

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

N601158619

FACILITY: MUSKEGON COUNTY SOLID WASTE FACILITY		SRN / ID: N6011
LOCATION: 9366 APPLE AVE, RAVENNA		DISTRICT: Grand Rapids
CITY: RAVENNA		COUNTY: MUSKEGON
CONTACT: Greg Leverence , Solid Waste Manager		ACTIVITY DATE: 06/23/2021
STAFF: David Morgan	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT:		
RESOLVED COMPLAINTS:		

At 1:00 P.M. on June 23, 2021, Air Quality Division (AQD) staff Dave Morgan conducted a scheduled inspection of the Muskegon County Solid Waste Facility (MCSWF) located at 9633 Apple Avenue in Ravenna. The purpose of the inspection was to determine the facility's compliance with Renewable Operating Permit (ROP) No. MI-ROP-N6011-2019 and state and federal air pollution regulations. Accompanying AQD staff on the inspection was Greg Leverence, Solid Waste Supervisor.

FACILITY DESCRIPTION

The MCSWF is a municipal solid waste landfill located in Ravenna, which began operation in 1973 and has a maximum design capacity of 3.76 million megagrams. MCSWF is currently permitted for five waste cells one of which is closed (Cell 1). Gases from Cells 1 through 5 are collected in an active collection system and then controlled through an open flare or treated and sent off-site for combustion.

The landfill is subject to the following federal standards:

1. Emission Guidelines for existing Municipal Solid Waste Landfills promulgated under 40 CFR Part 60, Subparts A and Cf.
2. Federal Plan Requirements for Existing Municipal Solid Waste Landfills promulgated in 40 CFR Part 62, Subpart OOO. The Federal Plan will apply until a State Plan is approved or delegation of the Federal Plan approved.
3. The Maximum Achievable Control Technology Standards (MACT) for Municipal Solid Waste Landfills promulgated in 40 CFR Part 63, Subparts A and AAAA.
4. The National Emission Standard for Hazardous Air Pollutants (NESHAP) for Asbestos promulgated in 40 CFR Part 61, Subparts A and M.

ROP No. MI-ROP-N6011-2019 will need to be modified to account for federal plan requirements.

COMPLIANCE EVALUATION

[EULANDFILL]

Records pertaining to maximum design capacity and year-by-year waste acceptance rates are maintained on site in accordance with ROP requirements. According to Mr. Leverence a survey of the amount of waste in place is conducted annually at the end of the fiscal year (in September). As of October 2020 there were approximately 3,980,695 cubic yards of waste in place in active Cells 2, 3, 4, and 5 with a total permitted air space for those cells of 4,210,900 cubic yards. The landfill is at 94.5% of total capacity. The total site capacity is 4,684,900 cubic yards.

It is noted that currently the County is filling waste in Cell 5 and will be to final grade soon. A gap fill cell has been constructed between Cell 1 (which is closed) and Cell 2. This gap cell will allow for additional waste volumes to be accepted before the site has to expand. This cell does not affect NSPS, Subpart XXX applicability at this time. A construction permit will be required by EGLE - Materials Management Division when the landfill expands to the west of Cell 1. When the site expands west of Cell 1, the site will likely become subject to NSPS, Subpart XXX once construction begins.

The County implements a program to monitor the cover integrity on a monthly basis and records the information. Cover integrity is verified on a regular basis and documented during the monthly well monitoring event. Cover issues are documented and addressed appropriately.

Surface Monitoring:

The County is monitoring surface methane concentration on a quarterly basis in accordance with the ROP. All records of surface monitoring include the sampling date, sampling location, and occurrence/location of any exceedances are maintained in accordance with the ROP. Calibration of the TVA 1000-TE flame ionization device (FID) appears to be conducted in accordance with EPA Method 21 and records are maintained

appropriately. The ROP requires that the collection system be operated so that the methane concentration is less than 500 ppm above background at the surface of the landfill and that the surface methane is monitored on a quarterly basis. If a reading above 500 ppm exists, corrective actions and re-monitoring is required with 10 days of the exceedance. A violation exists if any reading above 500 parts per million (ppm) is detected three times within a quarterly period.

County records were reviewed for the 3rd and 4th Quarters of 2020 and the 1st and 2nd Quarters of 2021. No surface monitoring exceedances above 500 ppm were recorded. All calibrations appeared to be consistent with Method 21 and the NSPS.

[EUACTIVECOLL]

Active Landfill Gas Collection System:

Because the County calculated non-methane organic compound (NMOC) emissions above 50 Mg/year, the County was required and has installed a landfill gas collection and control system in accordance with the ROP. According to Mr. Leverage, additional wells have not been added in the last year. However Cells 5 and 6 are near final elevation and additional gas wells will need to be installed.

