



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

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Secretary

KENNETH L. KIMMELL  
Commissioner

January 28, 2014

Mr. Rick Meyer  
Covanta Pittsfield, LLC  
500 Hubbard Avenue  
Pittsfield, MA 01201

**RE: Pittsfield**  
Transmittal No.: X258465  
Application No.: WE-13-034  
Class: *OP*  
FMF No.: 50772  
**AIR QUALITY PLAN APPROVAL**

Dear Mr. Rick Meyer:

The Massachusetts Department of Environmental Protection (“MassDEP”), Bureau of Waste Prevention, has reviewed your Limited Plan Application (“Application”) listed above. This Application concerns the Standard Operating and Maintenance Manual at Pittsfield Resource Recovery Facility (“Covanta Pittsfield”) located at 500 Hubbard Avenue in Pittsfield, Massachusetts (“Facility”).

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 “Air Pollution Control,” regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-J, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP’s review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator (“Permittee”) must comply in order for the Facility to be operated in compliance with this Plan Approval.

## **1. DESCRIPTION OF FACILITY AND APPLICATION**

Pursuant to Table 6d, Condition # 27 of Operating Permit #1-O-07-022, Covanta Pittsfield submitted a Limited Plan Application for an updated Standard Operating and Maintenance Manual (SOM) for the Pittsfield Resource Recovery Facility on December 19, 2013.

This SOM has been submitted to reflect the facility operation as it currently exists. The revisions to the 2013 version of the SOM consist of minor wording changes to clarify and reflect current operating practices as well as updates to operating parameters, equipment and operating procedures. The following list details specific changes made to the SOM which consisted of more than formatting and minor wording changes. In the list below, the section of the SOM where the revision occurs is identified and followed by an explanation of the revision.

- **Section 4.2.2.2 Chemical Treatment System**– This section has been updated to reflect current operating practices.
- **Section 4.2.3.1 Turbine Generator Heat Exchanger** – The feed water temperature increase was changed from 50F - 160F to 50F - 180F.
- **Section 4.2.4 Deaerator** – The language in this section has been revised to state that the water supply to the deaerator is from the turbine generator heat exchanger instead of from the exit of the water softeners. The temperature of the water supply to the deaerator was revised from approximately 60°F to 180°F. The saturation temperature at 12 psig on the deaerator was revised from approximately 245°F to 235°F.
- **Section 4.2.5 Boiler Feed Water Pumps** – The motors for the #1 and #2 electric boiler feed pumps are both 100 horsepower instead of 100 horsepower and 75 horsepower.
- **Section 4.11.6.1 Unbalanced Steam Generation**- The following step has been removed from the items that are to be checked when steam generation in one unit is significantly lower than the other. Verify the proper operation of feed water heater and trap if the boiler with less steam production is supplying the feed water heater.
- **Section 4.13 Safety** – This section has been updated to reflect current operating practices.
- **Section 5.4.4.1 RFG Fan Isolation Dampers** - This section has been updated to reflect current operating practices.
- **Section 5.5.1 System Description** – This section has been updated to reflect current operating practices.
- **Section 5.8 Venturi Quench Scrubber** - This section has been updated to reflect current operating practices.
- **Section 5.9.10 Slurry Production** - The range of specific gravity for the slurry solution has been added as 1.14-1.16.
- **Section 6.3 Bottom Ash Processing System** – This section has been updated to reflect current operating practices. In addition, the screening module has been removed from the bottom ash processing system.

- **Section 7.8 Industrial Sludge Injection System** – This section has been revised to state that the addition of #2 fuel oil to the sludge has been suspended.
- **Section 8.1.2 Boiler** – This section has been updated to reflect current operating practices.
- **Section 8.1.3 Flue Gas System** – This section has been updated to reflect current operating practices.
- **Section 8.2.2 Facility Start-Up from Cold Start** - This section has been updated to reflect current operating practices.
- **Section 8.2.3 Cold Combustor/Boiler Start-Up with Other Train On-Line** - This section has been updated to reflect current operating practices.
- **Section 8.2.4 Cold Boiler and Warm Combustor Start-Up with Other Train On-line** - This section has been updated to reflect current operating practices.
- **8.3.4 Facility Shutdown** - This section has been updated to reflect current operating practices.

