650 Town Center Drive, 20th Floor
Costa Mesa, California 92626-1925
Tel: +1.714.540.1235 Fax: +1.714.755.8290
www.lw.com

LATHAM&WATKINS LLP

November 19, 2008

File No. 030137-0012

DOCKET
07-AFC-3
DATE NOV 19 2008
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VIA FEDEX

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 07-AFC-3
1516 Ninth Street, MS-4
Sacramento, California 95814-5512

Re: CPV Sentinel Energy Project: Docket No. 07-AFC-3

Dear Sir/Madam:

Pursuant to California Code of Regulations, title 20, sections 1209, 1209.5, and 1210, enclosed herewith for filing please find Applicant's Project Design Refinements.

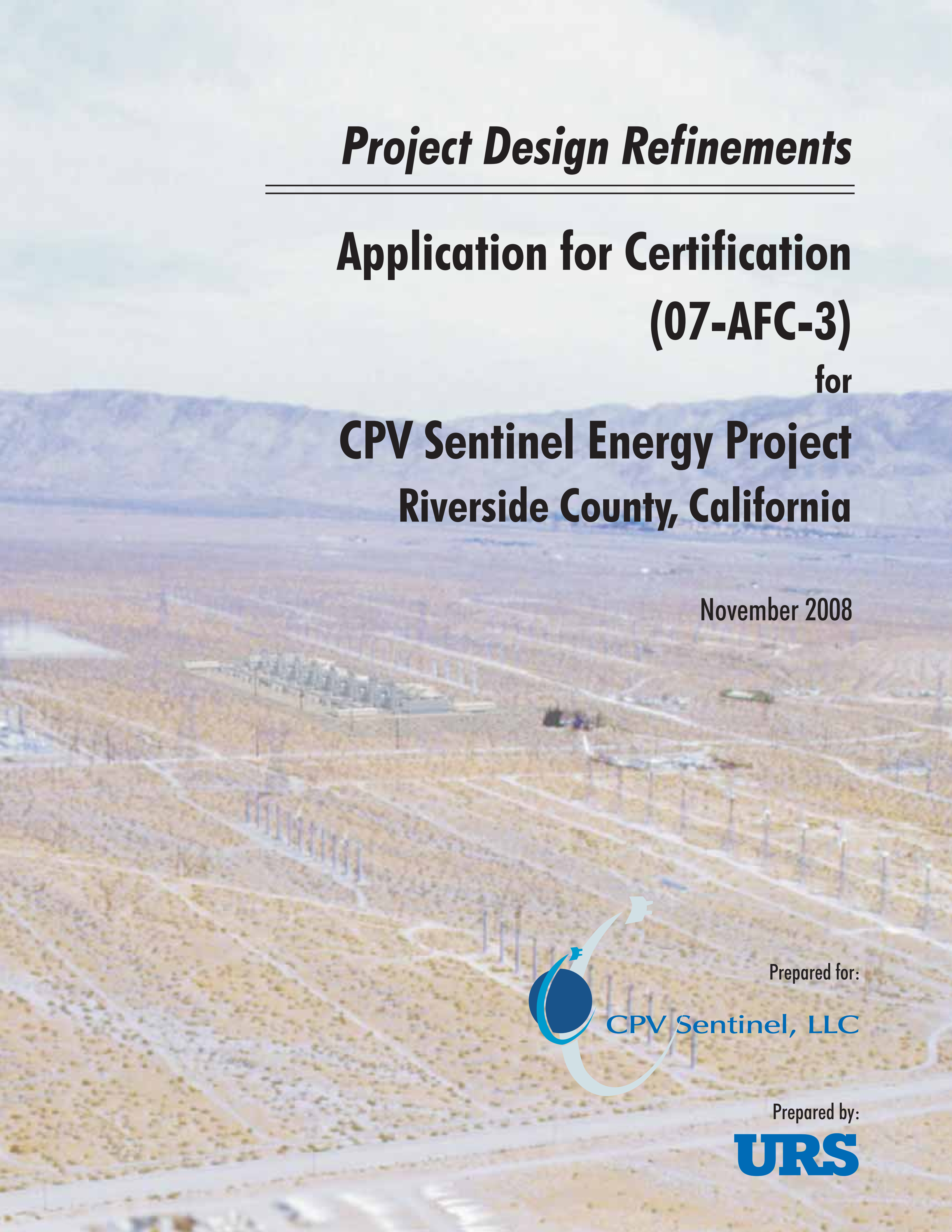
Please note that the enclosed submittal was also filed today via electronic mail to your attention.

Very truly yours,

Paul E. Kihm
Senior Paralegal

Enclosure

cc: CEC 07-AFC-3 Proof of Service List (w/encl. via e-mail)
Michael J. Carroll, Esq. (w/ encl.)



Project Design Refinements

Application for Certification (07-AFC-3)

for

CPV Sentinel Energy Project

Riverside County, California

November 2008

Prepared for:

CPV Sentinel, LLC

Prepared by:

URS

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APPENDIX

TABLE

FIGURES

ACRONYMS

3D	three-dimensional
ACFM	actual cubic feet per minute
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AFC	Application for Certification
BACT	Best Available Control Technologies
BPIP-Prime	EPA Building Profile Input Program – Prime
CAAQS	California ambient air quality standard
CAD	Computer Aided Design
CEC	California Energy Commission
CO	carbon monoxide
CPVS	CPV Sentinel Energy Project
CTG	combustion turbine generators
dBA	A-weighted decibel
DPM	diesel particulate matter
DVD	digital versatile disc
°F	degrees Fahrenheit
ERC	emission reduction credit
g/s	grams per second
GE	General Electric
gr/100 dscf	grain per 100 standard dry cubic feet
GSU	gas service unit
HRA	health risk assessment
KOP	key observation point
kV	kilovolt
lb/day	pounds per day
lb/hr	pounds per hour
lb/MMBtu	pounds per million British thermal units
lb/yr	pounds per year
L_{eq}	equivalent sound level
L_{90}	noise level equaled or exceeded during 90 percent of the measured time interval
m	meters
µg/Liter	micrograms per Liter
$\mu g/m^3$	micrograms per cubic meter
MMBtu/hr	million British thermal units per hour
MW	megawatts
NAAQS	national ambient air quality standard
NO_2	nitrogen dioxide
NO_X	nitrogen oxide
O_2	oxygen
OLM	ozone-limiting method
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppm	parts per million
ppmvd	parts per million by volume, dry
PSA	Preliminary Staff Assessment
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
RH	relative humidity
ROC	reactive organic compounds
SCAQMD	South Coast Air Quality Management District

SCE	Southern California Edison
SCFM	standard cubic feet per minute
SCR	selective catalytic reduction
SO_2	sulfur dioxide
SO_X	sulfur oxides
SR	State Route
TAC	toxic air contaminant
THI	total hazard index
U.S. EPA	U.S. Environmental Protection Agency
VOC	volatile organic compounds

1.0 INTRODUCTION

On June 26, 2007 CPV Sentinel, LLC filed an Application for Certification (AFC) with the California Energy Commission (CEC) seeking approval to construct and operate the CPV Sentinel Energy Project (CPVS or proposed project) (Docket 07-AFC-3). On November 3, 2008 the Committee held an evidentiary hearing on the proposed project covering all topics except air quality. The Committee ordered that the evidentiary record on all topics except air quality shall be closed on December 5, 2008. An evidentiary hearing on air quality will be held at a later time once an acceptable emission offset package has been identified for the proposed project.

Applicant has recently identified a number of project design refinements that it believes will improve the overall performance of the proposed project. They are typical of project design refinements that are identified post-certification. Given that the evidentiary record remains open, Applicant is taking this opportunity to submit these refinements for consideration by CEC staff, and incorporation into the evidentiary record, at this time. This submittal describes the project design refinements and analyzes whether or not they result in any environmental consequences not previously analyzed. As set forth below, the project design refinements do not materially change the environmental consequences of the proposed project and all impacts are expected to remain less than significant.

2.0 PROJECT DESIGN REFINEMENTS

Refinements to the general arrangement presented in the AFC are listed below. These refinements are all within the 37-acre project site and do not result in any additional disturbed areas beyond the site not previously evaluated. Revised Tables 2.4-1 and 2.4-2 show the changes to the major structure heights and dimensions. Revised Figures 2.4-1, 2.4-2, and 2.4-3 show the new plot plan and elevation drawings.

- Renumbering Units 1 through 8 from south to north (rather than north to south, as presented in the AFC);
- The 3-cell and 5-cell cooling towers identified in the AFC at the southern and northern ends of the plant area, respectively, will be replaced with single-cell cooling towers located next to each turbine unit (eight total cooling towers);
- The three fire water pumps and associated enclosure will be relocated;
- A gas metering station, anode bed, and conduit will be added at the southeastern section of the project site;
- The septic system will be relocated further north to accommodate the gas metering station;
- One electric gas compressor will be deleted, and the six remaining gas compressors will be relocated to the eastern side of the plant, within a sound wall enclosure rather than a building;
- One of the two raw water tanks will be deleted and the remaining water tank and fire protection pump skid will be relocated to the southeastern portion of the plant site;
- The operations building previously located on the southern portion of the site will be deleted;

- The warehouse building previously located on the northern portion of the site will be deleted and the warehouse building that was located to the south of the switchyard area will be relocated further east;
- The oily water separator and drain sump will be relocated further west within the project site;
- The internal plant road will be relocated to the eastern side of the project site;
- The switchgear building and auxiliary power transformers will be relocated from between Unit 3 and Unit 4 to between Unit 4 and Unit 5; and
- The treated water storage tanks, water pumping skids, and water treatment trailer parking will be relocated to the southeast end of the plant site north of the raw water storage tank.

Table 2.4-1 (Revised)
Major Equipment List

Quantity	Description	Size/Capacity[1]	Remarks
8	Combustion Turbine	100+ MW	Water Injected for NO_X control
8	Generators	155 MVA	Included with Combustion Turbine
8	Combustion Turbine Inlet Air Cooling	85%+ Effective	Evaporative Cooling~~/Inlet Fog System~~
6	Fuel Gas Compressors	905 ~~950~~ psi discharge	
8	SCR/Oxcat Emissions Control Systems	BACT	
1 ~~2~~	Raw Water Storage Tanks	2,300,000 ~~1,128,000~~ gal	~~One i~~ Includes fire water reserve
2	Treated Water Storage Tanks	864,000 gal	
8 ~~1~~	Cooling Towers	135 ~~675~~ MMBtu/hr	Single ~~Five~~-Cell
~~1~~	~~Cooling Tower~~	~~405 MMBtu/hr~~	~~Three-Cell~~
1	Fire Water Pump Skid	2,000 gpm	Jockey; Motor; and Diesel-Driven Pumps
8 ~~3~~	Cooling Water Pumps	6,900 ~~19,650~~ gpm	
~~3~~	~~Cooling Water (CWP) Pumps~~	~~11,790 gpm~~	
3 ~~5~~	Plant Air Compressors and Dryers	1,500 SCFM	
8	Step-up Transformers	13.8/220 kV	To electrical grid

Notes:

[1] Approximate size/capacity for each piece of equipment. Final sizing and configuration will be determined during detailed design.

BACT = Best Available Control Technologies
gpm – gallons per minute
kV = kilovolt
MMBtu/hr = million British thermal units per hour
MW = megawatts
NO_X = nitrogen oxide
psi = pounds per square inch
SCFM = standard cubic feet per minute
SCR = selective catalytic reduction

Table 2.4-2 (Revised) Significant Structures and Equipment				
		Dimensions		
Quantity	**Description**	**Length (feet)**	**Width (feet)**	**Height (feet)**
8	Combustion Turbine Generators (CTG)	130	90	40 (55 for VBV Duct)
8	CTG Simple Cycle SCR/COcat ~~Oxcat~~/Stack	67	30 (stack 13.5 in diameter)	90
8 ~~1~~	Cooling Towers	42 ~~211~~	42 ~~55~~	40 ~~36~~ ~~(46-foot stacks)~~
~~1~~	~~Cooling Tower~~	~~127~~	~~55~~	~~36~~ ~~(46-foot stacks)~~
1 ~~2~~	~~Cooling Tower Building/~~Warehouse	110 ~~125~~	50 ~~60~~	20-foot eave
1 ~~2~~	Operations Building	130	70	20-foot eave
1 ~~1~~	~~Gas Compression Building~~ Sound Wall Enclosure	~~120~~	~~60~~	~~20-foot eave~~ 14
~~1~~	~~Gas Compression Building~~	~~90~~	~~60~~	~~20-foot eave~~
8	Transformer Vaults with GSU	32	24	24
8	Unit Control Building	40	20	12-foot eave
1 ~~2~~	Raw Water Storage Tank	–	110 ~~80~~ dia.	64 ~~36~~
2	Treated Water Storage Tank	–	70 dia.	36
1	Fire Water Pump Enclosure	30	11	12
1	Switchyard, Buses, and Towers	1,275	100	90-foot poles
1 ~~2~~	Switchyard Building	100 ~~60~~	30 ~~25~~	9 ~~16-~~foot eave

Notes:

[1] Final equipment sizing will be determined during the project detail design phase.

CTG = combustion turbine generators
GSU = gas service unit
SCR = selective catalytic reduction

3.0 ENVIRONMENTAL CONSEQUENCES

This section discusses potential environmental impacts associated with the proposed project description modifications.

3.1 AIR QUALITY

3.1.1 Construction Emissions

Potential environmental impacts from project construction are presented in AFC Table 7.1-22. The modifications to the CPVS will not result in an increase in the area of disturbance or alter the expected number, duration, or location of construction equipment proposed for the construction of the CPVS presented in the AFC. Therefore, the construction emissions calculated and modeled in AFC Section 7.1.2 accurately characterize the potential air quality impacts during construction for the modified project. All construction mitigation measures agreed upon by Applicant and CEC staff remain valid and will be implemented during project construction.

3.1.2 Operational Emissions

The CPVS incorporates the construction and installation of eight (8) GE LMS100 peaking combustion turbines that will exclusively use pipeline-quality natural gas fuel. Minor refinement of the turbine's operating profiles required reassessment of the operational emissions presented in AFC Section 7.1.2. Overall project emissions will decrease from the levels presented in the AFC because of the reduced operating hours for CTGs 6 through 8 and the elimination of the diesel blackstart engine. In addition, the most recent performance data provided by the CTG vendor indicates slight changes in the mass emission rates presented in the AFC. The primary reason for revising the previous air quality impact analysis was to ensure that proposed changes in the locations of project emissions sources and changes to the dimensions and locations of other buildings and structures on the site would not cause stack plume downwash conditions that would lead to higher offsite pollutant concentrations than were presented in the AFC. Revised operational emission estimates and calculations are included as Appendix A. Emissions during turbine commissioning will not change; thus, additional modeling of turbine commissioning scenarios was not performed.

