

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

P031769253

FACILITY: Ameresco Woodland Meadows Romulus LLC		SRN / ID: P0317
LOCATION: 4620 Hannan Rd, CANTON TWP		DISTRICT: Detroit
CITY: CANTON TWP		COUNTY: WAYNE
CONTACT: Rebecca Sherwood, Environmental Compliance Officer		ACTIVITY DATE: 09/28/2023
STAFF: Jonathan Lamb	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled inspection, FY 2023		
RESOLVED COMPLAINTS:		

INSPECTED BY: Jonathan Lamb, EGLE-AQD

DATE OF INSPECTION: September 28, 2023

PERSONNEL PRESENT: Tarl Romano, Plant Manager; Don Meeks, Plant Specialist; Tygh Outland, Plant Specialist.

FACILITY CONTACT: Rebecca Sherwood, Environmental Compliance Engineer (cell: 215-586-1197)

FACILITY PHONE NUMBER: 734-595-8789

FACILITY BACKGROUND:

Ameresco Woodland Meadows Romulus, LLC. (Ameresco) operates a landfill gas conditioning facility which processes landfill gas from Woodland Meadows landfill and removes most of the non-methane components of the landfill gas to produce a high-Btu product to sell to a third party. Since 2017, Ameresco has supplied this gas to DTE Energy for their natural gas pipeline; previously, the gas was sold to Ford Motor Company.

Ameresco is located on the site of Woodland Meadows – North landfill. Ameresco processes landfill gas collected from all three sections of Woodland Meadows landfill (one active site, Woodland Meadows – Van Buren, and two closed sites, Woodland Meadows – North and Woodland Meadows – South). Ameresco has operated at this location since around 2000 after purchasing the landfill gas processing operations from Woodland Meadows.

Ameresco is determined to be a major source subject to Title V permitting requirements. The facility is currently permitted as a separate source from Woodland Meadows with its own SRN (P0317), but both facilities have been notified that the two sources will be permitted as a single stationary source when the Title V permit is renewed.

The facility operates 24 hours per day, 7 days per week, with staff on site 6:00 AM to 6:00 PM, Monday through Friday, and 7:00 AM to 3:00 PM, Saturday and Sunday. There currently four employees at the site.

COMPLAINT/COMPLIANCE HISTORY:

The facility was issued a Violation Notice on October 28, 2019, after notifying EGLE that the facility had discovered that it had failed to perform annual calibration of the temperature monitoring device for the enclosed flare in 2018. In its response to the Violation Notice, dated November 15, 2019, the facility stated that the failure to perform the required annual calibration was due to miscommunication with the plant manager and that annual calibration was performed on September 10, 2019. The Violation Notice was considered resolved upon receipt of this response.

PROCESS DESCRIPTION AND INSPECTION NARRATIVE:

Ameresco has the capacity to process 6,600 scfm of landfill gas and produce 2,630 scfm of pipeline-quality gas. On average, Ameresco processes approximately 80% of the landfill gas produced by Woodland Meadows; the remainder of the gas is flared by Woodland Meadows. During the inspection, the facility was processing 6,409 scfm of landfill gas and sending 2,340 scfm of pipeline-quality gas to DTE; an additional 2,506 scfm of landfill gas was being flared by Woodland Meadows, with another 220 scfm used to keep the pilot light of Ameresco's enclosed flare lit.

Landfill gas is collected by Woodland Meadow's gas collection system in all three sections of the landfill and is sent to a booster station located in the southwest corner of the Woodland Meadows – South landfill, which uses blowers to increase the flow rate of the landfill gas to send via pipelines to Ameresco; any landfill gas Ameresco is unable to process is sent to Woodland Meadows' flares. Once the raw landfill gas is received, Ameresco uses a two-stage pressure swing adsorption (PSA) system to condition landfill gas into pipeline-quality gas. This equipment was installed in 2017 under Permit to Install (PTI) No. 61-16; the old equipment was dismantled and removed at that time. In the first stage, the CO₂ PSA system removes carbon dioxide and other impurities (such as organics, hydrocarbons, sulfur compounds, and water vapor) from the landfill gas. This treated gas then passes to the second stage, the N₂ PSA system, which removes nitrogen and some oxygen from the gas stream.

