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AIR QUALITY DIV.

STATIONARY SOURCE TESTING
Ypsilanti Community Utilities Authority

PROJECT #: JQ1230.256

PREPARED FOR:
Ypsilanti Community Utilities Authority
2777 State Road
Ypsilanti, Michigan 48198

ISSUE DATE:
November 2016



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

**RENEWABLE OPERATING PERMIT
REPORT CERTIFICATION**

Authorized by 1994 P.A. 451, as amended. Failure to provide this information may result in civil and/or criminal penalties.

Reports submitted pursuant to R 336.1213 (Rule 213), subrules (3)(c) and/or (4)(c), of Michigan's Renewable Operating (RO) Permit program must be certified by a responsible official. Additional information regarding the reports and documentation listed below must be kept on file for at least 5 years, as described in General Condition No. 22 in the RO Permit and be made available to the Department of Environmental Quality, Air Quality Division upon request.

Source Name Ypsilanti Community Utilities Authority County Washtenaw
Source Address 2777 State Street City Ypsilanti
AQD Source ID (SRN) B6237 RO Permit No. MI-ROP-B6237-2015 RO Permit Section No. C

Please check the appropriate box(es):

Annual Compliance Certification (General Condition No. 28 and No. 29 of the RO Permit)

Reporting period (provide inclusive dates): From _____ To _____

- 1. During the entire reporting period, this source was in compliance with **ALL** terms and conditions contained in the RO Permit, each term and condition of which is identified and included by this reference. The method(s) used to determine compliance is/are the method(s) specified in the RO Permit.
- 2. During the entire reporting period this source was in compliance with all terms and conditions contained in the RO Permit, each term and condition of which is identified and included by this reference, **EXCEPT** for the deviations identified on the enclosed deviation report(s). The method used to determine compliance for each term and condition is the method specified in the RO Permit, unless otherwise indicated and described on the enclosed deviation report(s).

Semi-Annual (or More Frequent) Report Certification (General Condition No. 23 of the RO Permit)

Reporting period (provide inclusive dates): From _____ To _____

- 1. During the entire reporting period, **ALL** monitoring and associated recordkeeping requirements in the RO Permit were met and no deviations from these requirements or any other terms or conditions occurred.
- 2. During the entire reporting period, all monitoring and associated recordkeeping requirements in the RO Permit were met and no deviations from these requirements or any other terms or conditions occurred, **EXCEPT** for the deviations identified on the enclosed deviation report(s).

Other Report Certification

Reporting period (provide inclusive dates): From NA To NA

Additional monitoring reports or other applicable documents required by the RO Permit are attached as described:

EMISSIONS TEST REPORT CERTIFICATION

This form shall certify that the testing was conducted in accordance with the
attached test plan and that the facility was operated in compliance with permit
conditions or at the maximum routine operating conditions for the facility.

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this report and the supporting enclosures are true, accurate and complete, and that any observed, documented or known instances of noncompliance have been reported as deviations, including situations where a different or no monitoring method is specified by the RO Permit.

Jeff Castro Director 734-484-4600
Name of Responsible Official (print or type) Title Phone Number

Jeff Castro 11/17/16
Signature of Responsible Official Date

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AIR QUALITY DIV.

EMISSION TEST REPORT
YPSILANTI COMMUNITY UTILITIES AUTHORITY
2777 STATE ROAD
YPSILANTI, MICHIGAN 48198
AUGUST MACK PROJECT NUMBER JQ1230.256

INTRODUCTION

Ypsilanti Community Utilities Authority (YCUA) operates a municipal wastewater treatment plant in Ypsilanti, Michigan. As part of the wastewater treatment process, biosolids are accumulated and collected prior to discharge of the treated water into the Lower Rouge River. YCUA utilizes a Fluidized Bed Sewage Sludge (Biosolids) Incinerator (FBSSI) to incinerate sludge removed during the treatment process.

The State Plan for Implementation and Enforcement of Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration (SSI) Units (September 2015) applies to SSI sources that commenced operation on or before October 14, 2010. Rule 336.1972 requires compliance with 40 CFR Part 60, Subpart M MMM. Subpart M MMM limits the HCl emissions from the FBSSI to 0.51 parts per million (ppm), by dry volume. The purpose of this test program is to demonstrate compliance with the Subpart M MMM HCl emission limit. It should be noted that the previous HCl testing of the FBSSI (conducted December 15-16, 2015) did not achieve a detection limit low enough to demonstrate compliance with the limit. YCUA developed additional sampling procedures to ensure that this testing achieved the required detection limit. Details on the modified procedures are provided in Variations from Normal Sampling Procedures. Emissions testing was conducted on September 20, 2016.