3.1.2.1 Normal Turbine Operating Emissions

The most important emission sources of the CPVS would be the CTG trains. Maximum short-term operational emissions from the CTGs were determined from a comparative evaluation of potential emissions corresponding to turbine commissioning, normal operating conditions, and CTG startup/shutdown conditions. The long-term operational emissions from the CTGs were estimated by summing the emissions contributions from normal operating conditions and CTG startup/shutdown conditions. Estimated annual emissions of air pollutants for the CTGs have been calculated based on the expected operating schedule for the CTGs presented in Table 7.1-12 (Revised). As identified in Section 2.2, the operating hours and annual startup/shutdown cycles for Units 6 through 8 have been changed to match the original operating profile of Units 1 through 5.

Consistent with the AFC, each turbine unit will be equipped with a stack with the following dimensions:

- Height – 90 feet
- Diameter – 13.5 feet

The criteria pollutant emission rates and stack parameters provided by the CTG vendors for three load conditions (50 percent, 75 percent, and 100 percent) at three ambient temperatures (17 °F, 72 °F, and

107 °F) are presented in Table 7.1-13 (Revised). These cases encompass CTG operations with and without evaporative cooling of the inlet air to the turbines. The combined scenarios presented in this table bound the expected normal operating range of each proposed CTG. Note that the mass emission rates (pound-per-hour) corresponding to certain ambient temperature and load conditions in Table 7.1-13 (Revised) are changed from the values used in the AFC, based on the most recent performance data provided by the turbine supplier. However, the magnitudes of these changes are at most a few hundredths of a pound per hour. Another important modification of the CPVS is a reduction in the requested maximum annual hours of operation for CTG Units 6 through 8 from 3,200 hours plus 350 startups and shutdowns to 2,628 hours plus 300 startups and shutdowns. This change reduces annual emissions of all pollutants but does not affect the impact analyses for shorter averaging times.

3.1.2.2 Turbine Startup and Shutdown Emissions

The expected emissions and durations associated with CTG startup and shutdown events are summarized in Table 7.1-14 (Revised). Because hours that include startup and shutdown events would have higher nitrogen oxide (NO_X), carbon monoxide (CO), and reactive organic compounds (ROC) emissions than the normal operating condition with fully functioning selective catalytic reduction (SCR) and CO oxidation catalyst, they were incorporated (as applicable) into the worst-case short- and long-term emissions estimates in the air quality dispersion modeling simulations for these pollutants. However, continuous, full-load normal operations generally lead to the highest average rates of emission for sulfur oxides (SO_X), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), as these pollutants are emitted in proportion to the fuel combustion rate and are not affected by the operating status of post-combustion controls.

3.1.2.3 Modified Emission Sources

The diesel blackstart generator engine described in the AFC has been removed. However, the amended project will still include an emergency fire pump engine powered by diesel fuel (relocated as identified in Section 2.2). The fire pump engine will be rated at approximately 240 horsepower and will be tested 1 hour per week. Annual emissions and stack parameters for the testing of the engine are provided in Table 7.1-15 (Revised). Emission rates shown in Table 7.1-15 (Revised) are based on vendor-supplied emission factors. Fuel for this engine will be ultra-low sulfur diesel containing a maximum of 15 parts per million sulfur by weight. The proposed project will also include eight single-cell mechanical draft evaporative cooling towers (i.e., one for each CTG). These smaller single-cell cooling towers replace the 5-cell and 3-cell towers that were originally located at the northern and southern ends of the project site, respectively. The locations of the new cooling towers adjacent to the associated CTGs are shown in revised Figure 2.4-1. Detailed emissions calculations for all operational equipment for the CPVS are presented in Appendix A.

3.1.2.4 Emissions Scenarios for Modeling

Reasonable worst-case project emissions scenarios were developed for each combination of pollutant and averaging time for which modeling is required. These scenarios were expressly selected to ensure that the proposed project's maximum potential impacts on air quality would be evaluated versus applicable ambient air quality standards. Table 7.1-16 (Revised) presents the worst-case modeling scenarios selected for each averaging time. These scenarios form the basis for the air dispersion modeling analyses presented in Section 3.1.3. A discussion of the scenario selections and the resulting emission calculations are provided below.

Estimated annual emission totals for all pollutants incorporate the maximum requested numbers of startups and shutdowns, as well as the proposed maximum steady-state operating hours. For purposes of developing the annual emission estimates, the contributions associated with all normal operating hours were calculated based on assumed 100 percent turbine load and ambient temperature of 72ºF for the specified number of hours per year.

Short-term emissions were calculated for the pollutants and averaging times corresponding to the ambient air quality standards. The worst-case condition was assumed for purposes of estimating maximum 1-hour emission rates for all pollutants. A startup of all turbines with normal operations for the remaining time would produce the worst-case hourly NO_X and CO emissions. However, sulfur dioxide (SO_2) emissions would be directly proportional to fuel usage. Since the highest maximum fuel usage rate would occur when all turbines are running at 100 percent capacity, this condition was selected to represent maximum hourly SO_2 emissions at the assumed ambient temperature of 72 °F. The 3-hour SO_2 emission rate was calculated based on a scenario with all turbines running at full capacity for the ambient temperature of 72 °F. The 8-hour maximum CO emission rate was calculated assuming all turbines had one startup, one shutdown, and the balance of time operating at the worst-case operating condition (100 percent load with the ambient temperature of 72 °F). In each of these worst-case scenarios, it was assumed the fire water pump engine would be tested for 1 hour of the period under consideration and that the cooling towers would operate concurrently with the peak turbine emissions.

The maximum 24-hour emission rate for NOX and the maximum PM10 rate for the same averaging period were calculated assuming all turbines undergo two startups and two shutdowns, with the balance of the day spent operating at 100 percent load for an ambient temperature of 107 °F for PM10 and 72 °F for NOX. This assumption results in conservative 24-hour emissions estimates, in that no credit is taken for down time after the first shutdown. The SO2 worst-case 24-hour emission rate was calculated assuming all turbines are running at 100 percent for 24 hours with the emission rate for an ambient temperature of 72 °F.

In addition to emission scenarios that included startups and possibly shutdowns, modeling was also performed for normal operating emission rates without startups or shutdowns. Also, the 1-hour CO and NO_X startup modeling incorporated absolute worst-case stack parameters. These parameters included the lowest exhaust temperature and the lowest exhaust flow rate among all operating load cases in Table 7.1-13 (Revised). In particular, the lowest exhaust flow rate is associated with the 50 percent load at 107 °F (Case 100) but the lowest exhaust temperature corresponds to the 100 percent load at 107 °F (Case 100). The use of these absolute worst-case stack parameters will reasonably ensure that the highest offsite pollutant concentrations associated with CTG operations are identified and analyzed.

Estimated annual emissions from the firewater pump are based on 52 hours of operation per year at the maximum fuel input rates. Cooling tower emissions are assumed to occur for all hours of CTG operation throughout the year.

Note that the previous modeling analysis to evaluate short-term turbine commissioning impacts remains valid for the amended project and has not been redone. Although the Applicant has requested that the overall duration of commissioning tests for each turbine be increased from 104 hours to 150 hours, the modeling analysis to evaluate peak 1--hour nitrogen dioxide (NO_2) and CO impacts and 8-hour CO impacts during the commissioning period remains unchanged for this proposed amendment.

3.1.3 Air Quality Impacts Analysis

The purpose of the air quality impact analyses is to evaluate whether criteria pollutant emissions resulting from the CPVS would cause or contribute significantly to a violation of a California ambient air quality standard (CAAQS) or national ambient air quality standard (NAAQS). Mathematical models designed to simulate the atmospheric transport and dispersion of airborne pollutants were used to quantify the maximum expected impacts of project emissions for comparison with applicable regulatory criteria. Potential impacts of toxic air contaminant (TAC) emissions from the proposed project are evaluated in Section 3.6, Public Health, below.

The air quality modeling methodology described in this section followed the procedures outlined in a formal modeling protocol, which was submitted for comments to the CEC and the South Coast Air Quality Management District (SCAQMD) as part of the AFC. The modeling approaches used to assess various aspects of the proposed project's potential impacts to air quality are discussed below.

3.1.3.1 Model and Model Option Selections

Similar to the air quality analyses reported for the AFC, the potential impacts of the amended project on ambient criteria pollutant levels were evaluated using the American Meteorological Society/ Environmental Protection Agency Regulatory Model (AERMOD) (version 07026). AERMOD is appropriate in this instance because it has the ability to assess dispersion of emission plumes from multiple point, area, or volume sources in flat, simple, and complex terrain and to use sequential hourly meteorological input data. The regulatory default options were used, including building and stack tip downwash, default wind speed profiles, exclusion of deposition and gravitational settling, consideration of buoyant plume rise, and complex terrain.

The ozone-limiting method (OLM) option of the AERMOD model was used to take into account the role of ambient ozone in limiting the conversion of emitted NO_X (which occurs mostly in the form of NO) to NO_2, the pollutant regulated by ambient standards. The input data to the AERMOD-OLM model includes representative hourly ozone monitoring data for the same years corresponding to the meteorological input record. These simulations used the ozone data from the SCAQMD Palm Springs-Fire Station monitoring site for the years 1988, 1989, 1990, and 1991. As described in AFC Section 7.1, the rural option of the model was selected and this information was used to develop appropriate land use parameter values for use in processing the meteorological input data (see AFC Table 7.1-20).

3.1.3.2 Building Wake Effects

The effects of building wakes (i.e., downwash) on the plumes from the proposed project's CTGs were evaluated in the modeling for operational emissions, in accordance with U.S. Environmental Protection Agency (U.S. EPA) guidance (U.S. EPA, 1985). Data on the buildings within the project site that could potentially cause stack plume downwash effects were determined for different wind directions using the U.S. EPA Building Profile Input Program – Prime (BPIP-Prime) (Version 98086) (U.S. EPA, 1995). For the amended project, 36 structures and three tanks were identified within the CPVS site to be included in the downwash analysis:

- Cooling towers 1 through 8;
- CTG 1 through CTG 8;
- SCR 1 through SCR 8;
- Treated water tank 1;
- Treated water tank 2;
- Twelve buildings; and
- Raw water tank.

The results of the BPIP-Prime analysis were included in the AERMOD input files to enable simulation of downwash effects for the plumes from project emission sources. Input and output electronic files for the BPIP-Prime analysis are included with those from all other new dispersion modeling analyses on the digital versatile disc (DVD) that is being submitted under separate cover.

3.1.3.3 Meteorological Data

The meteorological input data sets used in the current modeling to evaluate impacts associated with the modifications to the CPVS are identical to those used for the AFC air quality analysis. These included records of surface measurements in the adjacent Wintec wind energy facility, supplemented by National

Weather Service surface and upper air data as required to construct the input information required for application of the AERMOD dispersion model. Detailed information on the origins and representativeness of these data to reflect conditions affecting transport and dispersion of air pollutants emitted by the CPVS is provided in AFC Section 7.1 and the associated appendices.

3.1.3.4 Receptor Locations

The receptor grids used in the AERMOD modeling analyses for operational sources were the same as those presented in AFC Section 7.1. As described in the AFC discussion of the modeling analysis for operational emissions, when the maximum predicted concentration for a particular pollutant and averaging time was located within the portion of the receptor grid with spacing greater than 25 meters, a supplemental dense receptor grid with 25-meter spacing was placed around the original maximum concentration point and the model was rerun.

3.1.3.5 Construction Impacts Modeling

As mentioned above, no additional construction modeling was performed for this AFC amendment. The construction modeling performed as part of the AFC remains valid and sufficient to address the construction impacts of the modification to the CPVS, because land area disturbed by project construction will not change and the size of the equipment fleet or the manner of its usage at the project site will not change.

3.1.3.6 Turbine Impact Screening Modeling

A screening modeling analysis was performed to determine which CTG operating mode and stack parameters would produce worst-case offsite impacts (i.e., maximum ground-level concentrations for each pollutant and averaging time). Only the emissions from the CTGs were considered in this preliminary modeling step. Note that the configuration and locations of the proposed turbines are unchanged and the operational emissions have changed by a small percentage in the most recent vendor performance data. Thus, the previous turbine screening modeling was repeated only to incorporate changes in the locations of other project structures (see Section 3.1.3.2), which could potentially alter the effects of these structures on downwash of CTG emission plumes. The screening modeling analysis used the AERMOD dispersion model with the same receptor array and meteorological input data described in previous sections.

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

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

The principal purpose of the turbine screening modeling analysis is to select stack parameters for use in subsequent refined modeling of CTG emissions. Specifically, the stack parameters associated with the maximum predicted impacts for each pollutant and averaging time were used in all simulations of the refined AERMOD analyses, which are described in the next subsection. Note that the lower exhaust temperatures and flow rates at reduced turbine loads correspond to reduced plume rise, in some cases resulting in higher offsite pollutant concentrations at ground level than the higher baseload emissions (e.g., this is the case with 24-hour and annual PM_{10} impacts, for which peak ground-level concentrations are predicted with the stack parameters corresponding to 50 percent load). Model input and output files for the screening modeling analysis, and those from all other modeling tasks, can be found on the Air Quality and Public Health Modeling DVDs that are included under separate cover.

3.1.3.7 Refined Modeling

The refined modeling analysis performed for the AFC to estimate offsite criteria pollutant impacts from operational emissions of the CPVS has been repeated for this AFC amendment. The primary reasons for remodeling the operational impacts are:

- As previously presented in the Declaration of John Lague, reduction of the maximum requested annual operating hours for CTGs 6 through 8 from 3,200 to 2,628 hours (that is, the same as requested for CTGs 1 through 5);
- As previously presented in the Declaration of John Lague, reduction in the maximum annual startups and shutdowns for CTGs 6 through 8 from 350 to 300 per year (that is, the same as requested in the AFC for CTGs 1 through 5);
- As previously presented in the Declaration of John Lague, elimination of the diesel blackstart engine;
- Relocation of the firewater pump engine;
- Replacement of the previous 5-cell and 3-cell cooling towers at the north and south ends of the site, respectively, with single-cell cooling towers located adjacent to each of the eight CTGs; and
- Modifications to the dimensions and locations of facility structures and tanks that may change the potential for aerodynamic downwash for individual sources (see revised Tables 2.4-1 and 2.4-2 in Section 2.0).

As described above, the most recent turbine performance data provided by GE indicates mass emission rates that are slightly changed from the levels presented in the AFC. These changes alone, which are on the order of hundredths of pounds per hour per turbine, were not large enough to justify remodeling. They have, however, been incorporated in the new modeling with the modifications listed above to ensure all of the most recent data are used.

The modeling was performed as described in the previous sections, using 4 years of hourly meteorological input data (1988 through 1991). Impacts for each pollutant due to the eight CTGs were modeled assuming the worst-case emissions corresponding to each averaging time and the turbine stack parameters that were determined in the turbine screening analysis (see previous subsection), as well as the maximum contributions from other operational equipment of the CPVS. The maximum mass emission rates that would occur over each averaging time, whether due to turbine startups, normal operations, turbine shutdowns, or a plausible combination of these activities, were used in all refined modeling analyses. Emission rate calculations and assumptions used for all pollutants and averaging times are documented in Appendix A.

3.1.4 Modeling Results – Compliance with Ambient Air Quality Standards

Air dispersion modeling was performed according to the methodology described in Section 3.1.3 to evaluate the maximum increase in ground-level pollutant concentrations resulting from CPVS emissions, and to compare the maximum predicted impacts, including background pollutant levels, with applicable short-term and long-term CAAQS and NAAQS.

