

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

N329464131

<b>FACILITY:</b> Ottawa County Farms Landfill		<b>SRN / ID:</b> N3294
<b>LOCATION:</b> 15550 68th Avenue, COOPERSVILLE		<b>DISTRICT:</b> Grand Rapids
<b>CITY:</b> COOPERSVILLE		<b>COUNTY:</b> OTTAWA
<b>CONTACT:</b> Justin Obermeyer , Environmental Manager		<b>ACTIVITY DATE:</b> 08/25/2022
<b>STAFF:</b> David Morgan	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b>		
<b>RESOLVED COMPLAINTS:</b>		

At 8:00A.M. on August 25, 2022, Air Quality Division (AQD) staff Dave Morgan and Michael Cox conducted a scheduled inspection of the Ottawa County Farms Landfill (OCFL) located at 15550 68th Avenue in Coopersville. The purpose of the inspection was to determine the facility's compliance with Renewable Operating Permit No. MI-ROP-N3294-2019, Permit to Install No. 116-20 and state and federal air pollution regulations. Accompanying AQD staff on the inspection of the OCFL was Justin Obermeyer, Environmental Manager; and Rob Carr, Site Manager. Records were obtained subsequent to the onsite inspection.

An inspection of Energy Developments Coopersville (EDC) located at 15352 68th Avenue in Coopersville was also conducted and is discussed below.

### FACILITY INFO

The OCFL is a municipal solid waste landfill, with a design capacity of 13.0 million cubic meters. Since the stationary source was modified after July 17, 2014 and has a design capacity greater than 2.5 million cubic meters, it is subject to the New Source Performance Standard (NSPS) for Municipal Solid Waste Landfills promulgated in 40 CFR Part 60, Subparts A and XXX. The stationary source is also subject to the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Municipal Solid Waste Landfills promulgated in 40 CFR Part 63, Subparts A and AAAA. The site opted-in to the Subpart AAAA requirements that became effective on September 28, 2021.

Because the NMOC emissions from OCFL are greater than 34 megagrams per year, the company is required to install a landfill gas collection and control system (GCCS). Currently gas from closed and active portions of the landfill are collected by an active gas collection system and directed to EDC where internal combustion engines burn the landfill gas to produce electricity. Excess gas is used by Resource Recovery Corporation (RRC) to recover metal and sand from used foundry sand. The OCFL and EDC are considered one stationary source and both are covered under ROP No. MI-ROP-N3294-2019. RRC is not considered part of the stationary source.

### COMPLIANCE EVALUATION

(FGLANDFILL-XXX, , FGACTIONECOLL-XXX,):

As stated, the landfill has an active GCCS on both closed and interim cover areas that was installed as required under Subpart WWW requirements. The company is now meeting the GCCS installation and operation schedule under Subpart XXX and Subpart AAAA.

Each interior wellhead is to be operated with a landfill gas temperature less than 145°F and negative pressure. If a well exceeds one of these operating parameters, action is to be initiated to correct the exceedance within 5 calendar days. If the exceedance is not corrected within 15 calendar days of the first measured exceedance, then the gas collection system is to be expanded within 120 days of the initial exceedance to correct the problem or alternate compliance timeline requested. Under Subparts XXX and AAAA any well where a temperature or pressure exceedance is not corrected within 60 days will need to have a root cause analysis conducted. OCFL conducts well monitoring/tuning and well maintenance on a monthly basis as required by the ROP, Subpart XXX and Subpart AAAA.

According to company records from August 2021 to July 2022 wells H13, H15, H20, H21, H22, and 89R had initial positive pressure exceedance. All of these wells were re-monitored and pressure exceedances resolved. There were no well temperatures above 145°F. No well issues were observed while on site. Monthly well monitoring records are attached.

The surface concentration of methane is monitored on a quarterly basis in accordance with the ROP, Subpart XXX and Subpart AAAA. A summary of quarterly surface monitoring reports over 2021 and 2022 is below. A copy of the results are attached. According to company records, all calibration was conducted prior to each surface monitoring event in accordance with the ROP, Subpart XXX and Subpart AAAA. All methane concentration exceedances were corrected within 30 days of the initial exceedance.

