



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

Clean Air Act Inspection Report

Drafted: January 5, 2023

Finalized: January 19, 2023

EPA Representatives: Hannah Patel, Environmental Scientist, Air Compliance Section /HHP/
Elizabeth Kudarauskas, Manager, Water Compliance Section
Tyler Kotsifas, Physical Scientist, Laboratory Services & Applied Science
Division

EPA Reviewer: Darren Fortescue, Senior Enforcement Coordinator, Air Compliance Section
/DEF/

Date of Inspection: December 6, 2022

Company Name: Manchester Wastewater Treatment Facility

Facility Address: 300 Winston Street, Manchester, NH 03103

Corporate Address: as above

ICISAir ID#: NH0000003301100089

Disclaimer:

Unless otherwise noted, this report describes conditions at the facility/property as observed by EPA inspector(s), and/or through records provided to and/or information reported to EPA inspector(s) by facility representatives and as understood by the inspector(s). This report may not capture all operations or activities ongoing at the time of the inspection. This report does not make final determinations on potential areas of concern. Nothing in this report affects EPA's authorities under federal statutes and regulations to pursue further investigation or action.

Inspection Attendees:

Name	Title	Organization
Hannah Patel	Clean Air Act Inspector	US EPA
Elizabeth Kudarauskas	Manager, Water Compliance Section	US EPA

Tyler Kotsifas	Physical Scientist, LASAD	US EPA
David Smith	Compliance Assessment Section Supervisor	NH DES
David St. Armand	Chief Operator	City of Manchester
Fred McNeill	Chief Engineer	City of Manchester

Facility Description:

History

The City of Manchester owns and operates the Manchester Wastewater Treatment Facility (“Manchester”) located at 300 Winston Street, Manchester, New Hampshire. Construction of the facility started in the early 1970s and was completed in 1975.

Sewage Sludge Incineration

Manchester operates a fluidized bed incinerator (“FBI”) that was installed in 1993 that incinerates sewage sludge produced at the facility and by three surrounding communities. The three surrounding communities contribute 18% of the sludge incinerated. Manchester does not incinerate merchant sludge.

The sewage sludge incinerated consists of only treated biosolids. The FBI has a 34 million gallons of per day sludge capacity.

Pollution Controls

Manchester utilizes good combustion in the FBI to control nitrogen oxides (“NO_x”), carbon monoxide (“CO”) and dioxin/furans (“D/F”) emissions.

Manchester utilizes a venturi scrubber to control particulate matter (“PM”) and metal (other than mercury) emissions, and an impingement tray scrubber to control hydrogen chloride (“HCL”) and sulfur dioxide (“SO₂”) emissions.

Finally, an “EnviroCare International, Inc. W. L. Gore & Associates, Inc.” mercury control system that utilizes a fixed sorbent polymer composite technology is in place to control mercury (“Hg”) emissions.

Ash Management

Manchester operates an ash handling system that carries ash generated from the FBI out of the combustion system to a wet ash lagoon. Ash removed in the scrubber system is pumped from the tray scrubber and is saturated with water. The ash removed in the scrubber is pumped to the scrubber blow down tank as an ash slurry. When the slurry in the blowdown tank reaches 50%

of the overall tank volume, it is pumped to the outdoor wet ash lagoons. The ash lagoons are drained and cleaned out approximately every six months.

Monitoring Requirements

Manchester monitors the following parameters, as described in the EPA approved site-specific monitoring plan (“SSMP”) that is required under 40 CFR Part 62, Subpart LLL:

- FBI freeboard temperature (Maximum limit for NO_x, and minimum limit for CO and D/F);
- Venturi scrubber differential pressure;
- Venturi scrubber total liquid flow;
- Tray scrubber differential pressure;
- Tray scrubber total liquid flow;
- Tray scrubber liquid pH;
- Mercury control system inlet temperature;
- Mercury control system differential pressure;
- Mercury removal efficiency and outlet concentration measured quarterly using a portable analyzer; and
- Visible emissions from the ash handling system, observed daily.

Number of Employees and Working Hours:

Manchester wastewater department employs approximately 80 people across two locations. The facility itself, is the reporting location for approximately 44 people, with 36 employees working at the wastewater facility. The facility operates 24 hours per day, 365 days per year.