In evaluating operational impacts, the AERMOD model was used to predict the increases in criteria pollutant concentrations at all receptor concentrations due to CPVS emissions only. Next, the maximum modeled incremental increases for each pollutant and averaging time were added to the maximum background concentrations, based on air quality data collected at the most representative monitoring stations during the last 3 years (i.e., 2004 through 2006). These background concentrations are presented and discussed in AFC Section 7.1. The resulting total pollutant concentrations were then compared with the most stringent CAAQS or NAAQS.

Note that turbine commissioning impacts, which would occur on a temporary, one-time basis and would not be representative of normal operations, have not been modeled as part of this amendment, because the higher short-term NO_X and CO emissions that may occur for some portions of this phase are not expected to change from the scenarios that were described in the AFC. For this reason, additional modeling has been conducted for normal, post-commissioning operations of the CPVS.

3.1.4.1 Normal Operational Impacts

As described above, the emissions and stack parameters used in the AERMOD simulations for the operation of the CPVS were selected to ensure that the maximum potential impacts would be addressed for each pollutant and averaging time corresponding to an ambient air quality standard. This subsection describes the maximum predicted operational impacts of the CPVS for normal combined cycle operating conditions.

Table 7.1-23 (Revised) summarizes the maximum predicted criteria pollutant concentrations due to all emission sources of the operational CPVS. These results show that the maximum modeled impacts due to the project emissions, in combination with conservative background concentrations, would not cause a violation of any NAAQS or CAAQS and would not significantly contribute to the existing violations of the federal and state PM_{10} standards. In addition, as described later, all of the proposed project's operational emissions of non-attainment pollutants and their precursors will be offset to ensure a net air quality benefit.

SCAQMD regulations require that information be provided on the modeled impacts of individual project sources. These results are provided in new Tables 3.1a, b, and c. Individual sources of non-attainment pollutants must not cause incremental pollutant concentrations above specified limits. For 24-hour and annual PM_{10}, the permissible impact levels are 2.5 micrograms per cubic meter ($\mu g/m^3$) and 1 $\mu g/m^3$, respectively. For attainment pollutants (NO_2, CO, SO_2), it is only necessary to show that facility impacts plus background will not cause an exceedance of an applicable ambient standards.

Modeling results in new Table 3.1c indicate that the highest 24-hour offsite concentration of PM_{10} due to any of the eight CTGs range from a low of 1.382 $\mu g/m^3$ (Unit 6) to a high of 1.656 $\mu g/m^3$ (Unit 1). These values are all below the SCAQMD 24-hour PM_{10} limit of 2.5 $\mu g/m^3$. The maximum annual PM_{10} value for any of the eight CTGs is also below the SCAQMD annual PM_{10} limit of 1 $\mu g/m^3$.

The locations of predicted maximum impacts would vary by pollutant and averaging time, but in all cases would be within 700 meters from the CPVS property line. The peak annual NO_2 impact and the annual maxima for SO_2 are predicted to occur approximately 700 meters east of the CPVS, roughly even with CTG 7 in a north-south sense. The peak annual PM_{10} impact is predicted to occur approximately 575 meters east of the eastern CPVS property line, also even with CTG 7. Short-term (1-hour) maxima for NO_2 and SO_2 are predicted to occur at the eastern property line of the CPVS even with CTG 6. Short-term (3-hour and 24-hour) maxima for SO_2 are predicted at the property line along the southeastern plant property boundary. The short-term (1-hour) maximum concentration for CO is predicted at the northwest corner of the facility property line. Maximum 24-hour PM_{10} and 8-hour CO impacts are predicted to occur approximately 450 meters south of the CPVS in line with the CTGs. Revised Figure 7.1-5 shows the locations of the maximum predicted operational impacts for all pollutants and averaging times.

3.1.4.2 Other Impacts

AFC Section 7.1 presented additional modeling to evaluate impacts of CPVS emissions due to plume fumigation conditions. That analysis has not been repeated because maximum short-term emissions for the sources of the amended project are expected to be no higher than the levels presented in the AFC. The same is true of the analysis conducted to determine potential impacts of CPVS emission plumes on visibility in the nearest Class I areas. Specifically, maximum 24-hour turbine emissions of NO_X, SO_X and PM_{10} are virtually unchanged from the values assumed in the AFC PLUVUE II plume modeling analysis, and the second largest project source of combustion pollutant emissions, the diesel blackstart engine, has been eliminated. For this reason, the PLUVUE II results provided in the AFC accurately characterize potential plume visibility impacts in the nearest Class I areas. As annual project emissions will be less than 250 tons per year for all pollutants, the CPVS is not subject to the additional visibility modeling requirements under the federal Prevention of Significant Deterioration regulations.

3.1.4.3 Impacts for Nonattainment Pollutants and their Precursors

The emission offset program described in the SCAQMD Rules and Regulations was developed to facilitate net air quality improvement when new sources locate within the SCAQMD. Maximum potential project impacts of non-attainment pollutants (PM_{10} and ozone) and their precursors (NO_X, SO_2, and ROC) will be fully mitigated by emission offsets. The emission reductions associated with these offsets have not been accounted for in the modeled impacts noted above. Thus, the impacts indicated in the foregoing presentation of model results for the proposed project are considered to be significantly overestimated.

Table 7.1-28 (Revised) provides the basis for estimating project emissions offset requirements. For NO_X only, offsets will be obtained in the form of NO_X RECLAIM credits that will be purchased on a 1-to-1 basis based on annual emissions. For SO_X, ROG, and PM_{10}, the basis for offset requirements will be the average daily emissions of the month with highest expected emissions. The Applicant anticipates that the power generation requirements under the Power Purchase Agreement with SCE will require sufficient credits to cover 15 hours of normal operation per day plus two startups and shutdowns per for all eight turbines in a day, in addition to a 1-hour firewater pump engine test. Emission reduction credits for these pollutants will be calculated as 1.2 times the daily emissions of each pollutant. Table 7.1-29 (Revised) shows the resulting emissions offset requirements for the entire project. The Applicant will obtain sufficient RECLAIM Trading Credits to offset project emission of NO_X and sufficient emission reduction credits or other mitigation approved by the CEC and SCAQMD to offset project emissions of volatile organic compounds, SO_X, and $PM_{10.}$

3.1.5 Conclusion

Even though project emissions of air pollutants will be generally decreased by the proposed modifications, reanalysis of the project's impacts to air quality was conducted to ensure that the modified relationships between CPVS emission sources would not inadvertently result in increased pollutant concentrations compared with those presented in the AFC. The results of the revised analysis demonstrate that air quality impacts associated with CPVS construction and operation will remain less than significant.

Table 7.1-12 (Revised)
Maximum Proposed CTG Operating Schedules

Operating Conditions (CTGs 1 through 8)	Annual Numbers
Number of Startups/Shutdown Cycles per CTG	300
Total Startup and Shutdown Time per CTG (hours)	175
Normal Operating Hours per CTG	2,628
Total Operating Hours per CTG	2,803

Note:

CTG = combustion turbine generators

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

Case No.	**100**	**101**	**102**	**103**	**104**	**105**	**106**	**107**	**108**	**109**	**110**
Ambient Temperature (°F)	17	17	17	72	72	72	72	107	107	107	107
Stack Diameter (feet)	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
Exhaust Flow (lb/hr)	1,704,762	1,438,475	1,138,319	1,641,406	1,605,189	1,376,241	1,092,909	1,561,119	1,484,727	1,278,007	1,020,221
CTG Load Level (percent)	**100**	**75**	**50**	**100**	**100**	**75**	**50**	**100**	**100**	**75**	**50**
Evaporative Cooler	NONE	NONE	NONE	YES	NONE	NONE	NONE	YES	NONE	NONE	NONE
Exhaust Temperature (°F)	742.6	743.7	761.6	785.1	791.0	770.2	785.6	798.9	812.6	790.8	804.9
Exit Velocity, feet/minute	6,026.5	5,089.8	4,087.7	6,007.6	5,902.9	4,976.8	4,001.7	5,777.1	5,554.2	4,699.0	3,793.5
NO_X Emissions per Turbine Unit											
ppmvd at 15% O_2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
lb/hr	7.91	6.25	4.59	7.95	7.78	6.09	4.48	7.55	7.18	5.65	4.17
CO Emissions per Turbine Unit											
ppmvd at 15% O_2	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
lb/hr	11.56	9.13	6.70	11.62	11.36	8.91	6.55	11.03	10.49	8.25	6.10
VOC Emissions per Turbine Unit											
ppmvd at 15% O_2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
lb/hr as methane	2.21	1.74	1.28	2.22	2.17	1.70	1.25	2.11	2.00	1.58	1.16
PM_{10} Emissions per Turbine Unit											
lb/hr	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
SO_X Emissions per Turbine Unit											
lb/hr	0.623	0.492	0.361	0.626	0.612	0.480	0.353	0.594	0.565	0.444	0.328

Notes:
A natural gas fuel sulfur content of 0.25 grains per 100 dry standard cubic feet was used to estimate CTG emissions of SO_2.

CO = carbon monoxide
CTG = combustion turbine generator
°F = degrees Fahrenheit
lb/hr = pounds per hour
NO_X = nitrogen oxide
O_2 = oxygen
PM_{10} = particulate matter 10 microns in diameter
ppmvd = parts per million by volume, dry
SO_X = sulfur oxides
VOC = volatile organic compounds

Table 7.1-14 (Revised) Criteria Pollutant Emission Rates During CTG Startup and Shutdown (per turbine)				
	Startup (25 minutes duration)		**Shutdown (10.5 minutes duration)**	
Pollutant	**Maximum Instantaneous Emission Rate (lb/hr)**	**Total Emissions (lb/event)**	**Maximum Instantaneous Emissions Rate (lb/hr)**	**Total Emissions (lb/event)**
NO_X	59.65	24.86	34.95	6.00
CO	40.55	16.89	203.88	35.00
VOC	10.21	4.26	17.48	3.00
SO_2	0.42	0.17	0.12	0.02
PM_{10}	6.00	2.50	6.00	1.03

Notes:
CO = carbon monoxide
CTG = combustion turbine generators
lb/hr = pounds per hour
NO_X = nitrogen oxide
PM_{10} = particulate matter 10 microns in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Table 7.1-15 (Revised) Emergency Fire Pump Engine Emissions		
Pollutant	**lb/hr**	**lb/yr**
NO_X	2.06	107.30
CO	0.31	16.23
VOC	0.53	27.51
SO_X	0.49	25.58
PM_{10}	0.07	3.85
Source Parameters	Annual emissions based on 52 hours of operation Stack height: 15 feet Stack Diameter: 0.375 feet Stack exhaust flow rate at full firing: 1,227 ACFM Stack exhaust temperature at full firing: 891 ºF	

Notes:
CO = carbon monoxide
CTG = combustion turbine generators
lb/hr = pounds per hour
lb/yr = pounds per year
NO_X = nitrogen oxide
PM_{10} = particulate matter 10 microns in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

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

Averaging Time	Operating Equipment	Pollutant	Emissions in pounds – Entire Period		
			Eight CTGs	Fire Water Pump	Cooling Tower (8 cells)
1-hour	**NO_X:** One startup (all turbines) with remainder at normal operations (100% load, 72ºF); **CO:** One shutdown (all turbines) with remainder at normal operations (100% load, 72ºF); **SO_2:** Full-load turbine operation at 72ºF ambient temperature. **All:** includes test of fire pump.	NO_X	235.9	2.06	-
		CO	357.0	0.31	-
		SO_2*	5.0/ 19.9	0.49	-
3-hour	**SO_2:** Continuous full-load (all turbines) at 72ºF ambient temperature, plus test of fire pump.	SO_2*	14.95/ 59.8	0.49	-
8-hour	**CO:** One startup, one shutdown (all turbines) with remainder at normal operations (100% load, 72ºF), plus test of fire pump.	CO	1,104.0	0.31	-
24-hour	**NO_X:** Two startups, two shutdowns (all turbines) with remainder at normal operations (100% load, 72ºF). **SO_2** Continuous full-load (all turbines) at 72ºF ambient temperature. **PM_{10}**: Two startups, two shutdowns (all turbines) with remainder at normal operations (50% load, 107ºF). **All:** includes test of fire pump.	NO_X	1,945.0	2.06	-
		SO_2*	119.5/ 478.1	0.49	-
		PM_{10}	1,152.0	0.07	12.5

Notes: Based on a CEC data request, on the original AFC, emissions of SO_X for averaging times of 1 to 24 hours were modeled with emissions corresponding to both the expected maximum natural gas sulfur content of 0.25 grain per 100 standard dry cubic feet (gr/100 dscf) and for the hypothetical maximum sulfur content allowed under the Southern California Gas Company tariff of 1.0 gr/100 dscf.

CO = carbon monoxide
CTG = combustion turbine generators
°F = degrees Fahrenheit
NO_X = nitrogen oxide
PM_{10} = particulate matter 10 microns in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Table 7.1-20 (Revised) AERMET Land Use Characteristics				
Land Use Characteristic	**Spring**	**Summer**	**Autumn**	**Winter**
Albedo	0.3	0.28	0.28	0.28
Bowen Ratio	3.0	4.0	6.0	6.0
Surface Roughness (m)	0.3	0.3	0.3	0.3

Table 7.1-21 (Revised)
Turbine Screening Modeling Results

Stack Parameters Normal and Operational Emissions per Turbine											
Case	**Case 100**	**Case 101**	**Case 102**	**Case 103**	**Case 104**	**Case 105**	**Case 106**	**Case 107**	**Case 108**	**Case 109**	**Case 110**
Ambient Temperature	**17 °F – 80% RH**			**72 °F – 40% RH**				**107 °F – 18% RH**			
CTG Load Level	**100%**	**75%**	**50%**	**100%**	**100%**	**75%**	**50%**	**100%**	**100%**	**75%**	**50%**
Evaporative Cooler Status	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
Stack Outlet Temperature (°F)	742.6	743.7	761.6	785.1	791.0	770.2	785.6	798.9	812.6	790.8	804.9
Stack Exit Velocity (ft/second)	100.44	84.83	68.13	100.13	98.38	82.95	66.70	96.29	92.57	78.32	63.23
Stack Outlet Temperature (°K)	667.9	668.5	678.5	691.5	694.8	683.3	691.8	699.2	706.8	694.7	702.5
Stack Exit Velocity (m/s)	30.61	25.9	20.8	30.52	29.99	25.3	20.3	29.35	28.22	23.9	19.3
Emission Per Turbine											
NO_X (lb/hr)	7.91	6.25	4.59	7.95	7.78	6.09	4.48	7.55	7.18	5.65	4.17
CO (lb/hr)	11.56	9.13	6.70	11.62	11.36	8.91	6.55	11.03	10.49	8.25	6.10
SO_2 (lb/hr)	0.623	0.492	0.361	0.626	0.612	0.480	0.353	0.594	0.565	0.444	0.328
PM_{10} (lb/hr)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
NO_X (g/s)	1.0	0.79	0.58	1.00	0.98	0.77	0.56	0.95	0.90	0.71	0.53
CO (g/s)	1.46	1.15	.084	1.46	1.43	1.12	0.83	1.39	1.32	1.04	0.77
SO_2 (g/s)	0.08	0.06	0.04	0.08	0.08	0.06	0.04	0.07	0.07	0.06	0.04
PM_{10} (g/s)	0.756	0.756	0.756	0.756	0.756	0.756	0.756	0.756	0.756	0.756	0.756
Screening Model Results – Maximum X/Q concentrations (μg/m³/(g/s)) predicted from AERMOD											
1 hour	22.1	24.47	27.68	21.79	21.98	24.56	27.75	22.22	22.65	25.23	28.93
3 hour	14.21	18.51	25.03	13.57	13.91	18.62	25.44	14.33	15.11	19.75	27.18
8 hour	10.91	13.06	18.31	10.70	10.85	13.13	18.61	11.03	11.37	14.07	20.19
24 hour	8.05	10.12	13.35	7.79	7.95	10.20	13.48	8.14	8.50	10.82	14.29
Annual	1.10	1.29	1.60	1.07	1.09	1.30	1.62	1.11	1.14	1.36	1.70

