



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



OCT - 8 2009

Kent Larsen
San Joaquin Solar 1 & 2
12555 High Bluff Dr
San Diego, CA 92130

Re: Notice of Preliminary Determination of Compliance (PDOC)
Facility: San Joaquin Solar 1 & 2 (08-AFC-12)
Project Number: C-1090203

Dear Mr. Larsen:

Enclosed for your review and comment is the District's preliminary determination of compliance (PDOC) for the installation of two 53.5 MW hybrid design solar thermal electric generating plants, comprising a solar field and biomass facility, the installation of two 35,840 gallon per minute wet surface air cooled condensers, and the installation of two 1341 bhp diesel fired emergency internal combustion engine powering an electrical generator and two 250 bhp diesel fired emergency internal combustion engine powering a firewater pump, located at Section 3, Township 21S, Range 16E in Fresno County, CA.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. Please submit your written comments on this project within the 30-day public comment period which begins on the date of publication of the public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Stanley Tom of Permit Services at (559) 230-5900.

Sincerely,

David Warner
Director of Permit Services

DW:st

Enclosures

cc: Anne Runnalls, URS Corporation
Elizabeth Klebaner, Adams Broadwell Joseph & Cardozo
Ingrid Brostrom, Center on Race, Poverty, & the Environment
Phyllis Fox
John Honnette

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585



OCT - 8 2009

Mike Tollstrup, Chief
Project Assessment Branch
Stationary Source Division
California Air Resources Board
PO Box 2815
Sacramento, CA 95812-2815

Re: Notice of Preliminary Determination of Compliance (PDOC)
Facility: San Joaquin Solar 1 & 2 (08-AFC-12)
Project Number: C-1090203

Dear Mr. Tollstrup:

Enclosed for your review and comment is the District's preliminary determination of compliance (PDOC) for the installation of two 53.5 MW hybrid design solar thermal electric generating plants, comprising a solar field and biomass facility, the installation of two 35,840 gallon per minute wet surface air cooled condensers, and the installation of two 1341 bhp diesel fired emergency internal combustion engine powering an electrical generator and two 250 bhp diesel fired emergency internal combustion engine powering a firewater pump, located at Section 3, Township 21S, Range 16E in Fresno County, CA.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. Please submit your written comments on this project within the 30-day public comment period which begins on the date of publication of the public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Stanley Tom of Permit Services at (559) 230-5900.

Sincerely,

David Warner
Director of Permit Services

DW:st

Enclosures

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



OCT - 8 2009

Gerardo C. Rios (AIR 3)
Chief, Permits Office
Air Division
U.S. E.P.A. - Region IX
75 Hawthorne Street
San Francisco, CA 94105

Re: Notice of Preliminary Determination of Compliance (PDOC)
Facility: San Joaquin Solar 1 & 2 (08-AFC-12)
Project Number: C-1090203

Dear Mr. Rios:

Enclosed for your review and comment is the District's preliminary determination of compliance (PDOC) for the installation of two 53.5 MW hybrid design solar thermal electric generating plants, comprising a solar field and biomass facility, the installation of two 35,840 gallon per minute wet surface air cooled condensers, and the installation of two 1341 bhp diesel fired emergency internal combustion engine powering an electrical generator and two 250 bhp diesel fired emergency internal combustion engine powering a firewater pump, located at Section 3, Township 21S, Range 16E in Fresno County, CA.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. Please submit your written comments on this project within the 30-day public comment period which begins on the date of publication of the public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Stanley Tom of Permit Services at (559) 230-5900.

Sincerely,

David Warner
Director of Permit Services

DW:st

Enclosures

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



OCT - 8 2009

Joseph Douglas
Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

Re: Notice of Preliminary Determination of Compliance (PDOC)
Facility: San Joaquin Solar 1 & 2 (08-AFC-12)
Project Number: C-1090203

Dear Mr. Trask:

Enclosed for your review and comment is the District's preliminary determination of compliance (PDOC) for the installation of two 53.5 MW hybrid design solar thermal electric generating plants, comprising a solar field and biomass facility, the installation of two 35,840 gallon per minute wet surface air cooled condensers, and the installation of two 1341 bhp diesel fired emergency internal combustion engine powering an electrical generator and two 250 bhp diesel fired emergency internal combustion engine powering a firewater pump, located at 16027 Section 3, Township 21S, Range 16E in Fresno County, CA.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. Please submit your written comments on this project within the 30-day public comment period which begins on the date of publication of the public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Stanley Tom of Permit Services at (559) 230-5900.

Sincerely,

David Warner
Director of Permit Services

DW:st

Enclosures

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

Fresno Bee

**NOTICE OF PRELIMINARY DECISION
FOR THE PROPOSED ISSUANCE OF
DETERMINATION OF COMPLIANCE**

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Unified Air Pollution Control District solicits public comment on the proposed issuance of determination of compliance (DOC) to San Joaquin Solar 1 & 2 for the installation of two 53.5 MW hybrid design solar thermal electric generating plants, comprising a solar field and biomass facility, the installation of two 35,840 gallon per minute wet surface air cooled condensers, and the installation of two 1341 bhp diesel fired emergency internal combustion engine powering an electrical generator and two 250 bhp diesel fired emergency internal combustion engine powering a firewater pump, located at Section 3, Township 21S, Range 16E in Fresno County, CA.

The analysis of the regulatory basis for these proposed actions, Project #C-1090203, is available for public inspection at the District office at the address below or at http://www.valleyair.org/notices/public_notices_idx.htm. Written comments on this project must be submitted within 30 days of the publication date of this notice to **DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT, 1990 EAST GETTYSBURG AVENUE, FRESNO, CA 93726.**

DETERMINATION OF COMPLIANCE EVALUATION

San Joaquin Solar 1 & 2 Project
California Energy Commission
Application for Certification Docket #: 08-AFC-12

Facility Name: San Joaquin Solar 1 & 2
Mailing Address: 12555 High Bluff Dr
San Diego, CA 92130

Contact Name: Kent Larsen
Telephone: (858) 947-7056
Fax: (858) 513-1205

Alternate Contact: Anne Runnalls
Telephone: (619) 243-2824
Fax: (619) 293-7920
E-Mail: Anne_Runnalls@urscorp.com

Engineer: Stanley Tom, Senior Air Quality Engineer
Lead Engineer: Joven Refuerzo, Supervising Air Quality Engineer
Date: October 1, 2009

Project #: C-1090203
Application #'s: C-7758-1-0, C-7758-2-0, C-7758-3-0, C-7758-4-0, C-7758-5-0, C-7758-6-0, C-7758-7-0, C-7758-8-0, C-7758-9-0, C-7758-10-0, C-7758-11-0, C-7758-12-0, and C-7758-13-0

Submitted: January 21, 2009

Table of Contents

Section	Page
I. Proposal	1
II. Applicable Rules	1
III. Project Location	2
IV. Process Description	2
V. Equipment Listing	4
VI. Emission Control Technology Evaluation	6
VII. General Calculations	9
VIII. Compliance	26
IX. Recommendation	77
APPENDIX A - Determination of Compliance Conditions	
APPENDIX B - BACT Guidelines	
APPENDIX C - Top Down BACT Analyses	
APPENDIX D - Interpollutant Offset Analysis	
APPENDIX E - Compliance Certification	
APPENDIX F - Health Risk Analysis and Ambient Air Quality Analysis	
APPENDIX G - Boiler Source Test Result	

I. Proposal

San Joaquin Solar 1 & 2 (SJS) is seeking approval from the San Joaquin Valley Air Pollution Control District for the installation of an electrical power generation facility. SJS will consist of two hybrid design solar thermal electric generating plants, comprising a solar field and biomass facility for each plant. The two plants will each produce up to a nominal 53.4 megawatts (MW) net of renewable energy. The project will apply solar thermal technology in combination with biomass combustion to provide renewable energy. Heat derived from the collection of solar radiation, complemented by heat derived from the combustion of biomass during periods of limited solar radiation, will power a conventional steam turbine generation. The two plants will be owned and operated by San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC.

SJS is proposing to install four 316 MMBtu/hr biomass-fired bubbling fluidized bed combustors, four baghouses, four cyclones, four wet scrubbers, four dry scrubbers, two 1,341 bhp diesel-fired emergency internal combustion (IC) engines powering an electrical generator, two 250 bhp diesel-fired emergency internal combustion (IC) engines powering a firewater pump, and two 35,840 gallon per minute wet surface air cooled condensers (WSAC).

SJS is subject to approval by the California Energy Commission (CEC). Pursuant to SJVAPCD Rule 2201, Section 5.8, the Determination of Compliance (DOC) review is functionally equivalent to an Authority to Construct (ATC) review. The Determination of Compliance (DOC) will be issued and submitted to the CEC contingent upon SJVAPCD approval of the project.

The California Energy Commission (CEC) is the lead agency for this project for the requirements of the California Environmental Quality Act (CEQA).

II. Applicable Rules

- Rule 1080** Stack Monitoring (12/17/92)
- Rule 1081** Source Sampling (12/16/93)
- Rule 1100** Equipment Breakdown (12/17/92)
- Rule 2010** Permits Required (12/17/92)
- Rule 2201** New and Modified Stationary Source Review Rule (9/21/06)
- Rule 2520** Federally Mandated Operating Permits (6/21/01)
- Rule 2540** Acid Rain Program (11/13/97)
- Rule 2550** Federally Mandated Preconstruction Review for Major Sources of Air Toxics (6/18/98)
- Rule 4001** New Source Performance Standards (4/14/99)
- Rule 4002** National Emissions Standards for Hazardous Air Pollutants (5/18/00)
- Rule 4101** Visible Emissions (2/17/05)
- Rule 4102** Nuisance (12/17/92)
- Rule 4201** Particulate Matter Concentration (12/17/92)
- Rule 4202** Particulate Matter Emission Rate (12/17/92)
- Rule 4301** Fuel Burning Equipment (12/17/92)
- Rule 4305** Boilers, Steam Generators and Process Heaters – Phase 2 (08/21/03)
- Rule 4306** Boilers, Steam Generators and Process Heaters – Phase 3 (02/17/05)

San Joaquin Solar 1 & 2 (08-AFC-12)

SJVACPD Determination of Compliance, C1090203

- Rule 4320** Advanced Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater Than 5.0 MMBtu/hr (10/16/08)
- Rule 4352** Solid Fuel Fired Boilers, Steam Generators, and Process Heaters (05/18/06)
- Rule 4701** Stationary Internal Combustion Engines – Phase 1 (8/21/03)
- Rule 4702** Stationary Internal Combustion Engines – Phase 2 (1/18/07)
- Rule 4703** Stationary Gas Turbines (8/17/06) – *Not Applicable: Solar Steam Turbine Generator*
- Rule 4801** Sulfur Compounds (12/17/92)
- Rule 7012** Hexavalent Chromium - Cooling Towers (12/17/92)
- Rule 8011** General Requirements (8/19/04)
- Rule 8021** Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities (8/19/04)
- Rule 8031** Bulk Materials (8/19/04)
- Rule 8051** Open Areas (8/19/04)
- Rule 8061** Paved and Unpaved Roads (8/19/04)
- Rule 8071** Unpaved Vehicle/Equipment Traffic Areas (9/16/04)
- California Environmental Quality Act (CEQA)**
- CH&SC 41700** Health Risk Assessment
- CH&SC 42301.6** School Notice
- CH&SC 44300** (Air Toxic “Hot Spots”)
- Title 13** California Code of Regulations (CCR), Section 2423 – Exhaust Emission Standards and Test Procedures, Off-Road Compression-Ignition Engines and Equipment
- Title 17** CCR, Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines

III. Project Location

The site is located in an unincorporated area of southwestern Fresno County, east of the City of Coalinga and southwest of Huron, CA. The project is approximately 8 miles north of Kings County. The project site will encompass one full section (640 acres) of tilled farm land comprising the entirety of Section 3, Township 21S, Range 16E, adjacent to West Jayne Avenue to the north and two miles east of California Route 33. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

Power Generation

Solar thermal technology provides a unique opportunity for hybrid generation, in that the steam turbine generator can be fueled with steam produced by thermal energy supplied from the solar field or by thermal energy supplied by a biomass fired boiler. Biomass combustion enhances the projects operating factor and economic performance by supplementing solar based renewable energy production with clean, renewable biomass based energy.

Biomass based energy production will be subordinate to production from the solar field, supplementing solar production during shoulder solar hours and when solar radiation is limited by local weather conditions, and replacing solar production at night. The facility is designed to produce up to 53.4 MW net energy to the grid when sufficient solar energy is available. During peak solar hours, the facility will produce power solely from the solar field. When there is no solar radiation and

energy production is only from biomass, the facility will be capable of production 40 MW of net energy to the grid.

The biomass facility at each SJS 1&2 plant has two 20 MW combustor trains. Each train can be operated independently, providing optimum operating flexibility and turndown ratio. SJS 1&2 are expected to utilize approximately 450,000 bone dry tons (BDT) of biomass fuel (including all sources) per year in the biomass combustor.

The project will burn a combination of locally available biomass. The anticipated mix of fuels for the project is as follows:

- 50% Agricultural Wood Waste compose primarily of wastes collected during clearing or pruning of local orchards. Wood wastes will primarily be pistachio, almond, walnut, and citrus trees, and will include some leafy material and a small amount of dirt resulting from the collection process.
- 50% Municipal Green Wastes composed primarily of clippings and collected wood materials from local municipalities.

Biomass will be delivered to the site in tractor trailers. A fuel storage area common to both SJS 1&2 plants will be located near the center of the proposed project site. It is anticipated that two front-end loaders will be needed to move the biomass. The majority of the biomass handling will occur in an enclosed system with slight negative pressure for dust control. Biomass delivery trucks will be unloaded directly into two enclosed hoppers, which will feed a screen to separate the wood chips according to size. The oversized chips will be processed by a grinder, then combined with the rest of the biomass. The biomass will then travel on a covered conveyor to the stacker which creates the biomass storage pile. Biomass will be picked up from the storage pile by a reclaim conveyor that will load the biomass into an interim storage silo which feeds a metering bin and ultimately the combustor. There will be seven dust capture points along the biomass handling system that will feed a baghouse. Each plant will have its own biomass handling system. The dust removal/control efficiency for the baghouses is anticipated to be at least 99%. One front end loader for each plant will be used intermittently in the biomass storage area.

Limestone and lime will be used in the biomass facilities for emission control. These materials will be delivered routinely to the site and stored in silos located near each plant's biomass facility.

A biomass combustion byproduct is ash. Ash will be collected from several points in the biomass facilities, including the boilers and economizers, the cyclones, the baghouses, and the air pre-heaters. All ash produced from the combustion process will be stored in silos until transported off site for beneficial uses, including the manufacture of aggregate and concrete, soil mineral supplements and bedding material for livestock pens, as well as other uses. All of the ash produced from the facility is anticipated to be marketable for these purposes, which are traditional uses for similar ash byproducts produced by existing biomass facilities throughout the state burning the same fuels as the proposes SJS 1&2 project.

Major sections of each SJS 1&2 plant include the solar field, biomass facility, power block and transmission interconnection. SJS 1 will be located on the northern portion of the site; SJS 2 will be on the southern portion. During daytime solar hours, each plant will generate 53.4 MW of net electric power production from the solar fields. When solar radiation is less intense, solar generation can be supported with biomass generation up to the rated capacity of the steam turbine. During nighttime hours, biomass combustion will provide up to 40 MW net from each SJS 1&2 plant without any solar

input and will maintain the solar field in a hot standby condition such that quick transfer to solar production can be accomplished when solar radiation is again available.

Diesel-fired Emergency Engine

The emergency engines power electrical generators and firewater pumps. Other than emergency operation, the engines may be operated up to 12 (electrical generators) or 52 (firewater pumps) hours per year for maintenance and testing purposes.

Wet Surface Air Cooled Condensers (WSAC)

Two wet surface air cooled condensers (WSAC) will be used to provide cooling water for the steam turbine and other cooling loads. The WSACs will consist of 4 cells and have a design water flow rate of 35,840 gallons per minute (gpm). The WSACs will be equipped with a high efficiency mist eliminator to minimize WSAC drift and the resultant PM10 emissions. The PM10 emissions are due to total dissolved solids (TDS) in the cooling water. No chromium containing compounds will be added to the cooling water.

V. Equipment Listing

- C-7758-1-0: BIOMASS RECEIVING, STORAGE, TRANSFER AND SIZING OPERATION WITH FUEL STORAGE AREA, BIOMASS SCREEN, GRINDER, STORAGE SILO, AND AUTOMATED CONVEYOR SYSTEM SERVED BY TWO BAGHOUSES
- C-7758-2-0: LIMESTONE RECEIVING, STORAGE, AND TRANSFER OPERATION WITH AN ENCLOSED LIMESTONE STORAGE SILO SERVED BY A BIN VENT FILTER, ENCLOSED LIMESTONE TRUCK UNLOADING SYSTEM AND ENCLOSED LIMESTONE TRANSFER SYSTEM
- C-7758-3-0: 316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY
- C-7758-4-0: 316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY

- C-7758-5-0: 316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY
- C-7758-6-0: 316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY
- C-7758-7-0: FLY ASH HANDLING, STORAGE, AND LOADOUT OPERATION CONSISTING OF FOUR FLY ASH STORAGE SILOS EACH SERVED BY A BIN VENT FILTER, ENCLOSED SCREW CONVEYORS
- C-7758-8-0: 35,840 GALLON PER MINUTE MECHANICAL/INDUCED DRAFT WET SURFACE AIR COOLED CONDENSER WITH 4 CELLS SERVED BY DRIFT ELIMINATORS
- C-7758-9-0: 35,840 GALLON PER MINUTE MECHANICAL/INDUCED DRAFT WET SURFACE AIR COOLED CONDENSER WITH 4 CELLS SERVED BY DRIFT ELIMINATORS
- C-7758-10-0: 1,341 BHP CATERPILLAR MODEL C32TA TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR
- C-7758-11-0: 1,341 BHP CATERPILLAR MODEL C32TA TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR
- C-7758-12-0: 250 BHP CLARKE MODEL JU6H TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A FIREWATER PUMP
- C-7758-13-0: 250 BHP CLARKE MODEL JU6H TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A FIREWATER PUMP

VI. Emission Control Technology Evaluation

C-7758-1-0

The receiving of biomass fuel will result in the release of PM₁₀ emissions. The biomass will be unloaded using hydraulic truck lifts onto an automated conveyor system served by a baghouse for each plant. The baghouse will capture the fugitive dust resulting from biomass handling. The baghouse can reduce PM₁₀ emissions by 99% per manufacturer.

C-7758-2-0

The limestone receiving, storage and transfer operation will result in PM₁₀ emissions. Limestone arrives via delivery truck, and is pneumatically unloaded from the truck into a silo. Displaced air in the silo is filtered through the bin vent filter, reducing emissions by at least 99%. Limestone will be unloaded from the silo and transferred to the boiler in a totally enclosed pneumatic conveyance system. The total enclosure will eliminate fugitive PM₁₀ emissions.

C-7758-3-0 through '6-0

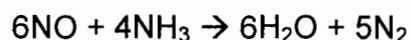
Combustion of biomass fuel will result in the formation of NO_x, SO_x, PM₁₀, CO, and VOC emissions, via combustor exhaust stack. The preheat burner will combust natural gas, which will also result in the formation of NO_x, SO_x, PM₁₀, CO, and VOC emissions.

1. NO_x Control

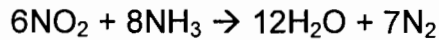
The NO_x is formed by two sources. The nitrogen contained in the biomass fuel is liberated from the fuel during combustion and oxidized into NO_x (fuel NO_x). Ambient nitrogen from the boiler's air intake is also oxidized into NO_x in the presence of the high combustion temperatures (Thermal NO_x).

NO_x control during the combustion process is achieved through a combination of methods. The bubbling fluidized bed combustion technology in combination with multiple stages of combustion air creates an extended combustion zone where cool bed temperatures both inhibit thermal NO_x formation and minimize the conversion of fuel nitrogen into NO_x. The introduction of large quantities of inert materials (sand and limestone) with high volumes of preheated fluidizing air makes low NO_x and VOC emissions possible.

Post-combustion NO_x is controlled by an ammonia injection system, otherwise known as a Selective Non-Catalytic Reduction (SNCR) system. Ammonia (NH₃) is injected into the exhaust stream of gas leaving the combustor zone where it can react with NO_x. Nitric Oxide (NO) is converted into nitrogen and water in the following reaction:



Similarly, nitrogen dioxide (NO₂) is converted into nitrogen and water in the following reaction:



Operation of the SNCR system is highly dependent on the temperature of the flue gas. In the absence of a catalyst, ammonia will selectively react with nitric oxide and water (as described above) at temperatures in the range of 1400 °F to 2000 °F, although temperatures above 1700 °F are preferred. Under typical conditions, the SNCR will result in the reduction of about 30% to 50% of NO_x.

A selective catalytic reduction system (SCR) is proposed for additional NO_x reduction before a wet scrubber provides a final means of removal for ammonia, acid gas, and particulate emissions.

Selective Catalytic Reduction systems selectively reduce NO_x emissions by injecting ammonia (NH₃) into the exhaust gas stream upstream of a catalyst. Nitrogen oxides, NH₃, and O₂ react on the surface of the catalyst to form molecular nitrogen (N₂) and H₂O. SCR is capable of over 90 percent NO_x reduction. Titanium oxide is the SCR catalyst material most commonly used, though vanadium pentoxide, noble metals, or zeolites are also used. The ideal operating temperature for a conventional SCR catalyst is 600 to 750 °F. Exhaust gas temperatures greater than the upper limit (750 °F) will cause NO_x and NH₃ to pass through the catalyst unreacted. Ammonia slip will be limited to 5.0 ppmvd @ 15% O₂.

2. SO_x Control

SO_x is controlled by the injection of limestone into the combustor bed and the wet scrubber. Fuel bound sulfur is released during combustion and is oxidized into SO_x. Limestone (calcium carbonate, CaCO₃) is added to the fluidized bed. At combustion temperatures, the limestone decomposes into calcium oxide (CaO or quicklime) and CO₂. CaO then reacts with SO₂ in the flue gas to form calcium sulfate (CaSO₄). The CaSO₄, a particulate, is then removed from the exhaust stream by the baghouse.

3. PM₁₀ Control

PM₁₀ is controlled by a multi-clone (a series of cyclones) for initial particulate removal and also by a wet scrubber and a pulse jet baghouse. Flue gas exhaust is routed through the baghouse which filters out the particulate matter. The manufacturer has specified a maximum grain loading emission rate of 0.007 grain per dscf for this baghouse.

4. CO and VOC Control

Control of CO, VOC, and all other products of incomplete combustion are accomplished with the use of fluidized bed combustion technology, including multiple levels of staged overfire air injection.

5. HCL Control

A dry and wet scrubber will be utilized to reduce hydrogen chloride emissions. Hydrated lime will be injected into the dry scrubber for control of acid gases (HCl and SO_x).

C-7758-7-0

The handling, storage and loading out of fly ash will result in the release of PM₁₀ emissions. The handling system employs enclosed conveyors with a silo, which is vented to a vent filter. The proposed filter efficiency is 99%. Fly ash is dampened at the silo. From the silos the damp ash will drop to trucks during loading. There will be two ash drop points at each plant (four points total) no more than three feet.

C-7758-8-0 and '9-0

The WSAC is a source of PM₁₀ emissions. PM₁₀ emissions are due to the total dissolved solids (TDS), mostly salts, in the cooling water. In the cooling process, some of the cooling water (and TDS) is carried out. This is referred to as drift. Some portion of the drift dries in the air before settling to ground, and its TDS content can thereby become airborne PM.

Cooling water drift is controlled by using drift eliminators in each of the WSAC cells. These drift eliminators act as a coalescer for the evolved cooling water to collect on and drop back into the process stream.

C-7220-10-0 and '11-0

The engine is equipped with:

- Intercooler/aftercooler
- Very Low (0.0015%) sulfur diesel

The emission control devices/technologies and their effect on diesel engine emissions detailed below are from *Non-catalytic NO_x Control of Stationary Diesel Engines*, by Don Koeberlein, CARB.

The intercooler/aftercooler functions in conjunction with the turbocharger to reduce the inlet air temperature. By reducing the inlet air temperature, the peak combustion temperature is lowered, which reduces the formation of thermal NO_x. NO_x emissions are reduced by approximately 15% with this control technology.

The use of very low-sulfur diesel fuel (0.0015% by weight sulfur maximum) reduces SO_x emissions by over 99% from standard diesel fuel.

C-7220-12-0 and '13-0

The engine is equipped with:

- Turbocharger
- Very Low (0.0015%) sulfur diesel

The emission control devices/technologies and their effect on diesel engine emissions detailed below are from *Non-catalytic NO_x Control of Stationary Diesel Engines*, by Don Koeberlein, CARB.

The turbocharger reduces the NO_x emission rate from the engine by approximately 10% by increasing the efficiency and promoting more complete burning of the fuel.

The use of very low-sulfur diesel fuel (0.0015% by weight sulfur maximum) reduces SO_x emissions by over 99% from standard diesel fuel.

VII. General Calculations

A. Assumptions

- Operating Schedule is 24 hr/day, 365 day/year

C-7758-1: Biomass receiving, storage, transfer, and sizing operation

Biomass Storage Piles

- Silt content = 2%
- Number of days \geq 0.01 inches precipitation per year (for WRCC for Coalinga COOP Station) = 37
- Time unobstructed wind speed exceeds 12 mph at mean pile height = 5%
- Fraction of TSP = PM₁₀ = 0.5
- Acres = 1.5
- Biomass Storage Piles = 2
- Watering Control Efficiency = 61% (applicant proposed watering every 3 hours)

Unloading and Handling

- Moisture content = 11.5% (applicant proposed)
- Mean wind speed = 5.6 mph (annual average from 2000-2004 Hanford airport data)
- Biomass unloading and handling emissions will be based on receiving 616,667 lb/hr, 3,700 tons/day, and 609,170 tons/year (applicant proposed)
- Biomass baghouse efficiency is 99% (applicant proposed)

C-7758-2: Limestone receiving, storage, and transfer operation

- Moisture content = 10.25% (applicant proposed)
- Mean wind speed = 5.6 mph (annual average from 2000-2004 Hanford airport data)
- Limestone receiving and storage emissions will be based on receiving 4,167 lb/hr, 25.0 tons/day and 2,786 tons/year (applicant proposed)
- Hydrated lime receiving and storage emissions will be based on receiving 4,167 lb/hr, 25.0 tons/day and 1,117 tons/year (applicant proposed)
- Limestone bin vent filter efficiency is 99% (applicant proposed)
- Limestone conveyance system will not have fugitive PM₁₀ emissions

C-7758-3 through '6: 316 MMBtu/hr biomass-fired fluidized bed combustor

- F-Factor for wood/biomass is 9,240 scf/MMBtu
- Ammonia slip is 5 ppmv (applicant proposed)
- Each combustor train will generate approximately 20 MW under most ambient conditions. Each plant has two 20 MW combustor trains. The boilers are expected to operate no more than 6,570 hours per year (each boiler), with an expected plant capacity factor of 75 percent (not including startup hours).
- The system has a 95% HCl control efficiency (applicant proposed)

Natural Gas Burners

Emissions from the natural gas burners within the biomass combustors were estimated by the vendor (EPI) for NO_x, CO, and VOC, District Policy APR 1720 for SO_x, and using AP-42 Natural Gas Combustion for PM₁₀. The burners will be used only during combustor cold startup, thus it is anticipated that each burner will be operated up to 14 hours per year. Four natural gas burners are associated with each combustor train, one 15 MMBtu/hr and three 50 MMBtu/hr burners. The burner exhaust emissions will be vented out of the combustor stacks.

- Maximum daily emissions for the natural gas burners are estimated assuming 7 hours per startup and 165 MMBtu/hr (15 MMBtu/hr + 50 MMBtu/hr + 50 MMBtu/hr + 50 MMBtu/hr).
- Maximum annual emissions for natural gas burners are estimated assuming 14 hours per year and 165 MMBtu/hr (15 MMBtu/hr + 50 MMBtu/hr + 50 MMBtu/hr 50 MMBtu/hr).
- There is 1 hour of overlap (hour 7) during startup with the natural gas burners and the combustors.
- Commissioning emissions will count towards the annual emission limit for each combustor.

Pollutant	Natural Gas Burner Emission Factors	Source
NO _x	0.1 lb-NO _x /MMBtu	AP-42 (07/98) Table 1.4-1
SO _x	0.00285 lb-SO _x /MMBtu	District Policy APR 1720
PM ₁₀	0.0076 lb-PM ₁₀ /MMBtu	AP-42 (07/98) Table 1.4-2
CO	0.084 lb-CO/MMBtu	AP-42 (07/98) Table 1.4-1
VOC	0.0055 lb-VOC/MMBtu	AP-42 (07/98) Table 1.4-2

C-7758-7: Fly ash handling, storage, and load out operation

- Moisture content = 7% (applicant proposed)
- Mean wind speed = 5.6 mph (annual average from 2000-2004 Hanford airport data)
- Fly ash removal rate is approximately 33,333 lb/hr, 200 tons per day, and 30,459 tons per year (applicant proposed)
- Fly ash bin vent filter efficiency is 99% (applicant proposed)

C-7758-8 and '9: Wet Surface Air Cooled Condenser

- PM₁₀ is the only criteria pollutant emitted by the WSAC
- WSAC total dissolved solids = 15.44 lb/1000 gallons (applicant proposal)
- WSAC Recirculation Rate = 71,680 gal/min total maximum short term for both WSACs (applicant proposal)
- WSAC Recirculation Rate = 61,000 gal/min total annual average for both WSACs (applicant proposal)
- Cycles of concentration = 5 (applicant proposal)
- Density of water = 8.34 lb/gal
- WSAC drift eliminator has a drift rate of 0.0005% (0.0005% of circulated water is emitted)

C-7758-10 and '11: 1341 bhp Emergency Engine Powering Electrical Generator

Emergency operating schedule: 1 hour/day
 Non-emergency operating schedule: up 12 hours/year
 Density of diesel fuel: 7.1 lb/gal
 EPA F-factor (adjusted to 60 °F): 9,051 dscf/MMBtu
 Fuel heating value: 137,000 Btu/gal
 BHP to Btu/hr conversion: 2,542.5 Btu/bhp-hr
 Thermal efficiency of engine: commonly ≈ 35%
 PM₁₀ fraction of diesel exhaust: 0.96 (CARB, 1988)

- The applicant has only supplied an emissions factor for NO_x and VOC emissions combined. Therefore the District will use data from the EPA document "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compressions Ignition", dated November 2002, as presented in the following table to estimate NO_x and VOC emissions (District assumption).

Tier 2 and Tier 3 Diesel-Fired IC Engines NO _x and VOC Estimated Emissions						
Horsepower Range (bhp)	Combined Standard, NO _x + VOC (g/bhp-hr)		Estimated NO _x Emissions (g/bhp-hr)		Estimated VOC Emissions (g/bhp-hr)	
	Tier 2	Tier 3	Tier 2	Tier 3	Tier 2	Tier 3
≥ 50 to < 100	5.6	3.5	5.2	3.3	0.4	0.2
≥ 100 to < 175	4.9	3.0	4.5	2.8	0.4	0.2
≥ 175 to < 300	4.9	3.0	4.5	2.8	0.4	0.2
≥ 300 to < 600	4.8	3.0	4.5	2.8	0.3	0.2
≥ 600 to < 750	4.8	3.0	4.5	2.8	0.3	0.2
≥ 750	4.8	N/A	4.5	N/A	0.3	N/A

For this application for a 1341 bhp Tier 2 certified IC engine the applicant supplied NO_x + VOC emissions factor is 4.77 g/bhp-hr. Therefore, the NO_x and VOC emissions factors for this engine are calculated as follows:

$$\text{NO}_x \text{ (g/bhp-hr)} = \text{NO}_x + \text{VOC (g/bhp-hr)} \times (4.5 \text{ g/bhp-hr} \div 4.8 \text{ g/bhp-hr})$$

$$\text{NO}_x \text{ g/bhp-hr} = 4.77 \text{ g/bhp-hr} \times (4.5 \text{ g/bhp-hr} \div 4.8 \text{ g/bhp-hr})$$

NO_x = 4.47 g/bhp-hr

$$\text{VOC (g/bhp-hr)} = \text{NO}_x + \text{VOC (g/bhp-hr)} \times (0.3 \text{ g/bhp-hr} \div 4.8 \text{ g/bhp-hr})$$

$$\text{VOC g/bhp-hr} = 4.77 \text{ g/bhp-hr} \times (0.3 \text{ g/bhp-hr} \div 4.8 \text{ g/bhp-hr})$$

VOC = 0.30 g/bhp-hr

C-7758-12 and '13: 250 bhp Emergency Engine Powering Fire Pump

Emergency operating schedule: 1 hour/day
 Non-emergency operating schedule: up to 52 hours/year
 Density of diesel fuel: 7.1 lb/gal
 EPA F-factor (adjusted to 60 °F): 9,051 dscf/MMBtu
 Fuel heating value: 137,000 Btu/gal
 BHP to Btu/hr conversion: 2,542.5 Btu/bhp-hr
 Thermal efficiency of engine: commonly ≈ 35%
 PM₁₀ fraction of diesel exhaust: 0.96 (CARB, 1988)

- The applicant has only supplied an emissions factor for NO_x and VOC emissions combined. Therefore the District will use data from the EPA document "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compressions Ignition", dated November 2002, as presented in the following table to estimate NO_x and VOC emissions (District assumption).

Tier 2 and Tier 3 Diesel-Fired IC Engines NO _x and VOC Estimated Emissions						
Horsepower Range (bhp)	Combined Standard, NO _x + VOC (g/bhp-hr)		Estimated NO _x Emissions (g/bhp-hr)		Estimated VOC Emissions (g/bhp-hr)	
	Tier 2	Tier 3	Tier 2	Tier 3	Tier 2	Tier 3
≥ 50 to < 100	5.6	3.5	5.2	3.3	0.4	0.2
≥ 100 to < 175	4.9	3.0	4.5	2.8	0.4	0.2
≥ 175 to < 300	4.9	3.0	4.5	2.8	0.4	0.2
≥ 300 to < 600	4.8	3.0	4.5	2.8	0.3	0.2
≥ 600 to < 750	4.8	3.0	4.5	2.8	0.3	0.2
≥ 750	4.8	N/A	4.5	N/A	0.3	N/A

For this application for a 250 bhp Tier 2 certified IC engine the applicant supplied NO_x + VOC emissions factor is 4.92 g/bhp-hr. Therefore, the NO_x and VOC emissions factors for this engine are calculated as follows:

$$\text{NO}_x \text{ (g/bhp-hr)} = \text{NO}_x + \text{VOC (g/bhp-hr)} \times (4.5 \text{ g/bhp-hr} \div 4.9 \text{ g/bhp-hr})$$

$$\text{NO}_x \text{ g/bhp-hr} = 4.92 \text{ g/bhp-hr} \times (4.5 \text{ g/bhp-hr} \div 4.9 \text{ g/bhp-hr})$$

NO_x = 4.52 g/bhp-hr

$$\text{VOC (g/bhp-hr)} = \text{NO}_x + \text{VOC (g/bhp-hr)} \times (0.4 \text{ g/bhp-hr} \div 4.9 \text{ g/bhp-hr})$$

$$\text{VOC g/bhp-hr} = 4.92 \text{ g/bhp-hr} \times (0.4 \text{ g/bhp-hr} \div 4.9 \text{ g/bhp-hr})$$

VOC = 0.40 g/bhp-hr

B. Emission Factors

C-7758-1-0

Biomass Storage Piles

South Coast AQMD (Table A9-9.E)

$$E = 1.7 \times G / 1.5 \times (365 - H) / 235 \times I / 15 \times J$$

G = 2 (silt content %)

H = 37 (days \geq 0.01 inches precipitation per year)

I = 5 (percentage time unobstructed wind speed exceeds 12 mph at mean pile height)

J = 0.5 (fraction of TSP = PM10)

$$E = 1.7 \times 2 / 1.5 \times (365 - 37) / 235 \times 5 / 15 \times 0.5 = 0.527 \text{ lb-PM}_{10} / \text{acre/day}$$

PM_{2.5} Fraction of PM₁₀ = 0.222 (SCQAMD - Updated CEIDARS Table with PM_{2.5} Fractions, Agricultural Tilling Dust)

$$E = 0.527 \text{ lb-PM}_{10} / \text{acre/day} \times 0.222 \text{ PM}_{2.5} / \text{PM}_{10} = 0.117 \text{ lb-PM}_{2.5} / \text{acre/day}$$

Unloading and Handling

AP42 Section 13.2.4 Aggregate Handling and Storage Piles (Equation 1)

$$E = \frac{k(0.0032)(U/5)^{1.3}}{(M/2)^{1.4}}$$

k = 0.35 (PM₁₀)

k = 0.053 (PM_{2.5})

U = 5.6 (Annual average from 2000-2004 Hanford airport data)

M = 11.5% (per applicant)

$$E = \frac{0.35(0.0032)(5.6/5)^{1.3}}{(11.5/2)^{1.4}} = 1.12E - 4 \text{ lb-PM}_{10} / \text{ton}$$

$$E = \frac{0.053(0.0032)(5.6/5)^{1.3}}{(11.5/2)^{1.4}} = 1.70E - 5 \text{ lb-PM}_{2.5} / \text{ton}$$

C-7758-2-0

AP42 Section 13.2.4 Aggregate Handling and Storage Piles (Equation 1)

$$E = \frac{k(0.0032)(U/5)^{1.3}}{(M/2)^{1.4}}$$

$$k = 0.35 \text{ (PM}_{10}\text{)}$$

$$k = 0.053 \text{ (PM}_{2.5}\text{)}$$

$$U = 5.6 \text{ (Annual average from 2000-2004 Hanford airport data)}$$

$$M = 0.25\% \text{ for limestone and } 1\% \text{ for hydrated lime (per applicant)}$$

Limestone

$$E = \frac{0.35(0.0032)(5.6/5)^{1.3}}{(0.25/2)^{1.4}} = 2.39E-2 \text{ lb-PM}_{10}\text{/ton}$$

$$E = \frac{0.053(0.0032)(5.6/5)^{1.3}}{(0.25/2)^{1.4}} = 3.61E-3 \text{ lb-PM}_{2.5}\text{/ton}$$

Hydrated Lime

$$E = \frac{0.35(0.0032)(5.6/5)^{1.3}}{(1/2)^{1.4}} = 3.42E-3 \text{ lb-PM}_{10}\text{/ton}$$

$$E = \frac{0.053(0.0032)(5.6/5)^{1.3}}{(1/2)^{1.4}} = 5.19E-4 \text{ lb-PM}_{2.5}\text{/ton}$$

C-7758-3-0 through '6-0

Commissioning

The commissioning of each fluidized bed combustor will entail several relatively short periods of operation prior to and during installation and testing of the pollution control technologies. During these test periods, emissions of all pollutants will be higher than during normal operations, because the control equipment will be either partially or completely inoperative.

