

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N280467379

FACILITY: CENTRAL SANITARY LANDFILL		SRN / ID: N2804
LOCATION: 21545 CANNONVILLE RD, PIERSON		DISTRICT: Grand Rapids
CITY: PIERSON		COUNTY: MONTCALM
CONTACT: Justin Obermeyer , Environmental Manager		ACTIVITY DATE: 04/06/2023
STAFF: Michael Cox	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled Unannounced Inspection		
RESOLVED COMPLAINTS:		

At 8:30 A.M. on April 6, 2023, Air Quality Division (AQD) staff Michael Cox (MTC) conducted an unannounced inspection of the Central Sanitary Landfill (CSL) and the Kinder Morgan (KM) - Central Generating Station located in Pierson, Michigan. The purpose of the inspection was to determine the facility's compliance with state and federal air pollution regulations, Renewable Operating Permit (ROP) No. MI-ROP-N2804-2020a, Permit to Install (PTI) No. 135-22 and to observe the open flare test. Accompanying AQD staff on the inspection was Tyler Smith, Environmental Information Logistics, LLC (EIL), who is a consultant for the landfill and was also conducting the open flare test. Also accompanying AQD staff on the inspection was Levi John with KM, Operator for the Central Generating Station. Records were provided by Justin Obermeyer, Environmental Manager, Tyler Smith, Consultant with EIL, Levi John, Operator for the generating station with KM, and Justin Boone, Operations Coordinator with KM.

FACILITY DESCRIPTION

The CSL is a solid waste landfill which accepts municipal waste, non-hazardous special waste, and debris. The landfill has a design capacity of 13.0 million cubic meters. Because the design capacity was increased after May 30, 1991, the landfill is considered a new source with respect to the requirements of New Source Performance Standards 40 CFR Part 60, Subpart WWW, and an existing source with respect to the requirements of the new Municipal Solid Waste Landfill Emission Guidelines under Subpart Cf. On May 14, 2021, a Tier II calculation was provided for the CSL which showed estimated non-methane organic compound (NMOC) emissions of 49.93 MG/year (see regulatory discussion in Activity Report No. N280438629). According to EPA guidance on significant figures, this equates to 50 Mg/year and therefore landfill gas collection and control is required under NSPS Subpart WWW. The company is required to operate the gas collection and control system under 40 CFR Part 62, Subpart OOO (federal plan) because emissions exceed 34 Mg/year. It should be noted that the AQD does not have delegated authority for Subpart OOO. The facility is also subject to the requirements of National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR 63 Subpart AAAA due to being a major source for Hazardous Air Pollutants (HAPs).

COMPLIANCE EVALUATION

SOURCE-WIDE:

This facility is subject to source-wide Carbon Monoxide (CO) emissions of 225 tons per year (tpy) and 225 tpy of Sulfur Dioxide (SO₂) emissions per a 12-month rolling basis. Emission records for the time period of January 2022 through March 2023 were requested and reviewed. The highest 12-consecutive month source-wide CO emission occurred during the 12-month period ending in December 2022 when 215.34 tons of CO was emitted. The highest 12-consecutive month source-wide SO₂ emission occurred during the 12-month period ending in December 2022 when 37.56 tons of SO₂ was emitted.

ROP Section 1**EUOPENFLARE/FGOPENFLARE-000/FGOPENFLARE-AAAA:**

CSL operates an open flare with a rated capacity of 4,700 scfm to control captured landfill gas. At the time of the inspection, the open flare was undergoing performance testing as required by the ROP. The following are the parameters measured during the performance test:

Run #1	Start time: 9:50 AM
Flare Temp	1210°F
Landfill gas Flow rate	1925 scfm
Gas Composition	52.9% CH₄ 37.5% CO₂ 0.9% O₂ 8.7% N
Visible emissions	None Detected

Run #2	Start time: 11:00 AM
Flare Temp	1187°F
Landfill gas Flow rate	1919 scfm
Gas Composition	52.8% CH₄ 37.1% CO₂ 1.1% O₂ 9.0% N
Visible emissions	None Detected

Run #3	Start time: 12:08 PM
Flare Temp	1185°F
Landfill gas Flow rate	1925 scfm
Gas Composition	52.5% CH₄ 37.3% CO₂ 1.1% O₂ 9.1% N
Visible emissions	None Detected

It should be noted that during the performance test the generating station was not in operation, which would have pulled landfill gas flow away from the open flare during testing.

