Moats, Nikki B <nikki.b.moats@wv.gov>

Meadowfill Review

12 messages

Michael Trupin <mtrupin@trinityconsultants.com> Mon, Oct 4, 2021 at 12:05 PM
To: "Moats, Nikki B" <Nikki.B.Moats@wv.gov>
Cc: "Michael Runner (mrunner@wm.com)" <mrunner@wm.com>

Hi Nikki.

Thanks for your call this AM. The permit document is fairly lengthy. Do you mind if I get you some thoughts by the end of the day?

Thanks

Mike

Michael A. Trupin

Principal Consultant

Manager of Consulting Services (NJ)

P 609-318-5500 x1755 M 215-478-1886

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Moats, Nikki B <nikki.b.moats@wv.gov> Mon, Oct 4, 2021 at 12:39 PM
To: Michael Trupin <mtrupin@trinityconsultants.com>

That would be fine. You just caught me with that e-mail while I was out to lunch.
[Quoted text hidden]

Michael Trupin <mtrupin@trinityconsultants.com> Mon, Oct 4, 2021 at 9:17 PM
To: "Moats, Nikki B" <nikki.b.moats@wv.gov>
Cc: "Michael Runner (mrunner@wm.com)" <mrunner@wm.com>, Joyce Lish <JLish@trinityconsultants.com>

Hi Nikki.

Please see the comments incorporated into the attached draft permit for Meadowfill. I definitely think we would want to see the same logic applied to the Northwestern permit (which is effectively at the same place regarding GCCS NSPS/NESHAP applicability). By Incorporating the entire NESHAP and State Plan for MSW Landfills into the permit, there are a dozen or (much) more pages in this permit that can be removed. These no longer applicable conditions also cause quite a bit of confusion for many readers of the permit document.

Please pardon the draft nature of the comments. The goal was to demonstrate to you that there are many conditions that no longer apply to the site. However, considering the length of the permit, it was challenging to formally prepare a response to you within a few hours.

Thank you so much for your help! We look forward to discussing this matter further with you and the Department.

Mike

Michael A. Trupin

Principal Consultant

Manager of Consulting Services (NJ)

P 609-318-5500 x1755 M 215-478-1886

Email: mtrupin@trinityconsultants.com

15 Roszel Road, Suite 105 Princeton, NJ 08540

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DPPermit R30-03300128-2021-Comment2.docx
3787K

Moats, Nikki B <nikki.b.moats@wv.gov> Tue, Oct 5, 2021 at 7:09 AM
To: Carrie McCumbers <carrie.mccumbers@wv.gov>

Carrie,

Here's the comments that were sent to me last night on the permit if you want to take a look at them and let me know what you think we should do.

Thanks,
Nikki
[Quoted text hidden]

DPPermit R30-03300128-2021-Comment2.docx
3787K

McCumbers, Carrie <carrie.mccumbers@wv.gov> Tue, Oct 5, 2021 at 9:28 AM
To: "Moats, Nikki B" <nikki.b.moats@wv.gov>

Nikki,

I quickly looked over his comments and put in responses or made some changes. I don't really have a problem with most of his comments, but it will mean that we have to go back over and check cross references and numbering.

You will need to contact him and give him instructions on how to make the R13 permit inactive if you haven't already done so.

I went over this quickly this morning before my staff meeting at 10 am, so if you have any questions, just let me know. It's very possible that I may have missed something.

Thanks,
Carrie
[Quoted text hidden]

DPPermit R30-03300128-2021-Comment2 Carrie's response.docx
3797K

Moats, Nikki B <nikki.b.moats@wv.gov> Tue, Oct 5, 2021 at 11:23 AM
To: Michael Trupin <mtrupin@trinityconsultants.com>

Michael,

One big thing before I get into looking too deeply into this that we've noticed is the requested removal of the Tire Shredder. The R13 permit for this is still active, so it cannot be removed until it is made inactive. I've attached here the letter that can be sent to Pamela Kindrick at pamela.k.kindrick@wv.gov
This letter is what she needs to start the process of making a R13 permit inactive.
If you've got any questions, feel free to give me a call.

As for the other requests for removing sections from the permit, other than the Emissions Unit Table and 4.1.2, there were a large number of changes made. Once we've finished editing it I'll send a draft over so you can review it.

Sincerely,
Nikki B. Moats
[Quoted text hidden]

Newest Permit Withdrawal Form Letter 4-7-21.docx
15K

Moats, Nikki B <nikki.b.moats@wv.gov> Tue, Oct 5, 2021 at 11:32 AM
To: "McCumbers, Carrie" <carrie.mccumbers@wv.gov>

Carrie,

Here's an updated version of the fact sheet and permit with the removals to the permit and the additions to the fact sheet added. I confirmed the date we were given with Rich, and March 26, 2022 was the date he had for the facility as well.

Thanks,
Nikki
[Quoted text hidden]

2 attachments

DPFactSheet R30-03300128-2021.doc
115K

DPPermit R30-03300128-2021.docx
3735K

Michael Trupin <mtrupin@trinityconsultants.com> Tue, Oct 5, 2021 at 12:10 PM
To: "Moats, Nikki B" <nikki.b.moats@wv.gov>
Cc: "Michael Runner (mrunner@wm.com)" <mrunner@wm.com>, Joyce Lish <JLish@trinityconsultants.com>, Wade Robinson <WRobinson@trinityconsultants.com>

Thanks Nikki. Much appreciated. I'll work with Mike Runner regarding the Tire Shredder.

I also wanted to confirm how you want to handle the NSPS/NESHAP comments as they relate to Northwestern. The status of the GCCS Design Plan (i.e., not being approved yet for Northwestern) shouldn't impact a majority of the comments we included in the Meadowfill draft. I believe that you said Rich would prefer to keep Northwestern as is, but it seems duplicative to update Meadowfill now (and require a modification submittal for Northwestern in the future). The key issue is that NMOC testing and related requirements will never be required again for Northwestern (i.e., the regulatory obligation has been met).

Thanks much!!

[Quoted text hidden]

Moats, Nikki B <nikki.b.moats@wv.gov> Tue, Oct 5, 2021 at 12:41 PM
To: Michael Trupin <mtrupin@trinityconsultants.com>

Michael,

The biggest issue with doing this for Northwestern without a modification would be where it's at in the permitting process currently. There's nothing incorrect with what's in the permit and the EPA and public have both already come back with no comments, and these changes would require it to go back to the EPA at the very least. As it currently stands, we would be able to issue this permit as soon as the EPA comment period ends on October 19th.

It also doesn't have to be done as its own modification or other type of amendment. This simplification of the conditions within the permit could be done the next time the permit is opened either for modification or renewal.

Sincerely,
Nikki
[Quoted text hidden]

Michael Trupin <mtrupin@trinityconsultants.com> Wed, Oct 20, 2021 at 11:43 AM
To: "Moats, Nikki B" <nikki.b.moats@wv.gov>
Cc: "Michael Runner (mrunner@wm.com)" <mrunner@wm.com>, Joyce Lish <JLish@trinityconsultants.com>

Hey Nikki.

Just checking in with you. We should have the R13 Tire Shredder letter to you today or tomorrow.

Thanks!

Mike

Michael A. Trupin

Principal Consultant

Manager of Consulting Services (NJ)

P 609-318-5500 x1755 M 215-478-1886

Email: mtrupin@trinityconsultants.com

15 Roszel Road, Suite 105 Princeton, NJ 08540

From: Moats, Nikki B <nikki.b.moats@wv.gov>
Sent: Tuesday, October 5, 2021 11:24 AM

[Quoted text hidden]

[Quoted text hidden]

Moats, Nikki B <nikki.b.moats@wv.gov> Wed, Oct 20, 2021 at 12:15 PM

To: Michael Trupin <mtrupin@trinityconsultants.com>

Hello Michael,

Thanks for letting me know, it could take up to two weeks for it to go through the required processes, and once it's gone through those and the permit is removed I'll be able to remove it from the permit and send the draft to you to see what all has been removed.

Sincerely,
Nikki
[Quoted text hidden]

Moats, Nikki B <nikki.b.moats@wv.gov> Thu, Nov 18, 2021 at 7:51 AM
To: Michael Trupin <mtrupin@trinityconsultants.com>
Cc: "Michael Runner (mrunner@wm.com)" <mrunner@wm.com>, Joyce Lish <JLish@trinityconsultants.com>

Hello Michael,

We finally got someone from enforcement to confirm everything yesterday so that the R13 permit could be made inactive. Here's what the permit and fact sheet look like with all of the requested removals we were able to do.
If you've got any questions, send me an e-mail or call me on my cell phone (304-641-1506) as I've moved into a new office and my phone isn't set up yet.
I'd like to send this out by 5pm eastern today so that it can go out to notice during the holiday week, but if you need more time than that, let me know.

Sincerely,
Nikki B. Moats

On Wed, Oct 20, 2021 at 11:44 AM Michael Trupin <mtrupin@trinityconsultants.com> wrote:
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2 attachments

DPPermit R30-03300128-2022.docx
3732K

DPFactSheet R30-03300128-2022.doc
118K

West Virginia Department of Environmental Protection

Harold D. Ward
Cabinet Secretary

Permit to Operate

Pursuant to
Title V
of the Clean Air Act

Issued to:
Meadowfill Landfill, Inc.
Bridgeport
R30-03300128-2021

Laura M. Crowder
Director, Division of Air Quality

Issued: Draft/Proposed • Effective: Draft/Proposed
Expiration: Draft/Proposed • Renewal Application Due: Draft/Proposed

Permit Number: **R30-03300128-2021**
Permittee: **Meadowfill Landfill, Inc.**
Permittee Mailing Address: **1488 Dawson Drive, Bridgeport, WV 26330**

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.) and 45CSR30 — Requirements for Operating Permits. The permittee identified at the above-referenced facility is authorized to operate the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Facility Location:	Bridgeport, Harrison County, West Virginia
Telephone Number:	(888) 964-9724
Type of Business Entity:	Corporation
Facility Description:	Municipal solid waste landfill
SIC Codes:	4953 Primary
UTM Coordinates:	564.04 km Easting • 4354.44 km Northing • Zone 17

Permit Writer: Nikki Moats

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

Issuance of this Title V Operating Permit does not supersede or invalidate any existing permits under 45CSR13, 14 or 19, although all applicable requirements from such permits governing the facility's operation and compliance have been incorporated into the Title V Operating Permit.

