

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <b>E&amp;C DIVISION</b>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	TOTAL PAGES:	PAGE NO.:
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**PERMIT TO CONSTRUCT/OPERATE  
(MODIFICATION)**

**APPLICANT:**

LA County Sheriff Dept.  
1000 South Fremont Ave., Unit 47  
Alhambra, CA 91803  
Facility ID# 800386  
Facility Type: Major Source (Title V), non-RECLAIM

**EQUIPMENT LOCATION:**

29300 The Old Road  
Saugus, CA 91384

Proposed new permit description language is shown in **bold underline**, items removed is shown in ~~strikeout~~

**APPLICATION NO. 546005**

MODIFICATION OF PERMIT TO OPERATE: F42177

BOILER, **NO. 3**, WATER TUBE, KEELER, MODEL NUMBER DS-10-13, SERIAL NO. 15396-1, NATURAL GAS OR ~~WITH FUEL OIL BURNER~~ **STANDBY FUEL**, **WITH ONE** COMBUSTION LOW NOX BURNER, COEN, MODEL 200 11632-1, RATED AT 68,9000,000 BTU PER, A 40 H.P. COMBUSTION AIR BLOWER **AND FLUE GAS RECIRCULATION SYSTEM**

**APPLICATION NO. 545981**

MODIFICATION OF PERMIT TO OPERATE: F42176

BOILER, **NO. 4**, WATER TUBE, KEELER, MODEL NUMBER DS-10-13, SERIAL NO. 15396-2, NATURAL GAS OR ~~WITH FUEL OIL BURNER~~ **STANDBY FUEL**, **WITH ONE** COMBUSTION LOW NOX BURNER, COEN, MODEL 200 11632-1 RATED AT 68,9000,000 BTU PER, A 10-H.P. COMBUSTION AIR BLOWER **AND FLUE GAS RECIRCULATION SYSTEM**

**APPLICATION NO. 546003**

AIR POLLUTION CONTROL SYSTEM NO. 1 CONSISTING OF

1. SELECTIVE CATALYTIC REDUCTION, CATASTACK, MODEL CUSTOM, , 4'-6" W. X 4'-6" L. X 1'-9' H., WITH A HONEYCOMB TYPE HALDOR TOPSOE DNX-1029 CATALYST BED, WITH ONE LAYER OF SCR BRICKS, 35 CUBIC FEET, 990 lbs CATALYST .

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2. UREA DOSING UNIT (FEED FORWARD), AMMONIA INJECTORS, A GAS MIXER, AND AUTOMATIC UREA/NOX CONTROLLER , AN INTERCONNECTING UREA TOTE STORAGE SYSTEM (COMMON)
3. EXHAUST SYSTEM VENTING ONE BOILER NO. 3.

**APPLICATION NO. 545986**

AIR POLLUTION CONTROL SYSTEM NO. 2 CONSISTING OF

1. SELECTIVE CATALYTIC REDUCTION, CATASTACK, MODEL CUSTOM, , 4'-6" W. X 4'-6" L. X 1'-9' H., WITH A HONEYCOMB TYPE HALDOR TOPSOE DNX-1029 CATALYST BED, WITH ONE LAYER OF SCR BRICKS, 35 CUBIC FEET, 990 lbs CATALYST.
2. UREA DOSING UNIT (FEED FORWARD), AMMONIA INJECTORS, A GAS MIXER, AND AUTOMATIC UREA/NOX CONTROLLER , AN INTERCONNECTING UREA TOTE STORAGE SYSTEM (COMMON)
3. EXHAUST SYSTEM VENTING ONE BOILER NO. 4.

**APPLICATION NO. 545976**

TITLE V REVISION

**PERMIT CONDITIONS**

**BOILERS**

Proposed new condition language is shown in **bold underline**, conditions removed is shown in ~~strikeout~~

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. ~~THIS BOILER SHALL BE OPERATED IN FULL COMPLIANCE WITH THE APPLICABLE PROVISIONS OF RULE 1146.~~  
{RULE 1146}
4. ~~THIS EQUIPMENT SHALL COMPLY WITH THE NOX EMISSIONS LIMITS of 9 PPMV BY 1/1/2012.~~  
{RULE 1146}
8. ~~THIS BOILER SHALL EMIT NO MORE THAN 30 PPM OF OXIDES OF NITROGEN (NOX) CALCULATED AS NO2, AND 400 PPM OF CARBON MONOXIDE (CO), ALL MEASURED BY VOLUME ON A DRY BASIS AT 3% OXYGEN.~~  
{RULE 1146}
11. ~~THE OPERATOR OF THIS BOILER SHALL FOLLOW THE PORCEDURES SPECIFIED BY THE MANUFACTURER TO TUNE UP AND MAINTAIN THE COMBUCTION SYSTEM (INCLUDING BUT NOT~~

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~~LIMITED TO BURNERS AND AIR/FUEL CONTROL DEVICES) OF THIS BOILER TO ASSURE CONTINUED COMPLIANCE WITH THE EMISSIONS LIMITS IN CONDITION NO. 8.~~  
~~{RULE 1146}~~

- ~~12. RECORDS SHALL BE KEPT BY THE OPERATOR TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 8. THE RECORDS SHALL BE KEPT FOR FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.~~  
~~{RULE 1146}~~
3. THIS EQUIPMENT WHILE FIRING ONLY ON NATURAL GAS SHALL NOT BE OPERATED UNLESS IT IS VENTED TO AN AIR POLLUTION CONTROL SYSTEM WHICH IS IN FULL USE AND HAS BEEN ISSUED A PERMIT TO CONSTRUCT BY THE EXECUTIVE OFFICER. [RULE 1146]
4. THIS EQUIPMENT SHALL COMPLY WITH RULE 1146.  
[RULE 1146]
5. THE OPERATOR OF THIS EQUIPMENT SHALL COMPLY WITH SOURCE TESTING REQUIREMENTS IN SUBDIVISION (d) (6) -- COMPLIANCE DETERMINATION OF RULE 1146.  
[RULE 1146]
6. THE OPERATOR OF THIS EQUIPMENT SHALL COMPLY WITH PERIODIC MONITORING REQUIREMENTS OF RULE 1146 (c) (8).  
[RULE 1146]
7. THIS BOILER SHALL EMIT NO MORE THAN 30 PPM FOR OXIDES OF NITROGEN (NOX) MEASURED BY VOLUME ON A DRY BASIS AT 3% OXYGEN AVERAGED OVER A PERIOD OF 15 CONSECUTIVE MINUTES WHEN FIRING ON NATURAL GAS.  
[RULE 1146]
8. EFFECTIVE 1/1/2014 THIS BOILER SHALL EMIT NO MORE THAN 5 PPM FOR OXIDES OF NITROGEN (NOX) MEASURED BY VOLUME ON A DRY BASIS AT 3% OXYGEN AVERAGED OVER A PERIOD OF 15 CONSECUTIVE MINUTES WHEN FIRING ON NATURAL GAS. THIS CONDITION DOES NOT APPLY DURING A START-UP OF THE BOILERS NOT TO EXCEED 120 MINUTES.  
[RULE 1146]
9. EMISSIONS OF NOX SHALL NOT EXCEED 40 PPM REFERENCED AT 3% O2 ON A DRY BASIS, AVERAGED OVER A PERIOD OF 15 CONSECUTIVE MINUTES WHENEVER THIS EQUIPMENT IS FIRED WITH OIL.  
[RULE 1146]
10. EMISSIONS OF CO SHALL NOT EXCEED 400 PPM REFERENCED AT 3% O2 ON A DRY BASIS, AVERAGED OVER A PERIOD OF 15 CONSECUTIVE MINUTES.  
[RULE 1146]
11. THE BOILER SHALL BE FIRED ON NATURAL GAS. FUEL OIL USE IS RESTRICTED TO PERIODS OF NATURAL GAS CURTAILMENT, NATURAL GAS SUPPLY EMERGENCIES, MAINTENANCE TESTING OR PERIODIC TESTING. PERIODIC TESTING OF FUEL OIL SHALL NOT EXCEED A COMBINED TOTAL OF 48 HOURS DURING ANY ONE CALENDAR YEAR.  
[RULE 1146, 40 CFR 63.11237]
12. FUEL OIL SUPPLIED TO THE BURNER SHALL BE NO. 2 OR A LIGHTER GRADE AS DESCRIBED BY THE LATEST ASTM SPECIFICATIONS AND SHALL CONTAIN LESS THAN 0.05 PERCENT SULFUR BY WEIGHT IF PURCHASED PRIOR TO 6/1/04 AND LESS THAN 15 PPM SULFUR BY WEIGHT IF PURCHASED ON OR AFTER 6/1/04.  
[RULE 431.2, 40 CFR 60.42c(D)]

