

**BUREAU OF AIR MANAGEMENT
NEW SOURCE REVIEW PERMIT
TO CONSTRUCT AND OPERATE A STATIONARY SOURCE**

Issued pursuant to Title 22a of the Connecticut General Statutes (CGS) and Section 22a-174-3a of the Regulations of Connecticut State Agencies (RCSA).

Owner/Operator	Borough of Naugatuck/ Naugatuck Environmental Technology LLC
Address	229 Church Street, Naugatuck, CT 06770
Equipment Location	500 Cherry Street Extension, Naugatuck, CT 06770
Equipment Description	Zimpro Fluidized Bed Sewage Sludge Incinerator
Town-Permit Numbers	109-0081
Premises Number	11
Stack Number	4
Modification Issue Date	December 12, 2023
Prior Permit Issue Dates	4/1/02, 9/6/05, 4/23/09, 5/7/10, 6/3/19 and 1/25/23
Expiration Date	None

for 
Katherine S. Dykes
Commissioner

December 12, 2023

Date

This permit specifies necessary terms and conditions for the operation of this equipment to comply with state and federal air quality standards. The Permittee shall at all times comply with the terms and conditions stated herein.

PART I. DESIGN SPECIFICATIONS

A. General Description

The Zimpro fluidized bed incinerator (FBI) has a sludge design feed rate of 3.5 dry tons sludge per hour (DT/hr). Sludge is fed to the bottom of the sand bed where air is injected at high pressure under the bed, fluidizing the sand and the sludge. Processing of sludge within the sand bed consists of evaporation of water and pyrolysis of organic material. The remaining carbon and combustible gases are burned in the freeboard area above the sand bed. Oil lances are located within the sand bed in order to deliver auxiliary fuel to maintain the desired combustion temperature if necessary. All ash generated in the combustion chamber leaves the top of the incinerator.

The incinerator includes a sludge dryer system integral to the incinerator, to reduce the consumption of auxiliary fuel. The sludge dryer system is used to evaporate water from the sludge prior to injecting the sludge into the incinerator. A waste heat recovery unit extracts heat from the incinerator flue gas to generate steam or heat a thermal oil transfer fluid. The steam or hot oil is used to indirectly heat the sludge in the dryer. Water is evaporated from the heated sludge and is collected by cooling. The non-condensable exhaust gases from the dryer are fed to the incinerator; therefore, the dryer does not generate any air emissions directly to the atmosphere. The dried sludge is then fed to the incinerator where it is combusted with a reduced need for auxiliary fuel.

A single burner is located near the air injection at the bottom of the bed. This burner is used to pre-heat the incinerator during start up. Lances are used to inject fuel into the bed to control bed temperature. Higher fuel injection rates are necessary when sludge solids content are lowest and moisture highest.

After the flue gas passes through the waste heat recovery unit, particulate is removed by an EnviroCare VenturiPak scrubber and an Envirocare SPC Mercury Module Vessel. The VenturiPak scrubber consists of an initial quench section to cool the exhaust gases and remove the bulk of the ash or metal particles and acid gases from the incoming gas, a tray section which further removes particulate and the associated metals and acid gases, a multi-venturi section to capture the finest particulate from the exhaust gas, and a mist eliminator. The VenturiPak tray section and venturi section uses plant water to remove particulate and acid gases in the tray section. Potable water is used for the mist eliminator sprays. The GORE Mercury adsorber has a series of GORE modules to remove the mercury. This adsorber has four sections of modules in series. Each section consists of two layers of nine GORE modules. Periodically the modules are sprayed with water to flush any particulate from the surface.

A System Control and Data Acquisition System (SCADA) is used to control the incineration system and to historically log operations. Air, sludge feed rate, and auxiliary fuel feed rate are automatically controlled to maintain the process in balance. Significant features of the process instrumentation and control include:

- Automatic control of auxiliary fuel based on incinerator combustion temperature;
- Manual adjustment of sludge feed rate and required combustion and excess air;

- An alarm system to proactively warn the operator of system imbalances, including, for example, low air flow to the incinerator, high incinerator outlet temperature, and low scrubber water flow; and,
- Electrical interlocks to prevent improper sequencing of startup and to prevent the system from operating outside of certain permitted limits.

B. Equipment Design Specifications

1. Fluidized Bed Incinerator
 - a. Manufacturer: U.S. Filter/Zimpro Products
 - b. Materials Charged: Sewage sludge
 - c. Incinerator Rated Capacity: 3.5 DT/hr
 - d. Gas Flow Rate: 11,050-14,250 scfm @ 68°F, wet at stack exit
 - e. Incinerator Combustion Temperature: 1300 - 1500°F typical during normal steady state or quasi-steady state operations
 - f. Incinerator Residence Time: 3-6 seconds during normal steady state or quasi-steady state operations
 - g. Sludge Heat Content: 7,000-8,000 Btu/lb, moisture free basis, typical
2. Auxiliary Burner System
 - a. Auxiliary Fuel Type: No. 2 oil and natural gas (Liquefied Petroleum Gas (LPG)) may be used for pilot lighting)
 - b. Start Up Burner Auxiliary Fuel Rate: ≤ 85 gal/hr for No. 2 oil; $\leq 12,070$ cf/hr for natural gas
 - c. Lance Burner Auxiliary Fuel Rate: ≤ 225 gal/hr for No. 2 oil; $\leq 32,000$ cf/hr for natural gas

C. Control Equipment Design Specifications

1. Scrubber
 - a. Make and Model: EnviroCare VenturiPak Scrubber
 - b. Reagent: Plant water and potable water
 - c. Reagent Flow Rate: To Be Determined gpm
 - d. Minimum Pressure Drop: 32 inches H₂O (12-hour average)
 - e. pH: To Be Determined
2. Adsorber
 - a. Make and Model: Envirocare SPC Mercury Module Vessel
 - b. Adsorbent: GORE Module
 - c. Flow Rate: 12,975 scfm
 - d. Maximum Inlet Gas Temperature: 180 °F (12-hour average)
 - e. Maximum Pressure Drop: 2.7 inches H₂O (12-hour average)