Table of Contents

1.0 Emission Units and Active R13, R14, and R19 Permits

1.1. Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
Landfill					
Phase 1	Cell 1-A	Phase 1 Cell 1-A	1994	180,374 Mg	None
Phase 1	Cell 1-B	Phase 1 Cell 1-B	1994	223,581 Mg	None
Phase 2	Cell 2-A	Phase 2 Cell 2-A	1995	160,028 Mg	None
Phase 2	Cell 2-B	Phase 2 Cell 2-B	1996	551,581 Mg	None
Phase 3	Cell 3-A	Phase 3 Cell 3-A	1997	519,633 Mg	None
Phase 3	Cell 3-B	Phase 3 Cell 3-B	1998	229,125 Mg	None
Phase 3	Cell 3-C	Phase 3 Cell 3-C	1999	449,106 Mg	None
Phase 4	Cell 4-A	Phase 4 Cell 4-A	2000	410,357 Mg	None
Phase 4	Cell 4-B	Phase 4 Cell 4-B	2001	331,267 Mg	None
Phase 4	Cell 4-C	Phase 4 Cell 4-C	2002	338,495 Mg	None
Phase 4	Cell 4-D	Phase 4 Cell 4-D	2003	348,131 Mg	None
Phase 5	Cell 5-A	Phase 5 Cell 5-A	2005	649,283 Mg	None
Phase 5	Cell 5-B	Phase 5 Cell 5-B	2005	357,768 Mg	None
Phase 6	Cell 6-A	Phase 6 Cell 6-A	2008	314,340 Mg	None
Phase 7	NA	Phase 7	2012	278,562 Mg	None
Pre-existing	NA	Inactive 12.20 Acres	1975	347,753 Mg	None
Phase A1	Cell A1-A	Asbestos/C&D Phase A1 Cell A1-A	1992	64,613 Mg	None
Phase A1	Cell A1-B	Asbestos/C&D Phase A1 Cell A1-B	1997	42,041 Mg	None
Phase A2	Cell A2-A	Asbestos/C&D Phase A2 Cell A2-A	2003	23,394 Mg	None
Phase A2	NA	Asbestos/C&D Phase A2 Remainder	NA	151,467 Mg	None
Pre-1990	NA	Asbestos/C&D Pre-existing	Pre-1990	486,495 Mg	None
Landfill Gas (LFG) Flares					
LGF-1	LGF-1	Landfill Gas Flare	2010	3,000 scfm	Flare
GV-1	VF-1	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-2	VF-2	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-3	VF-3	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-4	VF-4	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-5	VF-5	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-6	VF-6	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-7	VF-7	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-8	VF-8	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-9	VF-9	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-10	VF-10	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-11	VF-11	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-12	VF-12	Solar Spark Vent Flare CF5	2006	140 cfm	None
Miscellaneous					
LST001	LST001	Leachate Storage Tank	Post 1984	125,000 gal	None
LST002	LST002	Leachate Storage Tank	Post 1984	125,000 gal	None

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
2S	2E	Tire Shredder	2004	10 ton/hr	None
T1	T1	Sanitary Wastewater Tank	1999	1,000 gal	None
T10	T10	Diesel Tank	2001	1,200 gal	None
T10b	T10b	New/Lube Oil Tank (15W40)	2001	200 gal	None
T10c	T10c	New/Lube Oil Tank (10W)	2001	200 gal	None
T11	T11	Truck Wash Water Tank	2000	1,500 gal	None
T2	T2	Sanitary Wastewater Tank	1991	1,000 gal	None
T3	T3	MSW Leachate Tank	1993	1,000 gal	None
T3a	T3a	Oil/Water Tank	1993	1,000 gal	None
T3b	T3b	Oil/Water Tank	2003	1,000 gal	None
T4a	T4a	Waste Oil/Used Oil Tank	1993	2,000 gal	None
T4b	T4b	New/Lube Oil (15W40) Tank	1993	500 gal	None
T4c	T4c	Hydraulic Oil/Fluid Tank	1993	500 gal	None
T4d	T4d	New/Lube Oil Tank	1993	275 gal	None
T5	T5	Unleaded Gasoline Tank	1997	1000 gal	None
T6	T6	Leachate Sump Tank	1995	2,250 gal	None
T7	T7	Leachate Sump Tank	1993	2,250 gal	None
T8	T8	Leachate Sump Tank	1995	2,250 gal	None
T9	T9	Waste Oil/Used Oil Tank	1992	1,200 gal	None
T9f	T9f	New/Lube Oil (15W40) Tank	1997	550 gal	None
T9h	T9h	Waste Oil/Used Oil Tank	1997	205 gal	None
01-SP	Fugitive	Solidification Pit	2010	10,000 ft^2	None

1.2. Active R13, R14, and R19 Permits

The underlying authority for any conditions from R13, R14, and/or R19 permits contained in this operating permit is cited using the original permit number (e.g. R13-1234). The current applicable version of such permit(s) is listed below.

Permit Number	Date of Issuance
R13-2666A	November 30, 2009
R13-2596A	June 7, 2016

2.0 General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45CSR§30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.1.4. Unless otherwise specified in a permit condition or underlying rule or regulation, all references to a "rolling yearly total" shall mean the sum of the monthly data, values or parameters being measured, monitored, or recorded, at any given time for the previous twelve (12) consecutive calendar months.

2.2. Acronyms

CAAA	Clean Air Act Amendments	**NSPS**	New Source Performance Standards
CBI	Confidential Business Information	**PM**	Particulate Matter
CEM	Continuous Emission Monitor	**PM_{10}**	Particulate Matter less than 10μm in diameter
CES	Certified Emission Statement	**pph**	Pounds per Hour
C.F.R. *or* CFR	Code of Federal Regulations	**ppm**	Parts per Million
CO	Carbon Monoxide	**PSD**	Prevention of Significant Deterioration
C.S.R. *or* CSR	Codes of State Rules	**psi**	Pounds per Square Inch
DAQ	Division of Air Quality	**SIC**	Standard Industrial Classification
DEP	Department of Environmental Protection	**SIP**	State Implementation Plan
FOIA	Freedom of Information Act	**SO_2**	Sulfur Dioxide
HAP	Hazardous Air Pollutant	**TAP**	Toxic Air Pollutant
HON	Hazardous Organic NESHAP	**TPY**	Tons per Year
HP	Horsepower	**TRS**	Total Reduced Sulfur
lbs/hr *or* lb/hr	Pounds per Hour	**TSP**	Total Suspended Particulate
LDAR	Leak Detection and Repair	**USEPA**	United States Environmental Protection Agency
m	Thousand	**UTM**	Universal Transverse Mercator
MACT	Maximum Achievable Control Technology	**VEE**	Visual Emissions Evaluation
mm	Million	**VOC**	Volatile Organic Compounds
mmBtu/hr	Million British Thermal Units per Hour		
$mmft^3$/hr *or* mmcf/hr	Million Cubic Feet Burned per Hour		
NA *or* N/A	Not Applicable		
NAAQS	National Ambient Air Quality Standards		
NESHAPS	National Emissions Standards for Hazardous Air Pollutants		
NO_x	Nitrogen Oxides		

2.3. Permit Expiration and Renewal

2.3.1. Permit duration. This permit is issued for a fixed term of five (5) years and shall expire on the date specified on the cover of this permit, except as provided in 45CSR§30-6.3.b. and 45CSR§30-6.3.c.
[45CSR§30-5.1.b.]

2.3.2. A permit renewal application is timely if it is submitted at least six (6) months prior to the date of permit expiration.
[45CSR§30-4.1.a.3.]

2.3.3. Permit expiration terminates the source's right to operate unless a timely and complete renewal application has been submitted consistent with 45CSR§30-6.2. and 45CSR§30-4.1.a.3.
[45CSR§30-6.3.b.]

2.3.4. If the Secretary fails to take final action to deny or approve a timely and complete permit application before the end of the term of the previous permit, the permit shall not expire until the renewal permit has been issued or denied, and any permit shield granted for the permit shall continue in effect during that time.
[45CSR§30-6.3.c.]

2.4. Permit Actions

2.4.1. This permit may be modified, revoked, reopened and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.
[45CSR§30-5.1.f.3.]

2.5. Reopening for Cause

2.5.1. This permit shall be reopened and revised under any of the following circumstances:

a. Additional applicable requirements under the Clean Air Act or the Secretary's legislative rules become applicable to a major source with a remaining permit term of three (3) or more years. Such a reopening shall be completed not later than eighteen (18) months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to 45CSR§§30-6.6.a.1.A. or B.

b. Additional requirements (including excess emissions requirements) become applicable to an affected source under Title IV of the Clean Air Act (Acid Deposition Control) or other legislative rules of the Secretary. Upon approval by U.S. EPA, excess emissions offset plans shall be incorporated into the permit.

c. The Secretary or U.S. EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

d. The Secretary or U.S. EPA determines that the permit must be revised or revoked and reissued to assure compliance with the applicable requirements.

[45CSR§30-6.6.a.]

2.6. Administrative Permit Amendments

2.6.1. The permittee may request an administrative permit amendment as defined in and according to the procedures specified in 45CSR§30-6.4.
[45CSR§30-6.4.]

2.7. Minor Permit Modifications

2.7.1. The permittee may request a minor permit modification as defined in and according to the procedures specified in 45CSR§30-6.5.a.
[45CSR§30-6.5.a.]

