REGION 5
CHICAGO, IL 60604

MEMORANDUM

SUBJECT:	CLEAN AIR ACT INSPECTION REPORT Perham Resource Recovery Facility, Perham, Minnesota
FROM:	Charles Hall, Environmental Engineer AECAB (MN-OH)
THRU:	Brian Dickens, Section Chief AECAB (MN-OH)
TO:	File, Perham Resource Recovery Facility, Perham, Minnesota

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BASIC INFORMATION

Facility Name: Perham Resource Recovery Facility (Perham RRF)

Facility Location: 201 6th Avenue NE, Perham, Minnesota

Date of Inspection: 12 September 2024

EPA Inspectors:
1. Erin DuMontelle, U.S. EPA, Region 5, ECAD, AECAB, MI-WI Section
2. Charles Hall, U.S. EPA, Region 5, ECAD, AECAB, MN-OH Section

Other Attendees:
1. Brian Schmidt, Facility Manager

Contact Email Address: bschmidt@plmswa.com

Purpose of Inspection: Small Municipal Waste Combustor inspection

Facility Type: Small Municipal Waste Combustor

Regulations Central to Inspection: The North Unit is subject to the emission standards and other requirements in the Federal Plan Requirements for SMWC Units Constructed on or Before August 30, 1999 (hereinafter, the SMWC FIP). The South Unit is subject to the emission standards and other requirements in the Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999, or for Which Modification or Reconstruction is Commenced After June 6, 2001 (hereinafter, the SMWC NSPS). The Minnesota Pollution Control Agency issued the current Title V permit on April 17, 2013. The Perham RRF applied for a permit renewal in September 2017.

Arrival Time: 0835 hrs CDT
Departure Time: 1240 hrs CDT

Inspection Type:

☒ Unannounced Inspection
☐ Announced Inspection

OPENING CONFERENCE

☒ Presented Credentials
☒ Stated authority and purpose of inspection.
☐ Provided Small Business Resource Information Sheet.
☒ Small Business Resource Information Sheet not provided. Reason: If this box is checked, you must enter a reason such as "Not a Small Business," here.
☒ Provided CBI warning to facility.

The following information was obtained verbally from Schmidt unless otherwise noted.

Company Ownership: In June 2011, the Prairie Lakes Municipal Solid Waste Authority (PLMSWA) purchased the facility from the City of Perham. The ownership of the facility has not changed since then.

Process Description:

PLMSWA collects municipal solid waste (MSW) from residences, institutions, and businesses in Becker, Clay, Otter Tail, Todd, and Wadena Counties, Minnesota. The MSW is sorted through a material recovery facility to remove, among other things, large items, recyclable metals, and glass before the remainder of the MSW is fed to either of the two 100-ton per day municipal waste combustion units.[1] The North and South Units consist of primary and second combustion chambers that vent to a heat recovery boiler, superheater, and economizer. The Perham RRF injects activated carbon to control dioxin/furan and mercury emissions and injects

1 Perham RRF operates at approximately 75 tons per day per unit.

calcium hydroxide to control hydrogen chloride (HCl) and sulfur dioxide (SO_2) emissions. The North Unit uses a single compartment pulse jet fabric filter to control particulate matter. The South Unit uses a four-compartment pulse jet fabric filter to control particulate matter. Each MWC unit is equipped with continuous emission monitors (CEM) for carbon monoxide, sulfur dioxide, and oxygen, a continuous opacity monitor (COM), and continuous monitoring systems to monitor the activated carbon injection rate, dry sorbent injection rate, steam load, and fabric filter inlet temperature.

TOUR INFORMATION

EPA Tour of the Facility: Yes.

Data Collected and Observations:

The SMWC FIP, SMWC NSPS, and the facility's Title V permit require the Perham RRF, among other things, to continuously monitor carbon monoxide (CO) and SO_2 emission concentrations and opacity and to comply with their respective emission standards. During the inspection, the inspectors collected the emission concentration data which is summarized in Table 1.

Table 1. Summary of CO, Opacity, and SO_2 Emission Data.

Pollutant	North Unit Limit	North Unit	South Unit Limit	South Unit
CO[2]	100 ppmV	7.7 ppmV	100 ppmV	0.1 ppmV
Opacity[3]	10%	0.25%	10%	1.22%
SO_2[4]	29 ppmV or 75% reduction of potential emissions	21.0 ppmV	30 ppmV or 80% reduction of potential emissions	15.82 ppmV

The SMWC FIP, SMWC NSPS, and the facility's Title V permit require the Perham RRF to establish four operating limits during performance tests and to monitor and record the operating data continuously. The operating limits are a maximum steam load in pounds per hour (lbs/hr), minimum lime injection rate in lbs/hr, minimum activated carbon injection rate in lbs/hr, and maximum fabric filter inlet temperature in degrees Fahrenheit (°F). During the inspection, the inspectors collected the operating parameter data which is summarized in Table 2. The records were taken at approximately 10:30 a.m. on September 12, 2024.

