

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

N160439140

FACILITY: Kent County Waste to Energy Facility		SRN / ID: N1604
LOCATION: 950 Market Ave SW, GRAND RAPIDS		DISTRICT: Grand Rapids
CITY: GRAND RAPIDS		COUNTY: KENT
CONTACT: Terry Madden , Environmental Compliance Specialist		ACTIVITY DATE: 03/31/2017
STAFF: Steve Lachance	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: On-site, Unannounced Inspection for FY '017 - see CA_N160439140. (SLachance, 3/31/17)		
RESOLVED COMPLAINTS:		

On March 31, 2017, SL conducted a scheduled, unannounced inspection of the Kent County Waste to Energy facility located at 950 Market Avenue SW, Grand Rapids, Michigan. The purpose of the inspection was to determine the facility's compliance with Renewable Operating Permit No. MI-ROP-N1604-2013. The facility was represented by Mr. Terry Madden of Covanta. (Covanta operates the facility for Kent County.)

Primary Facility Contact: Mr. Terry Madden 616-235-3210 ext. 264

Weather conditions were heavily overcast, humid, about 45 degrees F, with calm winds. A condensed water vapor plume was present from the main stack, but no visible emissions were noted. No fugitive dust concerns or material track-out were evident; no malodors were noted up approaching the site at about 10 AM.

This Full Compliance Evaluation incorporates not only the observations of this field day, but also all other site activities and reviews of required reports in the previous calendar year. See the accompanying FCE Summary Report.

FACILITY DESCRIPTION

The facility is a nominal 625 ton per day waste to energy facility firing municipal solid waste and natural gas. Two identical municipal solid waste mass burn waterwall combustors can be co-fired with natural gas. The combustors produce steam for process use and/or for electrical generation. Each combustor is equipped with a baghouse, a dry scrubber, a carbon injection system, and a selective non catalytic reaction system. Support equipment and operations on-site consist of ash and lime handling systems.

The facility is located on the Grand River just southwest of downtown Grand Rapids. The immediate surrounding area is largely industrial.

The stationary source is located in Kent County, which is currently designated as attainment for all criteria pollutants.

The stationary source is subject to 40 CFR Part 70 because the potential to emit of sulfur dioxide and nitrogen oxides exceeds 100 tons.

The stationary source is considered a major source of Hazardous Air Pollutant (HAP) emissions because the potential to emit of a single HAP (Hydrogen Chloride) regulated by the Clean Air Act, Section 112 exceeds 10 tons per year. Moreover, the facility has been required to otherwise obtain a Part 70 Renewable Operating Permit since it is a solid waste incinerator regulated by Section 129 of the Clean Air Act.

The stationary source is subject to Prevention of Significant Deterioration (PSD) (40 CFR 52.21) regulations because the stationary source has the potential to emit of sulfur dioxide and nitrogen oxides greater than 100 tons. Emission levels of particulate matter, carbon monoxide, lead, mercury, sulfuric acid mist, and beryllium were also subject to PSD review.

The stationary source is subject to the New Source Performance Standards (NSPS), Subpart C Emission Guidelines for municipal waste combustors promulgated in 40 CFR Part 60 Subpart Cb, which in turn references and incorporates portions of 40 CFR Part 60 Subpart Eb. The stationary source is not subject to the NSPS for Industrial-Commercial-Institutional Steam Generating Units (40 CFR Part 60 Subpart Db) based on acceptance of a restriction in the use of fossil fuel (natural gas).

The facility is not subject to Acid Rain requirements of Title IV of the Clean Air Act, based on the size of the electrical generator (approximately 18.1 megawatts.)

