and approval.

A. All diesel-fueled engines used in the construction of the facility will be fueled only with ultra-low sulfur diesel, which contains no more than 15 ppm sulfur.

B. All diesel-fueled engines used in the construction of the facility will have clearly visible tags issued by the onsite AQCMM showing that the engine meets the conditions set forth herein.

C. A good faith effort will be made to find and use off-road construction diesel equipment that has a rating of 100 hp to 750 hp and that meets the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines as specified in Title 13, CCR §2423(b)(1). This good faith effort will be documented with signed written correspondence by the appropriate construction contractors along with documented correspondence with at least two construction equipment rental firms.

D. All construction diesel engines, which have a rating of 50 hp or more, will meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in Title 13, CCR §2423(b)(1). The following exceptions for specific construction equipment items may be made on a case-by-case basis.

    1. Equipment with non-Tier 2 engines that have tailpipe retrofit controls that reduce exhaust emissions of NOx and PM to no more than Tier 2 levels.

2. Tier 1 equipment will be allowed on a case-by-case basis only when the project owner has documented that no Tier 2 equipment or emissions equivalent retrofit equipment is available for a particular equipment type that must be used to complete the project's construction. This will be documented with signed written correspondence by the appropriate construction contractors along with documented correspondence with at least two construction equipment rental firms.

3. The construction equipment item is intended to be on site for five days or less.

4. Equipment owned by specialty subcontractors may be granted an exemption, for single equipment items on a case-by-case basis, if it can be demonstrated that extreme financial hardship would occur if the specialty subcontractor had to rent replacement equipment, or if it can be demonstrated that a specialized equipment item is not available by rental.

E. All heavy earthmoving equipment and heavy duty construction-related trucks with engines meeting the requirements of (c) above will be properly maintained and the engines tuned to the engine manufacturer's specifications.

F. All diesel heavy construction equipment will not remain running at idle for more than five minutes, to the extent practical.

G. Construction equipment will employ electric motors when feasible.

H. Except for limited activities such as cement pours, construction activities will be limited to daylight hours.

5.2.5.2 Operating Phase Mitigation Measures

The Project impacts analysis shows that the BSPP contributions to existing air quality during normal operations will be minimal and are well below the significant impact levels defined by the relevant agencies. The MDAQMD does not require emissions offsets for minor emission sources. The background values from the closest air quality monitoring site in Imperial County indicate that background PM10 already exceeds the 24-hour CAAQS. However, the BSPP can reasonably be assumed to reduce PM10 emissions in the region by applying an effective dust suppressant on the solar field where there currently desert shrub subject to disturbance from off-road vehicles and wind erosion. Therefore, no further mitigation for PM10 or other Project emissions is considered necessary.

Besides the ATC/DOC conditions that will be recommended by the MDAQMD, the following mitigation measures are proposed by the Applicants to be implemented during Project operations.

AQ-SC6 The project owner will use gasoline powered light trucks, equivalent of the Ford F150 model, for facility maintenance, except for mirror washing, welding rigs, or other specific activities which requires a larger vehicle. Only new trucks meeting California on-road vehicle emission standards will be purchased for use at the site. In addition, only electrical powered all-terrain vehicles or other low-emission vehicles will be used to support the maintenance crew within the facility.

AQ-SC7 The project owner will provide a site operations dust control plan that:

A. Describes the wind erosion control techniques such as windbreaks, water, and chemical dust suppressants that will be used on areas that could be disturbed by vehicles or wind; and

B. Identifies the location of signs throughout the facility that will limit traveling on unpaved portion of roadways to solar equipment maintenance vehicles only. In addition, vehicle speed will be limited to no more than 10 miles per hour on these unpaved roadways.

AQ-SC8 The project owner will provide the CPM copies of all District-issued ATC permits and PTOs for the facility. The project owner will submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner will submit to the CPM any modification to any permit proposed by the District and any revised permit issued by the District for the project.

AQ-SC8 Operation of each auxiliary boiler will not exceed 5,000 hours per year, 500 hours at a full load and 4,500 hours at 25 percent load.

AQ-SC9 Operation of each HTF heater will not exceed 500 hours per year.

AQ-SC10 Cooling tower total dissolved solids (TDS) will not exceed 2,000 ppmw.

AQ-SC11 Cooling water volumetric flow rate will not exceed 6,100 gallons per minute.

5.2.6 References

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Figure 5.2-1 National and California Ambient Air Quality Standards

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15.0 µg/m^3		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m^3)		—		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	—	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		—	—	—
Lead[8]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	—
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average[9]	—		0.15 µg/m^3		
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[8]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page ...

For more information please call ARB-PIO at (916) 322-2990 California Air Resources Board (11/17/08)

Figure 5.2-1 National and California Ambient Air Quality Standards (continued)

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, 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.

2. 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 eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calender year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

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. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

