SOURCE TEST REPORT
2020 COMPLIANCE TESTING

ZEELAND FARM SERVICES, INC.
ZEELAND, MICHIGAN

VSC
EUDTDC
EULF/NGBLR5
EUREFBOILER

Prepared For:

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For Submittal To:

Michigan Department of Environment, Great Lakes, and Energy (EGLE)
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Lansing, MI 48933

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Submittal Date:	**December 15, 2020**

REVIEW AND CERTIFICATION

All work, calculations, and other activities and tasks performed and presented in this document were carried out by me or under my direction and supervision. I hereby certify that, to the best of my knowledge, Montrose operated in conformance with the requirements of the Montrose Quality Management System and ASTM D7036-04 during this test project.

Signature: [signature] Date: 12 / 04 / 2020

Name: Steve Smith Title: Client Project Manager

I have reviewed, technically and editorially, details, calculations, results, conclusions, and other appropriate written materials contained herein. I hereby certify that, to the best of my knowledge, the presented material is authentic, accurate, and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature: [signature] Date: 12 / 04 / 2020

Name: Matthew Young Title: District Manager

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1.0 INTRODUCTION

1.1 SUMMARY OF TEST PROGRAM

Zeeland Farm Services, Inc. (Source ID: M4204) contracted Montrose Air Quality Services, LLC (Montrose) to perform a compliance emissions test program on the VSC, EUDTDC, EULF/NGBLR5, and EUREFBOILER at the Zeeland Farm Services, Inc. facility located in Zeeland, Michigan. The tests were conducted to satisfy the emissions testing requirements pursuant to Michigan Department of Environment, Great Lakes, and Energy (EGLE) Permit No. MI-ROP-M4204-2018b.

The specific objectives were to:

- Verify the total particulate matter (PM) emissions from the VSC Cyclone Exhaust Stack
- Verify the total PM emissions and volatile organic compounds (VOC) emissions from the EUDTDC Cyclone Exhaust Stack
- Verify the nitrogen oxides (NO_X as NO_2) and carbon monoxide (CO) emissions from the EULF/NGBLR5 (Johnston Boiler) Exhaust Stack and EUREFBOILER (Hurst Boiler) Exhaust Stack
- Verify the visible emissions (VE), as percent opacity, at the EUDTDC Cyclone Exhaust Stack
- Conduct the test program with a focus on safety

Montrose performed the tests to measure the emission parameters listed in Table 1-1.

**TABLE 1-1
SUMMARY OF TEST PROGRAM**

Test Date(s)	Unit ID/ Source Name	Activity/ Parameters	Test Methods	No. of Runs	Duration (Minutes)
10/20/2020	VSC	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
10/20/2020	VSC	O_2, CO_2	EPA 3	3	6-9
10/20/2020	VSC	Moisture	EPA 4	3	60
10/20/2020	VSC	TPM	EPA 5/202	3	60
10/20/2020	EUDTDC	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
10/20/2020	EUDTDC	O_2, CO_2	EPA 3	3	41-43
10/20/2020	EUDTDC	Moisture	EPA 4	3	60

TABLE 1-1 - CONTINUED
SUMMARY OF TEST PROGRAM

Test Date(s)	Unit ID/ Source Name	Activity/ Parameters	Test Methods	No. of Runs	Duration (Minutes)
10/20/2020	EUDTDC	TPM	EPA 5/202	3	60
10/20/2020	EUDTDC	Opacity	EPA 9*	3	6
10/20/2020	EUDTDC	VOC	EPA 25A	3	60
10/21/2020	EULF/NGBLR5	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	5-10
10/21/2020	EULF/NGBLR5	CO_2	EPA 3	3	33-40
10/21/2020	EULF/NGBLR5	O_2	EPA 3A	3	60
10/21/2020	EULF/NGBLR5	Moisture	EPA 4	3	30
10/21/2020	EULF/NGBLR5	NO_x	EPA 7E	3	60
10/21/2020	EULF/NGBLR5	CO	EPA 10	3	60
10/21/2020	EUREFBOILER	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	5-10
10/21/2020	EUREFBOILER	O_2, CO_2	EPA 3A	3	60
10/21/2020	EUREFBOILER	Moisture	EPA 4	3	30
10/21/2020	EUREFBOILER	NO_x	EPA 7E	3	60
10/21/2020	EUREFBOILER	CO	EPA 10	3	60

* Performed by AeroMet Engineering

To simplify this report, a list of Units and Abbreviations is included in Appendix D.1. Throughout this report, chemical nomenclature, acronyms, and reporting units are not defined. Please refer to the list for specific details.

This report presents the test results and supporting data, descriptions of the testing procedures, descriptions of the facility and sampling locations, and a summary of the quality assurance procedures used by Montrose. The average emission test results are summarized and compared to their respective permit limits in Tables 1-2 through 1-5. Detailed results for individual test runs can be found in Section 4.0. All supporting data can be found in the appendices.

The testing was conducted by the Montrose personnel listed in Table 1-6. The tests were conducted according to the test plan (protocol) dated September 18, 2020 that was submitted to EGLE.

TABLE 1-2
SUMMARY OF AVERAGE COMPLIANCE RESULTS -
VSC
OCTOBER 20, 2020

Parameter/Units	Average Results	Emission Limits
Total Particulate Matter (PM)		
lb/hr	0.54	--
lb/1000lb dry stack gas	0.02	0.05
PM10*		
lb/hr	0.54	2.0
PM2.5*		
lb/hr	0.54	1.4

* Total PM is equivalent to PM10 and/or PM2.5

TABLE 1-3
SUMMARY OF AVERAGE COMPLIANCE RESULTS -
EUDTDC
OCTOBER 20, 2020

Parameter/Units	Average Results	Emission Limits
Total Particulate Matter (PM)		
lb/hr	0.59	--
lb/1000lb dry stack gas	0.009	0.034
PM10*		
lb/hr	0.59	3.03
PM2.5*		
lb/hr	0.59	2.42
Volatile Organic Compounds, as Propane (VOC)		
ppmvw	51.2	--
lb/hr	6.0	14.6
Visible Emissions		
% opacity as 6 min average	0.0	10