The fluidized bed combustor commissioning activities can be broken down into seven separate test periods as described below. The first test occurs without the baghouse, thus the PM emissions will be higher since no particulate capture from the baghouse will occur. In the second and successive tests the baghouse will be operational. The SNCR will be started in the third stage, providing some reduction in NO_x emissions. The NO_x emissions will be further reduced when the SCR is started in the fourth stage.

During the commissioning tests the worst case short term emission rates of NO_x, SO_x, and CO will be greater than during either normal operations or combustor startup.

San Joaquin Solar 1 & 2 (08-AFC-12)
SJVACPD Determination of Compliance, C1090203

Commissioning Test Phase	Duration of test (hours/day)	Duration of test (days)	Hourly Emission Rate (lb/hr)					Total Emissions (tons)				
			NO _x	SO _x	PM10	CO	VOC	NO _x	SO _x	PM10	CO	VOC
1. Stabilize combustor and boiler (include limestone feed)	10	3	75.60	13.02	316.20	21.60	3.20	1.1	0.2	4.7	0.3	0.0
2. Start spray dryer and baghouse	20	17	33.53	4.34	21.70	17.40	2.20	5.7	0.7	3.7	3.0	0.4
Commission CEMS	Included above											
3. Start SNCR	18	7	37.20	5.00	24.80	19.80	2.50	2.3	0.3	1.6	1.2	0.2
4. Start SCR	24	4	7.44	4.96	24.80	19.80	2.50	0.4	0.2	1.2	1.0	0.1
5. Start Wet Scrubber	24	4	9.92	2.98	12.40	19.80	2.50	0.5	0.1	0.6	1.0	0.1
6. Stabilize	24	10	2.98	2.98	6.20	5.00	0.80	0.4	0.4	0.7	0.6	0.1
7. Stabilize at full load	24	7	3.72	3.72	7.75	6.20	1.00	0.3	0.3	0.7	0.5	0.1
Total commissioning		52						10.64	2.28	13.21	7.50	0.98

The commissioning of each successive combustor is anticipated to take less time; therefore progressively lower emission quantities are expected during commissioning of the second, third, and fourth combustor trains. The following table presents the maximum estimated emissions from the total commissioning of all four combustors.

Source	% of Emission from Commissioning each Combustor Relative to the First Combustor	Total Emissions (tons/year)				
		NO _x	SO _x	PM10	CO	VOC
Combustor 1	100%	10.64	2.28	13.21	7.50	0.98
Combustor 2	75%	7.98	1.71	9.91	5.62	0.74
Combustor 3	50%	5.32	1.14	6.61	3.75	0.49
Combustor 4	50%	5.32	1.14	6.61	3.75	0.49
Total Combustor Emissions		29.26	6.28	36.34	20.61	2.70
Total WSAC Emissions				1.25		
Total Commissioning Emissions		29.26	6.28	37.59	20.61	2.70

Normal Operation

After commissioning of the boilers, the emissions from the stack for each boiler at full load conditions (100% load with 100% wood waste fuel) are as follows:

316 MMBtu/hr biomass-fired combustor (C-7758-3-0 through '6-0)	
Pollutant	Emission Factor (controlled)
NO _x	0.012 lb/MMBtu
SO _x	0.012 lb/MMBtu
PM ₁₀	0.024 lb/MMBtu
PM _{2.5}	0.024 lb/MMBtu
CO	0.046 lb/MMBtu
VOC	0.005 lb/MMBtu
NH ₃	5.0 ppmv

The maximum air contaminant mass emission rates (lb/hr), concentrations (ppmvd @ 3% O₂), and startup commissioning emissions rates per manufacturer's estimate for each of the proposed boilers are summarized below:

Maximum Normal Emission Rates and Concentrations							
	NO _x	CO	VOC	PM ₁₀	PM _{2.5}	SO _x	NH ₃
Mass Emission Rates (per boiler, lb/hr)	3.70	8.46	1.32	7.66	7.66	3.80	1.08
ppmvd @ 3% O ₂ limits	7.3	43.4	3.0	--	--	5.3	5.0

- Mass emission rates for NO_x, CO, VOC, PM₁₀, PM_{2.5} and SO_x are highest at 100% load and 100% wood waste fuel.
- Mass emission rate for NH₃ is highest from 100% load 100% agricultural fuel, calculated from the ppm and volume flow in dscfm
- ppmvd limit for NO_x, CO and VOC from 50% load and 100% wood waste fuel
- ppmvd limit for SO_x from 100% load and 100% wood waste fuel
- ppmvd limit for NH₃ same for all cases

Normal Emission Rates (based on 50% agricultural wood and 50% wood waste)							
	NO _x	CO	VOC	PM ₁₀	PM _{2.5}	SO _x	NH ₃
Mass Emission Rates (per boiler, lb/hr)	3.63	6.25	1.03	6.940	6.940	3.67	1.08

Startup

Each combustor requires a cold startup if it has not operated for over 48 hours. Emissions after shutdowns of less than 48 hours are expected to be substantially equivalent to those for normal combustor operations.

It is anticipated that cold starts will occur up to two times a year for each combustor. A cold startup consists of six hours when the natural gas burners operate prior to the introduction of biomass to warm up the fluidized bed. On the seventh hour of the startup, some biomass is introduced into the combustor along with the heat from the natural gas burners. In the eighth hour, the natural gas burners no longer are needed, the maximum quantity of biomass can be added and the pollution control systems become functional.

The maximum hourly emissions during a startup occur in hour seven for NO_x and hour eight for all other pollutants and include the contributions from both biomass and natural gas combustion.

Startup Emissions (1-hour duration)						
	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	SO _x (lb/hr)
Mass Emission Rate	37.62	15.50	3.72	13.95	13.95	46.50

Maximum Startup Event Emissions (8-hour duration)						
	NO _x (lb/event)	CO (lb/event)	VOC (lb/event)	PM ₁₀ (lb/event)	PM _{2.5} (lb/event)	SO _x (lb/event)
Mass Emission Rate (per boiler)	102.10	58.50	5.74	23.18	23.18	86.84

NH3

$$PE = \text{ppm} \times \text{exhaust flow} \times MW \times 1/379.5 \times 60 \text{ min/hour} \times 24 \text{ hour/day}$$

Where:

- PE is the potential to emit of NH3 from the boiler in lb/day
- ppm is the emission concentration in ppmvd @ 3% O₂
- exhaust flow is the boiler maximum exhaust air flow in scf/min
- MW is the molecular weight of the pollutant (MW_{NH3} = 17 lb/lb-mol)
- 1/379.5 is one over the molar specific volume (lb-mol/scf)

$$PE = 5E-6 \times 80,318 \times 17 \times 1/379.5 \times 60 \times 24$$

$$PE = 25.9 \text{ lb-NH}_3/\text{day}$$

C-7758-7-0

AP42 Section 13.2.4 Aggregate Handling and Storage Piles (Equation 1)

$$E = \frac{k(0.0032)(U/5)^{1.3}}{(M/2)^{1.4}}$$

k = 0.35 (PM₁₀)
 k = 0.053 (PM_{2.5})
 U = 5.6 (Annual average from 2000-2004 Hanford airport data)
 M = 7% (per applicant)

$$E = \frac{0.35(0.0032)(5.6/5)^{1.3}}{(7/2)^{1.4}} = 2.25E - 4 \text{ lb-PM}_{10}/\text{ton}$$

$$E = \frac{0.053(0.0032)(5.6/5)^{1.3}}{(7/2)^{1.4}} = 3.40E - 5 \text{ lb-PM}_{2.5}/\text{ton}$$

C-7758-8-0 and '9-0

The PM₁₀ emissions from the WSAC can be quantified using the drift of the circulating water flow rate, 0.0005%, the concentration of total dissolved solids in the water, 1850 mg/L (15.44 lb/1000 gal).

Drift Rate = 0.0005%
 TDS = 1,850 mg/L (15.44 lb/1000 gal)

C-7758-10-0 and '11-0

Emission Factors		
Pollutant	Emission Factor (g/bhp-hr)	Source
NO _x	4.47	Tier 2 Emission Limits
SO _x	0.0051	Mass Balance Equation Below
PM ₁₀	0.15	Tier 2 Emission Limits
CO	2.6	Tier 2 Emission Limits
VOC	0.30	Tier 2 Emission Limits

$$\frac{0.000015 \text{ lb-S}}{\text{lb-fuel}} \times \frac{7.1 \text{ lb-fuel}}{\text{gallon}} \times \frac{2 \text{ lb-SO}_2}{\text{lb-S}} \times \frac{1 \text{ gal}}{137,000 \text{ Btu}} \times \frac{1 \text{ bhp input}}{0.35 \text{ bhp output}} \times \frac{2,542.5 \text{ Btu}}{\text{bhp-hr}} \times \frac{453.6 \text{ g}}{\text{lb}}$$

$$= 0.0051 \frac{\text{g-SO}_x}{\text{bhp-hr}}$$

C-7758-12-0 and '13-0

Emission Factors		
Pollutant	Emission Factor (g/bhp-hr)	Source
NO _x	4.52	Tier 2 Emission Limits
SO _x	0.0051	Mass Balance Equation Below
PM ₁₀	0.15	Tier 2 Emission Limits
CO	2.6	Tier 2 Emission Limits
VOC	0.40	Tier 2 Emission Limits

$$\frac{0.000015 \text{ lb-S}}{\text{lb-fuel}} \times \frac{7.1 \text{ lb-fuel}}{\text{gallon}} \times \frac{2 \text{ lb-SO}_2}{\text{lb-S}} \times \frac{1 \text{ gal}}{137,000 \text{ Btu}} \times \frac{1 \text{ bhp input}}{0.35 \text{ bhp output}} \times \frac{2,542.5 \text{ Btu}}{\text{bhp-hr}} \times \frac{453.6 \text{ g}}{\text{lb}}$$

$$= 0.0051 \frac{\text{g-SO}_x}{\text{bhp-hr}}$$

C. Calculations

1. Pre-Project Potential to Emit (PE1)

Since the emission units in this project are new, PE1 = 0 for all criteria pollutants.

2. Post Project Potential to Emit (PE2)

C-7758-1-0

Biomass Storage Pile Open Area Emissions

$$\text{Daily PE2} = 0.527 \text{ lb/acre/day} \times 1.5 \text{ acre} \times (1-0.61) \times 2 \text{ piles}$$

$$= 0.6 \text{ lb-PM}_{10}/\text{day}$$

$$\text{Annual PE2} = 0.527 \text{ lb/acre/day} \times 1.5 \text{ acre} \times (1-0.61) \times 365 \text{ day/year} \times 2 \text{ piles}$$

$$= 225 \text{ lb-PM}_{10}/\text{year}$$

$$\text{Daily PE2} = 0.117 \text{ lb/acre/day} \times 1.5 \text{ acre} \times (1-0.61) \times 2 \text{ piles}$$

$$= 0.1 \text{ lb-PM}_{2.5}/\text{day}$$

$$\text{Annual PE2} = 0.117 \text{ lb/acre/day} \times 1.5 \text{ acre} \times (1-0.61) \times 365 \text{ day/year} \times 2 \text{ piles}$$

$$= 50 \text{ lb-PM}_{2.5}/\text{year}$$

Unloading and Handling Emissions

There are two unloading and handling lines with a combined total peak throughput of 616,667 lb/hr. Each line has 7 drop points and is each served by one baghouse.

$$\text{Daily PE2} = 3,700 \text{ ton/day} \times 1.12\text{E-4} \text{ lb-PM}_{10}/\text{ton} \times (1-0.99) \times 7 \text{ drop points}$$

$$= 0.0 \text{ lb-PM}_{10}/\text{day}$$

$$\text{Annual PE2} = 609,170 \text{ ton/year} \times 1.12\text{E-4} \text{ lb-PM}_{10}/\text{ton} \times (1-0.99) \times 7 \text{ drop points}$$

$$= 5 \text{ lb-PM}_{10}/\text{year}$$

$$\text{Daily PE2} = 3,700 \text{ ton/day} \times 1.70\text{E-5} \text{ lb-PM}_{2.5}/\text{ton} \times (1-0.99) \times 7 \text{ drop points}$$

$$= 0.0 \text{ lb-PM}_{2.5}/\text{day}$$

$$\text{Annual PE2} = 609,170 \text{ ton/year} \times 1.70\text{E-5} \text{ lb-PM}_{2.5}/\text{ton} \times (1-0.99) \times 7 \text{ drop points}$$

$$= 1 \text{ lb-PM}_{2.5}/\text{year}$$

Total (Storage Piles + Unloading and Handling)

$$\begin{aligned} \text{Daily PE2} &= 0.6 + 0.0 \text{ lb-PM}_{10}/\text{day} = 0.6 \text{ lb-PM}_{10}/\text{day} \\ \text{Annual PE2} &= 225 + 5 \text{ lb-PM}_{10}/\text{year} = 230 \text{ lb-PM}_{10}/\text{year} \end{aligned}$$

$$\begin{aligned} \text{Daily PE2} &= 0.1 + 0.0 \text{ lb-PM}_{2.5}/\text{day} = 0.1 \text{ lb-PM}_{2.5}/\text{day} \\ \text{Annual PE2} &= 50 + 1 \text{ lb-PM}_{2.5}/\text{year} = 51 \text{ lb-PM}_{2.5}/\text{year} \end{aligned}$$

C-7758-2-0

Limestone Unloading and Handling

$$\begin{aligned} \text{Daily PE2} &= 25.0 \text{ ton/day} \times 2.39\text{E-}2 \text{ lb-PM}_{10}/\text{ton} \times (1-0.99) \\ &= 0.0 \text{ lb-PM}_{10}/\text{day} \\ \text{Annual PE2} &= 2,786 \text{ ton/year} \times 2.39\text{E-}2 \text{ lb-PM}_{10}/\text{ton} \times (1-0.99) \\ &= 0.7 \rightarrow 1 \text{ lb-PM}_{10}/\text{year} \end{aligned}$$

$$\begin{aligned} \text{Daily PE2} &= 25.0 \text{ ton/day} \times 3.61\text{E-}3 \text{ lb-PM}_{2.5}/\text{ton} \times (1-0.99) \\ &= 0.0 \text{ lb-PM}_{2.5}/\text{day} \\ \text{Annual PE2} &= 2,786 \text{ ton/year} \times 3.61\text{E-}3 \text{ lb-PM}_{2.5}/\text{ton} \times (1-0.99) \\ &= 0.1 \rightarrow 0 \text{ lb-PM}_{2.5}/\text{year} \end{aligned}$$

Hydrated Lime Unloading and Handling

$$\begin{aligned} \text{Daily PE2} &= 25.0 \text{ ton/day} \times 3.42\text{E-}3 \text{ lb-PM}_{10}/\text{ton} \times (1-0.99) \\ &= 0.0 \text{ lb-PM}_{10}/\text{day} \\ \text{Annual PE2} &= 1,117 \text{ ton/year} \times 3.42\text{E-}3 \text{ lb-PM}_{10}/\text{ton} \times (1-0.99) \\ &= 0.08 \rightarrow 0 \text{ lb-PM}_{10}/\text{year} \end{aligned}$$

$$\begin{aligned} \text{Daily PE2} &= 25.0 \text{ ton/day} \times 5.19\text{E-}4 \text{ lb-PM}_{2.5}/\text{ton} \times (1-0.99) \\ &= 0.0 \text{ lb-PM}_{2.5}/\text{day} \\ \text{Annual PE2} &= 1,117 \text{ ton/year} \times 5.19\text{E-}4 \text{ lb-PM}_{2.5}/\text{ton} \times (1-0.99) \\ &= 0.01 \rightarrow 0 \text{ lb-PM}_{2.5}/\text{year} \end{aligned}$$

Total Limestone plus Hydrated Lime Unloading and Handling

$$\begin{aligned} \text{Daily PE2} &= 0.0 + 0.0 \text{ lb-PM}_{10}/\text{day} = 0.0 \text{ lb-PM}_{10}/\text{day} \\ \text{Annual PE2} &= 1 + 0 \text{ lb-PM}_{10}/\text{year} = 1 \text{ lb-PM}_{10}/\text{year} \end{aligned}$$

$$\begin{aligned} \text{Daily PE2} &= 0.0 + 0.0 \text{ lb-PM}_{2.5}/\text{day} = 0.0 \text{ lb-PM}_{2.5}/\text{day} \\ \text{Annual PE2} &= 0 + 0 \text{ lb-PM}_{2.5}/\text{year} = 0 \text{ lb-PM}_{2.5}/\text{year} \end{aligned}$$

C-7758-3-0 through '6-0

The maximum hourly potential to emit from each boiler will occur when the unit is operating under startup mode at the 7th hour. On the 7th hour, biomass is also introduced into the boiler. On the 8th hour, the startup natural gas burners are no longer needed and the boiler is fired exclusively on biomass.

Maximum Hourly Startup Emissions (1-hour duration)						
	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	SO _x (lb/hr)
Mass Emission Rate (per boiler)	37.62	15.50	3.72	13.95	13.95	46.50

Maximum Startup Event Emissions (8-hour duration)						
	NO _x (lb/event)	CO (lb/event)	VOC (lb/event)	PM ₁₀ (lb/event)	PM _{2.5} (lb/event)	SO _x (lb/event)
Mass Emission Rate (per boiler)	102.10	58.50	5.74	23.18	23.18	86.84

The 8-hour startup emissions are the sum of each hour emission rates in the 8-hour startup event which may not equal the maximum 1-hour startup emission rate.

Maximum Normal Emissions (@ 100%, 75%, or 50% Load & 100% Wood Waste)						
	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)	PM ₁₀ (lb/hr)	SO _x (lb/hr)	NH ₃ (lb/hr)
Mass Emission Rates (per boiler)	3.70	8.46	1.32	7.66	3.80	1.08
ppmvd @ 3% O ₂ limits	7.3	43.4	3.0	--	5.3	5.0

The maximum daily emissions for NO_x, SO_x, and CO occur when each boiler operates with 1 startup for 8 hours and the remainder at 100% load. The maximum daily emissions for PM₁₀, PM_{2.5} and VOC occur when each boiler operates at 100% load. The results for each boiler is summarized in the table below:

Maximum Daily Post Project Potential to Emit (PE2)			
	Startup Emissions Rate (lb/day)	Maximum Short-term Emissions Rate @ 100% Load (lb/day)	Daily Emissions Limitation (lb/day) (per boiler)
Formula	lb/hr x 1 event/day x 8 hours/event	lb/hr x (24 hour/day - 1 event/day x 8 hr/event)	Startup + 100% Load
NO _x	102.10	3.70 x (24 - 1 x 8 hr) = 59.20	102.10 + 59.20 = 161.3
SO _x	86.84	3.80 x (24 - 1 x 8 hr) = 60.80	86.84 + 60.80 = 147.6
PM ₁₀		7.66 x 24 hr = 183.84	183.8
PM _{2.5}		7.66 x 24 hr = 183.84	183.8
CO		8.46 x 24 hr = 203.04	203.04
VOC		1.32 x 24 hr = 31.68	31.7
NH ₃	0	25.9	25.9

The maximum annual emissions occur when each boiler operates with 2 startups and 6570 hours per year at 100% load. The results for each boiler are summarized in the table below:

Maximum Annual Post Project Potential to Emit (PE2)			
	Startup Emissions Rate (lb/year)	Normal Emissions Rate @ 50% Ag Wood and 50% Wood Waste (lb/year)	Annual Emissions Limitation (lb/year) (per boiler)
Formula	lb/hr x 2 events/yr x 8 hr/event	lb/hr x 6570 hr/yr	Startup + 100% Load
NO _x	204.20	3.63 x 6570 hr = 23,849	204.20 + 23,849 = 24,053
SO _x	173.68	3.67 x 6570 hr = 24,112	173.68 + 24,112 = 24,286
PM ₁₀	46.36	6.940 x 6570 hr = 45,596	46.36 + 45,596 = 45,642
PM _{2.5}	46.36	6.940 x 6570 hr = 45,596	46.36 + 45,596 = 45,642
CO	117.00	6.25 x 6570 hr = 41,063	117.00 + 41,063 = 41,180
VOC	11.48	1.03 x 6570 hr = 6,767	11.48 + 6,767 = 6,778
NH ₃	0	7,091	7,091

d. Summary of PE2

The daily and annual PE2 for each boiler is summarized in the table below:

Post Project Potential to Emit (PE2) Summary (Each of C-7758-3-0, '4-0, '5-0, '6-0)		
	Daily Emissions (lb/day)	Annual Emissions (lb/year)
NO _x	161.3	24,053
SO _x	147.6	24,286
PM ₁₀	183.8	45,642
PM _{2.5}	183.8	45,642
CO	203.0	41,180
VOC	31.7	6,778
NH ₃	25.9	7,091

C-7758-7-0

Flyash Unloading and Handling

Daily PE2 = 200 ton/day x 2.25E-4 lb-PM₁₀/ton x (1-0.99)
 = 0.0 lb-PM₁₀/day

Annual PE2 = 30,459 ton/year x 2.25E-4 lb-PM₁₀/ton x (1-0.99)
 = 0 lb-PM₁₀/year

Daily PE2 = 200 ton/day x 3.40E-5 lb-PM_{2.5}/ton x (1-0.99)
 = 0.0 lb-PM_{2.5}/day

Annual PE2 = 30,459 ton/year x 3.40E-5 lb-PM_{2.5}/ton x (1-0.99)
 = 0 lb-PM_{2.5}/year

C-7758-8-0 and '9-0

The maximum design circulation water rate is 71,680 gal/min for the two WSACs combined. The applicant has proposed to limit the annual average circulation water rate to 61,000 gal/min for the two WSACs combined.

WSACs are the source of PM₁₀ emissions only. Emissions can be calculated using the following equation and are summarized in the table below:

$$\begin{aligned}
 \text{Daily PE} &= (\text{H}_2\text{O circulation rate}) \times (\text{drift rate}) \times (\text{TDS concentration}) \times (\text{cycles of Concentration}) \div 2 \text{ WSACs} \\
 &= (71,680 \text{ gal/min}) \times (0.0005\%) \times (15.44 \text{ lb/1000 gal}) \times (5) \div (2) \\
 &= (71,680 \text{ gal/min}) \times (60 \text{ min/hr}) \times (0.0005/100) \times (15.44/1000) \times (24 \text{ hr/day}) \times (5) \div (2) \\
 &= 19.9 \text{ lb PM}_{10}/\text{day (per WSAC)}
 \end{aligned}$$

$$\begin{aligned}
 \text{Annual PE} &= (61,000 \text{ gal/min}) \times (60 \text{ min/hr}) \times (8760 \text{ hr/year}) \times (0.0005/100) \\
 &\quad \times (15.44 \text{ lb/1000 gal}) \times (5) \div (2) \\
 &= 6,188 \text{ lb PM}_{10}/\text{year (per WSAC)}
 \end{aligned}$$

C-7758-10-0 and '11-0

The daily and annual PE per engine are calculated as follows:

Daily Post Project Emissions					
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Daily Hours of Operation (hrs/day)	Conversion (g/lb)	PE2 Total (lb/day)
NO _x	4.47	1341	1	453.6	13.2
SO _x	0.0051	1341	1	453.6	0.0
PM ₁₀	0.15	1341	1	453.6	0.4
CO	2.6	1341	1	453.6	7.7
VOC	0.30	1341	1	453.6	0.9

Annual Post Project Emissions					
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Annual Hours of Operation (hrs/yr)	Conversion (g/lb)	PE2 Total (lb/yr)
NO _x	4.47	1341	12	453.6	159
SO _x	0.0051	1341	12	453.6	0
PM ₁₀	0.15	1341	12	453.6	5
CO	2.61	1341	12	453.6	93
VOC	0.30	1341	12	453.6	11

C-7758-12-0 and '13-0

The daily and annual PE per engine are calculated as follows:

Daily Post Project Emissions					
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Daily Hours of Operation (hrs/day)	Conversion (g/lb)	PE2 Total (lb/day)
NO _x	4.52	250	1	453.6	2.5
SO _x	0.0051	250	1	453.6	0.0
PM ₁₀	0.15	250	1	453.6	0.1
CO	2.6	250	1	453.6	1.4
VOC	0.40	250	1	453.6	0.2

Annual Post Project Emissions					
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Annual Hours of Operation (hrs/yr)	Conversion (g/lb)	PE2 Total (lb/yr)
NO _x	4.52	250	52	453.6	130
SO _x	0.0051	250	52	453.6	0
PM ₁₀	0.15	250	52	453.6	4
CO	2.6	250	52	453.6	75
VOC	0.40	250	52	453.6	11

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Since this is a new facility, there are no valid ATCs, PTOs, or ERCs at the Stationary Source; therefore, the SSPE1 will be equal to zero.

4. Post Project Stationary Source Potential to Emit (SSPE2)

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Post Project Stationary Source Potential to Emit [SSPE2] (lb/year)							
Permit Unit	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO	VOC	NH ₃
C-7758-1-0	0	0	230	51	0	0	0
C-7758-2-0	0	0	1	0	0	0	0
C-7758-3-0	24,053	24,286	45,642	45,642	41,180	6,778	7,091
C-7758-4-0	24,053	24,286	45,642	45,642	41,180	6,778	7,091
C-7758-5-0	24,053	24,286	45,642	45,642	41,180	6,778	7,091
C-7758-6-0	24,053	24,286	45,642	45,642	41,180	6,778	7,091
C-7758-7-0	0	0	0	0	0	0	0
C-7758-8-0	0	0	6,188	6,188	0	0	0
C-7758-9-0	0	0	6,188	6,188	0	0	0
C-7758-10-0	159	0	5	5	93	11	0
C-7758-11-0	159	0	5	5	93	11	0
C-7758-12-0	130	0	4	4	75	11	0
C-7758-13-0	130	0	4	4	75	11	0
Post Project SSPE (SSPE2)	96,790	97,144	195,193	195,013	165,056	27,156	28,364

5. Major Source Determination

Pursuant to Section 3.24 of District Rule 2201, a Major Source is a stationary source with post-project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. However, Section 3.24.2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site."

Major Source Determination (lb/year)						
	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO	VOC
Pre-Project SSPE (SSPE1)	0	0	0	0	0	0
Post Project SSPE (SSPE2)	96,790	97,144	195,193	195,013	165,056	27,156
Major Source Threshold	50,000	140,000	140,000	140,000	200,000	50,000
Major Source?	Yes	No	Yes	No*	No	No

As seen in the table above, the facility is a new Major Source for NO_x and PM₁₀ as a result of this project.

*40 CFR Part 51 - Appendix S requirement for PM2.5

On May 8, 2008 EPA finalized regulations to implement NSR program for PM2.5. The new requirements became effective July 15, 2008. Under the new regulations a major source for PM2.5 is defined as 100 tons/yr. However in determining the PM2.5 emissions only the "front half" or filterable (not condensable) fraction is considered. Appendix G shows a source test performed by the manufacturer for a similar boiler as proposed in this project. The source test shows a tested value of 12.19 tons/year front half PM and 14 tons/year back half PM. Therefore using the ratio of filterable PM to total PM is 0.465 (12.19 ÷ (12.19 + 14)). The project emissions of PM2.5 are calculated as follows.

$$0.465 \times 195,013 = 90,681 \text{ lb-PM2.5/year or } \underline{45.3 \text{ ton-PM2.5/yr.}}$$

Therefore, the facility is not a major source of PM2.5.

6. Baseline Emissions (BE)

BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.22

Since these are new emission units, BE = PE1 = 0 for all criteria pollutants.

7. Major Modification

Major Modification is defined in 40 CFR Part 51.165 as "*any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act.*"

As discussed in Section VII.C.5 above, the facility is a new Major Source for NOx and PM10 as a result of this project; therefore the project is not a Major Modification.

8. Federal Major Modification

As shown above, this project does not constitute a Major Modification. Therefore, in accordance with District Rule 2201, Section 3.17, this project does not constitute a Federal Major Modification.

VIII. Compliance

Rule 1080 Stack Monitoring

This Rule grants the APCO the authority to request the installation and use of continuous emissions monitors (CEMs), and specifies performance standards for the equipment and administrative requirements for record keeping, reporting, and notification. The fluidized bed combustor will be equipped with operational CEMs for NO_x, SO_x, CO, and O₂. The unit will also be equipped with a Continuous Opacity Monitor (COM). Provisions included in the operating permit are consistent with the requirements of this Rule. Compliance with the requirements of this Rule is anticipated.

C-7758-3-0 through '6-0

Proposed Rule 1080 Conditions:

- The applicant shall install, maintain, and operate a continuous emissions monitoring system (CEMS) to measure stack gas NO_x, SO_x, CO, and O₂ concentration and shall meet the performance specification requirements in 40 CFR, Part 60, Appendix B or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. The CEM systems shall also be operated, maintained, and calibrated pursuant to the requirements of 40 CFR 60.7(c) and 40 CFR 60.13. [District Rules 1080, 2201, and 4352]
- The applicant shall install, maintain, and operate a continuous opacity monitor (COM) and shall meet the performance specification requirements in 40 CFR, Part 60, Appendix B, or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District Rules 1080 and 2201]
- The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]
- Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]
- Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]
- Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and compliance source testing are both performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]
- Permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]

- Permittee shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions; nature and cause of excess (averaging period used for data reporting shall correspond to the averaging period for each respective emission standard); corrective actions taken and preventive measures adopted; applicable time and date of each period during a CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 1080]

Rule 1081 Source Sampling

This Rule requires adequate and safe facilities for using in sampling to determine compliance with emissions limits, and specifies methods and procedures for source testing and sample collection. The requirements of this Rule will be included in the operating permit. Compliance with this Rule is anticipated.

C-7758-3-0 through '6-0

Proposed Rule 1081 Conditions:

- The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081]
- Source testing to measure the NO_x, CO, and NH₃ emission rates (lb/hr and lb/MMBtu or ppmvd @ 3% O₂) shall be conducted within 120 days after initial operation and at least once every twelve months thereafter. [District Rules 1081 and 4352]
- Compliance demonstration (source testing) shall be District witnessed or authorized and samples shall be collected by a certified testing laboratory. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
- The following test methods shall be used: NO_x (ppmv) - EPA Method 7E or ARB Method 100, NO_x (lb/MMBtu) - EPA Method 19, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, ammonia - BAAQMD ST-1B. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. The request to utilize EPA approved alternative source testing methods must be submitted in writing and written approval received from the District prior to the submission of the source test plan. [District Rules 1081, 4001, and 4352]

C-7758-8-0 and '9-0

Proposed Rule 1081 Condition:

- Compliance with PM10 emission limit shall be determined by a blowdown water sample analysis conducted by an independent laboratory within 60 days of initial operation and quarterly thereafter. [District Rule 1081]

Rule 1100 Equipment Breakdown

This Rule defines a breakdown condition and the procedures to follow if one occurs. The corrective action, the issuance of an emergency variance, and the reporting requirements are also specified.

The requirements of this Rule will be included in the operating permits. Compliance with this Rule is anticipated.

Proposed Rule 1100 Conditions:

- Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100]
- The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100]

Rule 2010 Permits Required

This Rule requires any person building, altering, or replacing any operation, article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants, to first obtain authorization from the District in the form of an ATC. By the submission of an PDOC application, the SJS Project is complying with the requirements of this Rule.

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following*:

- a. Any new emissions unit with a potential to emit exceeding two pounds per day,
- b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,

- c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in a Major Modification.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units – PE > 2 lb/day

C-7758-1-0

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install a new biomass receiving operation with a PE less than 2 lb/day for PM₁₀. Therefore, BACT is not triggered.

C-7758-2-0

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install a new limestone receiving and storage operation with a PE less than 2 lb/day for PM₁₀. Therefore, BACT is not triggered.

C-7758-3-0 through '6-0

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install four new boilers with a PE greater than 2 lb/day for NO_x, SO_x, PM₁₀, CO, and VOC. BACT is triggered for NO_x, SO_x, PM₁₀, and VOC since the PEs are greater than 2 lbs/day; however BACT is not triggered for CO since the SSPE2 for CO is not greater than 200,000 lbs/year, as demonstrated in Section VII.C.5 of this document.

The PE of ammonia is greater than 2.0 pounds per day for each of the four boilers. However, the ammonia emissions are intrinsic to the operation of the SCR system, which is BACT for NO_x. The emissions from a control device that is determined by the District to be BACT are not subject to BACT.

C-7758-7-0

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install a new flyash unloading operation with a PE less than 2 lb/day for PM₁₀. Therefore, BACT is not triggered.

C-7758-8-0 and '9-0

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install a new WSAC with a PE greater than 2 lb/day for PM₁₀. Therefore, BACT is triggered.

C-7758-10-0 and '11-0

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install a new diesel-fired emergency IC engine powering an electrical generator with a PE greater than 2 lb/day for NO_x, PM₁₀, CO, and VOC. BACT is triggered for NO_x, PM₁₀, and VOC since the PEs are greater than 2 lbs/day; however BACT is not triggered for CO since the SSPE2 for CO is not greater than 200,000 lbs/year, as demonstrated in Section VII.C.5 of this document.

C-7758-12-0 and '13-0

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install a new diesel-fired emergency IC engine powering a fire pump with a PE greater than 2 lb/day for NO_x, CO, and VOC. BACT is triggered for NO_x and VOC since the PEs are greater than 2 lbs/day; however BACT is not triggered for CO since the SSPE2 for CO is not greater than 200,000 lbs/year, as demonstrated in Section VII.C.5 of this document.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore BACT is not triggered.

c. Modification of emissions units – AIPE > 2 lb/day

As discussed in Section I above, there are no modified emissions units associated with this project; therefore BACT is not triggered.

d. Major Modification

As discussed in Section VII.C.7 above, this project does not constitute a Major Modification; therefore BACT is not triggered.

2. BACT Guideline

BACT Guideline 1.3.2, applies to each fluidized bubbling bed combustor. [Fluidized Bubbling Bed Combustor] (See Appendix B)

BACT Guideline 3.1.3, applies to the diesel-fired emergency IC engine driving an electrical generator. [Emergency Diesel I.C. Engine = or > 400 hp] (See Appendix B)

BACT Guideline 3.1.4, applies to the diesel-fired emergency IC engine driving a fire pump. [Emergency Diesel I.C. Engine Driving a Fire Pump] (See Appendix B)

BACT Guideline 8.3.10, applies to the WSAC. [Cooling Tower – Induced Draft, Evaporative Cooling] (See Appendix B)

3. Top-Down BACT Analysis

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Pursuant to the attached Top-Down BACT Analysis (see Appendix C), BACT has been satisfied with the following:

C-7758-3-0 through '6-0

NO_x: 0.012 lb/MMBtu, ammonia injection and natural gas auxiliary fuel
 SO_x: 0.012 lb/MMBtu, limestone injection and natural gas auxiliary fuel
 PM₁₀: 0.024 lb/MMBtu, baghouse or ESP, and natural gas auxiliary fuel
 VOC: 0.005 lb/MMBtu, natural gas auxiliary fuel

C-7758-8-0 and '9-0

PM₁₀: Cellular Type Drift Eliminator

C-7758-10-0 and '11-0

NO_x: Certified NO_x emissions of 6.9 g/hp·hr or less
 PM₁₀: 0.1 grams/bhp-hr (if TBACT is triggered) 0.4 grams/bhp-hr (if TBACT is not triggered)
 VOC: Positive crankcase ventilation

C-7758-12-0 and '13-0

NO_x: Certified NO_x emissions of 6.9 g/hp·hr or less
 VOC: Positive crankcase ventilation [unless it voids the Underwriters Laboratories (UL) certification]

B. Offsets

1. Offset Applicability

Pursuant to Section 4.5.3, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the Post Project Stationary Source Potential to Emit (SSPE2) equals to or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The following table compares the post-project facility-wide annual emissions in order to determine if offsets will be required for this project.

Offset Determination (lb/year)					
	NO _x	SO _x	PM ₁₀	CO	VOC
Post Project SSPE (SSPE2)	96,790	97,144	195,193	165,056	27,156
Offset Threshold	20,000	54,750	29,200	200,000	20,000
Offsets triggered?	Yes	Yes	Yes	No	Yes

2. Quantity of Offsets Required

As seen above, the SSPE2 is greater than the offset thresholds for NO_x, SO_x, PM₁₀, and VOC; therefore offset calculations will be required for this project.

The applicant has identified a pool of ERCs for use in this project since the District is currently evaluating a potential offset exemption for biomass facilities that burn agricultural wastes as part of a revised Rule 4103.

Per Sections 4.7.2 and 4.7.3, the quantity of offsets in pounds per year is calculated as follows for sources with an SSPE1 less than the offset threshold levels before implementing the project being evaluated.

$$\text{Offsets Required (lb/year)} = [(\text{SSPE2} - \text{ROT} + \text{ICCE}) \times \text{DOR}]$$

Where,

SSPE2 = Post Project Stationary Source Potential to Emit

ROT = Respective Offset Threshold, for the respective pollutant indicated in Section 4.5.3.

