Grace Consulting, Inc.
Emissions Testing Services

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EMISSIONS TEST REPORT

VIENNA JUNCTION INDUSTRIAL PARK SANITARY LANDFILL

Vienna Junction Landfill
6505 Hagman Road
Erie, MI 48133

Enclosed Flare Exhaust

Job #: 22-133

Test Date: 12-01-22
Report Date: 12-20-22

Grace Consulting, Inc.
Emissions Testing Services

December 20, 2022

I, Tim Moody, hereby certify that the data obtained at the Vienna Junction Industrial Park Sanitary Landfill on the Enclosed Flare Exhaust is in accordance with procedures set forth by the USEPA. This report accurately represents the data obtained from the testing procedures and analysis of this data.

Timothy C. Moody

Tim Moody, QSTI
Crew Chief
timmoody@gcitest.com

I, Stacy Sword, hereby certify that the report was prepared under my direction in conformance with the requirements of ASTM D7036. To the best of my knowledge the data and results are complete and accurate.

Stacy Sword

Stacy Sword, QSTI
Office Manager
stacysword@gcitest.com

I, Carl Vineyard, hereby certify that I have reviewed this report and to the best of my knowledge, the data presented herein is complete and accurate. GCI operated in conformance with the requirements of the ASTM D7036 during the test project.

Carl Vineyard, P.E., QSTI
Test Engineer
carlvineyard@gcitest.com

INTRODUCTION

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This report presents the results of the emissions test performed at the Vienna Junction Industrial Park Sanitary Landfill on the Enclosed Flare Exhaust.

The purpose of the tests was to determine the emissions of the unit for compliance. The results can be found in the Summary of Test Results section of this report.

The testing was performed by Grace Consulting, Inc., located at 510 Dickson Street, Wellington, OH 44090. Present during the testing from Grace Consulting, Inc. were Tim Moody, Tim P. Moody Jr., and Caleb Moody. Also present during the testing were Ryan Baisden from Vienna Juction Landfill and Andrew Riley from the State of Michigan.

The tests were performed on December 1, 2022. The testing was completed in accordance with USEPA test methods as published in the Federal Register.

The sampling and analytical procedures can be found in the Methods and Discussion section of this report. The raw field data and the equations used to determine the final results are presented in the Appendix section.

SOURCE DESCRIPTION

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The flare testing is required to show compliance with the existing MI-ROP-N2689-2020 and 40 CFR 60 Subpart XXX (NSPS XXX). The enclosed flare is an enclosed combustor or firebox which maintains a relatively constant limited peak temperature generally using a limited supply of combustion air. The testing was conducted at the exhaust only, while the flare was operating at the maximum landfill gas (LFG) flow available.

SUMMARY OF TEST RESULTS

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The following presents the results of the emissions tests performed at the Vienna Junction Industrial Park Sanitary Landfill on the Enclosed Flare Exhaust.

GASEOUS EMISSIONS
Method 25A

Run #	Test Date	THC ppmvd as Propane	THC ppmvd as Hexane	THC ppmvd as Hexane @ 3% O2	O2%
1	12/1/2022	1.3	0.7	1.3	11.1
2	12/1/2022	1.4	0.7	1.2	10.7
3	12/1/2022	2.1	1.1	1.9	10.7
Avg.		**1.6**	**0.8**	**1.5**	**10.8**

Limit: 20 ppm as Hexane @ 3% O2

PROCESS PARAMETERS

Run #	Test Date	Gas Flow SCFM min.	Gas Flow SCFM max.	Flare Temp °F min.	Flare Temp °F max
1	12/1/2022	1640	1687	1639	1641
2	12/1/2022	1644	1695	1657	1659
3	12/1/2022	1645	1712	1647	1648
Avg.		**1643**	**1698**	**1648**	**1649**

The complete results can be found on the computer printouts following.

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Sampling System Bias Check and Measured Value Correction

Vienna Junction Landfill - Unit Enclosed Flare Exhaust

Date: 12/1/2022
Pollutant: THC
Monitor Span: 11.00

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Percent Moisture	Corrected Value, Wet Basis	Corrected Percent, Dry Basis
1	1.4	0.05	0.09	0.36	3.09	3.12	0.27	3.030	3.2	1.3	1.3
2	1.4	0.09	0.16	0.64	3.12	3.21	0.82	3.030	3.8	1.3	1.4
3	2.2	0.16	0.18	0.18	3.21	3.16	-0.45	3.030	3.2	2.0	2.1

Cgas = (Cavg - Co) * Cma / (Cm - Co) Eq. 6C-1

where:
Cgas = Effluent gas concentration, dry basis, percent
Cavg = Average gas concentration indicated by gas analyzer, dry basis, percent
Co = Average of initial and final system calibration bias check responses for the zero gas, percent
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent
Cma = Actual concentration of the upscale calibration gas, percent

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Sampling System Bias Check and Measured Value Correction

Vienna Junction Landfill - Unit Enclosed Flare Exhaust

Date: 12/1/2022
Pollutant: O2
Monitor Span: 21.87

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Value, Dry Basis
1	11.2	0.13	0.09	-0.18	11.06	11.15	0.41	11.03	11.1
2	10.9	0.09	0.15	0.27	11.15	11.22	0.32	11.03	10.7
3	10.9	0.15	0.23	0.37	11.22	11.27	0.23	11.03	10.7

Cgas = (Cavg - Co) * Cma / (Cm - Co) Eq. 6C-1

where:
Cgas = Effluent gas concentration, dry basis, percent
Cavg = Average gas concentration indicated by gas analyzer, dry basis, percent
Co = Average of initial and final system calibration bias check responses for the zero gas, percent
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent
Cma = Actual concentration of the upscale calibration gas, percent

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Moisture Calculations (Runs 1 - 3)

Site: Vienna Junction Landfill
Date: 12/01/22
Unit Number: Enclosed Flare Exhaust

Run:	1	2	3
Total Impinger Content:	14.90	17.80	15.20
Volume Metered:	22.193	22.146	22.101
Meter Temperature:	63.00	63.00	64.00
Delta H:	1.700	1.700	1.700
Barometric Pressure:	29.81	29.81	29.81
Meter Correction Factor:	0.961	0.961	0.961
Volume Measured (DSCF):	21.53	21.49	21.40
Water Volume (SCF):	0.70	0.84	0.72
% Moisture in Flue Gas:	3.2	3.8	3.2

METHODS AND DISCUSSION

Test Methods used at the Vienna Junction Industrial Park Sanitary Landfill on the Enclosed Flare Exhaust

Method 3A

O_2 concentrations were determined with 3 Method 3A test runs corresponding with the testing. GCI used a monitor range of 0-21.87% for O_2.

Method 4

One moisture test was performed for each run of Method 25A testing.

Method 25A

THC emissions were determined with 3 Method 25A test runs. GCI used a monitor span of 11 ppm for the THC.

Method ASTM D-5504

SO_2 emissions were determined with 1 Method ASTM D-5504 test run.

Discussion

Environmental conditions did not adversely affect the test results.

Testing was completed by following GCI's Internal Site Specific Test Plan #22-133 with no deviations.