STOEL RIVES LLP
ATTORNEYS AT LAW

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770 L Street, Suite 800
Sacramento, California 95814
main 916.447.0700
fax 916.447.4781
www.stoel.com

JOHN A. MCKINSEY
Direct (916) 319-4746
jamckinsey@stoel.com

May 1, 2007

VIA E-MAIL AND U.S. MAIL

Mr. Christopher Meyer
Compliance Project Manager
California Energy Commission
1516 9th Street, MS-200
Sacramento, CA 95814

Re: El Segundo Power Redevelopment Project (00-AFC-14)
Modeling Protocol for Proposed Amendment

Dear Mr. Meyer:

On behalf of El Segundo Power II, LLC, please find the enclosed modeling protocol for a proposed amendment to the El Segundo Power Redevelopment project. The proposed amendment was submitted tot Mr. Ken Coats at the South Coast Air Quality Management District on Monday, April 30, 2007.

Should you have any questions, please do not hesitate to contact me directly at the number above.

Very truly yours,

John McKinsey

John A. McKinsey

JAM:kjh

Enclosure

cc: Tim Hemig, El Segundo Power II LLC (w/ enclosure)
George Piantka, El Segundo Power II LLC (w/ enclosure)
Tom Andrews, Sierra Research (w/ enclosure)

sierra research

1801 J Street
Sacramento, CA 95814
Tel: (916) 444-6666
Fax: (916) 444-8373

Ann Arbor, MI
Tel: (734) 761-6666
Fax: (734) 761-6755

April 30, 2007

Mr. Ken Coats
South Coast AQMD
21865 E. Copley Drive
Diamond Bar, CA 91765

Subject: ESPR Modeling Protocol

Dear Mr. Coats:

On behalf of El Segundo Power II LLC, we are pleased to submit the enclosed modeling protocol for a proposed amendment to the El Segundo Power Redevelopment (ESPR) Project. The proposed amendment to the ESPR project includes the installation of two Siemens 501F gas turbines rather than the two GE 7FA gas turbines originally proposed for the project. The proposed amendment will be subject to the District New Source Review/RECLAIM requirements including the need to perform a new air quality modeling analysis. Attached for your review and approval is a description of the analytical approach that will be used to comply with District modeling requirements for the proposed project amendment. We intend to file a permit application package with the District for this proposed amendment within the next few weeks. Consequently, we are requesting approval of the enclosed modeling protocol as soon as possible.

We look forward to working with you. If you have any questions, please do not hesitate to contact me at (916) 444-6666 or Tim Hemig with El Segundo Power II LLC at (760) 710-2144.

Sincerely,

Tom Andrews

Enclosure

Cc: Tim Hemig, El Segundo Power II LLC
George Piantka, El Segundo Power II LLC
John McKinsey, Stoel Rives LLP

sierra research

Air Dispersion Modeling Protocol
El Segundo Power
Redevelopment Project
El Segundo, California

prepared for:

El Segundo Power II LLC

April 2007

prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, California 95814
(916) 444-6666

Air Dispersion Modeling Protocol
El Segundo Power Redevelopment Project

Submitted to
South Coast Air Quality Management District

April 2007

Sierra Research, Inc.
1801 J Street
Sacramento, CA 95814
(916) 444-6666

Air Dispersion Modeling Protocol
El Segundo Power Redevelopment Project

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1. INTRODUCTION

In November 2000, an air dispersion modeling protocol for the El Segundo Power Redevelopment Project (ESPR) was submitted to the South Coast Air Quality Management District (SCAQMD or District) by Sierra Research. That protocol was approved by the District during the same month. An application for amendment to the ESPR project is being prepared to allow for a revised project design. As part of this amendment, it will be necessary to update the air dispersion modeling analysis for the project. Due to changes to District modeling requirements that have occurred since the approval of the modeling protocol in 2000, this modeling protocol has been updated to be consistent with current District modeling guidelines.