ICCE = Increase in Cargo Carrier Emissions

DOR = Distance Offset Ratio, determined pursuant to Section 4.8

Per Section 4.6.2, emergency equipment that is used exclusively as emergency standby equipment for electrical power generation or any other emergency equipment as approved by the APCO that does not operate more than 200 hours per year of non-emergency purposes and is not used pursuant to voluntary arrangements with a power supplier to curtail power, is exempt from providing emission offsets. Therefore, permit unit C-7758-10-0, '11-0, '12-0, '13-0 will be exempt from providing offsets and the emissions associated with this permit unit contributing to the SSPE2 should be removed prior to calculating actual offset amounts.

$$\text{Offsets Required (lb/year)} = [(\text{SSPE2} - \text{Emergency Equipment} - \text{ROT} + \text{ICCE}) \times \text{DOR}]$$

NO_x

SSPE2 (NO _x)	= 96,790 lb/year
C-7758-10-0 (NO _x)	= 159 lb/year
C-7758-11-0 (NO _x)	= 159 lb/year
C-7758-12-0 (NO _x)	= 130 lb/year
C-7758-13-0 (NO _x)	= 130 lb/year
Offset threshold (NO _x)	= 20,000 lb/year
ICCE	= 0 lb/year

$$\begin{aligned} \text{Offsets Required (lb/year)} &= [(96,790 - 159 - 159 - 130 - 130 - 20,000 + 0) \times \text{DOR}] \\ &= 76,212 \times \text{DOR} \end{aligned}$$

Calculating the appropriate quarterly emissions to be offset is as follows (in lb/qtr without distance ratio):

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
19,053	19,053	19,053	19,053

The applicant is proposing to use ERC Certificates N-556-2, S-2953-2, N-2-2, C-1001-2, S-2773-2, N-768-2, C-1022-2, N-552-2, N-801-2, N-789-2, N-596-2, N-820-2, N-595-2, C-880-2, C-881-2, S-3086-2, S-3022-2, S-3028-2, S-3039-2, S-3029-2, S-3087-2, N-755-2, S-2852-2, C-914-2 which have an original site of reduction greater than 15 miles from the location of this project. Therefore, an offset ratio of 1.5:1 is applicable and the amount of NO_x ERCs that need to be withdrawn is:

San Joaquin Solar 1 & 2 (08-AFC-12)
 SJVACPD Determination of Compliance, C1090203

Offsets Required (lb/year) = 76,212 x 1.5
 = 114,318 lb NO_x/year

Calculating the appropriate quarterly emissions to be offset is as follows (in lb/qtr):

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
28,579	28,579	28,580	28,580

The applicant has stated that the facility plans to use ERC certificates N-556-2, S-2953-2, N-2-2, C-1001-2, S-2773-2, N-768-2, C-1022-2, N-552-2, N-801-2, N-789-2, N-596-2, N-820-2, N-595-2, C-880-2, C-881-2, S-3086-2, S-3022-2, S-3028-2, S-3039-2, S-3029-2, S-3087-2, N-755-2, S-2852-2, C-914-2 to offset the increases in NO_x emissions associated with this project. The above certificates have available quarterly NO_x credits as follows:

	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
ERC #N-556-2	500	500	500	500
ERC #S-2953-2	2,500	2,500	2,500	2,500
ERC #N-2-2	2,587	2,434	7,175	7,642
ERC #C-1001-2	0	342	5,583	2,801
ERC #S-2773-2	454	689	275	487
ERC #N-768-2	14,634	12,268	15,814	10,504
ERC #C-1022-2	109,374	109,374	109,374	109,374
ERC #N-552-2	15,566	8,173	19,366	19,259
ERC #N-801-2	0	0	9,120	180
ERC #N-789-2	0	0	8,139	0
ERC #N-596-2	0	0	5,529	581
ERC #N-820-2	965	376	813	0
ERC #N-595-2	177	172	1,273	128
ERC #C-880-2	175	0	0	1,230
ERC #C-881-2	0	0	0	846
ERC #S-3086-2	6,370	6,370	4,370	6,370
ERC #S-3022-2	0	10,806	560	7,124
ERC #S-3028-2	12,976	0	0	0
ERC #S-3039-2	0	10,322	0	0
ERC #S-3029-2	3,313	1,795	0	0
ERC #S-3087-2	2,000	0	0	0
ERC #N-755-2	0	0	27,616	0
ERC #S-2852-2	2,296	7,000	9,353	954
ERC #C-914-2	4,702	6,728	3,983	1,831
Total	178,589	179,849	231,343	172,311

	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
ERCs Available	178,589	179,849	231,343	172,311
Offsets Required	28,579	28,579	28,580	28,580
Difference	150,010	151,270	202,763	143,731

As shown above, the facility has sufficient credits to fully offset the quarterly NO_x emissions increases associated with this project.

SO_x

SSPE2 (SO _x)	= 97,144 lb/year
C-7758-10-0 (SO _x)	= 0 lb/year
C-7758-11-0 (SO _x)	= 0 lb/year
C-7758-12-0 (SO _x)	= 0 lb/year
C-7758-13-0 (SO _x)	= 0 lb/year
Offset threshold (SO _x)	= 54,750 lb/year
ICCE	= 0 lb/year

$$\text{Offsets Required (lb/year)} = [(97,144 - 0 - 0 - 0 - 0 - 54,750 + 0) \times \text{DOR}]$$

$$= 42,394 \times \text{DOR}$$

Calculating the appropriate quarterly emissions to be offset is as follows (in lb/qtr without distance ratio):

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
10,598	10,598	10,599	10,599

The applicant is proposing to use ERC Certificates N-548-5, N-762-5, S-2790-5, S-3000-5, C-1022-5, N-744-5, S-2999-5, S-3056-5, S-2847-5, S-3106-5, S-2387-5 which have an original site of reduction greater than 15 miles from the location of this project. Therefore, an offset ratio of 1.5:1 is applicable and the amount of SO_x ERCs that need to be withdrawn is:

$$\text{Offsets Required (lb/year)} = 42,394 \times 1.5$$

$$= 63,591 \text{ lb SO}_x/\text{year}$$

Calculating the appropriate quarterly emissions to be offset is as follows (in lb/qtr):

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
15,897	15,898	15,898	15,898

The applicant has stated that the facility plans to use ERC certificates N-548-5, N-762-5, S-2790-5, S-3000-5, C-1022-5, N-744-5, S-2999-5, S-3056-5, S-2847-5, S-3106-5, S-2387-5 to offset the increases in SO_x emissions associated with this project. The above certificates have available quarterly SO_x credits as follows:

	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
ERC #N-548-5	8,250	8,250	8,250	8,250
ERC #N-762-5	21,000	21,000	21,000	21,000
ERC #S-2790-5	12862	491	0	8499
ERC #S-3000-5	71,703	71,500	75,296	75,296
ERC #C-1022-5	112,972	112,972	112,972	112,972
ERC #N-744-5	0	0	0	52,748
ERC #S-2999-5	24,000	24,000	24,000	24,000
ERC #S-3056-5	12,573	9,814	8,973	12,045
ERC #S-2847-5	1,509	1,536	1,563	1,563
ERC #S-3106-5	78,598	78,599	51,520	78,598
ERC #S-2387-5	7,500	7,500	7,500	7,500
Total	350,967	335,662	311,074	402,471

San Joaquin Solar 1 & 2 (08-AFC-12)
 SJVACPD Determination of Compliance, C1090203

	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
ERCs Available	350,967	335,662	311,074	402,471
Offsets Required	15,897	15,898	15,898	15,898
Difference	335,070	319,764	295,176	386,573

As shown above, the facility has sufficient credits to fully offset the quarterly SO_x emissions increases associated with this project.

PM10

SSPE2 (PM ₁₀)	= 195,193 lb/year
C-7758-10-0 (PM ₁₀)	= 5 lb/year
C-7758-11-0 (PM ₁₀)	= 5 lb/year
C-7758-12-0 (PM ₁₀)	= 4 lb/year
C-7758-13-0 (PM ₁₀)	= 4 lb/year
Offset threshold (PM ₁₀)	= 29,200 lb/year
ICCE	= 0 lb/year

$$\begin{aligned} \text{Offsets Required (lb/year)} &= [(195,193 - 5 - 5 - 4 - 4 - 29,200 + 0) \times \text{DOR}] \\ &= 165,975 \times \text{DOR} \end{aligned}$$

Calculating the appropriate quarterly emissions to be offset is as follows (in lb/qtr without distance ratio):

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
41,493	41,494	41,494	41,494

The applicant is proposing to use ERC Certificates C-1024-4, N-161-4, S-2649-4, C-352-4, N-847-4, C-352-4 which have an original site of reduction greater than 15 miles from the location of this project. Therefore, an offset ratio of 1.5:1 is applicable and the amount of PM10 ERCs that need to be withdrawn is:

$$\begin{aligned} \text{Offsets Required (lb/year)} &= 165,975 \times 1.5 \\ &= 248,963 \text{ lb PM}_{10}/\text{year} \end{aligned}$$

Calculating the appropriate quarterly emissions to be offset is as follows (in lb/qtr):

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
62,240	62,241	62,241	62,241

The applicant has stated that the facility plans to use ERC certificates C-1024-4, N-161-4, S-2649-4, C-352-4, N-847-4 to offset the increases in PM10 emissions associated with this project. The above certificates have available quarterly credits as follows:

San Joaquin Solar 1 & 2 (08-AFC-12)
SJVACPD Determination of Compliance, C1090203

	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
ERC #C-1024-4	0	0	0	14,534
ERC #N-161-4	23,150	22,909	24,274	22,565
ERC #S-2649-4	3,313	3,812	3,561	5,082
ERC #C-352-4	0	0	0	33,444
ERC #N-847-4	0	0	0	29,098
Total	26,463	26,721	27,835	104,723

As proposed by the applicant, in order to satisfy District offset requirements the applicant has proposed providing SO_x reductions in place of PM₁₀ reductions. District Rule 2201 Section 4.13.3 allows such interpollutant substitutions provided the applicant shows that the substitution will not cause or contribute to the violation of an ambient air quality standard and that the appropriate interpollutant offset ratio is utilized.

The applicant has stated that the facility plans to use SO_x ERC certificates N-548-5, N-762-5, S-2790-5, S-3000-5, C-1022-5, N-744-5, S-2999-5, S-3056-5, S-2847-5, S-3106-5, S-2387-5 to offset the increases in PM₁₀ emissions associated with this project. The above certificates have available quarterly credits as follows:

	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
ERC #N-548-5	8,250	8,250	8,250	8,250
ERC #N-762-5	21,000	21,000	21,000	21,000
ERC #S-2790-5	12862	491	0	8499
ERC #S-3000-5	71,703	71,500	75,296	75,296
ERC #C-1022-5	112,972	112,972	112,972	112,972
ERC #N-744-5	0	0	0	52,748
ERC #S-2999-5	24,000	24,000	24,000	24,000
ERC #S-3056-5	12,573	9,814	8,973	12,045
ERC #S-2847-5	1,509	1,536	1,563	1,563
ERC #S-3106-5	78,598	78,599	51,520	78,598
ERC #S-2387-5	7,500	7,500	7,500	7,500
Total	350,967	335,662	311,074	402,471

Per Rule 2201 Section 4.13.3.2, interpollutant offsets between PM₁₀ and PM₁₀ precursors (i.e. SO_x) may be allowed. The applicant is proposing to use interpollutant offsets SO_x for PM₁₀ at an interpollutant ratio of 1.0:1 (see Appendix D).

In addition, the overall offset ratio is equal to the multiplication of the distance and interpollutant ratios (1.5 x 1.0 = 1.5).

As seen above, the facility has sufficient credits to fully offset the quarterly PM₁₀ emissions increases associated with this project.

VOC

SSPE2 (VOC)	= 27,156 lb/year
C-7758-10-0 (VOC)	= 11 lb/year
C-7758-11-0 (VOC)	= 11 lb/year
C-7758-12-0 (VOC)	= 6 lb/year
C-7758-13-0 (VOC)	= 6 lb/year
Offset threshold (VOC)	= 20,000 lb/year
ICCE	= 0 lb/year

$$\text{Offsets Required (lb/year)} = [(27,156 - 11 - 11 - 11 - 11 - 20,000 + 0) \times \text{DOR}]$$

$$= 7,112 \times \text{DOR}$$

Calculating the appropriate quarterly emissions to be offset is as follows (in lb/qtr without distance ratio):

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
1,778	1,778	1,778	1,778

The applicant is proposing to use ERC Certificates S-3132-1, S-3051-1, N-815-1, S-3117-1, S-3003-1 which has an original site of reduction greater than 15 miles from the location of this project. Therefore, an offset ratio of 1.5:1 is applicable and the amount of VOC ERCs that need to be withdrawn is:

$$\text{Offsets Required (lb/year)} = 7,112 \times 1.5$$

$$= 10,668 \text{ lb VOC/year}$$

Calculating the appropriate quarterly emissions to be offset is as follows (in lb/qtr):

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
2,667	2,667	2,667	2,667

The applicant has stated that the facility plans to use ERC certificate S-3132-1, S-3051-1, N-815-1, S-3117-1, S-3003-1 to offset the increases in VOC emissions associated with this project. The applicant has purchased the quarterly VOC credits of the above certificate as follows:

	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
ERC #S-3132-1	10,335	10,336	10,334	10,333
ERC #S-3051-1	12,500	12,500	12,500	12,500
ERC #N-815-1	0	0	143	0
ERC #S-3117-1	5,500	5,500	5,500	5,500
ERC #S-3003-1	2,500	2,500	2,500	2,500
Total	30,835	30,836	30,977	30,833

As seen above, the facility has sufficient credits to fully offset the quarterly VOC emissions increases associated with this project.

Proposed Rule 2201 (offset) Conditions:

- Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide NO_x emission reduction credits for the following quantity of emissions: 1st quarter - 19,053 lb, 2nd quarter - 19,053 lb, 3rd quarter - 19,053 lb, and fourth quarter - 19,053 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
- Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide SO_x emission reduction credits for the following quantity of emissions: 1st quarter - 10,598 lb, 2nd quarter - 10,598 lb, 3rd quarter - 10,599 lb, and fourth quarter - 10,599 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
- Prior to initial operation of C-7758-1, '2, '3, '4, '5, '6, '7, '8, and '9, permittee shall provide PM₁₀ emission reduction credits for the following quantity of emissions: 1st quarter - 41,493 lb, 2nd quarter - 41,494 lb, 3rd quarter - 41,494 lb, and fourth quarter - 41,494 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). SO_x ERCs may be used to offset PM₁₀ increases at an interpollutant ratio of 1.0 lb-SO_x : 1.0 lb-PM₁₀. [District Rule 2201]
- Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide VOC emission reduction credits for the following quantity of emissions: 1st quarter - 1,778 lb, 2nd quarter - 1,778 lb, 3rd quarter - 1,778 lb, and fourth quarter - 1,778 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
- Sufficient ERCs from ERC Certificate Numbers N-556-2, S-2953-2, N-2-2, C-1001-2, S-2773-2, N-768-2, C-1022-2, N-552-2, N-801-2, N-789-2, N-596-2, N-820-2, N-595-2, C-880-2, C-881-2, S-3086-2, S-3022-2, S-3028-2, S-3039-2, S-3029-2, S-3087-2, N-755-2, S-2852-2, C-914-2, N-548-5, N-762-5, S-2790-5, S-3000-5, C-1022-5, N-744-5, S-2999-5, S-3056-5, S-2847-5, S-3106-5, S-2387-5, C-1024-4, N-161-4, S-2649-4, C-352-4, N-847-4, C-352-4, S-3132-1, S-3051-1, N-815-1, S-3117-1, S-3003-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Determination of Compliance shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Determination of Compliance. [District Rule 2201]

C. Public Notification

1. Applicability

Public noticing is required for:

- a. Any new Major Source, which is a new facility that is also a Major Source,
- b. Major Modifications,
- c. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- d. Any project which results in the offset thresholds being surpassed, and/or
- e. Any project with an SSIFE of greater than 20,000 lb/year for any pollutant.

a. New Major Source

New Major Sources are new facilities, which are also Major Sources. As shown in Section VII.C.5 above, the SSPE2 is greater than the Major Source threshold for NO_x and PM₁₀. Therefore, public noticing is required for this project for new Major Source purposes because this facility is becoming a new Major Source.

b. Major Modification

As demonstrated in VII.C.7, this project does not constitute a Major Modification; therefore, public noticing for Major Modification purposes is not required.

c. PE > 100 lb/day

The PE2 for this new unit is compared to the daily PE Public Notice thresholds in the following table:

PE > 100 lb/day Public Notice Thresholds			
Permit	PE2 (lb-PM10/day)	Public Notice Threshold	Public Notice Triggered?
C-7758-1-0	0.7	100 lb/day	No
C-7758-2-0	0.0	100 lb/day	No
C-7758-7-0	0.0	100 lb/day	No
C-7758-8-0	19.9	100 lb/day	No
C-7758-9-0	19.9	100 lb/day	No

Therefore, public noticing for PE > 100 lb/day purposes is not required.

PE > 100 lb/day Public Notice Thresholds			
Pollutant	PE2 (lb/day) (each boiler C- 7758-3-0 through '6-0)	Public Notice Threshold	Public Notice Triggered?
NO _x	161.3	100 lb/day	Yes
SO _x	147.6	100 lb/day	Yes
PM ₁₀	183.8	100 lb/day	Yes
CO	203.0	100 lb/day	Yes
VOC	31.7	100 lb/day	No

Therefore, public noticing for PE > 100 lb/day purposes is required.

PE > 100 lb/day Public Notice Thresholds			
Pollutant	PE2 (lb/day) (each engine C- 7758-10-0 and '11-0)	Public Notice Threshold	Public Notice Triggered?
NO _x	13.2	100 lb/day	No
SO _x	0.0	100 lb/day	No
PM ₁₀	0.4	100 lb/day	No
CO	7.7	100 lb/day	No
VOC	0.9	100 lb/day	No

Therefore, public noticing for PE > 100 lb/day purposes is required.

PE > 100 lb/day Public Notice Thresholds			
Pollutant	PE2 (lb/day) (each engine C- 7758-12-0 and '13-0)	Public Notice Threshold	Public Notice Triggered?
NO _x	2.5	100 lb/day	No
SO _x	0.0	100 lb/day	No
PM ₁₀	0.1	100 lb/day	No
CO	1.4	100 lb/day	No
VOC	0.2	100 lb/day	No

Therefore, public noticing for PE > 100 lb/day purposes is not required.

d. Offset Threshold

The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Offset Threshold				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO _x	0	96,790	20,000 lb/year	Yes
SO _x	0	97,144	54,750 lb/year	Yes
PM ₁₀	0	195,193	29,200 lb/year	Yes
CO	0	165,056	200,000 lb/year	Yes
VOC	0	27,156	20,000 lb/year	Yes

As detailed above, offset thresholds were surpassed for NO_x, SO_x, PM₁₀, CO, VOC with this project; therefore public noticing is required for offset purposes.

e. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i.e. $SSIPE = SSPE2 - SSPE1$. The values for SSPE2 and SSPE1 are calculated according to Rule 2201, Sections 4.9 and 4.10, respectively. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table:

Stationary Source Increase in Permitted Emissions [SSIPE] – Public Notice					
Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO _x	96,790	0	96,790	20,000 lb/year	Yes
SO _x	97,144	0	97,144	20,000 lb/year	Yes
PM ₁₀	195,193	0	195,193	20,000 lb/year	Yes
CO	165,056	0	165,056	20,000 lb/year	Yes
VOC	27,156	0	27,156	20,000 lb/year	Yes

As demonstrated above, the SSIPEs for NO_x, SO_x, PM₁₀, CO, VOC were greater than 20,000 lb/year; therefore public noticing for SSIPE purposes is required.

2. Public Notice Action

As discussed above, public noticing is required for this project for new major source, PE in excess of 100 lb/day, offset threshold being surpassed, and SSIPE greater than 20,000 lb/year. The District shall public notice this project according to the requirements of Section 5.5.

D. Daily Emission Limits (DELs)

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.15 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.15.1 and 3.15.2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

C-7758-1-0

Proposed Rule 2201 (DEL) Conditions:

- The maximum amount of biomass received at the facility shall not exceed any of the following limits: 3,700 tons/day or 609,170 tons/year. [District Rules 2201 and 4101]
- PM₁₀ emissions rate from the unloading and handling operation shall not exceed 1.12E-04 lb-PM₁₀/ton biomass. [District Rule 2201]
- PM₁₀ emissions rate from the biomass storage piles shall not exceed 0.527 lb/acre/day. [District Rule 2201]

C-7758-2-0

Proposed Rule 2201 (DEL) Conditions:

- The maximum throughput of limestone loaded into the storage silo shall not exceed any of the following limits: 25.0 tons/day or 2,786 tons/year. [District Rules 2201 and 4101]
- PM10 emissions rate from the limestone silo loading operation shall not exceed 2.39E-02 lb-PM10/ton limestone. [District Rule 2201]

C-7758-3-0 through '6-0

Proposed Rule 2201 (DEL) Conditions:

- Emission rates from the boiler, except during startup periods, shall not exceed any of the following limits: NO_x (as NO₂) - 3.70 lb/hr and 7.3 ppmvd @ 3% O₂; SO_x (as SO₂) – 3.80 lb/hr; PM10 – 7.66 lb/hr; CO – 8.46 lb/hr and 43.4 ppmvd @ 3% O₂; or VOC (as methane) – 1.32 lb/hr and 3.0 ppmvd @ 3% O₂. [District Rules 2201]
- Ammonia (NH₃) emissions shall not exceed either of the following limits: 1.08 lb/hr or 5.0 ppmvd @ 3% O₂ (based on a 24 hour rolling average). [District Rule 2201]
- Daily emissions from the boiler shall not exceed any of the following limits: NO_x (as NO₂) – 161.3 lb/day; VOC – 31.7 lb/day; CO – 203.0 lb/day; PM10 – 183.8 lb/day; or SO_x (as SO₂) – 147.6 lb/day. [District Rule 2201]

C-7758-7-0

Proposed Rule 2201 (DEL) Conditions:

- The maximum amount of fly ash unloaded at the facility shall not exceed any of the following limits: 200.0 tons/day or 30,459 tons/year. [District Rules 2201 and 4101]
- PM10 emissions rate from the unloading and handling operation shall not exceed 2.25E-04 lb-PM10/ton fly ash. [District Rule 2201]

C-7758-8-0 and '9-0

Proposed Rule 2201 (DEL) Condition:

- PM10 emission rate from the WSAC shall not exceed 19.9 lb/day. [District Rule 2201]

C-7758-10-0 and '11-0

Proposed Rule 2201 (DEL) Conditions:

- Emissions from this IC engine shall not exceed any of the following limits: 4.47 g-NO_x/bhp-hr, 2.6 g-CO/bhp-hr, or 0.30 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115]
- Emissions from this IC engine shall not exceed 0.15 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]

C-7758-12-0 and '13-0

Proposed Rule 2201 (DEL) Conditions:

- Emissions from this IC engine shall not exceed any of the following limits: 4.52 g-NO_x/bhp-hr, 2.6 g-CO/bhp-hr, or 0.40 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115]
- Emissions from this IC engine shall not exceed 0.15 g-PM₁₀/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]

E. Compliance Assurance

1. Source Testing

C-7758-3-0 through '6-0

The District Source Test Policy (APR 1705) requires annual testing for all pollutants controlled by catalysts. The control equipment will include a SCR system. Ammonia slip is an indicator of how well the SCR system is performing.

Therefore, source testing for NO_x, SO_x, VOC, CO, PM₁₀, and ammonia slip will be required within 120 days of initial operation and at least once every 12 months thereafter.

Also, initial source testing of NO_x, CO, and VOC startup emissions will be required for one boiler initially and not less than every seven years thereafter. If CEM data is not certifiable to determine compliance with NO_x and CO startup emission limits, then source testing to measure startup NO_x and CO mass emission rates shall be conducted at least once every 12 months. This testing will serve two purposes: to validate the startup emission estimates used in the emission calculations and to verify that the CEMs accurately measure startup emissions.

Each boiler will have a separate exhaust stack. The units will be equipped with CEMs for NO_x, SO_x, CO, opacity, ammonia slip, and O₂. Each boiler will be equipped with an individual CEM. Each CEM will have two ranges to allow accurate measurements of NO_x and CO emissions during startup. The CEMs must meet the installation, performance, relative accuracy, and quality assurance requirements specified in 40 CFR 60.13 and Appendix B and the acid rain requirements in 40 CFR Part 75.

C-7758-1-0, '2-0, 7-0, '8-0, '9-0, and 10-0 through '13-0

Pursuant to District Policy APR 1705, source testing is not required to demonstrate compliance with Rule 2201.

2. Monitoring

C-7758-1-0, '2-0, '7-0, '10-0 through '13-0

No monitoring is required to demonstrate compliance with Rule 2201.

C-7758-3-0 through '6-0

Monitoring of NO_x emissions is required by District Rule 4306. The applicant has proposed a CEMS for NO_x.

CO monitoring is not specifically required by any applicable Rule or Regulation. Nevertheless, due to erratic CO emission concentrations during start-up, it is necessary to limit the CO emissions on a pound per hour basis. Therefore, a CO CEMS is necessary to show compliance with the CO limits of this permit. The applicant has proposed a CO CEMS.

C-7758-8-0 and '9-0

District Rule 7012 requires hexavalent chromium concentration testing to be conducted at least once every six (6) months for non-wooden cooling towers subject to Section 5.2.3 of the rule. Since the WSAC does not have hexavalent chromium containing compounds added to the circulating water, this unit is exempt from the monitoring requirements of the rule. Therefore, no monitoring will be required for this permit unit.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201.

C-7758-1-0, '2-0, and '7-0

Records of daily and annual amount of material received or processed (in tons) at the facility shall be maintained.

C-7758-3-0 through '6-0

The applicant will be required to keep records of all of the parameters that are required to be monitored. Refer to section VIII.E.2 of this document for a discussion of the parameters that will be monitored.

C-7758-8-0 and '9-0

District Rule 7012 requires any person subject to Sections 5.2.2 and 5.2.3 of the rule to keep records of all circulating water tests performed. As discussed above, the WSAC is exempt from the monitoring/testing requirements of the rule. Therefore, no recordkeeping will be required for this permit unit.

C-7758-10-0 through '13-0

Recordkeeping is required to demonstrate compliance with the offset, public notification, and daily emission limit requirements of Rule 2201. As required by District Rule 4702, *Stationary Internal Combustion Engines - Phase 2*, this IC engine is subject to recordkeeping requirements. Recordkeeping requirements, in accordance with District Rule 4702, will be discussed in Section VIII, *District Rule 4702*, of this evaluation.

4. Reporting

C-7758-1-0, '2-0, '7-0, '10-0 through '13-0

No reporting is required to demonstrate compliance with Rule 2201.

C-7758-3-0 through '6-0

The applicant will be required to submit specific reports of various parameters. Refer to section VIII.E.2 of this document for a discussion of the parameters that will be reported.

C-7758-8-0 and '9-0

District Rule 7012 requires the facility submit a compliance plan to the APCO at least 90 days before the newly constructed WSAC is operated. Such reporting will be required.

F. Ambient Air Quality Analysis

Section 4.14.1 of this Rule requires that an ambient air quality analysis (AAQA) be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The Technical Services Division of the SJVAPCD conducted the required analysis. Refer to Appendix F of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_x, CO, VOC, and SO_x. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_x, CO, VOC, or SO_x.

The proposed location is in a non-attainment area for PM₁₀. The increase in the ambient PM₁₀ concentration due to the proposed equipment is shown on the table titled Calculated Contribution. The levels of significance, from 40 CFR Part 51.165 (b)(2), are shown on the table titled Significance Levels.

Significance Levels					
Pollutant	Significance Levels (µg/m ³) - 40 CFR Part 51.165 (b)(2)				
	Annual Avg.	24 hr Avg.	8 hr Avg.	3 hr Avg.	1 hr Avg.
PM ₁₀	1.0	5	N/A	N/A	N/A

Calculated Contribution					
Pollutant	Calculated Contributions ($\mu\text{g}/\text{m}^3$)				
	Annual Avg.	24 hr Avg.	8 hr Avg.	3 hr Avg.	1 hr Avg.
PM ₁₀	30	50	N/A	N/A	N/A

As shown, the calculated contribution of PM₁₀ will exceed the EPA significance level. However, the applicant is proposing to provide PM₁₀ offsets to ensure this project does not contribute to an exceedance of the AAQS. This project is not expected to cause or make worse a violation of an air quality standard.

G. Compliance Certification

Section 4.15.2 of this Rule requires the owner of a new Major Source or a source undergoing a Major Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Sections VIII-Rule 2201-C.1.a and VIII-Rule 2201-C.1.b, this facility is a new major source, therefore this requirement is applicable. Included in Appendix E is SJS's compliance certification.

Rule 2520 Federally Mandated Operating Permits

Since this facility's emissions exceed the major source thresholds of District Rule 2201, this facility is a major source. Pursuant to Rule 2520 Section 5.1, and as required by permit condition, the facility will have up to 12 months from the date of ATC issuance to either submit a Title V Application or comply with District Rule 2530 *Federally Enforceable Potential to Emit*.

Rule 2540 Acid Rain Program

The proposed boilers are subject to the acid rain program as phase II units, i.e. they will be installed after 11/15/90 and each has a generator nameplate rating greater than 25 MW.

The acid rain program will be implemented through a Title V operating permit. Federal regulations require submission of an acid rain permit application at least 24 months before the later of 1/1/2000 or the date the unit expects to generate electricity.

The acid rain program requirements for this facility are relatively minimal. Monitoring of the NO_x and SO_x emissions and a relatively small quantity of SO_x allowances (from a national SO_x allowance bank) will be required as well as the use of a NO_x CEM.

Proposed Rule 2540 Condition:

- Permittee shall submit an application to comply with SJVUAPCD District Rule 2540 - Acid Rain Program. [District Rule 2540]

Rule 2550 Federally Mandated Preconstruction Review for Major Sources of Air Toxics

Section 2.0 states, "The provisions of this rule shall only apply to applications to construct or reconstruct a major air toxics source with Authority to Construct issued on or after June 28, 1998." The applicant has provided the following analysis for Noncriteria pollutants/HAPs.

Noncriteria pollutants are compounds that have been identified as pollutants that pose a significant health hazard. Nine of these pollutants are regulated under the Federal New Source Review program: lead, asbestos, beryllium, mercury, fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds.¹

In addition to these nine compounds, the federal Clean Air Act lists 189 substances as potential hazardous air pollutants (Clean Air Act Sec. 112(b)(1)). Any pollutant that may be emitted from the project and is on the federal New Source Review List and the federal Clean Air Act list has been evaluated.

The applicant has supplied the following data.

**Hazardous Air Pollutant Emissions
 Each Combustor**

Hazardous Air Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (lb/yr)
Acetaldehyde	4.18E-02	2.75E+02
Ammonia*	9.40E-01	6.18E+03
Arsenic	6.26E-05	4.11E-01
Benzene	4.77E-02	3.14E+02
Cadmium	6.85E-04	4.50E+00
Chromium 6+	4.99E-05	3.28E-01
Copper*	5.21E-04	3.42E+00
Formaldehyde	3.59E-01	2.23E+03
Hydrogen Chloride	1.42E+00	9.33E+03
Lead	1.49E-03	9.82E+00
Manganese	1.35E-01	8.84E+02
Toluene	7.74E-06	5.09E-02
Naphthalene	7.90E-03	5.19E+01
PAHs	8.74E-02	5.74E+02
Benz [a] anthracene	1.92E-05	1.26E-01
Benzo [b] fluoranthene	2.05E-06	1.35E-02
Benzo [k] fluoranthene	8.42E-07	5.53E-03
Chrysene	2.60E-05	1.71E-01
Indeno [1,2,3-cd] pyrene	4.67E-07	3.07E-03
123678 HxCDD	5.88E-10	3.86E-06
1234678 HpCDD	3.32E-09	2.18E-05
2378 TCDF	3.45E-09	2.27E-05
23478 PeCDF	1.91E-09	1.26E-05

¹ These pollutants are regulated under federal and state air quality programs; however, they are evaluated as noncriteria pollutants by the California Energy Commission (CEC).

San Joaquin Solar 1 & 2 (08-AFC-12)
SJVACPD Determination of Compliance, C1090203

12378 PeCDF	1.19E-09	7.80E-06
123678 HxCDF	6.31E-10	4.15E-06
234678 HxCDF	7.39E-10	4.86E-06
1234678 HpCDF	9.79E-10	6.43E-06
123478 HxCDF	6.34E-10	4.16E-06
123789 HxCDF	1.09E-10	7.18E-07
Total	2.10	13,674.33

6570 hr/year operation based on 75% capacity.
 310.57 MMBtu/hr per combustor full load operation.
 * not a CAA 112 HAP

**Hazardous Air Pollutant Emissions
 Startup Combustors Per Combustor Train**

Hazardous Air Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (lb/yr)
Acetaldehyde	5.01E-04	4.77E-03
Acrolein	4.37E-04	4.16E-03
Benzene	9.38E-04	8.93E-03
Ethylbenzene	1.12E-03	1.06E-02
Formaldehyde	1.99E-03	1.89E-02
Hexane	7.44E-04	7.08E-03
Propylene*	8.57E-02	8.16E-01
Toluene	4.29E-03	4.08E-02
Xylenes	3.19E-03	3.03E-02
Naphthalene	4.85E-05	4.62E-04
PAHs other than naphthalene	1.62E-05	1.54E-04
Total	1.33E-02	0.13

4 burners per combustor, one 15 MMBtu/hr and three 50 MMBtu/hr.
 HHV = 1020 Btu/scf.
 2 startups per year, 7 hours each startup.
 * not a CAA112 HAP

**Hazardous Air Pollutant Emissions
 Each WSAC**

Hazardous Air Pollutant	Concentration in WSAC Return Water ⁽²⁾	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (lb/yr)
Arsenic	3.1 ug/L	1.39E-06	1.04E-02
Chlorine	161,000	7.22E-02	5.38E+02
Fluoride*	170	7.63E-05	5.69E-01
Mercury	0.59	2.65E-07	1.97E-03
Silica*	40,900	1.83E-02	1.37E+02
Sulfate*	1,200,000	5.38E-01	4.01E+03
Vanadium*	6.8	3.05E-06	2.27E-02
Total		7.22E-02	538

Emissions calculated from annual average circulating water rate of 61,000 gal/min and maximum daily circulating water rate of 71,680 gal/min, drift eliminator control of 0.0005%, operation of 8,760 hr/yr.
 Five cycles of concentration, four cells in each WSAC.
 Total number of WSAC = 2.
 * not a CAA112 HAP

**Hazardous Air Pollutant Emissions
 Fly Ash Handling Each Combustor**

Hazardous Air Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (lb/yr)
Arsenic	7.74E-07	5.09E-03
Beryllium	3.82E-09	2.51E-05
Cadmium	2.20E-08	1.44E-04
Hex Chrome	2.36E-08	1.55E-04
Copper*	3.49E-06	2.30E-02
Lead	1.90E-06	1.25E-02
Manganese	1.32E-06	8.68E-03
Nickel	3.12E-07	2.05E-03
Selenium	6.49E-09	4.26E-05
Total	4.36E-06	2.87E-02

99% control efficiency.

5.40 ton/hr and 35445.8 tons/year process rate.

* not a CAA112 HAP

**Hazardous Air Pollutant Emissions
 Emergency Diesel Electrical Generator**

Hazardous Air Pollutant	Emission Factor (g/hp-hr)	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (lb/yr)
Diesel Particulate ⁸	0.15	4.41E-01	5.286E+00
Total		0.441	5.286

* not a CAA112 HAP

**Hazardous Air Pollutant Emissions
 Emergency Diesel Firewater Pump**

Hazardous Air Pollutant	Emission Factor (g/hp-hr)	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (lb/yr)
Diesel Particulate*	0.15	8.20E-02	4.27E+00
Total		0.082	4.27

* not a CAA112 HAP

Total Project HAPs

Emission Unit	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (lb/yr)
Combustor (4)	2.10 x 4 = 8.40	13,677.75 x 4 = 54,711
Startup Combustor Train (2)	1.33E-02 x 2 = 0.0266	0.13 x 2 = 0.26
WSAC (2)	7.22E-02 x 2 = 0.1444	538 x 2 = 1,076
Fly Ash Handling	4.36E-06	2.87E-02
Emergency Generator (2)	0	0
Firewater Pump (2)	0	0
Total	8.57	55,787

Emissions of each individual HAP are below 10 tons per year but total HAP emissions are above 25 tons per year. Therefore, SJS will be a major air toxics source and the provisions of this rule apply.

This facility's emissions also exceed the major source thresholds of District Rule 2201, therefore, this facility is a major source. Per Rule 2520 Section 5.1, the facility will have up to 12 months from the date of ATC issuance to either submit a Title V Application or comply with District Rule 2530 *Federally Enforceable Potential to Emit*. The applicant will be in compliance with Rule 2550 with the submittal of the Title V Application.

Rule 4001 New Source Performance Standards (NSPS)

40 CFR Part 60 - Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978

This subpart applies to electric utility steam generating units. However, the applicability is limited to boilers combusting at least 73 MW (250 MMBtu/hr). Since each combustor train is rated at 40 MW, the provisions of this subpart do not apply.

40 CFR Part 60 - Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

This subpart applies to each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 MW (100 million Btu/hour). Since each combustor train is rated at 40 MW, the provisions of this subpart do apply.

§60.42b - Standard for sulfur dioxide.

(a) Except as provided in paragraphs (b), (c), (d), or (j) of this section, on and after the date on which the performance test is completed or required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that combusts coal or oil shall cause to be discharged into the atmosphere any gases that contain sulfur dioxide in excess of 10 percent (0.10) of the potential sulfur dioxide emission rate (90 percent reduction) and that contain sulfur dioxide in excess of the emission limit determined according to the formula located in this section.

(b) On and after the date on which the performance test is completed or required to be completed under §60.8 of this part, whichever comes first, no owner or operator of an affected facility that combusts coal refuse alone in a fluidized bed combustion steam generating unit shall cause to be discharged into the atmosphere any gases that contain sulfur dioxide in excess of 20 percent of the potential sulfur dioxide emission rate (80 percent reduction) and that contain sulfur dioxide in excess of 520 ng/J (1.2 lb/million Btu) heat input. If coal or oil is fired with coal refuse, the affected facility is subject to paragraph (a) or (d) of this section, as applicable.

(c) On and after the date on which the performance test is completed or is required to be completed under §60.8 of this part, whichever comes first, no owner or operator of an affected facility that combusts coal or oil, either alone or in combination with any other fuel, and that uses an emerging technology for the control of sulfur dioxide emissions, shall cause to be discharged into the atmosphere any gases that contain sulfur dioxide in excess of 50 percent of the potential sulfur dioxide emission rate (50 percent reduction) and that contain sulfur dioxide in excess of the emission limit determined according to the formula located in this section.

(d) On and after the date on which the performance test is completed or required to be completed under §60.8 of this part, whichever comes first, no owner or operator of an affected facility listed in paragraphs (d) (1), (2), or (3) of this section shall cause to be discharged into the atmosphere any gases that contain sulfur dioxide in excess of 520 ng/J (1.2 lb/million Btu) heat input if the affected facility combusts coal, or 215 ng/J (0.5 lb/million Btu) heat input if the affected facility combusts oil other than very low sulfur oil. Percent reduction requirements are not applicable to affected facilities under paragraphs (d)(1), (2), or (3).

(j) Percent reduction requirements are not applicable to affected facilities combusting only very low sulfur oil. The owner or operator of an affected facility combusting very low sulfur oil shall demonstrate that the oil meets the definition of very low sulfur oil by: (1) Following the performance testing procedures as described in §60.45b(c) or §60.45b(d), and following the monitoring procedures as described in §60.47b(a) or §60.47b(b) to determine sulfur dioxide emission rate or fuel oil sulfur content; or (2) maintaining fuel receipts as described in §60.49b(r).