* Total PM is equivalent to PM10 and/or PM2.5

TABLE 1-4
SUMMARY OF AVERAGE COMPLIANCE RESULTS -
EULF/NGBLR5
OCTOBER 21, 2020

Parameter/Units	Average Results	Emission Limits
Nitrogen Oxides (NO_x)		
ppmvd	21.7	--
lb/hr (NO_x as NO_2)	0.19	0.82
lb/MMBtu (NO_x as NO_2)	0.03	0.13
Carbon Monoxide (CO)*		
ppmvd	<0.53	--
lb/hr	<0.010	0.53

* The "<" symbol indicates that compound was below the Minimum Detection Limit (MDL) of the analytical method. See Section 4.2 for details

TABLE 1-5
SUMMARY OF AVERAGE COMPLIANCE RESULTS - EUREFBOILER
OCTOBER 21, 2020

Parameter/Units	Average Results	Emission Limits
Nitrogen Oxides (NO_x)		
ppmvd	14.2	--
lb/hr (NO_x as NO_2)	0.28	2.18
lb/MMBtu (NO_x as NO_2)	0.02	0.13
Carbon Monoxide (CO)		
ppmvd	25.6	--
lb/hr	0.31	1.42

1.2 KEY PERSONNEL

A list of project participants is included below:

Facility Information

Source Location:	Zeeland Farm Services, Inc. 2468 84th Ave Zeeland, MI 49464	
Project Contact:	Brandon Love	Bridgette Rillema
Role:	EHS Manager	Environmental Manager
Company:	Zeeland Farm Services, Inc.	Zeeland Farm Services, Inc.
Telephone:	616-879-1719	616-293-8150
Email:	Brandon.love@zfsinc.com	bridgetter@zfsinc.com

Agency Information

Regulatory Agency:	EGLE
Agency Contact:	Karen Kajiya-Mills
Telephone:	517-335-3122
Email:	kajiya-millsk@michigan.gov

Testing Company Information

Testing Firm:	Montrose Air Quality Services, LLC	
Contact:	Matthew Young	Steven Smith
Title:	District Manager	Client Project Manager
Telephone:	248-548-8070	248-548-8070
Email:	myoung@montrose-env.com	ssmith@montrose-env.com

Laboratory Information

Laboratory:	Montrose
City, State:	Royal Oak, MI
Method:	5
Laboratory:	Enthalpy Analytical, LLC
City, State:	Durham, NC
Method:	202
Laboratory:	Analytical Solution, Inc.
City, State:	Willowbrook, IL
Method:	19

Subcontractor Information

Company	AeroMet Engineering, Inc.
Contact	Brandon LaRosa - Visible Emissions Evaluator

Test personnel and observers are summarized in Table 1-6.

TABLE 1-6
TEST PERSONNEL AND OBSERVERS

Name	Affiliation	Role/Responsibility
Steven Smith	Montrose	Client Project Manager, QI
David Trahan	Montrose	Field Technician
Shane Rabideau	Montrose	Field Technician
Ben Durham	Montrose	Field Technician
Ryan McWinnie	Montrose	Field Technician
Brandon LaRosa	AeroMet Engineering, Inc.	Visible Emissions Evaluator
Brandon Love	Zeeland Farm Services, Inc.	Observer/Client Liaison/Test Coordinator
Bridgette. Rillema	Zeeland Farm Services, Inc.	Observer/Client Liaison
Karen Kajiya-Mills	EGLE	Observer

2.0 PLANT AND SAMPLING LOCATION DESCRIPTIONS

2.1 PROCESS DESCRIPTION, OPERATION, AND CONTROL EQUIPMENT

Zeeland Farm Services, Inc. operates a soybean oil extraction process at their Zeeland, Michigan facility. The soybeans are cleaned, conditioned, dehulled and processed into flakes. The oil is then extracted from the soybean flakes with hexane. The hexane is later removed from the flakes by flash desolventizing. The flakes are then toasted, dried, cooled and ground into protein meal. The oil is sent off for refining. The soybeans are passed through a processing area (EUPREPEQUIPMENT). A maximum rated capacity of 1,050 tons of soybeans per day are conditioned, cleaned, cracked and dehulled, ground, conditioned, and flaked within this area. Emissions from EUPREPEQUIPMENT are controlled by the VSC Cyclone and the Prepequipment baghouse. After the oil is extracted from the soybeans, the oil is separated from the solids, called meal. The meal is processed by the Desolventizer, Toaster Dryer/Cooler (DTDC) system. Vapors from the desolventizer/toaster are controlled by the mineral oil absorption system where hexane is recovered for reuse. The meal then passes through three (3) separate drying trays and a cooling tray. The drying and cooling is accomplished by blowing heated air in the drying section (dryer trays) and using ambient air to cool the meal in the cooling section. Each dryer and cooler has its own exhaust stream which is routed to its own cyclone. Once leaving the each cyclone, the four exhaust streams are then combined in one stack (SVDTDC). The desolventized, dried and cooled meal leaves the DTDC via the DTDC discharge conveyor and is sent back to EUPREPEQUIPMENT for grinding and sizing. Zeeland Farm Services, Inc. also operates two boilers (EULF/NGBLR5 and EUREFBOILER) that are both fed by landfill gas or natural gas. For purposes of testing, each boiler was run solely on landfill gas.

2.2 FLUE GAS SAMPLING LOCATIONS

Information regarding the sampling locations is presented in Table 2-1.