The tail gas streams from the CO₂ and N₂ PSA systems are sent to a 2,600-cfm enclosed flare (EUHBTUENCL) and a 1,440-cfm open flare (EUHBTUOPEN), respectively, to control emissions from the process. Note: There is also an unpermitted open candlestick flare on site which is owned and operated by Woodland Meadows and was not evaluated as part of this inspection.

Once processed, the high-Btu gas stream is sent via underground pipes to DTE's Remote Metering Station (RMS), located near the northwest corner of Hannan and Van Born Roads, adjacent to Woodland Meadows – South landfill. At the RMS, DTE monitors the gas continuously for higher heating value, hydrogen sulfide, carbon dioxide, nitrogen, oxygen, water, and flow rate to ensure the gas meets pipeline-quality specifications. If so, the processed gas is then odorized and metered into the natural gas pipeline. However, if the gas fails to meet specifications, then the flow of gas to the RMS is cut off and the gas is routed back to the 2,600-cfm enclosed flare. This situation occurs infrequently, but when it does it is usually due to the water vapor or oxygen levels being too high in the gas stream. The treated gas is approximately 96% methane and has a higher heating value of 975-1090 Btu when it is received at the RMS.

There are two tanks on site which are exempt from air permitting requirements. There is one 200-gallon diesel tank for fueling vehicles, which is exempt from permitting per Rule 284(2)(g)(ii). There is one 3,000-gallon propane tank used for igniting the pilot for the flares, which is exempt from permitting per Rule 284(2)(b).

Note: Mr. Romano mentioned that Ameresco plans to install a second RNG plant at Woodland Meadows, which will be sited at a different location on the property of Woodland Meadows.

APPLICABLE RULES/ PERMIT CONDITIONS:

Ameresco operates under ROP No. MI-ROP-P0317-2012a, issued on December 12, 2012, with a revision issued February 2, 2016, and Permit to Install (PTI) No. 61-16, issued on August 29, 2016. All equipment covered under ROP No. MI-ROP-P0317-2012a was replaced by the equipment permitted in PTI No. 61-16, so for the purposes of this inspection the conditions of PTI 61-16 were

used to determine compliance. The facility has submitted an application to renew its renewable operating permit; the conditions of PTI 61-16 will be incorporated into the ROP upon renewal.

Emission, production, and monitoring records from August 2021 through August 2023 were reviewed to evaluate compliance for this inspection; some of these records were reviewed on site, while copies of others can be found in the facility file.

PTI No. 61-16, applicable Special Conditions:

EUHBTUENCL – 2,600-cfm enclosed flare used for the destruction of the pressure swing adsorption (PSA) process CO₂ tail gas stream. Due to low Btu value of the gas stream, landfill gas and N₂ tail gas will be used as supplementary fuel.

I. Emission Limits

Pollutant	Limit	Highest Actual	Compliance Status
1. NMOC	Reduce NMOC by 98% or reduce outlet NMOC to less than 20 ppmv	1.69 ppmv outlet concentration*	COMPLIANCE
2. SO ₂	16.8 pph	12.7 pph*	COMPLIANCE
3. SO ₂	73.7 tons per 12-month rolling time period	47.8 tons in 12-month period ending August 2021; 43.8 tons in 12-month period ending August 2023.	COMPLIANCE
*Determined during testing performed on May 17, 2018			

III. Process/Operational Restrictions:

1. IN COMPLIANCE. EUHBTUENCL is equipped with a temperature monitor.
2. IN COMPLIANCE. The temperature monitor of EUHBTUENCL is calibrated annually. During the compliance period, calibration was performed on June 24, 2021, and June 14, 2022; calibration had not yet been performed in 2023. Calibration was performed by an outside contractor (Emerson, based in Minnesota).
3. IN COMPLIANCE. All flaring of EUHBTUENCL is recorded and maintained, as required.
4. IN COMPLIANCE. EUHBTUENCL is operated at all times when gas is routed to the flare.
5. IN COMPLIANCE. Facility implements and maintains a start-up, shutdown, and malfunction abatement (SSM) plan, as approved by AQD. The SSM Plan is resubmitted to AQD whenever revisions are made to the plan. The most recent revision to the SSM Plan is dated March 22, 2022.

