

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

N591066577

FACILITY: Venice Park RDF		SRN / ID: N5910
LOCATION: 9536 Lennon Rd., LENNON		DISTRICT: Lansing
CITY: LENNON		COUNTY: SHIAWASSEE
CONTACT: Nicole Green , Environmental Engineer		ACTIVITY DATE: 02/14/2023
STAFF: Matthew Karl	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: On-site inspection conducted as part of a full compliance evaluation (FCE) to determine compliance with MI-ROP-N5910-2022.		
RESOLVED COMPLAINTS:		

As part of a Full Compliance Evaluation (FCE), air quality division (AQD) staff conducted a compliance inspection of Venice Park Recycling and Disposal Facility (Venice Park RDF), 9536 Lennon Road, Lennon, Michigan 48449 over two days, on January 25, 2023, and February 14, 2023. The last compliance inspection was on June 16, 2021. Since then, Kinder Morgan, Inc. (KM) has taken over operations of the Venice Park 9526 Generating Station. Date of transfer was August 11, 2022.

The facility operates per the conditions of Renewable Operating Permit (ROP) No. MI-ROP-N5910-2022 which became effective August 23, 2022. The ROP has two sections. Section 1 covers processes owned and operated by Waste Management (WM) which includes the landfill operations, landfill gas (open) flare, a landfill gas treatment system and two (2) landfill gas fired engines EUWMENGINE1 and 2 which are CAT 3516 engines. Section 2 covers the processes owned and operated by KM (previously NANR), which includes a landfill gas treatment system and four (4) landfill gas fired engines EUNANRENGINE7R, 8R, 9 and 10 which are CAT G3520C engines. The facility has been permitted to replace EUNANRENGINE7R with EUNANRENGINE7 which is a CAT 3516 engine. However, this decision was made prior to KM ownership and has since been reversed. The facility no longer intends to replace EUNANRENGINE7R with EUNANRENGINE7.

Contacts:

Responsible Official – Section 1: John Gall, District Manager, 810-621-9080, jgall@wm.com

Facility Contact – Section 1: Nicole (Nikki) Dennis (Green), Environmental Engineer, 989-721-9982, ngreen2@wm.com

Responsible Official – Section 2: Thomas Burgett, Vice President of Midstream Services CO2

Facility Contact – Section 2: Eric Parker, Environmental Manager

Facility Description:

Operations owned and operated by WM and KM comprise a single stationary source known as the Venice Park RDF and Generating Station. WM owns the active landfill and KM owns the generating station located in eastern Shiawassee County at 9536 East Lennon Road, Lennon, approximately 3 miles north of I-69. The source is in a rural area surrounded primarily by farmland with some residential housing.

Venice Park RDF is classified as a Type II sanitary landfill, which is a Municipal Solid Waste (MSW) landfill. A “Municipal Solid Waste landfill” or a “Type II landfill” according to Act 451, Part 115,

Solid Waste Management is a landfill which receives household waste, incinerator ash or sewage sludge and which is not a land application unit, surface impoundment, injection well, or waste pile. A municipal solid waste landfill also may receive other types of solid waste, such as commercial waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial waste. Such a landfill may be publicly or privately owned.

Natural biological processes occurring in landfills transform the waste constituents producing leachate and landfill gas. Initially, decomposition is aerobic until the oxygen supply is exhausted. Anaerobic decomposition of buried refuse creates most of the landfill gas. Landfill gas consists mainly of methane (CH₄), carbon dioxide (CO₂), and nonmethane organic compounds (NMOC).

An active landfill gas collection system has been installed to collect the landfill gas. This system utilizes gas mover equipment to rout the collected gas to the gas-to-electric plant and/or flare. Landfill gas produced from the landfill is used to fuel six (6) reciprocating internal combustion engines (RICE). Each engine turns a crankshaft that spins a generator's rotor in an electromagnetic field, generating an electric current that can be used for electricity. WM owns two (2) engines, EUWMENGINE1 and 2 (CAT 3516) which were permitted under permit to install (PTI) No. 166-11. Previously, NANR had eight (8) engines (EUNANRENGINE3 through 10), two (2) of which (7R and 8R) were replaced with newer engines under PTI No. 123-11A and have removed engines EUNANRENGINE3 through 6 due to low landfill gas production. The facility is permitted under PTI No. 123-11B to replace EUNANRENGINE7R (CAT 3520C) with a smaller EUNANRENGINE7 (CAT 3516) sometime in the future. EUNANRENGINE10 was swapped out with a replacement unit under Rule 336.1285(2)(a)(vi) on January 3, 2023.