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13. MATERIAL SAFETY DATA SHEETS (MSDS) FOR THE FUEL OIL PURCHASED IN THIS EQUIPMENT, THE MSDS SHALL INCLUDE THE MINIMUM INFORMATION, NAME OF OIL SUPPLIER, THE MAXIMUM SULFUR CONTENT OF THE FUEL OIL. THIS INFORMATION SHALL BE KEPT CURRENT AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[40 CFR 60.48c(f) , 40 CFR 60.42c(h) (1)]
14. THE OPERATOR SHALL RECORD AND MAINTAIN THE AMOUNT OF NATURAL GAS COMBUSTED DURING EACH CALENDER MONTH. THE FUEL USAGE RECORDS SHALL BE KEPT FOR A PERIOD OF FIVE YEARS AND ALL RECORDS SHALL BE MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST  
[40 CFR 60.48c(g) (2)]
15. THIS BOILER SHALL BE EQUIPPED WITH A NON-RESETTABLE, TOTALIZING FLOW METER FOR EACH FUEL TO BE BURNED.  
[40 CFR 60.48c(g) (2), RULE 1313(g), RULE 1146]
16. WHENEVER THE BOILER IS OPERATED ON FUEL OIL, MONTHY CALENDAR AND CALENDAR YEAR , RECORDS SHALL BE MAINTAINED FOR THE BOILER AND SHALL INCLUDE THE FOLLOWING. (1) THE DATE. (2) THE REASON THE BOILER WAS OPERATED ON FUEL OIL. (3) THE HOURS OF OPERATION ON FUEL OIL (4) AMOUNT OF FUEL OIL USED. ALL RECORDS SHALL BE, (1) RECORDED IN A MANNER WHICH HAS BEEN APPROVED IN WRITING BY THE EXECUTIVE OFFICER, (2) KEPT FOR AT LEAST FIVE YEARS, AND (3) MADE AVAILABLE TO SCAQMD PERSONNEL UPON REQUEST.  
[RULE 1146, 40 CFR 63.11237, 40 CFR 60.48c(g) (2)]
17. THE OPERATOR SHALL RECORD AND MAINTAIN THE AMOUNT OF ALL FUEL COMBUSTED DURING EACH CALENDER MONTH. THE FUEL USAGE RECORDS SHALL BE KEPT FOR A PERIOD OF FIVE YEARS AND ALL RECORDS SHALL BE MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST  
[40 CFR 60.48c(g) (2)]
18. THIS BOILER IS A BACK-UP BOILER FOR THE HONOR RANCHO FACILITY'S COGENERATION SYTEM (GAS TURBINE AND WASTE HEAT BOILER), AND SHALL NOT BE OPERATED WHENEVER THE COGENERATION SYSTEM IS IN OPERATION.  
[RULE 1303(b) (2) -OFFSET]
19. THE FLUE GAS RECIRCULATION SYSTEM SHALL BE IN USE WHENEVER THE BOILER IS FIRING ON FUEL OIL.  
[RULE 1146]
20. THE OPERATOR SHALL HAVE THE BURNER EQUIPPED WITH A CONTROL SYSTEM TO AUTOMATICALLY REGULATE THE COMBUSTION AIR, FUEL, AND RECIRCULATION FLUE GAS AS THE BOILER LOAD VARIES. THIS CONTROL SYSTEM SHALL BE ADJUSTED AND TUNED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS TO MAINTAIN ITS ABILITY TO REPEAT THE SAME PERFORMANCE AT THE SAME FIRING RATE.  
[RULE 1146]
21. IF THIS BOILER BURNS MORE THAN 200,000,000,000 (200 BILLION) BTUS OF FUEL IN ANY ONE CALENDAR YEAR, THE BOILER OPERATOR SHALL INSTALL AND OPERATE BY MARCH 1 OF THE FOLLOWING YEAR, OR JULY 1, 1993, WHICHEVER IS LATER, AN OXIDES OF NITROGEN CONTINUOUS EMISSION MONITORING SYSTEM THAT IS APPROVED BY THE EXECUTIVE OFFICER IN ACCORDANCE WITH RULE 218(b) AND SHALL CONTINUE TO OPERATE IT FOR THE LIFE OF THE BOILER.  
[RULE 1146, RULE 218(b)]

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22. TO ENSURE COMPLIANCE WITH CONDITION NO. 21, THE FACILITY SHALL:

A. CALCULATE THE MONTHLY HEAT INPUT FOR THIS BOILER USING THE FOLLOWING EQUATION:

AMOUNT OF FUEL USED PER MONTH X EMISSION FACTOR

B. THE EMISSION FACTORS TO BE USED FOR THIS EQUIPMENT ARE:

1050 BTU PER CUBIC FEET OF NATURAL GAS USED

OR, IF FUEL OIL WAS USED AS BACK-UP FUEL,

138,490 BTU PER GALLON OF FUEL OIL USED

C. WITHIN 14 CALENDAR DAYS AFTER THE END OF EACH MONTH, CALCULATE AND RECORD THE HEAT INPUT IN BTUS FOR THE PREVIOUS MONTH.

D. ON OR BEFORE JANUARY 15TH OF EACH YEAR, TOTAL AND RECORD THE HEAT INPUT FOR THE PREVIOUS CALENDAR YEAR.

[RULE 1146]

23. THE OPERATOR SHALL LIMIT THE FUEL USAGE TO NO MORE THAN 49 MMCF IN ANY ONE MONTH.

FOR THE PURPOSE OF THIS CONDITION, FUEL USAGE SHALL BE DEFINED AS THE TOTAL NATURAL GAS USAGE OF A SINGLE BOILER. THE OPERATOR SHALL MAINTAIN RECORDS IN A MANNER APPROVED BY THE DISTRICT TO DEMONSTRATE COMPLIANCE WITH THIS CONDITION.

[RULE 1313 (g)]

24. THE OPERATOR SHALL RETAIN ALL RECORDS REQUIRED BY PERMIT FOR A PERIOD OF FIVE YEARS AND MAKE ALL RECORDS AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

[RULE 1146]

25. THE OWNER OR OPERATOR OF THE EQUIPMENT SHALL CONDUCT A SOURCE TEST UNDER THE FOLLOWING CONDITIONS:

A. SOURCE TESTING SHALL BE CONDUCTED PRIOR TO 7/1/2014.

B. THE SOURCE TEST SHALL BE DONE TO VERIFY COMPLIANCE PERMIT CONDITION NO. EIGHT, NINE AND TEN.

C. THE SOURCE TEST SHALL BE DONE TO VERIFY COMPLIANCE PERMIT CONDITION NO. ELEVEN FROM APPLICATIO NO. 546003 OR 545986.

D. THE SOURCE TESTS SHALL BE CONDUCTED IN ACCORDANCE WITH SCAQMD METHOD 207.1 FOR AMMONIA SLIP.

E. THE SOURCE TESTS SHALL BE CONDUCTED IN ACCORDANCE WITH SCAQMD METHOD 100.1.

F. THE TEST SHALL BE CONDUCTED FOR 15 MINUTES FOR EACH LOAD, WHILE FIRING NATURAL GAS AND FUEL OIL AT MAXIMUM, MINIMUM AND LOW FIRING RATES.