2.8. Significant Permit Modification

2.8.1. The permittee may request a significant permit modification, in accordance with 45CSR§30-6.5.b., for permit modifications that do not qualify for minor permit modifications or as administrative amendments.
[45CSR§30-6.5.b.]

2.9. Emissions Trading

2.9.1. No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for in the permit and that are in accordance with all applicable requirements.
[45CSR§30-5.1.h.]

2.10. Off-Permit Changes

2.10.1. Except as provided below, a facility may make any change in its operations or emissions that is not addressed nor prohibited in its permit and which is not considered to be construction nor modification under any rule promulgated by the Secretary without obtaining an amendment or modification of its permit. Such changes shall be subject to the following requirements and restrictions:

a. The change must meet all applicable requirements and may not violate any existing permit term or condition.

b. The permittee must provide a written notice of the change to the Secretary and to U.S. EPA within two (2) business days following the date of the change. Such written notice shall describe each such change, including the date, any change in emissions, pollutants emitted, and any applicable requirement that would apply as a result of the change.

c. The change shall not qualify for the permit shield.

d. The permittee shall keep records describing all changes made at the source that result in emissions of regulated air pollutants, but not otherwise regulated under the permit, and the emissions resulting from those changes.

e. No permittee may make any change subject to any requirement under Title IV of the Clean Air Act (Acid Deposition Control) pursuant to the provisions of 45CSR§30-5.9.

f. No permittee may make any changes which would require preconstruction review under any provision of Title I of the Clean Air Act (including 45CSR14 and 45CSR19) pursuant to the provisions of 45CSR§30-5.9.

[45CSR§30-5.9.]

2.11. Operational Flexibility

2.11.1. The permittee may make changes within the facility as provided by § 502(b)(10) of the Clean Air Act. Such operational flexibility shall be provided in the permit in conformance with the permit application and applicable requirements. No such changes shall be a modification under any rule or any provision of Title I of the Clean Air Act (including 45CSR14 and 45CSR19) promulgated by the Secretary in accordance with Title I of the Clean Air Act and the change shall not result in a level of emissions exceeding the emissions allowable under the permit.
[45CSR§30-5.8]

2.11.2. Before making a change under 45CSR§30-5.8., the permittee shall provide advance written notice to the Secretary and to U.S. EPA, describing the change to be made, the date on which the change will occur, any changes in emissions, and any permit terms and conditions that are affected. The permittee shall thereafter maintain a copy of the notice with the permit, and the Secretary shall place a copy with the permit in the public file. The written notice shall be provided to the Secretary and U.S. EPA at least seven (7) days prior to the date that the change is to be made, except that this period may be shortened or eliminated as necessary for a change that must be implemented more quickly to address unanticipated conditions posing a significant health, safety, or environmental hazard. If less than seven (7) days notice is provided because of a need to respond more quickly to such unanticipated conditions, the permittee shall provide notice to the Secretary and U.S. EPA as soon as possible after learning of the need to make the change.
[45CSR§30-5.8.a.]

2.11.3. The permit shield shall not apply to changes made under 45CSR§30-5.8., except those provided for in 45CSR§30-5.8.d. However, the protection of the permit shield will continue to apply to operations and emissions that are not affected by the change, provided that the permittee complies with the terms and conditions of the permit applicable to such operations and emissions. The permit shield may be reinstated for emissions and operations affected by the change:

a. If subsequent changes cause the facility's operations and emissions to revert to those authorized in the permit and the permittee resumes compliance with the terms and conditions of the permit, or

b. If the permittee obtains final approval of a significant modification to the permit to incorporate the change in the permit.

[45CSR§30-5.8.c.]

2.11.4. "Section 502(b)(10) changes" are changes that contravene an express permit term. Such changes do not include changes that would violate applicable requirements or contravene enforceable permit terms and conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements.
[45CSR§30-2.39]

2.12. Reasonably Anticipated Operating Scenarios

2.12.1. The following are terms and conditions for reasonably anticipated operating scenarios identified in this permit.

a. Contemporaneously with making a change from one operating scenario to another, the permittee shall record in a log at the permitted facility a record of the scenario under which it is operating and to document the change in reports submitted pursuant to the terms of this permit and 45CSR30.

b. The permit shield shall extend to all terms and conditions under each such operating scenario; and

c. The terms and conditions of each such alternative scenario shall meet all applicable requirements and the requirements of 45CSR30.

[45CSR§30-5.1.i.]

2.13. Duty to Comply

2.13.1. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
[45CSR§30-5.1.f.1.]

2.14. Inspection and Entry

2.14.1. The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

[45CSR§30-5.3.b.]

2.15. Schedule of Compliance

2.15.1. For sources subject to a compliance schedule, certified progress reports shall be submitted consistent with the applicable schedule of compliance set forth in this permit and 45CSR§30-4.3.h., but at least every six (6) months, and no greater than once a month, and shall include the following:

a. Dates for achieving the activities, milestones, or compliance required in the schedule of compliance, and dates when such activities, milestones or compliance were achieved; and

b. An explanation of why any dates in the schedule of compliance were not or will not be met, and any preventative or corrective measure adopted.

[45CSR§30-5.3.d.]

2.16. Need to Halt or Reduce Activity not a Defense

2.16.1. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.
[45CSR§30-5.1.f.2.]

2.17. Emergency

2.17.1. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.
[45CSR§30-5.7.a.]

2.17.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of 45CSR§30-5.7.c. are met.
[45CSR§30-5.7.b.]

2.17.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

b. The permitted facility was at the time being properly operated;

c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and

d. Subject to the requirements of 45CSR§30-5.1.c.3.C.1, the permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice, report, and

variance request fulfills the requirement of 45CSR§30-5.1.c.3.B. This notice must contain a detailed description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

[45CSR§30-5.7.c.]

2.17.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.
[45CSR§30-5.7.d.]

2.17.5. This provision is in addition to any emergency or upset provision contained in any applicable requirement.
[45CSR§30-5.7.e.]

2.18. Federally-Enforceable Requirements

2.18.1. All terms and conditions in this permit, including any provisions designed to limit a source's potential to emit and excepting those provisions that are specifically designated in the permit as "State-enforceable only", are enforceable by the Secretary, USEPA, and citizens under the Clean Air Act.
[45CSR§30-5.2.a.]

2.18.2. Those provisions specifically designated in the permit as “State-enforceable only” shall become “Federally-enforceable” requirements upon SIP approval by the USEPA.

2.19. Duty to Provide Information

2.19.1. The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records required to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.
[45CSR§30-5.1.f.5.]

2.20. Duty to Supplement and Correct Information

2.20.1. Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.
[45CSR§30-4.2.]

2.21. Permit Shield

2.21.1. Compliance with the conditions of this permit shall be deemed compliance with any applicable requirements as of the date of permit issuance provided that such applicable requirements are included and are specifically identified in this permit or the Secretary has determined that other requirements specifically identified are not applicable to the source and this permit includes such a determination or a concise summary thereof.
[45CSR§30-5.6.a.]

2.21.2. Nothing in this permit shall alter or affect the following:

a. The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance; or

b. The applicable requirements of the Code of West Virginia and Title IV of the Clean Air Act (Acid Deposition Control), consistent with § 408 (a) of the Clean Air Act.

c. The authority of the Administrator of U.S. EPA to require information under § 114 of the Clean Air Act or to issue emergency orders under § 303 of the Clean Air Act.

[45CSR§30-5.6.c.]

2.22. Credible Evidence

2.22.1. Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defenses otherwise available to the permittee including but not limited to any challenge to the credible evidence rule in the context of any future proceeding.
[45CSR§30-5.3.e.3.B. and 45CSR38]

2.23. Severability

2.23.1. The provisions of this permit are severable. If any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid by a court of competent jurisdiction, the remaining permit terms and conditions or their application to other circumstances shall remain in full force and effect.
[45CSR§30-5.1.e.]

2.24. Property Rights

2.24.1. This permit does not convey any property rights of any sort or any exclusive privilege.
[45CSR§30-5.1.f.4]

2.25. Acid Deposition Control

2.25.1. Emissions shall not exceed any allowances that the source lawfully holds under Title IV of the Clean Air Act (Acid Deposition Control) or rules of the Secretary promulgated thereunder.

a. No permit revision shall be required for increases in emissions that are authorized by allowances acquired pursuant to the acid deposition control program, provided that such increases do not require a permit revision under any other applicable requirement.

b. No limit shall be placed on the number of allowances held by the source. The source may not, however, use allowances as a defense to noncompliance with any other applicable requirement.

c. Any such allowance shall be accounted for according to the procedures established in rules promulgated under Title IV of the Clean Air Act.

[45CSR§30-5.1.d.]

2.25.2. Where applicable requirements of the Clean Air Act are more stringent than any applicable requirement of regulations promulgated under Title IV of the Clean Air Act (Acid Deposition Control), both provisions shall be incorporated into the permit and shall be enforceable by the Secretary and U. S. EPA. **[45CSR§30-5.1.a.2.]**

3.0 Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person is prohibited except as noted in 45CSR§6-3.1. **[45CSR§6-3.1.]**

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause or allow any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40 C.F.R. §61.145(b) and 45CSR34]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1, State-Enforceable only.]

3.1.5. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45CSR11.
[45CSR§11-5.2]

3.1.6. **Emission inventory.** The permittee is responsible for submitting, on an annual basis, an emission inventory in accordance with the submittal requirements of the Division of Air Quality.
[W.Va. Code § 22-5-4(a)(14)]

3.1.7. **Ozone-depleting substances.** For those facilities performing maintenance, service, repair or disposal of appliances, the permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 C.F.R. Part 82, Subpart F, except as provided for Motor Vehicle Air Conditioners (MVACs) in Subpart B:

a. Persons opening appliances for maintenance, service, repair, or disposal must comply with the prohibitions and required practices pursuant to 40 C.F.R. §§ 82.154 and 82.156.

b. Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 C.F.R. § 82.158.

c. Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 C.F.R. § 82.161.