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

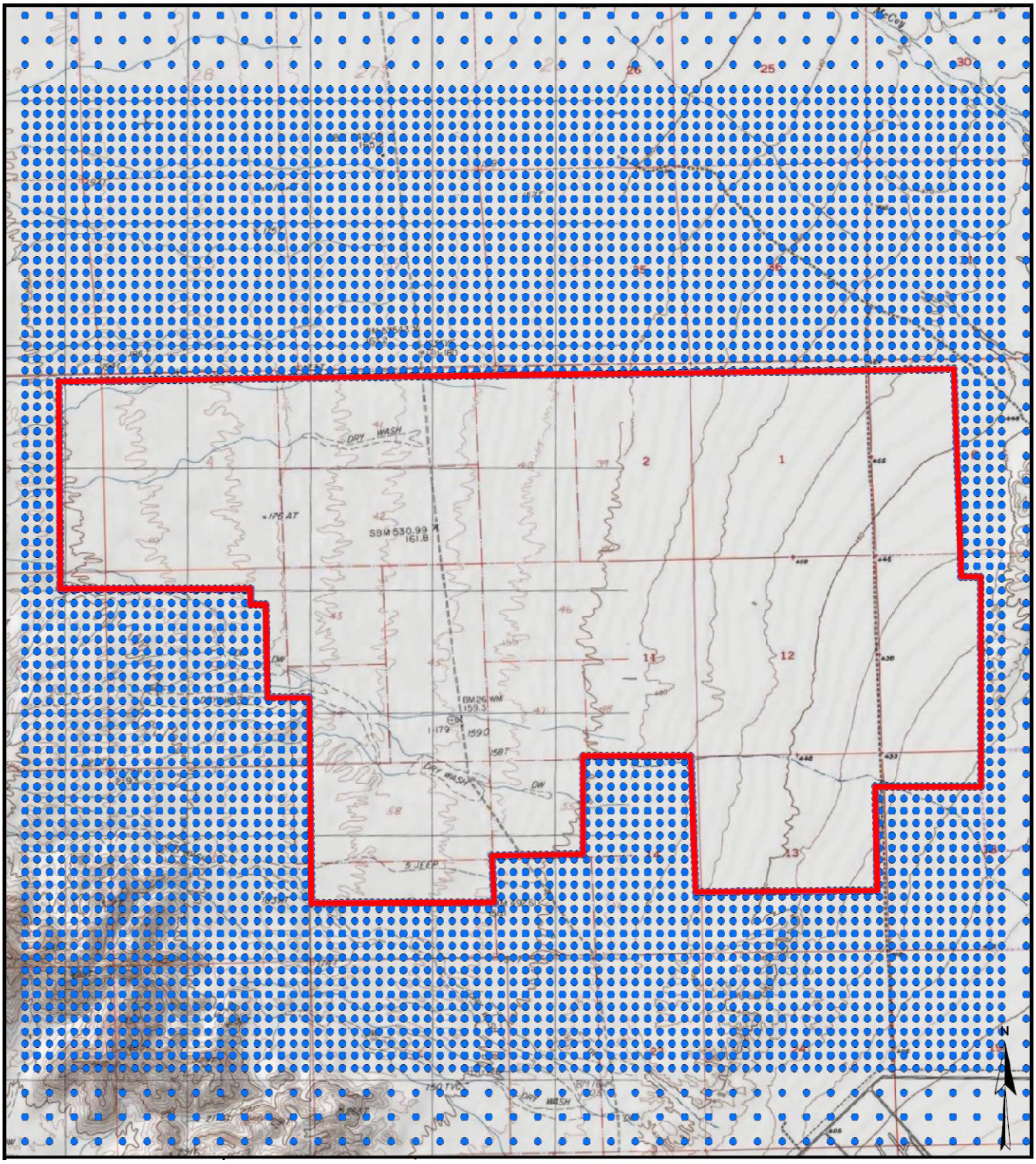
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

9. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (11/17/08)**



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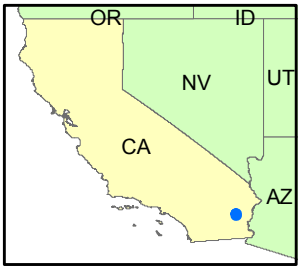
Fenceline

Receptor

Scale 1 0.5 0 1 2 3 4 Kilometers

Project Location



Blythe Solar Power Project

Figure 5.2-2
Near-Field Receptors Used in BSPP Air Impacts Analysis

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009

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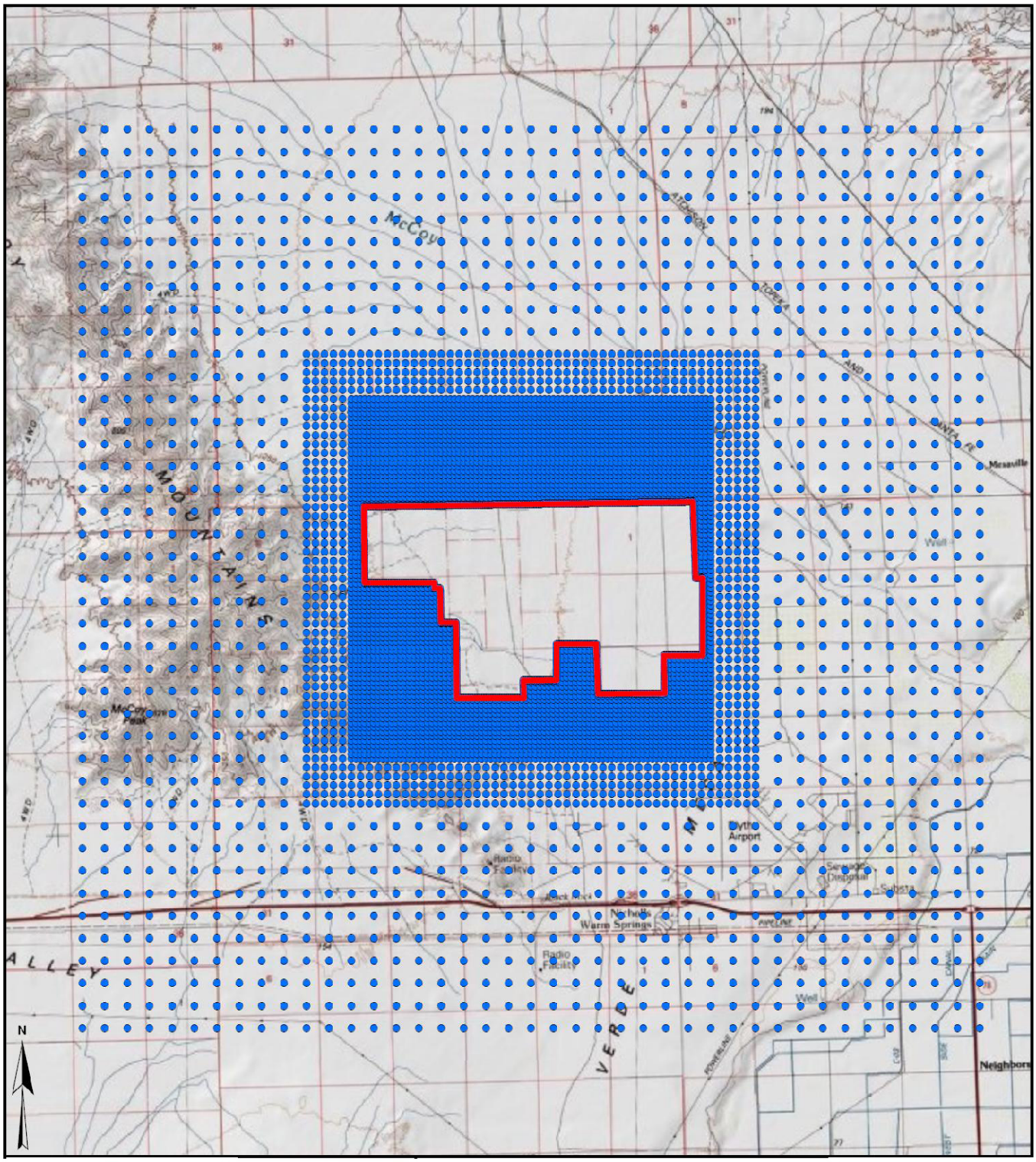