D. Stack Parameters

1. Minimum Stack Height: 150 ft
2. Exhaust Gas Flow Rate: 1761,671-20,166 acfm (Normal range)
3. Stack Exit Temperature: 150-250°F (Typical at normal operating conditions)

4. Minimum Distance from Stack to Nearest Property Line: 206 ft

PART II. OPERATIONAL CONDITIONS

A. Equipment

1. Fluidized Bed Incinerator (normal or quasi-steady state operating conditions)
 - a. Material Charged: Only sewage sludge, No. 2 fuel oil, natural gas and LPG may be fired in this unit.
 - i. For the purpose of this permit, sewage sludge is defined as any solid, semi-solid or liquid residue from the pretreatment or primary, secondary or advanced treatment by a Publicly Owned Treatment Works (POTW) of domestic sewage, industrial wastewater, septage, portable toilet pumpings, and grease traps.
 - ii. Any substance which is considered "municipal-type solid waste," as defined in Title 40 of the Code of Federal Regulations (CFR) Part 60, Section 60.51a, or "hazardous waste," as defined in Section 22a-115 of the Connecticut General Statutes is prohibited from being introduced to this unit.
 - b. Maximum Sludge Charging Rate over a 30-day rolling average: 3.5 DT/hr
 - c. Maximum Quantity of Sludge Burned over any consecutive 12 month period: 30,660 DT
 - d. Operation of a sewage sludge incinerator (SSI) shall not cause the operating combustion temperature for the sewage sludge incinerator to exceed the performance test combustion temperature by more than 20%.
[40 CFR §503.45(e)]
 - e. The Permittee shall terminate sludge feed if the exhaust duct temperature is less than 1400°F for a five minute period on a rolling basis or greater than 1750°F (instantaneous) during normal operating conditions.
2. Auxiliary Burner System
 - a. Auxiliary Fuel Type: No. 2 oil or natural gas. (LPG may be used for pilot lighting)
 - b. Maximum Auxiliary Fuel Oil Sulfur Content (by weight, dry basis): 0.0015%
 - c. Maximum Auxiliary Fuel Usage over any consecutive 12 month period: 1.97 MMgal of No. 2 oil; 280 MMcf of natural gas; but the combination of No. 2 oil and natural gas usage shall not exceed 280,000 MMBTU
3. Furnace Exhaust Duct Oxygen Content
 - a. Oxygen Content Range: 3-3.5%, wet (at normal or quasi-steady state)
 - b. Sewage sludge shall cease being introduced into the incinerator if the percent oxygen is less than 2% wet, based on a 5-minute rolling average. Sewage may be reintroduced to the incinerator when the oxygen percent is at least 2% wet, based on a 5-minute rolling average

B. Control Equipment

1. Multi-venturi scrubber (normal steady state or quasi-steady state operating conditions):
 - a. The pressure drop across each wet scrubber used to meet the PM, Pb and Cd emission limits in 40 CFR Part 62 Subpart LLL, Table 2, shall be no less than the lowest 4-hour average pressure drop across each such wet scrubber measured during the most recent performance test demonstrating compliance with the PM, Pb and Cd emission limits.
[40 CFR §62.15985(b)]
 - b. The scrubber liquid flow rate (measured at the inlet to each wet scrubber), shall be no less

than the lowest 4-hour average liquid flow rate measured during the most recent performance test demonstrating compliance with all applicable emission limits.
[40 CFR §62.15985(c)]

- c. The scrubber liquid pH for each wet scrubber used to meet the SO_x or HCl emission limits in 40 CFR Part 62 Subpart LLL, Table 2, shall be no less than the lowest 1-hour average scrubber liquid pH measured during the most recent performance test demonstrating compliance with the SO_x and HCl emission limits.
[40 CFR §62.15985(d)]
2. Mercury Adsorber (normal steady state or quasi-steady state operating conditions):
 - a. The Permittee shall measure mercury concentrations quarterly using a portable analyzer at the inlet and outlet of the mercury control system.
 - b. The Permittee shall replace the first layer of the mercury modules should the removal efficiency of the Mercury Adsorber be less than 70% and the outlet concentration is greater than 0.03 mg/m³.

PART III. ALLOWABLE EMISSION LIMITS

The Permittee shall not cause or allow this equipment to exceed the emission limits stated herein at any time.

A. Criteria Pollutants

Pollutant	lb/DT	Dry Sludge Content	mg/dscm @ 7% O ₂	ppmdv @ 7% O ₂	tpy
PM ₁₀			18 ^a		7.4
PM ₁₀	0.41	< 30 % ash			
PM ₁₀	0.48	≥ 30% ash			
SO ₂				15 ^a	55.0
SO ₂	2.7	< 1.5% sulfur			
SO ₂	3.6	≥ 1.5% sulfur			
NO _x	2.9			150 ^a	44.0
VOC	0.32				4.9
CO	1.4			64 ^a	22.0
Lead (Pb)	0.021		7.4E-03 ^a		0.32

Note:

- ^a The Permittee shall meet the emission limits and standards specified in Table 2 to 40 CFR Part 62 Subpart LLL by the final compliance date specified in 40 CFR §62.15875. The emission limits and standards apply at all times the unit is operating and during periods of malfunction. The emission limits and standards apply to emissions from a bypass stack or vent while sewage sludge in the combustion chamber (i.e., until the sewage sludge feed to the combustor has been cut off for a period of time not less than the sewage sludge incineration residence time). [40 CFR §62.15955; 40 CFR §503.40(c)(2)]