[2] 4-hour block average. The CO concentration is corrected to 7 percent oxygen.
[3] 6-minute average
[4] 24-hour geometric average. The SO2 concentration is corrected to 7 percent oxygen.

Table 2. Summary of Operating Parameter Limit Data.				
Operating Parameter	North Unit Limit	North Unit	South Unit Limit	South Unit
Maximum Steam Load[5]	25,681 lbs/hr	22,806 lbs/hr	27,715 lbs/hr	18,862 lbs/hr
Minimum Sorbent Feed Rate[6]	126.67 lbs/hr	138.4 lbs/hr	142 lbs/hr	154.9 lbs/hr
Minimum Carbon Feed Rate[7]	3.8 lbs/hr	4.00 lbs/hr	4.00 lbs/hr	4.2 lbs/hr
Maximum Fabric Filter Inlet Temperature[3]	396°F	352°F	361°F	329°F

In addition to calculating the required averaging periods, the Perham RRF displays the current value and the 1-minute and 60-minute average values of the CO and SO_2 emission concentrations, lime injection rate, activated carbon injection rate, and steam load. The Perham RRF also displays the 24-hour block average for CO, lime injection rate, activated carbon injection rate, and steam load. For opacity, the Perham RRF also displays the current value and the 1-minute and 60-minute averages. This additional information helps the control room operators recognize a problem more quickly than the required averaging time alone. For instance, if the activated carbon injection rate dropped to 0.00 lbs/hr, the control room operators would know that they needed to alert the maintenance staff to a problem in the activated carbon injection system.

The SMWC FIP, SMWC NSPS, and the facility's Title V permit require the Perham RRF to conduct periodic performance tests for dioxin/furan, cadmium, lead, mercury, opacity, particulate matter, and hydrogen chloride. Table 3 summarizes the results of the most recent performance test on each MWC.

Table 3. Summary of the Most Recent Performance Test on Each Unit.				
Pollutant	SMWC FIP Emission Standard[8]	Result of the 2023 Test on the North Unit[9]	SMWC NSPS Emission Standard	Result of the 2024 Test on the South Unit
Dioxin/Furan	30 ng/dscm	0.014 ng/dscm	13 ng/dscm	0.0034 ng/dscm
Cadmium	0.040 mg/dscm	2.4×10^{-3} mg/dscm	0.020 mg/dscm	6.6×10^{-4} mg/dscm
Lead	0.44 mg/dscm	1.9×10^{-2} mg/dscm	0.20 mg/dscm	0.0066 mg/dscm
Mercury	80 µg/dscm or 85% reduction	1.9 µg/dscm 85.9% reduction	0.080 mg/dscm or 85% reduction	1.3 µg/dscm 96.0% reduction
Opacity[10]	10 percent	0.4 percent	10 percent	0.0 percent
PM	27 mg/dscm	11.7 mg/dscm	24 mg/dscm	3.43 mg/dscm

[5] 4-hour block average.
[6] 3-hour block average.
[7] 8-hour block average.
[8] Except for opacity, all emission standards are corrected to 7 percent oxygen.
[9] Except for opacity, three run average concentration or emission reduction.
[10] Highest of three test runs.

Table 3. Summary of the Most Recent Performance Test on Each Unit.				
Pollutant	SMWC FIP Emission Standard[8]	Result of the 2023 Test on the North Unit[9]	SMWC NSPS Emission Standard	Result of the 2024 Test on the South Unit
HCl	29 ppmV or 95% reduction	<u>Condition 1</u> 26.4 ppmV 90.3% reduction <u>Condition 2</u> 29.2 ppmV 94.5% reduction	25 ppmV or 95% reduction	<u>Condition 1</u> 13.2 ppmV 98.1% reduction <u>Condition 2</u> 24.3 ppmV 96.4% reduction

The SMWC FIP, SMWC NSPS, and the facility's Title V permit require the Perham RRF to submit periodic reports regarding deviations from the CO, opacity, and SO2 emission standards and the four operating parameters. During the inspection, the inspectors requested the semiannual reports from the second half of calendar year 2023 and the first half of calendar year 2024 and reviewed the reports after the inspection. Table 4 summarizes the deviations. In general, the opacity deviations were the result of monitoring problems such as a dirty monitor lens, and the CO were frequently the result of clink that was caught in a primary chamber's grates.