Table 7.1-21 (Revised)
Turbine Screening Modeling Results

Stack Parameters Normal and Operational Emissions per Turbine												
Case		**Case 100**	**Case 101**	**Case 102**	**Case 103**	**Case 104**	**Case 105**	**Case 106**	**Case 107**	**Case 108**	**Case 109**	**Case 110**
Maximum predicted offsite pollutant concentrations due to eight turbine emissions for each averaging time												
NO_X	**1 hour**	**22.069**	19.272	16.007	21.389	21.577	18.878	15.700	21.190	20.521	17.993	15.235
	annual	**1.096**	1.017	0.928	1.053	1.069	1.000	0.917	1.057	1.035	0.972	0.896
CO	**1 hour**	**32.238**	28.184	23.366	31.246	31.521	27.605	22.903	30.931	29.997	26.258	22.233
	8 hour	**15.916**	15.036	15.458	15.345	15.550	14.760	15.356	15.351	15.056	14.643	15.517
SO_2	**1 hour**	**1.726**	1.511	1.255	1.672	1.687	1.485	1.224	1.657	1.604	1.399	1.203
	3 hour	1.110	**1.143**	1.135	1.041	1.068	1.126	1.122	1.069	1.070	1.095	1.130
	24 hour	**0.629**	0.625	0.605	0.598	0.610	0.617	0.594	0.607	0.602	0.600	0.594
	Annual	**0.086**	0.080	0.073	0.082	0.084	0.079	0.071	0.083	0.081	0.076	0.071
PM_{10}	**24 hour**	6.085	7.653	10.089	5.891	6.008	7.709	10.191	6.152	6.425	8.176	**10.806**
	Annual	0.829	0.977	1.213	0.811	0.823	0.984	1.225	0.838	0.864	1.030	**1.286**

Notes:

Bold = highest concentration for that pollutant and averaging time.

All particulate matter emissions from CTGs are assumed to be both PM_{10} and $PM_{2.5}$.

% = percent
CO = carbon monoxide
CTG = combustion turbine generators
g/s = grams per second
$\mu g/m^3$ = micrograms per cubic meter
NO_X = nitrogen oxide(s)
ºF = degrees Fahrenheit
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 10 microns in diameter
RH = relative humidity
SO_2 = sulfur dioxide

Table 7.1-23 (Revised)
AERMOD Refined Modeling Results for the Operational Project (All Sources)

Pollutant	Averaging Period	Maximum Predicted Impact (μg/m³)	PSD Class II Significance Level (μg/m³)	SCAQMD Significant Change (μg/m³)	Background Concentration (μg/m³)[1]	Total Concentration (μg/m³)	NAAQS (μg/m³)	CAAQS (μg/m³)	Maximum UTMX NAD27 (m)	Maximum UTMY NAD27 (m)
NO_2	1-hour Normal[2]	139.6	NA	20	174.8	314.4	NA	339	539,712	3,754,952
	1-hour Startup[2]	139.7	NA	20	174.8	314.5	NA	339	539,712	3,754,952
	Annual[2]	0.47	1	1	24.5	25.0	100	57	540,500	3,754,900
SO_2	1-hour	33.2	NA	NA	62.9	96.1	NA	655	539,712	3,754,952
	3-hour	23.5	25	NA	41.6	65.1	1300	NA	539,732	3,754,750
	24-hour	11.0	5	NA	39.4	50.4	365	105	539,732	3,754,750
	Annual	0.03	1	NA	10.7	10.7	80	NA	540,500	3,754,900
CO	1-hour Normal	32.0	2,000	1,100	2,645	2,677	40,000	23,000	539,490	3,754,314
	1-hour Startup	163.5	2,000	1,100	2,645	2,809	40,000	23,000	539,490	3,754,314
	8-hour Normal	15.7	500	500	944.4	960.1	10,000	10,000	539,625	3,754,250
PM_{10}	24-hour[3,4]	10.6	5	2.5	161	171.6	150	50	539,625	3,754,250
	Annual[3,4]	0.39	1	1	54.9	55.3	NA	20	540,375	3,754,900
$PM_{2.5}$	24-hour	10.6	NA	NA	44.3	54.9	35	NA	539,625	3,754,250
	Annual	0.39	NA	NA	10.8	11.2	15	12	540,375	3,754,900

Notes:

1 Background represents the maximum values measured at the monitoring stations identified in original AFC document.
2 Results for NO_2 during operations used ozone limiting method with ambient ozone data collected at the Palm Spring Fire Station monitoring station for the years 1988 through 1991.
3 PM_{10} background levels exceed ambient standards.
4 All PM_{10} emissions from project sources were also considered to be $PM_{2.5}$.

CO = carbon monoxide
CAAQS = California Ambient Air Quality Standards
m = meters
μg/m³ = micrograms per cubic meter
NAAQS = National Ambient Air Quality Standards
NO_2 = nitrogen dioxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 10 microns in diameter
PSD = Prevention of Significant Deterioration
SO_2 = sulfur dioxide

Table 3.1a (New Table) CO and NO_2 Modeling Results for Individual Project Emission Sources for Maximum Normal Operations Emission Rates (All values in micrograms per cubic meter – µg/m³)				
Pollutant	**CO**		**NO_2**	
Averaging Time	**1-Hour**	**8-Hour**	**1-Hour**	**Annual**
Unit 1	6.72	4.46	4.67	0.075
Unit 2	6.69	4.32	4.64	0.071
Unit 3	6.69	4.34	4.64	0.076
Unit 4	6.68	3.89	4.64	0.076
Unit 5	6.34	3.97	4.40	0.076
Unit 6	6.33	3.59	4.39	0.073
Unit 7	6.37	3.94	4.42	0.070
Unit 8	6.47	3.14	4.49	0.067
Fire Pump	21.01	10.19	139.63	0.05
All Eight Turbines Only	31.90	15.66	22.19	0.465
All Project Sources	**32.03**	**15.67**	**139.64**	**0.467**
Notes: CO = carbon monoxide µg/m³ = micrograms per cubic meter NO_2 – nitrogen dioxide				

Table 3.1b (New Table) CO and NO_2 Modeling Results for Individual Project Emission Sources for Worst-Case Startup Emission Rates (All values in micrograms per cubic meter – µg/m³)			
Pollutant	**CO**		**NO_2**
Averaging Time	**1-Hour**	**8-Hour**	**1-Hour**
Unit 1	34.04	6.62	22.50
Unit 2	33.58	6.42	22.20
Unit 3	33.97	6.45	22.45
Unit 4	33.63	5.77	22.23
Unit 5	33.51	5.89	22.15
Unit 6	30.93	5.33	20.44
Unit 7	31.18	5.84	20.61
Unit 8	32.27	4.66	21.33
Fire Pump	21.01	10.19	139.63
All Eight Turbines Only	163.32	23.26	107.94
All Project Sources	**163.45**	**23.26**	**139.68**
Notes: CO = carbon monoxide µg/m³ = micrograms per cubic meter NO_2 – nitrogen dioxide			

Table 3.1c (New Table)
PM_{10} and SO_2 Modeling Results for Individual Project Emission Sources for Worst-Case Normal Operations Emission Rates
(All values in micrograms per cubic meter – µg/m3)

Pollutant	PM_{10}		SO_2			
Averaging Time	24-Hour	Annual	1-Hour	3-Hour	24-Hour	Annual
Unit 1	1.66	0.068	1.44	1.02	0.958	0.004
Unit 2	1.64	0.067	1.43	0.99	0.094	0.004
Unit 3	1.64	0.068	1.43	0.99	0.096	0.004
Unit 4	1.48	0.067	1.43	0.88	0.094	0.004
Unit 5	1.58	0.066	1.36	0.93	0.092	0.004
Unit 6	1.38	0.063	1.36	0.81	0.087	0.004
Unit 7	1.51	0.061	1.36	0.89	0.084	0.004
Unit 8	1.39	0.057	1.39	0.75	0.082	0.004
Fire Pump	0.069	0.002	33.21	23.44	10.950	0.012
All	10.60	0.390	33.22	23.46	10.953	0.026
All Eight Turbines	10.57	0.386	6.84	4.26	0.638	0.026
Cooling Tower 1	0.533	0.002	-	-	-	-
Cooling Tower 2	0.344	0.006	-	-	-	-
Cooling Tower 3	0.277	0.005	-	-	-	-
Cooling Tower 4	0.249	0.005	-	-	-	-
Cooling Tower 5	0.242	0.005	-	-	-	-
Cooling Tower 6	0.233	0.006	-	-	-	-
Cooling Tower 7	0.208	0.004	-	-	-	-
Cooling Tower 8	0.138	0.003	-	-	-	-
All 8 Cooling Towers	0.754	0.008	-	-	-	-

Notes:
$\mu g/m^3$ = micrograms per cubic meter
PM_{10} = particulate matter less than 10 microns in diameter
SO_2 = sulfur dioxide

Table 7.1-28 (Revised) Basis for Estimating Emission Credit Requirements to Offset Proposed Project Emissions				
Emission Source[4]	**Annual Operating Hours at 100% Capacity**	**Annual Startups and Shutdowns (CTGs only)**	**Daily Operating Hours at 100% Capacity for Worst Month**	**Daily Startups/Shutdowns for Worst Month (CTGs only)**
CTGs 1-8	2,628	300	15	2
Firewater Pump Engine	52		One 1-hour test each week	

Note:
CTG = combustion turbine generator

Table 7.1-29 (Revised) Estimated Emission Offset Requirements for the Proposed Project Emissions				
Pollutant	**CTG Emissions**	**Firewater Pump Engine Emissions**	**Total Emission Credits Required**	**Note**
NO_X (lb/year)	241,206	107	241,313	1:1 If RECLAIM
NO_X (lb/day)	1,448	2	1,740	1.2: 1 If ERCs
VOC(lb/day)	382	1	459	1.2:1 ERCs
PM_{10} (lb/day)	776	1	932	1.2:1 ERCs
SO_X (lb/day)	78	0	94	1.2:1 ERCs

Notes:

Annual emissions for NO_X based on 2,628 hours of normal operation plus 300 startup/shutdown cycles. RECLAIM credits calculated on a 1-to-1 basis.

Emissions for average day of the worst month calculated based on 15 hours per day normal operating hours plus two startup/shutdown cycles.

ERC requirements based on daily emissions as described in previous note times offset factor of 1.2-to-1.

CTG = combustion turbine generator
ERCs = emission reduction credits
lb/day = pounds per day
lb/year = pounds per year
NO_X = oxides of nitrogen
PM_{10} = particulate matter less than or equal to 10 microns in diameter
SO_X = oxides of sulfur
VOC = volatile organic compound

3.2 BIOLOGICAL RESOURCES

As described in AFC Section 7.2 and in supplemental submittals to the CEC (i.e., responses to data requests), no threatened or endangered plant or wildlife species have been observed during biological resource field surveys of the project site and offsite linear features. The modification of the CPVS involves general arrangement changes within the 37-acre project site that do not result in any additional disturbed areas beyond the site.

Therefore, the modification of the CPVS would not change the analysis of potential impacts to biological resources described in AFC Section 7.2, and impacts to biological resources are expected to be less than significant with implementation of the mitigation measures agreed upon by Applicant and CEC staff.

3.3 CULTURAL RESOURCES

The modification of the CPVS involves general arrangement changes within the 37-acre project site that do not result in any additional disturbed areas beyond the site. As discussed in AFC Section 7.3, no significant archaeological or historic and architectural (built environmental) resources were identified within the project site or vicinity. Therefore, these modifications of the CPVS would not change the analysis of impacts to cultural resources as described in AFC Section 7.3, and impacts to cultural resources are expected to be less than significant with implementation of the mitigation measures agreed upon by Applicant and CEC staff.

3.4 LAND USE

The modification of the CPVS involves general arrangement changes within the 37-acre project site. These changes would not alter the analysis of potential impacts to land use resources presented in AFC Section 7.4, which found that the proposed project would not disrupt or divide an established community; would not conflict with the established uses of the area; would be consistent with existing zoning and applicable land use plans, policies, and regulations; and would not affect farmlands. Therefore, as described in AFC Section 7.4, potential impacts to land use resources are expected to be less than significant.

3.5 NOISE

The modifications to the CPVS would not result in significant changes to the potential noise emissions during construction that were modeled and presented in AFC Section 7.5.3.7. Construction noise impacts are expected to be less than significant with implementation of the mitigation measures agreed upon by Applicant and CEC staff.

A detailed noise model was developed for the operational noise analysis presented in AFC Section 7.5.3.2. This model was modified to incorporate the modifications to the CPVS and to assess potential changes in noise exposure. The only two changes that are expected to affect the operational noise emissions of the CPVS are the spatial rearrangement of cooling equipment on the project site, and the replacement of the building around the gas compressors with a 14-foot-high sound wall enclosure. Previously, a 3-cell and a 5-cell cooling tower were proposed at the southern and northern ends of the plant area, respectively. This AFC amendment involves substituting these two cooling towers with a single-cell cooling tower adjacent to each of the eight power generation units. The total number of cooling tower cells remains unchanged from the original design.

Table 3.5-1 presents the anticipated steady-state noise level of the project under full load at receptor location LT-1, as identified on AFC Figure 7.5-1, in terms of the noise level during 90 percent of the measured time interval (L_{90}) and equivalent sound level (L_{eq}). As discussed in the AFC and the FSA, receptor location LT-1 (Residences C and D) is the critical design receptor for purposes of evaluating noise exposure. No new potentially noise sensitive uses have been identified in the project area.

Table 3.5-2 presents the cumulative noise levels based on the available monitoring and project noise level data. This shows an increase of 5 A-weighted decibels (dBA) in L_{90} at receptor location LT-1 for the quietest 4 hours of the night and a 3 dBA increase in L_{eq}. The proposed modifications to the CPVS will not change the projected cumulative noise level at receptor location LT-1 from 54 dBA L_{90}, as described in the AFC and Attachment A of CPV Sentinel's PSA comments. The proposed modifications to the CPVS will also not change the projected cumulative noise levels at the other sensitive receptor locations identified in the AFC.