The flare operates on a continuous basis. No visible emissions were observed from the flare during the inspection or the performance test. The company electronically monitors and records the gas flow rate and presence of the pilot flame by monitoring the flame temperature as specified in the ROP. If there is no flame, a sensor is

tripped and attempts to relight the flare are made. The company conducts daily observations, as well as weekly and monthly maintenance. Records of flare operation for the period from January 2022 through March 2023 were requested and reviewed. No issues were noted. All instances of flare outages were reported in the ROP semi-annual reports.

This emission unit is subject to 125 tons per year tpy of CO emissions and 160 tpy of SO₂ emissions per a 12-month rolling basis. Emission records for the time period of January 2022 through March 2023 were requested and reviewed. The highest 12-consecutive month CO emission occurred during the 12-month period ending in December 2022 when 23.45 tons of CO was emitted. The highest 12-consecutive month SO₂ emission occurred during the 12-month period ending in December 2022 when 11.15 tons of SO₂ was emitted.

This emission unit is limited to 1,335.5 million cubic feet (MMcf) per year of landfill gas usage per a 12-month rolling basis. Records for the time period of January 2022 through March 2023 were requested and reviewed. The open flare was noted to have consumed 260.518 MMcf of landfill gas during the 2022 calendar year.

EUASBESTOS:

CSL does not accept asbestos waste and there is no documentation that the site has accepted it in the past.

EUEXISTGASOLINEENGINE:

This emission unit is for a 16 horsepower Briggs and Stratton AC-225/DC-210-6 spark ignited reciprocating internal combustion engine for a welder. According to facility personnel this emission unit has been decommissioned and is no longer on site. A permit modification will be submitted to remove the equipment from the ROP.

EULANDFILL/FGLANDFILL-OOO/FGLANDFILL-AAAA:

Due to the landfill's NMOC emissions were determined to be greater than 50 megagrams during the May 2021 Tier II testing, the company is required to install a landfill gas collection and control system under Subpart OOO (federal plan) and meet the requirements of Subpart AAAA. The facility is required to submit a GCCS design plan and to install and operate the system in accordance with the rule for the existing active gas collection and control system, which consists of approximately 48 vertical and horizontal wells, and an open flare. The GCCS design plan was received by the Grand Rapids District Office on September 14, 2022. A response letter from AQD with comments from the Material Management Division (MMD) was sent to the facility for revision on January 20, 2023. A revised GCCS design plan has not yet been received by the AQD as of this inspection. The facility

does monitor and balance the gas collection system at least once per month; no regular surface methane monitoring is conducted.

AQD staff toured the site. CSL has reduced odors from the southwest corner of the landfill by adding more horizontal wells and temporary cover measures. During the inspection, landfill gas odors were observed on top of the landfill near the active filling site. No landfill gas odors were observed off-site and AQD has not received any recent complaints regarding the landfill.

The company is maintaining all recordkeeping on-site and in accordance with the ROP. These records include the year-by-year waste acceptance rate, waste in place records, the design capacity report, and cover inspection records. As of March 20, 2022, the landfill has consumed 9,407,623 cubic yards of the permitted 17,090,000 cubic yards. The most current assessment of waste in place was conducted on March 30, 2023, just prior to the site visit and has not yet been processed.

All semi-annual and annual certification reports have been submitted in accordance with the ROP, Subpart WWW, and Subpart AAAA. It should be noted that the AQD does not have delegated authority to enforce Subpart OOO (federal plan).