When the landfill gas is not routed to the engines, such as during engine maintenance, it is burned in an open flare (EUOPENFLARE) owned by WM. The open flare is used as a back-up control device to combust the landfill gas and was originally permitted under PTI No. 166-11.

Solidification of non-hazardous liquid prior to disposal in the active landfill cell was permitted under PTI No. 72-96A and 72-96B. The types of non-hazardous liquid waste accepted are paint sludge and industrial wastewater. The process has been modified to incorporate a pug mill for the mixing operation and a change in some of the mixing materials. The liquids are discharged into the tank buried into the grade. The liquid is pumped into the pug mill. While the liquids are being loaded, a blend of auto shredder fluff, pozzolanic agent (steel slag), and polymer would be fed into a hopper which will blend with the liquid waste. The pozzolanic agent and polymer will make up about 10% of the solidifying agent mix. The waste then comes out the back of the pug mill and is loaded in a dump truck to be taken to the working face. The new solidification process is not subject to permitting and considered part of landfill operations and processes.

Inspection of Section 1 - Venice Park RDF (Waste Management (WM))

On Tuesday (2/14/23) I (Matt Karl) arrived on site at 09:30. I noted no odors as I approached the landfill from the west along East Lennon Road. I noted no strong odors on site near the facility office, or the gas-to-energy buildings. I noted no visible emissions from the open flare or the landfill gas engine stacks.

I had a meeting with John Gall and Nikki Green in the landfill office and then we took a tour up to the working face of the landfill. I inquired if there had been any recent odor complaints for the

landfill. Nikki responded that there had been a few, but they had been working with EGLE Materials Management Division (MMD) to address them. The air quality division (AQD) has not received any recent odor complaints for the landfill.

I asked John and Nikki about the landfill's fugitive dust control on landfill roads. Nikki informed me that water applications were applied as needed, during the summertime. There have not been recent water applications, due to expected freezing temperatures during the winter. I did note some fugitive dust during my inspection, but it was intermittent (<5 min over 2 hours) and did not appear to leave the landfill property.

The original Cells referred to as A – T, and Cells 1 and 2 are filled. Cells 3, 4, 5, 6 and 8 make up the active landfill. There is active collection in all cells consisting of horizontal and vertical collectors. The latest portion of the landfill, Cell 8, became active in January 2022.

The landfill accepts residential waste, largely from the Flint area. The landfill accepts liquid waste, approximately 40,000-gallons per day, which is up from about 20,000-gallons per day during the last inspection. The landfill accepts construction debris. The average waste acceptance rate is between 1000-1200 tons per day, which is up from about 800 tons per day during the last inspection. The average landfill gas generation rate is up from the previous inspection from between 600-700 standard cubic feet per minute (SCFM) to approximately 1200 SCFM currently.

Leachate from the collection system on the landfill goes to Genesee County, Montrose wastewater treatment plant (WWTP). There are 2-discharge points in the landfill that the drains in the cells are connected to. About 40,000 gallons/day and 600,000 to 700,000 gallons/month of leachate is directly discharged to the WWTP. No leachate recirculation has taken place on-site since at least 2008 when the sewer hookup occurred.

Yard waste is no longer accepted by the landfill. Acceptance of yard waste ended in 2021. No yard waste was accepted in 2022.

A mix of soil and autofluff is used as cover, and tarps are also used to cover the working face of the landfill at the end of the day.