The proposed project modifications outlined in Section 2.0 will not significantly change the noise levels generated by CPVS at the identified sensitive receptors as described in the AFC. Table 7.5-5 (Revised) is provided to replace the table previously presented in the AFC. The changes in sound levels shown in this revised table are less than or equal to the changes in sound levels shown in the original AFC Table 7.5-5. Therefore, noise impacts from facility operations with the identified modifications are less than significant with implementation of the mitigation measures agreed upon by Applicant and CEC staff.

Table 3.5-1 (New Table)
Predicted Project Noise Level (dBA L_{90}, L_{eq})

Location	Approx. Distance to Project	Project Noise Level (dBA L_{90}, L_{eq})
LT-1	1,007	52, 54

Notes:

dBA = A-weighted decibels
L_{90} = noise level equaled or exceeded during 90 percent of the measured time interval

Table 3.5-2 (New Table)
Summary of Cumulative Noise Levels (dBA L_{90}, L_{eq})

Location	Ambient Background Level (dBA L_{90}, L_{eq})	Project Noise Level (dBA L_{90}, L_{eq})	Cumulative Noise Level (dBA L_{90}, L_{eq})	Predicted Change (dBA L_{90}, L_{eq})
LT-1	49, 55	52, 54	54, 58	+5, +3

Notes:

dBA = A-weighted decibels
L_{90} = noise level equaled or exceeded during 90 percent of the measured time interval

Table 7.5-5 (Revised)
Change in Existing Sound Level with Proposed Project

Receptor	Distance from Source to Receptor	Existing Sound Level (L_{dn}) [1,2]	Calculated Project Sound Level (L_{dn},L_{eq},L_{90})	Calculated Project Plus Existing (L_{dn})	Change in Sound Level (L_{dn})
LT-1	1,007 feet	60 dBA	61, 54, 52 dBA	64 dBA	+4 dBA
ST-1	1,007 feet	60 dBA	61, 54, 52 dBA	64 dBA	+4 dBA
ST-2	2,450 feet	60 dBA	50, 43, 41 dBA	60 dBA	+0 dBA
ST-3	1,332 feet	60 dBA	58, 51, 49 dBA	62 dBA	+2 dBA

Notes:

[1] Measured Hourly L_{90} at LT-1 was the basis for L_{dn} used at all locations.
[2] Refer to AFC Table 7.5-2 for the existing measured hourly sound levels.

dBA ≡ decibels measured on the A-Weighted scale
L_{90} ≡ noise levels equaled or exceeded during 90 percent of the measured time interval
L_{dn} ≡ day-night average sound level
L_{eq} ≡ equivalent sound level

3.6 PUBLIC HEALTH

Applicable portions of the AFC Public Health analysis have been updated to reflect the modifications to the CPVS that constitute the basis for this amendment. Specifically, the health risk assessment (HRA) modeling presented in the AFC has been remodeled to reflect changes that affect the locations and magnitudes of specific project sources of TACs, as well as the relocation of other facility structures that may affect downwash of the plumes from such sources, thus altering the predicted health risks.

As described in AFC Section 7.6.2.2, significant long-term public health impacts were not expected to occur as a result of project construction emissions. This conclusion was in part a result of the relatively short duration of the construction effort (18 months) and the fact that the health impacts of the principal TAC emitted during construction (diesel particulate matter [DPM]) are related to long-term (chronic) exposures, rather than short-term (acute) exposures. The modifications to the CPVS do not alter the expected numbers, durations, or locations of construction equipment operations associated with project construction. Additionally, the area of land that will be disturbed during construction is not affected by the proposed modifications. Therefore, as described in AFC Section 7.6, it is anticipated that construction of the CPVS will pose a less-than-significant health risk to nearby populations.

The HRA performed for the AFC to estimate offsite impacts to human health from CPVS operational emissions of TACs has been remodeled to reflect the modifications to the project. The primary reasons for remodeling the operational impacts are:

- As previously presented in the Declaration by John Lague, reduction of the maximum requested annual operating hours for CTGs 6 through 8 from 3,200 to 2,628 hours (i.e., the same as requested for CTGs 1 through 5);
- As previously presented in the Declaration by John Lague, reduction in the maximum annual startups and shutdowns for CTGs 6 through 8 from 350 to 300 per year (i.e., the same as requested in the AFC for CTGs 1 through 5);
- As previously presented in the Declaration by John Lague, elimination of the diesel blackstart engine;
- Relocation of the diesel firewater pump engine;
- Substitution of the previous 5-cell and 3-cell cooling towers at the north and south ends of the project site, respectively, with single-cell cooling towers located adjacent to each of the eight CTGs;
- Modifications to the dimensions and locations of facility structures and tanks that may change the potential for aerodynamic downwash for individual sources of TACs; and
- Performance data for operation of the LMS100 CTGs under conditions at the CPVS site has been updated by GE, resulting in slight changes to the expected turbine heat rate and emissions (see Section 3.1.2).

While the overall project emissions of TACs will be generally lower as a result of these modifications and the stack exhaust parameters from most individual project sources are unchanged, the potential effects of moving the cooling towers and other structures could not be accurately understood without remodeling. Accordingly, the HRA was remodeled to reflect all of the modifications listed above.

TAC Sources and Emissions

Emissions from the eight gas turbines of the amended project would be slightly changed from the values used in the AFC, because of modifications in turbine performance data provided by the manufacturer (see Section 3.1.2 for further discussion). In addition, revised annual turbine emissions reflect reduced operating hours and startup/shutdown cycles for three units (CTGs 6, 7, and 8). The total requested operating hours for each of these units have been reduced to 2,803 hours per year; that is, 2,628 hours of normal operation plus 300 turbine startups of 25 minutes duration each and 300 shutdowns of 10 minutes duration each. Table 7.6-2 (Revised) presents the resulting emissions, which are based on the same U.S. EPA- and California Air Resources Board-approved emission factors that were used for the estimates presented in the AFC.

Emissions of DPM from the 240-horsepower diesel firewater pump engine are unchanged from the levels indicated in the AFC (Table 7.6-4). However, the emissions presented in the same table for the much larger diesel blackstart engine are now eliminated due to the removal of the engine from the amended project's equipment list.

The 5-cell and 3-cell mechanical draft evaporative cooling towers that were proposed in the AFC have been replaced by single-cell cooling towers that will be located adjacent to the eight CTGs. The emissions of droplets (drift) resulting from operation of these towers are assumed to contain TACs in the same concentrations found in the cooling system circulating water, which are estimated from chemical analysis of the makeup water and the planned cycles of concentration. The resulting emissions of TACs from individual cooling towers and from all towers combined are shown in Table 7.6-3 (Revised).

Calculated Health Risks

The modeling methodology used in this amendment for estimating potential cancer and non-cancer health risks due to CPVS emissions of TACs was identical to that employed for the AFC Public Health Section. This includes the same meteorological input data and the same receptor package used for the AFC analysis. Input information for characterizing the locations, magnitudes, and release characteristics of specific emission sources and other structures within the site have been updated based on the proposed changes to the facility design and operating profile. A list of these changes is provided in the previous subsection.

As described in AFC Section 7.6, a project is considered to pose a potentially significant health risk if the maximum calculated cancer risk at any receptor location exceeds 10 in one million (1.0×10^{-5}). An exposure that affects each target organ is considered potentially significant if the calculated total hazard index (THI) for either chronic or acute exposures exceeds a value of 1.0.

The results of the revised HRA are presented in Table 7.6-5 (Revised). The maximum incremental cancer risk resulting from emissions of the amended project is estimated to be 0.472 in 1 million, at a location on the eastern CPVS property boundary. The highest cancer risk predicted to occur at a sensitive receptor is 0.283 in 1 million, at a residence approximately 100 feet east of the CPVS site property boundary. The cancer burden is zero, because this parameter represents the integrated cancer risk over all individuals with an exposure greater than 1 in 1 million. Since maximum predicted cancer risks at all receptors are well below the significance criterion of 10 in 1 million, the emissions of TACs from the operational CPVS are expected to cause a less-than-significant increase in carcinogenic health risk.

The modeling results for non-cancer chronic and acute health risks are also provided in Table 7.6-5 (Revised). The maximum predicted chronic total THI due to the amended project's emissions of TAC over all receptors included in the HRA modeling is estimated to be 0.008, at a location about 330 feet east of the eastern CPVS property boundary. The highest chronic THI at a sensitive receptor is estimated to be 0.003, at a farm and possible residence located approximately 750 feet east of the same property boundary. Since the peak chronic THI values at all receptors are less than 1 percent of the significance criterion of 1.0, it is concluded that chronic non-cancer health risks due to CPVS project emissions will be less than significant.

Finally, the maximum predicted acute THI at any receptor as a result of CPVS emissions of toxic contaminants is 0.118, at a location about 2.2 miles west northwest of the CPVS. The highest acute THI at a sensitive receptor is 0.055, at St John's School about 4.3 miles to the west northwest. Because the predicted acute THI values at all receptors are well below the significance criterion of 1.0, it is concluded that acute non-cancer health risks resulting from CPVS operational emissions will be below a level of significance.

Pursuant to SCAQMD Rule 1401, it is necessary to demonstrate that maximum cancer risk, chronic THI, and acute THI values per permit unit are below the significance criteria described previously. As shown in Table 7.6-5 (Revised), the combined impacts of all project emissions will be below the significance thresholds. Therefore, the impacts from individual permit units will also be less than significant.

Table 7.6-2 (Revised)
Toxic Air Contaminant Emissions from Operation of Each Natural Gas Fired Combustion Turbine

Chemical Species	Emission Factor (lb/MMBtu) [1]	Hourly Emission Rate (lb/hr)[2]	Annual Emission Rate (lb/yr)[3]
Ammonia [4]	5 ppm [5]	5.89	1.65E+04
1,3-Butadiene	4.30E-07	3.83E-04	1.07E+00
Acetaldehyde	4.00E-05	3.57E-02	1.00E+02
Acrolein	3.62E-06	3.23E-03	9.05E+00
Benzene	3.26E-06	2.91E-03	8.15E+00
Ethylbenzene	3.20E-05	2.85E-02	8.00E+01
Formaldehyde	3.60E-04	3.21E-01	9.00E+02
Propylene Oxide	2.90E-05	2.59E-02	7.25E+01
Toluene	1.30E-04	1.16E-01	3.25E+02
Xylenes	6.40E-05	5.71E-02	1.60E+02
Polycyclic Aromatic Hydrocarbons			
Benzo(a)anthracene	2.22E-08	1.98E-05	5.55E-02
Benzo(a)pyrene	1.37E-08	1.22E-05	1.32E-01
Benzo(b)fluoranthene	1.11E-08	9.90E-06	2.77E-02
Benzo(k)fluoranthene	1.08E-08	9.64E-06	2.70E-02
Chrysene	2.48E-08	2.21E-05	6.19E-02
Dibenz(a,h)anthracene	2.31E-08	2.06E-05	5.77E-02
Indeno(1,2,3-cd)pyrene	2.31E-08	2.06E-05	5.77E-02
Naphthalene	1.63E-06	1.45E-03	4.08E+00

Notes:

1 Emission factors obtained from U.S. EPA AP-42 Table 3.1-3 for uncontrolled natural-gas–fired stationary turbines. Formaldehyde, Benzene, and Acrolein emission factors are from the background document for AP-42 Section 3.1, Table 3.4-1 for a natural-gas–fired combustion turbine with a carbon monoxide catalyst. Polycyclic aromatic hydrocarbon emission factors obtained from the CATEF database for natural-gas–fired combustion turbines with selective catalytic reduction and carbon monoxide catalyst. Used a natural gas fuel higher heating value of 1,018 British thermal units/standard cubic foot.

2 Turbine maximum fuel energy consumption rate higher hearting value per turbine is 891.7 million British thermal units per hour (based on 100% load with evaporative cooling at 72 °F ambient temperature.

3 Annual emissions based on 2,803 hours per year (2,628 hours of normal operation plus 300 startups and shutdowns).

4 Not a Clean Air Act Section 112 Hazardous Air Pollutant.

5 Ammonia emission rate based on an exhaust ammonia limit of 5 parts per million by volume, dry at 15% oxygen provided by the turbine vendor.

lb/hr = pounds per hour
lb/MMBtu = pounds per million British thermal units
lb/yr = pounds per year
ppm = parts per million

Table 7.6-3 (Revised)
Toxic Air Contaminant Emission Rates
From Operation of Each One-Cell Cooling Tower

Toxic Air Contaminant	TAC Concentration in Source Water[1]		Single tower emissions	
	µg/liter	lb/(1,000 gallon)	lb/hr[2]	lb/yr[3]
Antimony[4]	0.34	0.000003	3.99E-08	1.12E-04
Arsenic	2.3	0.000019	2.70E-07	7.57E-04
Chlorine	27,000	0.225299	3.17E-03	8.89E+00
Chromium	0.91	0.000008	1.07E-07	3.00E-04
Copper [5]	0.85	0.000007	9.98E-08	2.80E-04
Fluoride [5]	570	0.004756	6.69E-05	1.88E-01
Lead	0.21	0.000002	2.47E-08	6.91E-05
Selenium	1.3	0.000011	1.53E-07	4.28E-04
Silica [5]	11,000	0.091789	1.29E-03	3.62E+00
Sulfate [5]	8,300	0.069259	9.75E-04	2.73E+00
Vanadium [5]	38.3	0.000320	4.50E-06	1.26E-02

Notes:
1 TAC concentrations in source water determined by chemical analysis of water from an onsite well.
2 Mass emission rates based on circulating water rate for each tower of 6,900 gallons per minute, 6.8 cycles of concentration in the cooling water system and a drift elimination efficiency that reduces drift to less than 0.0005% of the circulating water rate.
3 Annual emissions are estimated based on a maximum of 2,803 hours of cooling tower operation.
4 Not a TAC for HRA purposes.
5 Not a Clean Air Act Section 112 Hazardous Air Pollutant.

lb/hr = pounds per hour
lb/yr = pounds per year
µg/Liter = micrograms per Liter
TAC = toxic air contaminant

Table 7.6-5 (Revised)
Estimated Maximum Cancer Risk and Acute and Chronic Non-cancer Total Hazard Indices due to CPVS Operational Emissions

Receptor Type	Risk Type	Estimated Maximum Risk	Receptor Description/Location
Point of Maximum Impact	Cancer	0.472 in 1 million	On eastern property boundary near firewater pump
	Chronic THI	0.008	~330 feet east of the eastern CPVS property boundary
	Acute THI	0.118	~2.2 miles west northwest of project site
Sensitive/ Residential Receptors	Cancer	0.283 in 1 million	Mundhenk Residence ~100 feet east of the CPVS eastern property boundary
	Chronic THI	0.003	Farm/possible residence ~750 feet east of the eastern CPVS property boundary
	Acute THI	0.055	St John's School ~4.3 miles west northwest of CPVS site

Note:
THI = total hazard index

3.7 WORKER SAFETY AND HEALTH

The modifications outlined in Section 2.0, which involve general arrangement changes within the 37-acre project site, would not change the anticipated workplace hazards or require changes to the safety programs presented in AFC Section 7.7.