[40 C.F.R. 82, Subpart F]

3.1.8. **Risk Management Plan.** Should this stationary source, as defined in 40 C.F.R. § 68.3, become subject to Part 68, then the owner or operator shall submit a risk management plan (RMP) by the date specified in 40 C.F.R. § 68.10 and shall certify compliance with the requirements of Part 68 as part of the annual compliance certification as required by 40 C.F.R. Part 70 or 71.
[40 C.F.R. 68]

3.1.9. No person shall cause, suffer, allow or permit fugitive particulate matter to be discharged beyond the boundary lines of the property on which the discharge originates or at any public or residential location, which causes or contributes to statutory air pollution.
[45CSR§17-3.1. State-Enforceable only.]

3.1.10. The permittee shall submit a control program upon the request of the Secretary, when the permitted facility is in violation of rule 45CSR17. The Secretary may require the permittee to utilize a system to minimize fugitive particulate matter that may include, but is not limited to, the following:

a. Use, where practicable, of water or chemicals for control of particulate matter in demolition of existing buildings or structures, construction operations, grading of roads or the clearing of land;

b. Application of asphalt, water or suitable chemicals on unpaved roads, material stockpiles and other surfaces which can create airborne particulate matter;

c. Covering of material transport vehicles, or treatment of cargo, to prevent contents from dripping, sifting, leaking or otherwise escaping and becoming airborne, and prompt removal of tracked material from roads or streets.

[45CSR§§17-3.2. & 4.1. State-Enforceable only.]

3.2. Monitoring Requirements

3.2.1. None.

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63, if applicable, in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within 60 days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

1. The permit or rule evaluated, with the citation number and language.

2. The result of the test for each permit or rule condition.

3. A statement of compliance or non-compliance with each permit or rule condition.

[WV Code §§ 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Monitoring information.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit and time of sampling or measurements;

b. The date(s) analyses were performed;

c. The company or entity that performed the analyses;

d. The analytical techniques or methods used;

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

[45CSR§30-5.1.c.2.A., 45CSR13, R13-2666, 4.4.1., R13-2596, 4.4.1.]

3.4.2. **Retention of records.** The permittee shall retain records of all required monitoring data and support information for a period of at least five (5) years from the date of monitoring sample, measurement, report, application, or record creation date. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Where appropriate, records may be maintained in computerized form in lieu of the above records.
[45CSR§30-5.1.c.2.B.]

3.4.3. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§30-5.1.c., State-Enforceable only.]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.
[45CSR§§30-4.4. *and* 5.1.c.3.D.]

3.5.2. A permittee may request confidential treatment for the submission of reporting required under 45CSR§30-5.1.c.3. pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.
[45CSR§30-5.1.c.3.E.]

3.5.3. Except for the electronic submittal of the annual compliance certification and semi-annual monitoring reports to the DAQ and USEPA as required in 3.5.5 and 3.5.6 below, all notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class or by private carrier with postage prepaid to the address(es), or submitted in electronic format by e-mail as set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

DAQ:

Director
WVDEP
Division of Air Quality
601 57th Street SE
Charleston, WV 25304

US EPA:

Section Chief
U. S. Environmental Protection Agency, Region III
Enforcement and Compliance Assurance Division
Air Section (3ED21)
1650 Arch Street
Philadelphia, PA 19103-2029

DAQ Compliance and Enforcement[1]:
DEPAirQualityReports@wv.gov

[1]For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, Notice of Compliance Status reports, Initial Notifications, etc.

3.5.4. **Certified emissions statement.** The permittee shall submit a certified emissions statement and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. **[45CSR§30-8.]**

3.5.5. **Compliance certification.** The permittee shall certify compliance with the conditions of this permit on the forms provided by the DAQ. In addition to the annual compliance certification, the permittee may be required to submit certifications more frequently under an applicable requirement of this permit. The annual certification shall be submitted to the DAQ and USEPA on or before March 15 of each year, and shall certify compliance for the period ending December 31. The permittee shall maintain a copy of the certification on site for five (5) years from submittal of the certification. The annual certification shall be submitted in electronic format by e-mail to the following addresses:

DAQ:	**US EPA:**
DEPAirQualityReports@wv.gov	R3_APD_Permits@epa.gov

[45CSR§30-5.3.e.]

3.5.6. **Semi-annual monitoring reports.** The permittee shall submit reports of any required monitoring on or before September 15 for the reporting period January 1 to June 30 and on or before March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports. All required reports must be certified by a responsible official consistent with 45CSR§30-4.4. The semi-annual monitoring reports shall be submitted in electronic format by e-mail to the following address:

DAQ:
DEPAirQualityReports@wv.gov

[45CSR§30-5.1.c.3.A.]

3.5.7. **Emergencies.** For reporting emergency situations, refer to Section 2.17 of this permit.

3.5.8. **Deviations.**

a. In addition to monitoring reports required by this permit, the permittee shall promptly submit supplemental reports and notices in accordance with the following:

1. Any deviation resulting from an emergency or upset condition, as defined in 45CSR§30-5.7., shall be reported by telephone or telefax within one (1) working day of the date on which the permittee becomes aware of the deviation, if the permittee desires to assert the affirmative defense in accordance with 45CSR§30-5.7. A written report of such deviation, which shall include the probable cause of such deviations, and any corrective actions or preventative measures taken, shall be submitted and certified by a responsible official within ten (10) days of the deviation.

2. Any deviation that poses an imminent and substantial danger to public health, safety, or the environment shall be reported to the Secretary immediately by telephone or telefax. A written report of such deviation, which shall include the probable cause of such deviation, and any corrective actions or preventative measures taken, shall be submitted by the responsible official within ten (10) days of the deviation.

3. Deviations for which more frequent reporting is required under this permit shall be reported on the more frequent basis.

4. All reports of deviations shall identify the probable cause of the deviation and any corrective actions or preventative measures taken.

[45CSR§30-5.1.c.3.C.]

b. The permittee shall, in the reporting of deviations from permit requirements, including those attributable to upset conditions as defined in this permit, report the probable cause of such deviations and any corrective actions or preventive measures taken in accordance with any rules of the Secretary.
[45CSR§30-5.1.c.3.B.]

3.5.9. **New applicable requirements.** If any applicable requirement is promulgated during the term of this permit, the permittee will meet such requirements on a timely basis, or in accordance with a more detailed schedule if required by the applicable requirement.
[45CSR§30-4.3.h.1.B.]

3.6. Compliance Plan

3.6.1. None

3.7. Permit Shield

3.7.1. The permittee is hereby granted a permit shield in accordance with 45CSR§30-5.6. The permit shield applies provided the permittee operates in accordance with the information contained within this permit.

3.7.2. The following requirements specifically identified are not applicable to the source based on the determinations set forth below. The permit shield shall apply to the following requirements provided the conditions of the determinations are met.

a. **40 C.F.R. 64 – Compliance Assurance Monitoring**. The permittee does not have any pollutant specific emissions units (PSEU) at this facility that satisfy the applicability criteria requirements of 40 CFR §64.2(a), i.e., that: 1) have pre-control device regulated pollutant potential emissions (PTE) equal to or greater than the "major" threshold limits to be classified as a major source; 2) are subject to an emission limitation or standard and; 3) have a control device to achieve compliance with such emission limitation or standard. Therefore, the facility is not subject to the Compliance Assurance Monitoring (CAM) rule.

b. **40 CFR 60, Subpart Kb** – Tanks LST001 and LST002 have a capacity greater than 151 m^3 and they store a liquid with a maximum true vapor pressure less than 3.5 kPa. All of the other tanks at this facility have a design capacity less than 75 m^3. Therefore, none of the tanks at this facility are subject to 40 C.F.R. 60 Subpart Kb.

4.0 Landfill Requirements [Landfill Areas Phase 1 through Phase 6 and Phase A1 through Phase A2 (Active), Phase 7, Inactive 12.20 Acre Cell]

4.1. Limitations and Standards

4.1.1. Each owner or operator of a MSWL with a design capacity greater than or equal to 2.5 million megagrams by mass and 2.5 million cubic meters by volume, shall collect and control MSWL emissions at each MSWL that meet the following conditions:

a. The landfill accepted waste at any time after November 8, 1987, or the MSWL has additional design capacity available for future waste deposition;

b. The landfill commenced construction, reconstruction or modification before July 17, 2014;

c. The landfill has an NMOC emission rate greater than or equal to 34 megagrams per year, or Tier 4 surface emissions monitoring shows a surface emission concentration 500 ppm methane or greater; or

d. The landfill is in the closed landfill subcategory and has NMOC emission rate greater than or equal to 50 megagrams per year, or Tier 4 surface emissions monitoring shows a surface emission concentration of 500 ppm methane or greater

[45CSR§23-7.4.a]

4.1.2. Collection System – For each MSWL that meets the criteria under condition 4.1.1, the gas collection and control system installation shall meet the requirements under paragraphs 4.1.2 through 4.1.3.

a. The owner or operator shall install and start up a collection and control system that captures the gas generated within the landfill within 30 months after:

1. The first annual report in which the NMOC emission rate is equal to or exceeds 34 megagrams per year, unless Tier 2 or Tier 3 sampling demonstrates that the NMOC emission rate is less than 34 megagrams per year, per condition 4.5.3.d; or

2. The first annual NMOC emission rate report for a landfill in the closed landfill subcategory that the NMOC emission rate equals or exceeds 50 megagrams per year, unless Tier 2 or Tier 3 sampling demonstrates that the NMOC emission rate is less than 50 megagrams per year, per condition 4.5.3.d; or

3. The most recent NMOC emission rate report in which the NMOC emission rate equals or exceeds 34 megagrams per year based on Tier 2, if the Tier 4 surface emissions monitoring shows a surface methane emission concentration of 500 ppm methane or greater per condition 4.5.3.d.3.

b. An active collection system shall:

1. Be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control system equipment;

2. Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of five years or more if active or two years or more if closed or at the final grade;

3. Collect gas at a sufficient extraction rate; and

4. Be designed to minimize off-site migration of subsurface gas.

c. A passive collection system shall:

1. Comply with conditions 4.1.2.b.1, 4.1.2.b.2, and 4.1.2.b.4; and

2. Be installed with liners installed on the bottom and all sides in all areas in which gas will be collected, per 40 CFR § 258.40.

