



**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	The Mattabassett District
Address	245 Main Street, Cromwell, CT 06416
Equipment Location	245 Main Street, Cromwell, CT 06416
Equipment Description	1.5 TPH Infilco Degremont Fluidized Bed Sewage Sludge Incinerator
Town-Permit Numbers	043-0030
Premises Number	012
Stack Number	07
Prior Permit Issue Date	May 13, 2013 (Original) September 14, 2018 (Minor Modification)
Modification Issue Date	December 5, 2024
Expiration Date	None

for 
 Katherine S. Dykes
 Commissioner

December 5, 2024
 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 Mattabassett District (Mattabassett) operates an Infilco Degremont fluidized bed sewage sludge incinerator at its Water Pollution Control Facility (WPCF) in Cromwell. The Infilco Degremont incinerator is used to process sewage sludge at the WPCF.

B. Equipment Design Specifications

1. Incinerator
 - a. Material Charged: Sewage Sludge
 - b. Maximum Hourly Charge Rate (dry basis): 1.5 DTPH

2. Auxiliary Heating Systems
 - a. Preheat Burner
 - i. Burner Manufacturer: Fives North American Combustion Inc.
 - ii. Fuel Types: Natural Gas
 - iii. Number of Burners: 1
 - iv. Maximum Design Fuel Firing Rate: 11,600 ft³/hr
 - v. Maximum Design Gross Heat Input: 11.6 MMBtu/hr
 - b. Direct Fuel Injection – Directly Fired Into Fluidized Bed
 - i. Fuel Types: Natural Gas and No. 2 Fuel Oil
 - ii. Maximum Sulfur Content of No. 2 Fuel Oil: 15 ppm
 - iii. Maximum Design Fuel Firing Rates:
 - (A) 11,600 ft³/hr (Natural Gas)
 - (B) 120 gal/hr (No. 2 Fuel Oil)
 - iv. Maximum Design Gross Heat Input:
 - (A) 11.6 MMBtu/hr (Natural Gas)
 - (B) 17 MMBtu/hr (No. 2 Fuel Oil)

C. Control Equipment Design Specifications

1. Wet Scrubber
 - a. Make and Model: EnviroCare International, Inc. VenturiPak w/impingement trays, quench, sub-cooling stage and mist elimination
 - b. Reagent: Caustic sodium hydroxide solution (only added to water in impingement trays)

2. Adsorber
 - a. Make and Model: CPPE KOMBISORBON
 - b. Adsorbent Material: Activated Carbon and Inert Material
 - c. Number of Beds: 3 (2 active carbon beds and 1 empty bed)

3. Wet Electrostatic Precipitator (WESP)
 - a. Make and Model: EnviroCare International, Inc. 5'0" WESP
 - b. Collecting Area: 856 ft²
 - c. Number of Fields: 1
 - d. Design Outlet Grain Loading: 0.004 gr/dscf

D. Stack Parameters

1. Minimum Stack Height (feet above grade): 80 ft
2. Minimum Exhaust Gas Flow Rate: 11,450 acfm
3. Normal Stack Exit Temperature, Range: 110-300°F
4. Minimum Distance from Stack to Nearest Property Line: 208 ft

E. Definitions

1. Startup shall be defined as the period of time between activation, including the firing of fuels (e.g., natural gas or distillate oil), of the system and the first feed of sewage sludge to the unit.
2. Shutdown shall be defined as the period of time after all sewage sludge has been combusted in the fluidized bed.