TABLE 2-1
SAMPLING LOCATIONS

Sampling Location	Stack Inside Diameter (in.)	Distance from Nearest Disturbance: Downstream EPA "B" (in./dia.)	Distance from Nearest Disturbance: Upstream EPA "A" (in./dia.)	Number of Traverse Points
VSC Cyclone Exhaust Stack	17.8	224.0 / 12.6	382.0 / 21.5	Isokinetic: 12 (6/port)
EUDTDC Cyclone Exhaust Stack	31.5	360.0 / 11.4	120.0 / 3.8	Isokinetic: 12 (6/port); Gaseous: 1
EULF/NGBLR5 Exhaust Stack	13.5	216.0 / 16.0	48.0 / 3.6	Isokinetic: 16 (8/port); Gaseous: 6 (3/port)
EUREFBOILER Exhaust Stack	24.0	108.0 / 4.5	300.0 / 12.5	Isokinetic: 16 (8/port); Gaseous: 6 (3/port)

Sample locations were verified in the field to conform to EPA Method 1. Acceptable cyclonic flow conditions were confirmed prior to testing using EPA Method 1, Section 11.4. See Appendix A.1 for more information.

2.3 OPERATING CONDITIONS AND PROCESS DATA

Emission tests were performed while the source/units and air pollution control devices were operating at the conditions required by the permit. The units were tested when operating during normal operating conditions.

Plant personnel were responsible for establishing the test conditions and collecting all applicable unit-operating data. The process data that was provided is presented in Appendix B. Data collected includes the following parameters:

- Soybean processed, tons
- Meal entering dryer, °F
- Landfill gas used, SCF/CF
- Methane content, %
- Gross caloric value (GCV), Btu/cf

3.0 SAMPLING AND ANALYTICAL PROCEDURES

3.1 TEST METHODS

The test methods for this test program were presented previously in Table 1-1. Additional information regarding specific applications or modifications to standard procedures is presented below.

3.1.1 EPA Method 1, Sample and Velocity Traverses for Stationary Sources

EPA Method 1 is used to assure that representative measurements of volumetric flow rate are obtained by dividing the cross-section of the stack or duct into equal areas, and then locating a traverse point within each of the equal areas. Acceptable sample locations must be located at least two stack or duct equivalent diameters downstream from a flow disturbance and one-half equivalent diameter upstream from a flow disturbance.

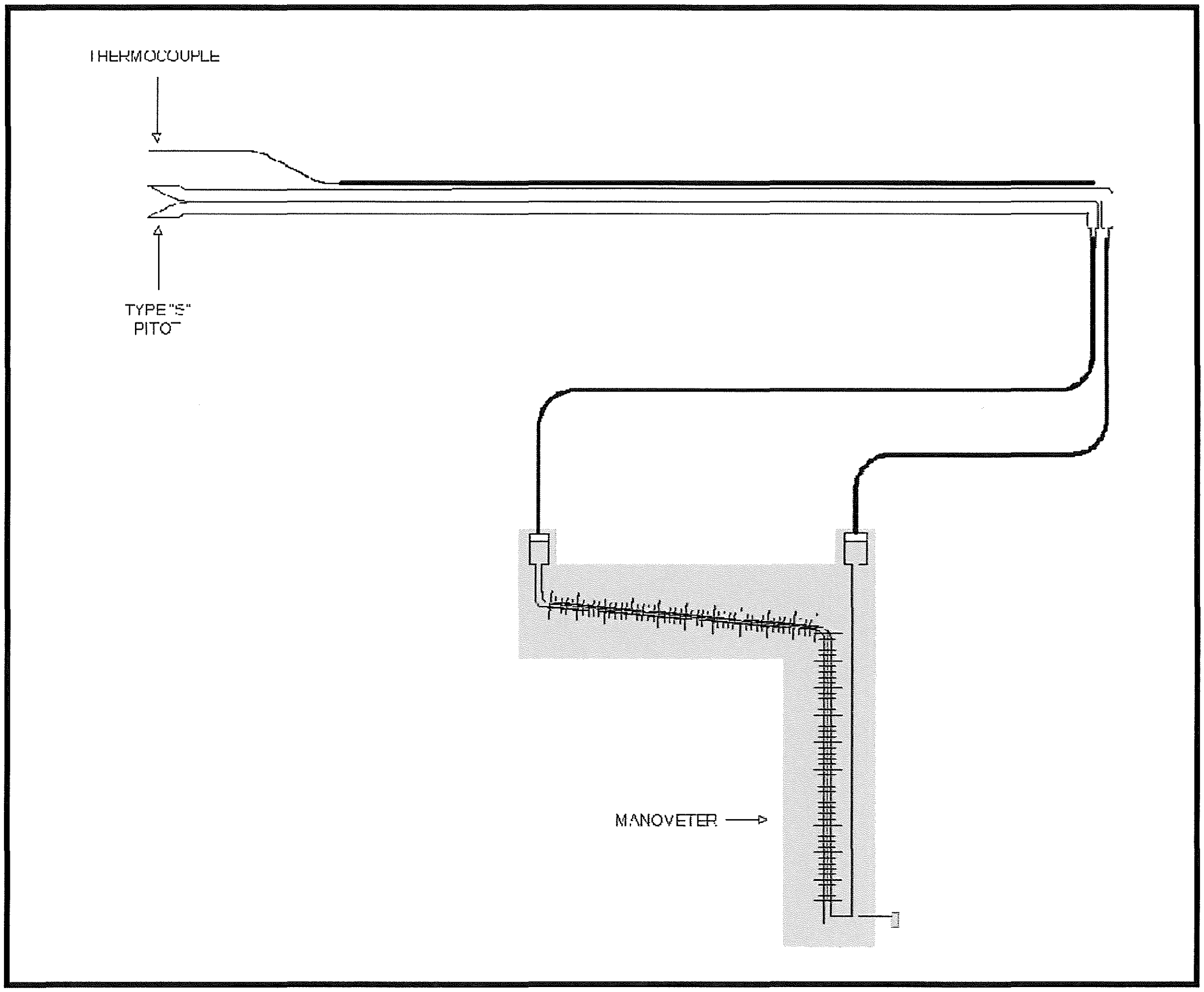
The sample port and traverse point locations are detailed in Appendix A.