This permit unit does not combust coal; oil, coal refuse, or very low sulfur oil therefore these sections do not apply.

§60.43b - Standard for particulate matter.

(a) On and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever comes first, no owner or operator of an affected facility which combusts coal or combusts mixtures of coal with other fuels, shall cause to be discharged into the atmosphere from that affected facility any gases that contain particulate matter in excess of the following emission limits:

(1) 22 ng/J (0.051 lb/million Btu) heat input,

(i) If the affected facility combusts only coal, or

(ii) If the affected facility combusts coal and other fuels and has an annual capacity factor for the other fuels of 10 percent (0.10) or less.

(2) 43 ng/J (0.10 lb/million Btu) heat input if the affected facility combusts coal and other fuels and has an annual capacity factor for the other fuels greater than 10 percent (0.10) and is subject to a federally enforceable requirement limiting operation of the affected facility to an annual capacity factor greater than 10 percent (0.10) for fuels other than coal.

(3) 86 ng/J (0.20 lb/million Btu) heat input if the affected facility combusts coal or coal and other fuels and

(i) Has an annual capacity factor for coal or coal and other fuels of 30 percent (0.30) or less,

(ii) Has a maximum heat input capacity of 73 MW (250 million Btu/hour) or less,

(iii) Has a federally enforceable requirement limiting operation of the affected facility to an annual capacity factor of 30 percent (0.30) or less for coal or coal and other solid fuels, and

(iv) Construction of the affected facility commenced after June 19, 1984, and before November 25, 1986.

This permit unit does not combust coal or combusts mixtures of coal with other fuels therefore this section does not apply.

(b) On and after the date on which the performance test is completed or required to be completed under 60.8 of this part, whichever date comes first, no owner or operator of an affected facility that combusts oil (or mixtures of oil with other fuels) and uses a conventional or emerging technology to

reduce sulfur dioxide emissions shall cause to be discharged into the atmosphere from that affected facility any gases that contain particulate matter in excess of 43 ng/J (0.10 lb/million Btu) heat input.

This permit unit does not combust oil (or mixtures of oil with other fuels) therefore this section does not apply.

(c) On and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that combusts wood, or wood with other fuels, except coal, shall cause to be discharged from that affected facility any gases that contain particulate matter in excess of the following emission limits:

(1) 43 ng/J (0.10 lb/million Btu) heat input if the affected facility has an annual capacity factor greater than 30 percent (0.30) for wood.

(2) 86 ng/J (0.20 lb/million Btu) heat input if

(i) The affected facility has an annual capacity factor of 30 percent (0.30) or less for wood,

(ii) Is subject to a federally enforceable requirement limiting operation of the affected facility to an annual capacity factor of 30 percent (0.30) or less for wood, and

(iii) Has a maximum heat input capacity of 73 MW (250 million Btu/hour) or less.

This permit unit does combust wood, or wood with other fuels, except coal, therefore this section does apply. The facility has proposed to take a PM₁₀ limit of 0.024 lb/MMBtu, which is in compliance with the limits of this section. Therefore, compliance is expected.

(d) On and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that combusts municipal-type solid waste or mixtures of municipal-type solid waste with other fuels, shall cause to be discharged into the atmosphere from that affected facility any gases that contain particulate matter in excess of the following emission limits:

(1) 43 ng/J (0.10 lb/million Btu) heat input,

(i) If the affected facility combusts only municipal-type solid waste, or

(ii) If the affected facility combusts municipal-type solid waste and other fuels and has an annual capacity factor for the other fuels of 10 percent (0.10) or less.

(2) 86 ng/J (0.20 lb/million Btu) heat input if the affected facility combusts municipal-type solid waste or municipal-type solid waste and other fuels; and

(i) Has an annual capacity factor for municipal-type solid waste and other fuels of 30 percent (0.30) or less,

(ii) Has a maximum heat input capacity of 73 MW (250 million Btu/hour) or less,

(iii) Has a federally enforceable requirement limiting operation of the affected facility to an annual capacity factor of 30 percent (0.30) for municipal-type solid waste, or municipal-type solid waste and other fuels, and

(iv) Construction of the affected facility commenced after June 19, 1984, but before November 25, 1986.

This permit unit does combust municipal-type solid waste or mixtures of municipal-type solid waste with other fuels therefore this section does apply. The facility has proposed to take a PM₁₀ limit of 0.024 lb/MMBtu, which is in compliance with the limits of this section. Therefore, compliance is expected.

(f) On and after the date on which the initial performance test is completed or is required to be completed under 60.8 of this part, whichever date comes first, no owner or operator of an affected facility that combusts coal, oil, wood, or mixtures of these fuels with any other fuels shall cause to be discharged into the atmosphere any gases that exhibit greater than 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity.

District Rule 4101 requires that a person shall not discharge into the atmosphere, any air contaminant, for a period or periods aggregating more than three minutes in any one hour which is as dark or darker than Ringelmann 1 (20% opacity). In addition, the permit unit will be equipped with a Continuous Opacity Monitoring system, which will ensure continued compliance.

§60.44b - Standard for nitrogen oxides.

(a) Except as provided under paragraphs (k) and (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that is subject to the provisions of this section and that combusts only coal, oil, or natural gas shall cause to be discharged into the atmosphere from that affected facility any gases that contain nitrogen oxides (expressed as NO₂) in excess of the emission limits within this section.

This permit unit does not combust only coal, oil, or natural gas therefore this section does not apply.

(b) Except as provided under paragraphs (k) and (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that simultaneously combusts mixtures of coal, oil, or natural gas shall cause to be discharged into the atmosphere from that affected facility any gases that contain nitrogen oxides in excess of a limit determined by the use of the formula located within this section.

This permit unit does not combust mixtures of coal, oil, or natural gas therefore this section does not apply.

(c) Except as provided under paragraph (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that simultaneously combusts coal or oil, or a mixture of these fuels with natural gas, and wood, municipal-type solid waste, or any other fuel shall cause to be discharged into the atmosphere any gases that contain nitrogen oxides in excess of the emission limit for the coal or oil, or mixtures of these fuels with natural gas combusted in the affected facility, as determined pursuant to paragraph (a) or (b) of this section, unless the affected facility has an annual capacity factor for coal or oil, or mixture of these fuels with natural gas of 10 percent (0.10) or less and is subject to a federally enforceable requirement that limits operation of the affected facility to an annual capacity factor of 10 percent (0.10) or less for coal, oil, or a mixture of these fuels with natural gas.

This permit unit does not combust mixtures of coal or oil therefore this section does not apply.

(d) On and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that simultaneously combusts natural gas with wood, municipal-type solid waste, or other solid

fuel, except coal, shall cause to be discharged into the atmosphere from that affected facility any gases that contain nitrogen oxides in excess of 130 ng/J (0.30 lb/million Btu) heat input unless the affected facility has an annual capacity factor for natural gas of 10 percent (0.10) or less and is subject to a federally enforceable requirement that limits operation of the affected facility to an annual capacity factor of 10 percent (0.10) or less for natural gas.

This permit unit does not simultaneously combust natural gas with wood, municipal-type solid waste, or other solid fuel, except coal therefore this section does not apply.

(e) Except as provided under paragraph (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that simultaneously combusts coal, oil, or natural gas with byproduct/waste shall cause to be discharged into the atmosphere any gases that contain nitrogen oxides in excess of the emission limit determined by the formula within this section unless the affected facility has an annual capacity factor for coal, oil, and natural gas of 10 percent (0.10) or less and is subject to a federally enforceable requirement that limits operation of the affected facility to an annual capacity factor of 10 percent (0.10) or less.

This permit unit does not simultaneously combust coal, oil, or natural gas with byproduct/waste therefore this section does not apply.

§60.46b - Compliance and performance test methods and procedures for particulate matter and nitrogen oxides.

(a) The particulate matter emission standards and opacity limits under §60.43b apply at all times except during periods of startup, shutdown, or malfunction. The nitrogen oxides emission standards under §60.44b apply at all times.

(b) Compliance with the particulate matter emission standards under §60.43b shall be determined through performance testing as described in paragraph (d) of this section.

(d) To determine compliance with the particulate matter emission limits and opacity limits under §60.43b, the owner or operator of an affected facility shall conduct an initial performance test as required under §60.8...

Performance tests will be conducted as defined under §60.8; therefore compliance is expected.

§60.48b - Emission monitoring for particulate matter and nitrogen oxides.

(a) The owner or operator of an affected facility subject to the opacity standard under §60.43b shall install, calibrate, maintain, and operate a continuous monitoring system for measuring the opacity of emissions discharged to the atmosphere and record the output of the system

As discussed above, the permit unit is only subject to the standards for particulate matter and the facility has proposed to install a COM system and record the output of the system. Therefore, compliance is expected.

Therefore, the boilers will be in compliance with the requirements of this subpart.

40 CFR Part 60 - Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

This subpart applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and has a maximum design heat input capacity of 29 megawatts (MW) (100 million Btu per hour (Btu/hr)) or less, but greater than or equal to 2.9 MW (10 million Btu/hr). Since this unit is rated at 316 MMBtu/hr, the provisions of this subpart do not apply.

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

Pursuant to Section 2.0, "All sources of hazardous air pollution shall comply with the standards, criteria, and requirements set forth therein;" therefore, the requirements of this rule applies to the SJS. But there are no applicable requirements for a non-major HAPs source. As shown above in the Rule 2550 discussion, the facility is a non-major HAPs source.

Rule 4101 Visible Emissions

Per Section 5.0, no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity).

C-7758-1-0

The receiving of biomass fuel will result in the release of PM₁₀ emissions. Biomass will be delivered to the site in tractor trailers. A fuel storage area common to both SJS 1&2 plants will be located near the center of the proposed project site. It is anticipated that two front-end loaders will be needed to move the biomass. The majority of the biomass handling will occur in an enclosed system with slight negative pressure for dust control. Biomass delivery trucks will be unloaded directly into two enclosed hoppers, which will feed a screen to separate the wood chips according to size. The oversized chips will be processed by a grinder, then combined with the rest of the biomass. The biomass will then travel on a covered a conveyor to the stacker which creates the biomass storage pile. Biomass will be picked up from the storage pile by a reclaim conveyor that will load the biomass into an interim storage silo which feeds a metering bin and ultimately the combustor. There will be seven dust capture points along the biomass handling system that will feed a baghouse. Each plant will have its own biomass handling system. The dust removal/control efficiency for the baghouses is anticipated to be at least 99%. One front end loader for each plant will be used intermittently in the biomass storage area. Therefore, excess visible emissions are not expected.

C-7758-2-0

The limestone receiving, storage and transfer operation will result in PM₁₀ emissions. Limestone arrives via delivery truck, and is pneumatically unloaded from the truck into a silo. Displaced air in the silo is filtered through the bin vent filter, reducing emissions by at least 99%. The enclosure eliminates fugitive PM₁₀ emissions. Therefore, excess visible emissions are not expected.

C-7758-3-0 through '6-0

PM₁₀ is controlled by a baghouse, multicyclone, dry scrubber and wet scrubber. Exhaust is routed through these pollution control devices which filter out the particulate matter. In addition, the applicant has proposed to install a continuous opacity monitor. Therefore visible emissions are not expected for this operation.

SJS is confident that the project will be below visible emissions limits. Other facilities including Ampersand Chowchilla Biomass (C-6923) and El Nido (N-4607) have much higher ammonia emission limits and the permits contain the same proposed visible emission restriction of 20% opacity.

C-7758-7-0

The handling, storage and loading out of fly ash will result in the release of PM₁₀ emissions. Fly ash will be damped at the silo which is vented to a vent filter. The proposed filter efficiency is 99%. Therefore, excess visible emissions are not expected.

C-7758-8-0 and '9-0

The evaporation of water in the WSAC will result in the release of PM₁₀ emissions. The heat lost by the WSAC is mostly from the evaporation of small amounts of water. Therefore, in order to minimize the loss of water, and thus PM₁₀ emissions, the unit is equipped with a mist eliminator. Therefore, excess visible emissions are not expected.

C-7758-10-0 through '13-0

The IC engines are not expected to have visible emissions greater than 20% opacity. Therefore, compliance is expected.

Proposed Rule 4101 Condition:

- No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

Rule 4102 Nuisance

Section 4.0 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected.

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – Risk Management Policy for Permitting New and Modified Sources specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

An HRA is not required for a project with a total facility prioritization score of less than one. According to the Technical Services Memo for this project (Appendix F), the total facility prioritization score including this project was greater than one. Therefore, a health risk assessment was required to determine the short-term acute and long-term chronic exposure from this project.

The cancer risk for this project is shown below:

HRA Summary	
Cancer Risk	T-BACT Required
< 10 in a million	Yes

Discussion of T-BACT

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is required for this project because the HRA indicates that the risk is above the District's thresholds for triggering T-BACT requirements.

For this project T-BACT is triggered. T-BACT is satisfied with BACT (see Appendix C),; therefore, compliance with the District's Risk Management Policy is expected.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification not have acute or chronic indices, or a cancer risk greater than the District's significance levels (i.e. acute and/or chronic indices greater than 1 and a cancer risk greater than 10 in a million). As outlined by the HRA Summary in Appendix F of this report, the emissions increases for this project was determined to be less than significant.

Rule 4201 Particulate Matter Concentration

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

C-7758-2-0

The PM emission factor for the unloading of limestone is 0.000239 lb·PM/ton. In addition, the density of limestone is approximately 58 lb/ft³. By conservatively assuming that no excess air is introduced into the silo during filling, then all of the emissions from the silo would be concentrated into the air that is displaced by the limestone during the filling process.

$$\frac{0.000239 \text{ lb} \cdot \text{PM}}{\text{ton} \cdot \text{limestone}} \times \frac{1 \text{ ton}}{2,000 \text{ lb}} \times \frac{58 \text{ lb} \cdot \text{limestone}}{\text{ft}^3} \times \frac{7,000 \text{ grain}}{\text{lb}} = 0.049 \frac{\text{grain}}{\text{ft}^3}$$

Since this does not exceed the rule threshold of 0.1 grain/scf, this unit is expected to comply with Rule 4201.

C-7758-3-0 through '6-0

$$\text{PM Conc. (gr/scf)} = \frac{(\text{PM emission rate}) \times (7,000 \text{ gr/lb})}{(\text{Exhaust gas flow rate}) \times (60 \text{ min/hr}) \times (24 \text{ hr/day})}$$

PM₁₀ emission rate = 161.3 lb/day. Assuming 100% of PM is PM₁₀
 Exhaust Gas Flow = 125,361 scfm

$$\text{PM Conc. (gr/scf)} = \frac{[(161.3 \text{ lb/day}) \times (7,000 \text{ gr/lb})]}{[(125,361 \text{ ft}^3/\text{min}) \times (60 \text{ min/hr}) \times (24 \text{ hr/day})]}$$

PM Conc. = 0.0063 gr/scf

Calculated emissions are well below the allowable emissions level. Therefore, compliance with Rule 4201 is expected.

C-7758-7-0

The PM emission factor for the unloading of fly ash is 0.00000225 lb·PM/ton. In addition, the density of dry fly ash is approximately 60 lb/ft³. By conservatively assuming that no excess air is introduced into the silo during filling, then all of the emissions from the silo would be concentrated into the air that is displaced by the fly ash during the filling process.

Based on past experience, this unit is expected to comply with Rule 4201.

C-7758-8-0 and '9-0

The WSAC is equipped with a mist eliminator. Since the applicant has proposed to use no chemicals containing chromium in the tower, it is not expected to produce any significant emissions. Based on past experience with WSACs, this unit is expected to comply with Rule 4201.

C-7758-10-0 and '11-0

$$0.15 \frac{g - PM_{10}}{bhp - hr} \times \frac{1g - PM_{10}}{0.96g - PM_{10}} \times \frac{1bhp - hr}{2,542.5 Btu} \times \frac{10^6 Btu}{9,051 dscf} \times \frac{0.35 Btu_{out}}{1 Btu_{in}} \times \frac{15.43 grain}{g} = 0.037 \frac{grain - PM}{dscf}$$

C-7758-12-0 and '13-0

$$0.15 \frac{g - PM_{10}}{bhp - hr} \times \frac{1g - PM_{10}}{0.96g - PM_{10}} \times \frac{1bhp - hr}{2,542.5 Btu} \times \frac{10^6 Btu}{9,051 dscf} \times \frac{0.35 Btu_{out}}{1 Btu_{in}} \times \frac{15.43 grain}{g} = 0.037 \frac{grain - PM}{dscf}$$

Proposed Rule 4201 Condition:

- Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Rule 4202 Particulate Matter Emission Rate

Rule 4202 establishes PM emission limits as a function of process weight rate in tons/hr. Gas and liquid fuels are excluded from the definition of process weight. Therefore, Rule 4202 does not apply to the four boilers or the engine. However, it does apply to the cooling tower.

C-7758-8-0 and '9-0

Weight rate/WSAC = 71,680 gal/min * 60 min/hr * 8.34 lb/gal ÷ 2,000 lb/ton
 = 17,934 ton/hr

Rule 4202 emission limit = 17.31 * P^{0.16} (where P greater than 30 tons/hr)
 = 17.31 * (17,934)^{0.16}
 = 82.96 lb/hr

The WSAC has a PM₁₀ emission rate of 0.42 lb/hr (10.1 lb/day @ 24 hr/day). All WSAC PM emissions are PM₁₀. As shown above, the WSAC PM emissions will be less than allowed by Rule 4202. Compliance is expected.

Rule 4301 Fuel Burning Equipment

Rule 4301 limits air contaminant emissions from fuel burning equipment as defined in the rule. Section 3.1 defines fuel burning equipment as “any furnace, boiler, apparatus, stack, and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer”.

C-7758-3-0 through '6-0

Based on maximum burner rating, and proposed emission factors, the biomass combustor is expected to operate in compliance with these limits as shown in the following table. Therefore, compliance with this rule is expected.

Hourly Potential to Emit			
Unit	NO ₂	PM	SO ₂
C-7758-3-0 and '6-0	3.70 lb/hr	7.66 lb/hr	3.80 lb/hr
Rule 4301 Limits	140 lb/hr	10 lb/hr	200 lb/hr

C-7758-10-0 through '13-0

The emergency use IC engines produces power mechanically. Therefore, they do not meet the definition of fuel burning equipment. Rule 4301 does not apply to the affected equipment.

Rule 4305 Boilers, Steam Generators and Process Heaters (Phase II)

District Rule 4305 applies only to liquid or gaseous fuel-fired boilers. Therefore, Rule 4305 does not apply to the biomass-fired combustor unit.

The 165 MMBtu/hr natural gas-fired preheat burner is a direct fired unit that sets into the under bed air duct and uses forced draft fan air that initially warms the air before biomass is introduced into the combustor bed. The preheat burner is addressed by Rule 4352 (see applicability section); therefore, Rule 4305 does not apply.

Rule 4306 Boilers, Steam Generators and Process Heaters (Phase III)

District Rule 4306 applies only to liquid or gaseous fuel-fired boilers. Therefore, Rule 4306 does not apply to the biomass combustor unit.

The 165 MMBtu/hr natural gas-fired preheat burner is a direct fired unit that sets into the under bed air duct and uses forced draft fan air that initially warms the air before biomass is introduced into the combustor bed. The preheat burner is addressed by Rule 4352 (see applicability section); therefore, Rule 4306 does not apply.

Rule 4320 Advanced Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater Than 5.0 MMBtu/hr

District Rule 4320 applies only to liquid or gaseous fuel-fired boilers. Therefore, Rule 4320 does not apply to the biomass combustor unit.

The 165 MMBtu/hr natural gas-fired preheat burner is a direct fired unit that sets into the under bed air duct and uses forced draft fan air that initially warms the air before biomass is introduced into the combustor bed. The preheat burner is addressed by Rule 4352 (see applicability section); therefore, Rule 4320 does not apply.

Rule 4352 Solid Fuel Fired Boilers, Steam Generators and Process Heaters

Pursuant to Section 5.1, the Tier 2 emission limits state NO_x emissions shall not exceed 115 ppmv @ 3% O₂, based on a 24 hour averaging period and CO emissions shall not exceed 400 ppmv @ 3% O₂.

The applicant has proposed the emission limit of 0.012 lb·NO_x/MMBtu. The CO emission factor has been proposed as 0.046 lb/MMBtu. Calculated in ppmv as follows:

$$\frac{0.012 \frac{\text{lb} \cdot \text{NO}_2}{\text{MMBtu}} \cdot 379.5 \frac{\text{dscf}}{\text{lb} \cdot \text{mol}} \cdot 10^6 \cdot \text{ppmv}}{9,240 \frac{\text{dscf}}{\text{MMBtu}} \cdot 46 \frac{\text{lb} \cdot \text{NO}_2}{\text{lb} \cdot \text{mol}} \cdot \frac{20.9}{17.9}} = 9.2 \text{ ppmv @ 3\% O}_2$$

$$\frac{0.046 \frac{\text{lb} \cdot \text{CO}}{\text{MMBtu}} \cdot 379.5 \frac{\text{dscf}}{\text{lb} \cdot \text{mol}} \cdot 10^6 \cdot \text{ppmv}}{9,240 \frac{\text{dscf}}{\text{MMBtu}} \cdot 28 \frac{\text{lb} \cdot \text{CO}}{\text{lb} \cdot \text{mol}} \cdot \frac{20.9}{17.9}} = 57.8 \text{ ppmv @ 3\% O}_2$$

Since the NO_x and CO permitted levels are lower than the Rule limits, this unit is expected to comply with this section of Rule 4352.

Section 5.5 of the rule requires that any unit with ammonia injection for NO_x control shall operate a CEMS to monitor and record NO_x concentrations, NO_x emission rate, and either CO or O₂ concentrations.

As discussed above, this unit is equipped with ammonia injection to control NO_x and will have the appropriate CEMS. Therefore, this unit is expected to comply with this section of Rule 4352.

Section 6.2 of the rule requires facilities to maintain a monthly operating log that includes type and quantity of fuel used, and the hhv of such fuel.

As discussed above, records will be required which include a complete fuel description. Therefore, this unit is expected to comply with this section of the rule.

Section 6.3 of the rule requires each unit be source tested annually, with the unit operating at normal conditions.

As discussed above, this unit is subject to annual source testing for all criteria pollutants. Therefore, this unit is expected to comply with this section of Rule 4352.

Rule 4701 Internal Combustion Engines – Phase 1

Pursuant to Section 7.5.2.3 of District Rule 4702, as of June 1, 2006 District Rule 4701 is no longer applicable to diesel-fired emergency standby or emergency IC engines. Therefore, this diesel-fired emergency IC engine will comply with the requirements of District Rule 4702 and no further discussion is required.

Rule 4702 Internal Combustion Engines – Phase 2

The purpose of this rule is to limit the emissions of nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC) from internal combustion engines.

This rule applies to any internal combustion engine with a rated brake horsepower greater than 50 horsepower.

C-7758-10-0 through '11-0

Pursuant to Section 4.2, except for the requirements of Sections 5.7 and 6.2.3, the requirements of this rule shall not apply to an internal combustion engine that meets the following condition:

- 1) An emergency standby engine as defined in Section 3.0 of this rule, and provided that it is operated with a nonresettable elapsed operating time meter. In lieu of a nonresettable time meter, the owner of an emergency engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

Section 3.15 defines an "Emergency Standby Engine" as an internal combustion engine which operates as a temporary replacement for primary mechanical or electrical power during an unscheduled outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the operator. An engine shall be considered to be an emergency standby engine if it is used only for the following purposes: (1) periodic maintenance, periodic readiness testing, or readiness testing during and after repair work; (2) unscheduled outages, or to supply power while maintenance is performed or repairs are made to the primary power supply; and (3) if it is limited to operate 100 hours or less per calendar year for non-emergency purposes. An engine shall not be considered to be an emergency standby engine if it is used: (1) to reduce the demand for electrical power when normal electrical power line service has not failed, or (2) to produce power for the utility electrical distribution system, or (3) in conjunction with a voluntary utility demand reduction program or interruptible power contract.

Therefore, the emergency standby IC engine involved with this project will only have to meet the requirements of Sections 5.7 and 6.2.3 of this Rule.

Section 5.7 of this Rule requires that the owner of an emergency standby engine shall comply with the requirements specified in Section 5.7.2 through Section 5.7.5 below:

- 1) Properly operate and maintain each engine as recommended by the engine manufacturer or emission control system supplier.

- 2) Monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier.
- 3) Install and operate a nonresettable elapsed operating time meter. In lieu of installing a nonresettable time meter, the owner of an engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO and is allowed by Permit-to-Operate or Stationary Equipment Registration condition. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

Therefore, the following conditions will be listed on the ATC to ensure compliance:

- {3405} This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702]
- {3478} During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]
- {3403} This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702 and 17 CCR 93115]
- {3807} An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702]
- {3808} This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702]
- {3810} This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 50 hours per calendar year. [District Rule 4702 and 17 CCR 93115]

Section 6.2.3 requires that an owner claiming an exemption under Section 4.2 or Section 4.3 shall maintain annual operating records. This information shall be retained for at least five years, shall be readily available, and submitted to the APCO upon request and at the end of each calendar year in a manner and form approved by the APCO. Therefore, the following conditions will be listed on the ATC to ensure compliance:

- {3479} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]

- {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

C-7758-12-0 through '13-0

Pursuant to Section 4.3, except for the requirements of Section 6.2.3, the requirements of this rule shall not apply to an internal combustion engine that meets the following conditions:

- 1) The engine is operated exclusively to preserve or protect property, human life, or public health during a disaster or state of emergency, such as a fire or flood, and
- 2) Except for operations associated with Section 4.3.1.1, the engine is limited to operate no more than 100 hours per calendar year as determined by an operational nonresettable elapsed operating time meter, for periodic maintenance, periodic readiness testing, and readiness testing during and after repair work of the engine, and
- 3) The engine is operated with a nonresettable elapsed operating time meter. In lieu of installing a nonresettable time meter, the owner of an engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

Therefore, the emergency IC engine involved with this project will only have to meet the requirements of Section 6.2.3 of this Rule.

Section 6.2.3 requires that an owner claiming an exemption under Section 4.2 or Section 4.3 shall maintain annual operating records. This information shall be retained for at least five years, shall be readily available, and submitted to the APCO upon request and at the end of each calendar year in a manner and form approved by the APCO. Therefore, the following conditions will be listed on the ATC to ensure compliance:

- {3816} This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. For testing purposes, the engine shall only be operated the number of hours necessary to comply with the testing requirements of the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems", 1998 edition. Total hours of operation for all maintenance, testing, and required regulatory purposes shall not exceed 100 hours per calendar year. [District Rule 4702 and 17 CCR 93115]
- {3489} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, and the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.). For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
- {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

In addition, the following conditions will be listed on the ATC to ensure compliance:

- {3404} This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702]
- {3807} An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702]

Rule 4801 Sulfur Compounds

Per Section 3.1, a person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2% by volume calculated as SO₂ on a dry basis averaged over 15 consecutive minutes:

C-7758-3-0 through '6-0

The sulfur of the natural gas fuel is 1.0 gr/100 dscf.

The ratio of the volume of the SO_x exhaust to the entire exhaust for one MMBtu of fuel combusted is:

$$\text{Volume of SO}_x: V = \frac{n \cdot R \cdot T}{P}$$

Where:

- n = number of moles of SO_x produced per MMBtu of fuel.
- Weight of SO_x as SO₂ is 64 lb/(lb-mol)
- $n = \frac{0.00285 \text{ lb}}{\text{MMBtu}} \times \frac{1 \text{ (lb-mol)}}{64 \text{ lb}} = 0.000045 \text{ (lb-mol)}$
- $R = \frac{0.7302 \text{ ft}^3 \cdot \text{atm}}{\text{(lb-mol)}^\circ\text{R}}$
- T = 500 °R
- P = 1 atm

Thus, volume of SO_x per MMBtu is:

$$V = \frac{n \cdot R \cdot T}{P}$$

$$V = \frac{0.000045 \text{ (lb-mol)} \cdot \frac{0.7302 \text{ ft}^3 \cdot \text{atm}}{\text{(lb-mol)}^\circ\text{R}} \cdot 500^\circ\text{R}}{1 \text{ atm}}$$

$$V = 0.016 \text{ ft}^3$$

Since the total volume of exhaust per MMBtu is 8,578 scf, the ratio of SO_x volume to exhaust volume is

$$= \frac{0.016}{8,578} = 0.0000019 = 1.9 \text{ ppmv} = 0.00019\% \text{ by volume}$$

1.9 ppmv ≤ 2000 ppmv, therefore the combustors are expected to comply with Rule 4801.

C-7758-10-0 through '13-0

Volume SO₂ = (n x R x T) ÷ P

n = moles SO₂

T (standard temperature) = 60 °F or 520 °R

R (universal gas constant) = $\frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot \text{°R}}$

$$\frac{0.000015 \text{ lb-S}}{\text{lb-fuel}} \times \frac{7.1 \text{ lb}}{\text{gal}} \times \frac{64 \text{ lb-SO}_2}{32 \text{ lb-S}} \times \frac{1 \text{ MMBtu}}{9,051 \text{ scf}} \times \frac{1 \text{ gal}}{0.137 \text{ MMBtu}} \times \frac{\text{lb-mol}}{64 \text{ lb-SO}_2} \times \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb-mol} \cdot \text{°R}} \times \frac{520 \text{°R}}{14.7 \text{ psi}} \times 1,000,000 = 1.0 \text{ ppmv}$$

Since 1.0 ppmv is ≤ 2,000 ppmv, this engine is expected to comply with Rule 4801. Therefore, the following condition will be listed on the permit to ensure compliance:

- {3395} Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]

Rule 7012 Hexavalent Chromium – Cooling Towers

The proposed WSACs are new and will not use hexavalent chromium, therefore they meet the exemption criteria in section 4.1.2. Therefore, the cooling tower is exempt from the requirements of Rule 7012 except for sections 5.2.1, 6.1, and 7.1.

Section 5.2.1 requires that no hexavalent chromium compounds be added after 9/16/91 (intended to apply to cooling towers that previously used hexavalent chromium). A permit condition will be added to satisfy this requirement.

Section 6.1 requires that the owner/operator of a new cooling tower submit a compliance plan at least 90 days before it is operated containing business information, location of cooling tower, type and materials of construction, and a statement regarding the use or non use of hexavalent chromium. A permit condition will be added to satisfy this requirement.

Section 7.1 requires that the permittee pay permit filing fees associated with the cooling tower. SJS has paid such fees.

Compliance is expected.

Proposed Rule 7012 Conditions:

C-7758-8-0 and '9-0

- Permittee shall submit WSAC design details including the WSAC type, drift eliminator design details, and materials of construction to the District at least 90 days before the WSAC is operated. [District Rule 7012]
- No hexavalent chromium containing compounds shall be added to WSAC circulating water. [District Rule 7012]

Rule 8011 General Requirements

The definitions, exemptions, requirements, administrative requirements, recordkeeping requirements, and test methods set forth in this rule are applicable to all rules under Regulation VIII (Fugitive PM10 Prohibitions) of the Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District.

Rule 8021 Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities

The purpose of this rule is to limit fugitive dust emissions from construction, demolition, excavation, and other earthmoving activities. It requires the use of control measures to maintain visible dust emissions (VDE) under the 20% opacity requirement.

SJS will commit to the use of dust control measures (e.g., water, approved chemical stabilizers, etc.) during construction to maintain opacity to a level below 20% per Rule 8021 requirements. Compliance with the requirements of this rule is anticipated.

Proposed Rule 8021 Condition:

- Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
- An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]
- An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8021]

Rule 8031 Bulk Materials

Pursuant to Section 2.0, this rule is applicable to the outdoor handling, storage, and transport of any bulk material. The following condition will be included on the permit to satisfy the requirements of the rule.

Proposed Rule 8031 Condition:

- Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

Rule 8051 Open Areas

Pursuant to Section 2.0, this rule is applicable to any open area having 3.0 acres or more of disturbed surface area, that has remained undeveloped, unoccupied, unused or vacant for more than seven days. The following condition will be included on the permit to satisfy the requirements of the rule.

Proposed Rule 8051 Condition:

- Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]

Rule 8061 Paved and Unpaved Roads

Pursuant to Section 2.0, this rule applies to any new or existing public or private paved or unpaved road, road construction project, or road modification project. The following condition will be included on the permit to satisfy the requirements of the rule.

Proposed Rule 8061 Condition:

- Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]

Rule 8071 Unpaved Vehicle/Equipment Traffic Areas

Pursuant to Section 2.0, this rule applies to any unpaved vehicle/equipment traffic area of 1.0 acre or larger. The following condition will be included on the permit to satisfy the requirements of the rule.

Proposed Rule 8071 Condition:

- Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
- Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]

- On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
- Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]

Title 13 California Code of Regulations (CCR), Section 2423 – Exhaust Emission Standards and Test Procedures, Off-Road Compression-Ignition Engines and Equipment (Required by Title 17 CCR, Section 93115 for New Emergency Diesel IC Engines)

C-7758-10-0 and '11-0

Particulate Matter and VOC + NO_x, and CO Exhaust Emissions Standards:

This regulation stipulates that off-road compression-ignition engines shall not exceed the following applicable emissions standards.

Title 13 CCR, Section 2423 lists a diesel particulate emission standard of 0.40 g/bhp-hr (with 1.341 bhp/kW, equivalent to 0.54 g/kW-hr) for 2000 - 2005 model year engines with maximum power ratings of ≥ 751.1 bhp (equivalent to ≥ 560 kW). or Title 13 CCR, Section 2423 lists a diesel particulate emission standard of 0.15 g/bhp-hr (with 1.341 bhp/kW, equivalent to 0.20 g/kW-hr) for 2006 and later model year engines with maximum power ratings of ≥ 751.1 bhp (equivalent to ≥ 560 kW). Therefore, the PM standards given in Title 13 CCR, Section 2423 are less stringent than ATCM, and thus the ATCM standards are the required standards and will be discussed in the following section.

Title 17 CCR, Section 93115, (e)(2)(A)(3)(b) stipulates that new stationary emergency standby diesel-fueled CI engines (> 50 bhp) must meet the VOC + NO_x, and CO standards for off-road engines of the same model year and maximum rated power as specified in the Off-Road Compression-Ignition Engine Standards (Title 13 CCR, Section 2423) or the Tier 1 standards for an off-road engine if no standards have been established for an off-road engine of the same model year and maximum rated power.

The engine involved with this project is a certified 2006 model engine. The following table compares the requirements of Title 13 CCR, Section 2423 to the emissions factors for the 1341 bhp Caterpillar model #C32TA diesel-fired emergency standby IC engine as given by the manufacturer.

Requirements of Title 13 CCR, Section 2423							
Source	Maximum Rated Power	Model Year	NO _x	VOC	NO _x + VOC	CO	PM
Title 13 CCR, §2423	≥ 751.0 bhp (≥ 560 kW)	2000-2005 (Tier 1)	6.9 g/bhp-hr (9.2 g/kW-hr)	1.0 g/bhp-hr (1.3 g/kW-hr)	--	8.5 g/bhp-hr (11.4 g/kW-hr)	0.40 g/bhp-hr (0.54 g/kW-hr)
Title 13 CCR, §2423	≥ 751.0 bhp (≥ 560 kW)	2006 and later (Tier 2)	--	--	4.8 g/bhp-hr (6.4 g/kW-hr)	2.6 g/bhp-hr (3.5 g/kW-hr)	0.15 g/bhp-hr (0.20 g/kW-hr)
Caterpillar, Model #C32TA	1341 bhp	2006	4.47 g/bhp-hr (6.0 g/kW-hr)	0.3 g/bhp-hr (0.4 g/kW-hr)	4.8 g/bhp-hr (6.4 g/kW-hr)	2.6 g/bhp-hr (3.5 g/kW-hr)	0.15 g/bhp-hr (0.20 g/kW-hr)
Meets Standard?			N/A	N/A	Yes	Yes	Yes

As presented in the table above, the proposed engine will satisfy the requirements of this section and compliance is expected.

The engine manufacturer's data for this engine lists a NO_x emissions factor of 4.47 g/bhp-hr, a VOC emissions factor of 0.30 g/bhp-hr, a NO_x+VOC emissions factor of 4.77 g/bhp-hr, a CO emission factor of 2.6 g/bhp-hr, and a PM₁₀ emissions factor of 0.15 g/bhp-hr, all of which satisfy the requirements of 13 CCR, Section 2423. Therefore, the following conditions will be listed on the ATC to ensure compliance:

- {edited 3485} Emissions from this IC engine shall not exceed any of the following limits: 4.47 g-NO_x/bhp-hr, 2.6 g-CO/bhp-hr, or 0.30 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115]
- {edited 3486} Emissions from this IC engine shall not exceed 0.15 g-PM₁₀/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]

Right of the District to Establish More Stringent Standards:

This regulation also stipulates that the District:

1. May establish more stringent diesel PM, NO_x + VOC, VOC, NO_x, and CO emission rate standards; and
2. May establish more stringent limits on hours of maintenance and testing on a site-specific basis; and
3. Shall determine an appropriate limit on the number of hours of operation for demonstrating compliance with other District rules and initial start-up testing

The District has not established more stringent standards at this time. Therefore, the standards previously established in this Section will be utilized.

Title 17 California Code of Regulations (CCR), Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines

Emergency Operating Requirements:

This regulation stipulates that no owner or operator shall operate any new or in-use stationary diesel-fueled compression ignition (CI) emergency standby engine, in response to the notification of an impending rotating outage, unless specific criteria are met.

This section applies to emergency standby IC engines that are permitted to operate during non-emergency conditions for the purpose of providing electrical power. However, District Rule 4702 states that emergency standby IC engines may only be operated during non-emergency conditions for the purposes of maintenance and testing. Therefore, this section does not apply and no further discussion is required.

Fuel and Fuel Additive Requirements:

This regulation also stipulates that as of January 1, 2006 an owner or operator of a new or in-use stationary diesel-fueled CI emergency standby engine shall fuel the engine with CARB Diesel Fuel.

Since the engine involved with this project is a new or in-use stationary diesel-fueled CI emergency standby engine, these fuel requirements are applicable. Therefore, the following condition (previously proposed in this engineering evaluation) will be listed on the ATC to ensure compliance:

- {3395} Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]

At-School and Near-School Provisions:

This regulation stipulates that no owner or operator shall operate a new stationary emergency standby diesel-fueled CI engine, with a PM₁₀ emissions factor > than 0.01 g/bhp-hr, for non-emergency use, including maintenance and testing, during the following periods:

1. Whenever there is a school sponsored activity, if the engine is located on school grounds, and
2. Between 7:30 a.m. and 3:30 p.m. on days when school is in session, if the engine is located within 500 feet of school grounds.