#### **STANDARD OPERATING & MAINTENANCE MANUAL STRUCTURE**

The SOM is structured as follows:

- Section 1 Receiving
- Section 2 Cranes
- Section 3 Combustors
- Section 4 Boiler System
- Section 5 Flue Gas System
- Section 6 Ash Residue Processing System
- Section 7 Miscellaneous
- Section 8 Facility Operating Procedures
- Section 9 Recordkeeping and Reporting

#### **DESCRIPTION OF FACILITY OPERATION**

The facility is located at 500 Hubbard Avenue, Pittsfield, MA 01201. It is owned and operated by Covanta Pittsfield, LLC (Covanta Pittsfield), a subsidiary of Covanta Berkshire Operations, Inc. The facility, which began commercial operation in 1981, consists of three municipal waste combustors (MWCs) with two waste heat boiler/economizers and associated air quality control equipment. Under normal operation, all three combustors are on-line simultaneously. Heat is recovered from the combustion process in the form of steam which is sold to Crane & Company, Inc. and used to generate electricity for the internal needs of the facility. The permitted municipal solid waste (MSW) disposal capacity of Covanta Pittsfield is 84,000 tons per year (tpy).

The facility consists of three Enercon combustors and two separate heat recovery/air pollution control trains. Each MWC has a combustion capacity of 120 tons per day, assuming a higher heating value of 4,400 Btu per pound of waste. Under normal operation with all three MWCs on-line, throughput is approximately 80 tons per day of MSW per combustor. The combustion rate of the facility is regulated on a 4-hour block average basis which is limited to 110% of the steam production rate measured during the most recent air emissions test. Annual throughput for the facility is limited to 84,000 tons.

Most MSW is delivered to the facility in trucks. Vehicles are weighed on the truck scale, which generates a weigh ticket for the driver and stores the information in a computerized database. The database generates daily, weekly, and monthly reports for billings, MSW inventory management and regulatory compliance.

Trucks leave the scale and proceed to the waste handling area where they dump either into the receiving pit or onto the tipping floor. An overhead crane mixes waste in the pit and piles waste for short-term storage. A front-end loader moves waste on the tipping floor and loads waste into the MWCs. The tipping, storage and combustion facilities are located inside a large building, permitting air from the waste receiving and storage area to be drawn into the combustion process, thereby minimizing odors.

An industrial sludge injection system was installed at the facility in 2011. It is designed to inject approximately 500 dry pounds per hour of dry sludge solids into each of the three MWC units at the facility on a daily average basis. The industrial sludge injection system at the facility is designed to receive industrial sludge by transport trucks. A 25,000 gallon receiving tank and a 25,000 gallon day tank from which the industrial sludge will be injected into the combustors were installed. Each tank is equipped with an agitator, a pumping system and an odor control system to accommodate the receipt of industrial sludge. The receiving tank, the day tank and associated equipment are located within the main building. Each MWC has a dedicated sludge injection nozzle that utilizes air for atomization of sludge particles. The sludge flow is controlled by a set point in the control room and a control valve at each nozzle with a flow meter for display and recording a control input. Each nozzle projects into the MWC and is designed such that it discharges the atomized sludge in a helical pattern into the furnace. Sludge flow through the nozzle is modulated in response to the secondary chamber temperature of the combustor which is continuously measured utilizing a sensor located in the secondary chamber.

Each MWC has a primary and a secondary combustion chamber which operate in an excess air mode. Combustion air is a combination of fresh air and recirculated flue gas. The primary combustion chamber consists of five progressively lower refractory lined hearths resembling steps. MSW fuel is introduced at the first hearth and tumbles from step to step by the action of hydraulic rams. When the MSW reaches the final step, the fifth hearth, what remains are ash and other non-combustible materials such as glass, metal and stone. This material, collectively termed bottom ash, is discharged into a water trough. The water trough quenches the bottom ash and seals the combustor from outside air. A drag chain conveyor at the bottom of the trough transports the bottom ash to the ash building. Presently, the ash is screened and the accepts are shipped to a landfill for utilization as sub grade fill material in the closure process. The screened rejects are passed over a drum magnet for ferrous recovery. The recovered ferrous is shipped out for recycling. The non-ferrous overs are either re-burned or hauled offsite for landfill disposal.

Flue gas flows from the primary chamber into the secondary chamber where sufficient time and temperature is provided to assure complete combustion. Flue gas from the secondary chamber of

each MWC flows into a common tertiary chamber before dividing again and entering one of the two heat recovery systems/air quality control trains (train).

The heat recovery system of each train consists of a Bigelow Water Tube waste heat boiler with superheater, a United McGill steaming economizer and a Bigelow trim economizer. Each heat recovery system has a rated capacity of approximately 34,000 pounds per hour of 220 psi, 540°F superheated steam. Most of this generated steam is sold to Crane & Company. Steam not sold passes through a turbine generator or is vented into the atmosphere. The air quality control system for each train consists of a Norit activated carbon injection system, a United McGill electrostatic precipitator (ESP), an induced draft fan, a Heil quench-venturi scrubber and a counter current packed tower scrubber with a demister.