PART II. OPERATIONAL CONDITIONS

A. Equipment

1. Incinerator
 - a. Material Charged: Sewage Sludge
 - i. For purposes of this permit, sewage sludge is defined as any solid, semi-solid or liquid residue generated during the treatment of municipal wastewater and/or domestic sewage. Sewage sludge includes, but is not limited to, solids removal during primary, secondary or advanced wastewater treatment; scum; septage; portable toilet pumping; sewage sludge products; fats, oils and grease (FOG); and food waste.
 - ii. Any substance which is considered "municipal-type solid waste", as defined in Title 40 of the Code of Federal Regulations ("40 CFR") Part 60, Section 60.51 a, or "hazardous waste", as defined in Section 22a-115 of the Connecticut General Statutes, is prohibited from being introduced to this unit.
 - b. Minimum Sludge Feed: 0.9 Dry Ton/hr*
 - c. Maximum Annual Charge Rate over Any Consecutive 12 Month Period: 13,140 Dry Ton
 - d. Maximum Gross Heat Input: 25.4 MMBtu/hr
 - e. Maximum Incinerator Sand Bed Temperature: 1445°F*
 - f. Daily Average Reactor Bed Oxygen when Burning Sludge: Less than 8.5%*
 - g. Combustion Gas Residence/Retention Time: 7 sec
*Averaged Over a 12 Hour Block Period
2. Auxiliary Heating Systems
 - a. Maximum Fuel Consumption over any Consecutive 12 Month Period:
 - i. 54 MMft³ (Natural Gas)
 - ii. 225,000 gal (No. 2 Fuel Oil)
 - b. The total auxiliary heat input, using the preheat burner and direct injection combined, shall not exceed 17 MMBtu/hr for any combination of natural gas and No. 2 Fuel Oil.
 - c. Fuels other than No. 2 Fuel Oil and natural gas may be introduced as auxiliary fuel subject to approval from the Connecticut Department of Energy and Environmental Protection, Bureau of Air Management.

B. Control Equipment

1. Wet Scrubber
 - a. Scrubber/Quench Water (total vessel) Flow Rate Range:
 - i. Scrubber: 417 - 475 gpm
 - ii. Quench: 99 - 132 gpm
 - b. Minimum Pressure Drop:
 - i. 28 inches of water; or
 - ii. 30% less than the average pressure drop measured during the most recent performance test (measured during each period of 15 minutes duration or more); whichever is less

2. Adsorber
 - a. Inlet Gas Temperature Range: 100 - 150°F
 - b. Pressure Drop Range: 0 – 11 in H₂O

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/hr	mg/dscm @ 7% O ₂	ppmvd @ 7% O ₂	lb/ton	tpy
PM	0.25	9.6		0.16	1.08
PM ₁₀	0.25				1.08
PM _{2.5}	0.25				1.08
SO ₂	0.36		5.3		1.58
NO _x	1.47		30		6.44
VOC/THC	1.70		100		7.46
CO	0.81		27		3.53
Pb	1.59E-5	6.2E-4			6.96E-5

B. Non-Criteria Pollutants

Pollutant	mg/dscm @ 7% O ₂	ppmvd @ 7% O ₂	lb/24 hours
HCl		0.24	
Be			0.022
Cd	0.0011		
Hg	0.001		7.1
Dioxins/Furans ^{1, 3}	1.3E-8		
Dioxins/Furans ^{2, 3}	4.4E-9		

¹ Compliance demonstrated on a total mass basis

² Compliance demonstrated on a toxic equivalency basis, using the toxic equivalency factors listed in Table 4 to 40 CFR 60 Subpart LLLL.

³ Compliance with Dioxin/Furan emissions may be demonstrated on a total mass basis or a toxic equivalency basis. [40 CFR Part 60 Subpart LLLL, Table 1]

C. Hazardous Air Pollutants

This equipment shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted and listed in RCSA Section 22a-174-29. [STATE ONLY REQUIREMENT]

D. Opacity

This equipment shall not exceed 10% opacity during any six minute block average as measured by 40 CFR Part 60, Appendix A, Reference Method 9.

E. The Permittee shall not cause or allow unburned waste or ash particulate emissions that are individually discernible by the human eye measured using 40 CFR 60, Appendix A, Reference Method 9 and 40 CFR Part 60, Appendix A, Reference Method 22.

F. Demonstration of compliance with the above emission limits may be met by calculating the emission rates using emission factors from the following sources:

- All Criteria Pollutants, except CO: Most Recent Stack Test
- NO_x: Most Recent Stack Test and Parameter Monitoring During Sludge Feed (EPA approval of a Site Specific Monitoring Plan and Request for Alternative Monitoring for NO_x, Issued on August 30, 2017)
- CO: CEMS
- Non-Criteria Pollutants: Most Recent Stack Test

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 Section 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
CO	24 hour block	27 ppmvd @ 7% O ₂ ¹
O ₂	1 hour block	

¹ For determining compliance with the carbon monoxide concentration limit using carbon monoxide CEMS, the correction to 7 percent oxygen does not apply during startup and shutdown. The Permittee shall use the measured carbon monoxide concentration without correcting for oxygen concentration in averaging with other carbon monoxide concentrations (corrected to 7 percent oxygen) to determine the 24-hour average value. [40 CFR Part 60 Subpart LLLL, Table 1]