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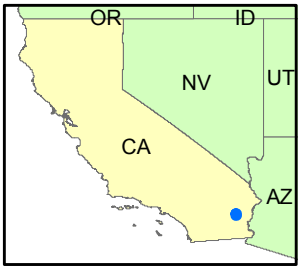
Receptor

Scale 2 1 0 2 4 6 8 10 Kilometers

Project Location



Blythe Solar Power Project

Figure 5.2-3
Far-Field Receptors Used in BSPP Air Impacts Analysis

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009

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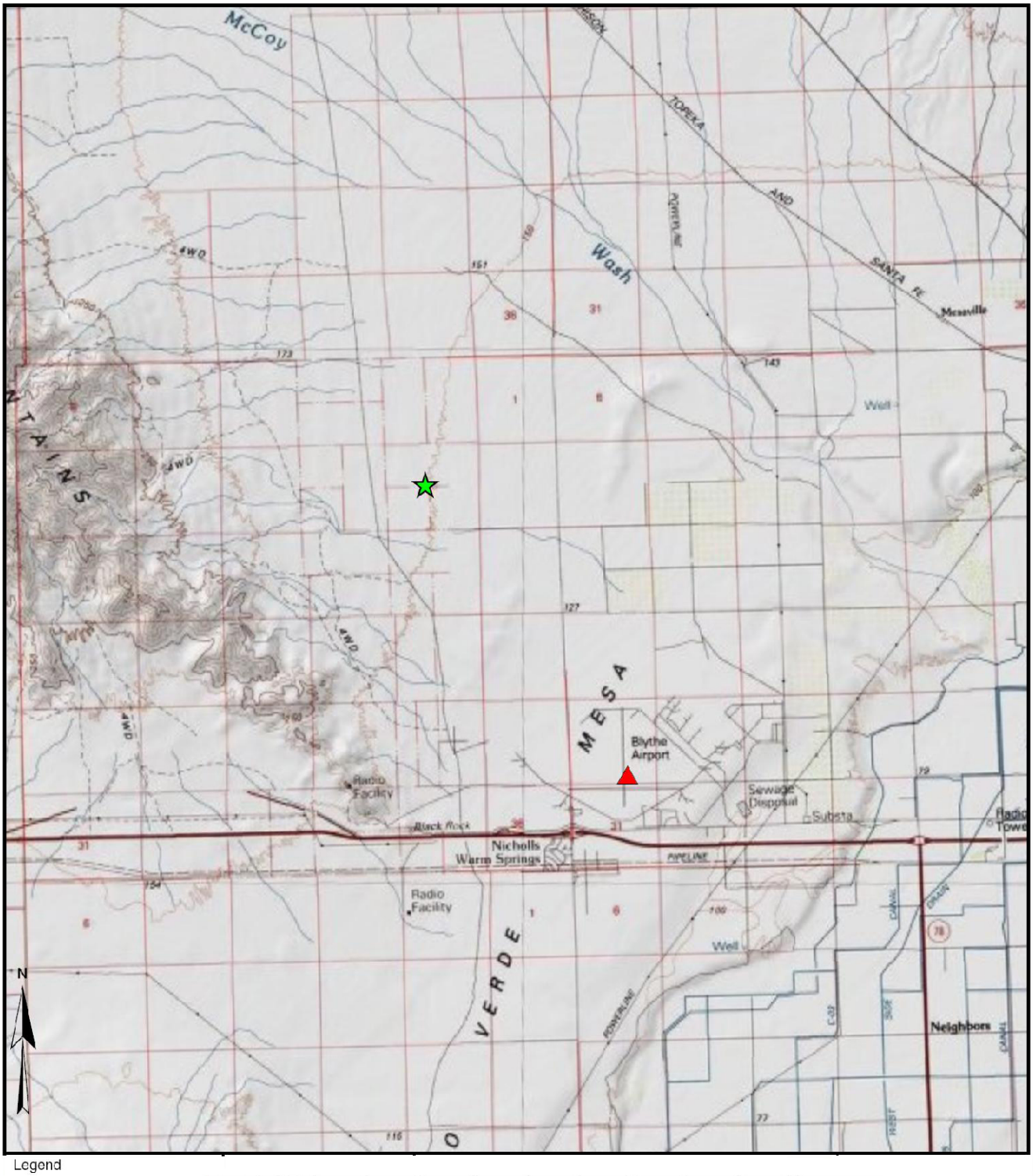