Potentially Applicable Clean Air Act Requirements:

Regulations

- 40 CFR Part 62, Subpart LLL – Federal Plan Requirements for Sewage Sludge Incineration Units Constructed on or Before October 14, 2010 (“Subpart LLL”).

Permits

- Title V Operating Permit Number TV-0066 Issued June 2, 2021, by New Hampshire Department of Environmental Services.

Previous Enforcement Actions:

On September 11, 2018, a Consent Decree between the US EPA and Manchester was filed in the United States District Court, District of New Hampshire (see United States of America v. City of Manchester, New Hampshire, Case 1:18-cv-00815-LM).

Focus of Inspection

In October 2022, Manchester requested that EPA terminate the Consent Decree between the United States of America and the City of Manchester (Case 1:18-cv-00815-LM). To inform EPA's decision regarding CD termination, EPA inspectors conducted an inspection of the Manchester facility to observe operations and gather information.

Opening Conference:

Entry

On December 6, 2022, at 09:30 am, Region 1 EPA Clean Air Act Inspector Hannah Patel entered the facility parking area. Ms. Patel met David Smith, from New Hampshire Department of Environmental Services, and Elizabeth Kudarauskas and Tyler Kotsifas from EPA. The group entered the main building and proceeded to a conference room where they were met by Frederick McNeill, and David St. Armand from the Manchester. Ms. Patel presented her credentials and initiated an opening conference.

Conference

EPA representatives asked how frequently the facility shuts down for repairs. Mr. McNeill said every September and October the facility shuts down for two weeks in order to conduct annual maintenance.

Ms. Patel asked what supplemental fuel is used to control fluidized bed temperatures. Mr. St. Armand said that although the system previously utilized No. 2 Oil, the facility now uses natural gas as supplemental fuel. Mr. St. Armand said this change in fuel occurred about three years ago to avoid problems with a buildup of slag in the boiler. Mr. St. Armand said when burning #2 oil a few years ago, the facility experienced a problem with slag buildup and even solidification of the Fluidized Bed Incinerator ("FBI") sand due to incorrect temperatures and imperfect air flow in the fluidized bed. Mr. St. Armand said Manchester switched to natural gas to avoid this. Ms. Patel observed this event was documented in the monthly compliance report for April 2020.

Facility Tour:

Mr. St. Armand led the group on a tour of the facility.

The group proceeded to the control room. Mr. St. Armand said a continuous monitoring system (called the SCADA) allows the facility to monitor process parameters in real time. Mr. St. Armand said the SCADA is programmed to include limits for each parameter, as described in the SSMP, that can alert the facility when corrective action needs to take place. Ms. Patel observed that the monitoring system is featured throughout the facility and has real time alerts to indicate to plant operators when to act. Ms. Patel asked Mr. St Armand to demonstrate how operators

know if there was an issue with the freeboard temperature. Mr. St Armand showed the group where on the control screen the FBI freeboard temperature is displayed. In addition, Mr. St. Armand showed the group where the FBI freeboard temperature high (1575°F) and low (1439°F) set points are displayed and showed inspectors where on the screen alarms would be displayed that would alert the operators if the temperatures were outside of the established set points.

Mr. St. Armand said that in addition to the SCADA system records, facility operators keep paper records. Mr. St. Armand said the operators walk around the facility and manually observe and record equipment measurements throughout the facility. Mr. St. Armand said this provides a way for the facility to routinely ground-truth the SCADA measurements.

Mr. St. Armand led the group through an area that he said contained the sludge dewatering process. Mr. St. Armand said the dewatering process is needed to prepare sewage sludge for incineration. Mr. St. Armand pointed out what he said were gravity thickener tanks. Mr. St. Armand said the gravity thickeners are the first part of the sludge dewatering process and consist of three main tanks where sludge is initially allowed to settle out from the water. Mr. St. Armand pointed out three centrifuges. Mr. St. Armand said the centrifuges are the next part of the dewatering process. Mr. St. Armand stated that the centrifuges produce a sludge cake that is ideally between 26-27% solids, which is then fed into the FBI.