2. For each fuel, the Permittee shall install, calibrate, maintain, and operate a device for measuring the fuel flow to the incinerator. The flow measuring device shall be certified by the manufacturer to have an accuracy of ±5 percent over its operating range. [40 CFR §60.153(b)(4)]

3. The Permittee shall install, calibrate, maintain, and operate a flow measuring device which can be used to determine either the mass or volume of sludge charged to the incinerator. The flow measuring device shall be certified by the manufacturer to have an accuracy of ± 5 percent over its operating range. [40 CFR §60.153(a)(1)]
4. The Permittee shall provide access to the sludge charged so that a well-mixed representative grab sample of the sludge can be obtained.
5. The Permittee shall install, calibrate, maintain, and operate a monitoring device that continuously measures and continuously records the pressure drop of the gas flow through the scrubber. The device used to monitor scrubber pressure drop shall be certified by the manufacturer to have an accuracy of ± 1 inch water gauge and shall be calibrated on an annual basis in accordance with the manufacturer's instructions. [40 CFR §60.153(b)(1)]
6. The Permittee shall install, calibrate, maintain, and operate a monitoring devices that continuously measures and continuously records the oxygen content in the bed and the incinerator exhaust gas. The oxygen monitor shall be located upstream of any fan, ambient air recirculation damper, or any other source of dilution air. The oxygen monitoring device shall be certified by the manufacturer to have a relative accuracy of ± 5 percent 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)]
7. The Permittee shall install, calibrate, maintain, and continuously operate temperature measuring devices in the bed and outlet of the incinerator. Each temperature measuring device shall be certified by the manufacturer to have an accuracy of ± 5 percent over its operating range. [40 CFR §60.153(b)(3)]
8. The Permittee shall collect and analyze a grab sample of the sludge fed to the incinerator once per day. The dry sludge content and the volatile solids content of the sample shall be determined in accordance with the method specified under 40 CFR 60.154(b)(5), except that the determination of volatile solids, step (3)(b) of the method, shall not be deleted. [40 CFR §60.153(b)(5)]
9. The Permittee shall continuously measure parameters sufficient to determine the moisture content in the sewage sludge incinerator stack exit gas. [40 CFR §503.45(c)]
10. The Permittee shall continuously measure the scrubber liquid flow rate and pH. [40 CFR Part 60 Subpart LLLL, Table 3]
11. The Permittee shall continuously measure the secondary voltage and secondary amperage of the electrostatic precipitator collection plates. [40 CFR Part 60 Subpart LLLL, Table 3]
12. The Permittee shall measure, hourly, the effluent water flow rate at the outlet of the electrostatic precipitator. [40 CFR Part 60 Subpart LLLL, Table 3]
13. The Permittee shall perform inspections of the control devices as recommended by the manufacturer.