3.1.2 EPA Method 2, Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)

EPA Method 2 is used to measure the gas velocity using an S-type pitot tube connected to a pressure measurement device, and to measure the gas temperature using a calibrated thermocouple connected to a thermocouple indicator. Typically, Type S (Stausscheibe) pitot tubes conforming to the geometric specifications in the test method are used, along with an inclined manometer. The measurements are made at traverse points specified by EPA Method 1.

The typical sampling system is detailed in Figure 3-1.

FIGURE 3-1
US EPA METHOD 2 SAMPLING TRAIN



3.1.3 EPA Method 3, Gas Analysis for the Determination of Dry Molecular Weight

EPA Method 3 is used to calculate the dry molecular weight of the stack gas using one of three methods. The first choice is to measure the percent O_2 and CO_2 in the gas stream. A gas sample is extracted from a stack by one of the following methods: (1) single-point, grab sampling; (2) single-point, integrated sampling; or (3) multi-point, integrated sampling. The gas sample is analyzed for percent CO_2 and percent O_2 using either an Orsat or a Fyrite analyzer.

3.1.4 EPA Method 3A, Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)

EPA Method 3A is an instrumental test method used to measure the concentration of O_2 and CO_2 in stack gas. The effluent gas is continuously or intermittently sampled and conveyed to analyzers that measure the concentration of O_2 and CO_2. The performance requirements of the method must be met to validate data.

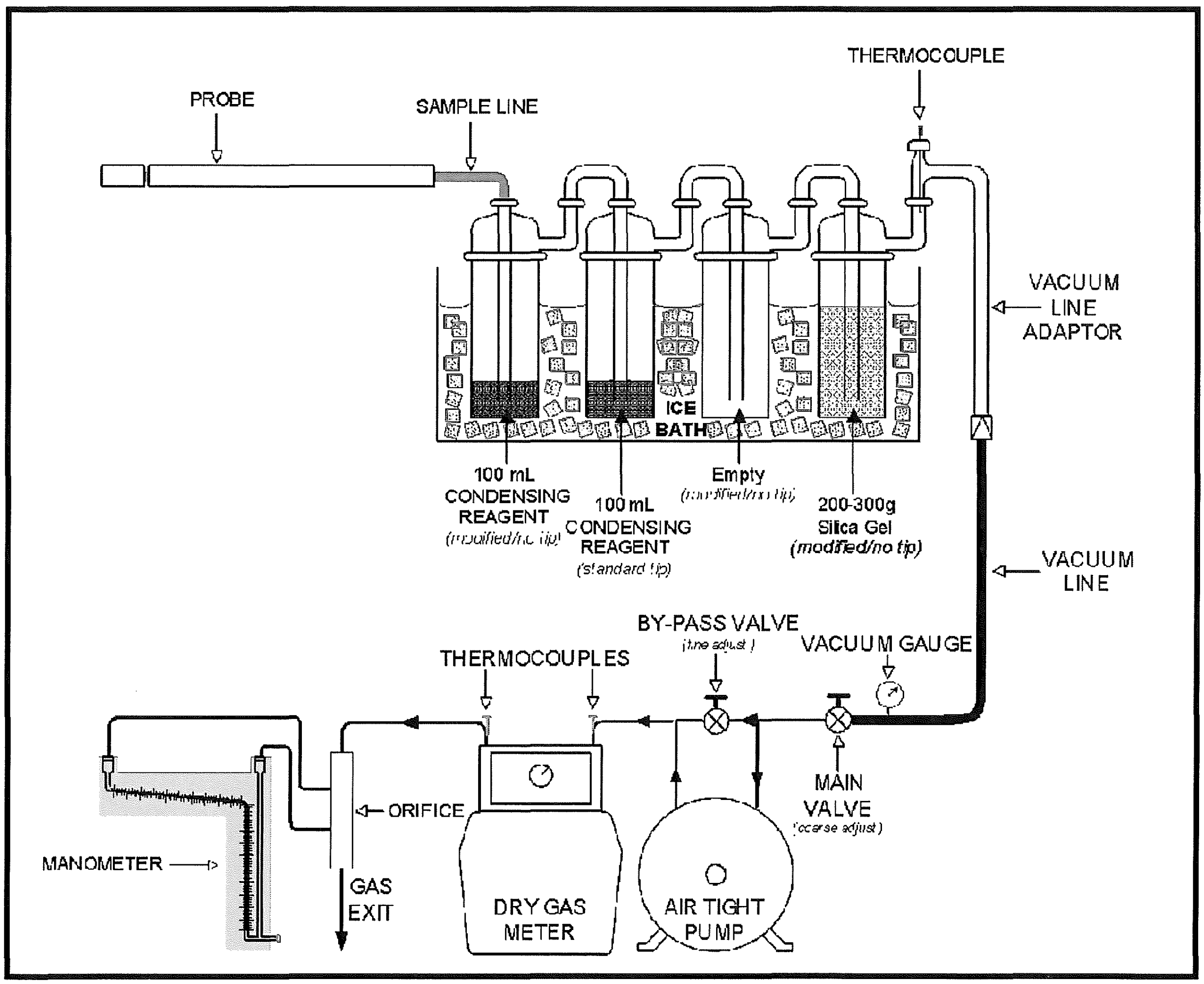
The typical sampling system is detailed in Figure 3-3.

3.1.5 EPA Method 4, Determination of Moisture Content in Stack Gas

EPA Method 4 is a manual, non-isokinetic method used to measure the moisture content of gas streams. Gas is sampled at a constant sampling rate through a probe and impinger train. Moisture is removed using a series of pre-weighed impingers containing methodology-specific liquids and silica gel immersed in an ice water bath. The impingers are weighed after each run to determine the percent moisture.

The typical sampling system is detailed in Figure 3-2.

FIGURE 3-2
US EPA METHOD 4 SAMPLING TRAIN



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3.1.6 EPA Method 5, Determination of Particulate Matter from Stationary Sources

EPA Method 5 is a manual, isokinetic method used to measure Filterable PM emissions. The samples are analyzed gravimetrically. This method is performed in conjunction with EPA Methods 1 through 4. The stack gas is sampled through a nozzle, probe, filter, and impinger train. FPM results are reported in emission concentration and emission rate units.