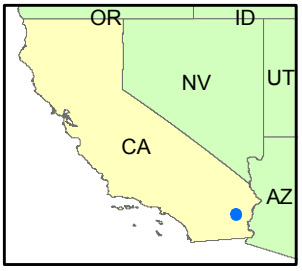
Legend

Proposed Site Location

Blythe Airport

Scale 0 0.5 1 2 3 4 5 6 7 8 9 10 Kilometers

Project Location



Blythe Solar Power Project

Figure 5.2-4
Relative Location of Blythe Solar Power Project and Blythe Airport

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009

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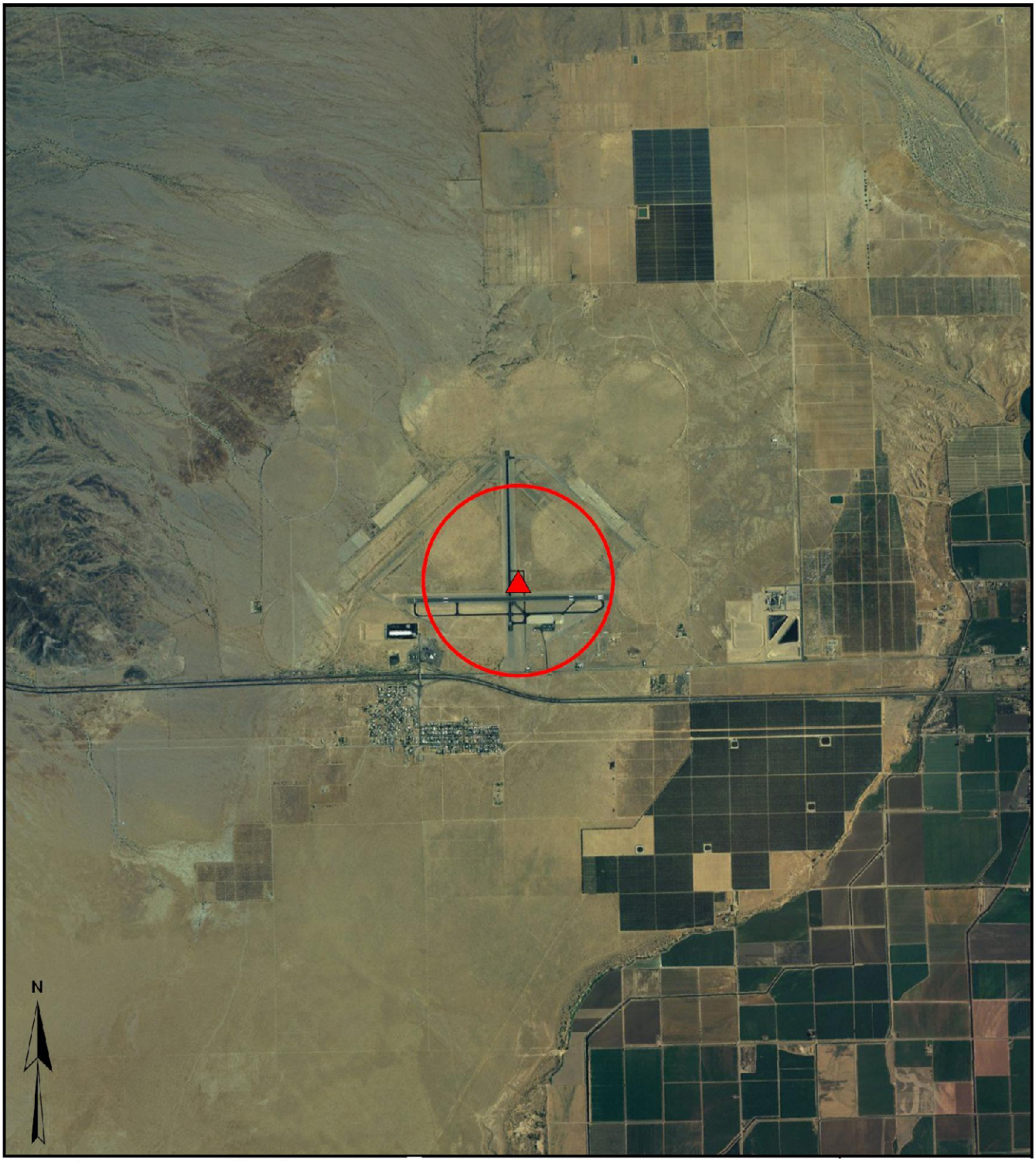


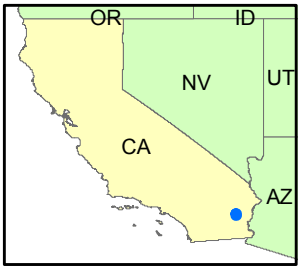
Legend

Blythe Airport

1km Circle

Scale 0 0.5 1 2 3 4 5 6 Kilometers

Project Location



Blythe Solar Power Project

Figure 5.2-5
Aerial Photograph of Blythe Airport

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009

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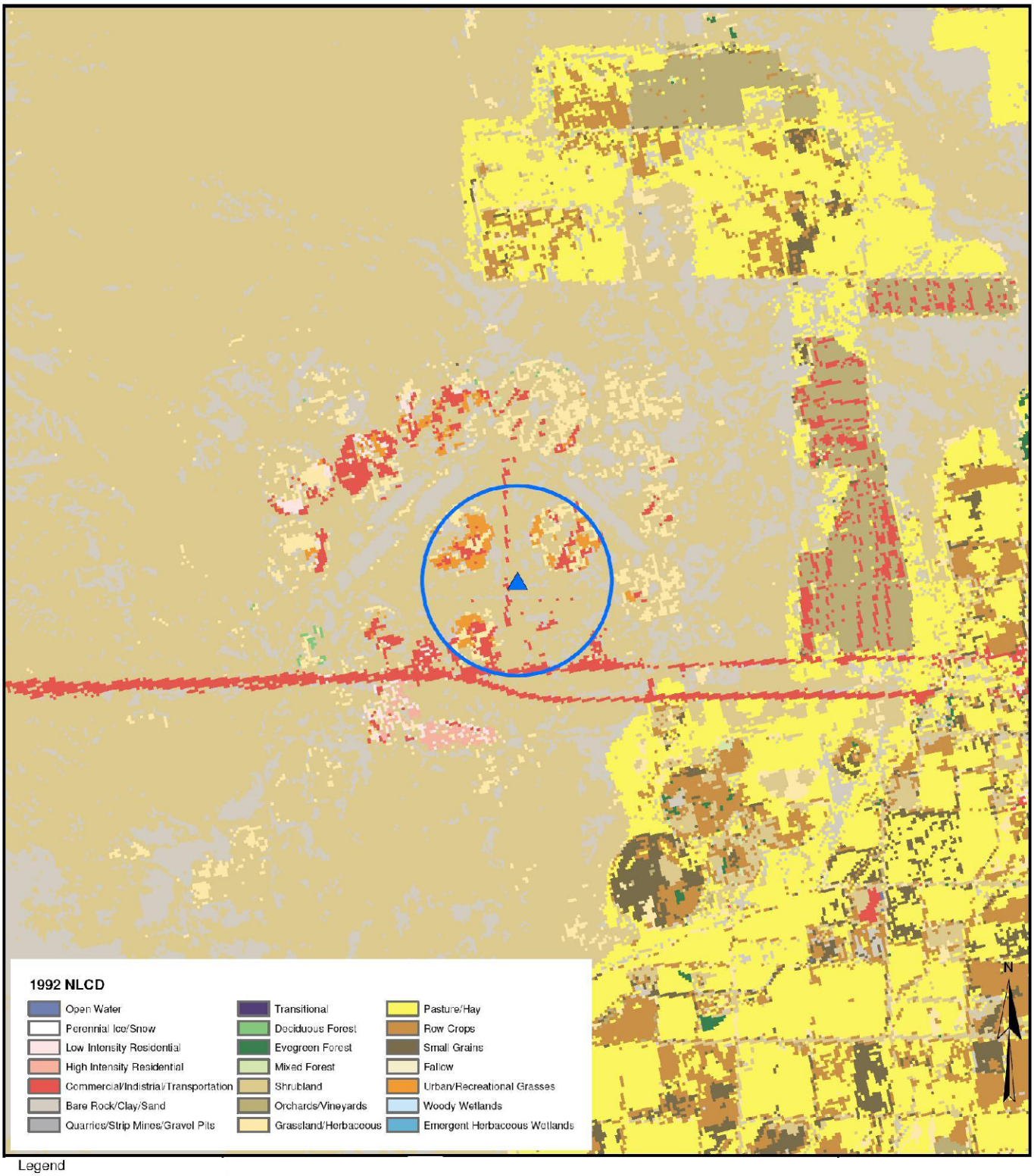