This report also includes the relative accuracy test audit (RATA) of the continuous emissions monitoring system (CEMS) installed to monitor sulfur dioxide (SO₂). Subpart M MMM allows regulated sources to demonstrate initial and continuous compliance with the SO₂ emission standards using CEMS, in lieu of annual performance testing. The

RATA testing associated with the SO₂ CEMS was conducted to meet the performance specifications of 40 CFR 60, Appendix B, Performance Specification 2. Subpart Mmmm states that for sources with actual inlet emissions less than 100 parts per million dry volume, the relative accuracy criterion for the inlet of the SO₂ CEMS should be no greater than 20 percent of the mean value of the method test data in terms of the units of the emission standard, or 5 parts per million dry volume absolute value of the mean difference between the method and the CEMS, whichever is greater.

Facility Info

Ypsilanti Community Utilities Authority (YCUA)
2777 State Road
Ypsilanti, Michigan 48198

State Registry Number (SRN): B6237
Permit Number: MI-ROP-B6237-2015

Contact Info

Source Contact

Luther Blackburn
Director of Wastewater Operations & Compliance
Ypsilanti Community Utilities Authority
2777 State Road
Ypsilanti, MI 48198-9112
Office: 734-484-4600 Ext. 121
Email: lblackburn@ycua.org

Test Coordinator (August Mack Environmental, Inc.)

Anthony Henley	Breegan Andersen
Compliance Manager	Compliance Manager
317.916.3147	317.721.0696
ahenley@augustmack.com	bandersen@augustmack.com

Test Company (Stack Test Group)

Bill J. Byczynski
President
Ph: (815) 433-0545
Cell: (630) 669-3813
billb@stacktestgroup.com

SUMMARY OF RESULTS

Process Operating Parameters

Operating parameters for the FBSSI are controlled by programmable logic controlled monitoring systems. Operating parameters were monitored during the testing at 10-minute intervals. In addition, sludge samples were collected to determine the moisture content of the sludge during testing. A summary of the observed operating parameters is provided in Table 1. Detailed field logs and process data is provided in Appendix A.

TABLE 1
Process Operating Parameters during Testing

Parametric Monitoring	Average Observed Value		
	Test #1	Test #2	Test #3
Sewage Sludge Feed Rate (lbs/hr)	5,254	4,948	5,483
Sludge Feed (GPM)	49.0	48.4	49.2
FAB Air Flow (SCFM)	11,250	11,267	11,318
Sand Bed Temp (F)	1,339	1,341	1,342
Freeboard Temp (F)	1,704	1,691	1,693
Freeboard O ₂ (%)	9.56	9.76	9.97
Venturi Pressure Drop (in)	35.5	35.7	35.8
Venturi Water Flow (GPM)	346.4	344.4	343.1
Tray Scrubber Pressure Drop (in)	9.90	9.50	9.72
Tray Scrubber Water Flow (GPM)	584.9	583.8	582.6
GAC Pressure Drop (in)	4.9	4.6	4.7
WESP Sec. Amp (mA)	38.0	36.3	26.7
WESP Sec. Voltage (kV)	37.1	35.7	32.4
Sludge Moisture Content (%)	79.24%	78.74%	77.93%

Emission Testing Results

HCl emissions testing and SO₂ RATA results are summarized in Tables 2 and 3, respectively. Field calculations, quality assurance data, associated equipment calibration data and laboratory results are provided in Appendices B and C.

TABLE 2
Summary of HCl Results

Test	Test Duration (min)	HCl Results (ppm at 7% O ₂)	Subpart MMMM Limit (ppm)
Test #1	120	0.107	0.51
Test #2	120	0.121	0.51
Test #3	120	0.165	0.51
Average	120	0.131	0.51

TABLE 3
Summary of SO₂ RATA

Run Number	Start Time	End Time	Reference Method (RM) Measurement (ppm @ 7% O ₂)	CEMS Monitor (ppm @ 7% O ₂)	Difference (ppm)	Average Relative Accuracy (ppm)*	Subpart MMMM Limit (ppm)
1	1348	1409	11.9	15.7	3.80	3.90	5
2	1417	1438	2.9	6.3	3.40		
3	1446	1507	5.3	7.9	2.60		
4	1519	1540	4.8	7.6	2.80		
5	1555	1616	4.0	7.3	3.30		
6	1640	1701	4.5	7.4	2.90		
7	1711	1732	3.0	7.3	4.30		
8	1740	1801	2.4	6.7	4.30		
9	1810	1831	3.9	7.4	3.50		

* Corrected with confidence coefficient, as indicated in Performance Specification 2.