The typical sampling system is detailed in Figure 3-5.

3.1.7 EPA Method 7E, Determination of Nitrogen Oxides Emissions from Stationary Source (Instrumental Analyzer Procedure)

EPA Method 7E is an instrumental test method used to continuously measure emissions of NO_x as NO_2. Conditioned gas is sent to an analyzer to measure the concentration of NO_x. NO and NO_2 can be measured separately or simultaneously together but, for the purposes of this method, NO_x is the sum of NO and NO_2. The performance requirements of the method must be met to validate the data.

The typical sampling system is detailed in Figure 3-3.

3.1.8 EPA Method 9, Visual Determination of the Opacity of Emissions

EPA Method 9 is used to observe the visual opacity of emissions (opacity). The observer stands at a distance sufficient to provide a clear view of the emissions with the sun oriented in the 140° sector to their back. The line of vision is perpendicular to the plume direction and does not include more than one plume diameter. Observations are recorded at 15-second intervals and are made to the nearest 5% opacity. The qualified observer is certified according to the requirements of EPA Method 9, section 3.1.

3.1.9 EPA Method 10, Determination of Carbon Monoxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)

EPA Method 10 is an instrumental test method used to continuously measure emissions of CO. Conditioned gas is sent to an analyzer to measure the concentration of CO. The performance requirements of the method must be met to validate the data.

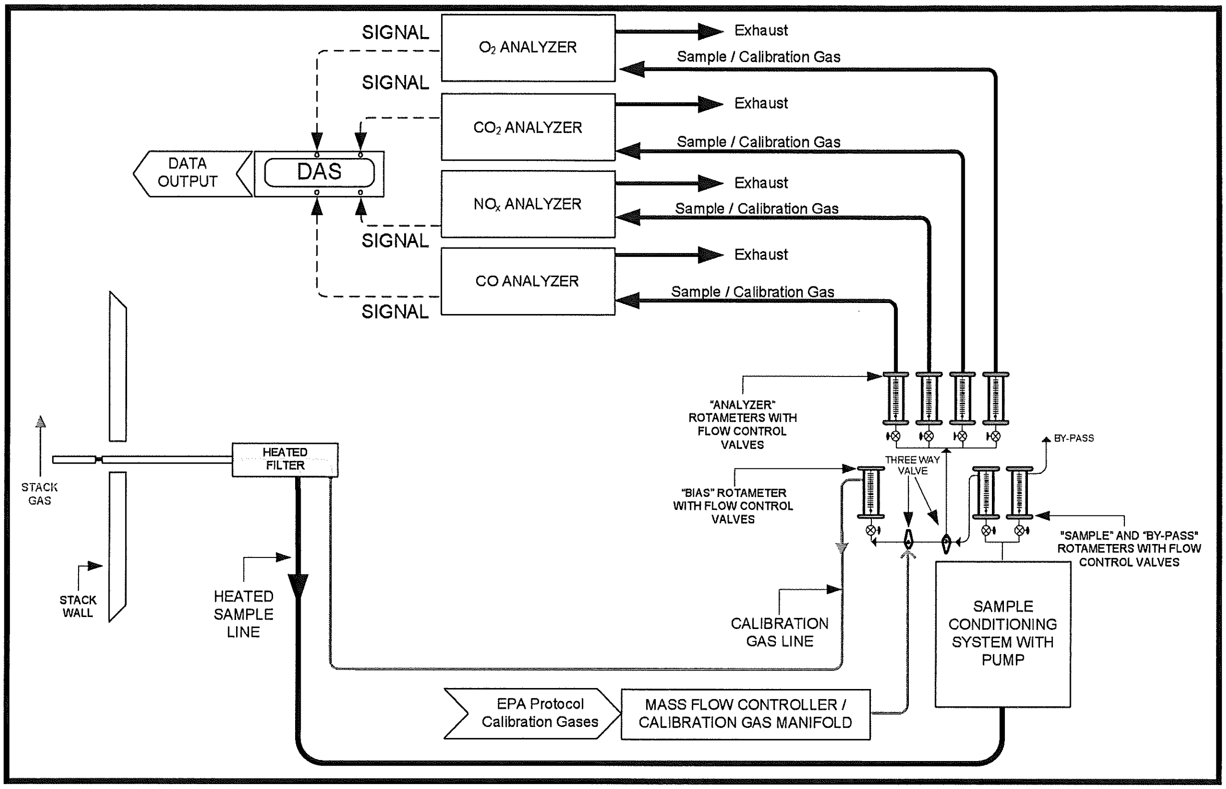
The typical sampling system is detailed in Figure 3-3.

3.1.10 EPA Method 19, Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxide Emission Rates

EPA Method 19 is a manual method used to determine (a) PM, SO_2, and NO_x emission rates; (b) sulfur removal efficiencies of fuel pretreatment and SO_2 control devices; and (c) overall reduction of potential SO_2 emissions. This method provides data reduction procedures, but does not include any sample collection or analysis procedures.

EPA Method 19 is used to calculate mass emission rates in units of lb/MMBtu. EPA Method 19, Table 19-2 contains a list of assigned fuel factors for different types of fuels, which can be used for these calculations.