The facility's original Renewable Operating Permit application was submitted prior to the effective date of the federal Compliance Assurance Monitoring (CAM) rule. However, subsequent changes at the facility to accommodate NSPS requirements after April, 1998 may have triggered CAM applicability for certain non-NSPS pollutant-specific emission limits. However, the facility has elected to subsume certain hydrogen chloride limits under the CAM-exempt limit promulgated through NSPS; and has also successfully demonstrated that compliance with non-NSPS emission limits for nitrogen oxides does not rely on the use of a control device. Therefore, CAM is not applicable to this current Renewable Operating Permit.

Two diesel-fired pump engines for fire protection are regulated under 40 CFR 63, ZZZZ; these emission units have been added to the most recent ROP.

The facility was formerly subject to (rescinded) R 336.1932, which was never incorporated into Michigan's State Implementation Plan. As such, the facility is also subject to a Federal Implementation Plan promulgated under 40 CFR 62 Subpart FFF. Michigan has also promulgated (in 2015) R 336.1973, which adopts the federal "Emissions Guidelines" for large municipal waste combustors constructed on or before September 20, 1994; these 40 CFR 60 Subparts Cb and Eb requirements have already been incorporated into the existing ROP.

A Fugitive Dust Control Strategy, Rule 911 Malfunction Abatement Plan, and a Consolidated Plan for Municipal Solid Waste Handling/Odor Control are referenced and required by the Renewable Operating Permit. Each of these has been recently reviewed, renewed and submitted to AQD as part of the most recent Operating Permit renewal.

COMPLIANCE EVALUATION

The Renewable Operating Permit contains tables of applicable requirements for the following emission units: EU-ASHSYSTEM; EU-LIMESYSTEM; EU-COOLINGTOWER; FG-COMBUSTORS (consisting of two identical combustor units, identified respectively as EU-COMBUSTOR-1 and EU-COMBUSTOR-2); EU-PUMPHOUSE1 and EU-PUMPHOUSE2 (two separate fire pump engines); FGCOLDCLEANERS and FGRULE290. The facility is also subject to a source-wide fugitive dust control strategy, and has submitted and up-dated the requested Malfunction Abatement Plans and a Consolidated Waste Acceptance/Odor Management Plan.

As noted above, no visible emissions were noted from the main stacks upon approaching the facility. No fugitive dust issues were observed while circling the property prior to entry.

The inspection began with an entrance interview with Mr. Madden. Only Unit 1 was in operation at the time; an event the previous evening had knocked both units off-line. While Unit 1 had returned to compliant service, Unit 2 had suffered a blown steam tube; and was also scheduled for shutdown for Spring maintenance commencing Sunday, April 2. As such, Unit 2's return to service prior to the scheduled shut down was uncertain.

The event was one not previously encountered; a "False" low alarm on a water pump feeding water through the cooling towers at about 8:40 PM, 3/30/17 had caused the cooling towers to go off-line; and this cascaded through a steam turbine/generator trip to a unit over-steaming condition; which then resulted in each unit automatically tripping out of service for controlled safety reasons. See attached COVANTA Emission Event/Deviation Investigation Report

Minute-by-minute CEMS data (attached above for O2, and also in unit-specific Data Summary Reports) indicate that unit O2 concentrations quickly reached 16.0%, at which point the units are considered "off-line" because the CEMS data is subject to distortion through "data blow-up." This data is partitioned separately and reported semi-annually via required "G" and "H" reports, but is excluded from comparison to permitted "block average" periods. The hourly Data Summary Report for CO from Units 1 and 2 shows that each of the valid block periods (un-circled on the attached) are compliant, while the circled blocks are not valid for comparison; but to be evaluated through the "G" and "H" reports. These reports, in fact, track data not used for direct compliance evaluations help to incentivize the minimization of operational issues/emissions events through the semi-annual declaration of these events.

The entrance interview continued with the following discussions:

***No changes to or current concerns with the existing Malfunction Abatement Plans, Consolidated Waste Plan or Fugitive Dust Plans. These were all updated and posted with the last ROP renewal.