SOURCE DESCRIPTION

Description

Ypsilanti Community Utilities Authority (YCUA) operates a municipal wastewater treatment plant in Ypsilanti, Michigan under the permit number ROP B6237-2015. As part of the wastewater treatment, biosolids are accumulated and collected prior to discharge of the treated water into the Lower Rouge River. YCUA utilizes a Fluidized

Bed Sewage Sludge (Biosolids) Incinerator (FBSSI) to incinerate sludge removed during the treatment process.

As part of the wastewater treatment, biosolids are accumulated and collected prior to discharge of the treated water into the Lower Rouge River. YCUA utilizes the FBSSI to incinerate sludge removed during the treatment process. Sludge is introduced into the incinerator using conveyors and pumps. Two dewatered sewage sludge bins are located in the solids building. Dewatered cake from nine belt filter presses is stored in the feed bins before being pumped to the incinerator. Two pumps are connected to each of the feed bins. The feed bin extraction screw conveyors feed the pumps, and the pumps transfer the dewatered sludge to the incinerator. High-pressure ball valves installed in the piping system control the flow of sludge to the incinerator.

The FBSSI uses an advanced air pollution control system, consisting of a venturi scrubber, a multistage impingement tray scrubber, a wet electrostatic precipitator, and a granular activated carbon absorber bed.

Raw Materials and Finished Products

The FBSSI unit incinerates sewage sludge (maximum permitted capacity = 6,300 pounds/hour). During testing, the FBSSI unit was operated at approximately 83% of their permitted capacity at an average of 5,228 pounds per hour.

Operation Type (Batch/Continuous)

This is a continuous process.

Operating Parameters

Control equipment parameters are controlled by programmable logic controlled monitoring systems. Control equipment parameters are summarized in Table 1.

SAMPLING & ANALYTICAL PROCEDURES

Reference Methods

All testing was conducted in accordance USEPA Reference Methods, unless noted otherwise. HCl testing was conducted in accordance with USEPA Methods 1-4 and 26A. Testing consisted of three (3) sampling runs. Each sampling run was approximately 120 minutes in duration with a minimum sample volume of two dry standard cubic meters. A summary of the test methods utilized for HCl testing is shown in Table 3 below.

TABLE 3
Test Methods for HCl Testing

Method Number	Applicability
1	Sample and Velocity Traverses for Stationary Sources
2	Determination of Stack Gas Velocity and Volumetric Flow
3	Gas Analysis for the Determination of Dry Molecular Weight
4	Determination of Moisture Content in Stack Gases
26A	Determination of Halogen Emissions from Stationary Sources

The SO₂ RATA was conducted in accordance with 40 CFR 60, Appendix B, Performance Specification 4B, and USEPA Method 6C and 19 with spans appropriate to the applicable emission limit. Testing consisted of nine (9) sampling runs. Each sampling run was twenty-one (21) minutes in duration. A summary of the RATA test methods is shown in Table 4 below.

TABLE 4
Test Methods for RATA Testing

Method Number	Applicability
6C	Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxide Emission Rates

Sampling Train Schematics

The sampling trains were set up according to the procedures of USEPA Reference Methods 26A and 6C. The sampling train schematics are shown in Figures 1 and 2, respectively.