The District has verified that the engine is not located within 500 feet of a K-12 school. Therefore, conditions prohibiting non-emergency usage of the engine during school hours will not be placed on the permit.

Recordkeeping Requirements:

This regulation stipulates that as of January 1, 2005, each owner or operator of an emergency standby diesel-fueled CI engine shall keep a monthly log of usage that shall list and document the nature of use for each of the following:

- a. Emergency use hours of operation;
- b. Maintenance and testing hours of operation;
- c. Hours of operation for emission testing;
- d. Initial start-up hours; and
- e. If applicable, hours of operation to comply with the testing requirements of National Fire Protection Association (NFPA) 25 — "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition;
- f. Hours of operation for all uses other than those specified in sections 'a' through 'd' above; and
- g. For in-use emergency standby diesel-fueled engines, the fuel used. The owner or operator shall document fuel use through the retention of fuel purchase records that account for all fuel used in the engine and all fuel purchased for use in the engine, and, at a minimum, contain the following information for each individual fuel purchase transaction:
 - I. Identification of the fuel purchased as either CARB Diesel, or an alternative diesel fuel that meets the requirements of the Verification Procedure, or an alternative fuel, or CARB Diesel fuel used with additives that meet the requirements of the Verification Procedure, or any combination of the above;
 - II. Amount of fuel purchased;
 - III. Date when the fuel was purchased;
 - IV. Signature of owner or operator or representative of owner or operator who received the fuel; and
 - V. Signature of fuel provider indicating fuel was delivered.

The engine associated with this project is a new emergency standby engine powering an electrical generator. Therefore, the following conditions (previously proposed in this engineering evaluation) will be listed on the ATC to ensure compliance:

- {3479} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
- {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

PM Emissions and Hours of Operation Requirements for New Diesel Engines:

This regulation stipulates that as of January 1, 2005, no person shall operate any new stationary emergency standby diesel-fueled CI engine that has a rated brake horsepower greater than 50, unless it meets all of the following applicable emission standards and operating requirements.

1. Emits diesel PM at a rate greater than 0.01 g/bhp-hr or less than or equal to 0.15 g/bhp-hr; or
2. Meets the current model year diesel PM standard specified in the Off-Road Compression Ignition Engine Standards for off-road engines with the same maximum rated power (Title 13 CCR, Section 2423), whichever is more stringent; and
3. Does not operate more than 50 hours per year for maintenance and testing purposes. Engine operation is not limited during emergency use and during emissions source testing to show compliance with the ATCM.

Therefore, the following conditions (previously proposed in this engineering evaluation) will be listed on the ATC to ensure compliance:

- {edited 3486} Emissions from this IC engine shall not exceed 0.15 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]
- {3810} This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 12 hours per calendar year. [District Rule 4702 and 17 CCR 93115]

C-7758-12-0 and '13-0

Particulate Matter and VOC + NO_x, and CO Exhaust Emissions Standards:

This regulation stipulates that off-road compression-ignition engines shall not exceed the following applicable emissions standards.

Title 13 CCR, Section 2423 lists a diesel particulate emission standard of 0.15 g/bhp-hr (with 1.341 bhp/kW, equivalent to 0.20 g/kW-hr) for 2003 - 2005 model year engines with maximum power ratings of 174.3 - 301.6 bhp (equivalent to 130 - 225 kW). The PM standards given in Title 13 CCR, Section 2423 are less stringent than the PM standards given in Title 17 CCR, Section 93115 (ATCM), thus the ATCM standards are the required standards and will be discussed in the following section.

Title 17 CCR, Section 93115, (e)(2)(A)(3)(b) stipulates that new stationary emergency diesel-fueled CI engines (> 50 bhp) must meet the VOC + NO_x, and CO standards for off-road engines of the same model year and maximum rated power as specified in the Off-Road Compression-Ignition Engine Standards (Title 13 CCR, Section 2423) or the Tier 1 standards for an off-road engine if no standards have been established for an off-road engine of the same model year and maximum rated power.

In addition, Title 17 CCR, Section 93115, (e)(2)(A)(4)(a)(II) allows new direct-drive emergency fire pump engines to meet the Off-Road Compression Ignition Engine Standards for off-road engines with the same maximum rated power (title 13 CCR, section 2423) three years after the date the standards

San Joaquin Solar 1 & 2 (08-AFC-12)

SJVACPD Determination of Compliance, C1090203

are applicable for off-road engines with the same maximum rated power. For this project the proposed emergency diesel IC engine will be used to power a firewater pump, but it is not a new installation. Therefore, the proposed emergency diesel IC engine will have to meet the Tier 2 and Tier 3 emission standards specified in the Off-Road Compression Ignition Engine Standards for off-road engines on the applicable dates specified.

The engine involved with this project is a certified 2006 model engine. The following table compares the requirements of Title 13 CCR, Section 2423 to the emissions factors for the 250 bhp Clarke model #JU6H diesel-fired emergency IC engine as given by the manufacturer.

Requirements of Title 13 CCR, Section 2423							
Source	Maximum Rated Power	Model Year	NO _x	VOC	NO _x + VOC	CO	PM
Title 13 CCR, §2423	174.3 – 301.6 bhp (130 - 225 kW)	1996-2002 (Tier 1)	6.9 g/bhp-hr (9.2 g/kW-hr)	1.0 g/bhp-hr (1.3 g/kW-hr)	--	8.5 g/bhp-hr (11.4 g/kW-hr)	0.40 g/bhp-hr (0.54 g/kW-hr)
Title 13 CCR, §2423	174.3 – 301.6 bhp (130 - 225 kW)	2003-2005 (Tier 2)	--	--	4.9 g/bhp-hr (6.6 g/kW-hr)	2.6 g/bhp-hr (3.5 g/kW-hr)	0.15 g/bhp-hr (0.20 g/kW-hr)
Title 13 CCR, §2423	174.3 – 301.6 bhp (130 - 225 kW)	2006 and later (Tier 3)	--	--	3.0 g/bhp-hr (4.0 g/kW-hr)	2.6 g/bhp-hr (3.5 g/kW-hr)	0.15 g/bhp-hr (0.20 g/kW-hr)
Clarke, Model # JUH6	250 bhp	2006	4.52 g/bhp-hr (6.6 g/kW-hr)	0.4 g/bhp-hr (6.6 g/kW-hr)	4.9 g/bhp-hr (6.6 g/kW-hr)	2.6 g/bhp-hr (3.5 g/kW-hr)	0.15 g/bhp-hr (0.20 g/kW-hr)
Meets Standard?			N/A	N/A	Yes	Yes	Yes

As presented in the table above, the proposed engine will satisfy the requirements of this section and compliance is expected.

The engine manufacturer's data for this engine lists a a NO_x emissions factor of 4.52 g/bhp-hr, a VOC emissions factor of 0.40 g/bhp-hr, NO_x+VOC emissions factor of 4.9 g/bhp-hr, a CO emission factor of 2.6 g/bhp-hr, and a PM₁₀ emissions factor of 0.15 g/bhp-hr, all of which satisfy the requirements of 13 CCR, Section 2423. Therefore, the following conditions (previously proposed in this engineering evaluation) will be listed on the ATC to ensure compliance:

- {edited 3485} Emissions from this IC engine shall not exceed any of the following limits: 4.52 g-NO_x/bhp-hr, 2.6 g-CO/bhp-hr, or 0.40 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115]
- {edited 3486} Emissions from this IC engine shall not exceed 0.15 g-PM₁₀/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]

Right of the District to Establish More Stringent Standards:

This regulation also stipulates that the District:

4. May establish more stringent diesel PM, NO_x + VOC, VOC, NO_x, and CO emission rate standards; and
5. May establish more stringent limits on hours of maintenance and testing on a site-specific basis; and
6. Shall determine an appropriate limit on the number of hours of operation for demonstrating compliance with other District rules and initial start-up testing

The District has not established more stringent standards at this time. Therefore, the standards previously established in this Section will be utilized.

Title 17 California Code of Regulations (CCR), Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines

Emergency Operating Requirements:

This regulation stipulates that no owner or operator shall operate any new or in-use stationary diesel-fueled compression ignition (CI) emergency standby engine, in response to the notification of an impending rotating outage, unless specific criteria are met.

This section applies to emergency standby IC engines that are permitted to operate during non-emergency conditions for the purpose of providing electrical power. However, District Rule 4702 states that emergency standby IC engines may only be operated during non-emergency conditions for the purposes of maintenance and testing. Therefore, this section does not apply and no further discussion is required.

Fuel and Fuel Additive Requirements:

This regulation also stipulates that as of January 1, 2006 an owner or operator of a new or in-use stationary diesel-fueled CI emergency standby engine shall fuel the engine with CARB Diesel Fuel.

Since the engine involved with this project is a new or in-use stationary diesel-fueled CI emergency standby engine, these fuel requirements are applicable. Therefore, the following condition (previously proposed in this engineering evaluation) will be listed on the ATC to ensure compliance:

- {3395} Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]

At-School and Near-School Provisions:

This regulation stipulates that no owner or operator shall operate a new stationary emergency diesel-fueled CI engine, with a PM₁₀ emissions factor > than 0.01 g/bhp-hr, for non-emergency use, including maintenance and testing, during the following periods:

3. Whenever there is a school sponsored activity, if the engine is located on school grounds, and
4. Between 7:30 a.m. and 3:30 p.m. on days when school is in session, if the engine is located within 500 feet of school grounds.

The District has verified that the engine is not located within 500 feet of a K-12 school. Therefore, conditions prohibiting non-emergency usage of the engine during school hours will not be placed on the permit.

Recordkeeping Requirements:

This regulation stipulates that as of January 1, 2005, each owner or operator of an emergency diesel-fueled CI engine shall keep a monthly log of usage that shall list and document the nature of use for each of the following:

- h. Emergency use hours of operation;
- i. Maintenance and testing hours of operation;
- j. Hours of operation for emission testing;
- k. Initial start-up hours; and
- l. If applicable, hours of operation to comply with the testing requirements of National Fire Protection Association (NFPA) 25 — “Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems,” 1998 edition;
- m. Hours of operation for all uses other than those specified in sections ‘a’ through ‘d’ above; and
- n. For in-use emergency diesel-fueled engines, the fuel used. The owner or operator shall document fuel use through the retention of fuel purchase records that account for all fuel used in the engine and all fuel purchased for use in the engine, and, at a minimum, contain the following information for each individual fuel purchase transaction:
 - I. Identification of the fuel purchased as either CARB Diesel, or an alternative diesel fuel that meets the requirements of the Verification Procedure, or an alternative fuel, or CARB Diesel fuel used with additives that meet the requirements of the Verification Procedure, or any combination of the above;
 - II. Amount of fuel purchased;
 - III. Date when the fuel was purchased;
 - IV. Signature of owner or operator or representative of owner or operator who received the fuel; and
 - V. Signature of fuel provider indicating fuel was delivered.

The proposed new emergency diesel IC engine powering a firewater pump is exempt from the operating hours limitation provided the engine is only operated the amount of hours necessary to satisfy National Fire Protection Association (NFPA) regulations. Therefore, the following conditions (previously proposed in this engineering evaluation) will be listed on the ATC to ensure compliance:

- {3489} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, and the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.). For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
- {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

PM Emissions and Hours of Operation Requirements for New Diesel Engines:

This regulation stipulates that as of January 1, 2005, no person shall operate any new stationary emergency diesel-fueled CI engine that has a rated brake horsepower greater than 50, unless it meets all of the following applicable emission standards and operating requirements.

1. Emits diesel PM at a rate greater than 0.01 g/bhp-hr or less than or equal to 0.15 g/bhp-hr; or
2. Meets the current model year diesel PM standard specified in the Off-Road Compression Ignition Engine Standards for off-road engines with the same maximum rated power (Title 13 CCR, Section 2423), whichever is more stringent; and
3. Does not operate more than 50 hours per year for maintenance and testing purposes. Engine operation is not limited during emergency use and during emissions source testing to show compliance with the ATCM.

The proposed emergency diesel IC engine powering a firewater pump is exempt from the operating hours limitation provided the engine is only operated the amount of hours necessary to satisfy National Fire Protection Association (NFPA) regulations. Therefore, the following conditions (previously proposed in this engineering evaluation) will be listed on the ATC to ensure compliance:

- {edited 3486} Emissions from this IC engine shall not exceed 0.15 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]
- {3816} This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. For testing purposes, the engine shall only be operated the number of hours necessary to comply with the testing requirements of the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems", 1998 edition. Total hours of operation for all maintenance, testing, and required regulatory purposes shall not exceed 52 hours per calendar year. [District Rule 4702 and 17 CCR 93115]

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The California Energy Commission (CEC) has the exclusive power to certify all thermal electric power plants greater than 50 MW in the State of California (Public Resources Code § 25500). While the CEC siting process is exempt from CEQA (14 CCR § 15251(k)), it is functionally equivalent to CEQA.

The District holds no discretionary approval powers over this project; however the District prepares a Determination of Compliance (DOC), this document. The DOC confers the rights and privileges of an Authority to Construct upon certification by the CEC, where the CEC certificate contains the conditions set forth in this DOC (20 CCR § 1744.5 and Rule 2201 § 5.8.8). A Permit to Operate is required to be issued if the project receives a certificate from the CEC and the project is constructed in accordance with the conditions set forth in the DOC (Rule 2201 § 5.8.9). The District makes the following findings regarding this project: the District holds no discretionary approval powers over this project and the District's actions are ministerial (CEQA Guidelines § 15369).

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is not located within 1,000 feet of a school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project

California Health & Safety Code, Section 44300 (Air Toxic "Hot Spots")

Section 44300 of the California Health and Safety Code requires submittal of an air toxics "Hot Spot" information and assessment report for sources with criteria pollutant emissions greater than 10 tons per year. However, Section 44344.5 (b) states that a new facility shall not be required to submit such a report if all of the following conditions are met:

1. The facility is subject to a district permit program established pursuant to Section 42300.
2. The district conducts an assessment of the potential emissions or their associated risks, and finds that the emissions will not result in a significant risk.
3. The district issues a permit authorizing construction or operation of the new facility.

A health risk screening assessment was performed for the proposed project. The acute and chronic hazard indices are less than 1.0 and the cancer risk is less than ten (10) in a million, which are the thresholds of significance for toxic air contaminants. This project qualifies for exemption per the above exemption criteria.

IX. Recommendation

Compliance with all applicable prohibitory rules and regulations is expected. Pending a successful NSR Public Noticing period, issue the Final Determination of Compliance for the facility subject to the conditions presented in Appendix A.

X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
C-7758-1-0	999-999	Electrical Generating Component	\$0
C-7758-2-0	999-999	Electrical Generating Component	\$0
C-7758-3-0	3020-8B-G	53,400 kW electrical generation	\$10,215
C-7758-4-0	3020-8B-G	53,400 kW electrical generation	\$0
C-7758-5-0	3020-8B-G	53,400 kW electrical generation	\$10,215
C-7758-6-0	3020-8B-G	53,400 kW electrical generation	\$0
C-7758-7-0	999-999	Electrical Generating Component	\$0
C-7758-8-0	999-999	Electrical Generating Component	\$0
C-7758-9-0	999-999	Electrical Generating Component	\$0
C-7758-10-0	3020-10-F	1,341 bhp	\$693
C-7758-11-0	3020-10-F	1,341 bhp	\$693
C-7758-12-0	3020-10-C	250 bhp	\$222
C-7758-13-0	3020-10-C	250 bhp	\$222

APPENDIX A
Determination of Compliance Conditions

EQUIPMENT DESCRIPTION, UNIT C-7758-1-0:

BIOMASS RECEIVING, STORAGE, TRANSFER AND SIZING OPERATION WITH FUEL STORAGE AREA, BIOMASS SCREEN, GRINDER, STORAGE SILO, AND AUTOMATED CONVEYOR SYSTEM SERVED BY TWO BAGHOUSES

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
2. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
3. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. Material removed from dust collector(s) shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201]
5. The baghouse shall be maintained and operated according to manufacturer's specifications. [District Rule 2201]
6. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201]
7. The baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
8. Replacement filtering media numbering amounting to at least 10% of the total filter media in the bin vent filter shall be maintained on the premises. [District Rule 2201]
9. The differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start up inspection. [District Rule 2201]
10. Differential operating pressure shall be monitored and recorded on each day that the baghouse operates. [District Rule 2201]
11. Records of all maintenance of the baghouse, including all change outs of filter media, shall be maintained. [District Rule 2201]
12. There shall be no visible emissions from the biomass transfer operation, for a period or periods aggregating more than three minutes in any one hour. [District Rules 2201 and 4101]
13. Visible emissions from the baghouse serving the storage silo shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201]

14. The maximum amount of biomass received at the facility shall not exceed any of the following limits: 3,700 tons/day or 609,170 tons/year. [District Rules 2201 and 4102]
15. PM₁₀ emissions rate from the unloading and handling operation shall not exceed 1.12E-04 lb-PM₁₀/ton biomass. [District Rule 2201]
16. Each biomass storage pile shall not exceed 1.5 acre. [District Rule 2201]
17. PM₁₀ emissions rate from the biomass storage pile shall not exceed 0.527 lb-PM₁₀/acre/day. [District Rule 2201]
18. Each biomass storage pile shall be watered to ensure visible emissions do not exceed 5% opacity. [District Rule 2201]
19. Records of daily and annual amount of biomass received (in tons) at the facility shall be maintained, retained on-site for a period of at least five (5) years and made available for District inspection upon request. [District Rules 1070 and 2201]
20. Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
21. An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]
22. An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8021]
23. Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
24. Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
25. Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]

San Joaquin Solar 1 & 2 (08-AFC-12)

SJVACPD Determination of Compliance, C1090203

26. Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]
27. On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
28. Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
29. Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

EQUIPMENT DESCRIPTION, UNIT C-7758-2-0:

LIMESTONE RECEIVING, STORAGE, AND TRANSFER OPERATION WITH AN ENCLOSED LIMESTONE STORAGE SILO SERVED BY A BIN VENT FILTER, ENCLOSED LIMESTONE TRUCK UNLOADING SYSTEM AND ENCLOSED LIMESTONE TRANSFER SYSTEM

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
2. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
3. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. Material removed from dust collector(s) shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201]
5. The bin vent filter shall be maintained and operated according to manufacturer's specifications. [District Rule 2201]
6. The bin vent filter cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201]
7. The bin vent filter shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
8. Replacement filtering media numbering amounting to at least 10% of the total filter media in the bin vent filter shall be maintained on the premises. [District Rule 2201]
9. The differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start up inspection. [District Rule 2201]
10. Differential operating pressure shall be monitored and recorded on each day that the bin vent filter operates. [District Rule 2201]
11. Records of all maintenance of the bin vent filter, including all change outs of filter media, shall be maintained. [District Rule 2201]
12. There shall be no visible emissions from the limestone transfer operation, for a period or periods aggregating more than three minutes in any one hour. [District Rules 2201 and 4101]
13. Visible emissions from the bin vent filter serving the storage silo shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201]

14. The maximum throughput of limestone loaded into the storage silo shall not exceed any of the following limits: 25.0 tons/day or 2,786 tons/year. [District Rules 2201 and 4102]
15. PM₁₀ emissions rate from the limestone silo loading operation shall not exceed 2.39E-02 lb-PM₁₀/ton limestone. [District Rule 2201]
16. Records of daily and annual amount (in tons) of limestone processed at the receiving and storage operation shall be maintained, retained on-site for a period of at least five (5) years and made available for District inspection upon request. [District Rules 1070 and 2201]
17. Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
18. An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]
19. An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8021]
20. Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
21. Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
22. Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
23. Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]

24. On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
25. Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
26. Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

EQUIPMENT DESCRIPTION, UNIT C-7758-3-0:

316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY

1. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide NO_x emission reduction credits for the following quantity of emissions: 1st quarter - 19,053 lb, 2nd quarter - 19,053 lb, 3rd quarter - 19,053 lb, and fourth quarter - 19,053 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
2. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide SO_x emission reduction credits for the following quantity of emissions: 1st quarter - 10,598 lb, 2nd quarter - 10,598 lb, 3rd quarter - 10,599 lb, and fourth quarter - 10,599 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
3. Prior to initial operation of C-7758-1, '2, '3, '4, '5, '6, '7, '8, and '9 permittee shall provide PM₁₀ emission reduction credits for the following quantity of emissions: 1st quarter - 41,493 lb, 2nd quarter - 41,494 lb, 3rd quarter - 41,494 lb, and fourth quarter - 41,494 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). SO_x ERCs may be used to offset PM₁₀ increases at an interpollutant ratio of 1.0 lb-SO_x : 1.0 lb-PM₁₀. [District Rule 2201]
4. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide VOC emission reduction credits for the following quantity of emissions: 1st quarter - 1,778 lb, 2nd quarter - 1,778 lb, 3rd quarter - 1,778 lb, and fourth quarter - 1,778 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
5. Sufficient ERCs from ERC Certificate Numbers N-556-2, S-2953-2, N-2-2, C-1001-2, S-2773-2, N-768-2, C-1022-2, N-552-2, N-801-2, N-789-2, N-596-2, N-820-2, N-595-2, C-880-2, C-881-2, S-3086-2, S-3022-2, S-3028-2, S-3039-2, S-3029-2, S-3087-2, N-755-2, S-2852-2, C-914-2, N-548-5, N-762-5, S-2790-5, S-3000-5, C-1022-5, N-744-5, S-2999-5, S-3056-5, S-2847-5, S-3106-5, S-2387-5, C-1024-4, N-161-4, S-2649-4, C-352-4, N-847-4, C-352-4, S-3132-1, S-3051-1, N-815-1, S-3117-1, S-3003-1 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Demonstration of Compliance shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Demonstration of Compliance. [District Rule 2201]

San Joaquin Solar 1 & 2 (08-AFC-12)

SJVACPD Determination of Compliance, C1090203

6. Permittee shall submit an application to comply with Rule 2520 - Federally Mandated Operating Permits within twelve months of commencing operation. [District Rule 2520]
7. Permittee shall submit an application to comply with Rule 2540 - Acid Rain Program within twelve months of commencing operation. [District Rule 2540]
8. The owner/operator of San Joaquin Solar 1 & 2 (SJS) shall minimize the emissions from the boiler to the maximum extent possible during the commissioning period. Conditions #9 through #20 shall apply only during the commissioning period as defined below. Unless otherwise indicated, Conditions #21 through #98 shall apply after the commissioning period has ended. [District Rule 2201]
9. Commissioning activities are defined as, but not limited to, all testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the SJS construction contractor to insure safe and reliable steady state operation of the fluidized bed combustors and associated electrical delivery systems. [District Rule 2201]
10. Commissioning period shall commence when all mechanical, electrical, and control systems are installed and individual system startup has been completed, or when a boiler is first fired, whichever occurs first. The commissioning period shall terminate when the plant has completed initial performance testing, completed final plant tuning, and is available for commercial operation. [District Rule 2201]
11. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the combustors of this unit shall be tuned to minimize emissions. [District Rule 2201]
12. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the Selective Catalytic Reduction (SCR) system shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]
13. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the baghouse system shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]
14. Coincident with the steady-state operation of the SCR system at loads greater than 50% and after installation and tuning of the emission controls, emissions from this unit shall comply with the limits specified in condition #50. [District Rule 2201]
15. The permittee shall submit a plan to the District at least four weeks prior to the first firing of this unit, describing the procedures to be followed during the commissioning period. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not limited to, the tuning of the combustors, the installation and operation of the SCR system, the installation, calibration, and testing of the continuous emissions monitors, and any activities requiring the firing of this unit without abatement by the SCR system. [District Rule 2201]

16. Emission rates from the four combustor units combined, during the commissioning period, shall not exceed any of the following limits: NO_x (as NO₂) – 29.26 tons/year; SO_x (as SO₂) – 6.28 tons/year; PM₁₀ – 37.59 tons/year; CO – 20.61 tons/year; or VOC (as methane) – 2.70 tons/year. [District Rule 2201]
17. During the commissioning period, the permittee shall demonstrate compliance with condition #16 through the use of properly operated and maintained continuous emissions monitors and recorders. The monitored parameters for this unit shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation). [District Rule 2201]
18. The continuous emissions monitors specified in these permit conditions shall be installed, calibrated and operational prior to the first firing of the unit. After first firing, the detection range of the CEMS shall be adjusted as necessary to accurately measure the resulting range of emissions concentrations. [District Rule 2201]
19. The total number of firing hours of all four combustors combined without abatement of emissions by the SCR system of units C-7758-3, '4, '5, and '6 shall not exceed 1628 hours total during the commissioning period. Such operation of this unit without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system in place. Upon completion of these activities, the permittee shall provide written notice to the District and the unused balance of the 1628 firing hours without abatement shall expire. Records of the commissioning hours of operation for units C-7758-3, '4, '5, and '6 shall be maintained. [District Rule 2201]
20. The total mass emissions of NO_x, SO_x, PM₁₀, CO, and VOC that are emitted during the commissioning period shall accrue towards the consecutive twelve month emission limits specified in condition #58. NO_x, SO_x, and CO total mass emissions will be determined from CEMs data and PM₁₀ and VOC total mass emissions will be calculated. [District Rule 2201]
21. A selective catalytic reduction (SCR) system shall serve the boiler. Exhaust ducting may be equipped (if required) with a fresh air inlet blower to be used to lower the exhaust temperature prior to inlet of the SCR system catalyst. The permittee shall submit SCR design details to the District at least 30 days prior to commencement of construction. [District Rule 2201]
22. Permittee shall submit continuous emission monitor design, installation, and operational details to the District at least 30 days prior to commencement of construction. [District Rule 2201]
23. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
24. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

25. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
26. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
27. The baghouse shall be maintained and operated according to manufacturer's specifications. [District Rule 2201]
28. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201]
29. Material removed from the dust collector(s) shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201]
30. The baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
31. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District Rule 2201]
32. The differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start up inspection. [District Rule 2201]
33. Differential operating pressure shall be monitored and recorded on each day that the baghouse operates. [District Rule 2201]
34. Records of all maintenance of the baghouse, including all change outs of filter media, shall be maintained. [District Rule 2201]
35. The dry and wet scrubber shall be equipped with a flow meter, in operation at all times. [District Rule 2201]
36. The slurry flow rate through the dry scrubber shall not be less than 125 lb/hr, during operation. [District Rule 2201]
37. Permittee shall monitor and record the slurry flow rate through the dry scrubber at least once every day. [District Rule 2201]
38. For the dry scrubber, the permittee shall maintain records of (1) the date of slurry flow rate measurements and (2) the slurry flow rate through the dry scrubber at the time of measure. [District Rule 2201]
39. The water flow rate through the wet scrubber shall not be less than 1 gal/100 scf gas flow, during operation. [District Rule 2201]

40. Permittee shall monitor and record the water flow rate through the wet scrubber at least once every day. [District Rule 2201]
41. For the wet scrubber, the permittee shall maintain records of (1) the date of water flow rate measurements and (2) the water flow rate through the wet scrubber at the time of measure. [District Rule 2201]
42. Each scrubber shall be equipped with an operational pressure differential gauge to indicate pressure drop across each scrubber. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
43. The dry scrubber differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start-up inspection. [District Rule 2201]
44. The wet scrubber differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start-up inspection. [District Rule 2201]
45. Permittee shall monitor and record the pressure drop readings for each scrubber at least once every day. [District Rule 2201]
46. The applicant shall install and maintain an operational ammonia volume flow-rate indicator for the selective non-catalytic reduction (SNCR) ammonia injection system. [District Rule 2201]
47. The applicant shall install, maintain, and operate a continuous emissions monitoring system (CEMS) to measure stack gas NO_x, SO_x, CO, and O₂ concentration and shall meet the performance specification requirements in 40 CFR, Part 60, Appendix B or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. The CEM systems shall also be operated, maintained, and calibrated pursuant to the requirements of 40 CFR 60.7(c) and 40 CFR 60.13. [District Rules 1080, 2201, and 4352]
48. The applicant shall install, maintain, and operate a continuous opacity monitor (COM) and shall meet the performance specification requirements in 40 CFR, Part 60, Appendix B, or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District Rules 1080 and 2201]
49. Operating schedule of the main combustor shall not exceed 6,570 hours per year. [District Rule 2201]
50. Emission rates from the boiler, except during startup periods, shall not exceed any of the following limits: NO_x (as NO₂) – 3.70 lb/hr and 7.3 ppmvd @ 3% O₂; SO_x (as SO₂) – 3.80 lb/hr; PM₁₀ – 7.66 lb/hr; CO – 8.46 lb/hr and 43.4 ppmvd @ 3% O₂; or VOC (as methane) – 1.32 lb/hr and 3.0 ppmvd @ 3% O₂. [District Rules 2201 and 4352]
51. Ammonia (NH₃) emissions shall not exceed either of the following limits: 1.08 lb/hr or 5.0 ppmvd @ 3% O₂ (based on a 24 hour rolling average). [District Rules 2201 and 4102]

52. During periods of startup, boiler exhaust emission rates shall not exceed any of the following limits: NO_x (as NO₂) – 37.62 lb/hr, SO_x – 46.50 lb/hr, PM₁₀ – 13.95 lb/hr, CO – 15.50 lb/hr, or VOC – 3.72 lb/hr, based on one hour averages. [District Rules 2201]
53. The preheat burner shall be used during start-up to reach the solid fuel ignition temperature throughout the combustor before feeding any solid fuel. [District Rule 2201]
54. Startup shall be defined as the period of time during which a unit is brought from a shutdown status to its SCR operating temperature and pressure, including the time required by the unit's emission control system to reach full operations. [District Rules 2201 and 4352]
55. The duration of each startup shall not exceed eight hours. Startup emissions shall be counted toward all applicable emission limits. [District Rules 2201 and 4352]
56. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4352]
57. Daily emissions from the boiler shall not exceed any of the following limits: NO_x (as NO₂) – 161.3 lb/day; VOC – 31.7 lb/day; CO – 203.0 lb/day; PM₁₀ – 183.8 lb/day; or SO_x (as SO₂) – 147.6 lb/day. [District Rule 2201]
58. Annual emissions from the boiler, calculated on a twelve consecutive month rolling basis, shall not exceed any of the following: NO_x (as NO₂) - 24,053 lb/year; SO_x (as SO₂) - 24,286 lb/year; PM₁₀ - 45,642 lb/year; CO - 41,180 lb/year; or VOC - 6,778 lb/year. [District Rule 2201]
59. Emissions from the preheat burner shall not exceed any of the following limits: NO_x - 0.1 lb/MMBtu, SO_x - 0.00285 lb/MMBtu, PM₁₀ - 0.0076 lb/MMBtu, CO - 0.084 lb/MMBtu, or VOC - 0.0055 lb/MMBtu. [District Rules 2201 and 4801]
60. Daily emissions will be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each month in the twelve consecutive month rolling average emissions shall commence at the beginning of the first day of the month. The twelve consecutive month rolling average emissions to determine compliance with annual emissions limitations shall be compiled from the twelve most recent calendar months. [District Rule 2201]
61. Compliance with the ammonia emission limits shall be demonstrated utilizing one of the following procedures: 1) calculate the daily ammonia emissions using the following equation: $(\text{ppmvd @ 15\% O}_2) = ((a - (b \times c / 1,000,000)) \times (1,000,000 / b)) \times d$, where a = average ammonia injection rate (lb/hr) / (17 lb/lb mol), b = dry exhaust flow rate (lb/hr) / (29 lb/lb mol), c = change in measured NO_x concentration ppmvd @ 15% O₂ across the catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip; 2.) Utilize another District-approved calculation method using measured surrogate parameters to determine the daily ammonia emissions in ppmvd @ 15% O₂. If this option is chosen, the permittee shall submit a detailed calculation protocol for District approval at least 60 days prior to commencement of operation; 3.) Alternatively, the permittee may utilize a

continuous in-stack ammonia monitor to verify compliance with the ammonia emissions limit. If this option is chosen, the permittee shall submit a monitoring plan for District approval at least 60 days prior to commencement of operation. [District Rule 2201]

62. Source testing to measure startup NO_x, CO, and VOC mass emission rates shall be conducted for one of the boilers (C-7758-3, C-7758-4, C-7758-5, or C-7758-6) prior to the end of the commissioning period and at least once every seven years thereafter. CEM relative accuracy shall be determined during startup source testing in accordance with 40 CFR 60, Appendix B. If CEM data is not certifiable to determine compliance with NO_x and CO startup emission limits, then source testing to measure startup NO_x and CO mass emission rates shall be conducted at least once every 12 months. [District Rule 1081]
63. Source testing to measure the NO_x, SO_x, CO, VOC, and NH₃ emission rates (lb/hr and ppmvd @ 15% O₂) and PM₁₀ emission rate (lb/hr) shall be conducted within 120 days after initial operation and at least once every twelve months thereafter. [District Rules 1081 and 4352]
64. The source plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rule 1081]
65. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]
66. The following test methods shall be used: NO_x - EPA Method 7E or 20, SO_x - EPA Method 6 or ARB Method 100, PM₁₀ - EPA Method 5/202 (front half and back half), CO - EPA Method 10 or 10B, O₂ - EPA Method 3, 3A, or 20, VOC - EPA Method 18 or 25, and ammonia - EPA Method 206. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. The request to utilize EPA approved alternative source testing methods must be submitted in writing and written approval received from the District prior to the submission of the source test plan. [District Rules 1081]
67. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [District Rule 4352]

68. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081]
69. Compliance demonstration (source testing) shall be District witnessed or authorized and samples shall be collected by a certified testing laboratory. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
70. All emission measurements shall be made with the unit operating at condition representative of normal operations. No compliance shall be established within two hours after a continuous period in which fuel flow to the unit is zero, or is shut off for 30 minutes or longer. [District Rule 4352]
71. The owner or operator shall install, certify, maintain, operate and quality-assure a Continuous Emission Monitoring System (CEMS) which continuously measures and records the exhaust gas NO_x, SO_x, CO and O₂ concentrations. Continuous emissions monitor(s) shall be capable of monitoring emissions during normal operating conditions, and during startups and shutdowns provided the CEMS pass the relative accuracy requirement for startups and shutdowns specified herein. If relative accuracy of CEMS cannot be demonstrated during startup conditions, CEMS results during startup events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits contained in this document. [District Rules 1080 and 2201]
72. The continuous emissions monitoring system (CEMS) shall meet the performance specification requirements in 40 CFR, Part 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. The CEM systems shall also be operated, maintained, and calibrated pursuant to the requirements of 40 CFR 60.7(c) and 40 CFR 60.13. [District Rules 1080, 2201, and 4352]
73. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080]
74. Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

75. The owner/operator shall perform a relative accuracy test audit (RATA) for the NO_x, SO_x, CO, and O₂ CEMs as specified by 40 CFR Part 60, Appendix F, 5.11, at least once every four calendar quarters. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]
76. Results of the CEM system shall be averaged over a one hour period for NO_x emissions and a three hour period for CO emissions using consecutive 15-minute sampling periods in accordance with all applicable requirements of CFR 60.13. [District Rule 4306 and 40 CFR 60.13]
77. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]
78. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]
79. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]
80. The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary shall be in the form and the manner prescribed by the APCO. [District Rule 1080]
81. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the APCO. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO_x emissions, nature and the cause of excess (if known); corrective actions taken and preventative measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period and used to determine compliance with an emissions standard; Applicable time and date of each period during which the CEM was inoperative (monitor downtime), except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080]
82. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]

83. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100]
84. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100]
85. The permittee shall maintain the following records: date and time, duration, and type of any startup, or malfunction; performance testing; evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system or monitoring device was inoperative, and maintenance of any continuous emission monitor. [District Rules 1080, 2201, and 40 CFR 60.8(d)]
86. The owner/operator shall maintain an operating log that includes the type and quantity of fuel used (hourly and annually) and the hmv of each fuel as determined by District Rule 4352, section 6.4 (as amended 05/18/06), or as certified by a third party fuel supplier. [District Rule 4352]
87. The owner/operator shall maintain an operating log that includes the number of hours of operation of the fluidized bed combustor, continuous emission monitor measurements, calculated ammonia slip and daily and annual natural gas usage of the preheat burner. [District Rule 1070]
88. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4352]
89. Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
90. An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]
91. An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8021]

92. Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
93. Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
94. Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
95. Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]
96. On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
97. Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
98. Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

EQUIPMENT DESCRIPTION, UNIT C-7758-4-0:

316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY

1. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide NO_x emission reduction credits for the following quantity of emissions: 1st quarter - 19,053 lb, 2nd quarter - 19,053 lb, 3rd quarter - 19,053 lb, and fourth quarter - 19,053 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
2. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide SO_x emission reduction credits for the following quantity of emissions: 1st quarter - 10,598 lb, 2nd quarter - 10,598 lb, 3rd quarter - 10,599 lb, and fourth quarter - 10,599 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
3. Prior to initial operation of C-7758-1, '2, '3, '4, '5, '6, '7, '8, and '9 permittee shall provide PM₁₀ emission reduction credits for the following quantity of emissions: 1st quarter - 41,493 lb, 2nd quarter - 41,494 lb, 3rd quarter - 41,494 lb, and fourth quarter - 41,494 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). SO_x ERCs may be used to offset PM₁₀ increases at an interpollutant ratio of 1.0 lb-SO_x : 1.0 lb-PM₁₀. [District Rule 2201]
4. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide VOC emission reduction credits for the following quantity of emissions: 1st quarter - 1,778 lb, 2nd quarter - 1,778 lb, 3rd quarter - 1,778 lb, and fourth quarter - 1,778 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
5. Sufficient ERCs from ERC Certificate Numbers N-556-2, S-2953-2, N-2-2, C-1001-2, S-2773-2, N-768-2, C-1022-2, N-552-2, N-801-2, N-789-2, N-596-2, N-820-2, N-595-2, C-880-2, C-881-2, S-3086-2, S-3022-2, S-3028-2, S-3039-2, S-3029-2, S-3087-2, N-755-2, S-2852-2, C-914-2, N-548-5, N-762-5, S-2790-5, S-3000-5, C-1022-5, N-744-5, S-2999-5, S-3056-5, S-2847-5, S-3106-5, S-2387-5, C-1024-4, N-161-4, S-2649-4, C-352-4, N-847-4, C-352-4, S-3132-1, S-3051-1, N-815-1, S-3117-1, S-3003-1 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Demonstration of Compliance shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Demonstration of Compliance. [District Rule 2201]