Mr. St. Armand led EPA inspectors to the FBI room. Mr. St. Armand showed EPA inspectors the FBI and said the facility operates it as part of the incineration process of sludge cake. Mr. St. Armand said the FBI contains a bed of silica sand that is maintained at a temperature of 1350 degrees Fahrenheit. Mr. St. Armand said after the fluidizing air blower turns on, air travels through the recuperator where gasses are used to preheat the lower section of the FBI. Mr. St. Armand said that air flows through tuyeres which evenly push air into the sand. Mr. St. Armand said this creates a fluidized effect on the sand that causes sand to be suspended. Mr. St. Armand said next biosolids are pumped into the middle section of the FBI and are moved upwards to be incinerated in the upper section of the furnace, also known as the freeboard.

The group walked through the area of the facility that Mr. St. Armand said contains the air pollution control systems. Mr. St. Armand pointed out a device he said was the venturi scrubber that he said is used to control PM and metal emissions. Mr. St. Armand pointed out a second device that he said is the tray scrubber that follows the venturi scrubber. Mr. St. Armand said the tray scrubber is used to control HCL and SO₂ emissions. Mr. St. Armand pointed out a third device that he said was the Hg control system that utilizes a sorbent polymer composite material to control Hg emissions. Mr. St. Armand said the flue gas exiting the Hg control system is exhausted through the main stack to the atmosphere.

The group proceeded to the ash handling system. Mr. St. Armand stated the facility currently operates a wet ash system and ash lagoon to minimize fugitive emissions from ash generated during incineration.

Records Reviewed:

- Organizational chart.
- Monthly compliance reports for August 2020, November 2020, and March 2021. Ms. Kudarauskas reviewed the reports from February 2021 (covering January 2021) and March 2021 (covering February 2021). The February 2021 report stated that the Performance Stack Test was conducted December 14-18, 2020. The March 2021 report stated that the Stack Test Report was submitted via CEDRI (EPA's electronic reporting tool) on February 12, 2021.

Closing Conference:

Ms. Patel asked for a description of what happened during the shutdown that was described in the monthly compliance reports for the period from May to October 2020. Mr. St. Armand said that the FBI was shutdown for repairs of the recuperator system. Mr. St. Armand said the facility first noticed high pressures from within the system. Mr. St. Armand said when the unit was taken down for repairs the facility discovered that the recuperator tubes were clogged and not able to transfer heat properly. Mr. St. Armand said repairs included the installation of additional pressure monitoring to identify and correct pressure changes within the system.

Ms. Patel asked when had the continuous monitoring and data acquisition systems been installed and Mr. McNeill confirmed that they had been put in place three years ago and continuously upgraded since then.

Ms. Patel said the monthly report for September 2022 described that an issue with the FBI had occurred and she asked for a description of the issue. Mr. St. Armand said that during the normal facility walk-through, the operator noticed an odor in the building adjacent to the incinerator. Mr. St. Armand said the operator used a hand-held monitor to monitor the atmosphere in the building and observed elevated SO₂ levels. Mr. St. Armand said the operator also noticed that system pressures in the heat recovery area were not normal (although they were within the operational limits). Mr. St. Armand said further investigation found that the problem was likely related to an issue with the venturi scrubber throat. Mr. St. Armand said corrective actions included opening the blowdown tank, making repairs, and continuously monitoring pressures as the unit was brought back online. Mr. St. Armand said the repairs were combined with routine annual maintenance.

Ms. Kudarauskas asked how Manchester deals with sludge when the FBI is offline. Mr. McNeill said that if the system is shutdown, they can store a small amount of sludge on-site; however, if the facility is shut down for an extended period of time (more than a week), the sludge must be hauled off-site. Mr. McNeill said Manchester has a contract with Casella, who hauls the sludge biosolids as needed. Mr. McNeill said during the last facility shutdown, the sludge was hauled to Canada to be processed.

The EPA inspectors said that compliance determinations or decisions regarding Consent Decree termination will not be made at the time of inspection.

EPA representatives thanked Mr. St. Armand and Mr. McNeill for their time and left the facility at 11:52am.