[45CSR§23-7.4.b]

4.1.3. Control System --Control devices shall meet the following requirements, except as provided in 40 CFR § 60.24.

a. The owner or operator shall design and operate a non-enclosed flare according to the parameters established in 40 CFR § 60.18 and 45CSR16, except as noted in condition 4.2.2.d; or

b. The owner or operator shall design and operate each control system to reduce NMOC by 98 weight percent, or when an enclosed combustion device is used for control, either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 ppm by volume, dry basis as hexane at three percent (3%) oxygen or less. The reduction efficiency or concentration in ppm by volume shall be established by an initial performance test using the test methods set out in condition 4.1.7.c and shall be completed no later than 180 days after the initial startup of the approved control system. The performance test is not required for boilers and process heaters with design heat input capacities equal to or greater than 44 megawatts that burn landfill gas for compliance with 45CSR§23-7.

1. If a boiler or process heater is used as the control device, the landfill gas stream shall be introduced into the flame zone.

2. The control device shall be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in condition 4.2.2.

3. For the closed landfill subcategory, the initial or most recent performance test to comply with section 4 or section 6 of 45CSR23 conducted on or before July 17, 2014 demonstrates compliance.

c. The owner or operator shall route the collected gas to a treatment system that processes the collected gas for subsequent sale or beneficial use, such as fuel for combustion, production of vehicle fuel, production of high-Btu gas for pipeline injection or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas shall be controlled according to either conditions 4.1.3.a or 4.1.3.b.

d. All emissions from any atmospheric vent from the gas treatment system are subject to the requirements of conditions 4.1.2 or 4.1.3. Atmospheric vents located on the condensate storage tank are not part of the treatment system and are exempt from the requirements of conditions 4.1.2 and 4.1.3.

[45CSR§23-7.4.c]

4.1.4. Emissions -- Each owner or operator of a MSWL with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters shall either install a collection and control system according to conditions 4.1.2 and 4.1.3 or calculate an initial NMOC emissions rate for the landfill using the procedures specified in conditions 4.3.1 through 4.3.5. The NMOC emissions rate shall be recalculated annually except as provided in condition 4.5.2.c.

a. If the calculated NMOC emission rate is less than 34 megagrams per year, the owner or operator shall:

1. Submit an annual NMOC emission rate report per 4.5.2 except as provided in 4.5.2.c; and

2. Recalculate the NMOC emission rate annually per conditions 4.3.1 through 4.3.5 until either the calculated NMOC emission rate is equal to or greater than 34 megagrams per year or the landfill is closed.

i. If the initial or annual calculated NMOC emission rate is equal to or greater than 34 megagrams per year, the owner or operator shall either:

A. Comply with 4.1.2 and 4.1.3;

B. Calculate NMOC emissions using the next higher tier in conditions 4.3.1 through 4.3.5 and 4.1.7; or

C. Conduct a surface emission monitoring demonstration according to condition 4.3.5.

ii. The owner or operator shall submit a closure report per condition 4.5.5 if the landfill is permanently closed, except for the exemption allowed under paragraph 45CSR§23-7.2.d.4.

iii. If the most recently calculated NMOC emissions rate is equal to or greater than 50 megagrams per year for the closed landfill subcategory, the owner or operator shall either:

A. Submit a gas collection and control system design plan per 4.5.3, except for the exemptions allowed under paragraph 45CSR§23-7.2.d.3, and install a collection and control system per conditions 4.1.2 and 4.1.3;

B. Calculate NMOC emissions using the next higher tier in conditions 4.3.1 through 4.3.5 and 4.1.7; or

C. Conduct a surface emission monitoring demonstration according to the requirements of condition 4.3.5.

b. If the calculated NMOC emission rate is equal to or greater than 34 megagrams per year using Tier 1, 2, or 3 procedures, the owner or operator shall either:

1. Submit a collection and control system design plan prepared by a professional engineer to the Secretary within one year as required by condition 4.5.3, except for the exemption allowed under 45CSR§23-7.2.d.3.

2. Calculate the NMOC emissions using a higher tier in conditions 4.3.1 through 4.3.5 and 4.1.7; or

3. Conduct a surface emission monitoring demonstration according to the requirements under condition 4.3.5.

c. For the closed landfill subcategory, if the calculated NMOC emission rate is equal to or greater than 50 megagrams per year using Tier 1, 2, or 3 procedures, the owner or operator shall either:

1. Submit a collection and control system design plan as required by condition 4.5.3, except for the exemption allowed under 45CSR§23-7.2.d.3.

2. Calculate NMOC emissions using a higher tier in conditions 4.3.1 through 4.3.5 and 4.1.7; or

3. Conduct a surface emission monitoring demonstration according to the requirements under condition 4.3.5.

[45CSR§23-7.4.e]

4.1.5. Removal criteria -- The owner or operator may cap, remove, or decommission the collection and control system if the following criteria are met.

a. The landfill is a closed landfill and a closure report was submitted to the Secretary per condition 4.5.5;

b. The collection and control system has been in operation a minimum of 15 years, or the owner or operator can demonstrate that the gas collection and control system is unable to operate for 15 years due to declining gas flow;

c. The NMOC emission rate at the landfill is less than 34 megagrams per year on three successive test dates, calculated per condition 4.1.7.a. The test dates shall be a minimum of 90 days apart and a maximum of 180 days apart; and

d. The NMOC emission rate for the closed landfill subcategory is less than 50 megagrams per year on three successive test dates, as calculated per condition 4.1.7.a. The test dates shall be a minimum of 90 days apart and a maximum of 180 days apart

[45CSR§23-7.4.f]

4.1.6. Specifications for active collection systems.

a. To comply with condition 4.1.2, the owner or operator shall site active collection wells, horizontal collectors, surface collectors or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures, unless the Secretary has approved alternative procedures.

1. A professional engineer shall certify interior collection devices to achieve comprehensive control of surface gas emissions. The following factors shall be addressed in the design:

i. Depths of refuse;

ii. Refuse gas generation rates and flow characteristics;

iii. Cover properties;

iv. Gas system expandability;

v. Leachate and condensate management;

vi. Accessibility;

vii. Compatibility with filling operations;

viii. Integration with closure end use;

ix. Air intrusion control;

x. Corrosion resistance;

xi. Fill settlement;

xii. Resistance to the refuse decomposition heat; and

xiii. Ability to isolate individual components or sections for repair or troubleshooting without shutting down the entire collection system.

2. The sufficient density of gas collection devices determined in condition 4.1.6.a shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

3. The placement of gas collection devices shall control all gas producing areas, except as provided by conditions i and ii below.

i. Any segregated area of asbestos or nondegradable material may be excluded from collection if documented per condition 4.4.4. The documentation shall provide the nature, date of deposition, location, and amount of asbestos or nondegradable material deposited in the area and shall be provided to the Secretary upon request.

ii. Any nonproductive area of the landfill may be excluded from control, provided that the owner or operator demonstrates that the total of all excluded areas contributes less than one percent (1%) of the total amount of NMOC emissions from the landfill. The owner or operator shall document the amount, location, and age of the material and provide that information to the Secretary upon the Secretary's request. The owner or operator shall make a separate NMOC emissions estimate for each section proposed for exclusion and shall compare the sum of all such sections to the NMOC emissions estimate for the entire landfill.

A. The NMOC emissions from each section proposed for exclusion shall be calculated using Equation 1:

$$Q_i = 2kL_0M_i(e^{-kt_i})(C_{NMOC})(3.6 * 10^{-9})$$ *Equation (1)*

Where:
Q_i = NMOC emission rate from the i^{th} section, megagrams per year.
k = Methane generation rate constant, $year^{-1}$.
L_0 = Methane generation potential, cubic meters per megagram solid waste.
M_i = Mass of the degradable solid waste in the i^{th} section, megagram.
t_i = Age of the solid waste in the section, years.
C_{NMOC} = Concentration of NMOC, ppm by volume.
$3.6*10^{-9}$ = Conversion factor.

B. If the owner or operator proposes to exclude or cease gas collection and control from nonproductive, physically separated (e.g., separately lined), closed areas that already have gas collection systems, the owner or operator shall calculate NMOC emissions from each physically separated closed area using either Equation 4 in section 4.1.7 or Equation 1.

iii. The owner or operator shall use the values for k and C_{NMOC} determined by field testing if the owner or operator performed field testing to determine the NMOC emission rate or the radii of influence (the distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If the owner or

operator did not perform field testing, the owner or operator shall use the default values for k, L_o, and C_{NMOC} provided in condition 4.1.7 or the alternative values from condition 4.1.7. The owner or operator may subtract the mass of nondegradable solid waste contained within the given section from the total mass of the section when estimating emissions, provided that the owner or operator documents the nature, location, age, and amount of the nondegradable material per condition 4.1.6.a.3.i.

b. To comply with condition 4.1.2, the owner or operator shall construct the gas collection devices using the following equipment or procedures:

1. The owner or operator shall construct the landfill gas extraction components of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel or other nonporous corrosion resistant material of suitable dimensions to:

i. Convey projected amounts of gases;

ii. Withstand installation, static, and settlement forces; and

iii. Withstand planned overburden or traffic loads.

iv. The collection system shall extend as necessary to comply with emission and migration standards.

v. The collection devices such as wells and horizontal collectors shall be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. The perforations shall be situated to prevent excessive air infiltration.