B. Hazardous Air Pollutants

Pollutant	lb/DT	lb/24-hr period	mg/dscm @ 7% O ₂	ppmdv @ 7% O ₂	ng/dscm @ 7% O ₂
Beryllium (Be)		0.022			
Cadmium (Cd)			1.6E-03 ^a		
Dioxins/Furans					1.2 ^a (total mass basis) or 0.10 ^a (toxic equivalency basis)
Hydrogen Chloride (HCl)	0.32			0.51 ^a	
Mercury (Hg)		7.1	3.7E-02 ^a		
Sulfuric Acid (H ₂ SO ₄)	0.32				

Note:

^a The Permittee shall meet the emission limits and standards specified in Table 2 to 40 CFR Part 62 Subpart LLL by the final compliance date specified in 40 CFR §62.15875. The emission limits and standards apply at all times the unit is operating and during periods of malfunction. The emission limits and standards apply to emissions from a bypass stack or vent while sewage sludge in the combustion chamber (i.e., until the sewage sludge feed to the combustor has been cut off for a period of time not less than the sewage sludge incineration residence time). [40 CFR §62.15955]

- C. This equipment shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted and listed in RCRA §22a-174-29. [STATE ONLY REQUIREMENT]
- D. Demonstration of compliance with the above emission limits may be met by calculating the emission rates using emission factors from the following sources:
- *Criteria Pollutants: Most recent stack test*
 - *CO: As measured by the CEM system (ppmvd @ 7% O₂)*
 - *HAP (Be, Cd, Dioxins/Furans, HCl, Hg, H₂SO₄): Most recent stack test*

F. Opacity

1. On and after the date on which the performance test required to be conducted by 40 CFR §60.8 is completed, the Permittee shall not discharge or cause the discharge into the atmosphere any gases which exhibit 20% opacity or greater.
[40 CFR §60.152(a)(2)]
2. The Permittee shall meet the following emission limit: Visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) for no more than 5% of any compliance test hourly observation period. The Permittee shall determine compliance using a visible emission test (40 CFR Part 60, Appendix A-7, Method 22).
[40 CFR §62.15955 and 40 CFR Part 62 Subpart LLL, Table 2]

The commissioner may require other means (e.g. stack testing) to demonstrate compliance with the above emission limits, as allowed by state or federal statute, law or regulation.

PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS

A. Monitoring

1. The Permittee shall comply with the CEM requirements as set forth in RCSA §22a-174-4a. CEM shall be required for the following pollutant/operational parameters and enforced on the following basis:

Pollutant/Operational Parameter	Averaging Times	Emission Limit	Units
Opacity	six minute block	20	%
CO	24-hour block	64 ^a	ppmvd @ 7% O ₂
O ₂	1-hour block		
SSI-Minimum combustion chamber operating temperature	12-hour block	The Permittee shall meet a site-specific operating limit established per 40 CFR §62.15985 [40 CFR §62.15960(a)]	°F
Scrubber-Minimum pressure drop	12-hour block	The Permittee shall meet a site-specific operating limit established per 40 CFR §62.15985 [40 CFR §62.15960(b)]	inches H ₂ O
Scrubber- Minimum liquid flow rate	12-hour block	The Permittee shall meet a site-specific operating limit established per 40 CFR §62.15985 [40 CFR §62.15960(b)]	gpm
Scrubber-Minimum liquid pH	3-hour block	The Permittee shall meet a site-specific operating limit established per 40 CFR §62.15985 [40 CFR §62.15960(b)]	Not Applicable

Note:

^a For determining compliance with the CO concentration limit using CO CEMS, the correction to 7% O₂ does not apply during periods of startup or shutdown. Use the measured CO concentration without correcting for O₂ concentration in averaging with other CO concentrations (corrected to 7% O₂) to determine the 24-hour average value. [40 CFR §62.15970]

2. The Permittee shall install, calibrate, maintain and operate a CO monitor. [RCSA §22a-174-4a; 40 CFR §503.40(c)(1)]
3. The Permittee shall provide access to the sludge charged so that a well-mixed representative grab sample of the sludge can be obtained. [40 CFR §60.153(a)(2)]

4. The Permittee shall install, calibrate, maintain and operate a monitoring device that continuously measures and records the pressure drop of the gas flow through the wet scrubbing device. Where a combination of wet scrubbers is used in series, the pressure drop of the gas flow through the combined system shall be continuously monitored. The device used to monitor scrubber pressure drop shall be certified by the manufacturer to be accurate within ± 1 inch of water gauge and shall be calibrated on an annual basis in accordance with the manufacturer's instructions.
[40 CFR §60.153(b)(1)]
5. The Permittee shall install, calibrate, maintain and operate a monitoring device that continuously measures and records the oxygen content (wet) of the incinerator exhaust gas. The oxygen monitoring device shall be located upstream of any rabble shaft cooling air inlet into the incinerator exhaust gas stream, fan ambient air recirculation damper, or any other source of dilution air. The oxygen monitoring device shall be certified by the manufacturer to have an accuracy of $\pm 5\%$ over its operating range and shall be calibrated according to methods prescribed by the manufacturer at least once each 24-hour operating period.
[40 CFR §60.153(b)(2); 40 CFR §503.45(b)]
6. The Permittee may demonstrate initial compliance using a continuous emissions monitoring system or continuous automated sampling system. The option to use a continuous emission monitoring system for HCl, dioxins/furans, Cd, or Pb take effect on the date a final performance specification applicable to HCl, dioxins/furans, Cd, or Pb is published in the FEDERAL REGISTER. The option to use a continuous automated sampling system for dioxins/furans takes effect on the date a final performance specification for such a continuous automated sampling system is published in the FEDERAL REGISTER. Collect data as specified in 40 CFR §62.16015(b)(6) and use the procedures in 40 CFR §§62.15980(b)(1-4).
[40 CFR §62.15980(b)]
7. The minimum combustion chamber operating temperature (or minimum afterburner temperature), is equal to the lowest 4-hour average combustion chamber operating temperature (or afterburner temperature) measured during the most recent performance test demonstrating compliance with all applicable emission limits.
[40 CFR §62.15985(e)]
8. For each continuous monitoring system, the Permittee's monitoring plan shall address the elements and requirements specified in 40 CFR §§62.15995(a)(1) through (8). The Permittee shall operate and maintain the continuous monitoring system in continuous operation according to the site-specific monitoring plan. [40 CFR §62.15995(a)]
9. The Permittee shall conduct an initial performance evaluation of each continuous monitoring system in accordance with the monitoring plan and to 40 CFR §60.13(c). The Permittee shall conduct the initial performance evaluation of each continuous monitoring system within 60 days of installation of the monitoring system.
[40 CFR §62.15995(c)]
10. The Permittee shall meet the requirements of 40 CFR §§62.16000(a) and (b) as applicable, and 40 CFR §§62.16000(c) through (e), according to the performance testing, monitoring, and calibration requirements in 40 CFR §§62.16015(a) and (b). [40 CFR §62.16000]