***SLachance requested and received Daily Calibrations Summaries for all CEMS for March 30 and 31, 2017 (attached.) All CEMS were fully functional and so all CEMS values referenced within this report are considered valid. SLachance also requested and received Calibration Drift Charts for the CEMS for the last couple of weeks; see examples, attached. These indicate stable CEMS performance over this period, well within required or source-imposed action limits for calibration error.

***Annual hours of operation for the onsite emergency/pump engines are 17.5 (W) and 28.1 (E). Accumulated hours for each engine are 1350 (W) and 244.75 (E).

***All records specifically requested were readily available for review. Specifically discussed were the required "site specific operating manual" (see FGCOMBUSTORS, SC. IX. 7 through 9) which is the site's "Environmental Compliance Operating Manual; ECOM" which was last updated on 5/19/16. This update incorporated additional emission control/operational control requirements for operators during startup and shutdown events. All required elements were addressed in this ECOM.

***The facility is fully staffed and so all "on-site presence" requirements for trained operational staff are now met/redundant.

***Every data reduction element in FGCOMBUSTORS that was specifically requested for review was readily available.

***Every monitoring requirement that was specifically requested was readily available; for instance, see the attached Data Summary Report for non-emissions parameters for 3/29/17. This addresses SC VI.42 of FGCOMBUSTORS.

The following CEMS-based results were observed at about 11:15 AM, 3/31/17:

Pollutant	Limit (ppmc)	Averaging Time	Unit 1	Unit 2
SO ₂	29	24-hour	4*	---
	50	8-hour	1	---
NO _x	205	24-hour	170	---
	350	3-hour	149	---
	400	1-hour	173	---
CO	50	8-hour	16	---
	100	4-hour	16	---
	200	1-hour	9	---
Parameter				
Opacity	10%	6-minute	1.4	---
Steam Load	81,000 pph	4-hour	68,000	---
Carbon Injection	10.5 pph (per test)	8-hour	11.6	---

*Values are for the most recently completed applicable "block" period.

--- Unit 2 was not in service at this time.

Each value indicates compliance; moreover, each CEMS had properly passed calibration for the day and so these values are considered valid. As noted above, Calibration Reports for each CEMS for this day are attached. No issues noted or reported. CO values are higher than normally observed, but weather conditions have been consistently and exceptionally wet; and so the current fuel is, too.

Each of the following areas was further observed/discussed during the ongoing inspection:

Reciprocating Internal Combustion Engine (RICE) MACT

SL reviewed operations/records for two emergency fire pump engines (EU-PUMPHOUSE1 and EU-PUMPHOUSE2.) Each is <10mmBtu heat input based on physical size and so exempt from R201 permitting requirements. Each is subject to different sets of RICE MACT requirements (May 2013) and so is included in the renewed ROP. Neither engine was operating at this time; they are simply briefly exercised weekly in preparedness/readiness for use. Each is diesel-fired. Per above, hours of operations are minimal and tracked satisfactorily.

FUGITIVE DUST CONTROL STRATEGY

Based on site observations and discussions with Mr. Madden, the Fugitive Dust Control Strategy appears to be implemented properly. Design elements of the plan include enclosures; maintaining moisture levels of ash; maintaining negative pressure within the combustor building; and paved road surfaces. Trucks are more likely to be kept indoors (under negative pressure and contained) as opposed to waiting outside, and this helps with "drippings" and subsequent track-out. Pavement conditions were okay, and no wind-swept fugitive dust was observed. Operational procedures include washing and sweeping; Covanta now hires a contractor for daily sweeping. The facility has also enclosed the ash conveyor to a much greater extent, and Mr. Madden indicated that this has helped with dust. SL believes that these areas are maintained in good condition and no fugitive dust issues were identified during the site inspection. No complaints regarding fugitive dust from the facility have been received by AQD.

EU-ASHSYSTEM

This table outlines the applicable requirements for the ash storage and handling equipment. There is a separate ash handling system for each combustor. Bottom ash and fly ash are quenched before being combined and transported by a single covered vibrating conveyor to an inclined belt conveyor and then to an enclosed ash storage building.