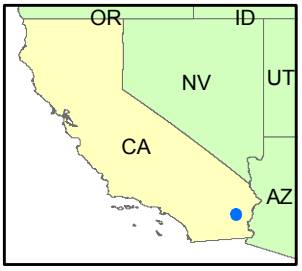
Legend

Blythe Airport

1km Circle

Scale 0 0.5 1 2 3 4 5 Kilometers

Project Location



Blythe Solar Power Project

Figure 5.2-6
Digitized 1992 NLCD Land-use
for Area Surrounding Blythe Airport

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009

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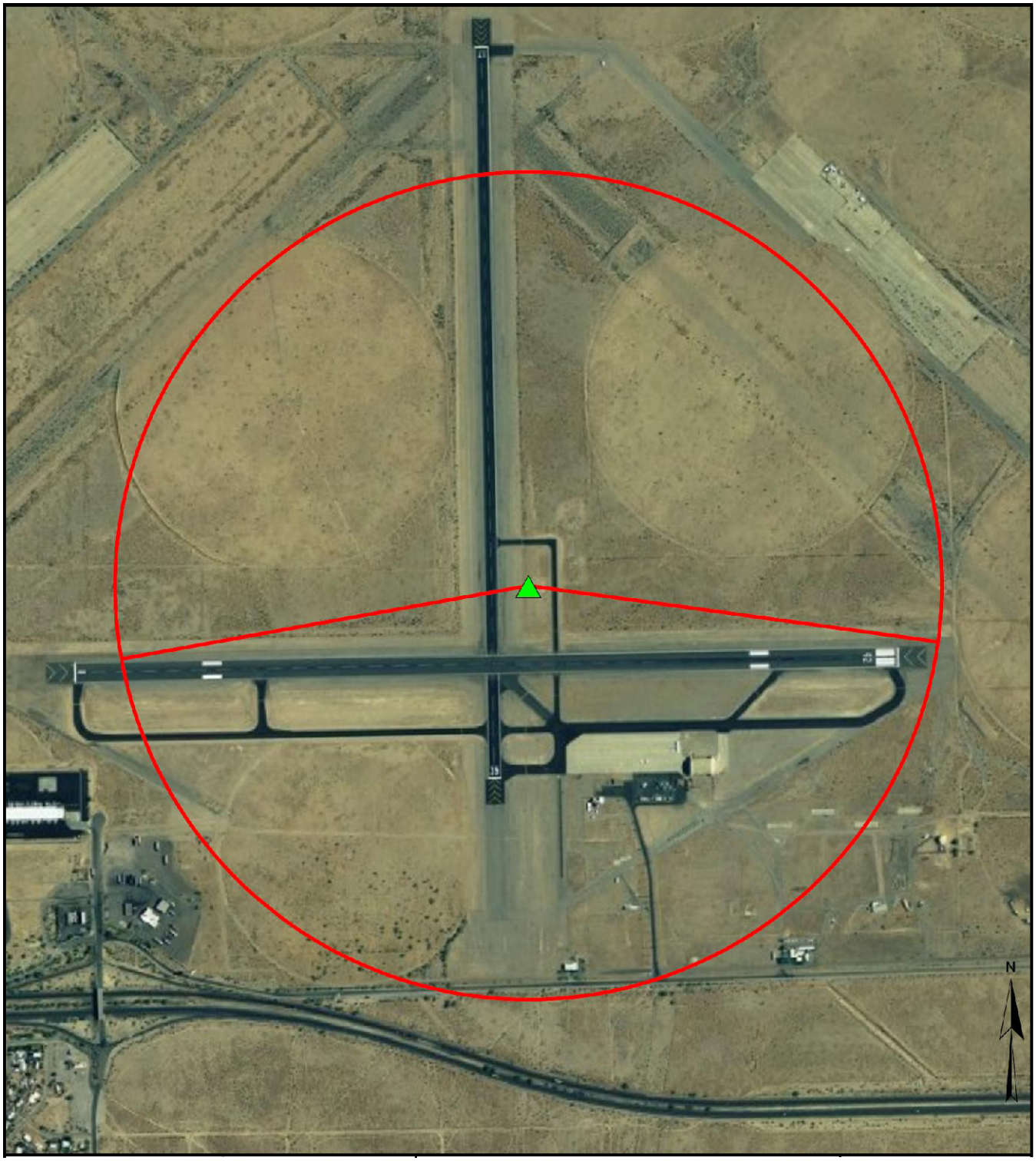