11. The Permittee shall continuously monitor operating parameters as specified in 40 CFR §62.16005(a) and meet the requirements of 40 CFR §§62.16005(b) and (c), according to the monitoring and calibration requirements in 40 CFR §62.16020. The Permittee shall confirm and re-establish operating limits as specified in 40 CFR §62.16005(d). [40 CFR §62.16005]
12. The Permittee shall meet, as applicable, the performance testing requirements specified in 40 CFR §62.16015(a), the monitoring requirements specified in 40 CFR §62.1615(b), the air pollution control device inspections requirements specified in 40 CFR §62.16015(c) and the bypass stack provisions specified in 40 CFR §62.16015(d). [40 CFR §62.16015]
13. The Permittee shall install, calibrate, maintain and operate an instrument that continuously measures and records information used to determine the moisture content in the sewage sludge incinerator stack exit gas. [40 CFR §503.45(c)]
14. The Permittee shall install, calibrate, maintain and operate an instrument that continuously measures and records combustion temperatures. [40 CFR §503.45(d)]
15. The Permittee shall perform inspections of the control devices as recommended by the manufacturer.

B. Record Keeping

1. The Permittee shall determine the hourly dry sludge feed rate (DT/hr) in accordance with the following procedure:
 - a. The Permittee shall calculate the dry solids hourly feed rate (DT/hr) using:
 - i. the most recent volumetric wet sludge feed rate (recorded continuously);
 - ii. the most recent wet sludge density determination (done monthly); and
 - iii. most recent daily dry solids mass determination (done by blending results of samples taken multiple times per day).
 - b. The Permittee shall determine the daily average dry solids hourly feed rate (DT/hr) by averaging the day's hourly feed rates.
 - c. The Permittee shall compute a rolling 30-day average dry solids hourly feed rate by adding the current daily average (DT/hr) to the previous 29 daily averages (DT/hr) and calculating the average value. The rolling 30-day average dry solids hourly feed rate (DT/hr) shall be used to determine compliance with the maximum allowable dry sludge feed rate.
 - d. The Permittee shall also keep records of daily, monthly, and consecutive 12-month quantity of sludge combusted (DT).
 - e. The Permittee shall make these calculations within 30 days of the end of each month.
2. The Permittee shall make and keep records of the daily, monthly and consecutive 12 month auxiliary fuel consumption. The consecutive 12 month fuel consumption shall be determined by adding (for each fuel) the current month's fuel consumption to that of the previous 11 months. The Permittee shall make these calculations within 30 days of the end of each month.
3. The Permittee shall keep records of the fuel certification for each delivery of fuel oil from a bulk petroleum provider or a copy of the current contract with the fuel supplier supplying the fuel used by this equipment that includes the applicable sulfur content of the fuel as a condition of each shipment. The shipping receipt or contract shall include the date of delivery, the name of the fuel supplier, type of fuel delivered, the percentage of sulfur in such fuel, by weight, dry basis, and the method used to determine the sulfur content of such fuel.

4. The Permittee shall calculate and record the monthly and consecutive 12 month PM, PM₁₀, PM_{2.5}, SO₂, NO_x, VOC, and CO emissions in units of tons. The consecutive 12 month emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous 11 months. Such records shall include a sample calculation for each pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month.
5. The Permittee shall keep calibration and maintenance records and original instrument chart recordings for all continuous monitoring instruments and equipment.
6. The Permittee shall keep records of any incinerator performance test results.
7. The Permittee shall make and keep a record of the measured pressure drop of the gas flow through the wet scrubbing device. [40 CFR §60.153(c)(1)]
8. The Permittee shall make and keep a record of the measured oxygen content of the incinerator exhaust gas. [40 CFR §60.153(c)(2)]
9. The Permittee shall maintain at the facility the documentation of the operator training procedures specified under 40 CFR §62.15920(c)(1) and make the documentation readily accessible to all SSI unit operators. [40 CFR §62.15950(a)]
10. The Permittee shall establish a program for reviewing the information listed in 40 CFR §62.15920(c)(1) with each qualified incinerator operator and other plant personnel who may operate the unit according to the provisions of 40 CFR §62.15945(a), according to the following schedule: [40 CFR §§62.15950(b)(1) and (2)]
 - a. The initial review of the information listed in 40 CFR §62.15920(c)(1) shall be conducted prior to an employee's assumption of responsibilities for operation of the SSI unit; and
 - b. Subsequent annual reviews of the information listed in 40 CFR §62.15920(c)(1) shall be conducted no later than 12 months following the previous review.
11. The Permittee shall maintain the items (as applicable) specified in 40 CFR §§62.16025(a) through (n) for a period of at least five years. All records shall be available on site in either paper copy or computer-readable format that can be printed upon request, unless an alternative format is approved by the Administrator: [40 CFR §62.16025]
 - a. Calendar date of each record [40 CFR §62.16025(a)]
 - b. Copies of the final control plan and any additional notifications, reported under 40 CFR §62.16030 [40 CFR §62.16025(b)]
 - c. Documentation of the operator training procedures and records specified in 40 CFR §§62.16025(c)(1) through (4). The Permittee shall make available and readily accessible at the facility at all times for all SSI unit operators the documentation specified in 40 CFR §62.16025(c)(1). [40 CFR §62.16025(c)]
 - d. Records of the results of initial and annual air pollution control device inspections conducted as specified in 40 CFR §62.15990 and 40 CFR §62.16015(c), including any required maintenance and any repairs not completed within ten days of an inspection or the timeframe established by the Administrator [40 CFR §62.16025(d)]
 - e. Performance test reports [40 CFR §62.16025(e)]
 - f. Continuous monitoring data [40 CFR §62.16025(f)]
 - g. Other records for continuous monitoring systems [40 CFR §62.16025(g)]