2. FACILITY DESCRIPTION AND SOURCE INFORMATION

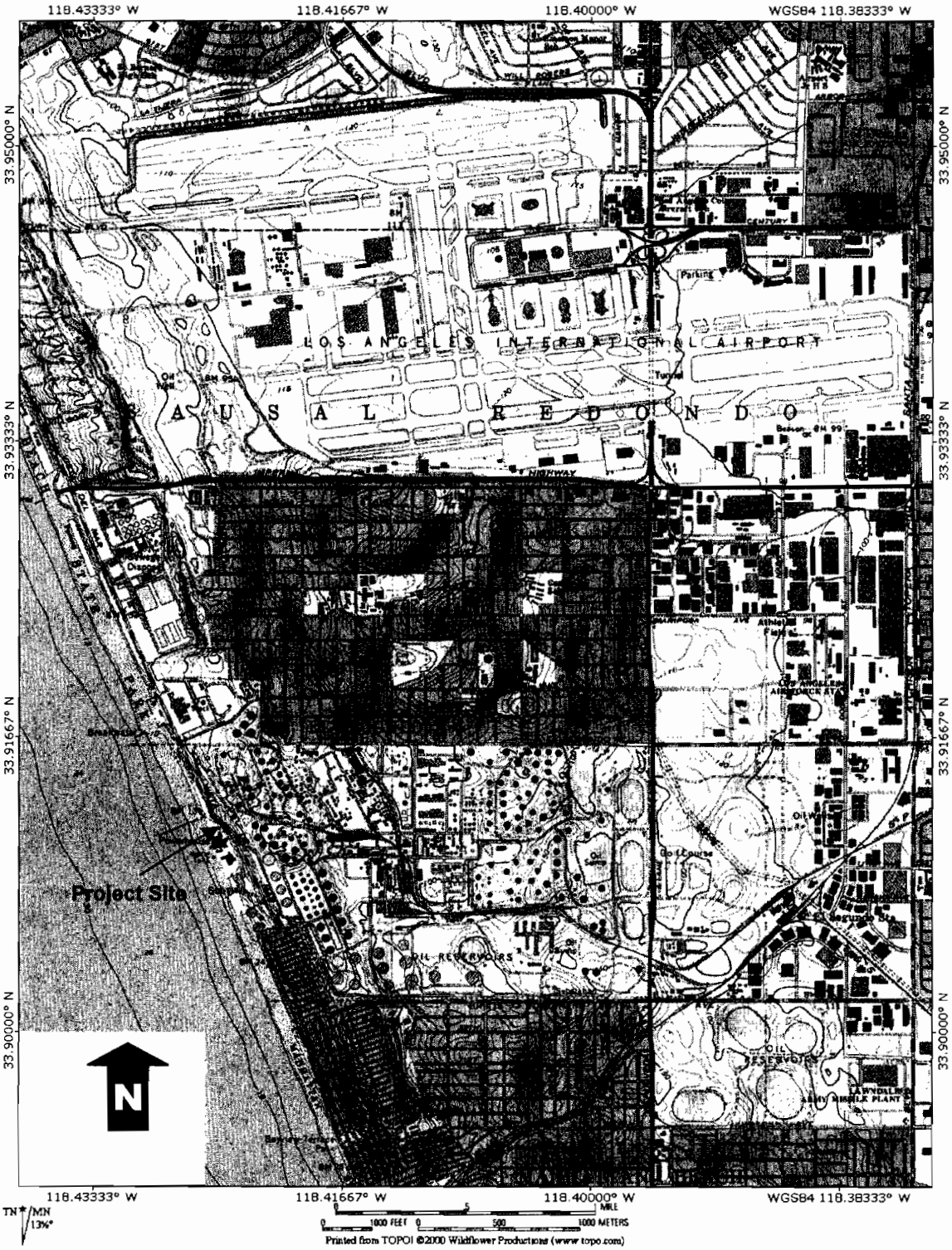
El Segundo Power II LLC proposes to construct and operate two new F-Class natural gas-fired gas turbines at the existing El Segundo Generating Station. The El Segundo Generating Station is located at 301 Vista Del Mar, El Segundo, California, situated approximately 2.5 miles southwest of the Los Angeles International Airport and west of the San Diego Freeway (I-405) on the eastern shore of Santa Monica Bay. The project site is bordered by Vista Del Mar and the Chevron refinery to the east, 45th Street in the City of Manhattan Beach on the south, Santa Monica Bay on the west, and Chevron Marine Terminal on the north. The facility site is approximately 33 acres in size. Figure 1 shows the location of the facility.