EUACTIVECOLL/FGACTIVECOLL-OOO/FGACTIVECOLL-AAAA:

This emission unit and flexible groups represent the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas from the wells to the control equipment as well as Subparts OOO and AAAA requirements. The landfill is required to install a landfill gas collection and control system under Subpart OOO (federal plan) and is required to submit a GCCS design plan and to install and operate the system in accordance with the rule for the existing active gas collection and control system which consists of approximately 48 vertical and horizontal wells, and an open flare. The GCCS design plan was received by the Grand Rapids District Office on September 14, 2022. A response letter from AQD with comments from the Material Management Division (MMD) was sent to the facility for revision on January 20, 2023. A revised GCCS design plan has not yet been received by the AQD as of this inspection. The facility does monitor and balance the gas collection system at least once per month. Surface emission monitoring has not yet been conducted as of this inspection as the facility has just become subject to Subparts OOO and AAAA. The surface emission monitoring plan will be included in the revised GCCS design plan.

The facility is maintaining all recordkeeping on-site and in accordance with the ROP. All semi-annual and annual certification reports have been submitted in accordance with the ROP, Subpart WWW, and Subpart AAAA. It should be noted that the AQD does not have delegated authority to enforce Subpart OOO (federal plan).

FGCOLDCLEANERS:

One cold cleaner was observed on site. The cold cleaner appears to be operated and maintained in accordance with the requirements of MI-ROP-N2804-2020a.

FGRULE290/EUAIRSTRIPPER:

There is a groundwater air stripping unit installed under Rule 290. Exhaust air is vented through a stack with a 6-inch diameter and 7-foot height from the ground. No visible emissions were observed from the air stripper during the inspection.

The company conducts semi-annual monitoring of the VOC concentration in the influent and effluent of the air stripper in order to calculate emissions. On a monthly basis, the facility calculates VOC emissions using the semi-annual VOC concentrations. For the 2022 calendar year, VOC emissions were no more than 1.49 pounds per month which is below the 1,000 pound per month limit in addition, all emissions are below 20 pound per month thus meeting emission limits for constituents with an applicable ITSL or IRSL. Total emissions for the 2022 calendar year were 14.85 pounds.

EVALUATION SUMMARY:

Based on the records reviewed and observations made during the site visit, CSL appears to be in compliance with MI-ROP-N2804-2020a and all other State and Federal air pollution rules and regulations

ROP Section 2

The Kinder Morgan Generating Station is a landfill gas treatment and electric generating facility where landfill gas produced at CSL is routed through a pipe where the gas is filtered, dewatered, compressed, and cooled prior to being burned in internal combustion engines to produce electricity. Any gas not treated in the system is burned in the CSL open flare. The generating station was recently issued PTI No. 135-22 to replace EUENGINE2 with EUENGINE2a. As of this inspection, EUENGINE2 is still in place but no longer operational and the facility is awaiting the arrival of EUENGINE2a for installation.

FGRICEENG/FGRICENSPS/FGRICEMACT:

The KM electric generating plant has one Caterpillar 3516LE and two Caterpillar 3520C internal combustion engines used to generate electricity from burning landfill

gas. The 3516LE engine has a capacity of 1,148 brake-horsepower but is currently non-operational and waiting dismantling, and the two 3520C engines have a capacity of 2,242 brake-horsepower. It is noted that EUENGINE3 is the newest engine and is in a self-contained unit (or box) on the north side of the main building. The company began full production on September 4, 2018.

The engines operate 24 hours per day, 7 days per week, however whether a particular engine is running is dependent on the amount of gas that is generated from the landfill. All three engines were not operating at the time of the inspection due to the open flare test being conducted.

KM monitors on a continuous basis, many parameters for engine operation including gas flow rate from the main header, gas flow rate into the engines, gas quality, electricity production, and hours of operation. Each engine can process 400 to 500 cubic feet of landfill gas per minute.

Records are maintained on-site in accordance with ROP No. MI-ROP-N2804-2020a, PTI No. 135-22, and in accordance with the preventative maintenance plan. A daily record sheet is used to record various engine and treatment system parameters.

The most recent performance test was conducted on April 4, 2023, for EUENGINE3, however, the results of the performance test have not yet been finalized and submitted to the AQD for review as of this inspection. Emission and landfill gas usage records for the period from January 2022 through March 2023 were requested and reviewed. No issues were noted. The following table is a summary of emission and material limits. The hourly emission values in the table are from the results of the September 2018 and January 2021 performance testing.