- h. Records of any deviation reports submitted under 40 CFR §§62.16030(e) and (f) [40 CFR §62.16025(h)]
 - i. Equipment specifications and related operation and maintenance requirements received from vendors for the incinerator, emission controls and monitoring equipment [40 CFR §62.16025(i)]
 - j. Records of inspections, calibration and validation checks of any monitoring devices as required under 40 CFR §62.16015 and 40 CFR §62.16020 [40 CFR §62.16025(j)]
 - k. Records of the monitoring plans required under 40 CFR §62.15995, and records of performance evaluations required under 40 CFR §62.16000(b)(5) [40 CFR §62.16025(k)]
 - l. Less frequent testing [40 CFR §62.16025(l)]
 - m. Records indicating use of bypass stack, including date, times and durations as required under §62.16020(d) [40 CFR §62.16025(m)]
 - n. If a malfunction occurs, the Permittee shall keep a record of the information submitted in the annual report in 40 CFR §62.16030(c)(16). [40 CFR §62.16025(n)]
12. The Permittee shall make and keep the following records and shall retain the information for five years: [40 CFR §503.40(c)(3)]
- a. The CO concentrations in the exit gas; and
 - b. A calibration and maintenance log for the instrument used to measure the CO concentration.
13. The Permittee shall develop the information in 40 CFR §§503.47(b, d-m) and shall retain that information for five years: [40 CFR §503.47(a)]
- a. The concentration of lead, arsenic, cadmium, chromium, and nickel in the sewage sludge fed to the sewage sludge incinerator [40 CFR §503.47(b)]
 - b. Information that indicates the requirements in the National Emission Standard for beryllium in 40 CFR Part 61 Subpart C are met [40 CFR §503.47(d)]
 - c. Information that indicates the requirements in the National Emission Standard for mercury in 40 CFR Part 61 Subpart E are met [40 CFR §503.47(e)]
 - d. The operating combustion temperatures for the sewage sludge incinerator [40 CFR §503.47(f)]
 - e. Values for the air pollution control device operating parameters [40 CFR §503.47(g)]
 - f. The oxygen concentration and information used to measure moisture content in the exit gas from the sewage sludge incinerator stack [40 CFR §503.47(h)]
 - g. The hourly sludge feed rate determination results [40 CFR §503.47(i)]
 - h. The stack height for the sewage sludge incinerator [40 CFR §503.47(j)]
 - i. The dispersion factor for the site where the sewage sludge incinerator is located [40 CFR §503.47(k)]
 - j. The control efficiency for lead, arsenic, cadmium, chromium, and nickel for each sewage sludge incinerator [40 CFR §503.47(l)]
 - k. The risk specific concentration for chromium calculated using Equation No. 6 in 40 CFR §503.43, if applicable [40 CFR §503.47(m)]
14. The Permittee shall keep all records required by this permit for a period of no less than five years and shall submit such records to the commissioner upon request.

C. Reporting

1. Opacity and CO CEMs-The Permittee shall submit to the Commissioner, on forms prescribed by the Commissioner, a quarterly report summarizing the excess emissions and the CEMS performance. Such report shall be submitted to the Commissioner not later than 30 days after the end of each calendar quarter in which data was collected. Each quarterly report shall include, at a minimum, the following information: [RCSA §22a-174-4a(i)(A-D)]
 - a. A list of all periods of excess emissions that includes:
 - i. Date and time of commencement and completion of each period of excess emissions,
 - ii. The measured value of excess emissions,
 - iii. The cause or likely cause of the excess emissions, and
 - iv. Corrective actions and future preventative measures;
 - b. A completed excess emissions summary form prescribed by the Commissioner;
 - c. A completed CEMS performance form prescribed by the commissioner which includes calculation of data availability for each pollutant and diluent, as specified in RCSA §22a-174-4a(g); and
 - d. A list of all periods of malfunctions of the CEMS that includes:
 - i. Date and time of commencement and completion of each malfunction period,
 - ii. Cause or likely cause of malfunction, and
 - iii. Corrective actions and future preventative measures.
2. The Permittee shall submit, to the commissioner, reports of the results of all performance tests conducted for this incinerator.
3. The Permittee shall submit to the Administrator semi-annually a report in writing which contains the following: [40 CFR §60.155(a)]
 - a. A record of average scrubber pressure drop measurements for each period of 15 minutes duration or more during which the pressure drop of the scrubber was less than, by a percentage specified in 40 CFR §60.155(a)(1)(i) or (ii), the average scrubber pressure drop measured during the most recent performance test.
[40 CFR §60.155(a)(1)]
 - b. A record of average oxygen content in the incinerator exhaust gas for each period of 1-hour duration or more that the oxygen content of the incinerator exhaust gas exceeds the average oxygen content measured during the most recent performance test by more than 3%. [40 CFR §60.155(a)(2)]
4. The Permittee shall submit a final control plan as specified in 40 CFR §§62.15875 and 62.15900.
[40 CFR §62.15875; 40 CFR §62.15900; 40 CFR §62.16030(a)(1); 40 CFR Part 62 Subpart LLL, Table 6]
5. The Permittee shall submit the notification of achievement of submitting the final control plan and achieving final compliance no later than ten business days after the compliance date as specified in 40 CFR §§62.15885 and 62.15890.
[40 CFR §62.15885; 40 CFR §62.15890; 40 CFR §62.16030(a)(2); 40 CFR Part 62 Subpart LLL, Table 6]