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- G. TWO COMPLETE COPIES OF SOURCE TEST REPORTS (INCLUDE THE APPLICATION NUMBER AND A COPY OF THE PERMIT IN THE REPORT) SHALL BE SUBMITTED TO THE DISTRICT (ADDRESSED TO SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, P.O. BOX 4941, DIAMOND BAR, CA 91765). THE RESULTS IN WRITING SHALL BE SUBMITTED WITHIN 45 DAYS AFTER THE SOURCE TEST IS COMPLETED. IT SHALL INCLUDE, BUT NOT LIMITED TO EMISSIONS RATE IN POUNDS PER HOUR AND CONCENTRATION IN PPMV AT THE OUTLET OF THE BOILER.
- H. A TESTING LABORATORY CERTIFIED BY THE SCAQMD LABORATORY APPROVAL PROGRAM (LAP) IN THE REQUIRED TEST METHODS FOR CRITERIA POLLUTANT TO BE MEASURED, AND IN COMPLIANCE WITH DISTRICT RULE 304 (NO CONFLICT OF INTEREST) SHALL CONDUCT THE TEST
- I. SAMPLING FACILITIES SHALL COMPLY WITH THE AQMD "GUIDELINES FOR CONSTRUCTION OF SAMPLING AND TESTING FACILITIES", PURSUANT TO RULE 217. [RULE 1146]

**Periodic Monitoring:**

27. THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE NOX EMISSION LIMIT(S) EITHER BY: (a) CONDUCTING A SOURCE TEST AT LEAST ONCE EVERY FIVE YEARS USING AQMD METHOD 100.1 OR 7.1; OR (b) CONDUCTING A TEST AT LEAST ANNUALLY USING A PORTABLE ANALYZER AND AQMD-APPROVED TEST METHOD. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS TO DEMONSTRATE COMPLIANCE WITH RULE 1146 CONCENTRATION LIMIT. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING, AND RECORDKEEPING REQUIREMENTS IN SECTIONS E AND K OF THIS PERMIT.  
[RULE 3004 (a) (4)]
28. THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE CO EMISSION LIMIT(S) EITHER BY: (a) CONDUCTING A SOURCE TEST AT LEAST ONCE EVERY FIVE YEARS USING AQMD METHOD 100.1 OR 10.1; OR (b) CONDUCTING A TEST AT LEAST ANNUALLY USING A PORTABLE ANALYZER AND AQMD-APPROVED TEST METHOD. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS TO DEMONSTRATE COMPLIANCE WITH RULE 1146 CONCENTRATION LIMIT. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING, AND RECORDKEEPING REQUIREMENTS IN SECTIONS E AND K OF THIS PERMIT.  
[RULE 3004 (a) (4)]
29. THE OPERATOR SHALL CONDUCT AN INSPECTION FOR VISIBLE EMISSION FROM ALL STACKS AND OTHER EMISSION POINTS OF THIS EQUIPMENT WHENEVER THIS EQUIPMENT HAS COMBUSTED ONE MILLION GALLONS OF DIESEL FUEL, TO BE COUNTED CUMULATIVELY OVER A FIVE YEAR PERIOD. THE INSPECTION SHALL BE CONDUCTED WHILE THE EQUIPMENT IS IN OPERATION AND DURING DAYLIGHT HOURS. IF ANY VISIBLE EMISSIONS (NOT INCLUDING CONDENSED WATER VAPOR) ARE DETECTED THAT LAST MORE THAN THREE MINUTES IN ANY ONE HOUR, THE OPERATOR SHALL EITHER:
- A. TAKE CORRECTIVE ACTION(S) THAT ELIMINATES THE VISIBLE EMISSIONS WITHIN 24 HOURS AND REPORT THE VISIBLE EMISSIONS AS A POTENTIAL DEVIATION IN THE SAME FASHION AS DEVIATIONS ARE REQUIRED TO BE REPORTED IN SECTION K OF THIS PERMIT; OR
- B. HAVE A CARB-CERTIFIED SMOKE READER DETERMINE COMPLIANCE WITH THE OPACITY STANDARD, USING EPA METHOD 9 OR THE PROCEDURES IN THE CARB MANUAL "VISIBLE EMISSION EVALUATION", WITHIN THREE BUSINESS DAYS AND REPORT ANY DEVIATIONS TO AQMD.

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IN ADDITION, THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- I. STACK OR EMISSION POINT IDENTIFICATION;
- II. DESCRIPTION OF ANY CORRECTIVE ACTIONS TAKEN TO ABATE VISIBLE EMISSIONS;
- III. DATE AND TIME VISIBLE EMISSION WAS ABATED; AND
- IV. VISIBLE EMISSION OBSERVATION RECORDED BY A CERTIFIED SMOKE READER.  
[RULE 3004 (a) (4)]

30. IF ANNUAL FUEL OIL USAGE EXCEEDS 2,000,000 GALLONS IN ANY ONE YEAR, THEN THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE PARTICULATE MATTER (PM) EMISSION LIMIT(S) BY CONDUCTING A SOURCE TEST AT LEAST ONCE EVERY FIVE YEARS USING AQMD METHOD 5.2. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS TO DEMONSTRATE COMPLIANCE WITH RULE 409 LIMIT. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING, AND RECORDKEEPING REQUIREMENTS IN SECTIONS E AND K OF THIS PERMIT.

FOR THE PURPOSE OF DETERMINING COMPLIANCE WITH RULE 409 LIMIT, THE EMISSIONS SHALL BE MEASURED AND AVERAGED OVER A 60 MINUTE TIME PERIOD.

THE OPERATOR SHALL CONDUCT AN ANNUAL MAINTENANCE INSPECTION CHECK OF THE OPERATING PRESSURE, TEMPERATURE, AIR SUPPLY, VENT, SMOKE SPOT, BURNER CONDITION, HEAT-TRANSFER SURFACE CONDITION, WATER TREATMENT, BLOWDOWN AND LEAKAGE.

THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. DATE WHEN ANNUAL MAINTENANCE INSPECTION WAS CONDUCTED.  
[RULE 3004 (a) (4)]

31. FOR UNITS WITH A HEAT INPUT GREATER THAN 10 MMBTU/HR AND ANNUAL OIL USAGE GREATER THAN 1,000,000 GALLONS OR GREATER THAN 336 HOURS OF OPERATION, BUT DO NOT EXCEED 2,000,000 GALLONS IN ANY ONE YEAR. THE OPERATOR SHALL CONDUCT AN ANNUAL MAINTENANCE INSPECTION CHECK OF THE OPERATING PRESSURE, TEMPERATURE, AIR SUPPLY, VENT, SMOKE SPOT, BURNER CONDITION, HEAT-TRANSFER SURFACE CONDITION, WATER TREATMENT, BLOWDOWN AND LEAKAGE

THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. DATE WHEN ANNUAL MAINTENANCE INSPECTION WAS CONDUCTED.  
[RULE 3004 (a) (4)]