3.8 SOCIOECONOMICS

The modifications outlined in Section 2.0, which involve general arrangement changes within the 37-acre project site, would not alter the analysis of potential socioeconomic impacts presented in AFC Section 7.8. As presented in the AFC, the proposed project would not induce substantial growth or concentration of population; induce substantial increases in demand for public service and utilities; displace a large number of people; disrupt or divide an established community; or result in disproportionate adverse effects on minority or low-income populations. Therefore, as described in AFC Section 7.8, potential socioeconomics impacts are expected to be less than significant.

3.9 SOILS

The modifications outlined in Section 2.0, which involve general arrangement changes within the 37-acre project site, would not result in increased soil erosion or loss of topsoil. AFC Section 7.9 presents project design measures that will be implemented during construction and operation of the CPVS to reduce soil impacts. Therefore, as described in AFC Section 7.9, potential impacts to soil resources are expected to be less than significant.

3.10 TRAFFIC AND TRANSPORTATION

The modifications outlined in Section 2.0, which involve general arrangement changes within the 37-acre project site, would not alter the analysis of potential traffic and transportation impacts presented in AFC Section 7.10, including roadway and intersection levels of service during project construction and operation, and potential impacts to transportation networks. Therefore, as described in AFC Section 7.10, potential traffic and transportation impacts are expected to be less than significant with implementation of the mitigation measures agreed upon by Applicant and CEC staff.

3.11 VISUAL RESOURCES

AFC Section 7.11 describes the methods used to inventory and assess the study area for visual resources and the potential visual effects of the CPVS. This section analyzes the potential impacts to visual resources that would occur as a result of modifications to the CPVS as compared to the potential impacts that were identified in the AFC. This study and analysis of potential visual effects associated with the modifications of the CPVS is based on the AFC and review of the technical data, including projects maps and drawings, terrestrial and aerial photography, and visual simulations. The affected environment described in the AFC, including the regional landscape setting, has not significantly changed since the AFC was submitted in June 2007.

3.11.1 Visible Project Description Changes

The modification of the cooling tower configuration will be the most visible of the CPVS amendments. This change is from one 3-cell cooling tower at the south end of the project and one 5-cell cooling tower at the north end of the project to single-cell cooling towers located adjacent to each of the eight turbine units. The number of aboveground storage tanks will also be reduced from four to three, and they will be relocated to the south end of the project site. Other proposed general arrangement modifications are generally not of sufficient magnitude to be discernable and therefore are beyond the consideration of this analysis. The changes to the dimensions of the proposed cooling towers are presented in revised Table 2.4-2.

3.11.2 Key Observation Points

Overall viewing conditions remain unchanged since the AFC was submitted in June of 2007 and thus new photography has not been collected. Three of the five key observation points (KOPs) evaluated in the AFC have been updated to reflect the modifications to the CPVS. The KOPs are described below and their locations are shown on Figure 7.11-3 of the AFC (a copy of this AFC figure is provided for reference).

KOP 3 (Figure 7.11-8 [Revised]) is the residential area closest to the proposed project and is located southwest of the project site. There are approximately twelve residences in this area near, Diablo and Smoke Tree Roads. Most of the residences do not face east toward the project site, but eastern views are possible from some homes and when traveling north on Diablo Road or east on Smoke Tree Road. The existing SCE Devers substation is to the left of the intersection of Diablo and Smoke Tree Roads. The project site is approximately 0.4 mile (2,300 feet) northeast of this intersection, beyond the SCE Devers substation. The existing wind turbine facilities dominate this view.

KOP 4 (Figure 7.11-10 [Revised]) represents the approximately 48 residential viewers in the area of State Route (SR) 62 and Pierson Boulevard. This KOP is approximately 1.7 miles (9,000 feet) away from the project site. This location is also generally representative for travelers on SR 62 (typically traveling at 50 to 60 miles per hour) and residential viewers west of SR 62. From this location, or any generally along SR 62 north of Dillon Road, views of the project site will be partially or completely seen through or screened by the SCE Devers substation. Viewers from KOP 4 experience partial screening from the substation as well as back-dropping provided by Devers Hill and Edom Hill in the distance. Southbound travelers on SR 62 will have a direct view of Mount San Jacinto in their direction of travel with the project site to the east (their left). Northbound travelers on SR 62 would have direct views of the San Bernardino Mountains in their direction of travel with the project site to the east (their right).

KOP 5 (Figure 7.11-12 [Revised]) represents the closest residence northeast of the project site. In the immediate area of KOP 5 there are approximately ten residences. Additionally, there are a number of residences east of KOP 5 (east of Indian Avenue) that may have views similar to KOP 5 but with a significantly greater view distance.

3.11.3 Environmental Consequences

To evaluate the proposed modifications of the CPVS, three new simulations illustrating the project were developed and compared to the existing conditions photography and the simulations from the AFC. The primary factors considered in the assessment of impacts on KOPs include: (1) the susceptibility of a KOP to realize an impact; and (2) the magnitude or severity of impact realized on a KOP. The dimensions of the major structures pertinent to visual resources are identified in revised Tables 2.4-1 and 2.4-1. As discussed above, the only modification with sufficient visual scale to be noticeable in the simulations is the change in the proposed cooling towers and their arrangement, which is discernable from KOPs 3, 4, and 5.

3.11.3.1 Susceptibility, Severity, and Significance Criteria

Susceptibility

The following components were considered in identifying the degree to which a KOP would be *susceptible* to impact:

- Scenic integrity level – the amount of noticeable disturbances within a landscape setting;
- Viewer sensitivity level – the anticipated level of sensitivity a viewer may have for changes occurring within the viewsheds;
- Project visibility – an evaluation of the angle of view, available screening, lighting, and time of day; and
- Viewer exposure – an evaluation of the distance, number of viewers, and duration of view.

Severity

The potential change a project can cause to a specific landscape setting within a specific sensitive viewshed is assessed a level of visual impact *severity*. Severity levels can range from significant to indiscernible. A number of components are considered and combined to determine the magnitude of visual impact severity the proposed project may have. These components are as follows:

- Form, line, color, texture, and scale contrast;
- Scale dominance and spatial dominance;
- View blockage; and
- Night lighting.

Significance Criteria

The assessment of significant visual impacts is based primarily on California Environmental Quality Act requirements and is outlined in detail in AFC Section 7.11.2.1. A brief review of the impact levels is provided below.

Significant – will likely cause a substantial long-term and adverse effect on landscape character or scenic quality on an existing viewshed due to the contrast between the proposed project and the level of existing scenic integrity.

Adverse But Not Significant – will create a noticeable but not substantial change in landscape character/scenic quality; or will cause a noticeable but not substantial change on a KOP viewshed.

Insignificant – may or may not be perceptible but considered minor in the context of existing landscape characteristics and view opportunity.

3.11.3.2 Photo Simulations

The development of photo simulations assisted with the determination of impacts on KOPs. The details of this process are provided in AFC Section 7.11.2.2.3. The following provides a brief review of the simulation process.

Computer Aided Design (CAD) equipment and the use of Global Positioning Systems are used to allow for life-size modeling within the computer. This translates to using *real world scale and coordinates* to locate facilities, other site data, and the actual camera locations corresponding to three-dimensional (3D) simulation viewpoints. A CAD site map is imported as a background reference. The locations of existing and proposed facilities are placed on top of the site map to register and orient the correct locations of KOPs. An electronic camera lens matches the camera lens that was actually used in the field.

Next, the photographic negative is scanned into the 3D database and loaded as an environment within which the view of the 3D model is generated. To generate the correct view relative to the actual photograph, the electronic camera is placed at a location (within the computer) from where the photograph was taken. From here, the 3D wire-frame model is displayed and the correct sun angle is set, materials and textures are applied, and the composite image is rendered through a computer image process known as *RayTracing.* Any additional filters required for appropriate atmospheric conditions, such as blur/focus/haze etc., are applied at this time.

The photo simulations developed for this project have been designed to be viewed 14 inches from the viewer's eye. This distance will portray the most realistic life-size image from the location of the KOPs.

3.11.3.3 Visual Impacts on KOPs

In each KOP discussed below, the location and configuration of the cooling towers are modified in relation to their locations as described in the AFC. While two cooling towers were proposed in the AFC, this amendment identifies a cooling tower located adjacent to each of the eight turbine units. The proposed cooling tower modifications are noticeable in comparison to the simulations provided in the AFC, however, the modifications are consistent with the impacts previously discussed in the AFC. In addition, the above ground storage tanks have been reduced in number from four to three and moved to the southeast end of the plant site. The modification to the transmission line route analyzed in Attachment A of the August 21, 2008 comments on the PSA was reflected in the new simulations.

KOP 3 – The photo simulation shown in Figure 7.11-9 (Revised) illustrates the amendments to the proposed project. In the revised simulation, the 3-cell cooling tower located on the southern end of the project site has been removed and replaced with single-cell cooling tower units located adjacent to each of the eight generating units. The 5-cell cooling tower located at the north end of the project has also been removed but is not visible from KOP 3. Aboveground storage tanks previously not visible on the south end of the project are now visible in the amended simulation. The amended project will be seen through the transmission corridor and the SCE Devers substation. The most prominent items are a number of the eight CTG stacks. The cooling towers, once prominent features, now provide partial screening of the more geometrically complex generating units. The CTG stacks and other elements of the project are lower than the adjacent transmission facilities, but are more solid and structural in appearance. The transmission line from the proposed project to the substation is shown, but the towers are not distinct in the context of the existing towers. While the CPVS is discernable, its forms are subordinate to the adjacent wind turbines, there is no view impairment, and the level of visual contrast is low. Overall, the modifications of the CPVS would have a less-than-significant impact on viewers from KOP 3 consistent with the findings of the AFC.

KOP 4 – The photo simulation shown in Figure 7.11-11 (Revised) illustrates the amendments to the proposed project. In the revised simulation, the 5-cell cooling tower previously located at the north end of the project has been removed and single-cell cooling towers are located immediately adjacent to each of the eight generating units. The change in the cooling towers and the relocation of the aboveground storage tanks to the south end of the project slightly reduces the project visibility from this KOP. The amended project will be discernable, with the most prominent features being the eight CTG stacks. The various components of the project will not be as high as the vertical facilities of the SCE Devers substation, but exhibit a more solid appearance. Edom Hill and the Indio Mountains will provide a backdrop for the proposed project from this vantage point. In context with the SCE Devers substation, transmission corridors, and wind turbines, the project will appear co-dominant in this landscape. The level of visual contrast is low between the proposed project and its surroundings. The forms of the project are consistent with the SCE Devers substation, transmission lines, and wind turbines. Although the project is within the viewshed of SR 62, a state scenic highway, the proposed project is not adjacent to the highway and does not impair or block views of the mountains to the north or south for travelers on the highway. Overall, it was determined that the modifications to the CPVS would have a less-than-significant impact on viewers from KOP 4, consistent with the findings of the AFC.

KOP 5 – The photo simulation shown in Figure 7.11-13 (Revised) illustrates the amendments to the proposed project. Consistent with the AFC, the most discernable features of the proposed project are the eight CTG stacks. In the amended simulation, the 5-cell cooling tower and 3-cell cooling tower, located at the north and south ends of the project, respectively, have been removed and single-cell cooling towers have been added adjacent to each of the eight generating units. In this view, the single-cell cooling towers are located away from the KOP and are not discernable. Other features visible in this simulation include the aboveground storage tanks located at the south end of the project. All of these features, however, are seen through and in the context of the wind turbines. The forms of the CPVS are not dissimilar to the wind turbines and, at 90 feet and less, are lower. The CPVS is back-dropped by Whitewater Hill in the distant middle-ground and Mount San Jacinto in the background. The proposed project does not increase blockage or impairment of views to the southwest and provides little visual contrast with the existing condition and features but is discernable. Overall, it was determined that the modifications of the CPVS would have a less-than-significant impact on viewers from KOP 5 consistent with the findings of the AFC.

Indirect, temporary, and construction-related impacts on all KOPs and other sensitive viewers are unchanged by the proposed modifications and range from no impact to a less-than-significant impact.

3.12 HAZARDOUS MATERIALS

The modifications outlined in Section 2.0, which involve general arrangement changes within the 37-acre project site, would not result in changes to the hazardous materials that would be used during construction or operation of the CPVS. Therefore, as described in AFC Section 7.12, potential hazardous materials handling impacts are expected to be less than significant with implementation of the mitigation measures agreed upon by Applicant and CEC staff.

3.13 WASTE MANAGEMENT

The modifications outlined in Section 2.0, which involve general arrangement changes within the 37-acre project site, would not increase nonhazardous or hazardous wastes associated with construction or operation of the CPVS. AFC Section 7.13.4 presents best management practices that will be implemented during construction and operation of the CPVS to manage and minimize the amount of waste generated. Therefore, as described in AFC Section 7.13, potential waste management impacts are expected to be less than significant.

3.14 WATER RESOURCES

The modifications outlined in Section 2.0 involve general arrangement changes within the 37-acre project site.

The modification of the CPVS would not result in changes to the analysis of water resources, water quality or flood hazards previously presented to the CEC. As described in AFC Section 7.14, impacts to water resources are expected to be less than significant with implementation of the mitigation measures agreed upon by Applicant and CEC staff.

3.15 GEOLOGIC HAZARDS AND RESOURCES

The modifications outlined in Section 2.0, which involve general arrangement changes within the 37-acre project site, would not result in changes to the analysis of geologic hazards or result in significant adverse impacts to the geologic environment. The general arrangement modifications are within the 37-acre project site and do not result in any additional disturbed areas beyond the site. Therefore, as described in AFC Section 7.15, impacts to geologic hazards and resources are expected to be less than significant with implementation of the mitigation measures agreed upon by Applicant and CEC staff.