6. The Permittee shall submit the initial compliance report as specified in 40 CFR §62.16030(b) no later than 60 days following the initial performance test.
[40 CFR §62.15980(d); 40 CFR §62.16030(b); 40 CFR Part 62 Subpart LLL, Table 6]
7. The Permittee shall submit a monitoring plan specifying the ash handling system operating procedures that they will follow to ensure that they meet the fugitive emission limit specified in 40 CFR Part 62 Subpart LLL, Table 2.
[40 CFR §62.15995(d)]
8. The Permittee shall submit their monitoring plans required in 40 CFR §§62.15995(a) and (b) at least 60 days before the initial performance evaluations of the continuous monitoring systems.
[40 CFR §62.15995(f)]
9. The Permittee shall submit their monitoring plan for the ash handling system, as required in 40 CFR §62.15995(d), at least 60 days before the initial compliance test date.
[40 CFR §62.15995(g)]
10. The Permittee shall update and resubmit their monitoring plan if there are any changes or potential changes in the monitoring procedures or if there is a process change, as defined in 40 CFR §62.16045. [40 CFR §62.15995(h)]
11. The Permittee shall submit an annual compliance report that includes the items listed in 40 CFR §§62.16030(c)(1-16) for the reporting period specified in 40 CFR §62.16030(c)(3). The Permittee shall submit the first annual compliance report no later than 12 months following the submission of the initial compliance report in 40 CFR §62.16030(b). The Permittee shall submit subsequent annual compliance reports no more than 12 months following the previous annual compliance report.
[40 CFR §62.16000(d); 40 CFR §62.16030(c); 40 CFR Part 62 Subpart LLL, Table 6]
12. The Permittee shall submit a deviation report if:
[40 CFR §62.16000(d); 40 CFR §§62.16030(d)(1)(i), (iii-vii); 40 CFR Part 62 Subpart LLL, Table 6]
 - a. Any recorded operating parameter, based on the averaging time specified in 40 CFR Part 62 Subpart LLL, Table 4, is above the maximum operating limit or below the minimum operating limit established under 40 CFR Part 62 Subpart LLL.
 - b. Any recorded 24-hour block average emissions level is above the emission limit, if a continuous monitoring system is used to comply with an emission limit.
 - c. There are visible emissions of combustion ash from an ash conveying system for more than 5% of any compliance test hourly observation period.
 - d. A performance test was conducted that deviated from any emission limit in 40 CFR Part 62 Subpart LLL, Table 2.
 - e. A continuous monitoring system was out of control.
 - f. The Permittee had a malfunction (e.g., continuous monitoring system malfunction) that caused or may have caused any applicable emission limit to be exceeded.
13. The deviation report shall be submitted by August 1 of that year for data collected during the first half of the calendar year (January 1 to June 30), and by February 1 of the following year for data collected during the second half of the calendar year (July 1 to December 31).
[40 CFR §62.16030(d)(2); 40 CFR Part 62 Subpart LLL, Table 6]

14. For each deviation where the Permittee is using a continuous monitoring system to comply with an associated emission limit, report the items described in 40 CFR §§62.16030(d)(3)(i-viii).
[40 CFR §62.16030(d)(3); 40 CFR Part 62 Subpart LLL, Table 6]
15. If the unit was shut down by the Administrator, under the provisions of 40 CFR §62.15945(b)(2)(i), due to failure to provide and accessible qualified operator, the Permittee shall notify the Administrator within five days of meeting 40 CFR §62.15945(b)(2)(ii) that the Permittee is resuming operation.
[40 CFR §62.16030(e)(2); 40 CFR Part 62 Subpart LLL, Table 6]
16. If a force majeure is about to occur, occurs, or has occurred for which the Permittee intends to assert a claim of force majeure:
[40 CFR §62.16000(e); 40 CFR §§62.16030(f)(1) and (2); 40 CFR Part 62 Subpart LLL, Table 6]
 - a. The Permittee shall notify the Administrator, in writing as soon as practicable following the date the Permittee first knew, or through the diligence, should have known that the event may cause or caused a delay in conducting a performance test beyond the regulatory deadline, but the notification shall occur before the performance test deadline unless the initial force majeure or a subsequent force majeure event delays the notice, and in such cases, the notification shall occur as soon as practicable.
 - b. The Permittee shall provide to the Administrator a written description of the force majeure event and rationale for attributing the delay in conducting the performance test beyond the regulatory deadline to the force majeure; describe the measures take or to be taken to minimize the delay; and identify a date by which the Permittee proposes to conduct the performance test.
17. The Permittee shall submit other notifications as provided by 40 CFR §60.7 and as follows:
[40 CFR §§62.16030(g)(1-3); 40 CFR Part 62 Subpart LLL, Table 6]
 - a. The Permittee shall notify the Administrator one month before starting or stopping use of a continuous monitoring system for determining compliance with any emission limit.
 - b. The Permittee shall notify the Administrator at least 30 days prior to any performance test conducted to comply with the provisions of 40 CFR Part 62 Subpart LLL, to afford the Administrator the opportunity to have an observer present.
 - c. As specified in 40 CFR §62.16015(a)(8), the Permittee shall notify the Administrator at least seven days prior to the date of a rescheduled performance test for which notification was previously made in 40 CFR §62.16030(g)(2).
18. The Permittee shall submit reports in the format as specified in 40 CFR §62.16030(h).
[40 CFR §62.16030(h)]
19. The Permittee shall notify the commissioner, in writing, of the following:
 - a. the date of completion of the proposed modification in Application No. 202308585;