Figure 1: Method 26A Sampling Train

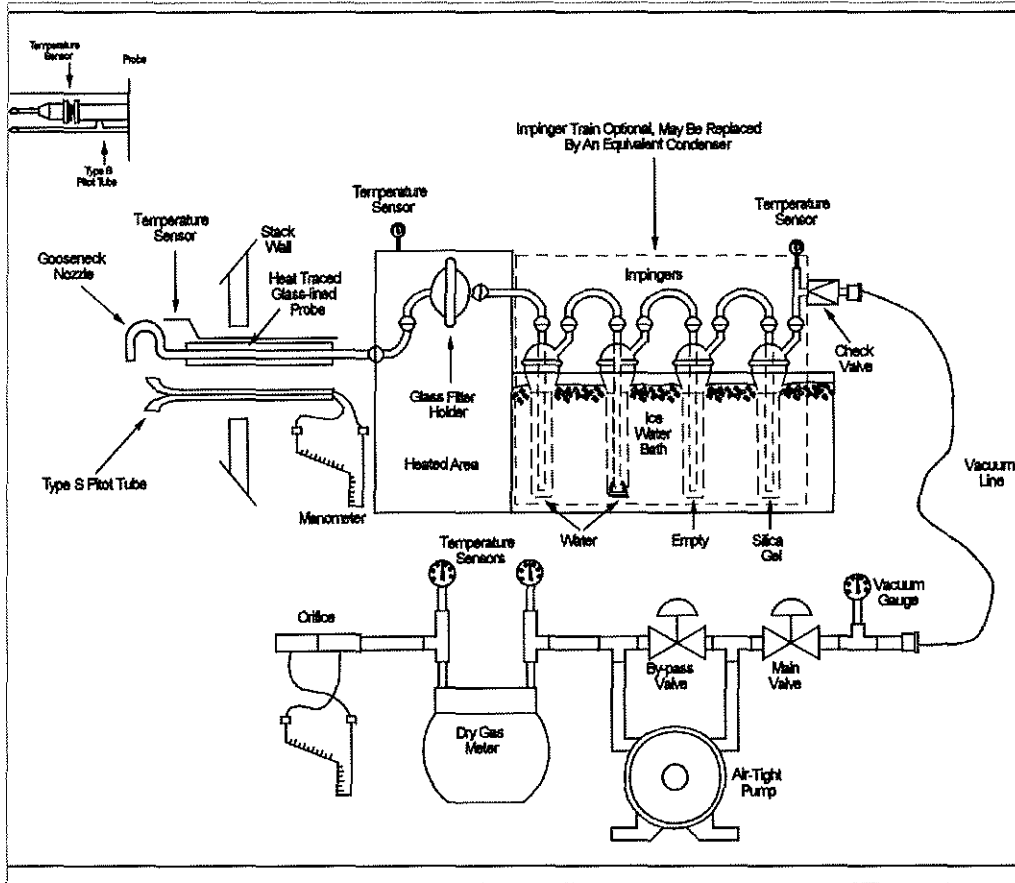
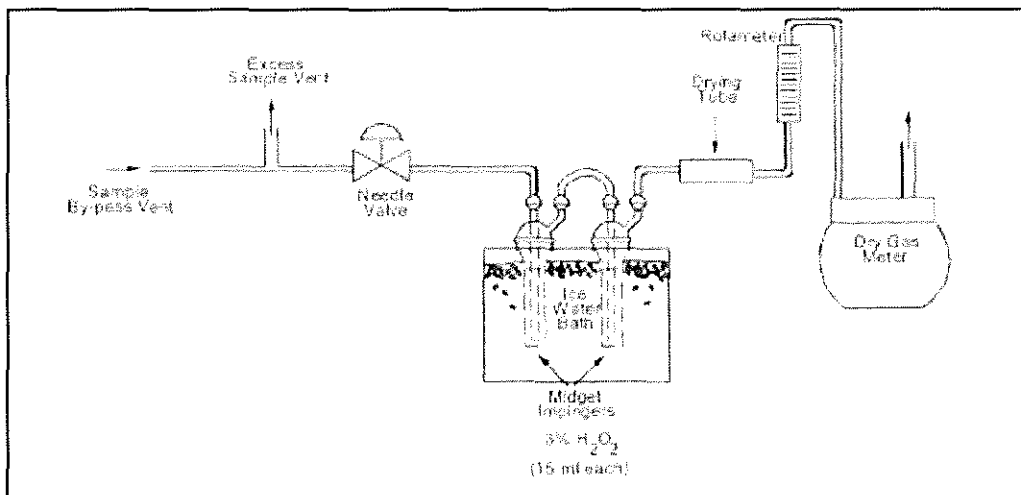