Solidification of non-hazardous liquid prior to disposal in the active landfill cell is done on-site. Liquids are discharged into a 4,500-gallon tank buried at grade. Liquid is pumped from the tank into a pug mill for mixing with auto shredder fluff, pozzolanic agent (steel slag) and polymer. The pozzolanic agent and polymer make up approximately 10% of the solidifying agent mix. The waste then comes out the back of the pug mill and is loaded in a dump truck to be taken to the working face. A diesel fuel-fired engine is used to power the solidification process. The engine is exempt per Rule 285(2)(g) because it is less than 10 MMBtu/hr of heat input. It also will not be subject to 40 CFR Part 63, Subpart ZZZZ because it is considered a mobile source because the solidification process is on wheels and can be moved. If it changes location at a minimum every 12-months, it is considered a non-stationary engine.

The facility accepts both friable and non-friable asbestos. Records for asbestos waste consist of site maps of the location of the asbestos placed in the landfill cells and logs that contain the waste manifests, x and y coordinates, elevations and amounts of asbestos waste in place. Nikki Green provided me with asbestos records for 2021 and 2022. In 2021 11,212 total yards were emplaced and in 2022 2,219 total yards were emplaced.

The landfill operates several portable diesel tanks that are used to refuel off-road vehicles. There are two (2) 1,000-gallon tanks by the landfill working face and one (1) 500-gallon tank of on-road diesel located by the shop.

I reviewed the most recent quarterly surface scan of the landfill, which was the fourth quarter (Q4) 2022, and the initial scan was conducted on December 7, 2022, by Monitoring Control and Compliance, Inc. The report contained an SEM route map for the surface scan. There was one (1) exceedance above 500 ppm methane (CH₄) in Cell 1. The location was retested within 10 days (on 12/8/22) and within 30 days (on 1/06/23) and both recheck scans were below 500 ppm CH₄.

The wellheads on the active gas collection system are monitored and are required to operate at below a temperature 145 °F and below 3% O₂ levels, and at negative pressure. Requests for variances from operating parameters for specific wells could be made as the gas quality decreases in a well. When monitoring shows that the operating parameters are not being met, an alternative timeline to address the issue can be requested to identify and address the issue.

The most recent request for a higher operative value (HOV) was made and approved on September 9, 2021, by AQD staff Julie Brunner. The request was for gas wells VPL160R3, VPL161R3, VPL177R3 and VPL179R2. A HOV of 150 °F for wells VPL160R3, VPL161R3, VPL177R3 and VPL179R2, as allowed by 40 CFR 60.753(c) was approved. Gas wells VPL160R3, VPL161R3, VPL177R3, and VPL179R2 will be operated with a temperature at or below 150 °F and an oxygen content of less than 3%. As proposed, if any of the gas wells have a measured temperature greater than 150 °F and an oxygen content greater than 3%, the vacuum will be immediately reduced. The well will then be re-monitored within 15 days to determine if the temperature and oxygen concentration have been reduced. This monitoring will continue until either the temperature is below 150 °F or the oxygen content is below 3%.

Nikki noted that there were currently no intentions to drill additional wells. Nikki informed me that there are currently several re-drills of existing wells planned in 2023.

Nikki noted that there was off-site gas migration detected in June-July 2022 off site detection on the west side of the landfill and that landfill worked with MMD staff to address the issue.

Nikki noted that MMD staff have requested groundwater sampling for PFAS on the south side of the landfill.

Section 1 - WM Gas Plant:

The gas plant consists of two buildings: the east and west plant. The west plant has two engines, EUWMENGINE1 and EUWMENGINE2 owned by WM, the landfill gas (LFG) open flare (EUOPENFLARE). The west plant was constructed between 1992-1993. The flare is strictly used as backup to the gas plant engines. If the WM engines are not operating, then the LFG goes to the NANR facility, and they will operate more engines. The open flare control is the last option to route landfill gas to maintain a negative pressure vacuum on the landfill.

The LFG is conditioned in a treatment system prior to combustion in any engine. Moisture is removed from the LFG and filtered to prevent damage to the engines. LFG routed to the flare is untreated except for removal of moisture prior to combustion. There are three (3) orifice flow meters that measure the volume of LFG. One meter measures the volume to the WM engines,

and one measures flow to the NANR engines in the east plant. The flow meters are calibrated annually. The flare also has a flow meter, and it is calibrated every 18-months.

