

Standard AIR CONTAMINANT DISCHARGE PERMIT REVIEW REPORT

Department of Environmental Quality
Northwest Region

Source Information:

SIC	4911
NAICS	221119

Source Categories (Table 1 Part, code)	B 27
Public Notice Category	III

Compliance and Emissions Monitoring Requirements:

FCE	
Compliance schedule	
Unassigned emissions	
Emission credits	
Special Conditions	X

Source test	Within 180 days after startup
COMS	
CEMS	
Ambient monitoring	

Reporting Requirements

Annual report (due date)	15 Feb
Quarterly report (due dates)	

Monthly report (due dates)	
Excess emissions report	
Other (specify)	

Air Programs

Synthetic Minor (SM)	
SM -80	
NSPS (list subparts)	JJJJ
NESHAP (list subparts)	ZZZZ
Part 68 Risk Management	
CFC	

NSR	
PSD	
RACT	
TACT	
Other (specify):	

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PERMITTING

PERMITTING ACTION

1. The proposed permit is a new permit for a new source.

OTHER PERMITS

2. The applicant has also applied for storm water discharge permits and a solid waste permit from DEQ.

ATTAINMENT STATUS

3. The source will be located in a maintenance area for CO and Ozone. NO_x and VOC are precursors to Ozone. The facility is an insignificant source of CO, NO_x, and VOC.

SOURCE DESCRIPTION

OVERVIEW

4. The applicant proposes to operate a biogas production facility to produce electricity, with solid and liquid fertilizers as byproducts. Food waste (solid and liquid organic waste) from commercial producers including grocery stores, restaurants, and industrial food and beverage processors will be used as stock. Biogas, biologically produced in an enclosed anaerobic digestion process, will be used to fuel biogas-fired engines that will generate approximately 5.7 MW of electricity as well as usable heat. The byproduct heat will be used onsite and may also be provided to neighboring industrial facilities. Additional byproducts include liquid fertilizer, digestate fiber, and clean process water. Primary plant components include a receiving and pretreatment building, process equipment and tanks, byproduct processing facilities, and power-generation equipment. The power generated will support frequency and voltage on the Pacificorp distribution system and provide reliable electricity to the surrounding area.

Several large holding and processing tanks will be used for feedstock processing (buffering, hydrolysis, fermentation, and digestate treatment). Piping with related pumps will move substrate between tanks. The biogas will be passed through Sulfa Treat media to remove H₂S (approximately 87%) prior to being combusted in the engines. Generators and gas handling equipment will be installed to manage the gas produced and transform the gas into electricity.

Food wastes will be delivered to the site via truck on Monday through Saturday to coordinate with waste haulers' collection schedules. Vehicular access to the facility will be provided via NE Columbia Boulevard. Trucks will pass through the truck scale, enter

and offload within the pretreatment and process building and will exit south to NE Columbia Boulevard. Northeast Columbia Boulevard is designed to handle truck traffic, as it has a center turn lane for trucks heading east on Columbia Boulevard toward the facility. The facility anticipates 50 truck deliveries per day and about 8 trucks hauling byproduct material off-site per day.

The facility will be located at 6849 NE Columbia Boulevard, Portland, Oregon. The 11-acre project site is located north of NE Columbia Boulevard and south of the Columbia Slough. The property is currently occupied by industrial buildings to the south and agricultural uses to the north. Startup is estimated in autumn 2011.

PROCESS AND CONTROL DEVICES

5. Air contaminant sources at the facility will consist of the following:
 - a. Four GE Jenbacher JMC 420 lean burn engine generator sets, rated at 1426 kW (1966 bhp), spark ignition reciprocating engines, each equipped with a urea injection selective catalytic reduction (SCR) computer system to control NO_x and an oxidation catalyst to control CO, VOC, and organic HAPs. The engines will have unresettable clocks to monitor total hours of usage. Constant monitoring of the pressure drop across the SCR and catalyst beds is required.
 - b. Digestate tanks vents will be ducted to biofilters for odor control. The biofilters have not yet been selected. Maintenance requirements are contained in the permit.
 - c. One Varec 224E flare, rated at 1483 scfm, to combust biogas when an engine set is down for maintenance. In an emergency, the flare will be capable of combusting all the gas that would normally go to the engine sets. The flare is designed such that combustion is managed in the burners by pre-mixing air and gas using venturi burner nozzles. A minimum operating temperature of 1400 degrees Fahrenheit is contained in the permit.

COMPLIANCE

6. The facility will be inspected by Department personnel to ensure compliance with the permit conditions.

SPECIAL CONDITIONS

7. Equipment selections were not confirmed at the time of application. Should the applicant choose a different make/model of generator, it is required to notify DEQ of the equipment chosen, using forms available from the Department for that purpose.