FIGURE 3-3
EPA METHODS 3A (O_2/CO_2), 7E, AND 10 SAMPLING TRAIN

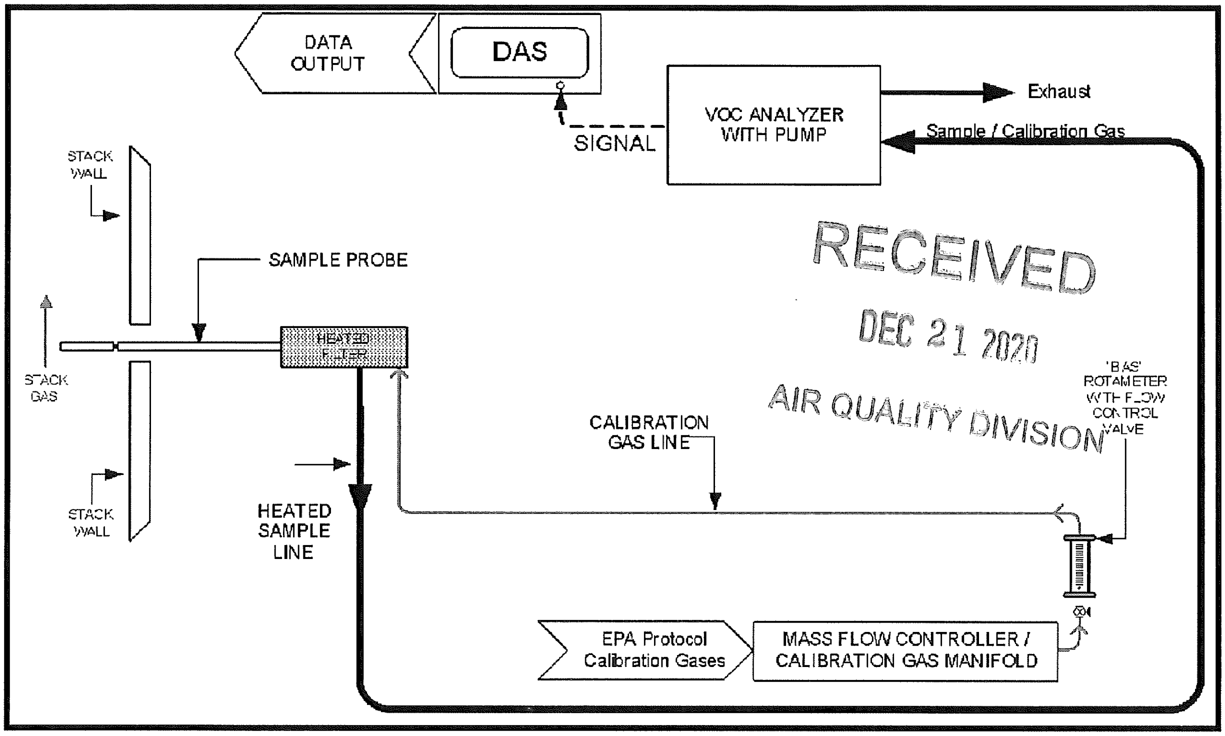


3.1.11 EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer

EPA Method 25A is an instrumental test method used to measure the concentration of THC in stack gas. A gas sample is extracted from the source through a heated sample line and glass fiber filter to a flame ionization analyzer (FIA). Results are reported as volume concentration equivalents of the calibration gas or as carbon equivalents.

The typical sampling system is detailed in Figure 3-4.

FIGURE 3-4
EPA METHODS 25A SAMPLING TRAIN



3.1.12 EPA Method 202, Dry Impinger Method for Determining Condensable Particulate Emissions from Stationary Sources

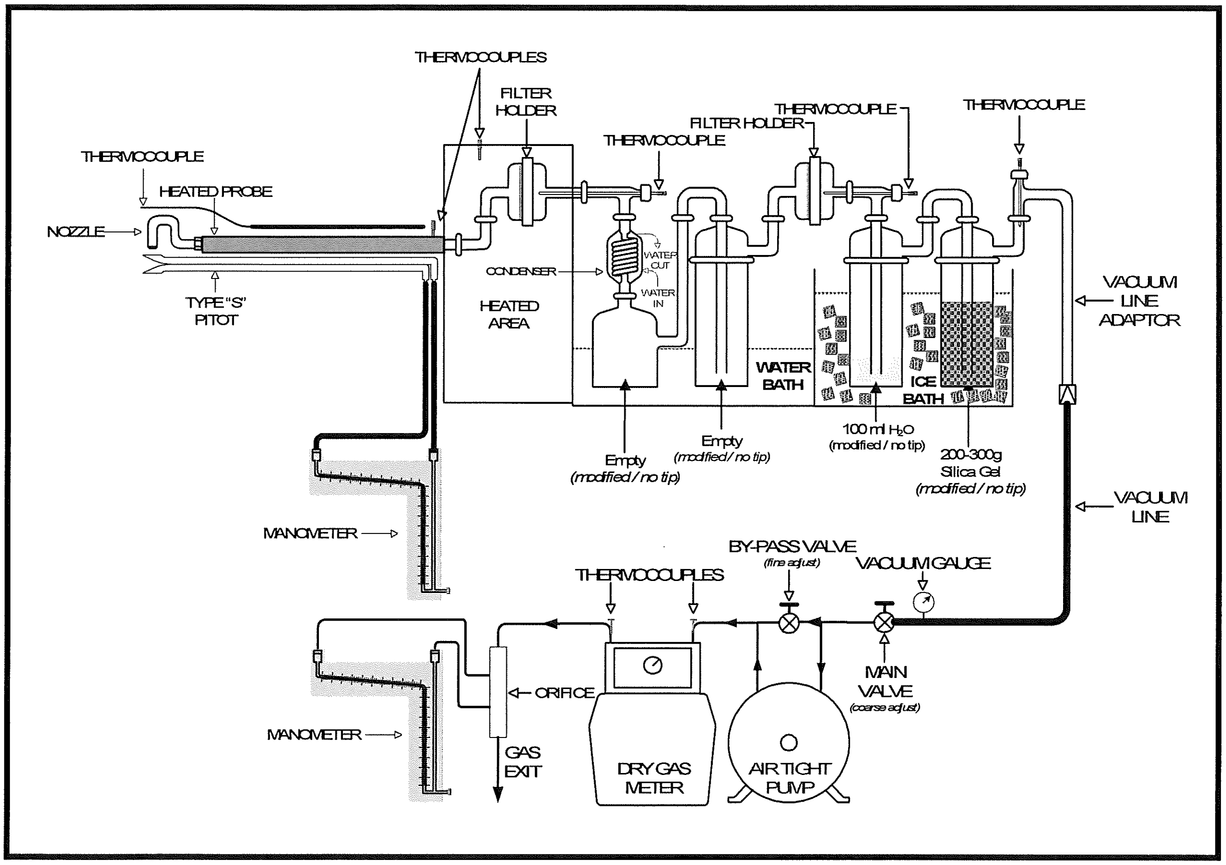
The CPM is collected in dry impingers after filterable PM has been collected on a filter maintained as specified in either Method 5 of Appendix A-3 to 40 CFR 60, Method 17 of Appendix A-6 to 40 CFR 60, or Method 201A of Appendix M to 40 CFR 51. The organic and aqueous fractions of the impingers and an out-of-stack CPM filter are then taken to dryness and weighed. The total of the impinger fractions and the CPM filter represents the CPM. Compared to the version of Method 202 that was promulgated on December 17, 1991, this method eliminates the use of water as the collection media in impingers and includes the addition of a condenser followed by a water dropout impinger immediately after the final in-stack or heated filter. This method also includes the addition of one modified Greenburg Smith impinger (backup impinger) and a CPM filter following the water dropout impinger.