B. Record Keeping

1. The Permittee shall make and keep records of the hourly, daily, monthly and consecutive 12 month quantity of sludge combusted. The consecutive 12 month quantity of sludge combusted shall be determined by adding the current month's quantity to that of the previous 11 months. 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 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.
4. The Permittee shall make and maintain records of the measured pressure drop of the gas flow through the wet scrubber. [40 CFR §60.153(c)(1)]
5. The Permittee make and maintain records of the measured oxygen content of the bed and the incinerator exhaust gas. [40 CFR §60.153(c)(2)]
6. The Permittee shall continuously record parameters sufficient to determine the moisture content in the sewage sludge incinerator stack exit gas. [40 CFR §503.45(c)] Such parameters shall be as determined in the EPA approved Site Specific Monitoring Plan and Request for Alternative Monitoring for NO_x, issued on August 30, 2017.
7. The Permittee shall continuously record the scrubber liquid flow rate and pH. [40 CFR Part 60 Subpart LLLL, Table 3]
8. The Permittee shall continuously record the secondary voltage and secondary amperage of the electrostatic precipitator collection plates. [40 CFR Part 60 Subpart LLLL, Table 3]
9. The Permittee shall record, hourly, the effluent water flow rate at the outlet of the electrostatic precipitator. [40 CFR Part 60 Subpart LLLL, Table 3]
10. The Permittee shall make and maintain records of the rate of sludge charged to the incinerator, the measured temperatures of the incinerator, the fuel flow to the incinerator, and the total solids and volatile solids content of the sludge charged to the incinerator. [40 CFR §60.153(c)(3)]
11. The Permittee shall make and maintain records of the carbon monoxide concentration in the incinerator exit gas; as well as a calibration and maintenance log for the instrument used to measure the carbon monoxide concentration. [40 CFR §503.40(c)(3)]
12. The Permittee shall keep a copy of the EPA approved Site Specific Monitoring Plan and Request for Alternative Monitoring for NO_x, as well as a copy of EPA's approval of such plan and request issued on August 30, 2017.
13. 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. The Permittee shall submit a semi-annual report to the Administrator. The report should contain the data requested in 40 CFR §60.155(a).
2. The Permittee shall submit the monthly average carbon monoxide concentrations in the incinerator exit gas, to the commissioner, on February 19 of each year.
[40 CFR §503.40(c)(4)]
3. The Permittee shall submit, to the commissioner, reports of the results of all performance tests conducted for this incinerator.
4. The Permittee shall submit, to the Administrator and commissioner, an annual compliance report that includes the items listed in 40 CFR §§60.4915(d)(1) thru (d)(16).
5. The Permittee shall submit a deviation report, to the Administrator and commissioner, documenting any deviations from emission limits, emission standards or operating limits, by August 1, for data collected during the first half of the calendar year; and by February 1 for data collected during the second half of the previous calendar year.
[40 CFR 60 Subpart LLLL, Table 5]

PART V. STACK EMISSION TEST REQUIREMENTS

- A. Stack emission testing shall be performed in accordance with the Emission Test Guidelines available on the DEEP website at www.ct.gov/deep/stacktesting.
- B. The Permittee shall conduct annual performance tests for all pollutants listed below to demonstrate compliance with the emission limits specified in Part III of this permit.
- PM PM₁₀ PM_{2.5} SO₂ NO_x CO
 VOC/HC Pb
 Other (HAPs): HCl, Be, Hg, Cd, As, Cr, Cu, Mn, Ni, Se, Zn, Dioxin/Furans
- C. The Permittee shall also perform annual visible emission tests, in accordance with 40 CFR Part 60 Subpart LLLL, Table 1, to ensure that there are no visible emissions of combustion ash from the ash conveying system for more than 5% of the hourly observation period.
- D. Notwithstanding the above requirement to conduct annual performance tests, the Permittee shall be allowed to conduct recurrent performance tests for PM, SO_x, NO_x, HCl, and fugitive emissions from ash handling within three years of the previous test in accordance with the requirements of 40 CFR §60.4885(a)(3)(i) through (iii), as applicable.
- E. The Permittee shall submit test results within 60 days after completion of testing.
- F. Stack test results shall be reported as follows: all pollutants in units of lb/hr, HAPs in units of µg/m³.

PART VI. OPERATION AND MAINTENANCE REQUIREMENTS

- A.** The Permittee shall operate and maintain this equipment and all associated control equipment in accordance with the manufacturer's specifications and written recommendations. The Permittee shall maintain a full, legible copy of the manufacturer's specifications and written operations manual on-site at all times. The Permittee shall provide a copy of the manufacturer's specifications and written operations manual upon request of the commissioner or his agent.
- B.** The Permittee shall properly operate the control equipment at all times that this incinerator is in operation and emitting air pollutants.
- C.** The Permittee shall only allow personnel who have been trained in the proper operation of the incinerator to operate the incinerator.
- D.** The Permittee shall not operate the incinerator unless a fully trained and qualified sewage sludge incinerator operator is accessible, either at the facility or can be at the facility within an hour.

PART. VII. SPECIAL REQUIREMENTS

- A.** 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 A, O and LLLL

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 Emissions Standards for Hazardous Air Pollutants at all times.

Title 40 CFR Part 61 Subparts C and E

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 National Standards for the Use or Disposal of Sewage Sludge at all times.

Title 40 CFR Part 503 Subparts E

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

- D.** The Permittee shall establish:

1. the minimum combustion chamber operating temperature, and
2. all applicable operating limits for the scrubber and Wet Electrostatic Precipitator (WESP) as specified in 40 CFR §60.4870. These limits shall be established during the initial performance test and the established limits shall be included in the performance test report submitted to the Bureau.

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.

- F.** 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]
- G.** 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.