**Emissions And Requirements:**

16. ~~IF THIS BOILER BURNS MORE THAN 200,000,000,000 (200 BILLION) BTUS OF FUEL IN ANY ONE CALENDAR YEAR, THE BOILER OPERATOR SHALL INSTALL AND OPERATE BY MARCH 1 OF THE FOLLOWING YEAR, OR JULY 1, 1993, WHICHEVER IS LATER, AN OXIDES OF NITROGEN CONTINUOUS EMISSION MONITORING SYSTEM THAT IS APPROVED BY THE EXECUTIVE OFFICER IN ACCORDANCE WITH RULE 218(b) AND SHALL CONTINUE TO OPERATE IT FOR THE LIFE OF THE BOILER.~~  
~~{RULE 1146, RULE 218(b)}~~

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32. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

CO: 2000 PPMV, RULE 407  
SOX: 500 PPMV FUEL OIL, RULE 409  
PM: 0.1 GR/SCF, RULE 409  
CO: 400 PPMV, RULE 1146  
NOX: 30 PPMV, RULE 1146  
NOX: 5 PPMV, NATURAL GAS, RULE 1146 ON OR AFTER JANUARY 1, 2014  
NOX: 40 PPMV FUEL OIL, RULE 1146 (~~FUEL OIL~~)

SCR

- 1) OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 202]
- 2) THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 202]
- 3) THE UREA FEED CONTROL SYSTEM SHALL BE IN FULL OPERATION WHENEVER THE SCR SYSTEM IS IN OPERATION.  
[RULE 1303(a)(1)-BACT ]
- 4) WHEN THE BOILER IS FIRED ON FUEL OIL THE UREA FEED CONTROL SYSTEM SHALL NOT BE IN OPERATION.  
[RULE 1303(a)(1)-BACT ]
- 5) THIS EQUIPMENT SHALL BE INSPECTED AND MAINTAINED PER MANUFACTURER'S SPECIFICATIONS. RECORDS SHALL BE MAINTAINED OF THE INSPECTIONS AND MAINTENANCE OF THIS EQUIPMENT. THE RECORDS SHALL BE KEPT FOR AT LEAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 1303(a)(1)-BACT ]
- 6) SAMPLING PORTS SHALL BE INSTALLED AT THE INLET AND OUTLET OF THE SELECTIVE CATALYTIC REDUCTION SYSTEM.  
[RULE 1303(a)(1)-BACT ]
- 7) THE OPERATOR SHALL INSTALL AND MAINTAIN A TEMPERATURE GAUGE TO ACCURATELY INDICATE THE TEMPERATURE OF THE EXHAUST AT THE OUTLET OF THE SCR REACTOR. THE MEASURING DEVICE OR GAUGE SHALL CONTINUOUSLY MEASURE THE TEMPERATURE, BE ACCURATE TO WITHIN PLUS OR MINUS 5 PERCENT, AND BE CALIBRATED ONCE EVERY 12 MONTHS. THE OPERATOR SHALL MAINTAIN MONTHLY RECORDS OF THE TEMPERATURE.  
[RULE 1303(a)(1)-BACT ]
- 8) THE UREA INJECTION SYSTEM SHALL BE OPERATED WHENEVER THE SCR INLET TEMPERATURE IS ABOVE 370 DEGREES FAHRENHEIT.  
[RULE 1303(a)(1)-BACT ]
- 9) THE MAXIMUM INLET TEMPERATURE OF THE SCR BED SHALL NOT EXCEED 650 DEGREES FAHRENHEIT.  
[RULE 1303(a)(1)-BACT ]

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- 10). THE INLET TEMPERATURE OF THE SCR BED SHALL BE MAINTAINED AT 370 DEGREES FAHRENHEIT OR GREATER.  
[RULE 1303(a)(1)-BACT ]
- 11). AMMONIA CONCENTRATION AT THE EXIT OF THE SCR UNIT SHALL NOT EXCEED 5 PPMV CORRECTED TO 3% OXYGEN, AVERAGED OVER 60 CONSECUTIVE MINUTES.  
[RULE 1303(a)(1)-BACT ]
- 12). THE OPERATOR SHALL INSTALL AND MAINTAIN A FLOW METER TO ACCURATELY INDICATE THE FLOW RATE OF THE TOTAL HOURLY THROUGHPUT OF INJECTED AMMONIA. THE OPERATOR SHALL ALSO INSTALL AND MAINTAIN A DEVICE TO CONTINUOUSLY RECORD THE PARAMETER BEING MEASURED. THE MEASURING DEVICE OR GAUGE SHALL BE ACCURATE TO WITHIN PLUS OR MINUS 5 PERCENT. IT SHALL BE CALIBRATED ONCE EVERY 12 MONTHS. THE AMMONIA INJECTION RATE SHALL NOT EXCEED 1.8 POUNDS PER HOUR  
[RULE 1303(a)(1)-BACT ]
- 13). THE OPERATOR SHALL INSTALL AND MAINTAIN A PRESSURE GAUGE TO ACCURATELY INDICATE THE DIFFERENTIAL PRESSURE ACROSS THE SCR CATALYST BED IN INCHES OF WATER COLUMN. THE MEASURING DEVICE OR GAUGE SHALL CONTINUOUSLY MEASURE THE DIFFERENTIAL PRESSURE, BE ACCURATE TO WITHIN PLUS OR MINUS 5 PERCENT, AND BE CALIBRATED ONCE EVERY 12 MONTHS. THE OPERATOR SHALL MAINTAIN MONTHLY RECORDS OF THE DIFFERENTIAL PRESSURE.  
[RULE 1303(a)(1)-BACT ]
- 14). THE PRESSURE DROP ACROSS THE SCR BED SHALL NOT EXCEED ONE INCH W.C.  
[RULE 1303(a)(1)-BACT ]
- 15). THE OPERATOR SHALL CHECK NOX EMISSIONS WITH A PORTABLE NOX, CO AND OXYGEN ANALYZER ACCORDING TO THE "PROTOCOL FOR THE PERIODIC MONITORING OF NITROGEN OXIDES, CARBON MONOXIDE, AND OXYGEN FROM UNITS SUBJECT TO SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULES 1146 AND 1146.1" AT LEAST EVERY 45-DAYS TO ENSURE PROPER OPERATION OF THIS EQUIPMENT. THE OPERATOR SHALL COMPLY WITH THIS CONDITION AND THE RULE 1146 REQUIREMENTS FOR PORTABLE ANALYZER TESTS TO ENSURE PROPER OPERATION OF THE ASSOCIATED BOILER, WHICHEVER IS MORE STRINGENT.  
[RULE 1303(a)(1)-BACT ]

**Periodic Monitoring**

- 16). THE AMMONIA SLIP SHOULD BE TESTED AT LEAST ONCE EVERY YEAR AND ONCE EVERY 3 MONTHS FOR THE FIRST YEAR OF OPERATION. THE AMMONIA SLIP TEST SHALL BE DONE USING AQMD APPROVED TEST METHODS, RECORDS OF THE AMMONIA SLIP TEST SHALL BE KEPT FOR AT LEAST FIVE YEARS AND BE MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a)(4)]

**EMISSIONS AND REQUIREMENTS**

- 17). THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

NH3: 5 PPMV [RULE 1303(a)(1)-BACT]

**BACKGROUND:**

The above applications were filed as a modification of the existing two boilers and proposed installation of two SCR units. The applicant operates two boilers, each rated at 68.9 million btu per hour. The

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applicant filed two applications (a/n 520247 and 520248) in March of 2011 and propose to install low NOx burner that will comply with Rule 1146 (c)(2)(A) NOx emissions limits of 5 ppmv. In the fall of 2012 the applicant decided not to install the low NOx burners and will proceed to install SCR to be vented to the boilers. Applications no. 520247 and 521248 will be cancelled.