2. Vertical wells shall:

i. Be placed to avoid endangering underlying liners; and

ii. Shall address the occurrence of water within the landfill.

3. Holes and trenches constructed for piped wells and horizontal collectors shall be a sufficient cross-section to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill.

4. Collection devices shall be designed to prohibit indirect short circuiting of air into the cover or refuse into the collection system or gas into the air.

5. The dimension of any gravel used around pipe perforations shall be sized not to penetrate or block the perforations.

6. Collection devices may be connected to the collection header pipes below or above the landfill surface.

i. The connector assembly surface emission monitor shall include a positive closing throttle valve, any necessary seals and couplings, access couplings, and at least one sampling port.

ii. The collection devices shall be constructed of PVC, HDPE, fiberglass, stainless steel or other nonporous material of suitable thickness to prevent discharge.

c. To comply with condition 4.1.3, the owner or operator shall convey the landfill gas through header piping to a control system in compliance with condition 4.1.3. The gas mover equipment shall be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment and shall meet the following requirements.

1. For existing collection systems, the flow data shall be used to project the maximum flow rate. If flow data does not exist, follow the requirements in 4.1.6.c.2.

2. For new collection systems, the maximum flow rate shall comply with condition 4.2.1.a.1.

d. Operational standards for collection and control systems. -- Each owner or operator shall comply with the operational standards in this condition and the requirements of subsections 4.2.1 and 4.2.2; or the operational standards from 40 CFR 63, subpart AAAA provided in 40 CFR § 63.1958 as well as the provisions in 40 CFR §§ 63.1960 and 63.1961; or both sets of requirements as an alternative means of compliance, for an MSWL with a gas collection and control system used to comply with conditions 4.1.2 and 4.1.3 Once the owner or operator begins to comply with the provisions of 40 CFR § 63.1958, the owner or operator shall continue to operate the collection and control device according to those provisions and cannot return to the requirements of this condition. Each owner or operator of an MSWL with a gas collection and control system used to comply with conditions 4.1.2 and 4.1.3 shall:

1. Operate the collection system such that gas is collected from each area, cell or group of cells in the MSWL that solid waste has been in place for:

i. Five years or more if active; or

ii. Two years or more if closed or at final grade.

2. Operate the collection system with negative pressure at each wellhead except under the following conditions:

i. A fire or increased well temperature. The owner or operator shall record instances when positive pressure occurs in efforts to avoid a fire. The owner or operator shall submit these records with the annual reports per condition 4.5.7.

ii. Use of a geomembrane or synthetic cover. The owner or operator shall develop acceptable pressure limits in the design plan to meet the requirements of condition 4.5.3.

iii. A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. The owner or operator shall obtain approval from the Secretary for all design changes per condition 4.5.3.

3. The owner or operator shall operate each interior wellhead in the collection system with a landfill gas temperature less than 55 degrees Centigrade (131 degrees Fahrenheit). The owner or operator may establish a higher value operating temperature at a particular well if the owner or operator satisfies all criteria below:

i. The owner or operator shall submit a higher operating value demonstration to the Secretary; and

ii. The supporting data shall demonstrate that the elevated parameter neither causes fires nor significantly inhibits anaerobic decomposition by killing methanogens; and

iii. The Secretary approved the higher value operating temperature.

4. The owner or operator shall operate the collection system to maintain the methane concentration below 500 ppm above the background at the landfill surface. To determine if this level is exceeded, the owner or operator shall:

i. Conduct surface testing using an organic vapor analyzer, flame ionization detector or other portable monitor meeting the specifications in subdivision 4.2.1.d;

ii. Conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at no more than 30-meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover and all cover penetrations;

iii. Monitor any openings that are within an area of the landfill where waste has been placed and a gas collection system is required; and

iv. Develop a surface monitoring design plan that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30-meter intervals.

v. To determine if the level established in condition 4.1.6.d.4. is exceeded, the owner or operator may:

A. Establish an alternative traversing pattern that ensures equivalent coverage; and

B. Exclude from the surface testing areas with steep slopes or other dangerous areas.

5. Vent all collected gases to a control system designed and operated in compliance with subdivision 4.1.3. In the event the collection or control system stops operating, the owner or operator shall:

i. Shut down the gas mover system; and

ii. Close all valves in the collection and control system contributing to venting of the gas to the atmosphere within one hour of the collection or control system not operating.

6. Operate the control system at all times when the collected gas is routed to the system.

7. Take corrective action as specified in conditions 4.2.1.a.3 and 4.2.1.a.4 or condition 4.2.1.c if monitoring demonstrates that the operational requirements in conditions 4.1.6.d.2, 4.1.6.d.3, or 4.1.6.d.4 are not satisfied. If the owner or operator takes corrective actions per condition 4.2.1, the Secretary shall not consider the monitored exceedance a violation of the operational requirements in this section.

[45CSR§23-7.5]

4.1.7.

a. The owner or operator shall calculate the NMOC emission rate after the installation and startup of a collection and control system to determine when the system can be capped, removed or decommissioned per condition 4.1.5., using Equation 4:

$$M_{NMOC} = 1.89\ x\ 10^{-3} Q_{LFG} C_{NMOC} \qquad Equation\ 4$$

Where:
M_{NMOC} = Mass emission rate of NMOC, megagrams per year.
Q_{LFG} = Flow rate of landfill gas, cubic meters per minute.
C_{NMOC} = NMOC concentration, ppm by volume as hexane.

1. The owner or operator shall determine the flow rate of landfill gas, Q_{LFG}, by measuring the total landfill gas flow rate at the common header pipe leading to the control system using a gas flow measuring device calibrated per section 10 of Method 2E of 40 CFR part 60, Appendix A and 45CSR16.

2. The owner or operator shall determine the average NMOC concentration, C_{NMOC}, by collecting and analyzing landfill gas sampled from the common header pipe prior to the gas moving or condensate removal equipment per Method 25 or 25C of 40 CFR part 60, Appendix A and 45CSR16. The sample location on the common header pipe shall be prior to any condensate removal or other gas refining units. The owner or operator shall divide the NMOC concentration from Method 25 or 25C by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.

3. The owner or operator may use another method to determine:

   i. Landfill gas flow rate if the owner or operator received prior approval for the alternate method by the Administrator; and

   ii. NMOC concentration if the owner or operator received prior approval for the alternate method by the Administrator.

4. The owner or operator shall submit the results from Equation 4 within 60 days after the date of calculating the NMOC emission rate per condition 4.5.9.b.

b. When calculating emissions for Prevention of Significant Deterioration purposes, the owner or operator shall estimate the NMOC emission rate for comparison to the Prevention of Significant Deterioration major source and significance levels in 45CSR14 using the Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (AP-42) or other approved measurement procedures.

c. For the performance test required by condition 4.1.3.b, the owner or operator shall calculate the net heating value of the combusted landfill gas as determined in 40 CFR § 60.18(f)(3) and 45CSR16 from the methane concentration in the landfill gas as measured by Method 3C of 40 CFR part 60, Appendix A and 45CSR16. The owner or operator shall take a minimum of three 30-minute Method 3C samples, but need not take the measurement of other organic components, hydrogen, and carbon monoxide. The owner or operator may use Method 3C to determine the landfill gas molecular weight for calculating the flare gas exit velocity under 40 CFR § 60.18(f)(4).

d. For the performance test required by condition 4.1.3.b, the owner or operator shall use Method 25 or 25C (the owner or operator may use Method 25C at the inlet only) of 40 CFR part 60, Appendix A and 45CSR16 to determine compliance with the 98 weight-percent efficiency or the 20 ppm by volume outlet NMOC concentration level, unless the owner or operator received prior approval by the Administrator for an alternative method per condition 4.5.3.b. The owner or operator shall use Method 3, 3A or 3C to determine oxygen for correcting the NMOC concentration as hexane to three percent. In cases where the outlet concentration is less than 50 ppm NMOC as carbon (eight ppm NMOC as hexane), the owner or operator shall use Method 25A in place of Method 25. The owner or operator may use Method 18 in conjunction with Method 25A on a limited basis (compound specific, e.g., methane) or Method 3C to determine methane. The owner or operator shall subtract methane as carbon from the Method 25A total hydrocarbon value as carbon to give NMOC concentration as carbon. The owner or operator shall divide the NMOC concentration as carbon by six to convert the C_{NMOC} as carbon to C_{NMOC} as hexane. The

owner or operator shall use Equation 5 to calculate efficiency:

$$Control\ Efficiency = \frac{(NMOC_{in} - NMOC_{out})}{(NMOC_{in})} \qquad Equation\ 5$$

Where:
$NMOC_{in}$ = Mass of NMOC entering control device.
$NMOC_{out}$= Mass of NMOC exiting control device.

e. Within 60 days after the date of completing each performance test according to conditions 4.1.7.c and 4.1.7.d, the owner or operator shall submit the performance test results required by conditions 4.1.7.a and 4.1.7.c including any associated fuel analyses per condition 4.5.9.a.

[45CSR§§23-7.6.b through 7.6.f]

4.1.8. Each owner or operator of an active waste disposal site that receives asbestos-containing waste material from a source covered under 40 C.F.R.§§61.149, 61.150, or 61.155 shall meet the following requirements:

a. Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of 4.1.8.c or 4.1.8.d. must be met.

b. Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of 4.1.8.c.1. must be met.

