Puget Sound Clean Air Agency

Notice of Construction No. **12135**

HEREBY ISSUES AN ORDER OF APPROVAL TO CONSTRUCT, INSTALL, OR ESTABLISH

Registration No. **14063**

Date

Sewage sludge gasification and syngas oxidation system. Sludge rotary drum dryer. Exhaust from gasification/oxidation and sludge dryer controlled by product separator cyclone, venturi scrubber, granulated activated carbon adsorption. Dry sludge handling bins, conveyors, hoppers controlled by one baghouse.

OWNER	INSTALLATION ADDRESS
Edmonds, City of, Wastewater Treatment Plant **200 2nd Ave S** **Edmonds, WA 98020**	**Edmonds, City of, Wastewater Treatment Plant** **200 2nd Ave S** **Edmonds, WA 98020**

THIS ORDER IS ISSUED SUBJECT TO THE FOLLOWING RESTRICTIONS AND CONDITIONS

1. Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Clean Air Agency to the applicant to install or establish the equipment, device or process described hereon at the INSTALLATION ADDRESS in accordance with the plans and specifications on file in the Engineering Division of the Puget Sound Clean Air Agency.
2. This approval does not relieve the applicant or owner of any requirement of any other governmental agency.
3. The owner and/or operator under this order must comply with all applicable requirements established in 40 CFR Part 61 Subparts A and E.
4. The owner and/or operator shall not process more than 864 pounds of dry solids per hour in the sludge handling processes covered under this order of approval. Compliance with this condition can be done using monthly processing records or daily processing records.
5. The owner and/or operator shall ensure that the dewatered sludge is not processed in the gasifier into syngas unless the oxidizer is properly functioning as part of the system.
6. The owner and/or operator shall not operate the sludge dryer unless emissions are routed through a three-stage emissions control system: the Venturi scrubber, followed by a packed bed scrubber, and then an activated carbon contactor.
7. All emissions associated with sludge drying and dried sludge handling shall be routed to either the three-stage emissions control system or the fabric filter dust collection system described above.
8. The gasifier/oxidizer operating temperature shall not exceed a temperature of 2500 degrees F. Compliance with this condition shall be determined using a block one-hour average, determined in accordance with 40 CFR 60.13(h)(2).
9. The flue gas exhaust stack coming from the sludge dryer, after being processed in the three-stage emissions control system, shall be 20 feet above the elevation of the bottom floor of the solids buildings.
10. The owner and/or operator shall not process waste from:
    - Extraction plants, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys, or beryllium-containing waste.
    - Machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than 5 percent beryllium by weight.

This condition can be verified according to the facilities waste discharge control program and shall be made available upon request from the agency.

11. The facility shall meet emission limits as described below.

Upon startup, emissions from the final exhaust stack shall not exceed the following limits.

Pollutant	Emissions Limit	Compliance Demonstration Method
SO2	1000 ppmv @ 7% O_2 dry	EPA Test Method 6C, or an alternative method approved by the Agency
HCl	100 ppmv @ 7% O_2 dry	EPA Test Method 26A, or an alternative method approved by the Agency
Arsenic	0.0000129 lbs/hr	EPA Test Method 29 Or an alternative method approved by the Agency.
Chrome (VI)	0.000000344 lbs/hr	EPA Test Method 29 Or an alternative method approved by the Agency.
PM	0.05 gr/dscf	EPA Test Method 5, Method 26A or Method 29 or an alternative method approved by the Agency.

Within 120 days after completing initial performance testing in accordance with permit condition 12, the owner and/or operator shall submit an engineering report to the agency proposing emission limits for the following constituents based on results of the initial performance test. Emission limits may include a 30% adjustment to allow for operational flexibility as long as this increase does not violate any other regulation. Upon approval by the Agency, the proposed emission limits will become enforceable operating limits and the owner and/or operator shall keep a copy of the table with all current enforceable limits on site and readily available for review.

If the results of the performance test show that using the updated testing emission factors would put the facility above any small quantity emission rates (SQERs) or any National Ambient Air Quality standards (NAAQS) that were previously below based on initial similar equipment estimates, the facility shall submit a permit modification to address these pollutants.

Pollutant	Emission Limit Units[a]	Compliance Demonstration Method[b]
PM	mg/dscm	EPA Test Method 5, Method 26A or Method 29
NOx	ppmv	EPA Test Method 7E
SO_2	ppmv	EPA Test Method 6C
CO	ppmv	EPA Test Method 10
VOC	ppmv	EPA Test Method 25 or 25A EPA Test Method 18 to quantify exempt compounds.
As	lb/ton of dry solids feed OR % removal from dry solids feed	Air: EPA Test Method 29 Solids: SW-846
Cd	lb/ton of dry solids feed OR % removal from dry solids feed	Air: EPA Test Method 29 Solids: SW-846

Hg	lb/ton of dry solids feed OR % removal from dry solids feed	Air: EPA Test Method 29 or 30B Solids: SW-846
Pb	lb/ton of dry solids feed OR % removal from dry solids feed	Air: EPA Test Method 29 Solids: SW-846
Hg	lb/ton of dry solids feed OR % removal from dry solids feed	Air: EPA Test Method 29 Solids: SW-846
Total dioxins and furans	ng/dscm	EPA Test Method 23

Notes:
[a] Gas phase concentrations shall be corrected to 7% oxygen dry.
[b] Or other method approved by the Agency.
[c] Permittee may include methods to address potential ammonium chloride interferences in Method 26

All equipment covered under this order of approval shall not be required to commence initial startup for the sole purpose of conducting a performance test. The owner and/or operator may wait until the unit is needed to commence initial startup and testing.