6. Permittee shall submit an application to comply with Rule 2520 - Federally Mandated Operating Permits within twelve months of commencing operation. [District Rule 2520]
7. Permittee shall submit an application to comply with Rule 2540 - Acid Rain Program within twelve months of commencing operation. [District Rule 2540]
8. The owner/operator of San Joaquin Solar 1 & 2 (SJS) shall minimize the emissions from the boiler to the maximum extent possible during the commissioning period. Conditions #9 through #20 shall apply only during the commissioning period as defined below. Unless otherwise indicated, Conditions #21 through #98 shall apply after the commissioning period has ended. [District Rule 2201]
9. Commissioning activities are defined as, but not limited to, all testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the SJS construction contractor to insure safe and reliable steady state operation of the fluidized bed combustors and associated electrical delivery systems. [District Rule 2201]
10. Commissioning period shall commence when all mechanical, electrical, and control systems are installed and individual system startup has been completed, or when a boiler is first fired, whichever occurs first. The commissioning period shall terminate when the plant has completed initial performance testing, completed final plant tuning, and is available for commercial operation. [District Rule 2201]
11. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the combustors of this unit shall be tuned to minimize emissions. [District Rule 2201]
12. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the Selective Catalytic Reduction (SCR) system shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]
13. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the baghouse system shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]
14. Coincident with the steady-state operation of the SCR system at loads greater than 50% and after installation and tuning of the emission controls, emissions from this unit shall comply with the limits specified in condition #50. [District Rule 2201]
15. The permittee shall submit a plan to the District at least four weeks prior to the first firing of this unit, describing the procedures to be followed during the commissioning period. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not limited to, the tuning of the combustors, the installation and operation of the SCR system, the installation, calibration, and testing of the continuous emissions monitors, and any activities requiring the firing of this unit without abatement by the SCR system. [District Rule 2201]

16. Emission rates from the four combustor units combined, during the commissioning period, shall not exceed any of the following limits: NO_x (as NO₂) – 29.26 tons/year; SO_x (as SO₂) – 6.28 tons/year; PM₁₀ – 37.59 tons/year; CO – 20.61 tons/year; or VOC (as methane) – 2.70 tons/year. [District Rule 2201]
17. During the commissioning period, the permittee shall demonstrate compliance with condition #16 through the use of properly operated and maintained continuous emissions monitors and recorders. The monitored parameters for this unit shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation). [District Rule 2201]
18. The continuous emissions monitors specified in these permit conditions shall be installed, calibrated and operational prior to the first firing of the unit. After first firing, the detection range of the CEMS shall be adjusted as necessary to accurately measure the resulting range of emissions concentrations. [District Rule 2201]
19. The total number of firing hours of all four combustors combined without abatement of emissions by the SCR system of units C-7758-3, '4, '5, and '6 shall not exceed 1628 hours total during the commissioning period. Such operation of this unit without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system in place. Upon completion of these activities, the permittee shall provide written notice to the District and the unused balance of the 1628 firing hours without abatement shall expire. Records of the commissioning hours of operation for units C-7758-3, '4, '5, and '6 shall be maintained. [District Rule 2201]
20. The total mass emissions of NO_x, SO_x, PM₁₀, CO, and VOC that are emitted during the commissioning period shall accrue towards the consecutive twelve month emission limits specified in condition #58. NO_x, SO_x, and CO total mass emissions will be determined from CEMs data and PM₁₀ and VOC total mass emissions will be calculated. [District Rule 2201]
21. A selective catalytic reduction (SCR) system shall serve the boiler. Exhaust ducting may be equipped (if required) with a fresh air inlet blower to be used to lower the exhaust temperature prior to inlet of the SCR system catalyst. The permittee shall submit SCR design details to the District at least 30 days prior to commencement of construction. [District Rule 2201]
22. Permittee shall submit continuous emission monitor design, installation, and operational details to the District at least 30 days prior to commencement of construction. [District Rule 2201]
23. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
24. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

25. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
26. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
27. The baghouse shall be maintained and operated according to manufacturer's specifications. [District Rule 2201]
28. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201]
29. Material removed from the dust collector(s) shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201]
30. The baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
31. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District Rule 2201]
32. The differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start up inspection. [District Rule 2201]
33. Differential operating pressure shall be monitored and recorded on each day that the baghouse operates. [District Rule 2201]
34. Records of all maintenance of the baghouse, including all change outs of filter media, shall be maintained. [District Rule 2201]
35. The dry and wet scrubber shall be equipped with a flow meter, in operation at all times. [District Rule 2201]
36. The slurry flow rate through the dry scrubber shall not be less than 125 lb/hr, during operation. [District Rule 2201]
37. Permittee shall monitor and record the slurry flow rate through the dry scrubber at least once every day. [District Rule 2201]
38. For the dry scrubber, the permittee shall maintain records of (1) the date of slurry flow rate measurements and (2) the slurry flow rate through the dry scrubber at the time of measure. [District Rule 2201]
39. The water flow rate through the wet scrubber shall not be less than 1 gal/100 scf gas flow, during operation. [District Rule 2201]

40. Permittee shall monitor and record the water flow rate through the wet scrubber at least once every day. [District Rule 2201]
41. For the wet scrubber, the permittee shall maintain records of (1) the date of water flow rate measurements and (2) the water flow rate through the wet scrubber at the time of measure. [District Rule 2201]
42. Each scrubber shall be equipped with an operational pressure differential gauge to indicate pressure drop across each scrubber. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
43. The dry scrubber differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start-up inspection. [District Rule 2201]
44. The wet scrubber differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start-up inspection. [District Rule 2201]
45. Permittee shall monitor and record the pressure drop readings for each scrubber at least once every day. [District Rule 2201]
46. The applicant shall install and maintain an operational ammonia volume flow-rate indicator for the selective non-catalytic reduction (SNCR) ammonia injection system. [District Rule 2201]
47. The applicant shall install, maintain, and operate a continuous emissions monitoring system (CEMS) to measure stack gas NO_x, SO_x, CO, and O₂ concentration and shall meet the performance specification requirements in 40 CFR, Part 60, Appendix B or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. The CEM systems shall also be operated, maintained, and calibrated pursuant to the requirements of 40 CFR 60.7(c) and 40 CFR 60.13. [District Rules 1080, 2201, and 4352]
48. The applicant shall install, maintain, and operate a continuous opacity monitor (COM) and shall meet the performance specification requirements in 40 CFR, Part 60, Appendix B, or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District Rules 1080 and 2201]
49. Operating schedule of the main combustor shall not exceed 6,570 hours per year. [District Rule 2201]
50. Emission rates from the boiler, except during startup periods, shall not exceed any of the following limits: NO_x (as NO₂) – 3.70 lb/hr and 7.3 ppmvd @ 3% O₂; SO_x (as SO₂) – 3.80 lb/hr; PM₁₀ – 7.66 lb/hr; CO – 8.46 lb/hr and 43.4 ppmvd @ 3% O₂; or VOC (as methane) – 1.32 lb/hr and 3.0 ppmvd @ 3% O₂. [District Rules 2201 and 4352]
51. Ammonia (NH₃) emissions shall not exceed either of the following limits: 1.08 lb/hr or 5.0 ppmvd @ 3% O₂ (based on a 24 hour rolling average). [District Rules 2201 and 4102]

52. During periods of startup, boiler exhaust emission rates shall not exceed any of the following limits: NO_x (as NO₂) – 37.62 lb/hr, SO_x – 46.50 lb/hr, PM₁₀ – 13.95 lb/hr, CO – 15.50 lb/hr, or VOC – 3.72 lb/hr, based on one hour averages. [District Rules 2201]
53. The preheat burner shall be used during start-up to reach the solid fuel ignition temperature throughout the combustor before feeding any solid fuel. [District Rule 2201]
54. Startup shall be defined as the period of time during which a unit is brought from a shutdown status to its SCR operating temperature and pressure, including the time required by the unit's emission control system to reach full operations. [District Rules 2201 and 4352]
55. The duration of each startup shall not exceed eight hours. Startup emissions shall be counted toward all applicable emission limits. [District Rules 2201 and 4352]
56. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4352]
57. Daily emissions from the boiler shall not exceed any of the following limits: NO_x (as NO₂) – 161.3 lb/day; VOC – 31.7 lb/day; CO – 203.0 lb/day; PM₁₀ – 183.8 lb/day; or SO_x (as SO₂) – 147.6 lb/day. [District Rule 2201]
58. Annual emissions from the boiler, calculated on a twelve consecutive month rolling basis, shall not exceed any of the following: NO_x (as NO₂) - 24,053 lb/year; SO_x (as SO₂) - 24,286 lb/year; PM₁₀ - 45,642 lb/year; CO - 41,180 lb/year; or VOC - 6,778 lb/year. [District Rule 2201]
59. Emissions from the preheat burner shall not exceed any of the following limits: NO_x - 0.1 lb/MMBtu, SO_x - 0.00285 lb/MMBtu, PM₁₀ - 0.0076 lb/MMBtu, CO - 0.084 lb/MMBtu, or VOC - 0.0055 lb/MMBtu. [District Rules 2201 and 4801]
60. Daily emissions will be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each month in the twelve consecutive month rolling average emissions shall commence at the beginning of the first day of the month. The twelve consecutive month rolling average emissions to determine compliance with annual emissions limitations shall be compiled from the twelve most recent calendar months. [District Rule 2201]
61. Compliance with the ammonia emission limits shall be demonstrated utilizing one of the following procedures: 1) calculate the daily ammonia emissions using the following equation: $(\text{ppmvd @ 15\% O}_2) = ((a - (b \times c / 1,000,000)) \times (1,000,000 / b)) \times d$, where a = average ammonia injection rate (lb/hr) / (17 lb/lb mol), b = dry exhaust flow rate (lb/hr) / (29 lb/lb mol), c = change in measured NO_x concentration ppmvd @ 15% O₂ across the catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip; 2.) Utilize another District-approved calculation method using measured surrogate parameters to determine the daily ammonia emissions in ppmvd @ 15% O₂. If this option is chosen, the permittee shall submit a detailed calculation protocol for District approval at least 60 days prior to commencement of operation; 3.) Alternatively, the permittee may utilize a

continuous in-stack ammonia monitor to verify compliance with the ammonia emissions limit. If this option is chosen, the permittee shall submit a monitoring plan for District approval at least 60 days prior to commencement of operation. [District Rule 2201]

62. Source testing to measure startup NO_x, CO, and VOC mass emission rates shall be conducted for one of the boilers (C-7758-3, C-7758-4, C-7758-5, or C-7758-6) prior to the end of the commissioning period and at least once every seven years thereafter. CEM relative accuracy shall be determined during startup source testing in accordance with 40 CFR 60, Appendix B. If CEM data is not certifiable to determine compliance with NO_x and CO startup emission limits, then source testing to measure startup NO_x and CO mass emission rates shall be conducted at least once every 12 months. [District Rule 1081]
63. Source testing to measure the NO_x, SO_x, CO, VOC, and NH₃ emission rates (lb/hr and ppmvd @ 15% O₂) and PM₁₀ emission rate (lb/hr) shall be conducted within 120 days after initial operation and at least once every twelve months thereafter. [District Rules 1081 and 4352]
64. The source plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rule 1081]
65. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]
66. The following test methods shall be used: NO_x - EPA Method 7E or 20, SO_x - EPA Method 6 or ARB Method 100, PM₁₀ - EPA Method 5/202 (front half and back half), CO - EPA Method 10 or 10B, O₂ - EPA Method 3, 3A, or 20, VOC - EPA Method 18 or 25, and ammonia - EPA Method 206. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. The request to utilize EPA approved alternative source testing methods must be submitted in writing and written approval received from the District prior to the submission of the source test plan. [District Rules 1081]
67. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [District Rule 4352]

68. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081]
69. Compliance demonstration (source testing) shall be District witnessed or authorized and samples shall be collected by a certified testing laboratory. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
70. All emission measurements shall be made with the unit operating at condition representative of normal operations. No compliance shall be established within two hours after a continuous period in which fuel flow to the unit is zero, or is shut off for 30 minutes or longer. [District Rule 4352]
71. The owner or operator shall install, certify, maintain, operate and quality-assure a Continuous Emission Monitoring System (CEMS) which continuously measures and records the exhaust gas NO_x, SO_x, CO and O₂ concentrations. Continuous emissions monitor(s) shall be capable of monitoring emissions during normal operating conditions, and during startups and shutdowns provided the CEMS pass the relative accuracy requirement for startups and shutdowns specified herein. If relative accuracy of CEMS cannot be demonstrated during startup conditions, CEMS results during startup events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits contained in this document. [District Rules 1080 and 2201]
72. The continuous emissions monitoring system (CEMS) shall meet the performance specification requirements in 40 CFR, Part 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. The CEM systems shall also be operated, maintained, and calibrated pursuant to the requirements of 40 CFR 60.7(c) and 40 CFR 60.13. [District Rules 1080, 2201, and 4352]
73. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080]
74. Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

75. The owner/operator shall perform a relative accuracy test audit (RATA) for the NO_x, SO_x, CO, and O₂ CEMs as specified by 40 CFR Part 60, Appendix F, 5.11, at least once every four calendar quarters. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]
76. Results of the CEM system shall be averaged over a one hour period for NO_x emissions and a three hour period for CO emissions using consecutive 15-minute sampling periods in accordance with all applicable requirements of CFR 60.13. [District Rule 4306 and 40 CFR 60.13]
77. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]
78. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]
79. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]
80. The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary shall be in the form and the manner prescribed by the APCO. [District Rule 1080]
81. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the APCO. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO_x emissions, nature and the cause of excess (if known), corrective actions taken and preventative measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period and used to determine compliance with an emissions standard; Applicable time and date of each period during which the CEM was inoperative (monitor downtime), except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080]
82. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]

83. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100]
84. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100]
85. The permittee shall maintain the following records: date and time, duration, and type of any startup, or malfunction; performance testing; evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system or monitoring device was inoperative, and maintenance of any continuous emission monitor. [District Rules 1080, 2201, and 40 CFR 60.8(d)]
86. The owner/operator shall maintain an operating log that includes the type and quantity of fuel used (hourly and annually) and the hmv of each fuel as determined by District Rule 4352, section 6.4 (as amended 05/18/06), or as certified by a third party fuel supplier. [District Rule 4352]
87. The owner/operator shall maintain an operating log that includes the number of hours of operation of the fluidized bed combustor, continuous emission monitor measurements, calculated ammonia slip and daily and annual natural gas usage of the preheat burner. [District Rule 1070]
88. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4352]
89. Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
90. An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]
91. An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8021]

92. Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
93. Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
94. Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
95. Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]
96. On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
97. Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
98. Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

EQUIPMENT DESCRIPTION, UNIT C-7758-5-0:

316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY

1. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide NO_x emission reduction credits for the following quantity of emissions: 1st quarter - 19,053 lb, 2nd quarter - 19,053 lb, 3rd quarter - 19,053 lb, and fourth quarter - 19,053 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
2. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide SO_x emission reduction credits for the following quantity of emissions: 1st quarter - 10,598 lb, 2nd quarter - 10,598 lb, 3rd quarter - 10,599 lb, and fourth quarter - 10,599 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
3. Prior to initial operation of C-7758-1, '2, '3, '4, '5, '6, '7, '8, and '9 permittee shall provide PM₁₀ emission reduction credits for the following quantity of emissions: 1st quarter - 41,493 lb, 2nd quarter - 41,494 lb, 3rd quarter - 41,494 lb, and fourth quarter - 41,494 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). SO_x ERCs may be used to offset PM₁₀ increases at an interpollutant ratio of 1.0 lb-SO_x : 1.0 lb-PM₁₀. [District Rule 2201]
4. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide VOC emission reduction credits for the following quantity of emissions: 1st quarter - 1,778 lb, 2nd quarter - 1,778 lb, 3rd quarter - 1,778 lb, and fourth quarter - 1,778 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
5. Sufficient ERCs from ERC Certificate Numbers N-556-2, S-2953-2, N-2-2, C-1001-2, S-2773-2, N-768-2, C-1022-2, N-552-2, N-801-2, N-789-2, N-596-2, N-820-2, N-595-2, C-880-2, C-881-2, S-3086-2, S-3022-2, S-3028-2, S-3039-2, S-3029-2, S-3087-2, N-755-2, S-2852-2, C-914-2, N-548-5, N-762-5, S-2790-5, S-3000-5, C-1022-5, N-744-5, S-2999-5, S-3056-5, S-2847-5, S-3106-5, S-2387-5, C-1024-4, N-161-4, S-2649-4, C-352-4, N-847-4, C-352-4, S-3132-1, S-3051-1, N-815-1, S-3117-1, S-3003-1 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Demonstration of Compliance shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Demonstration of Compliance. [District Rule 2201]

6. Permittee shall submit an application to comply with Rule 2520 - Federally Mandated Operating Permits within twelve months of commencing operation. [District Rule 2520]
7. Permittee shall submit an application to comply with Rule 2540 - Acid Rain Program within twelve months of commencing operation. [District Rule 2540]
8. The owner/operator of San Joaquin Solar 1 & 2 (SJS) shall minimize the emissions from the boiler to the maximum extent possible during the commissioning period. Conditions #9 through #20 shall apply only during the commissioning period as defined below. Unless otherwise indicated, Conditions #21 through #98 shall apply after the commissioning period has ended. [District Rule 2201]
9. Commissioning activities are defined as, but not limited to, all testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the SJS construction contractor to insure safe and reliable steady state operation of the fluidized bed combustors and associated electrical delivery systems. [District Rule 2201]
10. Commissioning period shall commence when all mechanical, electrical, and control systems are installed and individual system startup has been completed, or when a boiler is first fired, whichever occurs first. The commissioning period shall terminate when the plant has completed initial performance testing, completed final plant tuning, and is available for commercial operation. [District Rule 2201]
11. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the combustors of this unit shall be tuned to minimize emissions. [District Rule 2201]
12. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the Selective Catalytic Reduction (SCR) system shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]
13. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the baghouse system shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]
14. Coincident with the steady-state operation of the SCR system at loads greater than 50% and after installation and tuning of the emission controls, emissions from this unit shall comply with the limits specified in condition #50. [District Rule 2201]
15. The permittee shall submit a plan to the District at least four weeks prior to the first firing of this unit, describing the procedures to be followed during the commissioning period. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not limited to, the tuning of the combustors, the installation and operation of the SCR system, the installation, calibration, and testing of the continuous emissions monitors, and any activities requiring the firing of this unit without abatement by the SCR system. [District Rule 2201]

16. Emission rates from the four combustor units combined, during the commissioning period, shall not exceed any of the following limits: NO_x (as NO₂) – 29.26 tons/year; SO_x (as SO₂) – 6.28 tons/year; PM₁₀ – 37.59 tons/year; CO – 20.61 tons/year; or VOC (as methane) – 2.70 tons/year. [District Rule 2201]
17. During the commissioning period, the permittee shall demonstrate compliance with condition #16 through the use of properly operated and maintained continuous emissions monitors and recorders. The monitored parameters for this unit shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation). [District Rule 2201]
18. The continuous emissions monitors specified in these permit conditions shall be installed, calibrated and operational prior to the first firing of the unit. After first firing, the detection range of the CEMS shall be adjusted as necessary to accurately measure the resulting range of emissions concentrations. [District Rule 2201]
19. The total number of firing hours of all four combustors combined without abatement of emissions by the SCR system of units C-7758-3, '4, '5, and '6 shall not exceed 1628 hours total during the commissioning period. Such operation of this unit without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system in place. Upon completion of these activities, the permittee shall provide written notice to the District and the unused balance of the 1628 firing hours without abatement shall expire. Records of the commissioning hours of operation for units C-7758-3, '4, '5, and '6 shall be maintained. [District Rule 2201]
20. The total mass emissions of NO_x, SO_x, PM₁₀, CO, and VOC that are emitted during the commissioning period shall accrue towards the consecutive twelve month emission limits specified in condition #58. NO_x, SO_x, and CO total mass emissions will be determined from CEMs data and PM₁₀ and VOC total mass emissions will be calculated. [District Rule 2201]
21. A selective catalytic reduction (SCR) system shall serve the boiler. Exhaust ducting may be equipped (if required) with a fresh air inlet blower to be used to lower the exhaust temperature prior to inlet of the SCR system catalyst. The permittee shall submit SCR design details to the District at least 30 days prior to commencement of construction. [District Rule 2201]
22. Permittee shall submit continuous emission monitor design, installation, and operational details to the District at least 30 days prior to commencement of construction. [District Rule 2201]
23. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
24. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

25. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
26. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
27. The baghouse shall be maintained and operated according to manufacturer's specifications. [District Rule 2201]
28. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201]
29. Material removed from the dust collector(s) shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201]
30. The baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
31. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District Rule 2201]
32. The differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start up inspection. [District Rule 2201]
33. Differential operating pressure shall be monitored and recorded on each day that the baghouse operates. [District Rule 2201]
34. Records of all maintenance of the baghouse, including all change outs of filter media, shall be maintained. [District Rule 2201]
35. The dry and wet scrubber shall be equipped with a flow meter, in operation at all times. [District Rule 2201]
36. The slurry flow rate through the dry scrubber shall not be less than 125 lb/hr, during operation. [District Rule 2201]
37. Permittee shall monitor and record the slurry flow rate through the dry scrubber at least once every day. [District Rule 2201]
38. For the dry scrubber, the permittee shall maintain records of (1) the date of slurry flow rate measurements and (2) the slurry flow rate through the dry scrubber at the time of measure. [District Rule 2201]
39. The water flow rate through the wet scrubber shall not be less than 1 gal/100 scf gas flow, during operation. [District Rule 2201]

40. Permittee shall monitor and record the water flow rate through the wet scrubber at least once every day. [District Rule 2201]
41. For the wet scrubber, the permittee shall maintain records of (1) the date of water flow rate measurements and (2) the water flow rate through the wet scrubber at the time of measure. [District Rule 2201]
42. Each scrubber shall be equipped with an operational pressure differential gauge to indicate pressure drop across each scrubber. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
43. The dry scrubber differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start-up inspection. [District Rule 2201]
44. The wet scrubber differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start-up inspection. [District Rule 2201]
45. Permittee shall monitor and record the pressure drop readings for each scrubber at least once every day. [District Rule 2201]
46. The applicant shall install and maintain an operational ammonia volume flow-rate indicator for the selective non-catalytic reduction (SNCR) ammonia injection system. [District Rule 2201]
47. The applicant shall install, maintain, and operate a continuous emissions monitoring system (CEMS) to measure stack gas NO_x, SO_x, CO, and O₂ concentration and shall meet the performance specification requirements in 40 CFR, Part 60, Appendix B or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. The CEM systems shall also be operated, maintained, and calibrated pursuant to the requirements of 40 CFR 60.7(c) and 40 CFR 60.13. [District Rules 1080, 2201, and 4352]
48. The applicant shall install, maintain, and operate a continuous opacity monitor (COM) and shall meet the performance specification requirements in 40 CFR, Part 60, Appendix B, or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District Rules 1080 and 2201]
49. Operating schedule of the main combustor shall not exceed 6,570 hours per year. [District Rule 2201]
50. Emission rates from the boiler, except during startup periods, shall not exceed any of the following limits: NO_x (as NO₂) – 3.70 lb/hr and 7.3 ppmvd @ 3% O₂; SO_x (as SO₂) – 3.80 lb/hr; PM₁₀ – 7.66 lb/hr; CO – 8.46 lb/hr and 43.4 ppmvd @ 3% O₂; or VOC (as methane) – 1.32 lb/hr and 3.0 ppmvd @ 3% O₂. [District Rules 2201 and 4352]
51. Ammonia (NH₃) emissions shall not exceed either of the following limits: 1.08 lb/hr or 5.0 ppmvd @ 3% O₂ (based on a 24 hour rolling average). [District Rules 2201 and 4102]

52. During periods of startup, boiler exhaust emission rates shall not exceed any of the following limits: NO_x (as NO₂) – 37.62 lb/hr, SO_x – 46.50 lb/hr, PM₁₀ – 13.95 lb/hr, CO – 15.50 lb/hr, or VOC – 3.72 lb/hr, based on one hour averages. [District Rules 2201]
53. The preheat burner shall be used during start-up to reach the solid fuel ignition temperature throughout the combustor before feeding any solid fuel. [District Rule 2201]
54. Startup shall be defined as the period of time during which a unit is brought from a shutdown status to its SCR operating temperature and pressure, including the time required by the unit's emission control system to reach full operations. [District Rules 2201 and 4352]
55. The duration of each startup shall not exceed eight hours. Startup emissions shall be counted toward all applicable emission limits. [District Rules 2201 and 4352]
56. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4352]
57. Daily emissions from the boiler shall not exceed any of the following limits: NO_x (as NO₂) – 161.3 lb/day; VOC – 31.7 lb/day; CO – 203.0 lb/day; PM₁₀ – 183.8 lb/day; or SO_x (as SO₂) – 147.6 lb/day. [District Rule 2201]
58. Annual emissions from the boiler, calculated on a twelve consecutive month rolling basis, shall not exceed any of the following: NO_x (as NO₂) - 24,053 lb/year; SO_x (as SO₂) - 24,286 lb/year; PM₁₀ - 45,642 lb/year; CO - 41,180 lb/year; or VOC - 6,778 lb/year. [District Rule 2201]
59. Emissions from the preheat burner shall not exceed any of the following limits: NO_x - 0.1 lb/MMBtu, SO_x - 0.00285 lb/MMBtu, PM₁₀ - 0.0076 lb/MMBtu, CO - 0.084 lb/MMBtu, or VOC - 0.0055 lb/MMBtu. [District Rules 2201 and 4801]
60. Daily emissions will be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each month in the twelve consecutive month rolling average emissions shall commence at the beginning of the first day of the month. The twelve consecutive month rolling average emissions to determine compliance with annual emissions limitations shall be compiled from the twelve most recent calendar months. [District Rule 2201]
61. Compliance with the ammonia emission limits shall be demonstrated utilizing one of the following procedures: 1) calculate the daily ammonia emissions using the following equation: $(\text{ppmvd @ 15\% O}_2) = ((a - (b \times c / 1,000,000)) \times (1,000,000 / b)) \times d$, where a = average ammonia injection rate (lb/hr) / (17 lb/lb mol), b = dry exhaust flow rate (lb/hr) / (29 lb/lb mol), c = change in measured NO_x concentration ppmvd @ 15% O₂ across the catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip; 2.) Utilize another District-approved calculation method using measured surrogate parameters to determine the daily ammonia emissions in ppmvd @ 15% O₂. If this option is chosen, the permittee shall submit a detailed calculation protocol for District approval at least 60 days prior to commencement of operation; 3.) Alternatively, the permittee may utilize a

continuous in-stack ammonia monitor to verify compliance with the ammonia emissions limit. If this option is chosen, the permittee shall submit a monitoring plan for District approval at least 60 days prior to commencement of operation. [District Rule 2201]

62. Source testing to measure startup NO_x, CO, and VOC mass emission rates shall be conducted for one of the boilers (C-7758-3, C-7758-4, C-7758-5, or C-7758-6) prior to the end of the commissioning period and at least once every seven years thereafter. CEM relative accuracy shall be determined during startup source testing in accordance with 40 CFR 60, Appendix B. If CEM data is not certifiable to determine compliance with NO_x and CO startup emission limits, then source testing to measure startup NO_x and CO mass emission rates shall be conducted at least once every 12 months. [District Rule 1081]
63. Source testing to measure the NO_x, SO_x, CO, VOC, and NH₃ emission rates (lb/hr and ppmvd @ 15% O₂) and PM₁₀ emission rate (lb/hr) shall be conducted within 120 days after initial operation and at least once every twelve months thereafter. [District Rules 1081 and 4352]
64. The source plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rule 1081]
65. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]
66. The following test methods shall be used: NO_x - EPA Method 7E or 20, SO_x - EPA Method 6 or ARB Method 100, PM₁₀ - EPA Method 5/202 (front half and back half), CO - EPA Method 10 or 10B, O₂ - EPA Method 3, 3A, or 20, VOC - EPA Method 18 or 25, and ammonia – EPA Method 206. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. The request to utilize EPA approved alternative source testing methods must be submitted in writing and written approval received from the District prior to the submission of the source test plan. [District Rules 1081]
67. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [District Rule 4352]

68. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081]
69. Compliance demonstration (source testing) shall be District witnessed or authorized and samples shall be collected by a certified testing laboratory. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
70. All emission measurements shall be made with the unit operating at condition representative of normal operations. No compliance shall be established within two hours after a continuous period in which fuel flow to the unit is zero, or is shut off for 30 minutes or longer. [District Rule 4352]
71. The owner or operator shall install, certify, maintain, operate and quality-assure a Continuous Emission Monitoring System (CEMS) which continuously measures and records the exhaust gas NO_x, SO_x, CO and O₂ concentrations. Continuous emissions monitor(s) shall be capable of monitoring emissions during normal operating conditions, and during startups and shutdowns provided the CEMS pass the relative accuracy requirement for startups and shutdowns specified herein. If relative accuracy of CEMS cannot be demonstrated during startup conditions, CEMS results during startup events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits contained in this document. [District Rules 1080 and 2201]
72. The continuous emissions monitoring system (CEMS) shall meet the performance specification requirements in 40 CFR, Part 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. The CEM systems shall also be operated, maintained, and calibrated pursuant to the requirements of 40 CFR 60.7(c) and 40 CFR 60.13. [District Rules 1080, 2201, and 4352]
73. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080]
74. Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

75. The owner/operator shall perform a relative accuracy test audit (RATA) for the NO_x, SO_x, CO, and O₂ CEMs as specified by 40 CFR Part 60, Appendix F, 5.11, at least once every four calendar quarters. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]
76. Results of the CEM system shall be averaged over a one hour period for NO_x emissions and a three hour period for CO emissions using consecutive 15-minute sampling periods in accordance with all applicable requirements of CFR 60.13. [District Rule 4306 and 40 CFR 60.13]
77. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]
78. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]
79. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]
80. The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary shall be in the form and the manner prescribed by the APCO. [District Rule 1080]
81. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the APCO. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO_x emissions, nature and the cause of excess (if known), corrective actions taken and preventative measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period and used to determine compliance with an emissions standard; Applicable time and date of each period during which the CEM was inoperative (monitor downtime), except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080]
82. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]

83. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100]
84. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100]
85. The permittee shall maintain the following records: date and time, duration, and type of any startup, or malfunction; performance testing; evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system or monitoring device was inoperative, and maintenance of any continuous emission monitor. [District Rules 1080, 2201, and 40 CFR 60.8(d)]
86. The owner/operator shall maintain an operating log that includes the type and quantity of fuel used (hourly and annually) and the hhv of each fuel as determined by District Rule 4352, section 6.4 (as amended 05/18/06), or as certified by a third party fuel supplier. [District Rule 4352]
87. The owner/operator shall maintain an operating log that includes the number of hours of operation of the fluidized bed combustor, continuous emission monitor measurements, calculated ammonia slip and daily and annual natural gas usage of the preheat burner. [District Rule 1070]
88. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4352]
89. Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
90. An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]
91. An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8021]

92. Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
93. Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
94. Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
95. Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]
96. On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
97. Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
98. Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

EQUIPMENT DESCRIPTION, UNIT C-7758-6-0:

316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY

1. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide NO_x emission reduction credits for the following quantity of emissions: 1st quarter - 19,053 lb, 2nd quarter - 19,053 lb, 3rd quarter - 19,053 lb, and fourth quarter - 19,053 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
2. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide SO_x emission reduction credits for the following quantity of emissions: 1st quarter - 10,598 lb, 2nd quarter - 10,598 lb, 3rd quarter - 10,599 lb, and fourth quarter - 10,599 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
3. Prior to initial operation of C-7758-1, '2, '3, '4, '5, '6, '7, '8, and '9 permittee shall provide PM₁₀ emission reduction credits for the following quantity of emissions: 1st quarter - 41,493 lb, 2nd quarter - 41,494 lb, 3rd quarter - 41,494 lb, and fourth quarter - 41,494 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). SO_x ERCs may be used to offset PM₁₀ increases at an interpollutant ratio of 1.0 lb-SO_x : 1.0 lb-PM₁₀. [District Rule 2201]
4. Prior to initial operation of C-7758-3, '4, '5, and '6, permittee shall provide VOC emission reduction credits for the following quantity of emissions: 1st quarter - 1,778 lb, 2nd quarter - 1,778 lb, 3rd quarter - 1,778 lb, and fourth quarter - 1,778 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]
5. Sufficient ERCs from ERC Certificate Numbers N-556-2, S-2953-2, N-2-2, C-1001-2, S-2773-2, N-768-2, C-1022-2, N-552-2, N-801-2, N-789-2, N-596-2, N-820-2, N-595-2, C-880-2, C-881-2, S-3086-2, S-3022-2, S-3028-2, S-3039-2, S-3029-2, S-3087-2, N-755-2, S-2852-2, C-914-2, N-548-5, N-762-5, S-2790-5, S-3000-5, C-1022-5, N-744-5, S-2999-5, S-3056-5, S-2847-5, S-3106-5, S-2387-5, C-1024-4, N-161-4, S-2649-4, C-352-4, N-847-4, C-352-4, S-3132-1, S-3051-1, N-815-1, S-3117-1, S-3003-1 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Demonstration of Compliance shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Demonstration of Compliance. [District Rule 2201]

San Joaquin Solar 1 & 2 (08-AFC-12)
SJVACPD Determination of Compliance, C1090203

6. Permittee shall submit an application to comply with Rule 2520 - Federally Mandated Operating Permits within twelve months of commencing operation. [District Rule 2520]
7. Permittee shall submit an application to comply with Rule 2540 - Acid Rain Program within twelve months of commencing operation. [District Rule 2540]
8. The owner/operator of San Joaquin Solar 1 & 2 (SJS) shall minimize the emissions from the boiler to the maximum extent possible during the commissioning period. Conditions #9 through #20 shall apply only during the commissioning period as defined below. Unless otherwise indicated, Conditions #21 through #98 shall apply after the commissioning period has ended. [District Rule 2201]
9. Commissioning activities are defined as, but not limited to, all testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the SJS construction contractor to insure safe and reliable steady state operation of the fluidized bed combustors and associated electrical delivery systems. [District Rule 2201]
10. Commissioning period shall commence when all mechanical, electrical, and control systems are installed and individual system startup has been completed, or when a boiler is first fired, whichever occurs first. The commissioning period shall terminate when the plant has completed initial performance testing, completed final plant tuning, and is available for commercial operation. [District Rule 2201]
11. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the combustors of this unit shall be tuned to minimize emissions. [District Rule 2201]
12. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the Selective Catalytic Reduction (SCR) system shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]
13. At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the baghouse system shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]
14. Coincident with the steady-state operation of the SCR system at loads greater than 50% and after installation and tuning of the emission controls, emissions from this unit shall comply with the limits specified in condition #50. [District Rule 2201]
15. The permittee shall submit a plan to the District at least four weeks prior to the first firing of this unit, describing the procedures to be followed during the commissioning period. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not limited to, the tuning of the combustors, the installation and operation of the SCR system, the installation, calibration, and testing of the continuous emissions monitors, and any activities requiring the firing of this unit without abatement by the SCR system. [District Rule 2201]

16. Emission rates from the four combustor units combined, during the commissioning period, shall not exceed any of the following limits: NO_x (as NO₂) – 29.26 tons/year; SO_x (as SO₂) – 6.28 tons/year; PM₁₀ – 37.59 tons/year; CO – 20.61 tons/year; or VOC (as methane) – 2.70 tons/year. [District Rule 2201]
17. During the commissioning period, the permittee shall demonstrate compliance with condition #16 through the use of properly operated and maintained continuous emissions monitors and recorders. The monitored parameters for this unit shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation). [District Rule 2201]
18. The continuous emissions monitors specified in these permit conditions shall be installed, calibrated and operational prior to the first firing of the unit. After first firing, the detection range of the CEMS shall be adjusted as necessary to accurately measure the resulting range of emissions concentrations. [District Rule 2201]
19. The total number of firing hours of all four combustors combined without abatement of emissions by the SCR system of units C-7758-3, '4, '5, and '6 shall not exceed 1628 hours total during the commissioning period. Such operation of this unit without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system in place. Upon completion of these activities, the permittee shall provide written notice to the District and the unused balance of the 1628 firing hours without abatement shall expire. Records of the commissioning hours of operation for units C-7758-3, '4, '5, and '6 shall be maintained. [District Rule 2201]
20. The total mass emissions of NO_x, SO_x, PM₁₀, CO, and VOC that are emitted during the commissioning period shall accrue towards the consecutive twelve month emission limits specified in condition #58. NO_x, SO_x, and CO total mass emissions will be determined from CEMs data and PM₁₀ and VOC total mass emissions will be calculated. [District Rule 2201]
21. A selective catalytic reduction (SCR) system shall serve the boiler. Exhaust ducting may be equipped (if required) with a fresh air inlet blower to be used to lower the exhaust temperature prior to inlet of the SCR system catalyst. The permittee shall submit SCR design details to the District at least 30 days prior to commencement of construction. [District Rule 2201]
22. Permittee shall submit continuous emission monitor design, installation, and operational details to the District at least 30 days prior to commencement of construction. [District Rule 2201]
23. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
24. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

25. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
26. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
27. The baghouse shall be maintained and operated according to manufacturer's specifications. [District Rule 2201]
28. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201]
29. Material removed from the dust collector(s) shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201]
30. The baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
31. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District Rule 2201]
32. The differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start up inspection. [District Rule 2201]
33. Differential operating pressure shall be monitored and recorded on each day that the baghouse operates. [District Rule 2201]
34. Records of all maintenance of the baghouse, including all change outs of filter media, shall be maintained. [District Rule 2201]
35. The dry and wet scrubber shall be equipped with a flow meter, in operation at all times. [District Rule 2201]
36. The slurry flow rate through the dry scrubber shall not be less than 125 lb/hr, during operation. [District Rule 2201]
37. Permittee shall monitor and record the slurry flow rate through the dry scrubber at least once every day. [District Rule 2201]
38. For the dry scrubber, the permittee shall maintain records of (1) the date of slurry flow rate measurements and (2) the slurry flow rate through the dry scrubber at the time of measure. [District Rule 2201]
39. The water flow rate through the wet scrubber shall not be less than 1 gal/100 scf gas flow, during operation. [District Rule 2201]