The applicant proposes to comply with the Rule 1146 NOx emissions limits by venting the boilers to SCR. In the Facility Permit ID#800386, additions are requested to section D by the modification of two existing boilers. Attached is a draft of Section D in the Facility Permit affected by this addition.

Per Rule 3000 (b)(7) as referenced by Rule 3005 (e) this Title V modification is considered as a "de minimis significant revision" to the Title V permit because there is an increase in HAP emissions (ammonia), but no increase criteria pollutants (net reduction in NOx emissions).

The applicant proposes to keep the current burner and to vent each boiler to a SCR. When firing on oil there will be no change in the NOx emissions limit of 40 ppmv. The applicant propose to vent to the boilers to SCR and the vendor has provided emissions guarantees of no more than 5 ppmv of NOx emissions corrected to 3% O2 while firing on natural gas. There will be no change in the current CO emissions limit of 400 ppmv.

The boilers were installed in 1975 and were modified to comply with Rule 1146 in the early 1990's. They are currently operating under the permits issued at that time. The following table summarizes the current application and permit numbers.

Equipment	Current A/N	Current P/O
Boiler	349167	F42177
Boiler	349169	F42176

### COMPLIANCE HISTORY

There has been one NOV (not conducting required Rule 1146 testing) and one NC (keep VOC records) has been issued during the past two years for this facility during the following time period: 03/05/2011-03/05/2013

### Permitting since the Title V permit was renewed since 03/24/2009, ref a/n 477115

Item	A/n	30 day ave-lb/dy				
		NOx	ROG	CO	SOx	PM10
title v revision	502371	+0.34	+0	+0	+0	+0
Title v revision	545976	-100.36	0	0	0	0
Change in emissions		-100.02	0	0	+0	0

### PROCESS DISCRIPTION

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The boilers are used to provide back-up to a Cogeneration unit (P/O F97277). The cogeneration unit provides electrical power and the waste heat supplies, steam, hot water to the facility. The boilers only operate when the cogen is off line (see permit condition no. 17). For this evaluation assume all the boilers operate 24 hr/dy, 7 dy/wk, 52 wk/yr.

The boilers are all identical units each rated at 68.9 mmbtu/hr. Following are the specifications:

Specification	
Boiler Manufacturer	Keeler
Model	DS-10-13
Fuel Type	Natural gas primary, with fuel oil standby
Maximum Fuel Consumption	65,619 ft <sup>3</sup> /hr natural gas
Maximum Exhaust Flow SCFM	20,808 ft <sup>3</sup> /min natural gas
Maximum Heat Input	68.9 mmbtu/hr
NOx Combustion Control	30 PPMV NOx
Post combustion control NOx limit natural gas	5 ppmv
Post combustion control NOx limit fuel oil	40 ppmv with FGR
Turn down ratio natural gas	6 to 1
Turn down ratio fuel oil	4 to 1
Post Combustion Control	Vent to SCR

Each SCR will be designed to reduce NOx to 5 ppm with one layer of vanadium catalyst. Ammonia slip will be limited to 5.0 ppm.

Specification	
Manufacturer	Catstack, model DNX-1029
Catalyst Type	Vanadium Pentoxide
Catalyst Volume	35.31 ft <sup>3</sup>
Reactor Dimensions	4'-6"L X 4'-6"W X 1'-9"H
Space Velocity	56.75 ft/hr
Area Velocity	12.6 ft/hr
Amount of catalyst	990 pounds
Catalyst life	3 years
Ammonia Injection Rate	1.8 lbm/hr
Ammonia Slip	5.0 ppm
Outlet NOx	5 ppm at 3% oxygen
Time for SCR to come on line from cold start.	120 minutes
Minimum operating temperature	370 F

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Maximum inlet operating temperature	<b>650 F</b>
Max pressure drop across the SCR	<b>1 in W.C.</b>
Turn down ratio	<b>4 to 1</b>
Urea day tank (common)	<b>17 gallons</b>
Urea total	<b>Less than 330 gallons</b>

When firing on fuel oil, the exhaust of the boiler will be vented to the SCR and no ammonia will be injected into the SCR.

The CCA TRIM-NOX urea injection system is a patented delivery, metering and injection system designed to automatically inject reagent (urea solution) into the exhaust gas of the boiler, for the reduction of nitrogen oxide emissions across an SCR catalyst. Aqueous urea solution is delivered by tote (330 gallons) to the site as a 32.5% urea concentration. The urea solution is transferred into the bulk reagent storage tank by a pump located on the delivery truck. On the TRIM-NOX LT units, urea solution is gravity fed from bulk storage to the injection skid or the optional 17-gallon day tank. On the TRIM-NOX XL units, urea solution is pulled from bulk storage to the individual day tank by a 110v transfer pump that is mounted on the day tank and forms part of the metering module. The metering module is generally located indoors. In applications with multiple units, a separate urea circulation-pumping skid can be supplied to constantly circulate urea to individual metering modules, with or without day tanks.

The metering module injects urea into the exhaust duct through a patented, solenoid actuated, and mechanically atomized injector. Air is not required for atomization or cooling. Multiple injectors can be used to maximize reagent distribution in the exhaust duct. For large duct areas or applications with low exhaust temperatures, the injectors can be mounted on a separate urea decomposition module for the on-demand generation of ammonia and injection into the exhaust gases through an ammonia injection grid (AIG).

The day tank is equipped with a level sensor and solenoid valve that are used to automatically refill the day tank from the bulk storage tank as level in the day tank falls below a set point. There is a strainer in the urea discharge line to prevent the urea nozzle from fouling with tramp material. The fluid delivery system has a pressure transmitter on the discharge piping of the injection-metering pump. The discharge pressure is typically controlled at 80 psig. The pump discharge pressure controller sends a 4-20 mA signal to the PLC to control the chemical metering pump which is equipped with a DC variable speed motor. The PLC automatically adjusts the pump speed to maintain the pump discharge pressure.

The feed rate of urea solution into the exhaust is automatically controlled based upon a target injection rate as a function of boiler load and the corresponding uncontrolled NOx. A boiler load signal (or fuel feed signal) is provided by others as a 4-20mA signal to the CCA supplied Allen Bradley PLC. The PLC has an injection map programmed based upon boiler load which determines how much urea needs to be injected. The map is preset during system assembly based upon boiler performance data and is fine tuned by CCA at start-up based upon field measurement of uncontrolled and controlled NOx using portable meters or the plant's emissions monitor.

The urea flow controller sends a digital pulse signal to the injector, which is equipped with a pulse modulated solenoid coil. The solenoid opens an internal valve that allows urea to be injected into the

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exhaust pipe. The amount of urea injected is controlled by how long the internal valve is open. Urea is circulated through the injector body at all times when the boiler is on to maintain injector cooling. Injectors are mounted on the boiler exhaust duct (or optional urea decomposition duct in urea to ammonia applications) to provide for distribution, evaporation and mixing of reagent before the catalyst. There are optional electro-magnetic urea flow meters in the injector supply and return piping that are used to measure chemical flow for data reporting purposes and for injection trim control. The injection trim control is a closed loop control system that will measure the actual injected rate, compare to the targeted rate, and trim the targeted rate to meet the map requirements. When this option is not utilized, the urea injection is monitored and displayed as a function of targeted injector on time. Permit requirements may dictate whether supply and return flow meters are required for reporting or control purposes.

Reagent decomposes to ammonia in the exhaust duct (or separate urea decomposition duct) and reacts with the NOx in the flue gas as it passes through the SCR catalyst to form nitrogen, carbon dioxide and water vapor. The catalyst is selected to match the gas flow, NOx reduction and temperature requirements of the application. There is a temperature sensor interlock in the catalyst exhaust that enables the SCR injection system to initiate injection when the catalyst is up to operating temperature and to stop injection when temperature falls below a predetermined set point.