Any required written notification(s) above shall be submitted to DEEP.CACU@ct.gov, DEEP.SEM@ct.gov and DEEP.BAM.AirPermits@ct.gov no later than 30 days after the subject event.

PART V. STACK EMISSION TEST REQUIREMENTS

Stack emission testing shall be performed in accordance with the Emission Test Guidelines available on the DEEP website at www.ct.gov/deep/stacktesting.

Recurrent stack testing shall be required for the following pollutants:

- ☐ PM ☒ PM₁₀ ☐ PM_{2.5} ☒ SO₂ ☒ NO_x ☒ CO
☒ VOC/HC ☒ Opacity
☒ Other (NSPS): Be, Hg
☒ Other (HAPs): Pb, HCl, H₂SO₄, Dioxins/Furans
☒ Other (Metals): As, Cd, Cr, Cu, Pb, Mn, Ni, Se, Zn

1. Recurrent stack testing for the following pollutants shall be conducted within five years from the date of the previous stack test: SO_x, NO_x, PM₁₀, CO, VOC/HC and Pb.
2. The Permittee shall submit test results within 60 days after completion of testing.
3. The stack emission testing for SO_x shall include determination of the percent sulfur content in the sludge.
4. Each stack emission test shall include determination of:
 - a. sludge hourly feed rate;
 - b. auxiliary fuel hourly feed rate;
 - c. percent oxygen, wet, in the fluidized bed incinerator exhaust duct, based on a five minute rolling average
5. Stack test results shall be reported in the following units:
 - a. PM₁₀, SO₂, NO_x, VOC/HC, CO, Pb, HCl, H₂SO₄: lb/DT
 - b. Ash, sulfur content: %
 - c. PM₁₀, Pb, Cd: mg/dscm @ 7% O₂
 - d. SO₂, NO_x, CO, HCl: ppmvd @ 7% O₂
 - e. Be, Hg: lb/24-hr period
 - f. Dioxins/Furans (total mass basis or toxic equivalency basis): ng/dscm @ 7% O₂
 - g. VOC/HC, HAPs, metals: µg/m³
6. The Permittee shall stack test annually for mercury, metals and hydrocarbons in the incinerator exhaust gas. [CGS §22a-191a(b)]
7. The stack emissions testing for PM₁₀ shall include determination of:
 - a. percent ash content in the sludge; and
 - b. compliance with the PM₁₀ emission limit. [40 CFR §60.152(a)(1)]
8. Stack testing is required to determine compliance with the beryllium (Be) emission limit. [40 CFR §61.33(a)]
9. Stack testing is required to determine compliance with the mercury (Hg) emission limit. [40 CFR §61.53(d)]

10. The Permittee shall demonstrate initial compliance using the performance test required in 40 CFR §60.8. The Permittee shall demonstrate that the SSI unit meets the emission limits and standards specified in 40 CFR Part 62 Subpart LLL, Table 2 for PM, HCl, CO, dioxins/furans (total mass basis or toxic equivalency basis), Hg, NO_x, SO₂, Cd, Pb and fugitive emissions from ash handling using the performance test. The initial performance test shall be conducted using the test methods, averaging methods, and minimum sampling volumes or durations specified in 40 CFR Part 62 Subpart LLL, Table 2 and according to the testing, monitoring, and calibration requirements specified in 40 CFR §62.16015(a). [40 CFR §62.15980(a)]
11. To demonstrate initial compliance with the dioxins/furans toxic equivalency emission limit in 40 CFR Part 62 Subpart LLL, Table 2, the Permittee shall determine dioxins/furans toxic equivalency as specified in 40 CFR §§62.15980(c)(1-3). [40 CFR §62.15980(c)]
12. If a force majeure event is about to occur, occurs, or has occurred for which the Permittee intends to assert a claim of force majeure, the Permittee shall notify the Administrator in writing as specified in 40 CFR §62.16030(f). The Permittee shall conduct the initial performance test as soon as practicable after the force majeure occurs. The Administrator will determine whether or not to grant the extension to the initial performance test deadline and will notify the Permittee in writing of approval or disapproval of the request for an extension as soon as practicable. Until an extension of the performance test deadline has been approved by the Administrator, the Permittee remains strictly subject to the requirements of 40 CFR Part 62 Subpart LLL. [40 CFR §62.15980(e)]