*** design parameters***

The equipment is designed as required by the ROP. There have been no recent changes to this equipment other than further enclosure of the ash conveyor at ground level. Emissions from the enclosed areas are controlled by roof vent filters.

*** material usage/emission limits***

Visible emissions of fugitive dust are evaluated on a weekly basis; and an annual Method 22 evaluation is completed. No visible emissions from ash handling were noted during the on-site portion of this inspection.

*** monitoring/recordkeeping***

The required records for the required inspections were available, and no issues were identified.

*** testing/recordkeeping/reporting***

Required testing has been completed/reported and no issues have been identified.

EU-LIMESYSTEM

This table outlines the applicable requirements for the lime storage and handling equipment. The lime is used in the dry scrubber for sulfur dioxide control. Pebble lime is transferred from bulk trucks through an enclosed conduit to a vented storage silo equipped with a filter to control particulate emissions from displaced silo air. Note, these requirements (inspections and maintenance) are also being applied to the "new" dolomite silo, which was installed under a Rule 290 exemption.

*** design parameters***

There are no such requirements.

***** material usage/emission limits*****

Compliance with the particulate matter and opacity limits is based on proper operation and maintenance of the equipment, in conjunction with the periodic monitoring that is required. At the time of the inspection, no visible emissions were noted from either the lime or dolomite silo; but no active pneumatic loading from a truck was observed to be taking place during the inspection.

***** monitoring/recordkeeping*****

The required records for the required inspections were available, and no issues were identified.

***** testing/recordkeeping/reporting*****

No testing of this equipment has been required.

NOTE; dolomitic lime (separate silos) is used to balance the pH of the lime slurry used for acid gas control.

EU-COOLINGTOWERS

The counter flow mechanical-induced draft cooling tower is equipped with mist eliminators. It is physically inspected at least twice a year; records of the inspections are maintained.

FG-COMBUSTORS

There are two identical municipal solid waste (MSW) mass burn waterwall combustor units. Each is equipped with a baghouse, a dry scrubber, a carbon injection system, and a selective non-catalytic reduction (SNCR) system. The MSW combustors produce steam for process use and for electrical generation. Each unit is rated at 312.5 tons per day MSW at a higher heating value (hmv) of 4,800 Btu/lb., and 125 mmBtu per hour.

***** design parameters*****

There have been no recent changes to the design of the combustors.

***** material usage/emission limits*****

Refer to the table above for specific values; each value recorded indicates compliance with applicable emissions/process operations limits.

The units are each subject to a variety of material usage and emission limits, as follows:

Steam Load; steam loads observed were about 68,000 pph (Unit 1) and 0 pph (Unit 2; not operating). Each unit's capacity is restricted to 110% of load at testing each year (or to 81,000 pph, whichever is less.)

Natural Gas: None in use at the time of the inspection. Daily records are totalized on a monthly, semi-annual, and annual basis to demonstrate compliance with the yearly limit. As reported in MAERS for EI2016, the facility used about 15.1 mmcf natural gas in the units (combined), compared to the annual limit of 104 mmcf (per unit.)

Baghouse Inlet Temperature: about 321 F(Unit 1) and 320 F (Unit 2). The maximum acceptable value (350 F) for this parameter is established during each annual emissions test.

Emission Limits:

See above. The basis for compliance for each of the emission limits is either periodic (annual or bi-annual) stack testing, or certified Continuous Emissions Monitoring Systems (CEMS). No compliance issues were identified as a consequence of the testing completed June 2016. Mr. Madden provided a nice summary of current and historic test results, all of which show compliance with applicable limits. See attached.

** monitoring/recordkeeping**

Monitoring consists of various CEMS; Continuous Opacity Monitoring Systems (COMS); various process monitoring systems; control device monitoring; training requirements; and records in accordance with the Malfunction Abatement Plan.