1. Warning signs must be displayed at all entrances and at intervals of 100 m (330 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:

i. Be posted in such a manner and location that a person can easily read the legend; and

ii. Conform to the requirements of 51 cm × 36 cm (20″ × 14″) upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

iii. Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	**Notation**
Asbestos Waste Disposal Site	2.5 cm (1 inch) Sans Serif, Gothic or Block.
Do Not Create Dust	1.9 cm (3/4 inch) Sans Serif, Gothic or Block.
Breathing Asbestos is Hazardous to Your Health	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

2. The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public.

3. Upon request and supply of appropriate information, the Secretary will determine whether a fence or a natural barrier adequately deters access by the general public.

c. Rather than meet the no visible emission requirement of 4.1.8.a, at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall:

1. Be covered with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, or

2. Be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Such an agent shall be used in the manner and frequency recommended for the particular dust by the dust suppression agent manufacturer to achieve and maintain dust control. Other equally effective dust suppression agents may be used upon prior approval by the Secretary. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent.

d. Rather than meet the no visible emission requirement of 4.1.8.a, use an alternative emissions control method that has received prior written approval by the Secretary according to the procedures described in 40 C.F.R. §61.149(c)(2).

e. For all asbestos-containing waste material received, the owner or operator of the active waste disposal site shall:

1. Maintain waste shipment records, using a form similar to that shown in Appendix B, and include the following information:

i. The name, address, and telephone number of the waste generator.

ii. The name, address, and telephone number of the transporter(s).

iii. The quantity of the asbestos-containing waste material in cubic meters (cubic yards).

iv. The presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers. Report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the disposal site, by the following working day, the presence of a significant amount of improperly enclosed or uncovered waste. Submit a copy of the waste shipment record along with the report.

v. The date of the receipt.

2. As soon as possible and no longer than 30 days after receipt of the waste, send a copy of the signed waste shipment record to the waste generator.

3. Upon discovering a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received, attempt to reconcile the discrepancy with the waste generator. If the discrepancy is not resolved within 15 days after receiving the waste, immediately report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or EPA Regional office responsible for administering the asbestos

NESHAP program for the disposal site. Describe the discrepancy and attempts to reconcile it, and submit a copy of the waste shipment record along with the report.

4. Retain a copy of all records and reports required by this paragraph for at least 2 years.

f. Maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area.

g. Upon closure, comply with all the provisions of 40 C.F.R. §61.151.

h. Submit to the Secretary, upon closure of the facility, a copy of records of asbestos waste disposal locations and quantities.

i. Furnish upon request, and make available during normal business hours for inspection by the Secretary, all records required under this section.

j. Notify the Secretary in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Administrator at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:

1. Scheduled starting and completion dates.

2. Reason for disturbing the waste.

3. Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Administrator may require changes in the emission control procedures to be used.

4. Location of any temporary storage site and the final disposal site.

[45CSR34, 40 C.F.R. §61.154]

4.2. Monitoring Requirements

4.2.1. Compliance requirements. Each owner or operator shall comply with the compliance requirements in this condition and the requirements in conditions 4.1.6.d and 4.2.2; or the compliance provisions from 40 CFR 63, subpart AAAA provided in 40 CFR § 63.1960, as well as the provisions in 40 CFR §§ 63.1958 and 63.1961; or both sets of requirements as an alternative means of compliance, for an MSWL with a gas collection and control system used to comply with subdivisions 4.1.2 and 4.1.3. Once the owner or operator begins to comply with the provisions of 40 CFR § 63.1960, the owner or operator shall continue to operate the collection and control device according to those provisions and cannot return to the requirements of this subsection.

a. The owner or operator shall use the specified methods in conditions 4.2.1.a.1 through 4.2.1.a.6, except as provided in condition 4.5.3.b, to determine whether the gas collection system is in compliance with condition 4.1.2.b.

1. To determine compliance with condition 4.1.2.b.1, the owner or operator shall use either Equation 6 or Equation 7 to calculate the maximum expected gas generation flow rate from the landfill. The owner or operator shall use the methane generation rate constant (k) and methane generation potential (Lo) kinetic factors published in the most recent AP-42 or other site specific values the owner or operator has demonstrated to be appropriate and that the Secretary has approved. The owner or operator shall use the value of k determined from the test if k was determined as specified in condition 4.3.3. The owner or operator shall use a value of no more than 15 years for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure.

   i. For sites with unknown year-to year solid waste acceptance rate:

$$Q_m = 2L_o\,R(e^{-kc} - e^{-kt}) \qquad Equation\ 6$$

   Where:
   Q_m = Maximum expected gas generation flow rate, cubic meters per year.
   L_o = Methane generation potential, cubic meters per megagram solid waste.
   R = Average annual acceptance rate, megagrams per year.
   k = Methane generation rate constant, $year^{-1}$.
   t = Age of the landfill at equipment installation plus the time the owner or operator intends to use the gas mover equipment or active life of the landfill, whichever is less. If the equipment is installed after closure, t is the age of the landfill at installation, years.
   c = Time since closure, years (for an active landfill c = 0 and e^{-kc} =1).

   ii. For sites with known year-to-year solid waste acceptance rate:

$$Q_m = \sum_{i=1}^{n} 2kL_o\,M_i(e^{-kt_i}) \qquad Equation\ 7$$

   Where:
   Q_m = Maximum expected gas generation flow rate, cubic meters per year.
   k = Methane generation rate constant, $year^{-1}$.
   L_o = Methane generation potential, cubic meters per megagram solid waste.
   M_i= Mass of solid waste in the i^{th} section, megagrams.
   t_i= Age of the i^{th} section, years.

   iii. The owner or operator may use the actual flow data to project the maximum expected gas generation flow rate instead of, or in conjunction with, Equation 6 or Equation 7 if the owner or operator installed a collection and control system. If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so the owner or operator shall use calculations using Equation 6 or Equation 7 or other methods to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment.

2. To demonstrate compliance with condition 4.1.2.b.2 determining the sufficient density of gas collectors, the owner or operator shall design a system of vertical wells, horizontal collectors or other collection devices satisfactory to the Secretary that is capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards.

3. To demonstrate compliance with condition 4.1.2.b.3, the owner or operator shall measure gauge pressure in the gas collection header applied to each individual well monthly to determine whether the gas collection system flow rate is sufficient. If a positive pressure exists, the owner or operator shall initiate action to correct the exceedance within five calendar days, except for the three

conditions allowed under condition 4.1.6.d.2 below. The owner or operator shall not cause exceedances of other operational or performance standards by use of any attempted corrective measure.

i. If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement of positive pressure, the owner or operator shall conduct a root cause analysis and correct the exceedance as soon as practicable, but not later than 60 days after the first measure of positive pressure. The owner or operator shall keep records per condition 4.4.5.c below.

ii. If the owner or operator cannot fully implement corrective actions within 60 days following the positive pressure or elevated temperature measurement for which the root cause analysis was required, the owner or operator shall conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the measurement of landfill gas temperature greater than 55 degrees Celsius (131 degrees Fahrenheit) or positive pressure measurement. The owner or operator shall keep records per condition 4.4.5.d below and submit the items required by condition 4.5.7.g in the next annual report.

iii. If the owner or operator expects corrective action to take longer than 120 days after the initial exceedance to complete, the owner or operator shall submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Secretary according to conditions 4.5.7.g and 4.5.10 and keep records according to condition 4.4.5.e.

4. To determine whether excess air infiltration into the landfill is occurring, the owner or operator shall monitor each well monthly for temperature according to condition 4.1.6.d.3. If a well exceeds the operating parameter for temperature, the owner or operator shall initiate action to correct the exceedance within five calendar days. Attempted corrective measures shall not cause exceedances of other operational or performance standards.

i. If the owner or operator cannot achieve a landfill gas temperature less than 55 degrees Celsius (131 degrees Fahrenheit) within 15 calendar days of the first measurement of landfill gas temperature greater than 55 degrees Celsius (131 degrees Fahrenheit), the owner or operator shall conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after the first measurement of landfill gas temperature greater than 55 degrees Celsius (131 degrees Fahrenheit). The owner or operator shall maintain records per condition 4.4.5.c below.

ii. If the owner or operator cannot fully implement corrective actions within 60 days following the measurement for which the root cause analysis was required, the owner or operator shall also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the measurement of landfill gas temperature greater than 55 degrees Celsius (131 degrees Fahrenheit). The owner or operator shall maintain records per condition 4.4.5.d and submit the information listed in condition 4.5.7.g in the next annual report.

iii. If the owner or operator expects corrective action to take longer than 120 days after the initial exceedance to complete, the owner or operator shall submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Secretary according to condition 4.5.7.g and condition 4.5.10 and maintain records per condition 4.4.5.e.

5. An owner or operator seeking to demonstrate compliance with condition 4.1.2.b.4 through the use of a collection system that does not meet the specifications of subdivision 4.1.6 shall provide

information satisfactory to the Administrator according to 4.5.3.c demonstrating that the owner or operator is controlling off-site migration.

b. To comply with condition 4.1.6.d.1, the owner or operator shall place each well or design component as specified in the approved design plan per condition 4.5.3. The owner or operator shall install each well no later than 60 days after the date on which the initial solid waste has been in place for a period of:

1. Five years or more if active; or

2. Two years or more if closed or at final grade.

c. To comply with the surface methane operational standard of condition 4.1.6.d.4, the owner or operator shall follow the procedures listed below:

1. Monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at no more than 30 meter intervals (or a site-specific established spacing), after installation and startup of the gas collection system, for each collection area on a quarterly basis using an organic vapor analyzer, flame ionization detector or other portable monitor that meets the specifications in condition 4.2.1.d;

2. Determine the background concentration by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells;

3. Monitor surface emissions during typical meteorological conditions and according to section 8.3.1 of Method 21 of 40 CFR part 60, Appendix A and 45CSR16, except that the probe inlet shall be placed within five to ten centimeters of the ground;

4. Record any reading of 500 ppm or more above background at any location as a monitored exceedance and take the actions specified below. If the owner or operator takes the below-specified actions, the Secretary shall not consider the exceedance a violation of the operational requirements of condition 4.1.6.d.4. The owner or operator shall:

i. Mark the location of each monitored exceedance and record the location and concentration by determining location using the latitude and longitude coordinates found by an instrument with an accuracy of at least four meters and written in decimal degrees with at least five decimal places;

ii. Perform cover maintenance or adjust the vacuum of the adjacent wells to increase gas collection in the vicinity of each exceedance and re-monitor the location within ten calendar days of detecting the exceedance;

iii. Take additional corrective action if the re-monitoring of the location shows a second exceedance and monitor the location again within ten days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, stop monitoring and take the action specified under condition 4.2.1.c.4.v;

iv. Re-monitor one month from the initial exceedance any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the ten-day re-monitoring specified above. If the one month re-monitoring shows a concentration less than 500 ppm above background, then the owner or operator is not required to perform further monitoring of that location until the next quarterly monitoring period. If the one-month re-monitoring shows an exceedance, the owner or operator shall take the actions specified under conditions 4.2.1.c.4.iii or 4.2.1.c.4.v; and

v. For any location where monitored methane concentration equals or exceeds 500 ppm above background three times within a quarterly period, the owner or operator shall install a new well or other collection device within 120 calendar days of the initial exceedance. The owner or operator may submit to the Secretary for approval an alternative solution to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation.