For larger boiler systems, an optional emissions monitor can also be supplied for tracking and display of SCR outlet NOx and O2 in ppm (*does not apply for this case*). This will utilize actual stack emissions to trim the targeted injection rate. Pressure sensors can be supplied to monitor and alarm for system backpressure. Data logging and Ethernet communications capability are part of the standard TRIM-NOX injection system for both the LT and XL series. System outputs are provided as 4-20 mA signals to be field connected by others to the customer's plant computer or data acquisition system.

This SCR will only be employed during operation on natural gas only. If emergency fuel, fuel oil is required to be fired, the current burner oil firing capability will be employed. Ammonia will not be injected into the system when firing on oil.

## CALCULATIONS

### 1. Permit processing Emissions calculation methodology

#### A. Emissions calculations ROG, SOx and PM

$$R1(LB / HR) = \frac{EF \times GAS USAGE}{1 \times 10^6}$$

Note R1 = R2

Where E.F per AP-42, table 1.4-1

Note, NOx and CO ref the same table for default values

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Using the ideal gas law (lbmole/dscf@68 F)

$$PV = nRT$$

$$n/V = P / RT$$

Given

Pressure = 1 atm

Temp = 68 F

Ideal gas constant R = 0.73 ft<sup>3</sup>-atm/lb-mole-R

R = 460 F + 68 F

$$\begin{aligned} \text{lb NOx/btu} &= \text{dscf} / \text{mmbtu} \times 1^{-06} \text{mmbtu} / \text{btu} \times \\ &= (20.9 / (20.9 - 3\%O_2)) \times \text{ppm} \times \\ &= (\text{VolNOxppm}) \times (\text{MW}) \times \text{lbmol/dscf} \end{aligned}$$

Given

Dscf/mmbtu = 8710

Mw = 46 NOx

Mw = 28 CO

Lbmole/dscf = 0.00259

Ppm = 5 NOx

Pppm = 100 CO

Vol NOx/pmm = 0.000001

Repeat formula for CO

**2. EMISSIONS CALCULATIONS****A. Boilers**

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**E&C DIVISION****APPLICATION PROCESSING AND CALCULATIONS**

## Emissions per boiler

	lb/hr	lb/day	30-dy ave	lb/yr
RHC	0.3609	8.66	8.66	3153
NOx	0.42	10.03	10.03	3650.92
SO2	0.0394	0.9449	0.94	343.936
CO	5.09	122.16	122.16	44467.68
PM=PM10=PM2.5	0.499	11.97	11.97	4359

CHG	Lb/hr	Lb/yr
CO2	8065.3	70455840
CH4	0.1	1223.04
N2O	0.02	174.72

CHG gases calculations reference attached worksheet, CO2e calculated from NSR program.

The boilers were previously modified (a/n 256696 and 256697) to comply with Rule 1146 NOx limit of 30 ppmv limits. Revise the PM10 emissions base on revised current EF.

## Previous emissions per boiler

	lb/hr	lb/day	30-dy ave	lb/yr
RHC	0.3609	8.66	8.66	3153
NOx	2.51	60.21	60.21	21916.44
SO2	0.0394	0.9449	0.94	343.936
CO	5.09	122.16	122.16	44467.68
PM=PM10=PM2.5	0.499	11.97	11.97	4359

## B. SCR, ammonia emissions

flow rate = 11529 scfm

moisture = 12%

Max NH3 outlet concentration = 5 ppmv

MW NH3 = 17 lb/mole

ammonia rate = 1.80 lb/hr

DSCFM = 11529 ft<sup>3</sup>/min \* (1-0.12) = 10142 dscfm

$$R1(LB / HR) = \frac{PPM_V \times MW_{ave} \times CFM \times 60 MIN / HR}{1 \times 10^6 \times 379 FT^3 / MOLE}$$

Lb/hr = 5 ppmv \* 17 lb/mole \* 10142 ft<sup>3</sup>/min \* 60min/hr / (379 \* 1000000)

Lb/hr = 0.14 lb/hr

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$$\text{Lb/dy} = 24 \text{ hr/dy} * 0.14 \text{ lb/hr} = 3.36 \text{ lb/dy}$$

$$\text{Lb/yr} = 3.36 \text{ lb/dy} * 7 \text{ dy/wk} * 52 \text{ wk/yr} = 1223 \text{ lb/yr}$$

**RULE EVALUATION:**

**RULE 212 - Standards for Approving Permits**

Rule 212 requires that a person shall not build, erect, install, alter, or replace any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce, or control the issuance of air contaminants without first obtaining written authorization for such construction from the Executive Officer. Rule 212(c) states that a project requires written notification if there is an emission increase for ANY criteria pollutant in excess of the daily maximums specified in Rule 212(g), if the equipment is located within 1,000 feet of the outer boundary of a school, or if the MICR is equal to or greater than one in a million (1EE-6).

**Section (c)(1)**

Item	Equipment located beyond 1000 feet of a school	Public notice required
Boilers	> 1000 ftn/a	no

Section (c)(3)(A)(i)-Public notice is required for any new or modified equipment under Regulation XXX with emissions in emissions of Rule 1401 toxic contaminants for which a person may be exposed to a maximum individual cancer risk greater than, or equal to one in one million during a lifetime (70 years) for facilities with more than one permitted unit, unless the applicant demonstrates to the satisfaction of the Executive officer that the total facility-wide maximum individual cancer risk is below 10 in a million using the Risk assessment procedures and toxic air contaminants specified in Rule 1402.

The boilers will be vented to SCR with no increase in btu rating or Rule 1401 emissions, thus the equipment is not subject to this section .

Pollutant	MICR	Threshold	Public Notice required
Boiler	n/a	1.0e-06	No

Section (c)(2)-Public notice is required of any new or modified facility which has on-site emission increase exceeding any of the daily maximum specified in subdivision (g) of this Rule. This subsection does not require public notice because on-site emissions decreases from this project, from the modification of the two boilers will not exceed any of the daily maximum thresholds set forth in subdivision (g), as shown below

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Pollutant	Net increase in emissions lb/dy	Allowed limit-lb/dy	Trigger Public Notice
NOx	-100.36	40	No
ROG	+0	30	No
CO	+0	220	No
PM10	+0	30	No
SOx	+0	60	NO

**Rule 401 – Visible Emissions**

Visible emissions are not expected under normal operation firing gaseous fuel. However, fuel oil combustion has the potential to result in visible emissions. Fuel oil is only fired in the unit during a natural gas curtailment, or during maintenance testing.

**Rule 402 - Nuisance**

A person must not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The equipment primary uses natural gas, expected not to cause a odor, the Project will comply with this rule.

**Rule 404 Exempt per section (c).****Rule 407 – Liquid and Gaseous Air Contaminants**

This rule limits the CO emissions to 2000 ppm, and also limits the SO2 emissions to 500 ppm when firing fuel oil. The Rule 1146 CO limit of 400 ppm is more stringent. The most recent source test (copy in file, date 5/2013) shows the CO emissions below 50 ppm for each boiler. The units have not been tested for SO2 emissions, however, since 15 ppm sulfur fuel oil is required by Rule 431.2, the equipment should theoretically be able to comply with the 500 ppm SO2 limit.

**Rule 409 – Combustion Contaminants**

Expected to comply while firing on natural gas or fuel oil.

**Rule 429 – Start-up and Shutdown Exemption Provisions for Oxides of Nitrogen**

The boiler exhaust is expected to reach minimum inlet temperature to the SCR in 120 minutes during a start-up, thus section (b)(3) is satisfied. Boiler condition no. 8 allows for a 120 minute start-up.