CPM is collected in the water dropout impinger, the modified Greenburg Smith impinger, and the CPM filter of the sampling train as described in this method. The impinger contents are purged with nitrogen immediately after sample collection to remove dissolved SO_2 gases from the impinger. The CPM filter is extracted with water and hexane. The impinger solution is then extracted with hexane. The organic and aqueous fractions are dried and the residues are weighed. The total of the aqueous and organic fractions represents the CPM.

The potential artifacts from SO_2 are reduced using a condenser and water dropout impinger to separate CPM from reactive gases. No water is added to the impingers prior to the start of sampling. To improve the collection efficiency of CPM, an additional filter (the "CPM filter") is placed between the second and third impingers

The typical sampling system is detailed in Figure 3-5.

FIGURE 3-5
US EPA METHOD 5/202 SAMPLING TRAIN



3.2 PROCESS TEST METHODS

Process samples of landfill gas were taken by Zeeland Farm Services, Inc. personal and analyzed for methane content and gross caloric value (GCV).

4.0 TEST DISCUSSION AND RESULTS

4.1 FIELD TEST DEVIATIONS AND EXCEPTIONS

At the EULF/GBLR5 Exhaust Stack, the O_2 was sampled using US EPA Method 3A while the CO_2 was sampled using US EPA Method 3, fyrite. EGLE approved this change.

4.2 PRESENTATION OF RESULTS

The average results are compared to the permit limits in Tables 1-2 through 1-5. The results of individual compliance test runs performed are presented in Tables 4-1 through 4-5. Emissions are reported in units consistent with those in the applicable regulations or requirements. Additional information is included in the appendices as presented in the Table of Contents.

Visible emissions readings were evaluated by Brandon LaRosa of AeroMet Engineering, Inc.

**TABLE 4-1
TOTAL PM EMISSIONS RESULTS -
VSC**

Run Number	1	2	3	Average
Date	10/20/2020	10/20/2020	10/20/2020	--
Time	8:49-10:01	10:29-11:33	12:08-13:12	--
Process Data				
Soybean processed, tons/hr	42.8	41.6	41.5	41.9
Flue Gas Parameters				
O_2, % volume dry	21.0	21.0	21.0	21.0
CO_2, % volume dry	0.0	0.0	0.0	0.0
flue gas temperature, °F	135.8	136.1	135.5	135.8
moisture content, % volume	10.24	9.21	9.01	9.49
volumetric flow rate, dscfm	7,680	7,644	7,867	7,730
Filterable PM				
gr/dscf	0.0074	0.0060	0.0023	0.0052
lb/hr	0.48	0.40	0.16	0.35
lb/1000lb dry stack gas	0.014	0.012	0.004	0.010
Condensable PM				
gr/dscf	0.0018	0.0009	0.0058	0.0028
lb/hr	0.12	0.06	0.39	0.19
lb/1000lb dry stack gas	0.003	0.002	0.011	0.005
Total PM				
lb/hr	0.60	0.45	0.55	0.54
lb/1000lb dry stack gas	0.017	0.013	0.016	0.015
PM10*				
lb/hr	0.60	0.45	0.55	0.54
PM2.5*				
lb/hr	0.60	0.45	0.55	0.54

* Total PM is equivalent to PM10 and/or PM2.5

TABLE 4-2
TOTAL PM AND VOC EMISSIONS RESULTS - EUDTDC

Run Number	1	2	3	Average
Date	10/20/2020	10/20/2020	10/20/2020	--
Time	9:58-11:05	11:40-12:44	13:27-14:30	
Process Data				
Sparge Deck Temp, °F	228.3	227.5	227.4	227.7
Flue Gas Parameters				
O_2, % volume dry	21.0	21.0	21.0	21.0
CO_2, % volume dry	0.0	0.0	0.0	0.0
flue gas temperature, °F	128.8	129.1	130.0	129.3
moisture content, % volume	12.09	12.32	12.72	12.38
volumetric flow rate, dscfm	14,645	14,705	15,231	14,860
Filterable PM				
gr/dscf	0.0025	0.0054	0.0020	0.0033
lb/hr	0.32	0.69	0.27	0.42
lb/1000lb dry stack gas	0.005	0.010	0.004	0.006
Condensable PM				
gr/dscf	0.0013	0.0018	0.0009	0.0013
lb/hr	0.16	0.23	0.11	0.17
lb/1000lb dry stack gas	0.002	0.003	0.002	0.003
Total PM				
lb/hr	0.48	0.91	0.38	0.59
lb/1000lb dry stack gas	0.007	0.014	0.006	0.009
PM10*				
lb/hr	0.48	0.91	0.38	0.59
PM2.5*				
lb/hr	0.48	0.91	0.38	0.59
Volatile Organic Compounds (VOC) as propane				
ppmvw	49.8	50.6	53.2	51.2
lb/hr	5.7	5.8	6.3	6.0