All collection wells are placed with sufficient density to control surface gas emissions as certified by a professional engineer. All wells are constructed of schedule-80 PVC pipe with HDPE well heads.

The ROP requires that each interior wellhead be operated with a landfill gas temperature less than 131°F, an oxygen level less than 5%, and negative pressure. The County is monitoring static pressure, oxygen (O₂) concentration, and temperature on a monthly basis in accordance with the ROP using an Elkins Envision gas meter. All wells are equipped with required sampling ports. Several wells (including EW 12R, 15R, 18R, 20R, 23R, 30R, 34, 35, 38R) were observed for performance. No issues were identified with the gas wells.

From June 2020 through May 2021 records showed that monitored O₂ was greater than 5% in wells EW29R2, EW23 and OC-2. These exceedances were documented and valves adjusted. Re-monitoring showed O₂ values either returned to less than 5% or an alternate compliance timeline requested. It is noted that EW29R2 was approved for decommissioning in April 2018, however, the well was not decommissioned until July 22, 2020. From June 2020 through May 2021 records showed no pressure or temperature exceedances.

It is noted that well OC-1 and OC-2 were installed on leachate collection points to address odors from the site. However, based on EPA determinations, these wells are required to be monitored in accordance with NSPS requirements. OC-2 has been operating with an alternate compliance operating parameter since 2013.

[EUTREATMENTSYSTEM]

A landfill gas treatment and compressor system is installed to allow landfill gas to be burned in off-site combustion units (at Eagle Alloy and Sun Chemical). In the process, landfill gas captured from the field is sent into the compressor station. The gas passes through a knockout tank that contains a demister pad to remove any condensed liquid and then through a filter section to remove particulates.

The filtered gas then goes through an electric compressor to compress the gas to 20 psig which will result in an outlet temperature of 200°F. The gas is then cooled to 100°F through an air-to-air heat exchanger. Following the cooler, liquids are removed by a moisture separator (cyclone) to remove any free liquid. The gas is dried to a dew point of 40°F using a refrigeration dryer and the temperature of the gas cooled to 40°F by a refrigeration system using R22 gas. Treated gas is metered, analyzed, and transported to the end user(s) via the pipeline. All operating conditions including gas flow, temperatures, and pressures are monitored using a computer monitoring system. It is noted that due to low demand for landfill gas by Eagle Alloy and Sun Chemical, the treatment system was shutdown on April 28, 2020 and was restarted on May 3, 2021. During that time period, all landfill gas was burned in the open flare. At the time of the inspection, approximately 206 scfm of landfill gas was going to the off-site party; the flare was operating with a flow around 250 scfm. The methane content was around 46% and the O₂ content around 0.01%.

The County has an acceptable preventative maintenance plan on site. In accordance with that plan, County personnel conduct daily inspections of the treatment system components and document any maintenance activities performed or equipment notes. Preventative maintenance records were reviewed on site.

[EUOPENFLARE] :

The County also operates a 600 scfm non-assisted, open flare to burn landfill gas generated by the landfill. At the time of the inspection, no gas was going to the flare. There is no bypass line on the flare, but all gas burned in the flare goes through the treatment system.

The flare is equipped with an ultraviolet sensor that continuously monitors flame presence. In addition, the County installed a pilot flame system fueled by a propane tank in which the temperature is also monitored. Upon flare outage, the flame controller shuts down the blower and main well field valve until the flame is relighted. Re-ignition of the flare is conducted automatically; however, it can be done manually. The flame outage procedure is also dependent on whether gas is diverted to the other users. The County is recording the presence of flame by monitoring the temperature of the flame when the flare is operating and the temperature of the pilot flame. All flare outages are being recorded in accordance with the ROP and SSM plan.

The initial performance test for the flare was conducted on July 1, 2004.

It is noted that the MCSWF sampled the landfill gas for hydrogen sulfide and the analysis resulted in a hydrogen sulfide concentration of 206 ppm. Potential sulfur dioxide emissions at the rated flare capacity are estimated to be around 5.4 tons per year. These emissions are below the 40 ton per year significance level for sulfur dioxide as referenced in Rule 278 and therefore the flare remains exempt from air use permitting under Rule 285(2)(aa).

Also, the County may be looking to increase the size of the flare as gas generation is expected to increase with additional cell construction.

Startup/Shutdown/Malfunction:

A startup, shutdown, malfunction (SSM) plan is maintained and implemented at the site. All SSM reports are kept on file at the site and were reviewed by AQD staff. All SSM events are documented in accordance with the permit.

[EUASBESTOS]:

The County does not accept asbestos containing material.

SUMMARY

The Muskegon County Solid Waste Facility is in compliance with all applicable requirements. All records are being maintained in accordance with the ROP. Records are attached.

NAME David L. Ryan DATE 7/12/2021 SUPERVISOR HH