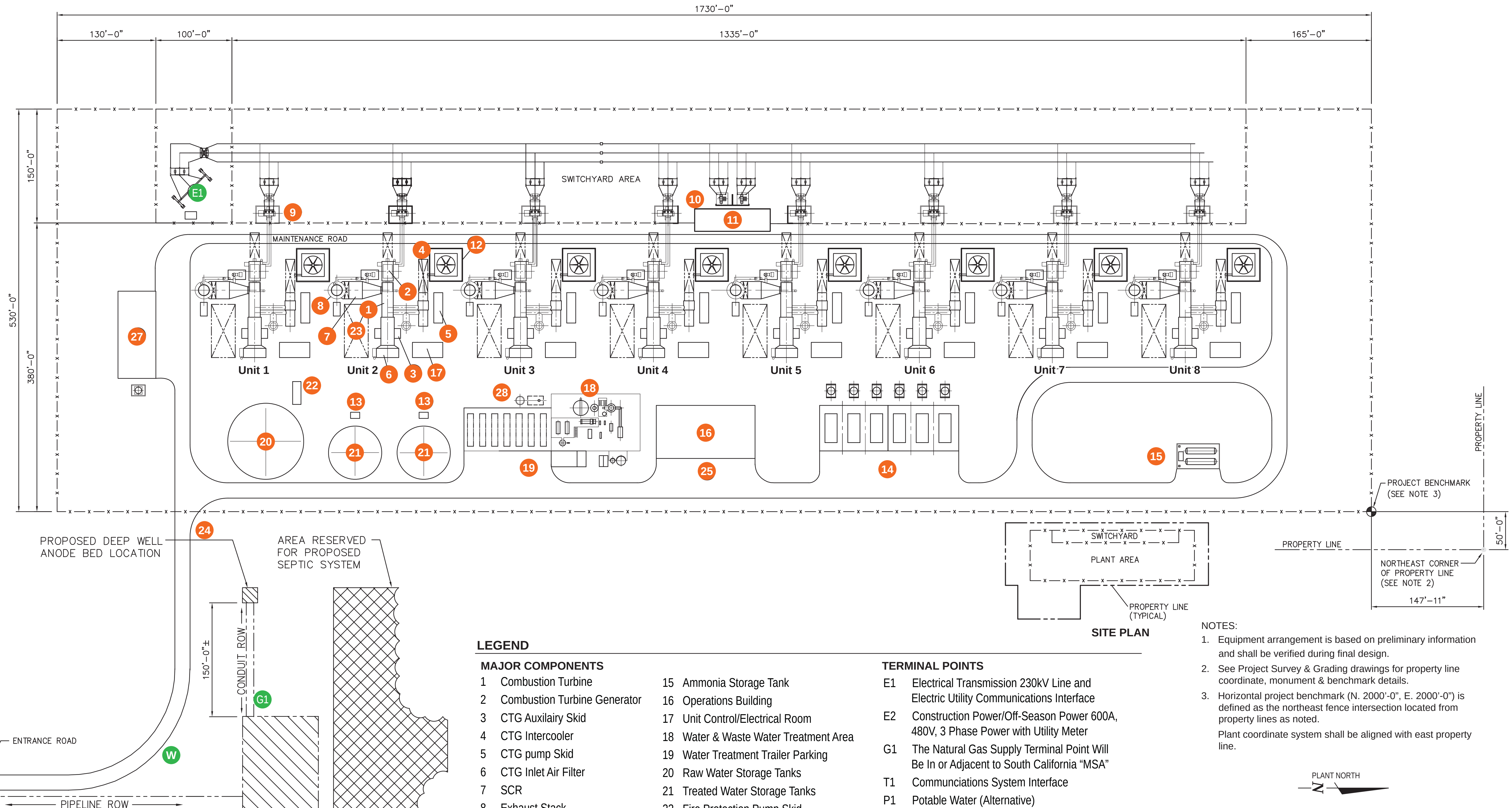
3.16 PALEONTOLOGICAL RESOURCES

AFC Section 7.16 identified potential impacts on paleontological resources that could occur as a result of project construction. The modifications outlined in Section 2.0 primarily involve operational and general arrangement changes within the 37-acre project site that do not result in any additional disturbed areas beyond the site. Therefore, these modifications would not change the analysis of impacts to paleontological resources as described in AFC Section 7.16, and impacts to paleontological resources are expected to be less than significant with implementation of the mitigation measures agreed upon by Applicant and CEC staff.

4.0 REFERENCES

U.S. EPA (U.S. Environmental Protection Agency), 1985. Guideline for Determination of Good Engineering Stack Height (Technical Support Document for the Stack Height Regulation) (Revised), U.S. EPA-450/4-80-023R. Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina. June 1985.

U.S. EPA (U.S. Environmental Protection Agency), 1995. User's Guide to the Building Profile Input Program. U.S. EPA-454/R-93-038. Revised February 8, 1995.



LEGEND

MAJOR COMPONENTS

1 Combustion Turbine
2 Combustion Turbine Generator
3 CTG Auxilairy Skid
4 CTG Intercooler
5 CTG pump Skid
6 CTG Inlet Air Filter
7 SCR
8 Exhaust Stack
9 GSU Transformer
10 Auxiliary Power Tranformers
11 Switchgear Building
12 Cooling Tower
13 Water, Pumping Skids
14 Gas Compressor Area
15 Ammonia Storage Tank
16 Operations Building
17 Unit Control/Electrical Room
18 Water & Waste Water Treatment Area
19 Water Treatment Trailer Parking
20 Raw Water Storage Tanks
21 Treated Water Storage Tanks
22 Fire Protection Pump Skid
23 Mainteneance ASrea (Typ)
24 Plant Entrance
25 Plant Parking
26 MCC Building
27 Warehouse
28 Oily Water Separator & Drain Sump

TERMINAL POINTS

E1 Electrical Transmission 230kV Line and Electric Utility Communications Interface
E2 Construction Power/Off-Season Power 600A, 480V, 3 Phase Power with Utility Meter
G1 The Natural Gas Supply Terminal Point Will Be In or Adjacent to South California "MSA"
T1 Communciations System Interface
P1 Potable Water (Alternative)
W Existing Domestic Water

NOTES:

1. Equipment arrangement is based on preliminary information and shall be verified during final design.
2. See Project Survey & Grading drawings for property line coordinate, monument & benchmark details.
3. Horizontal project benchmark (N. 2000'-0", E. 2000'-0") is defined as the northeast fence intersection located from property lines as noted.

   Plant coordinate system shall be aligned with east property line.

Source:
Gemma Power Systems California, Inc., CPV Sentinel Energy Project; Enhanced General Arrangement (SEP-SK-E-GA-001) Rev. B, November, 2008 (SEP-SK-E-GA-001-RC.dwg)

PLOT PLAN

November 2008
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CPV Sentinel Energy Project
CPV Sentinel, LLC
Riverside County, California

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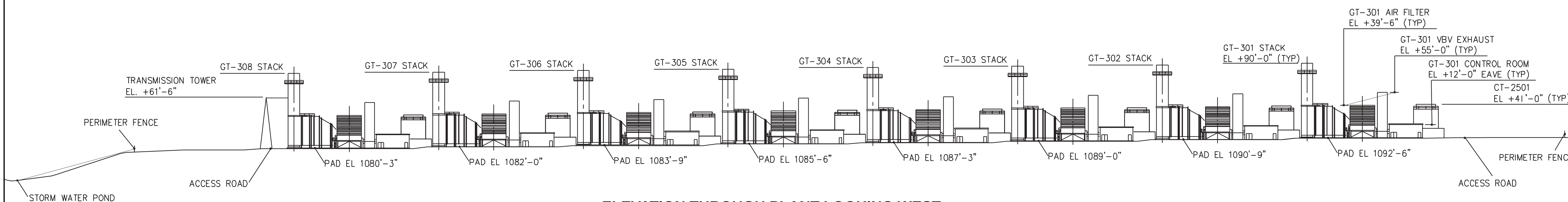
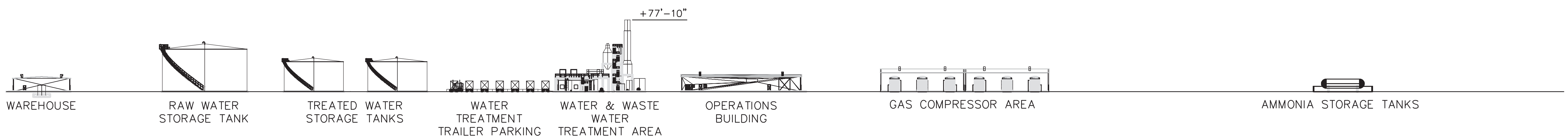
FIGURE 2.4-1 (REVISED)

11/17/08 vsa ..T:\CPV Sentinel 2008\Graphics\AFC Amendment\REV_2.4-1_plotplan_nov08.ai



ELEVATION THROUGH PLANT LOOKING WEST



ELEVATION LOOKING WEST FROM EAST FENCE LINE

NOTES:

1. EQUIPMENT ARRANGEMENT IS BASED ON PRELIMINARY INFORMATION AND SHALL BE VERIFIED DURING FINAL DESIGN.
2. SEE PROJECT GRADING DRAWINGS FOR PROJECT ELEVATION DETAILS. COORDINATE, MONUMENT & BENCHMARK DETAILS.
3. EQUIPMENT ELEVATIONS SHOWN ARE BASED ON BEST AVAILABLE INFORMATION & SHALL BE VERIFIED DURING FINAL DESIGN.
4. EQUIPMENT ELEVATIONS NOTED ARE HEIGHTS ABOVE FINISHED PADS. SEE PROJECT GRADING DRAWINGS FOR FINISHED PAD ELEVATIONS NOT SHOWN ON THIS SHEET.

0 50 100 200 400

Scale in Feet

Source:
Gemma Power Systems California, Inc.
Equipment Arrangement Elevations
(Dwg. No. SEP-SK-ELEV-001, Rev. B)

ELEVATIONS LOOKING WEST

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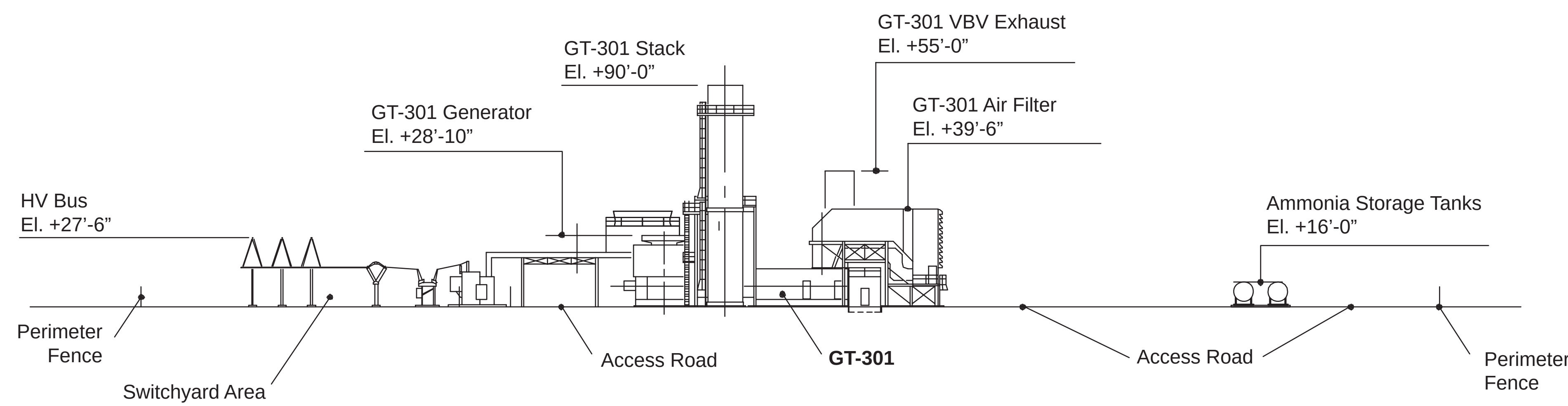
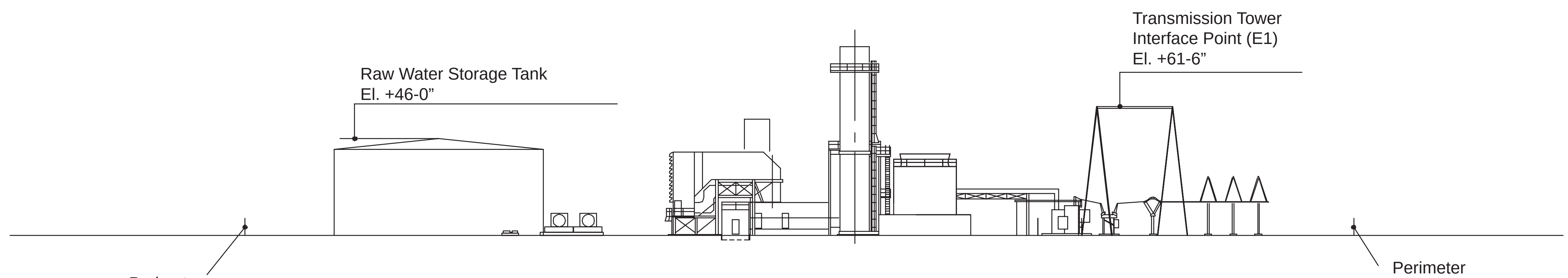
FIGURE 2.4-2 (REVISED)

11/10/08 vsa ..\T:\CPV Sentinel 2008\Graphics\AFC Amendment\REV_2.4-2_elevs west.ai



ELEVATION AT GT-301 LOOKING NORTH



ELEVATION AT GT-308 LOOKING SOUTH

NOTES:

1. EQUIPMENT ARRANGEMENT IS BASED ON PRELIMINARY INFORMATION AND SHALL BE VERIFIED DURING FINAL DESIGN.
2. SEE PROJECT GRADING DRAWINGS FOR PROJECT ELEVATION DETAILS. COORDINATE, MONUMENT & BENCHMARK DETAILS.
3. EQUIPMENT ELEVATIONS SHOWN ARE BASED ON BEST AVAILABLE INFORMATION & SHALL BE VERIFIED DURING FINAL DESIGN.
4. EQUIPMENT ELEVATIONS NOTED ARE HEIGHTS ABOVE FINISHED PADS. SEE PROJECT GRADING DRAWINGS FOR FINISHED PAD ELEVATIONS NOT SHOWN ON THIS SHEET.

0 50 100 200

Scale in Feet

Source:
Gemma Power Systems California, Inc.
Equipment Arrangement Elevations
(Dwg. No. SEP-SK-ELEV-001, Rev. B)

ELEVATIONS LOOKING NORTH AND SOUTH

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FIGURE 2.4-3 (REVISED)

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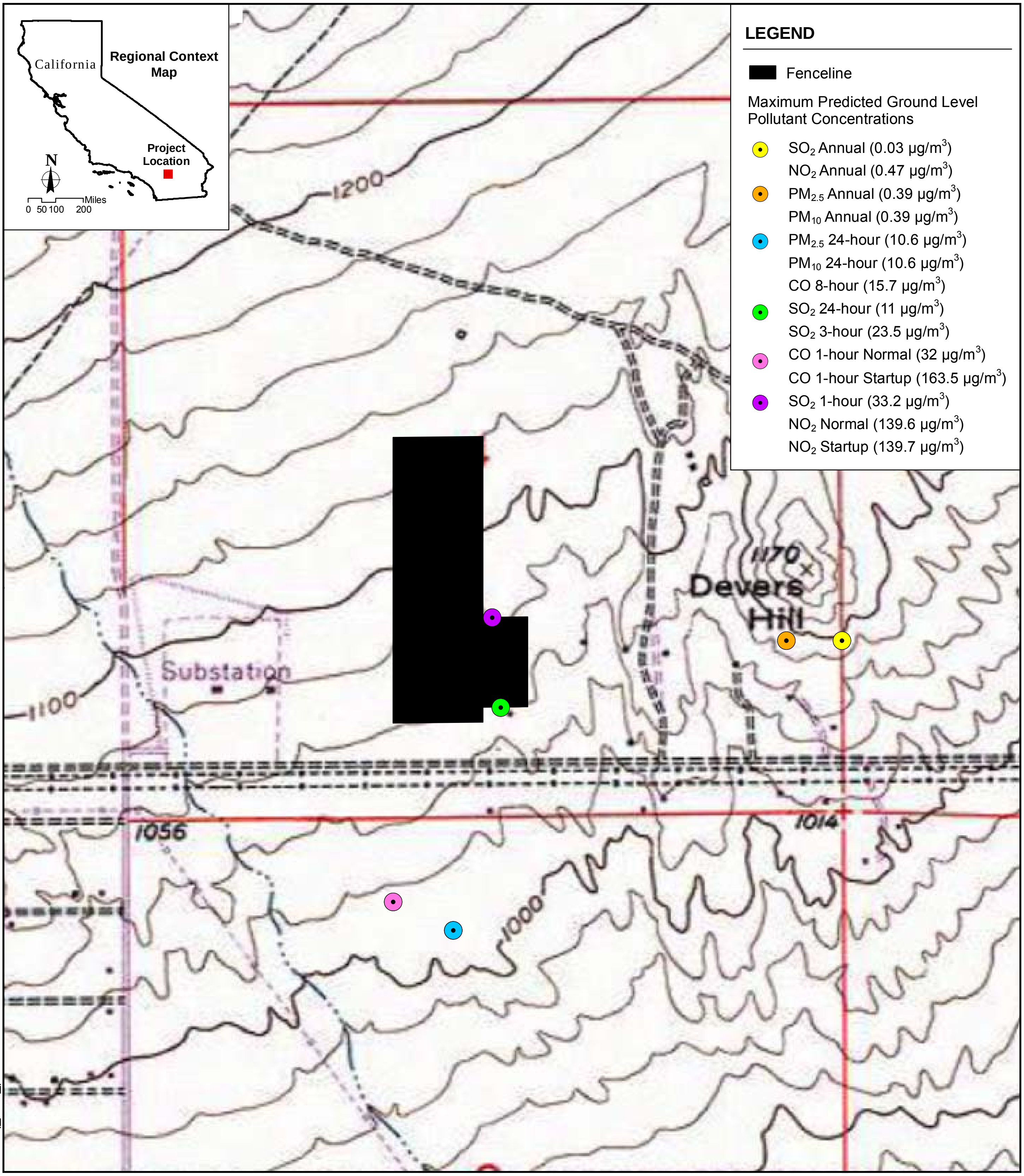