Quarter	Exceedance Above 500ppm	10-day remonitoring	30-day remonitoring
Q3 2021	4 (Well OCFEW31B - by air riser - 1,069ppm; Well OCFEW31B - by air riser - 669ppm; Well OCFEW89R - 876 ppm; Sump 1 - Vac and well riser - 784ppm)	1 (Remote well next to Well OCFEW23A - 3,636ppm)	0
Q4 2021	3 (Well OCFEW31B - 969; Vac Riser OCFEW50B - 555ppm; Well Riser OCFEW80A - 641ppm)	1 (Vac Riser OCFEW50B - 4,372ppm)	1 (Well OCFEW31B - 13,491ppm)
Q1 2022	3 (Air and FM valves near Cell Riser 6 - 686ppm; FM Valve Southwest on old road between OCF0W55 and OCFEW56A - 151ppm; Air Riser OCFEW44A - 1,009ppm )	1 (Air and FM valves near Cell Riser 6 - 2,639ppm)	0
Q2 2022	7 (Well OCFEW50B - 1,263PPM; Well OCFEW44A - 1,291ppm; Well OCFEW45R - 603ppm; Wood post south of well OCFEW45A - 907ppm; Well OCFEW78A - 119,911ppm; Well OCFEW60A - 1,288PPM; Well OCFEW128 - 5,636ppm)	0	1 (Well OCFEW78A - - 16,521ppm)

Records pertaining to maximum design capacity, year-to-year acceptance rate, and amount of waste in place are maintained and available within four hours in accordance with the ROP. As of March 2022 there was 25,020,424 cubic yards of waste in place leaving 31,954,576 cubic yards of capacity remaining of the total permitted capacity of 56,975,000 cubic yards.

#### Enclosed Flare (EUENCLSDFLARE):

In 2008 a 3,700 scfm enclosed flare was installed to ensure that the landfill maintains compliance with the control requirements of the NSPS should EDC shutdown. The flare is used mainly as backup to the gas-to-energy plant. Each time the enclosed flare is fired-up, a startup report is created. In November 2021, air use permit to install No. 116-20 was issued to address sulfur dioxide emissions as a result of the sulfur concentration in the landfill gas being higher than AP-42 which was used in the original evaluation of the flare.

A performance test was conducted in June 16, 2022 to verify CO emission rates. It is noted that the initial performance test for NMOC reduction efficiency was conducted in 2009.

The company is keeping all records in accordance with the permit, below is a summary of recordkeeping results. Records are attached.

Parameter	Value	Limit	Compliance
CO	0.004 lbs/MMBtu	0.20 lbs/MMBtu	Yes
CO	1.16 tons	65.7 tons	Yes
SO2	0.10 tons	35.9 tons	Yes
Landfill gas burned	21.35 million cubic feet	1,419 million cubic feet	Yes
Heat content of gas	11,556 million Btus	NA	Yes
H2S content	<150 ppmv	305 ppmv	Yes

**The equipment has a flow device which monitors gas flow as well as a heat sensing device to monitor the presence of the flame when it is operated. At the time of the inspection, the enclosed flare was not operating.**

**Asbestos Waste (EUASBESTOS):**

OCFL continues to accept asbestos containing waste which is placed in designated locations within the landfill. On the day of the inspection, no asbestos was being disposed; according to Justin Obermeyer and Rob Carr asbestos is generally deposited on Tuesday and Thursday. The asbestos waste is placed in columns to eliminate the need to disturb those areas. AQD staff observed the asbestos disposal area while on site; there was daily cover and no issues were noted. The company uses aerial photos and topographic maps to record asbestos waste locations in the landfill. It is noted that the landfill has both natural barriers and fencing that deters access to the site by the general public; signage and site barriers were appropriate.

The landfill maintains all required asbestos shipment records, in accordance with the ROP. From August 2021 to July 2022 the company accepted 9,027 yards of asbestos waste. See attached records.

**Cold Cleaner (EUCOLDCLEANER):**

No non-compliance issues have been identified.

There were no visible emissions from the site and water trucks were observed maintaining the roadways.