CEMS and COMS data are reviewed quarterly. No actionable items have been identified as a result of the review of these and other required reports. A RATA was completed as part of the 2016 annual testing. Per above, SL requested and received Daily Calibration Summaries for each Unit's CEMS for 3/30 and 31/17. No issues were identified.

Various process monitoring is completed, such as carbon injection rates, ammonia injection rates, lime flow, lime slurry density, roof top and baghouse inlet temperatures, control device differential pressures, steam flow, natural gas usage, etc. These appear to be sufficient to meet required limits for criteria pollutants based on current CEMS values; and exceed the rates established during the last compliance tests (where applicable). These values are also consistent with observations made during previous inspections of the facility.

In final summary, all requested monitoring items were readily available. Specific items reviewed for content indicated compliant operating conditions.

*** testing/recordkeeping***

Timely testing has been completed in accordance with the provisions outlined in this table and in Appendix 5 of the RO Permit. There were no issues identified as a result of the 2016 testing event. There are no outstanding compliance issues based on previous rounds of testing.

*** reporting***

In addition to the RO Permit reporting requirements pertaining to the Title V program, the facility submits quarterly excess emissions and monitoring systems performance reports; stack test reports; semi-annual Emission Guideline operating and data availability summary reports; and semi-annual Emission Guideline excess emission reports. Each of these has been submitted in a timely manner and reviewed by AQD. See the attached FCE Completion Summary for references to specific report review documentation.

*** operational parameters/other requirements***

Data monitored and collected pursuant to the monitoring/recordkeeping requirements discussed above indicated compliance with the RO Permit's operational parameters/ other requirements for the combustors.

This table contains the requirements for any future, new cold cleaner that is exempt from NSR permitting by R 336.1281(2)(h) or R 336.1285 (2)(r)(iv). In addition to non-regulated, citrus-based cleaning agents for small degreasing tasks, the facility has a single Safety-Kleen cold cleaner on-site for support of architectural coating (maintenance) activities. This unit is <10 square feet in size, and does not use heated solvents or agitation. Appropriate signage has been observed to be in place. This unit appears to be compliant with applicable regulations.

FGRULE290

This table contains the requirements for any existing or future emission unit that emits air contaminants which are exempt from the requirements of R 336.1201 pursuant to R 336.1290. The "new" lime silo has been installed per this rule. The manufacturer's efficiency guarantees in conjunction with the loading schedule for the unit supply the basis for complying with the Rule 290 emission limits. (As noted above, emissions occur only during a few loadings per year, and are minimal.) Additionally, this silo is subjected to the same monitoring and maintenance activities as the existing equipment on-site.

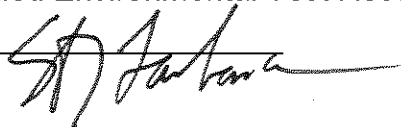
EVALUATION SUMMARY

SL considers the facility to be in compliance with applicable air use rules, regulations and requirements at the time of the completion of this inspection. This is based on review of all reports and activities associated with this Full Compliance Evaluation, as well as the observations and records collected as part of the on-site inspection activities conducted on March 31, 2017, above.

ATTACHMENTS

- A; COVANTA Emission Event/Deviation Investigation Report for 3/30/17
- B; Minute-Computed Data Summary Report (ppmc, Units 1 and 2) post 20:30 on 3/30/17
- C; Hourly Data Summary Report, Units 1 and 2, 3/30/17
- D; Daily Calibration Summary 3/30 and 31/17, each CEMS
- E; Example Zero Drift Charts, Unit 2 SO2 and CO
- F; Hourly Data Summary Report, Units 1 and 2, DPs, Temp, Aux Gas and Steam; 3/29/17
- G; Compiled Environmental Test Results, each unit, 206-2016

NAME



DATE

4/5/17

SUPERVISOR