Besides installation of two new F-Class combined-cycle gas turbines, the project will include the installation of a Diesel-fueled emergency firewater pump engine. The new emitting units will be fitted with Best Available Control Technology (BACT). For the gas turbines, BACT will include dry low-NOx combustors, selective catalytic reduction (SCR), an oxidation catalyst, and use of clean-burning natural gas as the fuel. The emergency firewater pump engine will meet the EPA non-road engine certification requirements for an engine manufactured in 2007. The engine will also use CARB ultra-low sulfur content Diesel fuel.

The operating schedule of the new equipment will vary and may range from no operation during the winter months to potentially full time operation (24 hours per day, 7 days per week) during the summer months. The modeling analysis will be performed for the worst-case (maximum expected equipment operation) operating hour, operating day, and operating year. The modeling analysis will include a complete description of the new equipment including the worst-case hourly, daily, and annual operating schedules used for the analysis.

FIGURE 1

PROJECT LCATION



3. DISPERSION MODEL INPUT

ISCST3 Modeling

Most of the air dispersion modeling will be conducted with Version 02035 of the ISCST3 model. The air quality modeling analysis will follow the SCAQMD January 24, 2007 guidance, ISCST3 User's Guide, and EPA's "Guideline on Air Quality Models." One of the default options that will be used allows the model to automatically calculate dispersion for both simple and complex terrain because some terrain heights exceed the height of the stack. The upper-bound and urban options will be turned on and the calm wind processing and regulatory default options will be turned off. Additional ISCST3 model options that will be used are URBAN and NOCALM. Downwash parameters will be determined by implementing the Building Profile Input Program (BPIP).

Ambient Ratio Method and Ozone Limiting Method

Annual NO_2 concentrations will be calculated using the Ambient Ratio Method (ARM), adopted in Supplement C to the Guideline on Air Quality Models (USEPA, 1995). The Guideline allows a nationwide default of 75% for the conversion of nitric oxide (NO) to NO_2 on an annual basis and the calculation of NO_2/NOx ratios.

If NO_2 concentrations need to be examined in more detail, the Ozone Limiting Method (OLM; Cole and Summerhays, 1979), as offered with ISC3 software, will be used. Hourly ozone data collected at the West Los Angeles monitoring station during 2006 will be used in conjunction with ISCST3-OLM to calculate hourly NO_2 concentrations from hourly NOx concentrations. The OLM involves an initial comparison of the estimated maximum NOx concentration during each modeled hour and the ambient O_3 concentration in the atmosphere for the same hour to determine if the latter is high enough to cause more than the default 10 percent conversion of NO to NO_2 formation. If the remaining O_3 concentration is greater than the maximum NOx concentration, total conversion is assumed. If the NOx concentration is greater than the O_3 concentration, the formation of NO_2 is limited by the remaining ambient O_3 concentration. In this case, the NO_2 concentration is set equal to the O_3 concentration plus a correction factor that accounts for in-stack and near-stack thermal conversion.

Since 1998, OLM has been implemented using the ISCST3-OLM model. There is now a second option. AERMOD PVMRM is a non-regulatory option that is now available for use. For this project, AERMOD PVMRM will be used to calculate the NO_2 concentration based on the PVMRM method, and hourly ozone data. Missing hourly ozone data will be substituted prior to use with day-appropriate values (e.g., from the previous day, or the next day, for the same hour). Any other missing hourly ozone data (if any) will be substituted with 40 ppb ozone (typical ozone tropospheric background level).

Fumigation Modeling

The SCREEN3 model will be used to evaluate inversion breakup and shoreline fumigation impacts for short-term averaging periods (24 hours or less), as appropriate. EPA methodology[1] and SCAQMD modeling guidelines will be followed for these analyses.

Health Risk Modeling

A multiple-pathway screening-level health risk assessment will be performed for the project. For this analysis, the HARP model, Version 1.3, will be run following the guidance provided in SCAQMD's Risk Assessment Procedures for Rules 1401 and 212 and in the Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588).

Meteorological Data

Following District guidance, 1981 surface meteorological data (i.e., hourly wind speed and direction) from the Lennox station (located approximately 5 km from the project site) will be used for the analysis (as downloaded from the District web site). Upper air meteorological data from the Los Angeles Airport station will also be used for the analysis (also located approximately 5 km from the project site). These are the nearest District-approved surface and upper air meteorological monitoring stations to the project site. There is no intervening terrain between the project site and the monitoring stations that would dictate the use of alternative monitoring stations.