EMISSIONS

8. Proposed PSEL information:

Pollutant	Baseline Emission Rate (tons/yr)	Netting Basis		Plant Site Emission Limits (PSEL)		
		Previous (tons/yr)	Proposed (tons/yr)	Previous PSEL (tons/yr)	Proposed PSEL (tons/yr)	PSEL Increase (tons/yr)
PM ₁₀	0	0	0	0	14	14
PM _{2.5}	0	0	0	0	9	9
SO ₂	0	0	0	0	39	39
NO _x	0	0	0	0	39	39
CO	0	0	0	0	99	99
VOC	0	0	0	0	39	39

- a. The proposed PSELs for all pollutants are equal to the Generic PSEL in accordance with OAR 340-216-0064(4)(b) and the netting basis is zero in accordance with OAR 340-222-0040(2).
- b. All PM from gas combustion is considered to be fine particulate (PM₁₀ / PM_{2.5}).
- c. Actual emissions, based on operating 8,760 hours per year, are 2 tons PM₁₀/PM_{2.5}, 2 tons SO₂, 10 tons NO_x, 25 tons CO, and 15 tons VOC. Emission factors were obtained from process and control equipment manufacturers.
- d. The PSEL is a federally enforceable limit on the potential to emit.

SIGNIFICANT EMISSION RATE ANALYSIS

9. For each pollutant, the proposed Plant Site Emission Limit is less than the Netting Basis plus the significant emission rate, thus no further air quality analysis is required.

MAJOR SOURCE APPLICABILITY

CRITERIA POLLUTANTS

10. A major source is a facility that has the potential to emit 100 tons/yr or more per year of any criteria pollutant. This facility will not be a major source of criteria pollutant emissions. See the PSEL section above.

HAZARDOUS AIR POLLUTANTS

11. A major source is a facility that has the potential to emit 10 tons/yr or more of any single HAP or 25 tons/yr or more of combined HAPs. This source will not be a major source of hazardous air pollutants. Trace amounts of several HAPs are associated with fuel combustion. The highest of these will be formaldehyde at 0.9 tons/year, followed by acetaldehyde at 0.5 tons/year. Total estimated HAPs are 2.13 tons/year.

ADDITIONAL REQUIREMENTS

NSPS / NESHAP APPLICABILITY

12. 40 CFR Part 60, Subpart JJJJ, is applicable to each engine (generator set) to be installed because they were manufactured in 2010.
13. 40 CFR Part 63, Subpart ZZZZ is applicable to each engine to be installed because they were manufactured in 2010. Subpart ZZZZ requires subject engines at area sources to meet the requirements in the NSPS (40 CFR 60, Subpart JJJJ). The NESHAP does not add any additional requirements.
14. Specific applicable requirements of the NESHAP and the NSPS are not included in the permit because DEQ is rescinding its adoption of these federal rules. It was determined that they are best implemented by US EPA at the manufacturers' level.

RACT APPLICABILITY

15. The facility is located in the Portland AQMA, but it is not one of the listed source categories in OAR 340-232-0010, thus the categorical RACT rules do not apply.

TACT APPLICABILITY

16. Biogas from the digester tanks is combusted in the engine generators. The engine generator sets are subject to NSPS and NESHAP requirements and are therefore not subject to TACT. In addition, the flare is a back-up control device for digester tank biogas combustion. The use of engines with control and the flare control device meets the requirements of TACT.

PUBLIC NOTICE

17. Pursuant to OAR 340-216-0066(4)(a)(A), issuance of Standard Air Contaminant Discharge Permits require public notice in accordance with OAR 340-209-0030(3)(c), which requires that the Department provide notice of the proposed permit action and a minimum of 35 days for interested persons to submit written comments. In addition, a hearing will be scheduled to allow interested persons to submit oral or written comments if the Department receives written request for a hearing from ten persons, or from an organization representing at least ten persons, within 35 days of the mailing of the public notice. If a hearing is scheduled, the Department will provide a minimum of 30 days notice for the hearing. **The public notice was mailed on October 15th, 2010; a public hearing was held on November 18th, 2010; the comment period ended on November 29th, 2010.**

18. DEQ made the following changes based upon comments received and additional internal review:

Section 3.1.a: Added the requirement that all biogas to be combusted must be vented through the H₂S treatment system.

Section 3.1.b: Moved the H₂S sampling requirements from 3.1.d to 3.1.b for clarity. The requirement was also modified to require immediate corrective action upon a single measurement above 25 ppm. Also requires verification of a return to compliance after corrective action has been taken.

Section 3.1.c.iii: Added an internal combustion temperature requirement for the flare.

Section 3.1.d: Updated the language of this requirement to incorporate results from required emission factor verification testing.

Section 3.1.e: Added corrective action requirements for urea injection range exceedances.

Section 5.0: Added source testing requirements to verify the proposed emissions factors for NO_x, CO, and VOC from the generators and control device. If the installed units are identical only one unit must be tested.

Section 7.1: Revised the language of this requirement to incorporate appropriate procedures for notification of DEQ.

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