

Lane Regional Air Pollution Authority
Synthetic Minor Air Contaminant Discharge Permit

REVIEW REPORT

University of Oregon
Department of Physical Plant

Permit No. 208557

1. General Background Information

The University of Oregon is an educational facility in Eugene, Oregon. Air emissions are generated from boilers generating electricity serving the heating and cooling needs of the campus, printing activities to support the educational activities and unpaved roads/parking areas. Emissions of criteria pollutants are principally from two natural gas-fired boilers located north of Franklin Boulevard near the main campus. Boiler #4 was converted from hog fuel-fired to natural gas-fired, with backup fuels converting from residual oil to distillate oil. The boilers, rated at 79 and 140 MMBtu/hr, produce steam for space heating and domestic water heating, as well as operating chillers during the summer. They also produce electrical power through three steam turbine generators, which is fed into the local utility grid. Other minor emission sources include two small gas-fired boilers located in Agate Hall, two small boilers at the Casanova Center, printing activities at the Register-Guard building in downtown Eugene and two air heater burners at the Indoor Practice Facility.

Boiler #1 is subject to the NSPS, Subpart Dc.

2. Reasons for Permit Action

This source's ACDP has expired and the source is required to have a permit as a source listed in LRAPA Rules Title 34. Title 34, Table A, Part II, 58(b) lists gas or oil burning equipment >100 and <250 MMBtu/hr as a category requiring an ACDP permit. Additionally, this source is taking enforceable limits on its potential to emit, thereby, becoming classified as a synthetic minor to avoid applicability of Title V requirements. The limits on the combustion of natural gas and fuel oil are synthetic minor limits for both SO₂ and NO_x emissions.

2. Enforcement History

There are currently no pending or ongoing enforcement actions against this source.

3. Performance Test Results

On July 2, 1997, the University of Oregon tested NO_x emissions from Boiler #4 to establish emission factors.

The test report indicates that NO_x emissions averaged 13.8 lbs/hr or 132 lbs/MMdscf natural gas while averaging 102,000 lb/hr of steam produced.

This permit requires a source test of each boiler to verify the emission factors used to determine compliance with the SO_x and NO_x synthetic minor limits.

4. Baseline Emissions Rate Information

The baseline emissions for the source are contained in the following table.

| Pollutant | Baseline Emission Rate (tons per year) |
|-----------|-------------------------------------------|
| PM | 271.6 |
| PM10 | 204.5 |
| SO2 | 34.2 |
| NOx | 116.4 |
| CO | 225.6 |
| VOC | 49.2 |

A. Baseline Emissions Rate Assumptions

- 1) 4 boilers in operation
- 2) 702,866,000 lbs of steam generated through firing 66,308 units (tons) of hogged fuel
- 3) 30,000,000 lbs of steam generated through firing 200,000 gal of #6 fuel oil with a sulfur content of 1.75%
- 4) 1 unit of hogged fuel generates 10,600 lbs of steam
- 5) 1 gallon of #6 fuel oil generates 150 lbs of steam

B. Baseline Emission Factors

| Source | Units | PM | SOx | NOx | VOC |
|-------------|----------------|------|--------|------|-----|
| #6 Fuel Oil | lbs/Kgal | 20.5 | 274.75 | 42.0 | .76 |
| Hogged Fuel | lbs/Klbs steam | Test | .014 | .31 | .13 |
| Fuel Pile | lb/ton | .5 | -- | -- | -- |

C. Baseline Emissions (tons/year)

| | | <u>prior baseline</u> | <u>corrected baseline</u> |
|------|---|-----------------------|---------------------------|
| PM | = | 177.6 | 271.6 |
| PM10 | = | | 204.5 |
| SOx | = | 32.4 | 34.2 |
| NOx | = | 115.6 | 116.4 |
| VOC | = | 45.8 | 49.2 |
| CO | = | | 225.6 |

*The prior baseline was set during an earlier permit action. The corrected baseline emissions rate is based on better information provided in the current permit application which is included as Attachment A to this review report.

The baseline emission rates, netting baseline, and previous and proposed

PSEL are shown below.

| Pollutant | Baseline Emission Rate (ton/yr) | Netting Baseline (ton/yr) | Plant Site Emission Limit (PSEL) | | |
|------------------|---------------------------------|---------------------------|----------------------------------|------------------------|---------------|
| | | | Previous PSEL (ton/yr) | Proposed PSEL (ton/yr) | PSEL Increase |
| PM | 217.6 | 217.6 | 177.6 | 79.8 | -191.8 |
| PM ₁₀ | 204.5 | 204.5 | 177.6 | 24.6 | -179.9 |
| SO ₂ | 34.2 | 34.2 | 32.4 | 72.7 | 38.4 |
| NO _x | 116.4 | 116.4 | 115.6 | 72.0 | -44.4 |
| CO | 225.6 | 225.6 | -- | 36.2 | -189.4 |
| VOC | 49.2 | 49.2 | 45.8 | 4.4 | -44.8 |

5. Synthetic Minor Limits

The potential to emit from Boilers 1 and 4 is greater than 100 tons per year of both sulfur dioxide and nitrogen oxides. Therefore, the permittee has taken enforceable limits on its potential to emit in order that it may be classified as a synthetic minor source, and therefore, not subject to the Title V Operating Permits requirements. The enforceable limits on the potential to emit are the Plant Site Emissions Limits, compliance with which may be determined on a monthly basis. This rolling 12-month total approach to compliance with PSELs has been previously reviewed by EPA and found to be an enforceable limit on potential to emit. In addition to recording information necessary to determine compliance monthly, the permittee shall calculate and record emissions when the fuel usage exceeds 75 percent of the fuel usage used in establishing the PSELs.

The PSELs for this permit were based on information provided by the permittee in the synthetic minor permit application. The PSEL in the permit include emissions from all boilers, the printing operations, and unpaved roads and parking areas. The emissions detail sheets from the application are included as Attachment A to this review report.

6. New Source Performance Standards (NSPS)

Boiler #1 is subject to the requirements of 40 CFR 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. The permittee presently complies with the sulfur standard by using fuel with a sulfur content of 0.5% or less, keeping records, and reporting as specified in 40 CFR 60.48c.

Boiler #1 is not subject to the TACT requirements since it is subject to the New Source Performance Standard.

Boiler #4 was originally installed in 1965. Boiler #4 had the capability of burning hog fuel and #6 oil. In 1991, the burners for this boiler were replaced for a combination of natural gas and #6 oil capability. Accord-

ing to information provided by the permittee, boiler #4 is not subject to the requirements of 40 CFR 60 Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units. The document, *NSPS Evaluation of Central Power Station Boilers #1 and #4*, dated May 7, 1997, was provided to LRAPA as an attachment to a September 24, 1997 memo from the U of O. In the document, the permittee indicates that Boiler #4 is not an affected facility since it has not been modified or reconstructed, and therefore, is not subject Subpart Db. The document is included as Attachment B to this review report.

Boiler #4 is not subject to TACT requirements since it is subject to emissions standards under Title 32 (32-010 and 32-020).

7. Permit Changes

- A. The 40% opacity limit was removed since the source no longer operates a wood fired boiler.
- B. The 0.2 grains per dry standard cubic foot limit was removed since both boilers have been modified since 1970.
- C. Miscellaneous conditions relating to the control and handling of boiler ash were removed since the source no longer burns wood fuels.

8. Public Notice

The draft permit was placed on public notice from February 4, 2000, to March 6, 2000. No written comments were received during the 30-day comment period.

DJ
6/28/01