Legend

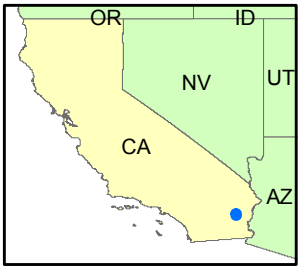
Anemometer Location

Land Use Sectors

1 KM Land-use Circle

Scale 0 0.25 0.5 1 1.5 Kilometers

Project Location



Blythe Solar Power Project

Figure 5.2-7
1km Radius Surrounding Blythe Airport, with Surface Roughness Sectors

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009

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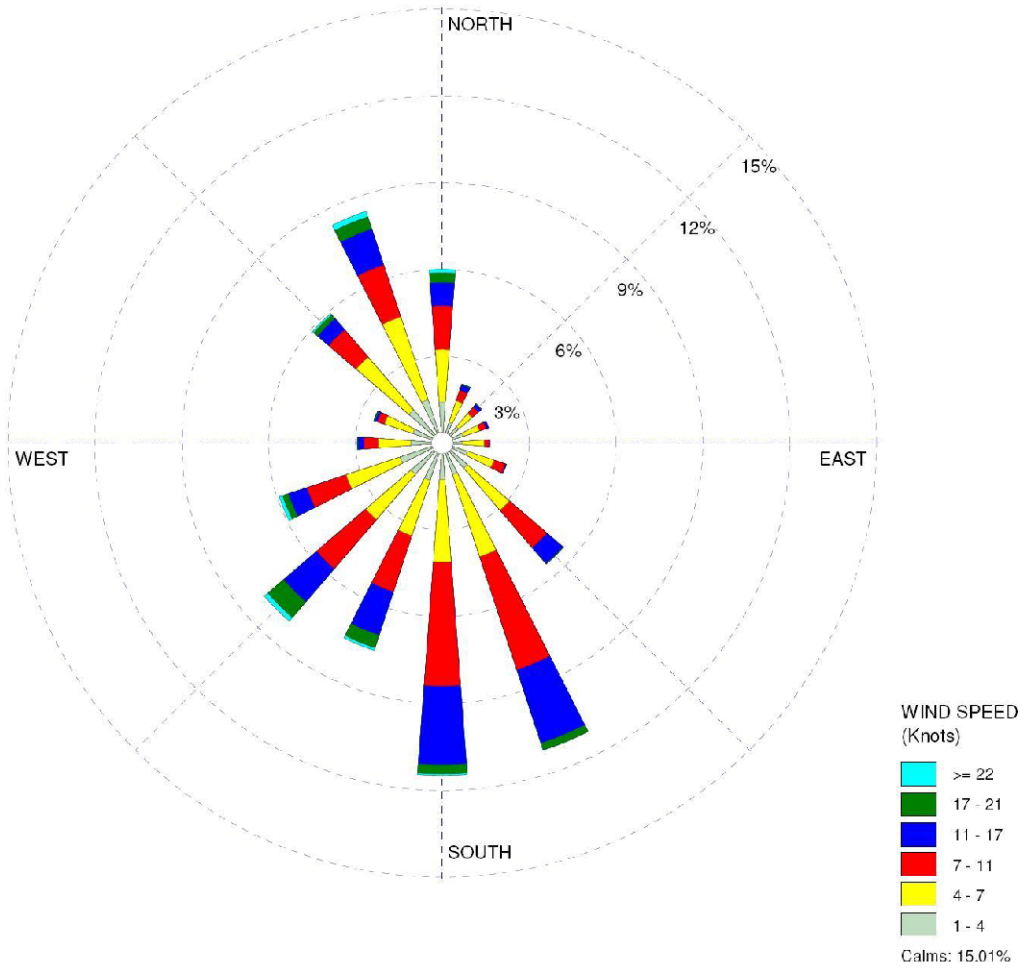
WIND ROSE PLOT:

3 Year Wind Rose (2002-2004) for Blythe Airport, Blythe, CA

DISPLAY:

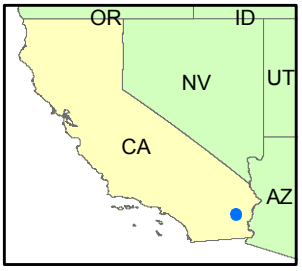
Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD:		
	2002 2003 2004 Jan 1 - Dec 31 00:00 - 23:00	MODELER: **M. Stresing**	
		TOTAL COUNT: **24901 hrs.**	
	AVG. WIND SPEED: **6.93 Knots**	DATE: **6/22/2009**	