**SUMMARY**

OCFL appears to be in compliance with all applicable requirements at the time of this evaluation. Records are attached.

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At 10:20 A.M. on August 25, 2022, Air Quality Division (AQD) staff Dave Morgan and Michael Cox conducted a scheduled inspection of Energy Developments Coopersville (EDC) LLC located in Coopersville. The purpose of the inspection was to determine the facility's compliance with Renewable Operating Permit No. MI-ROP-N5890-2019, PTI No. 118-20 and state and federal air pollution regulations. Accompanying AQD staff on the inspection of EDC was Dan Young, Operator.

**FACILITY DESCRIPTION**

Currently gas from closed and active portions of OCFL are collected by an active gas collection system and directed to the EDC where internal combustion engines burn the landfill gas to produce electricity. Excess gas is burned in an open flare operated by EDC or used in process equipment at RRC to recover metal and sand from used foundry sand. EDC is subject to NSPS, Subparts XXX and NESHAP, Subpart AAAA requirements due to treating landfill gas. The engines at the site are subject NSPS, Subpart JJJJ and NESHAP, Subpart ZZZZ requirements.

**FGTREATMENTSYS-XXX (EUTREATSYS1 and EUTREATSYS2):**

Under Subpart XXX, landfill gas may be controlled by routing the collected gas to a treatment system that processes the collected gas for subsequent sale or use. The USEPA considers de-watering, filtering through at least a 10 micron screen, and compression prior to the combustion of the gas in energy recovery devices such as boilers, process heaters, turbines, or internal combustion engines to satisfy the definition of treatment.

Each plant at EDC contains a landfill gas treatment system. The Plant 1 (EUTREATSYS1) treatment system consists of a 36-inch diameter condensate/liquids knockout tank for de-watering, a 42-inch diameter carbon steel scrubber tank with scrubber pad for de-watering, two AC compressors, two radiator style aftercoolers which cool the gas, a coalescing filter with 0.3-micron coalescing filters, and a fuel gas dryer for gas de-watering and temperature control. It is noted that at the time of the inspection, the dryer was down. The facility was in the process of getting parts to make the repairs. The Plant 2 (EUTREATSYS2) treatment system contains a 24-inch diameter condensate/liquids knockout tank for de-watering, a 42-inch diameter carbon steel scrubber tank with scrubber pad for de-watering, one AC compressor, one radiator style aftercoolers which cool the gas, a 0.3-micron coalescing filter, and a fuel gas dryer for gas de-watering and temperature control.

Preventative maintenance is conducted on the treatment systems in accordance with the company's maintenance plan which also includes monitoring parameters and frequencies required by Subpart XXX. On a daily basis the company is recording the differential pressure on the landfill gas scrubber and coalescing filters, as well as other parameters. Coalescing filters are changed once the pressure drop reaches 2.5 psi

across the filters, generally. Upon inspection at Plant 1, the differential pressure drop on the filter was 0.0 psi of water. The coalescing filter for Plant 1 was replaced three months ago. For Plant 2, the differential pressure gauges across the coalescing filter were not working, but additional parameters across the system were being used as surrogates until the gauge could be fixed. The company did not replace the coalescing filter in 2021 or 2022.

The presence of a treatment system excludes the engines from the testing and control requirements contained in the NSPS, Subpart XXX. However, any atmospheric vent from the gas treatment system is subject to the requirements.

#### FGENGINES::

Plant 1 consists of five Caterpillar G3516LE internal combustion engines that were originally installed in 1992 and which were permitted in November 2021 under PTI No. 118-20.

Plant 2 consists of one Caterpillar G3520C internal combustion engine (EURICEENGINE7) which was initially installed in 2006. The following table is a summary of each engine at the plant.