Figure 2: Method 6C Sampling Train



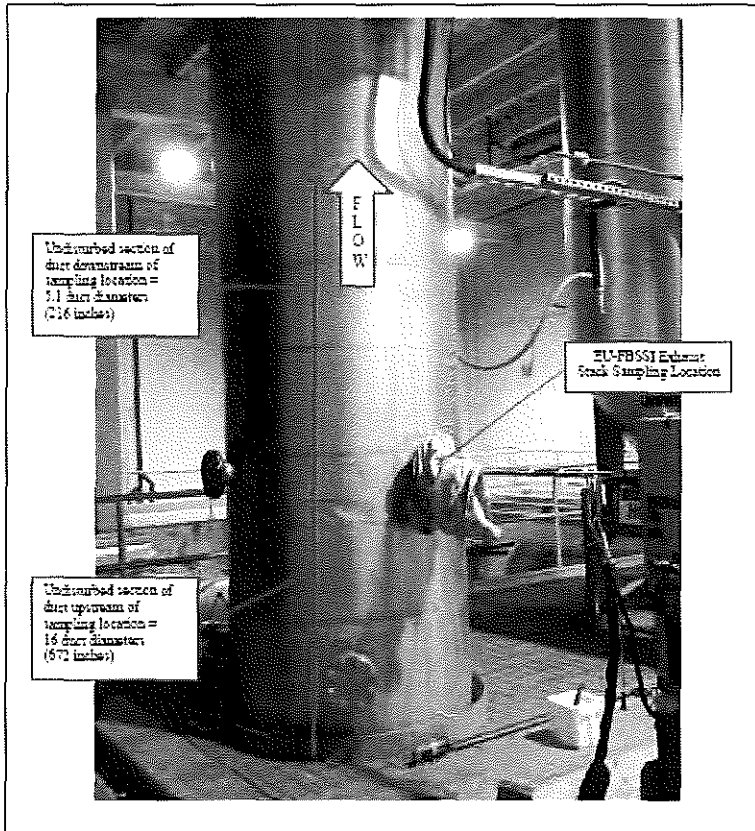
Quality Assurance / Quality Control (QA/QC)

For HCl testing, one equipment blank was collected and sent to the laboratory for analysis. Sampling equipment calibration and leak checks were performed in accordance with the applicable USEPA Reference Methods. Standard chain of custody procedures were followed. The laboratory conducted one reagent blank for HCl. Also, a USEPA audit sample was analyzed by the laboratory and was found to be within acceptable range. Additional QA/QC information is included in Appendices B and C.

Stack Description/Schematic

The FBSSI exhaust stack is 42 inches in diameter and has two 4-inch \emptyset sampling ports. The ports are located 18 feet (5.1 duct diameters) from the nearest downstream disturbance and 56 feet (16 duct diameters) upstream from the nearest disturbance. A diagram of the testing location is provided in Figure 3 below.

Figure 3: Testing Location/Dimensions



Flue Gas Conditions

The flue gas conditions from emissions testing are provided below. Detailed flue gas conditions are provided in Appendices B and C.

Average Exhaust Temperature = 140.5 °F

Average Exhaust Moisture = 3.60%

Average Exhaust Velocity = 32.67 FPM

Average Exhaust Volume = 17,975 ACFM

TEST RESULTS & DISCUSSION

Results

As summarized in Table 2, the HCl results from testing conducted on September 20, 2016 show YCUA is in compliance with the Subpart M HCl emission limit with results less than 0.51 ppm. As summarized in Table 3, the RATA results indicate that the SO₂ CEMS meets the requirements of Subpart M. Prior to testing, YCUA conducted a 7-day drift check. The results of the 7-day drift check were also within the allowable range of Performance Specification 2. Documentation of the 7-day drift check is provided in Appendix D. Field calculations, quality assurance data, associated equipment calibration data and laboratory results for the HCl testing and SO₂ RATA are provided in Appendices B and C, respectively.

Variations from Normal Sampling Procedures

YCUA modified the sample time for HCl emissions testing from 60 minutes in length to 120 minutes in length. This was to ensure the detection limit was reached for HCl. The previous HCl emissions testing conducted December 15th and 16th of 2015 did not reach the detection limit to prove compliance with Subpart M.

YCUA was not able to complete the carbon monoxide (CO) relative accuracy test audit (RATA) for the compliance emissions monitoring system (CEMS) due to YCUA equipment malfunction. Therefore, no response time test was completed because the CO RATA was not conducted.

CERTIFICATION

A certification by the responsible official, is included in Appendix E.