WRPLOT View - Lakes Environmental Software

Project Location



Blythe Solar Power Project

Figure 5.2-8
Three-Year Wind Rose for Blythe Airport

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009

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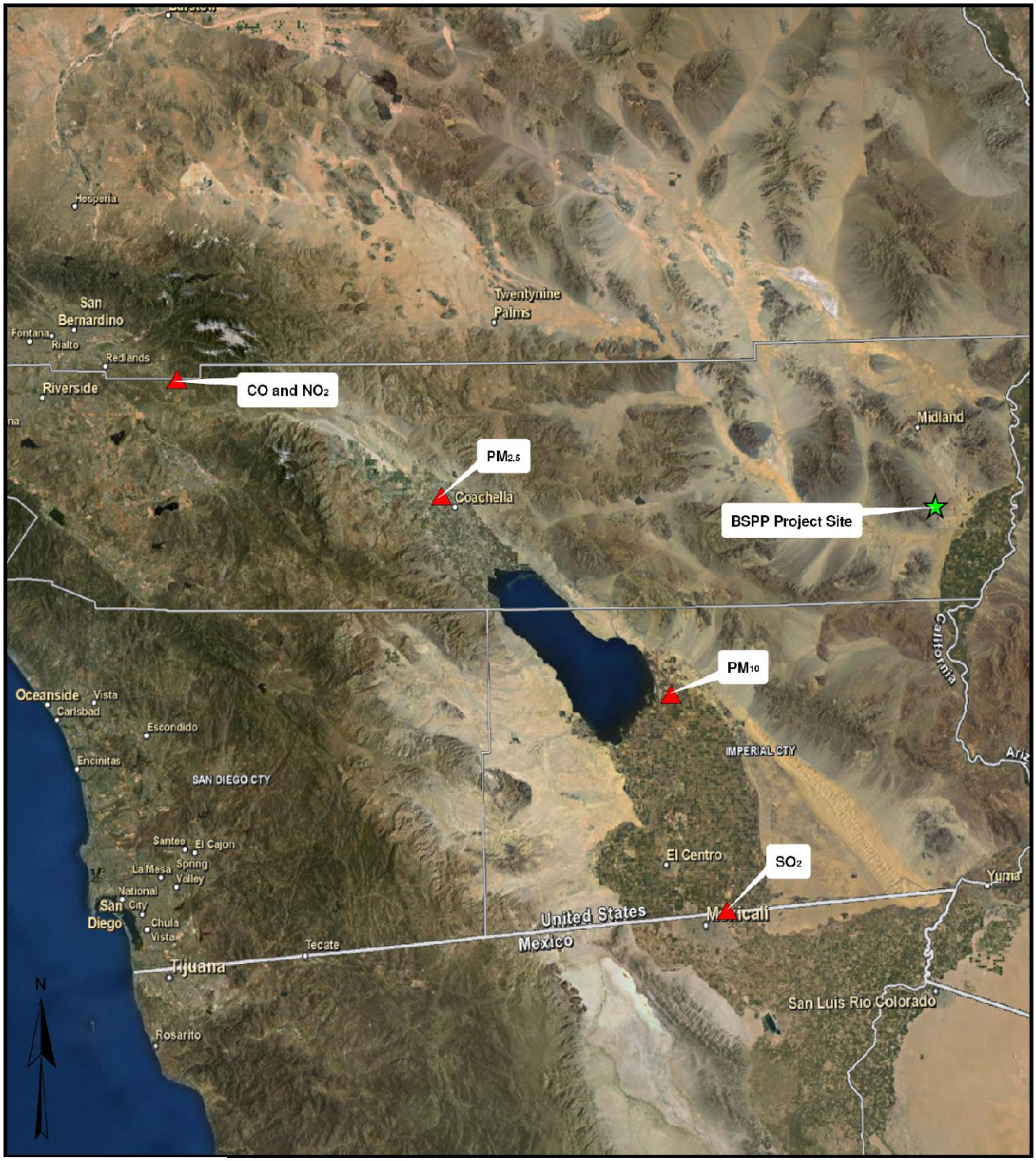


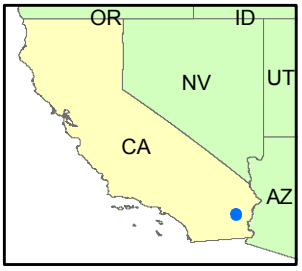
Legend

Proposed Site Location

Monitor Location

Scale 0 12.5 25 50 75 100 125 Kilometers

Project Location



Blythe Solar Power Project

Figure 5.2-9
Location of Background Monitors used in BSPP Air Modeling Analysis

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009

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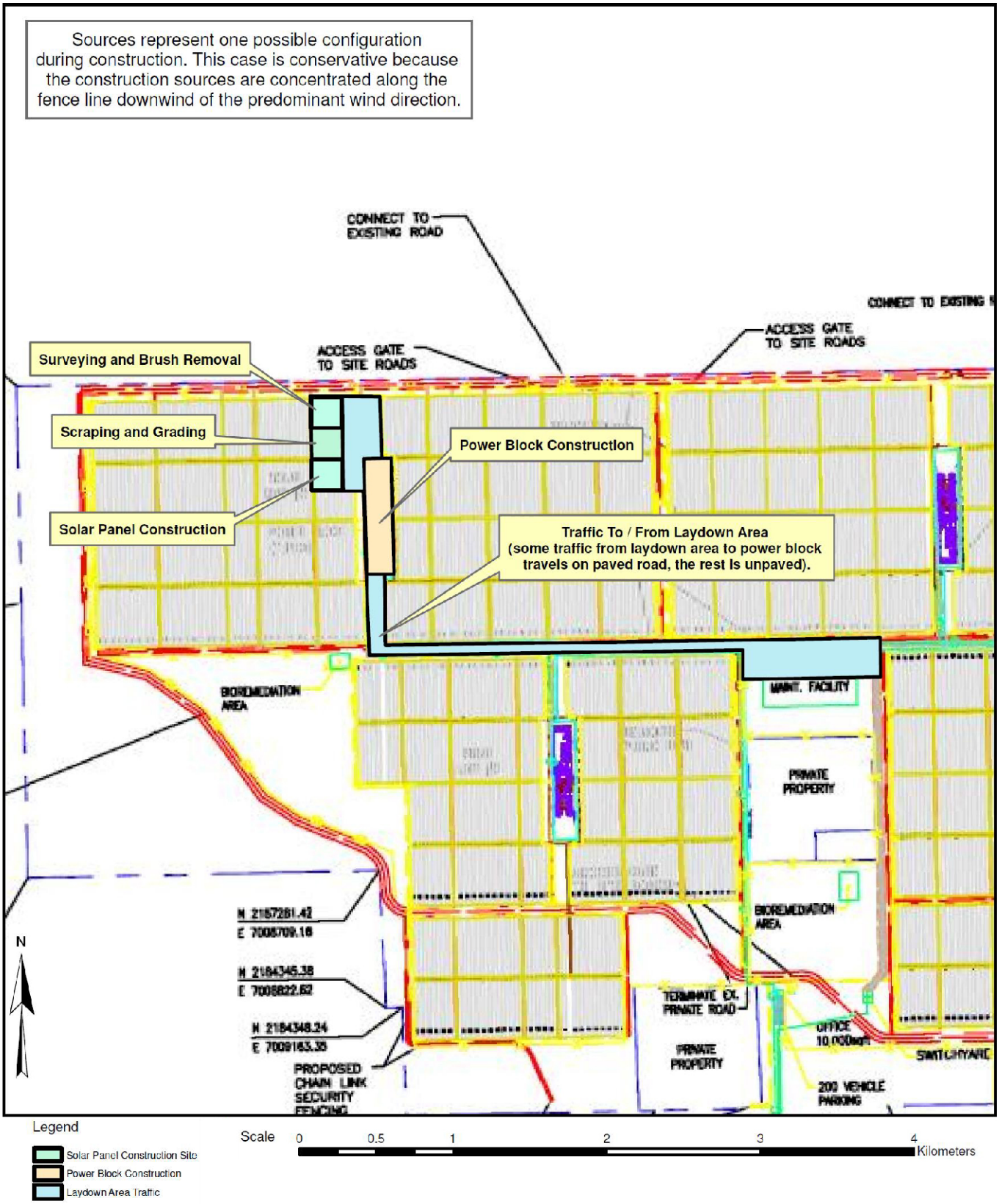
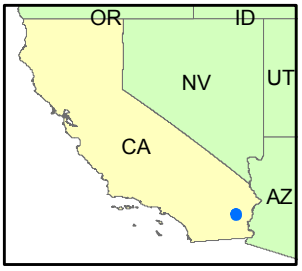