IV. Design/Equipment Parameters:

1. IN COMPLIANCE. EUHBTUENCL is equipped with a flow meter which monitors and records the flow rate of the landfill gas burned in EUHBTUENCL on a continuous basis.
2. IN COMPLIANCE. Per manufacturer specifications, EUHBTUENCL has a design capacity of 2,600 CFM.

V. Testing/Sampling:

1. IN COMPLIANCE. The facility verifies the hydrogen sulfide (H₂S) content of the landfill gas on a weekly basis using either Draeger-brand or Gastric-brand tubes in accordance with the approved Sulfur Monitoring Plan, most recently revised on June 4, 2020. The facility also performs a lab

analysis of the total reduced sulfur (TRS) content of the landfill gas on an annual basis, per the Sulfur Monitoring Plan.

2. IN COMPLIANCE. Testing to determine the NMOC outlet concentration from EUHBTUENCL was performed on May 17, 2018, within 180 days after commencing initial startup. Results of the testing showed an NMOC outlet concentration of 1.69 ppmv, in compliance with the permit limit of 20 ppmv.

3. IN COMPLIANCE. Testing to determine the SO₂ emission rate from EUHBTUENCL was performed on May 17, 2018, within 180 days after commencing initial startup. Results of the testing showed an SO₂ emission rate of 12.7 pph, in compliance with the permit limit of 16.8 pph.

VI. Monitoring/Recordkeeping:

1a. IN COMPLIANCE. EUHBTUENCL is equipped with a temperature monitoring device with a continuous recorder which is calibrated annually.

1.b. IN COMPLIANCE. EUNBTUENCL is equipped with a flow meter which records the flow every 15 minutes.

2. IN COMPLIANCE. All records are maintained, as required, and any deviations of operating parameters are reported.

3a. IN COMPLIANCE. Facility records average combustion temperature every 15 minutes.

3b. IN COMPLIANCE. The facility maintains the percent reduction of NMOC as determined during the stack testing.

4. IN COMPLIANCE. The facility maintains a record of all control system exceedances. The facility reported no exceedances of emission limits during the compliance period.

5. IN COMPLIANCE. The facility calculates and records the SO₂ emission rates from EUHBTUENCL on a monthly and 12-month rolling time period basis based on monthly gas usage and sulfur content of the landfill gas as determined by sampling data.

VII. Reporting:

1. IN COMPLIANCE. Facility submits an SSM Plan report on a semiannual basis, as required.

2. IN COMPLIANCE. Facility notified AQD in a letter dated December 1, 2017, that the initial startup for EUHBTUENCL was November 19, 2017.

VIII. Stack/Vent Restrictions:

1. IN COMPLIANCE. EUHBTUENCL flare stack appears to meet permit specifications.

IX. Other Requirements:

1. IN COMPLIANCE. Facility complies with all applicable provisions of the federal Standards of Performance for Municipal Solid Waste Landfills, as specified in 40 CFR Part 60 Subpart A and WWW, as they apply to EUHBTUENCL.

2. IN COMPLIANCE. Facility complies with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants for Municipal Solid Waste Landfills, as specified in 40 CFR Part 63 Subpart A and AAAA, as they apply to EUHBTUENCL.

EUHBTUOPEN: 1,440-cfm open flare used for the destruction of the N₂ tail gas stream. The flare will use product gas (approximately 94% methane) and propane to run the pilot continuously if needed for flame stability.

I. Emission Limits:

1. IN COMPLIANCE. Facility performed visible emissions testing EUHBTUOPEN on May 17, 2018. Average opacity during testing was determined to be 0%. During the inspection, no visible emissions were observed from EUHBTUOPEN.

II. Material Limits:

1. IN COMPLIANCE. During testing performed on May 17, 2018, the net heating value of the landfill gas was determined to be 548 Btu/scf, in compliance with the permitted minimum of 200 Btu/scf.