**Rule 431.1. - Sulfur Content of Gaseous Fuels**

This rule limits the sulfur content of natural gas sold in the district to 16 ppm sulfur.

**Rule 431.2 – Sulfur Content of Liquid Fuels**

Any fuel oil combusted in the boilers must comply with the rule limit of 15 ppm sulfur. The boilers are required to use a low sulfur oil in the units which complies with the sulfur limits of this rule per section (c)(e)(2).

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Rule 1146—Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters

This Rule was amended last September 2008 and is subject to the following emissions limits. The boilers are expected to comply with the proposed NOx limits (verify by source test).

Table 1146-1 per section (c)(1)(A) requires 30 ppmv limit for NOx when burning gaseous fuel. Section (c)(1)(4) requires 400 ppmv limit for CO. When operating on fuel oil, the NOx emission limit is 40 ppmv.

The Rule also requires submittal of a compliance plan specifying when the facility will come into compliance with the limits. The applicant submitted their plan under A/N 505146, the plan was submitted within the required timeframe and was approved by SCAQMD on December 2010. The plan specified a 9 ppm NOx compliance level to be achieved by January 1, 2012. The facility filed the applications after the 1/1/2011 deadline, thus the boilers are subject to the requirements of section (c)(2)(A)

The boilers are listed as a Group II type unit and will be subject to the following emissions limits

The boilers are subject to Table 1146-1 (c)(2) requires 5 ppmv limit for NOx when burning gaseous fuel effective on 1/1/2014. The applicant proposes to vent the boilers to SCR, thus compliance with this section is met.

Per section (c)(4) the CO concentration limit is 400 ppmv (no change)

Per section (c)(6) the boiler is btu rating is greater than 40 mmbtu/hr and there is a permit condition, if the fuel usage exceed threshold and Rule 219 NOx CEMs has to be installed. The current permit conditions require the boilers to install a CEMs if the threshold is exceeded. Will keep the current permit condition in place. Permit conditions will require a fuel meter to be installed and keep track of the total yearly BTUs used by each boiler

Per section (d)(6)(A) source testing is required once every three years for this size boiler

Per section (d)(8) the applicant shall check the NOx and CO emissions from the boiler using a portable analyzer effective 7/1/2009.

REGULATION XIII – NEW SOURCE REVIEW (NSR)

The following section describes the NSR analysis for this project and it will be evaluated for compliance with the rules below.

RULE 1303(a)– BACT

These rules state that the Executive Officer shall deny the Permit to Construct for any new source which results in an emission increase of any non-attainment air contaminant, any ozone depleting compound, or ammonia unless the applicant can demonstrate that BACT is employed for the new source. The applicant proposes to reduce the NOx

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emissions from 30 ppmv to 5 ppmv to comply with Rule 1146, thus there is a net reduction in NOx emissions. Therefore the boilers are not subject to BACT.

boiler	Sox	NOx	CO	PM10
Nat. gas > 20 mmbtu/hr	Natural gas	9 ppmv low nox burner  7 ppmv with add-on control	<50 ppmv firetube  <100 ppmv watertube	Natural gas
Oil fired	Sulfur content 0.05%	Rule 1146, 40 ppmv	Same above	
Compliance		n/a	n/a	n/a

SCR			<5 ppmv ammonia slip	Ammonia
Compliance		n/a	yes	n/a

**RULE 1303(b)(1) – MODELING**

Does not apply no increase in emissions

**RULE 1303(b)(2) – OFFSETS**

Emission offsets are required for all projects where there is an increase in emissions unless there is an exemption identified in Rule 1304. The facility is a prison and is Essential Public Service (EPS) per Rule 1302 (m)(6) and use the Rule 1309.1(a)(3) exemption for offsets purposes.

Item	A/n	30 day ave-lb/dy				
		NOx	ROG	CO	SOx	PM10
Boiler 3	546005	+10.03	+8.66	+122.16	+0.94	+11.97
Boiler 4	545981	+10.03	+8.66	+122.16	+0.94	+11.97
Boiler 3	349167	-60.21	-8.66	-122.16	-0.94	-11.97
Boiler 4	349169	-60.21	-8.66	-122.16	-0.94	-11.97
Change in emissions		-100.36	+0	+0	+0	+0

There is a net reduction in NOx emissions

**RULE 1313(g) – Emission Limitation Permit Conditions**

Every permit shall have the following conditions:

- (1) Identified BACT conditions;

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(2) Monthly maximum emissions from the permitted source.

BACT does not apply for the boilers. The boilers are being modified to comply with the 5 ppmv NOx limit. Permit condition nos 8 and 10 is a Rule 1146 condition.

Permit condition 15 requires a fuel meter to be installed. Permit condition 24 will limit the monthly fuel usage and keep records.

**Rule 1401 – New Source Review of Toxic Air Contaminants**

This rule specifies limits for maximum individual cancer risk (MICR), acute hazard index (HIA), chronic hazard index (HIC) and cancer burden (CB) from new permit units, relocations, or modifications to existing permits which emit toxic air contaminants. These requirements are summarized in table below as follows:

Rule 1401 Requirements

Parameters and Specifications	Rule 1401 Requirements
MICR, without T-BACT	≤ 1EE-6
MICR, with T-BACT	≤ 1EE-5
Acute Hazard Index	≤ 1.0
Chronic Hazard Index	≤ 1.0
Cancer Burden	≤ 0.5

The boilers are exempt per section (g)(1)(F) because there is no increase in Rule 1401 containments. The ammonia emissions are subject to this Rule. The results are provided below as follows:

**Tier 3 MICR Boiler**

Parameter	MICR
Residential	n/a
Commercial	n/a
Risk Threshold w/T-BACT	10EE-6
Comply (Yes/No)	n/a

**Tier 3 MICR results, SCR**

Parameter	MICR
Residential	1.33EE-7
Commercial	1.09EE-7
Risk Threshold w/T-BACT	10EE-6
Comply (Yes/No)	Yes

**RULE 1401.1 – REQUIREMENTS FOR NEW AND RELOCATED FACILITIES NEAR SCHOOLS**

The purpose of this rule is to provide additional health protection to children at schools or schools under construction from new or relocated facilities emitting toxic air contaminants. This rule applies to new and relocated, but not to existing facilities. Applications for Permit to Construct/Operate from such new or relocated facilities shall be evaluated under this rule using the list of toxic air contaminants in the version of Rule 1401 that is in effect at the time the application is deemed complete. The existing facility is not located within 1000 feet of any school; therefore, the requirements of this rule are applicable

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The prison is an existing facility and is not located within 1000 feet of any school, thus the boilers and SCR are not subject to this Rule.

**Section (d)(2)**

item	MICR	MICR limit	Compliance
Rule 1401 (d) (1) (A)	n/a	1.0EE-6	n/a
Rule 1401 (d) (1) (B)	n/a	1.0EE-5	n/a
Rule 1401 (d) (1) (C)	n/a	n/a	n/a

**Rule 1714 – PSD for Greenhouse Gases**

This rule sets forth preconstruction review requirements for greenhouse gases (GHG). The provisions of this rule apply only to GHGs as defined by EPA to mean the air pollutant as an aggregate group of six GHGs: carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). All other attainment air contaminants, as defined in Rule 1702 subdivision (a), shall be regulated for the purpose of Prevention of Significant Deterioration (PSD) requirements pursuant to Regulation XVII, excluding Rule 1714. The provisions of this rule shall apply to any source and the owner or operator of any source subject to any GHG requirements under 40 Code of Federal Regulations Part 52.21 as incorporated into this rule. The rule specifies what portions of 40 CFR, Part 52.21 do not apply to GHG emissions, which are identified in Rule 1714(c)(1) as exclusions.