Project Location



Blythe Solar Power Project

Figure 5.2-10
Construction Sources used in the BSPP AERMOD Construction Impacts Analysis

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009

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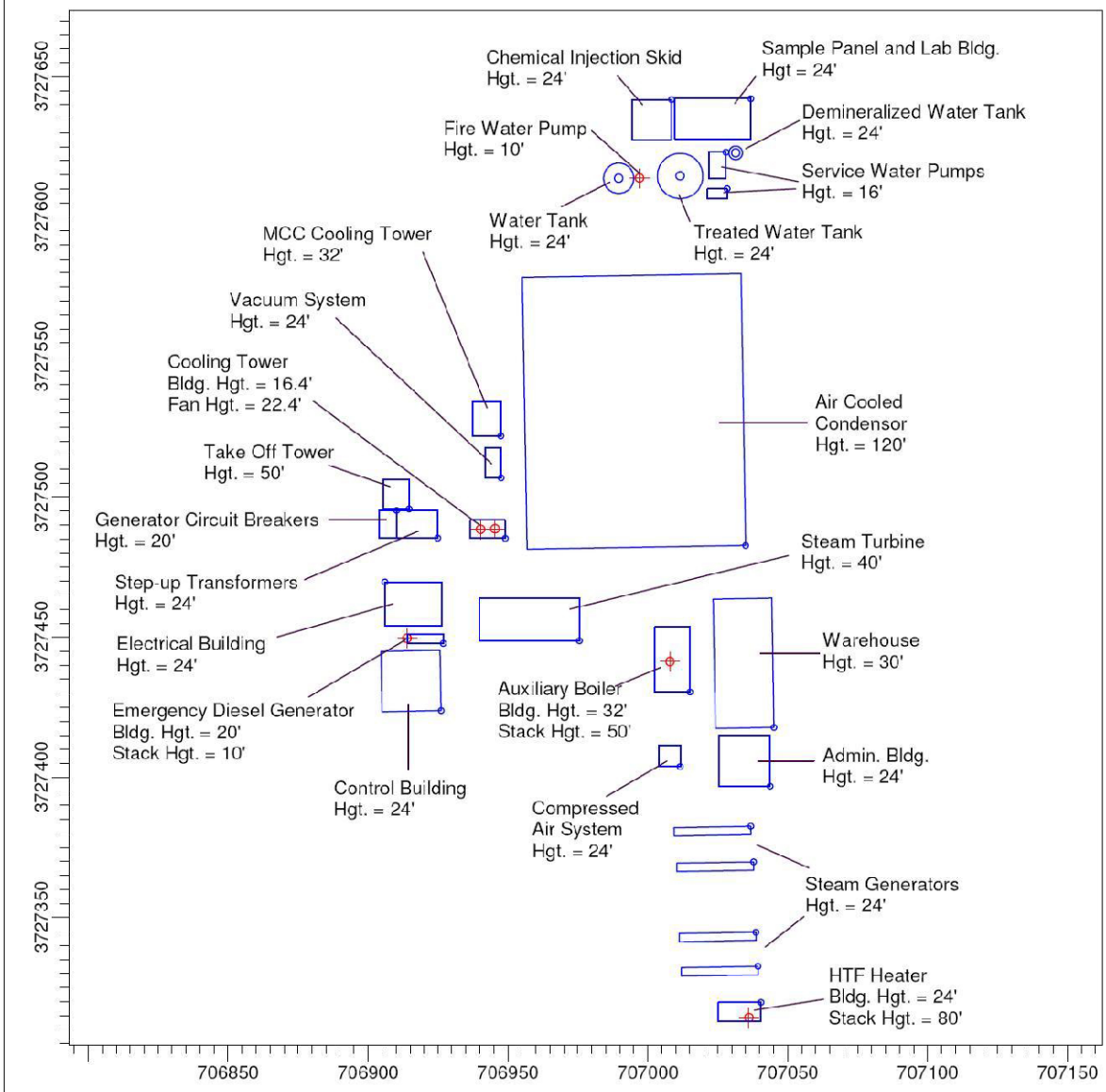
PROJECT TITLE:

Structures Evaluated in GEP Analysis
Blythe Solar Power Project



COMMENTS:	SOURCES: 36	COMPANY NAME: AECOM	
	RECEPTORS: 6742	MODELER: Adrienne Kieldsing	
		SCALE: 1:2,254 — 0 — 0.05 km	
		DATE: 8/14/2009	PROJECT NO.:

AERMOD View - Lakes Environmental Software

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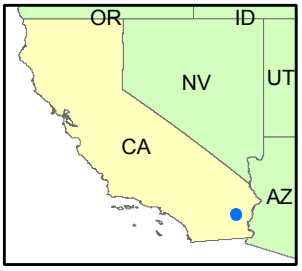
Project Location



Blythe Solar Power Project

Figure 5.2-11
Buildings and Structures used in BSPP GEP Analysis

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009

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