III. Process/Operational Restrictions

1. IN COMPLIANCE. Facility operates EUHBTUOPEN in accordance with 40 CFR 60.18.
2. IN COMPLIANCE. EUHBTUOPEN is operated at all times when gas is routed to the flare.
3. IN COMPLIANCE. EUHBTUOPEN is designed and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.
4. IN COMPLIANCE. EUHBTUOPEN is operated with a flame present at all times.
5. IN COMPLIANCE. The net heating value of the landfill gas burned in EUHBTUOPEN is 200 Btu/scfm or greater. EUHBTUOPEN is a non-air assisted flare.
6. IN COMPLIANCE. Results from the initial performance testing of EUHBTUOPEN, performed on May 17, 2018, showed an exit velocity of 21.5 ft/sec, in compliance with the maximum exit velocity of less than 60 ft/sec, as required in 40 CFR 60.18.
7. NOT APPLICABLE. EUHBTUOPEN is not air-assisted, so this condition does not apply.
8. IN COMPLIANCE. EUHBTUOPEN is operated at all times when gas is routed to the flare.
9. IN COMPLIANCE. All collected gases are vented to the control system. There is no bypass system.
10. IN COMPLIANCE. Facility implements and maintains a start-up, shutdown, and malfunction abatement (SSM) plan, as approved by AQD. The most recent revision to the SSM Plan is dated March 22, 2022.

IV. Design/Equipment Parameters

1. IN COMPLIANCE. Per manufacturer specifications, EUHBTUOPEN has a design capacity of 1,440 CFM.

V. Testing/Sampling

1. IN COMPLIANCE. During testing performed on May 17, 2018, the net heating value was determined to be 548 Btu/scf.
2. IN COMPLIANCE. Visible emissions testing was performed on May 17, 2018. Average opacity during testing was determined to be 0%, in compliance with the permit limit in S.C. I.1.

VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. EUHBTUOPEN is equipped with a heat sensing device to indicate the continuous presence of a flame.
2. IN COMPLIANCE. All records of testing performed on EUHBTUOPEN are maintained, as required.
3. IN COMPLIANCE. All records of testing performed on EUHBTUOPEN are maintained, as required.
4. IN COMPLIANCE. The following records are maintained for EUHBTUOPEN: a) records indicating presence of a pilot flame; b) net heating value of gas being combusted in the flare; and c) calculations of the exit velocity of the flare. Note: d) and e) are not applicable.

5. IN COMPLIANCE. Facility monitors and records the average Btu value of the landfill gas burned in EUHBTUOPEN.

6. IN COMPLIANCE. Facility maintains monthly and 12-month rolling heat input calculations for EUHBTUOPEN.

7. IN COMPLIANCE. The facility calculates and records the SO₂ emission rates from EUHBTUOPEN on a monthly and 12-month rolling time period basis based on monthly gas usage and sulfur content of the landfill gas as determined by sampling data.

VII. Reporting

1. IN COMPLIANCE. Facility submits an SSM Plan report on a semiannual basis, as required.

2. IN COMPLIANCE. Facility notified AQD in a letter dated December 1, 2017, that the initial startup for EUHBTUOPEN was November 19, 2017.

VIII. Stack/Vent Restrictions:

1. IN COMPLIANCE. EUHBTUOPEN flare stack appears to meet permit specifications.

IX. Other Requirements

1. IN COMPLIANCE. The facility reported no startup, shutdown, or malfunction events exceeding one hour for EUHBTUOPEN during the compliance period.

2. IN COMPLIANCE. The facility demonstrates compliance with 40 CFR Part 63, Subpart AAAA and 40 CFR Part 60, Subpart WWW through performance testing, parametric monitoring, and other credible evidence.

3. IN COMPLIANCE. Facility complies with all applicable provisions of the federal Standards of Performance for Municipal Solid Waste Landfills, as specified in 40 CFR Part 60 Subpart A and WWW, as they apply to EUHBTUOPEN.

4. IN COMPLIANCE. Facility complies with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants for Municipal Solid Waste Landfills, as specified in 40 CFR Part 63 Subpart A and AAAA, as they apply to EUHBTUOPEN.

ROP No. MI-ROP-P0317-2012a, applicable conditions:

EUGASTREAT and EUOILSEPARATOR: This equipment has been dismantled and removed, so these conditions are no longer applicable.

FGCOLDCLEANERS: There are no cold cleaners on site, so these conditions were not evaluated.

FINAL COMPLIANCE DETERMINATION:

At the time of inspection, Ameresco was determined to be in substantial compliance with the conditions of PTI No. 61-16, ROP No. MI-ROP-P0317-2012a, and applicable State and Federal rules.

NAME



DATE

8-15-24

SUPERVISOR