40. Permittee shall monitor and record the water flow rate through the wet scrubber at least once every day. [District Rule 2201]
41. For the wet scrubber, the permittee shall maintain records of (1) the date of water flow rate measurements and (2) the water flow rate through the wet scrubber at the time of measure. [District Rule 2201]
42. Each scrubber shall be equipped with an operational pressure differential gauge to indicate pressure drop across each scrubber. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
43. The dry scrubber differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start-up inspection. [District Rule 2201]
44. The wet scrubber differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start-up inspection. [District Rule 2201]
45. Permittee shall monitor and record the pressure drop readings for each scrubber at least once every day. [District Rule 2201]
46. The applicant shall install and maintain an operational ammonia volume flow-rate indicator for the selective non-catalytic reduction (SNCR) ammonia injection system. [District Rule 2201]
47. The applicant shall install, maintain, and operate a continuous emissions monitoring system (CEMS) to measure stack gas NO_x, SO_x, CO, and O₂ concentration and shall meet the performance specification requirements in 40 CFR, Part 60, Appendix B or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. The CEM systems shall also be operated, maintained, and calibrated pursuant to the requirements of 40 CFR 60.7(c) and 40 CFR 60.13. [District Rules 1080, 2201, and 4352]
48. The applicant shall install, maintain, and operate a continuous opacity monitor (COM) and shall meet the performance specification requirements in 40 CFR, Part 60, Appendix B, or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District Rules 1080 and 2201]
49. Operating schedule of the main combustor shall not exceed 6,570 hours per year. [District Rule 2201]
50. Emission rates from the boiler, except during startup periods, shall not exceed any of the following limits: NO_x (as NO₂) – 3.70 lb/hr and 7.3 ppmvd @ 3% O₂; SO_x (as SO₂) – 3.80 lb/hr; PM₁₀ – 7.66 lb/hr; CO – 8.46 lb/hr and 43.4 ppmvd @ 3% O₂; or VOC (as methane) – 1.32 lb/hr and 3.0 ppmvd @ 3% O₂. [District Rules 2201 and 4352]
51. Ammonia (NH₃) emissions shall not exceed either of the following limits: 1.08 lb/hr or 5.0 ppmvd @ 3% O₂ (based on a 24 hour rolling average). [District Rules 2201 and 4102]

52. During periods of startup, boiler exhaust emission rates shall not exceed any of the following limits: NO_x (as NO₂) – 37.62 lb/hr, SO_x – 46.50 lb/hr, PM₁₀ – 13.95 lb/hr, CO – 15.50 lb/hr, or VOC – 3.72 lb/hr, based on one hour averages. [District Rules 2201]
53. The preheat burner shall be used during start-up to reach the solid fuel ignition temperature throughout the combustor before feeding any solid fuel. [District Rule 2201]
54. Startup shall be defined as the period of time during which a unit is brought from a shutdown status to its SCR operating temperature and pressure, including the time required by the unit's emission control system to reach full operations. [District Rules 2201 and 4352]
55. The duration of each startup shall not exceed eight hours. Startup emissions shall be counted toward all applicable emission limits. [District Rules 2201 and 4352]
56. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4352]
57. Daily emissions from the boiler shall not exceed any of the following limits: NO_x (as NO₂) – 161.3 lb/day; VOC – 31.7 lb/day; CO – 203.0 lb/day; PM₁₀ – 183.8 lb/day; or SO_x (as SO₂) – 147.6 lb/day. [District Rule 2201]
58. Annual emissions from the boiler, calculated on a twelve consecutive month rolling basis, shall not exceed any of the following: NO_x (as NO₂) - 24,053 lb/year; SO_x (as SO₂) - 24,286 lb/year; PM₁₀ - 45,642 lb/year; CO - 41,180 lb/year; or VOC - 6,778 lb/year. [District Rule 2201]
59. Emissions from the preheat burner shall not exceed any of the following limits: NO_x - 0.1 lb/MMBtu, SO_x - 0.00285 lb/MMBtu, PM₁₀ - 0.0076 lb/MMBtu, CO - 0.084 lb/MMBtu, or VOC - 0.0055 lb/MMBtu. [District Rules 2201 and 4801]
60. Daily emissions will be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each month in the twelve consecutive month rolling average emissions shall commence at the beginning of the first day of the month. The twelve consecutive month rolling average emissions to determine compliance with annual emissions limitations shall be compiled from the twelve most recent calendar months. [District Rule 2201]
61. Compliance with the ammonia emission limits shall be demonstrated utilizing one of the following procedures: 1) calculate the daily ammonia emissions using the following equation: $(\text{ppmvd @ 15\% O}_2) = ((a - (b \times c/1,000,000)) \times (1,000,000 / b)) \times d$, where a = average ammonia injection rate (lb/hr) / (17 lb/lb mol), b = dry exhaust flow rate (lb/hr) / (29 lb/lb mol), c = change in measured NO_x concentration ppmvd @ 15% O₂ across the catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip; 2.) Utilize another District-approved calculation method using measured surrogate parameters to determine the daily ammonia emissions in ppmvd @ 15% O₂. If this option is chosen, the permittee shall submit a detailed calculation protocol for District approval at least 60 days prior to commencement of operation; 3.) Alternatively, the permittee may utilize a

continuous in-stack ammonia monitor to verify compliance with the ammonia emissions limit. If this option is chosen, the permittee shall submit a monitoring plan for District approval at least 60 days prior to commencement of operation. [District Rule 2201]

62. Source testing to measure startup NO_x, CO, and VOC mass emission rates shall be conducted for one of the boilers (C-7758-3, C-7758-4, C-7758-5, or C-7758-6) prior to the end of the commissioning period and at least once every seven years thereafter. CEM relative accuracy shall be determined during startup source testing in accordance with 40 CFR 60, Appendix B. If CEM data is not certifiable to determine compliance with NO_x and CO startup emission limits, then source testing to measure startup NO_x and CO mass emission rates shall be conducted at least once every 12 months. [District Rule 1081]
63. Source testing to measure the NO_x, SO_x, CO, VOC, and NH₃ emission rates (lb/hr and ppmvd @ 15% O₂) and PM₁₀ emission rate (lb/hr) shall be conducted within 120 days after initial operation and at least once every twelve months thereafter. [District Rules 1081 and 4352]
64. The source plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rule 1081]
65. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]
66. The following test methods shall be used: NO_x - EPA Method 7E or 20, SO_x - EPA Method 6 or ARB Method 100, PM₁₀ - EPA Method 5/202 (front half and back half), CO - EPA Method 10 or 10B, O₂ - EPA Method 3, 3A, or 20, VOC - EPA Method 18 or 25, and ammonia - EPA Method 206. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. The request to utilize EPA approved alternative source testing methods must be submitted in writing and written approval received from the District prior to the submission of the source test plan. [District Rules 1081]
67. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [District Rule 4352]

68. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081]
69. Compliance demonstration (source testing) shall be District witnessed or authorized and samples shall be collected by a certified testing laboratory. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
70. All emission measurements shall be made with the unit operating at condition representative of normal operations. No compliance shall be established within two hours after a continuous period in which fuel flow to the unit is zero, or is shut off for 30 minutes or longer. [District Rule 4352]
71. The owner or operator shall install, certify, maintain, operate and quality-assure a Continuous Emission Monitoring System (CEMS) which continuously measures and records the exhaust gas NO_x, SO_x, CO and O₂ concentrations. Continuous emissions monitor(s) shall be capable of monitoring emissions during normal operating conditions, and during startups and shutdowns provided the CEMS pass the relative accuracy requirement for startups and shutdowns specified herein. If relative accuracy of CEMS cannot be demonstrated during startup conditions, CEMS results during startup events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits contained in this document. [District Rules 1080 and 2201]
72. The continuous emissions monitoring system (CEMS) shall meet the performance specification requirements in 40 CFR, Part 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. The CEM systems shall also be operated, maintained, and calibrated pursuant to the requirements of 40 CFR 60.7(c) and 40 CFR 60.13. [District Rules 1080, 2201, and 4352]
73. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080]
74. Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

75. The owner/operator shall perform a relative accuracy test audit (RATA) for the NO_x, SO_x, CO, and O₂ CEMs as specified by 40 CFR Part 60, Appendix F, 5.11, at least once every four calendar quarters. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]
76. Results of the CEM system shall be averaged over a one hour period for NO_x emissions and a three hour period for CO emissions using consecutive 15-minute sampling periods in accordance with all applicable requirements of CFR 60.13. [District Rule 4306 and 40 CFR 60.13]
77. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]
78. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]
79. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]
80. The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary shall be in the form and the manner prescribed by the APCO. [District Rule 1080]
81. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the APCO. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO_x emissions, nature and the cause of excess (if known), corrective actions taken and preventative measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period and used to determine compliance with an emissions standard; Applicable time and date of each period during which the CEM was inoperative (monitor downtime), except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080]
82. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]

83. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100]
84. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100]
85. The permittee shall maintain the following records: date and time, duration, and type of any startup, or malfunction; performance testing; evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system or monitoring device was inoperative, and maintenance of any continuous emission monitor. [District Rules 1080, 2201, and 40 CFR 60.8(d)]
86. The owner/operator shall maintain an operating log that includes the type and quantity of fuel used (hourly and annually) and the hhv of each fuel as determined by District Rule 4352, section 6.4 (as amended 05/18/06), or as certified by a third party fuel supplier. [District Rule 4352]
87. The owner/operator shall maintain an operating log that includes the number of hours of operation of the fluidized bed combustor, continuous emission monitor measurements, calculated ammonia slip and daily and annual natural gas usage of the preheat burner. [District Rule 1070]
88. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4352]
89. Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
90. An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]
91. An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8021]

92. Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
93. Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
94. Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
95. Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]
96. On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
97. Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
98. Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

EQUIPMENT DESCRIPTION, UNIT C-7758-7-0:

FLY ASH HANDLING, STORAGE, AND LOADOUT OPERATION CONSISTING OF FLY ASH STORAGE SILO SERVED BY A BIN VENT FILTER, ENCLOSED SCREW CONVEYORS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
2. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
3. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. Material removed from dust collector(s) shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201]
5. The bin vent shall be maintained and operated according to manufacturer's specifications. [District Rule 2201]
6. The bin vent cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201]
7. The bin vent shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
8. Replacement filtering media numbering amounting to at least 10% of the total filter media in the bin vent filter shall be maintained on the premises. [District Rule 2201]
9. The differential pressure gauge reading range shall be established per manufacturer's recommendation at time of start up inspection. [District Rule 2201]
10. Differential operating pressure shall be monitored and recorded on each day that the bin vent operates. [District Rule 2201]
11. Records of all maintenance of the bin vent, including all change outs of filter media, shall be maintained. [District Rule 2201]
12. There shall be no visible emissions from the fly ash transfer operation, for a period or periods aggregating more than three minutes in any one hour. [District Rules 2201 and 4101]
13. Visible emissions from the bin vent serving the storage silo shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201]

San Joaquin Solar 1 & 2 (08-AFC-12)
SJVACPD Determination of Compliance, C1090203

14. The maximum amount of fly ash received at the facility shall not exceed any of the following limits: 200.0 tons/day or 30,459 tons/year. [District Rules 2201 and 4102]
15. PM₁₀ emissions rate from the unloading and handling operation shall not exceed 2.25E-04 lb-PM₁₀/ton fly ash. [District Rule 2201]
16. Records of daily and annual amount of fly ash processed (in tons) at the facility shall be maintained, retained on-site for a period of at least five (5) years and made available for District inspection upon request. [District Rules 1070 and 2201]
17. Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
18. An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]
19. An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8021]
20. Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
21. Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
22. Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
23. Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]

24. On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
25. Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
26. Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

EQUIPMENT DESCRIPTION, UNIT C-7758-8-0:

71,680 GALLON PER MINUTE MECHANICAL/INDUCED DRAFT WET SURFACE AIR COOLED CONDENSER (WSAC) WITH 4 CELLS SERVED BY DRIFT ELIMINATORS

1. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
2. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
3. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
4. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
5. No hexavalent chromium containing compounds shall be added to WSAC circulating water. [District Rule 7012]
6. Drift eliminator drift rate shall not exceed 0.0005%. [District Rule 2201]
7. PM10 emission rate from the WSAC shall not exceed 19.9 lb/day. [District Rule 2201]
8. Compliance with the PM10 daily emission limit shall demonstrated as follows: $PM10 \text{ lb/day} = \text{circulating water recirculation rate} \times \text{total dissolved solids concentration in the blowdown water} \times \text{design drift rate} \times \text{cycles of concentration}$. [District Rule 2201]
9. Compliance with the PM10 emission limit shall be determined by blowdown water sample analysis by independent laboratory within 120 days of initial operation and quarterly thereafter. [District Rule 1081]
10. The permittee shall maintain records of the calculated PM10 emission rate and the laboratory water sample analysis. [District Rule 1070]
11. Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
12. An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]

13. An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8021]
14. Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
15. Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
16. Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
17. Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]
18. On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
19. Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
20. Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

EQUIPMENT DESCRIPTION, UNIT C-7758-9-0:

71,680 GALLON PER MINUTE MECHANICAL/INDUCED DRAFT WET SURFACE AIR COOLED CONDENSER (WSAC) WITH 4 CELLS SERVED BY DRIFT ELIMINATORS

1. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
2. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
3. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
4. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
5. No hexavalent chromium containing compounds shall be added to WSAC circulating water. [District Rule 7012]
6. Drift eliminator drift rate shall not exceed 0.0005%. [District Rule 2201]
7. PM10 emission rate from the WSAC shall not exceed 19.9 lb/day. [District Rule 2201]
8. Compliance with the PM10 daily emission limit shall demonstrated as follows: $PM10 \text{ lb/day} = \text{circulating water recirculation rate} \times \text{total dissolved solids concentration in the blowdown water} \times \text{design drift rate} \times \text{cycles of concentration}$. [District Rule 2201]
9. Compliance with the PM10 emission limit shall be determined by blowdown water sample analysis by independent laboratory within 120 days of initial operation and quarterly thereafter. [District Rule 1081]
10. The permittee shall maintain records of the calculated PM10 emission rate and the laboratory water sample analysis. [District Rule 1070]
11. Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]
12. An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]

13. An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8021]
14. Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]
15. Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]
16. Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
17. Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]
18. On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]
19. Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]
20. Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

EQUIPMENT DESCRIPTION, UNIT C-7758-10-0:

1,341 BHP CATERPILLAR MODEL C32TA TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR OR EQUIVALENT

1. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Determination of Compliance. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]
2. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2201]
3. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Determination of Compliance. [District Rule 2201] N
4. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]
5. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
6. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
7. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
8. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]
9. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702 and 17 CCR 93115]
10. An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702]
11. This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702]

12. This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702]
13. Emissions from this IC engine shall not exceed any of the following limits: 4.47 g-NOx/bhp-hr, 2.6 g-CO/bhp-hr, or 0.30 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115]
14. Emissions from this IC engine shall not exceed 0.15 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]
15. This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 1 hour per day and 12 hours per calendar year. [District Rules 2201 and 4702 and 17 CCR 93115]
16. During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]
17. The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
18. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

EQUIPMENT DESCRIPTION, UNIT C-7758-11-0:

1,341 BHP CATERPILLAR MODEL C32TA TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR OR EQUIVALENT

1. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Determination of Compliance. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]
2. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2201]
3. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Determination of Compliance. [District Rule 2201] N
4. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]
5. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
6. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
7. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
8. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
9. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]
10. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702 and 17 CCR 93115]
11. An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702]
12. This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702]

13. This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702]
14. Emissions from this IC engine shall not exceed any of the following limits: 4.47 g-NOx/bhp-hr, 2.6 g-CO/bhp-hr, or 0.30 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115]
15. Emissions from this IC engine shall not exceed 0.15 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]
16. This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 1 hour per day and 12 hours per calendar year. [District Rules 2201 and 4702 and 17 CCR 93115]
17. During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]
18. The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
19. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

EQUIPMENT DESCRIPTION, UNIT C-7758-12-0:

250 BHP CLARKE MODEL JU6H TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A FIREWATER PUMP OR EQUIVALENT

1. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Determination of Compliance. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]
2. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2201]
3. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Determination of Compliance. [District Rule 2201] N
4. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]
5. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
6. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
7. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]
9. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]
10. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702 and 17 CCR 93115]
11. Emissions from this IC engine shall not exceed any of the following limits: 4.52 g-NOx/bhp-hr, 2.6 g-CO/bhp-hr, or 0.40 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115]
12. Emissions from this IC engine shall not exceed 0.15 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]

13. This engine shall be operated only for maintenance, testing, required regulatory purposes, and during emergency situations. For testing purposes, the engine shall only be operated the number of hours necessary to comply with the testing requirements of the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems", 1998 edition. Total hours of operation for all maintenance, testing, and required regulatory purposes shall not exceed 1 hour per day and 52 hours per calendar year. [District Rules 2201 and 4702 and 17 CCR 93115]
14. The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, and the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.). For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
15. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

EQUIPMENT DESCRIPTION, UNIT C-7758-13-0:

250 BHP CLARKE MODEL JU6H TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A FIREWATER PUMP OR EQUIVALENT

1. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Determination of Compliance. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]
2. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2201]
3. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Determination of Compliance. [District Rule 2201] N
4. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]
5. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
6. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
7. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]
9. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]
10. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702 and 17 CCR 93115]
11. Emissions from this IC engine shall not exceed any of the following limits: 4.52 g-NOx/bhp-hr, 2.6 g-CO/bhp-hr, or 0.40 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115]
12. Emissions from this IC engine shall not exceed 0.15 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]

13. This engine shall be operated only for maintenance, testing, required regulatory purposes, and during emergency situations. For testing purposes, the engine shall only be operated the number of hours necessary to comply with the testing requirements of the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems", 1998 edition. Total hours of operation for all maintenance, testing, and required regulatory purposes shall not exceed 1 hour per day and 52 hours per calendar year. [District Rules 2201 and 4702 and 17 CCR 93115]
14. The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, and the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.). For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
15. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

APPENDIX B
BACT Guidelines

Per » B A C T » Bact Guideline.asp?category Level1=1&category Level2=3&category Level3=2&last Update=11 » 21 :

**Best Available Control Technology (BACT) Guideline 1.3.2
Last Update: 11/21/2002
Fluidized Bubbling Bed Combustor (biomass-fired)**

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
CO	183 ppmvd, natural gas auxiliary fuel		
NOx	0.10 lb/MMBtu, ammonia injection and natural gas auxiliary fuel		fluidized circulating bed combustor w/NH3 injection
PM10	0.045 lb/MMBtu, baghouse or ESP, and natural gas auxiliary fuel		
SOx	23 ppmvd, limestone injection and natural gas auxiliary fuel		
VOC	0.02 lb/MMBtu, natural gas auxiliary fuel		

Per » B A C T » Bact Guideline.asp?category Level1=3&category Level2=1&category Level3=3&last Update=6 » 30 :

**Best Available Control Technology (BACT) Guideline 3.1.3
 Last Update: 6/30/2001
 Emergency Diesel I.C. Engine = or > 400 hp**

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
CO	2.0 grams/brake horsepower-hour	= or < 1.4 grams/bhp-hr	
NOx	Certified emissions of 6.9 g/bhp-hr or less		
PM10	0.1 grams/bhp-hr (if TBACT is triggered) 0.4 grams/bhp-hr (if TBACT is not triggered)		
SOx	Low-sulfur diesel fuel (500 ppmw sulfur or less) or Very Low-sulfur diesel fuel (15 ppmw sulfur or less), where available.		
VOC	Positive crankcase ventilation		

1. Any engine model included in the ARB or EPA diesel engine certification lists and identified as having a PM10 emission rate of 0.149 grams/bhp-hr or less, based on ISO 8178 test procedure, shall be deemed to meet the 0.1 grams/bhp-hr requirement. 2. A site-specific Health Risk Analysis is used to determine if TBACT is triggered. (Clarification added 05/07/01)

Per » B A C T » Bact Guideline.asp?category Level1=3&category Level2=1&category Level3=4&last Update=6 » 30 :

Best Available Control Technology (BACT) Guideline 3.1.4
Last Update: 6/30/2001
Emergency Diesel I.C. Engine Driving a Fire Pump

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
CO		Oxidation Catalyst	
NOx	Certified NOx emissions of 6.9 g/bhp-hr or less		
PM10	0.1 grams/bhp-hr (if TBACT is triggered) (corrected 7/16/01) 0.4 grams/bhp-hr (if TBACT is not triggered)		
SOx	Low-sulfur diesel fuel (500 ppmw sulfur or less) or Very Low-sulfur diesel fuel (15 ppmw sulfur or less), where available.		
VOC	Positive crankcase ventilation [unless it voids the Underwriters Laboratories (UL) certification]	Catalytic Oxidation	

1. Any engine model included in the ARB or EPA diesel engine certification lists and identified as having a PM10 emission rate of 0.149 grams/bhp-hr or less, based on ISO 8178 test procedure, shall be deemed to meet the 0.1 grams/bhp-hr requirement. 2. A site-specific Health Risk Analysis is used to determine if TBACT is triggered. (Clarification added 05/07/01)

Per » B A C T » Bact Guideline.asp?category Level1=8&category Level2=3&category Level3=10&last Update=6 » 19 :

Best Available Control Technology (BACT) Guideline 8.3.10
Last Update: 6/19/2000
Cooling Tower - Induced Draft, Evaporative Cooling

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
PM10		Cellular Type Drift Eliminator	

APPENDIX C
BACT Guideline 1.3.2 Revision

BACT Guideline 1.3.2 Revision: Biomass-Fired Combustors \geq 10 MW

Facility Name: San Joaquin Solar 1 & 2
Mailing Address: 12555 High Bluff Dr
San Diego, CA 92130
Contact Person: Kent Larsen
Telephone: (858) 947-7056
Application #(s): C-7758-3-0, C-7758-4-0, C-7758-5-0, C-7758-6-0
Project #: C-1090203
Deemed Complete: March 3, 2009

Date: May 22, 2009
Engineer: Stanley Tom
Lead Engineer: Joven Refuerzo

Proposal

San Joaquin Solar 1 & 2 (SJS) is seeking approval from the San Joaquin Valley Air Pollution Control District for the installation of an electrical power generation facility. SJS will consist of two hybrid design solar thermal electric generating plants, comprising a solar field and biomass facility for each plant. The two plants will each produce up to a nominal 53.4 megawatts (MW) net of renewable energy. The project will apply solar thermal technology in combination with biomass combustion to provide renewable energy. Heat derived from the collection of solar radiation, complemented by heat derived from the combustion of biomass during periods of limited solar radiation, will power a conventional steam turbine generation. The two plants will be owned and operated by San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC.

SJS is proposing to install four 316 MMBtu/hr biomass-fired bubbling fluidized bed combustors, six baghouses, four cyclones, four wet scrubbers, four dry scrubbers, two 1,341 bhp diesel-fired emergency internal combustion (IC) engines powering an electrical generator, two 250 bhp diesel-fired emergency internal combustion (IC) engines powering a firewater pump, and two 35,840 gallon per minute wet surface air cooled condensers (WSACs).

Process Description

Power Generation

Solar thermal technology provides a unique opportunity for hybrid generation, in that the steam turbine generator can be fueled with steam produced by thermal energy supplied from the solar field or by thermal energy supplied by a biomass fired boiler. Biomass combustion enhances the projects operating factor and economic performance by

San Joaquin Solar 1 & 2 (08-AFC-12)
SJVACPD Determination of Compliance, C1090203

supplementing solar based renewable energy production with clean, renewable biomass based energy.

Biomass based energy production will be subordinate to production from the solar field, supplementing solar production during shoulder solar hours and when solar radiation is limited by local weather conditions, and replacing solar production at night. The facility is designed to produce up to 53.4 MW net energy to the grid when sufficient solar energy is available. During peak solar hours, the facility will produce power solely from the solar field. When there is no solar radiation and energy production is only from biomass, the facility will be capable of production 40 MW of net energy to the grid.

The biomass facility at each SJS 1&2 plant has two 20 MW combustor trains. Each train can be operated independently, providing optimum operating flexibility and turndown ratio. SJS 1&2 are expected to utilize approximately 450,000 bone dry tons (BDT) of biomass fuel (including all sources) per year in the biomass combustor.

The project will burn a combination of locally available biomass. The anticipated mix of fuels for the project is as follows:

- 50% Agricultural Wood Waste compose primarily of wastes collected during clearing or pruning of local orchards. Wood wastes will primarily be pistachio, almond, walnut, and citrus trees, and will include some leafy material and a small amount of dirt resulting from the collection process.
- 50% Municipal Green Wastes composed primarily of clippings and collected wood materials from local municipalities.

Biomass will be delivered to the site in tractor trailers. A fuel storage area common to both SJS 1&2 plants will be located near the center of the proposed project site. The fuel will be unloaded using hydraulic truck lifts onto an automated conveyor system under cover in a large building to prevent fugitive dust from reaching the solar collectors. A dedicated fan and associated baghouse will maintain a negative pressure by drawing air from within the storage building. The baghouse will capture the fugitive dust resulting from biomass handling. A conveyor system will feed biomass fuel to the combustor beds. Wood and green waste will be pre-sized by the fuel aggregators. Wood and green waste will be stored on site in a storage pile, with approximately 14-28 days supply to assure continuous fuel for power generation. Diesel powered heavy equipment will be used to move the biomass on site.

Limestone and lime will be used in the biomass facilities for emission control. These materials will be delivered routinely to the site and stored in silos located near each plant's biomass facility.

A biomass combustion byproduct is ash. Ash will be collected from several points in the biomass facilities, including the boilers and economizers, the cyclones, the baghouses, and the air pre-heaters. All ash produced from the combustion process will be stored in

San Joaquin Solar 1 & 2 (08-AFC-12)

SJVACPD Determination of Compliance, C1090203

silos until transported off site for beneficial uses, including the manufacture of aggregate and concrete, soil mineral supplements and bedding material for livestock pens, as well as other uses. All of the ash produced from the facility is anticipated to be marketable for these purposes, which are traditional uses for similar ash byproducts produced by existing biomass facilities throughout the state burning the same fuels as the proposes SJS 1&2 project.

Major sections of each SJS 1&2 plant include the solar field, biomass facility, power block and transmission interconnection. SJS 1 will be located on the northern portion of the site; SJS 2 will be on the southern portion. During daytime solar hours, each plant will generate 53.4 MW of net electric power production from the solar fields. When solar radiation is less intense, solar generation can be supported with biomass generation up to the rated capacity of the steam turbine. During nighttime hours, biomass combustion will provide up to 40 MW net from each SJS 1&2 plant without any solar input and will maintain the solar field in a hot standby condition such that quick transfer to solar production can be accomplished when solar radiation is again available.

Equipment Listing

C-7758-3-0: 316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY

C-7758-4-0: 316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY

- C-7758-5-0: 316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY
- C-7758-6-0: 316 MMBTU/HR ENERGY PRODUCTS OF IDAHO (EPI) BIOMASS-FIRED FLUIDIZED BUBBLING BED COMBUSTOR WITH ONE 15 MMBTU/HR AND THREE 50 MMBTU/HR NATURAL GAS-FIRED STARTUP BURNERS POWERING A 53.4 MW STEAM TURBINE GENERATOR, SERVED BY A LIMESTONE INJECTION SYSTEM, AN AMMONIA INJECTION SYSTEM, A SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM, ONE MULTICLONE, ONE DRY SCRUBBER, ONE PULSE JET BAGHOUSE, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AND ONE WET SCRUBBER WITH A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR NO_x, SO_x, CO, AMMONIA SLIP, O₂ AND OPACITY

BACT Guideline 1.3.2 Revision

BACT Applicability

a. New emissions units – PE > 2.0 lb/day

C-7758-3-0 through '6-0

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install four new boilers with a PE greater than 2 lb/day for NO_x, SO_x, PM₁₀, CO, and VOC. BACT is triggered for NO_x, SO_x, PM₁₀, and VOC since the PEs are greater than 2 lbs/day; however BACT is not triggered for CO since the SSPE2 for CO is not greater than 200,000 lbs/year, as demonstrated in Section VII.C.5 of this document.

The PE of ammonia is greater than 2.0 pounds per day for each of the four boilers. However, the ammonia emissions are intrinsic to the operation of the SCR system, which is BACT for NO_x. The emissions from a control device that is determined by the District to be BACT are not subject to BACT.

The existing BACT Guideline will be revised to include all types of biomass combustor technologies including fluidized bed or stoker. The emission controls listed in the

revised BACT Guideline are applicable to fluidized bed or stoker combustor technologies and the achievable emission rates by fluidized bed or stoker combustor technologies are similar to those listed in the revised BACT Guideline.

The Massachusetts Department of Environmental Protection (MA DEP) issued a BACT Guidance document for biomass combustion facilities dated April 18, 2007 which shows units less than 10 MW have higher NO_x and CO emissions mainly due to operating temperature considerations. Therefore, the limits listed in this revised BACT Guideline are applicable to units rated at 10 MW or greater.

The startup emissions provided in this evaluation were provided by the combustor vendor, EPI. The startup emission rates could be lowered slightly by increasing the speed at which the combustor heats up so that the SCR could operate sooner, but in doing so the combustor lifespan and overall efficiency would be compromised. Thus, the startup emissions are the lowest achievable to ensure the equipment will not be damaged in the startup process and have been optimized from an engineering practice standpoint. There are no other published BACT limits established for startup emissions for this class and category source.

The commissioning emissions provided in this evaluation were provided by the combustor vendor, EPI. During the first phase of commissioning each fluidized bed combustor will be stabilized. During this test, no emission control devices will be operational. There is a possibility that the baghouse might be brought on line if all goes well during this test. The combustor vendor cannot guarantee that the baghouse can be used during this test. The commissioning emissions presented in this evaluation represent the worst-case scenario (ie. no baghouse). After this first phase of commissioning the baghouse will be operational and the PM₁₀ emissions will drop significantly.

BACT Guidance

Current District BACT Guideline 1.3.2 applies to the biomass boilers in this project.

The current guideline does not list current control technologies for biomass boilers. Therefore, the guideline will be revised to add current control technologies.

Top Down BACT Analysis

Step 1 - Identify All Possible Control Technologies

The Environmental Protection Agency (EPA), California Air Resources Board (CARB), South Coast Air Quality Management District (SCAQMD), Bay Area Air Quality Management District (BAAQMD) BACT clearinghouses were reviewed to determine potential control technologies for this class and category of operation, but no more stringent BACT guidelines were found.

The New Hampshire Department of Environmental Services (NH DES) has issued permits to biomass combustion facilities with a 0.065 lb-NO_x/MMBtu emission limit. Per Padmaja Baru Senior Title V Permit Engineer NH DES, Air Resources Division, none of these facilities have been built and are none are currently in operation. However, this emission limit will be set as a technologically feasible limit.

The Massachusetts Department of Environmental Protection (MA DEP) issued a BACT Guidance document for biomass combustion facilities dated April 18, 2007. The guidance lists achieved BACT limits as well as technologically feasible BACT levels. Table 1 of this document lists the following achieved emission levels for units greater than or equal to 25 MW. Per Donald Squires of the MA DEP, the Table 1 emission levels have been permitted and the facilities are operational and achieving these limits.

SO₂ = 0.025 lb/MMBtu
NO_x = 0.075 lb/MMBtu
CO = 0.1 lb/MMBtu
PM = 0.012 lb/MMBtu (filterable only)
VOC = 0.01 lb/MMBtu

Except for PM₁₀, these values will be used to set the Achieved in Practice emission limits for this revised BACT Guideline. The above PM emission limit is strictly a filterable PM limit so it is not applicable to this project. The existing BACT Guideline PM₁₀ emission limit of 0.045 lb/MMBtu, which includes both filterable and condensable PM, will remain the Achieved in Practice limit.

Regenerative Selective Catalytic Reduction (RSCR)

A new technology, Regenerative Selective Catalytic Reduction (RSCR) has been developed for control of NO_x emission in certain low temperature exhaust streams. RSCR has been installed on three biomass-fired cogeneration facilities rated at 15 MW, 16 MW, and 50 MW. The two small cogeneration units are located in New Hampshire and the larger one is located in Maine. The NO_x emissions from the cogeneration units were limited to 0.075 lb/MMBtu.

RSCR is a combination of regenerative heater technology using cycling ceramic beds (similar to a regenerative thermal oxidizer) and SCR. RSCR can reduce NO_x emission by 70% or more depending upon the application. However, the resulting units requires supplemental fuel, electricity, and ammonia to operate.

RSCR can be considered for retrofitting boilers since it can be located at the tail end of the exhaust system and does not need to be inserted in the more crowded high temperature sections of the exhaust system like a traditional SCR unit. It is imperative with a biomass-fired combustion application that the exhaust stream particulate be removed prior to the catalyst bed to avoid plugging or poisoning of the catalyst.

RSCR has a higher potential control efficiency for NO_x emissions compared to SNCR.

Selective Catalytic Reduction (SCR)

One of the challenges of SCR technology is the concern about poisoning of the catalyst by sodium, potassium, lead, or arsenic, which are present in small quantities in the exhaust of wood-fired boilers due to the mineral content of the fuel. A particulate control device, such as baghouse or ESP, can be used to protect the catalyst. SCR provides the highest potential control efficiency for NO_x emissions.

RSCR with NO_x emissions of 0.075 lb/MMBtu will be set as the Achieved in Practice option for biomass-fired boilers.

San Joaquin Solar 1 & 2 proposes to install a SNCR and a SCR system in series with a wet scrubber which results in NO_x emissions of 0.012 lb/MMBtu. This will be set as the Technologically Feasible option for biomass-fired boilers.

Pollutant	Achieved in Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
CO	0.1 lb/MMBtu, natural gas auxiliary fuel	0.046 lb/MMBtu, natural gas auxiliary fuel	
NO _x	0.075 lb/MMBtu, Regenerative Selective Catalytic Reduction (RSCR), or equal, and natural gas auxiliary fuel	1. 0.012 lb/MMBtu, Selective Non-Catalytic Reduction (SNCR), Selective Catalytic Reduction (SCR), and wet scrubber, or equal, and natural gas auxiliary fuel 2. 0.065 lb/MMBtu, Selective Catalytic Reduction (SCR), or equal, and natural gas auxiliary fuel	
PM ₁₀	0.045 lb/MMBtu, baghouse or ESP, and natural gas auxiliary fuel	0.024 lb/MMBtu, baghouse, multiclones, and wet scrubber, or equal, natural gas auxiliary fuel	
SO _x	0.025 lb/MMBtu, limestone injection and natural gas auxiliary fuel	0.012 lb/MMBtu, limestone injection, or equal, natural gas auxiliary fuel	
VOC	0.01 lb/MMBtu, natural gas auxiliary fuel	0.005 lb/MMBtu, natural gas auxiliary fuel	

Step 2 - Eliminate Technologically Infeasible Options

There are no technologically infeasible options.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

NOx

Rank	Control Technology	Achieved in Practice
1	0.012 lb/MMBtu, Non-Selective Catalytic Reduction (SNCR), Selective Catalytic Reduction (SCR), and wet scrubber, or equal, and natural gas auxiliary fuel	N
2	0.065 lb/MMBtu, Selective Catalytic Reduction (SCR), or equal, and natural gas auxiliary fuel	N
2	0.075 lb/MMBtu, Regenerative Selective Catalytic Reduction (RSCR), or equal, and natural gas auxiliary fuel	Y

SOx

Rank	Control Technology	Achieved in Practice
1	0.012 lb/MMBtu, limestone injection, or equal, natural gas auxiliary fuel	N
2	0.025 lb/MMBtu, limestone injection and natural gas auxiliary fuel	Y

PM10

Rank	Control Technology	Achieved in Practice
1	0.024 lb/MMBtu, baghouse, multiclones, and wet scrubber, or equal, natural gas auxiliary fuel	N
2	0.045 lb/MMBtu, baghouse or ESP, and natural gas auxiliary fuel	Y

CO

Rank	Control Technology	Achieved in Practice
1	0.046 lb/MMBtu, natural gas auxiliary fuel	N
2	0.1 lb/MMBtu, natural gas auxiliary fuel	Y

VOC

Rank	Control Technology	Achieved in Practice
1	0.005 lb/MMBtu, natural gas auxiliary fuel	N
2	0.01 lb/MMBtu, natural gas auxiliary fuel	Y

There are no remaining control technologies for NO_x, SO_x, PM₁₀, CO or VOC.

Step 4 - Cost Effectiveness Analysis

The applicant is proposing the most effective control technology identified for NO_x, SO_x, PM₁₀, CO, and VOC, therefore, a cost effectiveness analysis not necessary.

Step 5 - Select BACT

NO_x: 0.012 lb/MMBtu, Non-Selective Catalytic Reduction (SNCR), Selective Catalytic Reduction (SCR), and wet scrubber, or equal, and natural gas auxiliary fuel is selected as BACT.

SO_x: 0.012 lb/MMBtu, limestone injection, or equal, natural gas auxiliary fuel is selected as BACT.

PM₁₀: 0.024 lb/MMBtu, baghouse, multiclones, and wet scrubber, or equal, natural gas auxiliary fuel is selected as BACT.

CO: 0.046 lb/MMBtu, natural gas auxiliary fuel is selected as BACT.

VOC: 0.005 lb/MMBtu, natural gas auxiliary fuel is selected as BACT.

**San Joaquin Valley
Unified Air Pollution Control District**

Best Available Control Technology (BACT) Guideline 1.3.2

Emission Unit: Biomass-Fired Combustors

Industry Type: Biomass
Combustion

Equipment Rating: 10 MW or greater

Pollutant	Achieved in Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
CO	0.1 lb/MMBtu, natural gas auxiliary fuel	0.046 lb/MMBtu, natural gas auxiliary fuel	
NO _x	0.075 lb/MMBtu, Regenerative Selective Catalytic Reduction (RSCR), or equal, and natural gas auxiliary fuel	1. 0.012 lb/MMBtu, Selective Non-Catalytic Reduction (SNCR), Selective Catalytic Reduction (SCR), and wet scrubber, or equal, and natural gas auxiliary fuel 2. 0.065 lb/MMBtu, Selective Catalytic Reduction (SCR), or equal, and natural gas auxiliary fuel	
PM ₁₀	0.045 lb/MMBtu, baghouse or ESP, and natural gas auxiliary fuel	0.024 lb/MMBtu, baghouse, multiclones, and wet scrubber, or equal, natural gas auxiliary fuel	
SO _x	0.025 lb/MMBtu, limestone injection and natural gas auxiliary fuel	0.012 lb/MMBtu, limestone injection, or equal, natural gas auxiliary fuel	
VOC	0.01 lb/MMBtu, natural gas auxiliary fuel	0.005 lb/MMBtu, natural gas auxiliary fuel	

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

***This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)**

**San Joaquin Valley
Unified Air Pollution Control District**

Best Available Control Technology (BACT) Guideline 1.3.2C

Emission Unit: Biomass-fired Combustors

Equipment Rating: 316 MMBtu/hr

Facility: San Joaquin Solar 1 & 2

References: ATC #: C-7758-3-0
Project #: C-1090203

Location: Coalinga, CA

Date of Determination: ATC Not Issued Yet

Pollutant	BACT Requirements
NO _x	0.012 lb/MMBtu, Selective Non-Catalytic Reduction (SNCR), Selective Catalytic Reduction (SCR), and wet scrubber, natural gas auxiliary fuel
SO _x	0.012 lb/MMBtu, limestone injection, natural gas auxiliary fuel
PM ₁₀	0.024 lb/MMBtu, baghouse, multiclones, and wet scrubber, natural gas auxiliary fuel
CO	0.046 lb/MMBtu, natural gas auxiliary fuel
VOC	0.005 lb/MMBtu, natural gas auxiliary fuel

BACT Status:

- Achieved in practice Small Emitter T-BACT
- Technologically feasible BACT
- At the time of this determination achieved in practice BACT was equivalent to technologically feasible BACT
- Contained in EPA approved SIP
- The following technologically feasible options were not cost effective:
- The following alternate basic equipment was not cost effective:

APPENDIX C
Top Down BACT Analyses

Top Down BACT Analysis for the Emergency IC Engine Electrical Generator

Oxides of nitrogen (NO_x) are generated from the high temperature combustion of the diesel fuel. A majority of the NO_x emissions are formed from the high temperature reaction of nitrogen and oxygen in the inlet air. The rest of the NO_x emissions are formed from the reaction of fuel-bound nitrogen with oxygen in the inlet air.