PART VI. OPERATION AND MAINTENANCE REQUIREMENTS

- A. The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.
- B. The Permittee shall properly operate the control equipment at all times that this equipment is in operation and emitting air pollutants.
- C. An SSI unit cannot be operated unless a fully trained and qualified SSI unit operator is accessible, either at the facility or can be at the facility within one hour. The trained and qualified SSI unit operator may operate the SSI unit directly or be the direct supervisor of one or more other plant personnel who operate the unit. If all qualified SSI unit operators are temporarily not accessible, the Permittee shall follow the procedures in 40 CFR §62.15945. [40 CFR §62.15920(a)]
- D. Operator training and qualification shall be obtained through a state approved program or by completing the requirements included in 40 CFR §62.15920(c). [40 CFR §62.15920(b)]
- E. If a qualified operator is not at the facility and cannot be at the facility within one hour, the Permittee shall meet the criteria specified in either 40 CFR §62.15945(a) or (b), depending on the length of time that a qualified operator is not accessible. [40 CFR §62.15945]
- F. The Permittee shall conduct an air pollution control device inspection according to 40 CFR §62.16015(c) by the final compliance date as specified in 40 CFR §62.15875. For air pollution control devices installed after the final compliance date, the Permittee shall conduct the air pollution control device inspection within 60 days after installation of the control device. [40 CFR §62.15990(a)]

- G.** Within ten operating days following the air pollution control device inspection under 40 CFR §62.15990(a), all necessary repairs shall be completed unless the Permittee obtains written approval from the Administrator establishing a date whereby all necessary repairs of the SSI unit shall be completed. [40 CFR §62.15990(b); 40 CFR §62.16010(b)]
- H.** The Permittee shall conduct an annual inspection of each air pollution control device used to comply with the emission limits, according to 40 CFR §62.16015(c), no later than 12 months following the previous annual air pollution control device inspection. [40 CFR §62.16010(a)]
- I.** If all qualified operators are not accessible for two weeks or more, the Permittee shall take the two actions in 40 CFR §§62.16030(e)(1)(i) and (ii).
[40 CFR §62.16030(e)(1); 40 CFR Part 62 Subpart LLL, Table 6]

PART VII. SPECIAL REQUIREMENTS

The Permittee shall comply with all applicable sections of the following New Source Performance Standard(s) at all times.

Title 40 CFR Part 60 Subparts O and A

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

- B.** The Permittee shall comply with all applicable sections of the following National Emission Standards for Beryllium and Mercury at all times.

Title 40 CFR Part 61 Subparts C, E and A

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

- C.** The Permittee shall comply with all applicable sections of the following Federal Plan Requirements for Sewage Sludge Incineration Units at all times.

Title 40 CFR Part 62 Subpart LLL

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

- D.** The Permittee shall comply with all applicable sections of the following Technical Standards for the Use and Disposal of Sewage Sludge at all times.

Title 40 CFR Part 503 Subpart E

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

E. Premises Emissions Summary

1. On January 1st of each calendar year, if the potential emissions of NO_x or VOC from the premises are equal to or greater than 25 tons per year per pollutant, then for such pollutant(s), the Permittee shall:
 - a. Monitor NO_x and/or VOC emissions, as applicable, from the premises for such calendar year.
 - b. Calculate and record annual NO_x and/or VOC emissions, as applicable, from the premises for such calendar year, in units of tons. The Permittee shall make these calculations on or before February 1st of the following year with respect to the previous calendar year. Such records shall include a sample calculation(s).
 - c. If actual NO_x and/or VOC emissions, as applicable, from the premises are equal to or greater than 25 tons for such calendar year, the Permittee shall submit to the commissioner, on or before March 1st of the following year, an annual emissions summary with respect to the premises for the previous calendar year. Such summary shall be submitted on forms prescribed or provided by the commissioner.
 2. A Permittee is exempt from Part VII.E.1 requirements of this permit if, on January 1st of the subject year, the premises was operating in accordance with any of the following:
 - a. A valid Title V permit issued pursuant to RCSA section 22a-174-33;
 - b. RCSA section 22a-174-33a; or
 - c. RCSA section 22a-174-33b
- J.** The Permittee shall not cause or permit the emission of any substance or combination of substances which creates or contributes to an odor beyond the property boundary of the premises that constitutes a nuisance as set forth in RCSA Section 22a-174-23. [STATE ONLY REQUIREMENT]
- K.** The Permittee shall operate this facility at all times in a manner so as not to violate or contribute significantly to the violation of any applicable state noise control regulations, as set forth in RCSA Sections 22a-69-1 through 22a-69-7.4. [STATE ONLY REQUIREMENT]

PART VIII. ADDITIONAL TERMS AND CONDITIONS

- A.** This permit does not relieve the Permittee of the responsibility to conduct, maintain and operate the regulated activity in compliance with all applicable requirements of any federal, municipal or other state agency. Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- B.** Any representative of DEEP may enter the Permittee's site in accordance with constitutional limitations at all reasonable times without prior notice, for the purposes of inspecting, monitoring and enforcing the terms and conditions of this permit and applicable state law.
- C.** This permit may be revoked, suspended, modified or transferred in accordance with applicable law.
- D.** This permit is subject to and in no way derogates from any present or future property rights or other rights or powers of the State of Connecticut and conveys no property rights in real estate or material, nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the facility or regulated activity affected thereby. This permit shall neither create nor affect any rights of persons or municipalities who are not parties to this permit.

- E.** Any document, including any notice, which is required to be submitted to the commissioner under this permit shall be signed by a duly authorized representative of the Permittee and by the person who is responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under section 22a-175 of the Connecticut General Statutes, under section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute."
- F.** Nothing in this permit shall affect the commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of this or any other permit issued to the Permittee by the commissioner.
- G.** Within 15 days of the date the Permittee becomes aware of a change in any information submitted to the commissioner under this permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the commissioner.
- H.** The date of submission to the commissioner of any document required by this permit shall be the date such document is received by the commissioner. The date of any notice by the commissioner under this permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" means calendar day. Any document or action which is required by this permit to be submitted or performed by a date which falls on a Saturday, Sunday or legal holiday shall be submitted or performed by the next business day thereafter.
- I.** Any document required to be submitted to the commissioner under this permit shall, unless otherwise specified in writing by the commissioner, be directed to: Office of Director; Enforcement Division; Bureau of Air Management; Department of Energy and Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.