Engine Slot	Type	Serial #	Rating	Installed under PTI/Rule	NSPS JJJJ	MACT ZZZZ	Last Top end date
							Major date
Engine 1	Caterpillar G3516LE	4EK00134	800 Kw (1148 hp)	PTI 118-20	N	Y	-
							5/15/2022
Engine 3	Caterpillar G3516LE	4EK00467	800 Kw (1148 hp)	PTI 118-20	N	Y	-
							3/12/2021
Engine 4	Caterpillar G3516LE	4EK00136	800 Kw (1148 hp)	PTI 118-20	N	Y	5/11/2022
							-
Engine 5	Caterpillar G3516LE	4EK00124	800 Kw (1148 hp)	PTI 118-20	N	Y	-
							4-19-2022
Engine 6	Caterpillar G3516LE	<b>3RC00889</b>	800 Kw (1148 hp)	PTI 118-20	N	Y	6/15/2022
							-
Engine 7	Caterpillar G3520C	GZJ00681	1600 kW (2233 hp)	173-05 (subsequently revised as 173-05A)	Y	Y	-
							2/15/2021

EDC monitors the gas flow rate from the main header as well as the gas flow rate into the engines on a continuous basis and the gas is analyzed at regular intervals to verify the quality of the gas.

Records are maintained on-site in accordance with the preventative maintenance plan. A daily record sheet is also used to record various engine and treatment system parameters including kilowatt output, fuel flow, landfill gas quality, coalescing filter pressure drop and others. It is noted that the company uses non-resettable hours meters to record engine hours. The facility has upgraded their daily records to an electronic data monitoring and capture system rather than manual recordkeeping form used in the past. The company maintains appropriate records to determine compliance with the ROP.

Routine maintenance is conducted on the engines in accordance with manufacturer and company specifications which include replacing engine spark plugs, oil, and lubrication. Maintenance is also conducted on an as needed basis. In addition, "top-end" overhauls, which includes replacing/cleaning cylinder heads, turbochargers and valves, are conducted on each engine after approximately 10,000 hours of

operation. This is typically completed on site. A record of engine maintenance is attached. No issues were identified.

"Major" overhauls are conducted every 50,000 to 100,000 hours of operation. Major overhauls includes all of the work of a top end overhaul plus disassembling all of the bearings, seals, gaskets, and components that wear and may even include replacing the crankshaft. When an engine is due for a major overhaul, it is swapped out with another overhauled engine. When the engine is swapped, it is removed from the facility and either replaced with an engine with a different serial number and manufacture date or the same unit is brought back after being rebuilt and will have the same serial number and manufacture date. Swapping engines in this manner is an industry standard for maintaining the engines.

It is noted that EDC PTI No. 118-20 was issued to address sulfur dioxide emissions as a result of the sulfur concentration in the landfill gas being higher than AP-42 which was used in the original evaluation of the engines. Monthly hydrogen sulfide sampling is conducted using Draeger tubes. The tubes have a maximum concentration of 200 ppm where the site limit for H<sub>2</sub>S is 330ppm. Results indicate H<sub>2</sub>S well below 200 ppm. After the operators take a sample reading they submit a picture of the tube to and complete a handwritten form. AQD staff advised the operators that recording the value observed on the tube in addition to submitting a picture would be the best method for demonstrating compliance. The company is also taking semi-annual total reduced sulfur samples in accordance with the permit.

Emissions and other records are maintained for the engines in accordance with PTI No. 118-20. Below is a summary of records:

Equipment	Parameter	Emissions	Limit	Stack test Date	Compliance	Comments
EUENGINE1, EUENGINE3, EUENGINE4, EUENGINE5, EUENGINE6	CO	<5.22 pph	7.8 pph	5/10-5/12, 2022	Yes	Highest test result from EUENGINE4
	NOx	<2.87 pph	4.56 pph	5/10-5/12, 2022	Yes	Highest test result from EUENGINE5
	SO <sub>2</sub>	<0.33 pph	1.1 pph	5/10-5/12, 2022	Yes	Highest test result from EUENGINE5
	VOC	<1.16pph	1.7 pph	5/10-5/12, 2022	Yes	Highest test result from EUENGINE6
	Formaldehyde	< 0.73 pph	0.76 pph	5/10-5/12, 2022	Yes	Highest test result from EUENGINE6
EUENGINE7	CO	12.0 pph	16.3 pph	5/10-5/12, 2022	Yes	
		2.5 g/bhp-hr	5.0 g/bhp-hr or 610 ppmvd at 15% O <sub>2</sub>	5/10-5/12, 2022	Yes	
	NOx	3.42 pph	4.94 pph	5/10-5/12, 2022	Yes	
		0.71 g/bhp-hr	3.0 g/bhp-hr or 150 ppmvd at 15% O <sub>2</sub>	5/10-5/12, 2022	Yes	
	SO <sub>2</sub>	0.40 pph	1.91 pph	5/10-5/12, 2022	Yes	
	VOC	2.09 pph	<b>3.2 pph</b>	5/10-5/12, 2022	Yes	
		0.11 g/bhp-hr	1.0 g/bhp-hr* or	5/10-5/12, 2022	Yes	