The GHG pollutants of CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> are products of combustion. The use of HFCs, PFCs, and SF<sub>6</sub> are associated with equipment that are used for the operation of the facility, such as: HFCs used as heat transfer medium in air condition control equipment, PFCs used as an agent in fire suppression equipment, and SF<sub>6</sub> as gas used to insulate transformers as well as in circuit breakers. The facility is expected to follow appropriate procedures to minimize any release of GHGs during installation, operation, and maintenance activities. The purchase of equipment that meet applicable standards and the practice of proper maintenance will ensure compliance for the non-combustion GHG products.

A PSD permit is required, prior to actual construction, of a new major stationary source or major modification to an existing major source as defined in 40 CFR 52.21(b)(1) and (b)(2), respectively. The rule incorporates the EPA rule by reference, so determination of PSD applicability for GHG is done using the EPA's document PSD and Title V Permitting Guidance for Greenhouse Gases, March 2010. The GHG emissions calculated in the tables below, using the heat input data and emission factor, respectively, were used for the project GHG PSD applicability determination.

The facility is considered a minor source to PSD and does not emit criteria emission over the threshold 150/250 ton per year. There is no change in the btu rating of the boiler, the CO<sub>2</sub>e is calculated based on maximum operations, see attached calculation.

**A. CO<sub>2</sub>e**

Boiler1	35,268ton/yr
Boiler 2	35,268 ton/yr

There is no net change in CO<sub>2</sub>e ton/yr for each boiler

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**Regulation XXX**

This facility (id# 800386) is included in Phase One of the Title V universe. Therefore the proposed equipment is expected to comply with the following sections:

Rule 3000 (b)(6)- The Title V expected permit revisions caused by this equipment I installation satisfies all the applicable conditions listed in this rule, thus it constitutes a de minimus permit evaluation.

Rule 3003 The anticipated de minimis significant revision is expected to comply with all the applicable requirements in this rule, of special note are the sections listed below

Section (j)(1)(A) The EPA Administrator will timely receive the de minimis permit revision application whenever it becomes available to the Executive Officer.

Section (j)(1)(B) The EPA Administrator will timely receive the draft of the de minimis significant revision upon completion of District evaluation.

Section (j)(4) The applicant and the EPA will be timely notified of any refusal to accept all recommendations of the draft permits.

Rule 3005 (e) Whenever applicable, the procedures for de minimus permit revision stated in this rule will be addressed in a proper and timely man

**California Environmental Quality Act (CEQA)**

The boiler modification to reduce the NOx emissions does not trigger CEQA. The SCR will use urea (no anhydrous ammonia) . Section B-1 of the form 400-CEQA was checked 'no". CEQA staff was consultant and this project does not trigger CEQA for air quality purposes. CEQA staff did contact the applicant to confirm no other CEQA documents were generated.

**Federal Regulations**

**40 CFR Part 63, Subpart JJJJJ—National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources**

§63.11193 This subpart is applicable to owner or operator of industrial, commercial or institution boiler as defined in §63.11237 that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in §63.2 except as specified in §63.1195

§63.11237 defines "institutional boiler" to mean "a boiler used in institutional establishments such as medical centers, research centers and institutions of higher education to provide electricity, steam, and/or hot water. The boilers are located a County Prison and this definition closely matches the operation of this boiler.

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§63.2 Definitions

“Area Source” means any stationary source of hazardous air pollutants that is not a major source as defined in this part. “Major Source” means any stationary source or group of stationary sources located within a contiguous are and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutants or 25 tons per year or more of any combination of hazardous air pollutants.

For 2012 compliance year, the facility reported the following HAPs emissions, the emissions are well below any thresholds limits of this Rule and the facility will be an area source for HAPs.

Pollutant Description	Annual Emissions (lb/yr)
1,3-Butadiene	1.066
Ammonia	1831.953
Arsenic	0.002
Benzene	26.104
Cadmium	0.001
Chromium (VI)	0.000
Formaldehyde	223.183
Lead (inorganic)	0.010
Naphthalene	2.446
Nickel	0.004
PAHs, total, with components not reported	1.711

§63.11195 The types of boilers listed in paragraphs (a) through (g) of this section are not subject to this subpart and to any requirements of this subpart.

(e) A gas fired boiler as defined in this subpart.

§63.11237 “Gas-fired boiler” includes any boiler that burns gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year.

The usage of fuel oil as stand-by fuel will be limited to ensure that these boilers meet the definition of “gas fired boiler” in order not be subject to this subpart. Condition 11 will limits periodic testing to 48 hours per year. Condition no. 16 set forth the recordkeeping requirements to demonstrate compliance with the 48 hour per year limit.

40 CFR PART 60, Subpart Dc-Standards of Performance for Small Industrial-Commercial-Institutional steam generating Units

Boilers natural gas with fuel oil stand-by fuel

§60.40c Applicability and delegation of authority

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The affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and has a maximum design input capacity of 100 MMBtu/hr of less, but greater or equal to 10 MMBtu/hr

§ 60.15 Reconstruction

(a) An existing facility, upon reconstruction, becomes an affected facility, irrespective of any change in emission rate.

(b) "Reconstruction" means the replacement of components of an existing facility to such an extent that:

(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and

(2) It is technologically and economically feasible to meet the applicable standards set forth in this part.

Analysis: Low NOx burners were installed in 1991 to comply with the 30 ppmv NOx limit of Rule 1146. Per a/n 256697 the cost of the burner replacement was \$175k. The cost of a new boiler and compliant burner in 1991 was estimated to be \$1,100,000 (email from applicant dated 5/6/13).

§ 60.14 Modification

...any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere [60.14(b) also goes on to explain that emission increase is determined based on an hourly basis]

Analysis: The installation of the low NOx burners in 1991 (boilers installed in 1975), did reduce the hourly NOx emissions rate. There is no previous CO emission data prior to the installation of the new burners (1993 CO source test shows the max CO ppmv less than half of the 400 ppmv limit). There is not a CO standard in this Rule, thus does not apply. Venting the boiler to SCR, there will be no increase in the NOx (reduction) or CO hourly emissions rate. Thus for the purpose of NSPS the boilers have not been modified.

40 CFR 60.14 –The boilers were installed and permitted in 1975 and applications were filed in 1991 to comply with Rule 1146. The applicant proposes to vent the boiler to SCR and there will be no change in the burner btu rating. Venting the boiler to SCR does not constitute a modification for NSPS purposes because it does not result in an hourly emissions increase per 40 CFR 60.14. As a result this boiler is not considered to have been modified after 2/25/2005 for NSPS purposes.

Section §60.42(c)(d) requires fuel oil to be less than 0.5 ppmw Sulfur content. Rule 431.2 requires fuel oil purchased to be less than 15 ppmw Sulfur content.

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40 CFR 60.48c(g)(2)- requires to record the monthly usage of natural gas and fuel oil combusted in the boiler. To demonstrate compliance with this section, requires boiler to be equipped with a non-resettable totalizing fuel meter.

Section §60.42c(h)(1) requires fuel oil supplier certification (list sulfur content of the fuel oil) according to 40 CFR 60.48c(f). Require the operator to have MSDS on site listing the sulfur content of the fuel oil.

**RECOMMENDATIONS**

For this reason, the following disposition is recommended; issue a revised Title V Facility Permit reflecting the modification of two boilers under section D.

Updates in Section D of the Title V facility Permit resulting from this addition are listed in Equipment and Condition sections of the attached draft permit.

Based on the analysis in this report, the equipment is expected to comply with the applicable Rules and Regulations of the SCAQMD and the applicable Rule 1146 requirements.

FOR THIS APPLICATION THE FOLLOWING DISPOSITION IS RECOMMENDED:

Issue PC/PO for the boilers and SCRs

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