The most recent “like-kind” engine replacement was to replace EUWMENGINE2 and occurred on June 15, 2020; with start-up of the replacement on June 16, 2020. Major overhauls are done on an engine if it is using too much oil, or if the engine reaches a clock time of 80,000 to 90,000 hours of operation since last major overhaul. In-frame overhauls of the engines are done roughly at between 40,000 to 50,000 hours of operation.

EUWMENGINE1

Serial No.: 4EK00234

Mfg. Date: 06/17/1994 (engine bought used in 2014)

Output: 831 kWh (during inspection)

EUWMENGINE2

Serial No.: 3RC00419

Mfg. Date: 08/12/1991

Output: 831 kWh (during inspection)

I reviewed the ALS Environmental Laboratory report for gas sampling conducted June 8, 2022. I have included a summary of the results in the table below:

CAS #	Compound	Avg. Result %, v/v
7782-44-7	Oxygen	1.43
7727-37-9	Nitrogen	13.1
74-82-8	Methane	49.1
124-38-9	Carbon Dioxide	36.3

At a minimum of annually, bag samples of the LFG are collected and analyzed for sulfur content. It is part of the contact with NANR to provide them with the results. The last sulfur sampling was conducted on June 8, 2022. The total reduced sulfur (TRS) content was 14.7 ppmv.

EUWMENGINE1 and EUWMENGINE2 were last tested for compliance with the emission limits for CO, NO_x, PM_{2.5}, VOC and Formaldehyde in May of 2014. The testing is “Upon request of the District Supervisor”. Compliance with the emission limit special conditions (SC) 1.1 through 5 are assumed based on the last stack testing and the engine maintenance program.

Daily maintenance checks on the engines include noting engine operating hours, oil temperature, oil pressure, oil levels, etc. EUWMENGINE1 and EUWMENGINE2 maintenance logs showed replacement of spark plugs, adjustments for valves and bridges, oil/filter changes and top ends.

The requirements of the PM/MAP in SC III.2 are being followed. The logs of all maintenance activities fulfill the requirements in SC VI.7.

Section 1 - Records Review:

EUOPENFLARE- (FGOPENFLARE-OOO, FGOPENFLARE-AAAA)

1. Monthly and 12-month rolling time period NOx emission calculation records for the past two years (January 2021- December 2022)

I reviewed the “2021-2022 Venice Park 12-month rolling NOX” for the open flare. The highest monthly emissions occurred in September 2021, with 0.30 tons per month. The highest annual emissions occurred in May 2022, with 1.68 tons per 12-month rolling period.

I also reviewed the “2021-2022 Venice Park Continuous Record” for the open flare. It contains the date, timestamp, stack temperature (°F), and the landfill gas (LFG) flowrate (SCFM) to the flare.

FGENGINES1-2-

1. Total landfill gas usage records including Btu content on a monthly and 12-month rolling time period for January 2021- December 2022 as required by SC VI.3, VI.4 and VI.5 and 6.

I reviewed the record “2021-2022 Venice Park WMRE 12-Month Rolling”. The maximum monthly LFG usage occurred in May 2021, with 28,871 MCF. The highest 12-month rolling usage occurred in September 2021 and was 324,900. The average monthly methane content ranged from 44.5% in January 2022 to 53.5% in March 2021. LFG usage limit 158,832 MMBtu/12-month rolling (SC II.1).

EULANDFILL-ASBESTOS

Asbestos logs and maps for 2021 and 2022. The asbestos maps include information on the hole #, the cell, the coordinates of the corners of the hole, and the elevation of the emplaced waste. The asbestos log includes the date, job #, hauler, removal company, waste generator, yards, and total yards. In 2021 11,212 total yards asbestos waste were emplaced and in 2022 2,219 total yards asbestos waste were emplaced.

Inspection of Section 2 – North American Natural Resources, Inc. (NANR) – Venice Park 9526 Generating Station

I performed this inspection on January 25, 2023, during an engine stack test.

The east plant is comprised of the following engines: EUNANREENGINE7R, EUNANREENGINE8R, EUNANREENGINE9, and EUNANREENGINE10.