* Total PM is equivalent to PM10 and/or PM2.5

TABLE 4-3
VISIBLE EMISSIONS RESULTS -
EUDTDC

Run Number	1	2	3	Average
Date	10/20/2020	10/20/2020	10/20/2020	--
Time	10:15-10:21	11:54-12:00	13:43-13:49	--
Visible Emissions				
% opacity as 6 min average	0.0	0.0	0.0	0.0

TABLE 4-4
NO_X AND CO EMISSIONS RESULTS -
EULF/NGBLR5

Run Number	1	2	3	Average
Date	10/21/2020	10/21/2020	10/21/2020	--
Time	8:32-9:36	9:54-11:00	11:20-12:25	--
Process Data				
Landfill Gas, SCFH	11,028	11,000	11,296	11,108
Heat Input Rate, MMBtu/hr	5.91	5.90	6.05	5.95
Flue Gas Parameters				
O_2, % volume dry	4.8	4.6	4.3	4.6
CO_2, % volume dry	15.0	15.0	15.0	15.0
flue gas temperature, °F	357.0	389.6	390.5	379.0
moisture content, % volume	15.00	15.31	16.11	15.48
volumetric flow rate, dscfm	1,262	1,226	1,259	1,249
Nitrogen Oxides (NO_x)				
ppmvd	21.5	21.7	22.0	21.7
lb/hr (NO_x as NO_2)	0.19	0.19	0.20	0.19
lb/MMBtu (NO_x as NO_2)	0.033	0.033	0.032	0.033
Carbon Monoxide (CO)*				
ppmvd	<0.61	<0.55	<0.43	<0.53
lb/hr	<0.01	<0.01	<0.01	<0.01

* The "<" symbol indicates that compound was below the Minimum Detection Limit (MDL) of the analytical method. See Section 4.2 for details

MONTROSE AIR QUALITY SERVICES

TABLE 4-5
NO_X AND CO EMISSIONS RESULTS -
EUREFBOILER

Run Number	1	2	3	Average
Date	10/21/2020	10/21/2020	10/21/2020	--
Time	8:10-9:15	9:26-10:31	10:45-11:50	
Process Data				
Landfill Gas, SCFH	26,822	26,452	27,500	29,925
Heat Input Rate, MMBtu/hr	14.38	14.18	14.74	14.43
Flue Gas Parameters				
O_2, % volume dry	4.6	4.5	4.5	4.5
CO_2, % volume dry	14.5	14.7	14.7	14.6
flue gas temperature, °F	332.7	381.5	381.4	365.2
moisture content, % volume	14.59	15.53	14.88	15.00
volumetric flow rate, dscfm	2,720	2,792	2,731	2,748
Nitrogen Oxides (NO_x)				
ppmvd	14.0	14.3	14.2	14.2
lb/hr (NO_x as NO_2)	0.27	0.29	0.28	0.28
lb/MMBtu (NO_x as NO_2)	0.019	0.020	0.019	0.019
Carbon Monoxide (CO)*				
ppmvd	25.7	24.8	26.4	25.6
lb/hr	0.30	0.30	0.31	0.31

5.0 INTERNAL QA/QC ACTIVITIES

5.1 QA/QC AUDITS

The meter boxes and sampling trains used during sampling performed within the requirements of their respective methods. All post-test leak checks, minimum metered volumes, minimum sample durations, and percent isokinetics met the applicable QA/QC criteria.

Fyrite analyzer audits were performed during this test in accordance with EPA Method 3, Section 10.1 requirements. The results were within ± 0.5% of the respective audit gas concentrations.

EPA Method 3A, 7E, and 10 calibration audits were all within the measurement system performance specifications for the calibration drift checks, system calibration bias checks, and calibration error checks.

EPA Method 9 was performed by a certified Visible Emissions Evaluator. For quality assurance, the observer obtained a view of the emissions with the best available contrasting background and with the sun oriented in the 140° sector to their back. Readings were taken every 15 seconds and made to the nearest 5% opacity.

EPA Method 25A FIA calibration audits were within the measurement system performance specifications for the calibration drift checks and calibration error checks.

The NO_2 to NO converter efficiency check of the analyzer was conducted per the procedures in EPA Method 7E, Section 8.2.4. The conversion efficiency met the criteria.

An EPA Method 205 field evaluation of the calibration gas dilution system was conducted. The dilution accuracy and precision QA specifications were met.

EPA Method 5 analytical QA/QC results are included in the laboratory report. The method QA/QC criteria were met, except if noted in Section 5.2. An EPA Method 5 reagent blank was analyzed. The maximum allowable amount that can be subtracted is 0.001% of the weight of the acetone blank. The blank did not exceed the maximum residue allowed.

EPA Method 202 analytical QA/QC results are included in the laboratory report. The method QA/QC criteria were met. An EPA Method 202 Field Train Recovery Blank (FTRB) was performed for each source category. The maximum allowable amount that can be subtracted is 0.002 g (2.0 mg). For this project, the FTRB had a mass of 1.7 mg, and 1.7 mg was subtracted.

5.2 QA/QC DISCUSSION

All QA/QC criteria were met during this test program.

5.3 QUALITY STATEMENT

Montrose is qualified to conduct this test program and has established a quality management system that led to accreditation with ASTM Standard D7036-04 (Standard Practice for Competence of Air Emission Testing Bodies). Montrose participates in annual functional assessments for conformance with D7036-04 which are conducted by the American Association for Laboratory Accreditation (A2LA). All testing performed by Montrose is supervised on site by at least one Qualified Individual (QI) as defined in D7036-04 Section 8.3.2. Data quality objectives for estimating measurement uncertainty within the documented limits in the test methods are met by using approved test protocols for each project as defined in D7036-04 Sections 7.2.1 and 12.10. Additional quality assurance information is included in the report appendices. The content of this report is modeled after the EPA Emission Measurement Center Guideline Document (GD-043).