Flue gas initially passes through the waste heat boiler, the steaming economizer, and the trim economizer. Approximately 45% of the flue gas leaving the trim economizer is recirculated to a MWC by the recirculated flue gas (RFG) system. The RFG system includes a Zurn multiclone which removes particulate matter (PM) from the flue gas before it passes through the RFG fan. The RFG system provides relatively cool, low O<sub>2</sub> content flue gas (approximately 400°F and 10% O<sub>2</sub>) to the combustion chambers to inhibit the formation of nitrogen oxides (NO<sub>x</sub>) and slag. The remaining 55% of the flue gas passes through an ESP, through an induced draft fan and into a quench-venturi scrubber. Preceding each ESP is an activated carbon injection system which provides for the addition of activated carbon to reduce mercury emissions from the stack. The quench-venturi scrubber lowers the flue gas temperature by evaporation from approximately 400°F to approximately 140°F. The venturi section removes particulate matter and fresh water is added to replace water lost through evaporation and continuous bleed to control specific gravity.

Particulate matter, also known as fly ash, is collected from the multiclones and the ESPs via hopper and conveyors. Presently, the fly ash is delivered to the pug mill, then it is mixed with lime at a 5:1 ratio, fly ash to lime. The conditioned fly ash is then transferred to Supersacks for disposal at a licensed landfill.

Flue gas exiting the quench-venturi scrubber enters a counter current packed bed scrubber to control acid gas emissions. The scrubber utilizes a counter current flowing solution of water and soda ash to remove sulfur dioxide (SO<sub>2</sub>) and hydrogen chloride (HCl) from the flue gas. Scrubber liquid collects in the base of the scrubber. Pumps return the liquid to a distribution spray header at the top of the scrubber. A pH control system monitors the pH of the scrubber solution and controls the soda ash feed rate. Finally, fresh water is added to replace water lost through evaporation and continuous bleed to control specific gravity.

Exhaust gas from the scrubbers, located at the discharge end of both air pollution control trains, is combined and discharged to the atmosphere through a 115 foot FRP lined steel stack. The stack is equipped with reference method sampling ports which are accessible via a platform.

Gases exiting each of the two ESPs pass separate opacity monitors. The monitors provide a continuous indication of each ESPs performance in controlling PM emissions. A slipstream of

flue gas is extracted by the continuous emissions monitoring system (CEMS) from the duct connecting the scrubber outlets to the stack. The CEMS provides an indication of facility performance relative to permit standards for SO<sub>2</sub>, NO<sub>x</sub>, and CO.

The existing emission limits applicable to the three MWCs located at Covanta Pittsfield are listed in Table 1.

**Table 1: MWC Existing Emission Limitations**

|                        |  |
|------------------------|--|
| Particulate Matter     | 27.0 mg/dscm*  |
| Sulfur Dioxide         | 10 ppmvd* or 75% reduction   |
| Hydrochloric Acid      | 20 ppmvd* or 95% reduction   |
| Carbon Monoxide        | 100 ppmvd* (4-hour block average)  |
| Nitrogen Oxides        | 192 ppmvd* (24-hour daily block average)<br>0.180 pounds per million Btu of heat input (365-day rolling average)<br>105 ppmvd* (365-day rolling average)<br>≤75.5 tons in any 12 consecutive month period            |
| Cadmium                | 0.040 mg/dscm*   |
| Lead                   | 0.440 mg/dscm*<br>≤ 0.0095 lb/hr when combusting only industrial sludge and operating two or three waste combustors<br>≤ 0.0047 lb/hr when combusting only industrial sludge and operating only one waste combustor. |
| Mercury                | 0.080 mg/dscm*(1 test)<br>0.028 mg/dscm* (4 quarter rolling average)   |
| PCDD/PCDF (tetra-octa) | 36 ng/dscm*  |
| Opacity                | ≤10% (6 minute block average)  |
| Fugitive Dust          | No visible emission for more than 5% of 3-hour observation period.   |

\*Concentration limits are corrected to 7% O<sub>2</sub>.

Any changes to the SOM shall be reported to MassDEP pursuant to Table 6d, Condition # 26 of Operating Permit #1-O-07-022, issued April 2, 2012.

## **2. MASSACHUSETTS ENVIRONMENTAL POLICY ACT**

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts

Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain “Fail-Safe Provisions,” which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

### **3. APPEAL PROCESS**

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
P.O. Box 4062  
Boston, MA 02211

This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this Plan Approval, please contact Cortney Danneker by telephone at 413-755-2234, or in writing at the letterhead address.

This final document copy is being provided to you electronically by the  
Department of Environmental Protection. A signed copy of this document  
is on file at the DEP office listed on the letterhead.

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Marc Simpson  
Air Quality Permit Chief  
Bureau of Waste Prevention  
Western Region

cc: WERO AQ plan file  
WERO AQ approval file

ecc: MassDEP/Boston - Yi Tian  
MassDEP WERO – Peter Czapienski