Receptor Grids

A coarse grid of receptors spaced 250 meters apart will be placed from the facility fenceline going out 10 km to the south, east and north, and 8 km to the west. A refined grid of receptors spaced at 25 meters will be used in areas where the coarse grid analyses

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[1] EPA. *Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised*, Report 454/R-92-019, 1992.

indicate modeled maxima will be located. Following general California Energy Commission (CEC) guidance, fine grid receptors will be placed up to 1000 meters away from any coarse grid impact, to ensure that all maxima are captured in the fine receptor grids. Receptors will be spaced 25 meters apart along the facility fenceline, and in a tier of receptors four rows deep paralleling the fenceline. Digital Elevation Model (DEM) data will be used to select the receptor elevations. A map showing the receptor grids with the actual coordinate system used for modeling will be included as part of the modeling analysis report.

Modeling Scenarios

Emissions will occur from combustion of natural gas in the proposed new combustion turbines and from Diesel fuel combustion in the emergency firewater pump engine. As part of the analysis, hourly, daily, and annual emission rates will be calculated based on vendor data and additional conservative assumptions of equipment performance. Turbine emissions and stack parameters, such as flow rate and exit temperature, exhibit some variation with ambient temperature.

To calculate the worst-case air quality impacts, a screening analysis will be performed to evaluate several turbine operating scenarios (e.g., normal full-load operation, normal low-load operation, startup, commissioning), and will predict the worst-case facility impact on a pollutant-specific basis. Each operating scenario has unique performance characteristics that affect plume dispersion and thus predicted ambient impacts. A cold, annual average, and hot ambient temperature operating scenario will be developed for the project to reflect actual site conditions. The results of the screening analysis will be used to select the worst-case operational scenarios for the refined modeling. The stack parameters and criteria pollutant emission rates used for the screening, refined, startup, and commissioning analysis will be provided as part of the analysis.

Ambient Air Quality Data

The Hawthorne monitoring station is the nearest District ambient monitoring station to the project site. This station is located only approximately 5 miles from the project site. However, data collection at this station ended in December 2004. The next nearest District monitoring station for ozone/CO/NO_2 is a station located at the West Los Angeles VA Hospital (approximately 9 miles from the project site). The nearest SCAQMD monitoring station for PM_{10}/$PM_{2.5}$/SO_2 is the station located at North Long Beach (approximately 14 miles from the project site). There are no other District/State/Federal-operated ambient monitoring stations located closer to the project site. Consequently, for background ozone/NO_2/CO levels, data collected at the West Los Angeles monitoring station during the period from 2004 to 2006 will be used for the

upcoming analysis. For background $PM_{10}/PM_{2.5}/SO_2$ levels, data collected at the North Long Beach monitoring station during the period from 2004 to 2006 will be used for the analysis.

4. DISPERSION MODELING REPORT CONTENT AND ORGANIZATION

The results of the criteria pollutant and TAC modeling will be assembled in a final air dispersion modeling report that will be organized as follows:

- Facility Description – This section will contain the information requested in Section II of the SCAQMD January 24, 2007 guidance document, including a site map and site plan along with equipment operating schedules.

- Model Options and Input – This section will contain the information requested in Section III of the SCAQMD January 24, 2007 guidance document, including model options, source parameters, meteorological data, and receptor grid used for the modeling analysis.

- Modeling Results – This section will contain the information requested in Section IV of the SCAQMD January 24, 2007 guidance document, including model output summaries and derived air quality impacts. The modeling results will also discuss compliance with the requirements of District rules. Model input and output files and meteorological data will be provided in electronic format on a compact disc.

5. REFERENCES

South Coast AQMD, 2007. Dispersion Modeling Procedures for Relevant District Rules, January 24, 2007.

South Coast AQMD, 2005. Risk Assessment Procedures for Rules 1401 and 212, Version 7.0, July 1, 2005.

USEPA, 1987. Supplement A to the Guideline on Air Quality Models (Revised). Office of Air Quality Planning and Standards, Research Triangle Park, NC.

USEPA, 1990. Supplement B to the Guideline on Air Quality Models (Revised). Office of Air Quality Planning and Standards, Research Triangle Park, NC.

USEPA, 1995. Supplement C to the Guideline on Air Quality Models (revised). Office of Air Quality Planning and Standards, Research Triangle Park, NC.

USEPA, 2003. 40 CFR Part 51, Appendix W. Guideline on Air Quality Models. Last update 5/13/2003.