The following engines were operating and producing the following kWh outputs at the time of the inspection: EUNANRENGINE7R- ~1610 kW.

The last date of performance testing for each of the engines is included below. The engines are tested at or near 100% load, for NOx, CO, VOC and formaldehyde emissions. There have been no recent emission limit exceedances detected during testing.

EUNANRENGINE7R- 01/25/2023

EUNANRENGINE8R- 06/02/2022

EUNANRENGINE9- 06/02/2022

EUNANRENGINE10- Just underwent replacement in January 2023, still needs to be tested*

I have included the test report summary for the most recent testing below:

Unit ID	Generator Output (kW)	CO		NOx		VOC
		lb/hr	g/bhp-hr	lb/hr	g/bhp-hr	g/bhp-hr
EUNANRENGINE7R	1,610	12.5	2.52	1.53	0.3	0.13
Permit Limit		16.3	3.30	2.97	2.0	0.63
Compliance Status (% limit)		Pass (77%)	Pass (76%)	Pass (52%)	Pass (15%)	Pass (21%)

The serial numbers and manufacture dates of the engines are listed below:

Engine EU	Serial Number	Manufacture Date
EUNANRENGINE7R	CAT33520LGZJ00628	10/26/2012
EUNANRENGINE8R	CAT00000PGZJ00538	10/26/2011
EUNANRENGINE9	CATG3520VG7J00712	12/2015
EUNANRENGINE10	CATG3520VG7J00626	2012

The last major overhaul was conducted on EUNANRENGINE10 which was replaced on January 23, 2023, with the engine listed in the table above.

Maintenance records for each engine show oil and filter changes, top ends, cleaning of spark plugs, replacement of various parts, etc. An electronic copy of the maintenance records was obtained for the past year (June 2021-2022).

The requirements of the PM/MAP required by SC III.2 are being followed. The logs of all maintenance activities fulfill the requirements in SC VI.3.f.

For each engine, continuous and daily monitoring of kilowatt output and landfill gas (LFG) usage is conducted meeting the requirements in SC VI.2 and 3. NANR has monitors that measure fuel flow to the east and west plants and is meeting the requirements in FGRICEMACT IV.1 since only LFG is combusted in the engines. Compliance with all the permit terms and conditions for FGENGINES7R-10 and FGRICEMACT was demonstrated.

The gas is treated prior to combustion in any engine. NANR has a separate treatment system from the WM treatment system, identified in the permit as EUTREATMENTSYS2. Moisture is removed from the LFG gas and is filtered to prevent damage to the engines.

Section 2 – Records Review:

FGENGINES7R-10

1. Total LFG usage records and hours of operation per engine on a monthly and 12-month rolling time period for 2022.

I received an excel spreadsheet “NANR Venice Park 12-month data (COMPLETE)”. It contains tabs for Monthly Meter Reads, Monthly Use, 12-month totals and H2S Lab Results (semi-annual).

2. Logs of all maintenance activities conducted on the engines as required by SC VI.3.

An electronic copy of the maintenance records was obtained for the following:

Engine EU	Record Dates	Hours
EUNANRENGINE7R	12-28-21 to 1-23-23	39,910 to 42,803
EUNANRENGINE8R	2-1-22 to 12/29/22	42,939 to 49,112
EUNANRENGINE9	10-20-21 to 1-26-23	11 to 8,473
EUNANRENGINE10	12-22-21 to 1-26-23	1,978 to 2,293

3. Results of the last sulfur content analysis of the LFG. Total sulfur content of the LFG is required to be tested annually if less than 400 ppm per SC V.3.

The date of the last test was November 9, 2022. Total Sulfur 53.2 ppmv, Sulfur as H₂S 50 ppmv, Total sulfur to sulfur as H₂S 0.94, Methane Mol 50%.

Summary:

At the time of this inspection, Venice Park RDF and NANR, Inc.- Venice Park 9526 Generating Station were found to be in compliance with MI-ROP-N5910-2022.

NAME Matthew L. Kael DATE 3/16/23 SUPERVISOR AB