			80 ppmvd at 15% O2*			
	Formaldehyde	1.56 pph	2.1 pph	5/10-5/12, 2022	Yes	
FGFACILITY	SO2	5.13 tons	45.8 tpy (12-month rolling)	NA	Yes	
	H2S (engine plant)	<125ppm	330ppm	NA	Yes	
	CO	130.24 tons	290 tpy (12-month rolling)	NA	Yes	
	NOx	55.99 tons	130 tpy (12-month rolling)	NA	Yes	
	Landfill gas usage	403.0 MMcf/year	1,581.53 MMcf/year (12-month rolling)	NA	Yes	

#### -Stack Testing-

A stack test was last performed on May 10 -12, 2022 pursuant to PTI No. 118-20 and NSPS Subpart JJJJ. All emissions were within applicable limits.

All stack dimensions appear to meet the minimum height of 60 feet above ground and a maximum diameter of 12 inches. It is noted that the stacks were reconfigured and raised in June 2022.

#### - 40 CFR Part 60, Subpart JJJJ-

Engine 7 is subject to the requirements of 40 CFR Part 60, Subpart JJJJ based on the engine installation and manufacture date. The company submitted an initial notification on June 6, 2012. The company performed an initial performance test for Subpart JJJJ on April 14, 2011 which was within 180 days of the Engine 7 installation date of October 2010. EDC appears to be meeting other applicable requirements of Subpart JJJJ at this time.

#### -40 CFR Part 63, Subpart ZZZZ-

In May 2012 it was determined that the potential to emit of formaldehyde from Engines 1 through 7 is 28.9 tons which is above the major source threshold of 10 tons for a single HAP. Because the engines are considered a major source of HAPs and were installed after December 12, 2002, they are subject to the requirements of 40 CFR Part 63, Subpart ZZZZ. The company submitted an initial notification on June 6, 2012. EDC appears to be meeting Subpart ZZZZ requirements at this time.

#### -Miscellaneous -

It is noted that at Plant 1, engine crank case pressure is exhausted directly out of the building through louvered vents not stacks. Although there is an oil knock out, black oil-like residue was observed on the outside of the building around the vents. In addition, visible emissions were observed coming from these vents. For Plant 2, engine crank case pressure is exhausted through a stack that has an exit point just above the roof line and which has a conical raincap. According to Mr. Young, the stack for the crank case exhaust was added in 2021. It is noted some visible emissions were observed from this stack as well. The crank case pressure vents may have been considered ancillary equipment during permit review, however, additional permitting consideration may be necessary.

#### Open Flare (EUOPENFLARE):

EDC also operates an open flare which is used when there is extra gas that the engines cannot process, or in the event of a catastrophic failure of the engines and bypass is needed. Since the flare is installed after the treatment system, the flare is not subject to the testing and control requirements. Gas going to the flare is sent through the treatment system in Plant 2. At the time of the inspection, the flare was not operating. The company has a separate monitor on the gas flow rate to the flare and thermocouple to measure temperature when it is used, but does not monitor the presence of a pilot flame. A pilot flame is not lit continuously in the flare. Monitored parameters are recorded to a data recorder.

#### SUMMARY

EDC appears to be in compliance with applicable requirements at the time of this evaluation. Records obtained during the inspection are included in AQD files.



9/9/2022



NAME \_\_\_\_\_

DATE \_\_\_\_\_

SUPERVISOR \_\_\_\_\_