0 500 1,000
Scale in Feet
1:12,000
N

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

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

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FIGURE 7.1-5 (REVISED)

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

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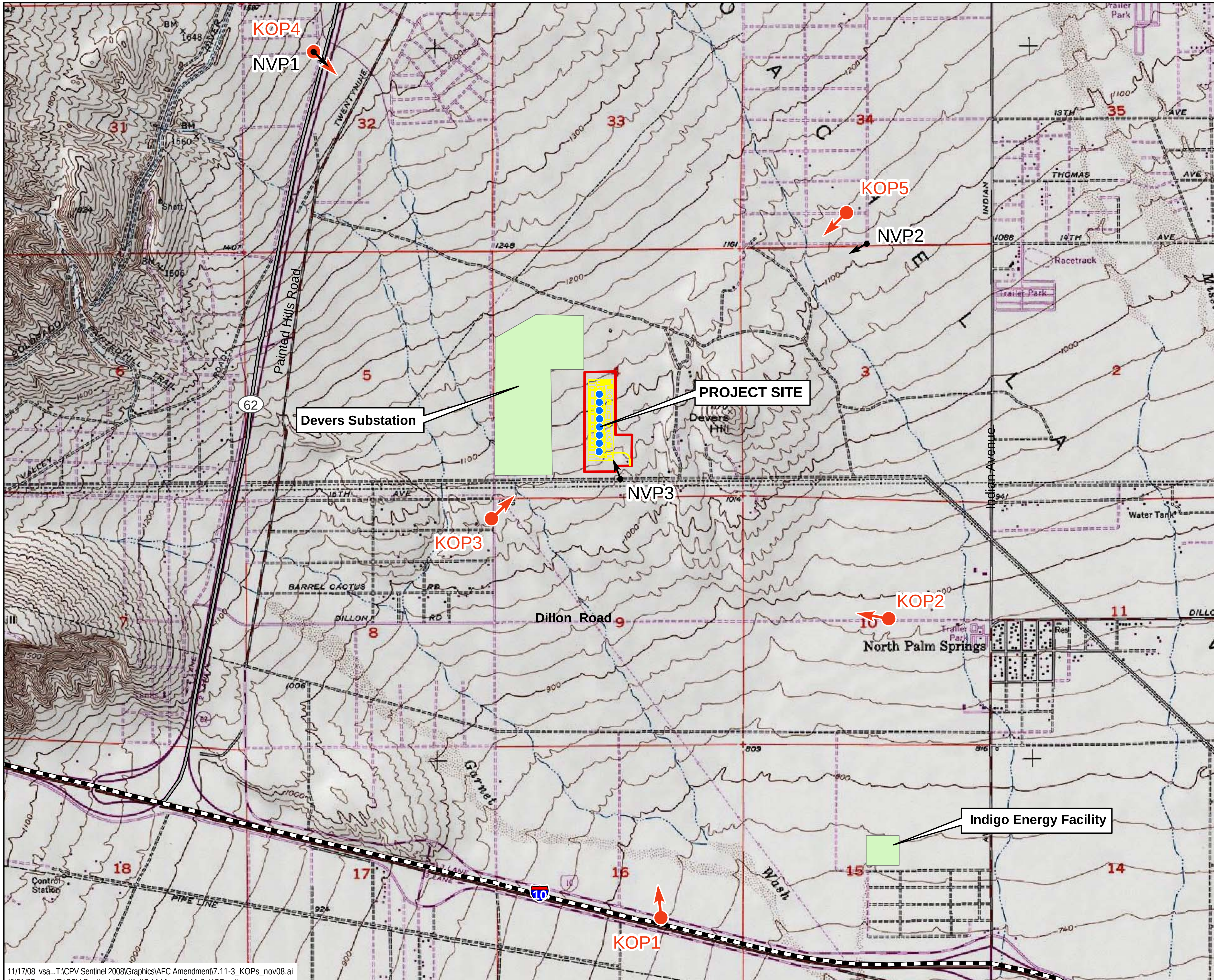

LEGEND

Night View Point and Direction

Key Observation Point and Direction

Project Features

Stacks

General Arrangement

Proposed Power Plant Boundary

Visual Analysis

General Reference Featues

Limited Access

Highway

Source:
Environmental Systems Institute, 2004
URS Corporation, 2001, 2007
Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com)

0 0.25 0.5
Scale in Miles

0 2000 4000
Scale in Feet
1:24,000

N

KEY OBSERVATION POINTS (KOPs)

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FIGURE 7.11-3

11/17/08 vsa...T:\CPV Sentinel 2008\Graphics\AFC Amendment\7.11-3_KOPs_nov08.ai
(6/21/07 vsa ..\T:\CPV Sentinel (Ocotillo)\7.11 Visual\7.11-3_KOPs.ai)

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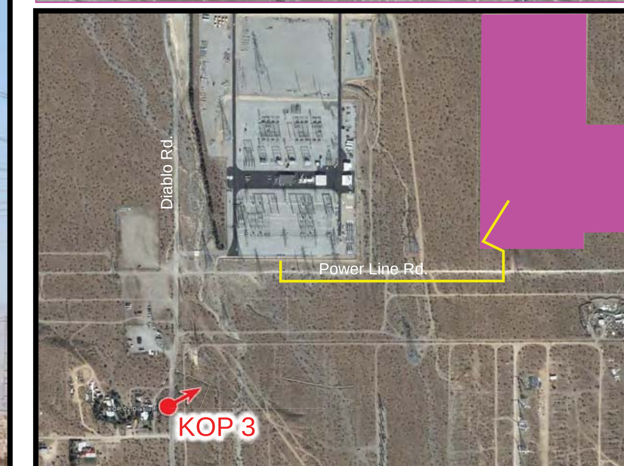

Viewpoint Location Maps

Legend

- Property Site
- Proposed Transmission Line

Photograph Information

Time of photograph:	3:13 PM
Date of photograph:	Feb 21, 2007
Distance to project:	0.45 miles
Weather condition:	Clear
Viewing direction:	Northeast
Latitude:	33°55’50.75”N
Longitude:	116°34’48.99”W

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Photograph is intended to be viewed 10 inches from viewer’s eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph’s area shown in yellow.

KOP 3 VIEW FROM DIABLO RD. LOOKING NORTHEAST – EXISTING CONDITIONS

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November 2008
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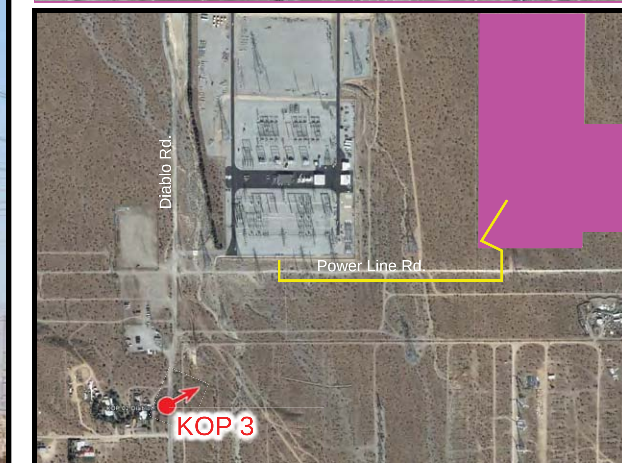
FIGURE 7.11-8 (REVISED)

11/10/08 vsa ..\T:\CPV Sentinel 2008\Graphics\AFC Amendment\REV_7.11-8_KOP3 ex.ai

Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.



Viewpoint Location Maps

Legend

- Property Site
- Proposed Transmission Line

Photograph Information

Time of photograph:	3:13 PM
Date of photograph:	Feb 21, 2007
Distance to project:	0.45 miles
Weather condition:	Clear
Viewing direction:	Northeast
Latitude:	33°55'50.75"N
Longitude:	116°34'48.99"W

KOP 3 VIEW FROM DIABLO RD. LOOKING NORTHEAST – SIMULATION

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CPV Sentinel, LLC
Riverside County, California

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FIGURE 7.11-9 (REVISED)

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Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.

Viewpoint Location Maps

Legend

- Property Site
- Proposed Transmission Line

Photograph Information

Time of photograph:	1:57 PM
Date of photograph:	Feb 21, 2007
Distance to project:	1.7 miles
Weather condition:	Hazy
Viewing direction:	Southeast
Latitude:	33°57'29.94"N
Longitude:	116°35'33.37"W

KOP 4 VIEW FROM SALTON VIEW RD. LOOKING SOUTHEAST – EXISTING CONDITIONS

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URS **FIGURE 7.11-10 (REVISED)**

11/10/08 vsa ..\T:\CPV Sentinel 2008\Graphics\AFC Amendment\REV_7.11-10_KOP4 ex.ai

Viewpoint Location Maps

Legend

- Property Site
- Proposed Transmission Line

Photograph Information

Time of photograph:	1:57 PM
Date of photograph:	Feb 21, 2007
Distance to project:	1.7 miles
Weather condition:	Hazy
Viewing direction:	Southeast
Latitude:	33°57’29.94”N
Longitude:	116°35’33.37”W

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Photograph is intended to be viewed 10 inches from viewer’s eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph’s area shown in yellow.

KOP 4 VIEW FROM SALTON VIEW RD. LOOKING SOUTHEAST – SIMULATION

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FIGURE 7.11-11 (REVISED)

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Viewpoint Location Maps

Legend

- Property Site
- Proposed Transmission Line

Photograph Information

Time of photograph:	2:34 PM
Date of photograph:	March 7, 2007
Distance to project:	1.15 miles
Weather condition:	Hazy
Viewing direction:	Southwest
Latitude:	33°56'54.87"N
Longitude:	116°33'18.96"W

Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.

KOP 5 VIEW FROM WESTERN AVE. LOOKING SOUTHWEST – EXISTING CONDITIONS

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FIGURE 7.11-12 (REVISED)

11/10/08 vsa ..\T:\CPV Sentinel 2008\Graphics\AFC Amendment\REV_7.11-12_KOP5 ex.ai

Viewpoint Location Maps

Legend

- Property Site
- Proposed Transmission Line

Photograph Information

Time of photograph:	2:34 PM
Date of photograph:	March 7, 2007
Distance to project:	1.15 miles
Weather condition:	Hazy
Viewing direction:	Southwest
Latitude:	33°56'54.87"N
Longitude:	116°33'18.96"W

Photograph is intended to be viewed 10 inches from viewer's eyes when printed on 11x17 paper. The photograph below has been cropped top and bottom to show a wide angle of view with the above photograph's area shown in yellow.

KOP 5 VIEW FROM WESTERN AVE. LOOKING SOUTHWEST – SIMULATION

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URS **FIGURE 7.11-13 (REVISED)**

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11/10/08 vsa ..\T:\CPV Sentinel 2008\Graphics\AFC Amendment\REV_7.11-13_KOP5 sim.ai

APPENDIX A

REVISED OPERATIONAL EMISSION ESTIMATED AND CALCULATIONS (SUBMITTED AS SEPARATE DVD)

STATE OF CALIFORNIA
ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

In the Matter of: Application for Certification, for the CPV SENTINEL ENERGY PROJECT	Docket No. 07-AFC-3 **ELECTRONIC PROOF OF SERVICE LIST** (October 24, 2008]

☒ Transmission via electronic mail and by depositing one original signed document with FedEx overnight mail delivery service at Costa Mesa, California with delivery fees thereon fully prepaid and addressed to the following:

<u>DOCKET UNIT</u>

CALIFORNIA ENERGY COMMISSION
Attn: DOCKET NO. 07-AFC-3
1516 Ninth Street, MS-15
Sacramento, California 95814-5512
docket@energy.state.ca.us

☒ Transmission via electronic mail addressed to the following:

<u>APPLICANT</u>

Mark Turner
Project Manager
CPV Sentinel, LLC
55 Second Street, Suite 525
San Francisco, California 94105
mturner@cpv.com

Dale Shileikis
Vice President
URS Corporation
221 Main Street, Suite 600
San Francisco, CA 94105-1917
dale_shileikis@urscorp.com

Kathy Rushmore
URS Corporation
221 Main Street, Suite 600
San Francisco, CA 94105-1917
Kathy_Rushmore@URSCorp.com

INTERESTED AGENCIES

California ISO
P.O. Box 639014
Folsom, CA 95763-9014
e-recipient@caiso.com

Mohsen Nazemi
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, California 91765-4178
mnazemi@aqmd.gov

ENERGY COMMISSION

James D. Boyd
Vice Chair and Presiding Member
jboyd@energy.state.ca.us

Jackalyne Pfannenstiel
Chair and Associate Committee Member
jpfannen@energy.state.ca.us

Kenneth Celli
Hearing Officer
kcelli@energy.state.ca.us

John Kessler
Project Manager
jkessler@energy.state.ca.us

Caryn Holmes
Staff Counsel
cholmes@energy.state.ca.us

Elena Miller
Public Adviser
Publicadviser@energy.state.ca.us

DECLARATION OF SERVICE

I, Paul Kihm, declare that on November 19, 2008, I deposited a copy of the attached:

PROJECT DESIGN REFINEMENTS

with FedEx overnight mail delivery service at Costa Mesa, California with delivery fees thereon fully prepaid and addressed to the California Energy Commission. I further declare that transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service List above.

I declare under penalty of perjury that the foregoing is true and correct. Executed on November 19, 2008, at Costa Mesa, California.

Paul Kihm