Table 4. Total Number of Deviations.				
Pollutant or Parameter	North Unit 2nd Half 2023	North Unit 1st Half 2024	South Unit 2nd Half 2023	South Unit 1st Half 2024
CO	1	0	12	1
Opacity	9	7	0	2
SO_2	0	0	0	0
Steam Load	0	3	0	0
Sorbent Feed Rate	0	1	0	0
Carbon Feed Rate	0	0	0	0
Fabric Filter Inlet Temperature[3]	0	0	0	0

Photos were and **Videos** were not taken during the inspection.

Field Measurements were not taken during the inspection.

<u>RECORDS REVIEW</u>

The inspectors did not review any records during the inspection.

<u>CLOSING CONFERENCE</u>

☒ Provided U.S. EPA point of contact to the facility.

Requested documents:

In an e-mail sent after the inspection, the inspectors requested the following documents:

- Activated Carbon SDS and mesh size if not in the SDS,
- Sorbent SDS and mesh size if not in the SDS,
- The executive summary and report body from the most recent performance test for each Unit; no appendices,
- The 2nd quarter 2024 COMS Error Audit for each COMs,
- The report from the most recent RATA for each Unit,
- The 2nd half 2023 and 1st half 2024 semiannual reports, and
- The CEMS daily log for each Unit for September 12, 2024.

Compliance Assistance: The inspectors did not provide compliance assistance.

Concerns: The inspectors did not point out deficiencies or concerns during the inspection.

DIGITAL SIGNATURES

CHARLES HALL Digitally signed by CHARLES HALL
Date: 2024.10.03 11:47:22 -05'00'

Report Author:

BRIAN DICKENS Digitally signed by BRIAN DICKENS
Date: 2024.10.04 08:58:12 -05'00'

Section Chief:

APPENDICES AND ATTACHMENTS

Appendix A: Digital Image Log

Facility Name: Perham Resource Recovery Facility
Facility Location: 201 6th Avenue NE, Perham, Minnesota
Date of Inspection: 12 September 2024

APPENDIX A: DIGITAL IMAGE LOG

Photographer: Charles Hall Camera: Olympus TG-6 #1 EPA Bar Code: SZ4061

File Name	Date and Time	Description of Image
P9120025.jpg	09/12/24 10:32	CEM System Overview Screen for North and South Units Screen
P9120026.jpg	09/12/24 10:34	Steam Flow to Bongards Creameries and Tuffy's Screen
P9120027.jpg	09/12/24 10:34	Steam Flow to Bongards Creameries and Tuffy's Screen
P9120028.jpg	09/12/24 10:34	#1 Combustion Unit Process Overview Screen
P9120029.jpg	09/12/24 10:34	Feed Water System for North and South Unit Screen
P9120030.jpg	09/12/24 10:34	#2 Combustion Unit Process Overview Screen
P9120031.jpg	09/12/24 10:38	Unit 1 Carbon System Detail Screen
P9120032.jpg	09/12/24 10:38	Unit 2 Carbon System Detail Screen
P9120033.jpg	09/12/24 10:48	Lime System Detail Screen
P9120034.jpg	09/12/24 10:51	Unit 1 Flue Gas System Screen
P9120035.jpg	09/12/24 10:57	South Bag House System Screen
P9120036.jpg	09/12/24 11:02	General System Log Screen
P9120037.jpg	09/12/24 11:19	South Unit undergrade and grates (Part 1)
P9120038.jpg	09/12/24 11:19	South Unit undergrade and grates (Part 2)
P9120039.jpg	09/12/24 11:20	North Unit undergrade and grates
P9120040.jpg	09/12/24 11:25	North Unit super heaters with vortex cleaners
P9120041.jpg	09/12/24 11:26	Lime System Room
P9120042.jpg	09/12/24 11:29	Magnehelic gauge for North Unit baghouse
P9120043.jpg	09/12/24 11:30	North Baghouse Unit bottom side
P9120044.jpg	09/12/24 11:33	North Unit Baghouse vent to stack
P9120045.jpg	09/12/24 11:34	North Unit sampling port box and stack opacity (left)
P9120046.jpg	09/12/24 11:34	North Unit sampling port box and stack opacity (right)
P9120047.jpg	09/12/24 11:35	North Unit sampling ort box with CEMS probe
P9120048.jpg	09/12/24 11:38	South Unit stack opacity monitor (left)
P9120049.jpg	09/12/24 11:38	South Unit stack sampling port box
P9120050.jpg	09/12/24 11:38	South Unit stack opacity monitor
P9120051.jpg	09/12/24 11:47	Components of the activated carbon injection system
P9120052.jpg	09/12/24 11:48	Supersacks of activated carbon on weigh feeders