12. Within 90 days of completing initial startup of the carbon recovery project (Gasifier/Oxidizer system with dry sludge material handling), the owner and/or operator shall conduct a performance test to establish emissions limits in accordance with permit condition 11.

    At least 60 days prior to conducting performance testing, the owner and/or operator shall submit a performance test plan for the sampling that includes the following elements:

    - The data that is to be collected during the testing.
    - The test methods to be used for stack gas measurements.
    - Sample collection procedures and test methods for any other proposed testing (such as sludge or dry solids).
    - The procedures and methods that will be used to develop emissions limits from the results of the source test.

    The owner and/or operator shall conduct all testing in accordance with Section 3.07 of Puget Sound Clean Air Agency (PSCAA) Regulation I, including:

    - Sampling sites and velocity traverse points shall be selected in accordance with EPA Test Method 1 or 1A.
    - The gas volumetric flow rate shall be measured in accordance with EPA Test Method 2, 2A, 2C, 2D, 2F, 2G or 19.
    - The dry molecular weight shall be determined in accordance with EPA Test Method 3, 3A or 3B.
    - The stack gas moisture shall be determined in accordance with EPA Test Method.
    - The permittee shall use GFAAS or ICP/MS as needed for the analytical finish on the metals when using EPA Method 29 (Lead, Cadmium, Chrome, Arsenic and Mercury)

    The equipment identified in this section is not required to commence initial startup for the sole purpose of conducting a performance test. The owner and/or operator may wait until the unit is needed to commence initial startup and testing.

13. The owner and/or operator shall not exhaust the dried sludge separators unless they are connected to a properly functioning dust collection baghouse. The dust collection baghouse shall have an outlet grain loading standard of 0.002 gr/dscf @ 13% O_2 dry. Compliance with this condition can be met by

supplying manufacturers specifications showing the dust collection baghouse is capable of meeting the grain loading standard. The owner and/or operator shall make the document available to the agency upon request.

14. The owner and/or operator shall ensure that the flue gas entering the venturi scrubber unit does not exceed 230 degrees F (one-hour block average). The owner and/or operator must monitor the temperature of the influent gas coming into the venturi scrubber to ensure compliance with this condition.

15. The owner and/or operator shall ensure that the flue gas entering the packed bed carbon adsorption unit does not exceed 200 Degrees F (one-hour block average). The owner and/or operator must monitor the temperature of the influent gas coming into the packed bed carbon adsorption unit to ensure compliance with this condition.

16. The owner/or operator shall develop and maintain an Operation and Maintenance (O&M) plans for the three-stage emission control (the Venturi scrubber, followed by a packed bed scrubber, and then an activated carbon contactor). The O&M plan shall be developed and implemented per Agency's Regulation I.

17. Odor Compliance
The owner and/or operator shall develop an odor response plan and odor complaint log with the following elements:
    a. Instances where the odor is detected and any corrective action taken.
    b. Initiate an investigation of all odor complaints received from the public as soon as possible, but no later than 12 hours after receipt of the complaint.
    c. Take corrective action to eliminate odors beyond the property line as soon as possible, but within 24 hours after receipt of the complaint. If the odors cannot be eliminated within 24 hours after receipt of the complaint, the owner and/or operator shall explain the reasoning in the odor compliant log and the date that it was corrected.
    d. Develop a report for every odor complaint and investigation. The odor complaint and investigation report must include the following:
        i. The date and time of when the complaint was received.
        ii. The date and time of when the investigation was initiated.
        iii. Location of complaint and investigation.
        iv. Weather conditions during the complaint and investigation.
        v. Description of complaint and investigation.
        vi. Actions taken in response to the complaint.
        vii. The date and time odors are no longer detected.

18. The following records shall be kept onsite and up-to-date, and be made readily available to Agency personnel upon request at all times:
    a. Compliance test reports.
    b. Amount of sludge handling processed on a monthly or daily basis to verify compliance with Permit Condition 4.
    c. A copy of the odor complaint log and odor response plan.
    d. A written log showing any instance where sludge handling gasses bypass the oxidizer or the three-stage control system and are released to the atmosphere unabated. Each log entry must include date, time, duration and the estimated amount of sludge handling gasses released to the atmosphere.
    e. The Operation and Maintenance (O&M) plan.
    f. All records required by 40 CFR 61 Subpart E.

19. Records required by this order must be kept by the owner and/or operator for at least 2 years, and made

available upon request by the agency.

20. This Order of Approval hereby cancels and supersedes Order of Approval 11212 (issued 7/26/2016) upon the installation of the new equipment outlined in this Order of Approval.

APPEAL RIGHTS

Pursuant to Puget Sound Clean Air Agency's Regulation I, Section 3.17 and RCW 43.21B.310, this Order may be appealed to the Pollution Control Hearings Board (PCHB). To appeal to the PCHB, a written notice of appeal must be filed with the PCHB and a copy served upon Puget Sound Clean Air Agency within 30 days of the date the applicant receives this Order.

Ralph Munoz
Reviewing Engineer

John Dawson
Engineering Manager