1. BACT Analysis for NO_x Emissions:

a. Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 3.1.3, 2nd quarter 2009, identifies achieved in practice BACT for NO_x emissions from emergency diesel IC engines powering an electrical generator as follows:

- 1) Certified emissions of 6.9 g-NO_x/bhp-hr or less

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed.

b. Step 2 - Eliminate technologically infeasible options

There are no technologically infeasible options to eliminate from step 1.

c. Step 3 - Rank remaining options by control effectiveness

No ranking needs to be done because the applicant has proposed the achieved in practice option.

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the only control achieved in practice in the ranking list from Step 3. Therefore, per SJVUAPCD BACT policy, the cost effectiveness analysis is not required.

e. Step 5 - Select BACT

BACT for NO_x emissions from this emergency diesel IC engine powering an electrical generator is having certified emissions of 6.9 g-NO_x/bhp-hr or less. The applicant has proposed to install a 1341 bhp emergency diesel IC engine powering an electrical generator with certified emissions of 6.9 g-NO_x/bhp-hr or less; therefore BACT for NO_x emissions is satisfied.

3. BACT Analysis for PM₁₀ Emissions:

Particulate matter (PM₁₀) emissions occur from the reaction of various elements in the diesel fuel including fuel sulfur.

a. Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 3.1.3, 2nd quarter 2009, identifies achieved in practice BACT for PM₁₀ emissions from emergency diesel IC engines as follows:

- 1) Certified emissions of (0.4 g-PM₁₀/bhp-hr since T-BACT is not triggered for this project) or (certified emissions of 0.1 g-PM₁₀/bhp-hr since T-BACT is triggered for this project) or less

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed.

b. Step 2 - Eliminate technologically infeasible options

There are no technologically infeasible options to eliminate from step 1.

c. Step 3 - Rank remaining options by control effectiveness

No ranking needs to be done because the applicant has proposed the achieved in practice option.

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the only control achieved in practice in the ranking list from Step 3. Therefore, per SJVUAPCD BACT policy, the cost effectiveness analysis is not required.

e. Step 5 - Select BACT

BACT for PM₁₀ emissions from this emergency standby diesel IC engine (< 175 bhp or ≥ 175 and less than 400 bhp or ≥ 400 bhp) is having certified emissions of 0.4 g-PM₁₀/bhp-hr or less. The applicant has proposed to install a 1341 bhp emergency standby diesel IC engine with certified emissions of 0.4 g-PM₁₀/bhp-hr or less; therefore BACT for PM₁₀ emissions is satisfied.

3. BACT Analysis for VOC Emissions:

Volatile organic compounds (VOC) are emitted from the crankcase of the engine as a result of piston ring blow-by.

a. Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 3.1.4, 2nd quarter 2009, identifies achieved in practice BACT for VOC emissions from emergency diesel IC engines powering an electrical generator as follows:

- 1) Positive crankcase ventilation

b. Step 2 - Eliminate technologically infeasible options

There are no technologically infeasible options to eliminate from step 1.

c. Step 3 - Rank remaining options by control effectiveness

- 1) Positive crankcase ventilation

d. Step 4 - Cost effectiveness analysis

A cost effective analysis must be performed for all control options in the list from Step 3 in the order of their ranking to determine the cost effective option with the lowest emissions.

However, this engine has been UL Certified, and the UL certification does not include a positive crankcase ventilation system, and the addition of a positive crankcase ventilation system would void the UL certification. Therefore, the positive crankcase ventilation system option will not be required.

e. Step 5 - Select BACT

BACT for VOC emissions from this emergency diesel IC engine powering an electrical generator is having no control technology for VOC emissions. The applicant has proposed to install a 1341 bhp emergency diesel IC engine powering an electrical generator with no control technology for VOC emissions; therefore BACT for VOC emissions is satisfied.

Top Down BACT Analysis for the Emergency IC Engine Firewater Pump

Oxides of nitrogen (NO_x) are generated from the high temperature combustion of the diesel fuel. A majority of the NO_x emissions are formed from the high temperature reaction of nitrogen and oxygen in the inlet air. The rest of the NO_x emissions are formed from the reaction of fuel-bound nitrogen with oxygen in the inlet air.

1. BACT Analysis for NO_x Emissions:

a. Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 3.1.4, 2nd quarter 2009, identifies achieved in practice BACT for NO_x emissions from emergency diesel IC engines powering a firewater pump as follows:

- 2) Certified emissions of 6.9 g-NO_x/bhp-hr or less

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed.

b. Step 2 - Eliminate technologically infeasible options

There are no technologically infeasible options to eliminate from step 1.

c. Step 3 - Rank remaining options by control effectiveness

No ranking needs to be done because the applicant has proposed the achieved in practice option.

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the only control achieved in practice in the ranking list from Step 3. Therefore, per SJVUAPCD BACT policy, the cost effectiveness analysis is not required.

e. Step 5 - Select BACT

BACT for NO_x emissions from this emergency diesel IC engine powering a firewater pump is having certified emissions of 6.9 g-NO_x/bhp-hr or less. The applicant has proposed to install a 250 bhp emergency diesel IC engine powering a firewater pump with certified emissions of 6.9 g-NO_x/bhp-hr or less; therefore BACT for NO_x emissions is satisfied.

3. BACT Analysis for VOC Emissions:

Volatile organic compounds (VOC) are emitted from the crankcase of the engine as a result of piston ring blow-by.

a. Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 3.1.4, 2nd quarter 2009, identifies achieved in practice BACT for VOC emissions from emergency diesel IC engines powering a firewater pump as follows:

- 2) Positive crankcase ventilation (unless it voids the Underwriters Laboratories (UL) certification)

In addition, the SJVUAPCD BACT Clearinghouse guideline 3.1.4, 1st quarter 2007, identifies technologically feasible BACT for VOC emissions from emergency diesel IC engines powering a firewater pump as follows:

- 1) Catalytic oxidation

No control alternatives identified as alternate basic equipment for this class and category of source are listed.

b. Step 2 - Eliminate technologically infeasible options

There are no technologically infeasible options to eliminate from step 1.

c. Step 3 - Rank remaining options by control effectiveness

- 1) Catalytic oxidation
- 2) Positive crankcase ventilation (unless it voids the Underwriters Laboratories (UL) certification)

d. Step 4 - Cost effectiveness analysis

A cost effective analysis must be performed for all control options in the list from Step 3 in the order of their ranking to determine the cost effective option with the lowest emissions.

However, this engine has been UL Certified, and the UL certification does not include a catalytic oxidation system or a positive crankcase ventilation system, and the addition of a catalytic oxidation system or a positive crankcase ventilation system would void the UL certification, which is required for firewater pump engines. Therefore, both the catalytic oxidation system and the positive crankcase ventilation system options will not be required.

e. Step 5 - Select BACT

BACT for VOC emissions from this emergency diesel IC engine powering a firewater pump is having no control technology for VOC emissions. The applicant has proposed to install a 250 bhp emergency diesel IC engine powering a firewater pump with no control technology for VOC emissions; therefore BACT for VOC emissions is satisfied.

Top Down BACT Analysis for the Wet Surface Air Cooled Condenser (WSAC)

1. BACT Analysis for PM10 Emissions:

a. Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 8.3.10, 2nd quarter 2009, identifies achieved in practice BACT for PM10 emissions from cooling towers – induced draft, evaporative cooling as follows:

- 1) Cellular Type Drift Eliminator

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed.

b. Step 2 - Eliminate technologically infeasible options

There are no technologically infeasible options to eliminate from step 1.

c. Step 3 - Rank remaining options by control effectiveness

No ranking needs to be done because the applicant has proposed the achieved in practice option.

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the only control achieved in practice in the ranking list from Step 3. Therefore, per SJVUAPCD BACT policy, the cost effectiveness analysis is not required.

e. Step 5 - Select BACT

BACT for PM10 emissions from this WSAC is cellular type drift eliminator. The applicant has proposed to install a cellular type drift eliminator with a drift rate of 0.0005%; therefore BACT for PM10 emissions is satisfied.

APPENDIX D
Interpollutant Offset Analysis

Interpollutant Offset Ratio Explanation

The Air District's Rule 2201, "New and Modified Source Review", requires facilities to supply "emissions offsets" when a permittee requests new or modified permits that allow emissions of air contaminants above certain annual emission offset thresholds. In addition, Rule 2201 allows interpollutant trading of offsets amongst criteria pollutants and their precursors upon the appropriate scientific demonstration of an adequate trading ratio, herein referred to as the interpollutant ratio. A technical analysis is required to determine the interpollutant offset ratio that is justified by evaluation of atmospheric chemistry. This evaluation has been conducted using the most recent modeling analysis available for the San Joaquin Valley. The results of the analysis are designed to be protective of health for the entire Valley for the entire year, by applying the most stringent interpollutant ratio throughout the Valley.

It is appropriate for District particulate offset requirements to be achieved by either a reduction of directly emitted particulate or by reduction of the gases, called particulate precursors, which become particulates from chemical and physical processes in the atmosphere. The District interpollutant offset relationship quantifies precursor gas reductions sufficient to serve as a substitute for a required direct particulate emissions reduction. Emission control measures that reduce gas precursor emissions at the facility may be used to provide the offset reductions. Alternatively, emission credits for precursor reductions may be used in accordance with District regulations.

The amount of particulate formed by the gaseous emissions must be evaluated to determine how much credit should be given for the gaseous reductions. Gases combine and merge with other material adding molecular weight when forming into particles. Some of the gases do not become particulate matter and remain a gas. Both the extent of conversion into particles and resulting weight of the particles are considered to establish mass equivalency between direct particulate emissions and particulate formed from gas precursors. The Interpollutant offset ratio is expressed as a per-ton equivalency.

The District interpollutant analysis uses the most recent and comprehensive modeling of San Joaquin Valley particulate formation from sulfur oxides (SO_x) and nitrogen oxides (NO_x). Modeling compares industrial directly emitted particulate to particulate matter from precursor emissions. The interpollutant modeling procedure, assumptions and uncertainties are documented in an extensive analysis file. Additional documentation of the modeling procedure for the San Joaquin Valley is contained in the 2008 PM_{2.5} Plan and its appendices. The 2008 PM_{2.5} Plan provides evaluation of the atmospheric relationships for direct particulate emissions and precursor gases when they are highest during the fourth quarter of the year. The southern portion of the Valley is evaluated by both receptor modeling and regional modeling of chemical relationships for precursor particulate formation. Regional modeling was conducted for the entire Valley through 2014. The two modeling approaches are combined to determine interpollutant offset ratios applicable to, and protective of, the entire Valley (SO_x for PM 1:1 and NO_x for PM 2.629:1).

DEVELOPMENT OF THE INTERPOLLUTANT RATIO

For the proposed substitution of reductions of sulfur oxides (SOx)
or nitrogen oxides (NOx) for directly emitted particulate matter

March 2009

INTRODUCTION	2
ANALYSES INCLUDED IN INTERPOLLUTANT EVALUATION	3
FACTORS CONSIDERED.....	3
ELEMENTS FROM 2008 PM 2.5 PLAN.....	3
EXTENSION BY ADDITIONAL ANALYSIS	4
STRENGTHS	4
LIMITATIONS	5
ANALYSES CONTAINED IN RECEPTOR MODELING	6
FACTORS CONSIDERED.....	6
ANALYSES IN RECEPTOR MODELING THAT USE INPUT FROM REGIONAL MODELING	6
EXTENSION BY ADDITIONAL ANALYSIS	6
STRENGTHS	6
LIMITATIONS	7
ANALYSES CONTAINED IN REGIONAL MODELING	8
FACTORS CONSIDERED.....	8
EXTENSION BY ADDITIONAL ANALYSIS	8
STRENGTHS	9
LIMITATIONS	9
RESULTS AND DOCUMENTATION	10

Introduction

Goal of Interpollutant Evaluation: Establish the atmospheric exchange relationship for substitution of alternative pollutant or precursor reductions for required reductions of directly emitted particulate

Evaluation to establish the atmospheric relationship of different pollutants is required as a prerequisite for establishing procedures for allowing a required reduction to be met by substitution of a reduction of a different pollutant or pollutant precursor. Proposed new facility construction or facility modifications may result in increased emissions of a pollutant. The District establishes requirements for reductions of the pollutant to "offset" the proposed increase. A facility may propose a reduction of an alternative pollutant or pollutant precursor where reductions of that material have already been achieved at the facility beyond the amount required by District regulations or where emission reductions credits for reductions achieved by other facilities are economically available; however, for such a substitution to be allowed the District must establish equivalency standards for the substitution. The equivalency relationship used for offset requirements is referred to in this discussion as the interpollutant ratio. The interpollutant ratio is a mathematical formula expressing the amount of alternative pollutant or precursor reduction required to be substituted for the required regulatory reduction. This discussion is limited to the atmospheric relationships and does not address other policy or regulatory requirements for offsets such as are contained in District Rule 2201.

The following description is provided to explain key elements of the analysis conducted to develop the atmospheric relationship between the commonly requested substitutions. Emission reductions of sulfur oxide emissions or nitrogen oxide emissions are proposed by many facilities as a substitution for reduction of directly emitted particulates. Elemental and organic carbon emissions are the predominant case and dominant contribution to directly emitted particulate mass from industrial facilities, although other types of directly emitted particulates do occur. Therefore this atmospheric analysis examines directly emitted carbon particulates from industrial sources in comparison to the formation of particles from gaseous emissions of sulfur oxides and nitrogen oxides.

Analyses included in Interpollutant evaluation

Factors Considered

The foundation for this analysis is provided by the atmospheric modeling conducted for the 2008 PM_{2.5} Plan. Modeling conducted for this State Implementation Plan was conducted by the District and the California Air Resources Board using a variety of modeling approaches. Each separate model has technical limitations and uncertainties. To reduce the uncertainty of findings, a combined evaluation of results of all of the modeling methods is used to establish “weight of evidence” support for technical analysis and conclusions. The modeling methods are supported by a modeling protocol which was sent to ARB and EPA Region IX for review and was included in the appendices to the Plan.

The analysis file prepared for the interpollutant ratio evaluation includes emissions inventories, regional model daily output files, chemical mass balance modeling and speciated rollback modeling as produced for the 2008 PM_{2.5} Plan. This well examined and documented modeling information was used as a starting point for additional evaluation to determine interrelationships between directly emitted pollutants and particulates from precursors.

The interpollutant ratio analysis is limited to evaluation of directly emitted PM_{2.5} from industrial sources and formation of PM_{2.5} from precursor gases. While both directly emitted particulates and particulate from precursor gases also occur in the PM₁₀ size range, there is much more uncertainty associated with deposition rates and particle formation rates for the larger size ranges. Additionally, because PM_{2.5} is a subset of PM₁₀; all reductions of PM_{2.5} are fully creditable as reductions towards PM₁₀ requirements. This analysis concentrates on the quarter of the year when both directly emitted carbon from industrial sources and secondary particulates are measured at the highest levels. Assessing atmospheric ratios at low concentrations is subject to much greater uncertainty and has limited value toward assessment of actions to comply with the air quality standards.

Elements from 2008 PM 2.5 Plan

- Regional modeling daily output for eleven locations
- Chemical Mass Balance (CMB) modeling for four locations – source analysis, speciation profile selection, event meteorology evaluation
- Receptor speciated rollback modeling with adjustment for nitrate nonlinearity for four locations, evaluation of spatial extent of contributing sources
- Emission inventories and projections to future years as developed for the 2008 PM 2.5 Plan

DEVELOPMENT OF THE INTERPOLLUTANT RATIO

- Modeling protocols for receptor modeling, regional modeling, and Positive matrix Factorization (PMF) analysis and evaluation of technical issues applicable to particulate formation in the San Joaquin Valley
- Model performance analysis as documented in appendices to the 2008 PM 2.5 Plan

Extension by additional analysis

Additional evaluation was conducted to evaluate the receptor modeling relationship between direct PM from industrial sources and sulfate and nitrate particulate formed from SO_x and NO_x precursor gases. Area of influence adjustments were evaluated to ensure appropriate consideration of contributing source area for different types of pollutants for both directly emitted and secondary particulate. This evaluation was possible only for the southern four Valley counties and was conducted for both 2000 and 2009.

The regional model output was evaluated for the fourth quarter to evaluate general atmospheric chemistry in 2005 and 2014 to determine the correlation between northern and southern areas of the Valley. This evaluation determined that the atmospheric chemistry observed and modeled in the north was within the range of values observed and modeled in the southern SJV. This establishes that a ratio protective of the southern Valley will also be protective in the north.

The District determined from the additional analyses of both receptor and regional modeling that the most stringent ratio determined for the southern portion of the Valley would also be protective of the northern portion of the Valley. Due to the regional nature of these pollutants, actions taken in other counties must be assumed to have at least some influence on other counties; therefore to achieve attainment at the earliest practical date it is appropriate to require all counties to establish a consistent interpollutant ratio for the entire District.

Strengths

The interpollutant ratio analysis uses established and heavily reviewed modeling and outputs as foundation data. Analysis of model performance has already been completed for the models and for the emissions inventories used for this analysis. The modeling was performed in accordance with protocols developed by the District and ARB and in accordance with modeling guidelines established by EPA. The combination of modeling approaches provides an analysis for the current year and provides projection to 2014. Weight of evidence comparison of various modeling approaches establishes the reliability of the foundation modeling, with all modeling approaches showing strong agreement in predicted results. Additional analysis performed to develop the interpollutant ratio uses both regional and receptor evaluations which were the primary models used for the 2008 PM 2.5 Plan.

Limitations

Both industrial direct emissions and secondary formed particulate may be both PM2.5 and PM10. The majority of secondary particulates formed from precursor gases are in the PM2.5 range as are most combustion emissions from industrial stacks, however both secondary and stack emissions do contain particles larger than PM2.5. Regional modeling is more reliable for the smaller fraction due to travel distances and deposition rates. Large particles have much higher deposition and are much more difficult to replicate with a regional model. This leads to a strong technical preference for evaluating both emission types in terms of PM2.5 because the integration of receptor analysis and regional modeling for coarse particle size range up to PM10 has a much greater associated uncertainty.

Analyses contained in Receptor modeling

Factors Considered

This modeling approach uses speciated linear modeling based on chemical mass balance evaluation of contributing sources with San Joaquin Valley specific identification of contributing source profiles, adjustments from regional modeling for the nonlinearity of nitrate formation, adjustments for area of influence impacts of contributing sources developed from back trajectory analysis of high concentration particulate episodes and projections of future emission inventories as developed for the 2008 PM2.5 Plan.

Analyses in receptor modeling that use input from regional modeling

The receptor modeling analysis uses a modified projection of nitrate particulate formation from nitrogen oxides based upon results of regional modeling. The atmospheric chemistry associated with nitrate particulate formation has been determined to be nonlinear; while the default procedures for speciated rollback modeling assume a linear relationship. This adjustment has been demonstrated as effective in producing reliable atmospheric projections for the prior PM10 Plans.

Extension by additional analysis

Additional evaluations were added to results of the receptor modeling performed for the 2008 PM2.5 Plan. Calculations determine the observed micrograms per ton of emission for each contributing source category that can be resolved by chemical mass balance modeling methods. These ten categories allow differentiation of industrial direct emissions of organic and elemental carbon from other sources that emit elemental and organic carbon. The interpollutant calculation is developed as an addition to the receptor analysis by calculating the ratio of emissions per ton of directly emitted industrial PM2.5 to the per ton ratio of secondary particulate formed from NOx and SOx emissions. Summary tables and issue and documentation discussion was added to the analysis.

Strengths

Receptor modeling provides the ability to separately project the effect of different key sources contributing to carbon and organic carbon. This is critical for establishing the atmospheric relationship between industrial emissions and the observed concentrations due to industrial emissions. Regional modeling methods at this time do not support differentiation of vegetative and motor vehicle carbon contribution from the emissions from industrial sources. The area of influence of contributing sources was also considered as a factor with the methods developed by the District to incorporate the gridded footprint of contributing sources into the receptor analysis. While regional

DEVELOPMENT OF THE INTERPOLLUTANT RATIO

models use gridded emissions, current regional modeling methods do not reveal the resulting area of influence of contributing sources.

Limitations

Receptor modeling uses linear projections for future years and cannot account for equilibrium limitations that would occur if a key reaction became limited by reduced availability of a critical precursor due to emission reductions. The regional model was used to investigate this concern and did not project any unexpected changes due to precursor limitations.

Analyses contained in Regional modeling

Factors Considered

The analysis file includes the daily modeling output representing modeled values for the base year 2005 and predicted values for 2014 for each of the eleven Valley sites that have monitoring data for evaluation of the models performance in predicting observed conditions. These sites are located in seven of the eight Valley counties. Madera County does not have monitoring site data for this comparison.

Modeling data for all quarters of the year was provided. Due to the higher values that occur due to stagnation events in the fourth quarter, both industrial carbon concentrations and secondary particulates forming from gases are highest in the fourth quarter. Evaluating the interpollutant ratio for other quarters would be less reliable and of less significance to assisting in the reduction of high particulate concentrations. Modeling for lower values has higher uncertainty. Modeling atmospheric ratios when the air quality standard is being met are axiomatically not of value to determining offset requirements intended to assist in achieving compliance with the air quality standard. However, for consistency of analysis between sites, days when the standard was being met during the fourth quarter were not excluded from the interpollutant ratio analysis. Bakersfield fourth quarter modeled data included only eight days that were at or below the standard. Fresno and Visalia sites averaged twelve days; northern sites 24 days and the County of Kings 38 days.

Modeling output provided data for both 2005 and 2014. While there is substantial emissions change projected for this period, the regional modeling evaluation does not project much change in the atmospheric ratios of directly emitted pollutants and secondary pollutants from precursor gases. This indicates that the equilibrium processes are not expected to encounter dramatic change due to limitation of reactions by scarcity of one of the reactants. This further justifies using the receptor evaluation determining the interpollutant ratio for 2009 through the year 2014 without further adjustment. If observed air quality data demonstrates a radical shift in chemistry or components during the next few years, such a change could indicate that a limiting reaction has been reached that was not projected by the model and such radical changes might require reassessment of the conclusion that the ratio should remain unchanged through 2014.

Extension by additional analysis

Regional modeling results prepared for the 2008 PM2.5 Plan were analyzed to extract fourth quarter data for all sites. The atmospheric chemistry for all counties was analyzed for consistency and variation. This analysis provided a determination that the secondary formation chemistry and component sources contributing to concentrations observed in the north fell within the range of values similarly determined for the southern four counties. Based upon examination of the components and chemistry, the northern counties would be expected to have an interpollutant ratio value less than the

DEVELOPMENT OF THE INTERPOLLUTANT RATIO

ratio determined for Kern County but greater than the one for Tulare County. This establishes that the interpollutant ratio determined by receptor analysis of the southern four counties provides a value that is also sufficiently protective for the north.

Strengths

Regional models provide equilibrium based evaluations of particulate formed from precursor gases and provide a regional assessment that covers the entire Valley. The projection of particulate formed in future years is more reliable than linear methods used for receptor modeling projections.

Limitations

The regional model does not provide an ability to focus on industrial organic carbon emissions separate from other carbon sources such as motor vehicles, residential wood smoke, cooking and vegetative burning. Regional modeling does not provide an assessment method for determination of sources contributing at each site or the area of influence of contributing emissions. Receptor analysis provides a more focused tool for this aspect of the evaluation.

Results and Documentation

SJVAPCD Interpollutant Ratio Results

SOx for PM ratio: 1.000 ton of SOx per ton of PM

NOx for PM ratio: 2.629 tons of NOx per ton of PM

These ratios do not include adjustments for other regulatory requirements specified in provisions of District Rule 2201.

The results of the modeling analysis developed an atmospheric interpollutant ratio for NOx to PM of 2.629 tons of NOx per ton of PM. This result was the most stringent ratio from the assessment industrial carbon emissions to secondary particulates at Kern County; with Fresno, Tulare and Kings counties having a lower ratio. The assessment of chemistry from the regional model required comparison of total carbon to secondary particulates and is therefore not directly useful to establish a ratio. However, the regional model does provide an ability to compare the general atmospheric similarity and compare changes in chemistry due to Plan reductions. Evaluation revealed that the atmospheric chemistry of San Joaquin, Stanislaus and Merced counties falls within the range of urban characteristics evaluated for the southern four counties; therefore the ratio established should be sufficiently protective of the northern four counties. Additionally, comparison of future year chemistry showed minimal change in pollutant ratio due to the projected changes in the emission inventory from implementation of the Plan. The SOx ratio as modeled indicates a value of less than one to one due to the increase in mass for conversion of SOx to a particulate by combination with other atmospheric compounds; however, the District has set guidelines that require at least one ton of an alternative pollutant for each required ton of reduction in accordance with District Rule 2201 Section 4.13.3. Therefore the SOx interpollutant ratio is established as 1.000 ton of SOx per ton of PM. These ratios do not include adjustments for other regulatory considerations, such as other provisions of District Rule 2201.

A guide to the key technical topics and the reference material relevant to that topic is found on the next page. References from the 2008 PM2.5 Plan may be obtained by requesting a copy of that document and its appendices or by downloading the document from http://www.valleyair.org/Air_Quality_Plans/AQ_Final_Adopted_PM25_2008.htm. References in Italics are spreadsheets included in the interpollutant analysis file "09 Interpollutant Ratio Final 032909.xls" which includes 36 worksheets of receptor modeling information from the 2008 PM2.5 Plan, 11 modified and additional spreadsheets for this analysis and two spreadsheets of regional model daily output. This file is generally formatted for printing with the exception of the two spreadsheets containing the regional model output "*Model-Daily Annual*" and "*Model-Daily Q4*" which are over 300 pages of raw unformatted model output files. The remainder of the file is formatted to print at approximately 100 pages. This file will be made available on request but is not currently posted for download.

Interpollutant Ratio Issues & Documentation

TOPIC	Reference
<p>1 Reason for using PM2.5 for establishing the substitution relationship between direct emitted carbon PM and secondary nitrate and sulfate PM: consistency of relationship between secondary particulates and industrial direct carbon combustion emissions.</p>	<p>2008 PM2.5 Plan, Sections 3.3.2 through 3.4.2</p>
<p>2 Reason for using 4th Quarter analysis: Highest PM2.5 for all sites.</p>	<p><i>DV Qtrs</i></p>
<p>3 Reason for using analysis of southern SJV sites to apply to regional interpollutant ratio: Northern site chemistry ratios are within the range of southern SJV ratios. Peak ratio will be protective for all SJV counties.</p>	<p><i>Q4 Model Pivot, Model-site chem, Model-Daily Q4</i></p>
<p>4 Reason for using combined results of receptor and regional model: Receptor model provides breakdown of different carbon sources to isolate connection between industrial emissions and secondary PM. Regional model provides atmospheric information concerning the northern SJV not available from receptor analysis.</p>	<p>2008 PM2.5 Plan, Appendix F 2008 PM2.5 Plan, Appendix G</p>
<p>5 Most significant contributions of receptor evaluation: Separation of industrial emissions from other source types. Area of influence evaluation for contributing sources.</p>	<p>2008 PM2.5 Plan, Appendix F</p>
<p>6 Most significant contributions of regional model: Scientific equilibrium methods for atmospheric chemistry projections for 2014. Receptor technique is limited to linear methods.</p>	<p>2008 PM2.5 Plan, Appendix G</p>
<p>7 Common area of influence adjustments used for all receptor evaluations: Geologic & Construction, Tire and Brake Wear, Vegetative Burning - contribution extends from more than just the urban area (L2) Mobile exhaust (primary), Organic Carbon (Industrial) primary, Unassigned - contribution extends from more than larger area, subregional (L3) Secondary particulates from carbon sources are dominated by the local area with some contribution from the surrounding area (average of L1 and L2) Marine emissions not found present in CMB modeling for this analysis.</p>	<p>Modeling evaluation by J. W. Sweet February 2009 Reflected in <u>IPR County 2000-2009</u> worksheets</p>
<p>8 Variations to reflect secondary area of influence specific to location: Fresno: Evaluation shows extremely strong urban signature (L1) for secondary sources Kern: Evaluation shows a strong urban signature mixed with emissions from the surrounding industrial areas (average L1 and L2) for both carbon and secondary sources Kings and Tulare: Prior evaluation has show a shared metropolitan contribution area (L2)</p>	<p>Modeling evaluation by J. W. Sweet February 2009 Reflected in <u>IPR County 2000-2009</u> worksheets</p>
<p>9 Reasons for using 2009 Interpollutant Ratio Projection: 2009 Interpollutant ratio is consistent with current emissions inventories Regional modeling does not show a significant change in chemical relationships through 2014.</p>	<p>2008 PM2.5 Plan <i>Q4 Model Pivot</i></p>
<p>10 Reason for using SOx Interpollutant Ratio at 1.000: A minimum offset ratio is established as 1.000 to 1.000 consistent with prior District policy and procedure for interpollutant offsets.</p>	<p>District Rule 2201 Section 4.13.3</p>

APPENDIX E
Compliance Certification

July 31, 2009

Mr. Dave Warner
Director of Permit Section
1990 East Gettysburg Avenue
San Joaquin Valley Air Pollution Control District
Fresno, CA 93726-0244

Subject: Certification of Compliance,
San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC
Fresno County, California
Certification of Compliance
URS Project No. 27658031

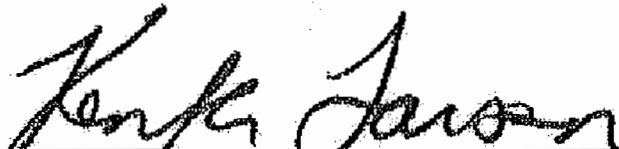
Dear Mr. Warner,

Pursuant to SJVAPCD (District) Rule 2201 Section 4.15.2, San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC respectfully submit this Compliance Assertion regarding other owned, operated, or controlled major stationary sources in California.

I hereby certify that San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC does not own, operate or control any other major stationary source in California. This certification shall speak as to the date of its execution.

Should you have any questions in this regard, please do not hesitate to contact me at 858-947-7056.

Sincerely,



Kent.Larsen
VP Project Manager

APPENDIX F
Health Risk Assessment and AAQA

San Joaquin Valley Air Pollution Control District Risk Management Review

To: Stanley Tom – Permit Services
 From: Leland Villalvazo – Technical Services
 Date: June 8, 2009
 Facility Name: San Joaquin Solar
 Location: West Jayne Ave
 Application #(s): C-7758-1-0
 Project #: C-1090203

A. RMR SUMMARY

Technical Services performed modeling for criteria pollutants CO, NO_x, SO_x and PM₁₀, as well as a RMR. The emission rates used for criteria pollutant modeling were provided by the processing engineer. The engineer also supplied the maximum fuel rate used for the RMR evaluation.

The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*

Diesel ICE	1 Hour	3 Hours	8 Hours.	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO _x	Pass	X	X	X	Pass
SO _x	Pass	Pass	X	Pass	Pass
PM ₁₀	X	X	X	Failed	Pass

*The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

The PM₁₀ emissions for each fluidized bed combustor for commissioning were given as 3160 lbs per day for a combined total of 12,640 lbs per day. The 24 hour PM₁₀ concentration for each fluidized bed combustor was greater than 15 ug/m³. This value is greater than the 5.0 ug/m³ SIL. Therefore, to ensure that the facility does not contribute to an exceedance of the AAQS the facility has agreed to will provide PM10 offsets.

B. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk associated with the power generation facility is greater than 1.0 in a million, but less than 10 in a million. **In accordance with the District's Risk Management Policy, the project is approved with Toxic Best Available Control Technology (T-BACT).**

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS as long as PM10 Offsets are provided.

Attachments:

- A. RMR request from the project engineer
- B. Additional information from the applicant/project engineer

AAQA for San Joaquin Solar (C-7758)
All Values are in ug/m^3

	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM 24 Hour	PM Annual
COMBUST1	1.796E+01	8.015E-02	7.364E+00	1.855E+00	3.901E+01	1.041E+01	5.326E+00	1.108E-01	1.509E+01	2.245E-01
COMBUST2	1.741E+01	8.079E-02	7.137E+00	1.913E+00	3.928E+01	1.046E+01	5.356E+00	1.117E-01	1.518E+01	2.263E-01
COMBUST3	1.232E+01	8.191E-02	5.052E+00	2.038E+00	4.014E+01	1.056E+01	5.326E+00	1.132E-01	1.509E+01	2.295E-01
COMBUST4	1.126E+01	8.184E-02	4.619E+00	2.129E+00	4.026E+01	1.068E+01	5.304E+00	1.131E-01	1.503E+01	2.292E-01
COOL1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.261E-02	3.597E-03
COOL2	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.263E-02	3.607E-03
COOL3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.300E-02	3.612E-03
COOL4	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.310E-02	3.597E-03
GEN1	1.380E+02	5.149E-03	1.070E+02	2.808E+01	1.573E-03	1.898E-02	5.215E-03	1.039E-05	1.152E-01	2.285E-04
GEN2	1.411E+02	5.171E-03	1.095E+02	2.922E+01	1.570E-03	1.913E-02	5.204E-03	1.043E-05	1.150E-01	2.295E-04
FIRE1	2.517E+01	8.817E-04	1.927E+01	9.811E+00	6.100E-04	1.256E-02	3.259E-03	7.521E-07	2.584E-02	3.762E-05
FIRE2	2.493E+01	8.907E-04	1.909E+01	1.027E+01	5.973E-04	1.232E-02	2.950E-03	7.598E-07	2.339E-02	3.800E-05
BIO_HLG1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.724E-05	5.690E-07
BIO_HLG2	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.050E-04	6.365E-07
FA_HLG1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.721E-06	5.091E-06
FA_HLG2	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.938E-06	5.476E-06

FA_HLG3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.960E-06	5.517E-06
FA_HLG4	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.043E-06	5.792E-06
LS_HLG1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.830E-06	9.138E-07
LS_HLG2	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.928E-06	9.235E-07
LS_HLG3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.787E-06	1.090E-06
LS_HLG4	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.906E-06	1.099E-06
HL_HLG1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.842E-06	2.195E-07
HL_HLG2	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.853E-06	2.203E-07
HL_HLG3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.998E-06	2.335E-07
HL_HLG4	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.002E-06	2.342E-07
Background	1.110E+02	2.104E+01	5.126E+03	2.796E+03	2.796E+03	2.398E+01	7.990E+00	1.280E+02	2.660E+00	2.660E+00	2.660E+00	1.280E+02	3.800E+01
Facility Totals	4.991E+02	2.138E+01	5.405E+03	2.881E+03	2.881E+03	6.614E+01	2.932E+01	1.887E+02	3.109E+00	3.109E+00	3.109E+00	1.887E+02	3.892E+01
AAQS	470	100	23000	10000	10000	655	105	50	80	80	80	50	30
	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Fail	Fail

EPA's Significance Level (ug/m³)

NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM 24 Hour	PM Annual
0.0	1.0	2000.0	500.0	0.0	25.0	5.0	1.0	5.0	1.0

Passed on OLM Run

AAQA Emission (g/sec)

<i>Device</i>	NOX 1 Hour	NOX Annual	CO 1 Hour	CO 8 Hour	SOX 1 Hour	SOX 3 Hour	SOX 24 Hour	SOX Annual	PM 24 Hour	PM Annual
COMBUST1	9.52E+00	3.50E-01	2.93E+00	2.93E+00	5.86E+00	5.86E+00	5.86E+00	3.63E-01	1.66E+01	7.35E-01
GEN2	1.67E+00	9.51E-03	9.69E-01	9.69E-01	2.52E-03	2.52E-03	2.52E-03	1.44E-05	5.57E-02	3.16E-04
FIRE1	3.14E-01	1.80E-03	1.80E-01	1.80E-01	5.29E-04	5.29E-04	5.29E-04	1.15E-06	4.19E-03	5.75E-05
FIRE2	3.14E-01	1.80E-03	1.80E-01	1.80E-01	5.29E-04	5.29E-04	5.29E-04	1.15E-06	4.19E-03	5.75E-05
BIO_HLG1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-05	3.68E-07
BIO_HLG2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-05	3.68E-07
FA_HLG1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.43E-07	4.36E-06
FA_HLG2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.43E-07	4.36E-06
FA_HLG3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.43E-07	4.36E-06
FA_HLG4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.43E-07	4.36E-06
LS_HLG1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.39E-07	7.04E-07
COMBUST2	9.52E+00	3.50E-01	2.93E+00	2.93E+00	5.86E+00	5.86E+00	5.86E+00	3.63E-01	1.66E+01	7.35E-01
LS_HLG2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.39E-07	7.04E-07
LS_HLG3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.39E-07	7.04E-07
LS_HLG4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.39E-07	7.04E-07
HL_HLG1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.45E-07	1.84E-07
HL_HLG2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.45E-07	1.84E-07
HL_HLG3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.45E-07	1.84E-07
HL_HLG4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.45E-07	1.84E-07
COMBUST3	9.52E+00	3.50E-01	2.93E+00	2.93E+00	5.86E+00	5.86E+00	5.86E+00	3.63E-01	1.66E+01	7.35E-01
COMBUST4	9.52E+00	3.50E-01	2.93E+00	2.93E+00	5.86E+00	5.86E+00	5.86E+00	3.63E-01	1.66E+01	7.35E-01
COOL1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-02	1.16E-02

AAQA Emission (g/sec)

<i>Device</i>	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM 24 Hour	PM Annual
COOL2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-02	1.16E-02
COOL3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-02	1.16E-02
COOL4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-02	1.16E-02
GEN1	1.67E+00	9.51E-03	9.69E-01	9.69E-01	2.52E-03	2.52E-03	2.52E-03	1.44E-05	5.57E-02	3.16E-04

APPENDIX G
Boiler Source Test Result