Equipment	Parameter	Emissions	Limit	Stack test Date	Compliance
EUENGINE1	CO	10.0 pph	16.3 pph	9/2018	Yes
	NOx	2.73 pph	4.94 pph	9/2018	Yes
	SO2	3.6 pph	5.8 pph	9/2018	Yes
	Formaldehyde	1.62 pph	2.1 pph	9/2018	Yes
EUENGINE2	CO	2.99 pph	7.9 pph	9/2018	Yes
	NOx	0.75 pph	5.1 pph	9/2018	Yes

	SO2	1.90 pph	3.3 pph	9/2018	Yes
	Formaldehyde	0.53 pph	0.71 pph	9/2018	Yes
EUENGINE3	CO	11.7 pph	16.3 pph	1/2021	Yes
		2.4 g/bhp- hr	5.0 g/bhp-hr or 610 ppmvd at 15% O2	1/2021	Yes
	NOx	1.92 pph	4.94 pph	1/2021	Yes
		0.4 g/bhp- hr	2.0 g/bhp-hr or 150 ppmvd at 15% O2	1/2021	Yes
	SO2	2.1 pph	5.8 pph	1/2021	Yes
	VOC	2.42 pph	7.04 pph	1/2021	Yes
		0.1 g/bhp- hr	1.0 g/bhp-hr* or 80 ppmvd at 15% O2*	1/2021	Yes
	Formaldehyde	1.8 pph	2.1 pph	1/2021	Yes
FGRICEENG	SO2	17.0 tons during 12- month period ending in December 2022	65.2 tpy (12- month rolling)	NA	Yes
	Landfill gas usage	476.0 MMcf/year during 12- month period ending in June 2022	783 MMcf/year (12-month rolling)	NA	Yes

KM has been verifying the hydrogen sulfide (H₂S) content of the gas using Draeger Tubes in accordance with the permit. AQD staff observed spent Draeger tubes which are kept on site. Draeger tube results indicate H₂S concentrations for the past 12 months have not exceeded 600 ppm which is below the 1,000 ppm H₂S concentration limit in the permit.

The company conducts appropriate engine maintenance in accordance with a malfunction abatement/preventative maintenance plan. All engine maintenance activities are maintained in a logbook located on site which was reviewed by staff. There were no apparent issues identified with the engine maintenance records.

No visible emissions were observed during the site visit. There are three stacks associated with the emission units. All stack heights appeared to be consistent with the dimensions listed in the ROP.

EUTREATMENTSYS/FGTREATMENTSYS-OOO/ FGTREATMENTSYS-AAAA:

EUTREATMENTSYS is a treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. The treatment system removes particulate to at least the 10-micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion of gas for subsequent use. The gas entering the treatment system first goes through a knockout scrubber vessel, then through a compressor, then an after-cooler system which is supposed to cool the gas to a temperature around 90°F. An inlet temperature gauge and an outlet temperature gauge are used to monitor the cooling of the gas. At the time of the inspection, the treatment system was not in operation due to the ongoing performance test being conducted on the open flare. It is noted that there are no atmospheric vents or emissions from the landfill gas conditioning system.

The treatment system's only filter mechanism for particulates is the knockout scrubber. Maintenance is conducted on the treatment system in accordance with a facility maintenance plan and a logbook of all maintenance activities is kept on site.

The facility has developed as part of the facility's overall preventative maintenance plan a treatment system monitoring plan. According to that plan parameters are monitored for treatment system operation which consist of the scrubber vessel differential pressure and condensate site tube level, the compressor oil level and maximum operating temperatures, the water/oil separator gauges, and the gas cooler maximum inlet and outlet temperatures.

EVALUATION SUMMARY

Based on the records reviewed and observations made during the site visit, KM appears to be in compliance with MI-ROP-N2804-2020a, PTI No. 135-22, and all other State and Federal air pollution rules and regulations.

NAME Michael T. CoxDATE 5/11/2023SUPERVISOR HH