5. Implement a program to monitor cover integrity on a monthly basis and implement cover repairs as necessary.

d. The owner or operator shall meet the following instrumentation specifications and procedures for surface emission monitoring devices to comply with the provisions in conditions 4.2.1.c or 4.3.5:

1. The portable analyzer shall meet the instrument specifications of section 6 of Method 21 of 40 CFR part 60, Appendix A and 45CSR16 except that "methane" replaces all references to "VOC";

2. The calibration gas shall be methane, diluted to a nominal concentration of 500 ppm in air;

3. To meet the performance evaluation requirements in section 8.1 of Method 21 of 40 CFR part 60, Appendix A and 45CSR16, use the instrument evaluation procedures of section 8.1 of Method 21; and

4. Follow the calibration procedures in sections 8 and 10 of Method 21 of 40 CFR part 60, Appendix A and 45CSR16 immediately before starting a surface monitoring survey.

e. The provisions of 45CSR§23-7 apply at all times, including periods of startup, shutdown, or malfunction. During periods of startup, shutdown or malfunction, the owner or operator shall comply with the work practice specified in condition 4.1.6.d.5 in lieu of the compliance provisions of this condition.

[45CSR§23-7.7]

4.2.2. Monitoring requirements. Each owner or operator shall comply with the monitoring requirements in this condition except as provided in condition 4.5.3.b, the requirements of subdivision 4.1.6.d and condition 4.2.1; or the monitoring provisions from 40 CFR 63, subpart AAAA provided in 40 CFR § 63.1961, as well as the provisions in 40 CFR §§ 63.1958 and 63.1960; or both sets of requirements as an alternative means of compliance, for an MSWL with a gas collection and control system used to comply with subdivisions 4.1.2 and 4.1.3. Once the owner or operator begins to comply with the provisions of 40 CFR § 63.1961, the owner or operator shall continue to operate the collection and control device according to those provisions and cannot return to the requirements of this subsection.

a. To comply with condition 4.1.2.b. for an active gas collection system, the owner or operator shall install a sampling port and a thermometer, other temperature measuring device or an access port for temperature measurements at each wellhead and:

1. Measure the gauge pressure in the gas collection header monthly per condition 4.2.1.a.3; and

2. Monitor nitrogen or oxygen concentration in the landfill gas monthly as follows:

i. Determine the nitrogen level using Method 3C of 40 CFR part 60, Appendix A and 45CSR16, unless the owner or operator establishes an alternative test method as allowed by condition 4.5.3.b;

ii. Determine the oxygen level using an oxygen meter using Method 3A, 3C or ASTM D6522-11 (if sample location is prior to combustion) unless the owner or operator establishes an alternative test method as allowed by condition 4.5.3.b, except that:

A. The span shall be set between ten percent and 12 percent oxygen;

B. A data recorder is not required;

C. Only two calibration gases are required, a zero and span;

D. A calibration error check is not required; and

E. The allowable sample bias, zero drift, and calibration drift are plus or minus 10 percent.

iii. Use a portable gas composition analyzer to monitor the oxygen levels: provided, that:

A. The analyzer is calibrated; and

B. The analyzer meets all quality assurance and quality control requirements for Method 3A or ASTM D6522-11.

3. Monitor the temperature of the landfill gas on a monthly basis per condition 4.2.1.a.4, calibrating the temperature measuring device annually using the procedure in section 10.3 of Method 2 of 40 CFR part 60, Appendix A-1 and 45CSR16.

b. If the owner or operator seeks to comply with condition 4.1.3 using an enclosed combustor, the owner or operator shall calibrate, maintain, and operate the following equipment according to the manufacturer's specifications:

1. A temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of plus or minus one percent of the temperature being measured expressed in degrees Celsius or plus or minus 0.5 degrees Celsius, whichever is greater. A temperature monitoring device is not required for boilers or process heaters with design heat input capacity equal to or greater than 44 megawatts;

2. For a device that records flow to the control device and bypass of the control device (if applicable), the owner or operator shall:

i. Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the control device at least every 15 minutes; and

ii. Secure the bypass line valve in the closed position with a car-seal or a lock and key type configuration, performing a visual inspection of the seal or closure mechanism at least once every month to ensure that the valve is maintained in the closed position and the gas flow is not diverted through the bypass line.

c. If the owner or operator chooses to comply with condition 4.1.3 using a non-enclosed flare, the owner or operator shall install, calibrate, maintain, and operate the following equipment according to the manufacturer’s specifications:

1. A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame;

2. For a device that records flow to the flare and bypass of the flare (if applicable), the owner or operator shall:

   i. Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the control device at least every 15 minutes; and

   ii. Secure the bypass line valve in the closed position with a car-seal or a lock and key type configuration, performing a visual inspection of the seal or closure mechanism at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

d. If the owner or operator chooses to comply with condition 4.1.3 using a device other than a non-enclosed flare or an enclosed combustor or a treatment system, the owner or operator shall provide information per condition 4.5.3.b to the Administrator that describes the operation of the control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Administrator shall review the information and either approve it or request that the owner or operator submit additional information. The Administrator may specify additional appropriate monitoring procedures.

e. If the owner or operator chooses to install a collection system that does not meet the specifications of condition 4.1.6.a through c or seeks to monitor alternative parameters to those required by conditions 4.1.6.d, 4.1.7, 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.2.1, and 4.2.2, the owner or operator shall provide information satisfactory to the Administrator as provided in conditions 4.5.3.b and 4.5.3.c describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Administrator may specify additional appropriate monitoring procedures.

f. To demonstrate compliance with the 500 ppm surface methane operational standard in condition 4.1.6.d.4, the owner or operator shall monitor surface concentrations of methane according to the requirements of condition 4.2.1.c and the instrument specifications of condition 4.2.1.d. The owner or operator may change to annual monitoring of any closed landfill that does not have monitor exceedances of the operational standard in three consecutive quarterly monitoring periods. If the owner or operator detects any methane reading of 500 ppm or more above background during the annual monitoring, the owner or operator shall resume quarterly monitoring.

g. To demonstrate compliance with the control system requirements in condition 4.1.3 using a landfill gas treatment system, the owner or operator shall maintain and operate all monitoring systems associated with the treatment system according to the site-specific treatment system monitoring plan per condition 4.4.2.e.2. The owner or operator shall calibrate, maintain, and operate a device that records flow to the treatment system and bypass of the treatment system, if applicable, according to the manufacturer's specifications by:

   1. Installing, calibrating, and maintaining a gas flow rate measuring device that records the flow to the treatment system at least every 15 minutes; and

   2. Securing the bypass line valve in the closed position with a car-seal or a lock and key type configuration, performing a visual inspection of the seal or closure mechanism at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

h. The monitoring requirements of conditions 4.2.2.b, 4.2.2.c, 4.2.2.d, and 4.2.2.g apply at all times the affected source is operating, except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality

control activities. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. The owner or operator is required to complete monitoring system repairs in response to monitoring system malfunctions and to return the monitoring system to operation as expeditiously as practicable.
[45CSR§23-7.8]

4.2.3. The permittee shall comply with the Landfill Gas Collection and Control System design plan approved on November 18, 2020 (see Appendix A).

4.3. Testing Requirements

4.3.1. NMOC emission rate:

a. The owner or operator shall calculate the NMOC emission rate using either Equation 2 or Equation 3 below:

b. The owner or operator may use both Equation 2 and Equation 3 if:

1. The owner or operator knows the actual year-to-year solid waste acceptance rate for part of the life of the landfill; or

2. The owner or operator does not know the actual year-to-year solid waste acceptance rate for part of the life of the landfill.

c. The owner or operator shall use the following values in both Equation 2 and Equation 3:

1. k is 0.05 per year,

2. L_o is 170 cubic meters per megagram and

3. C_{NMOC} is 4,000 ppm by volume as hexane

4. If the landfill is located in geographical areas with a 30-year annual average precipitation of less than 25 inches, as measured at the nearest representative official meteorological site, the k value is 0.02 per year.

d. The owner or operator shall use Equation 2 if the actual year-to-year solid waste acceptance rate is known. When calculating the value for Mi, the owner or operator may subtract the mass of nondegradable solid waste from the total mass of solid waste in a particular section of the landfill, if the owner or operator maintains documentation of the nature and amount of such wastes.

$$M_{NMOC} = \sum_{i=1}^{n} 2kL_oM_i\,(e^{-kt_i})(C_{NMOC})(3.6\ x\ 10^{-9}) \qquad Equation\ 2$$

Where:

M_{NMOC} = Total NMOC emission rate from the landfill, megagrams per year.
k = Methane generation rate constant, $year^{-1}$.
L_o = Methane generation potential, cubic meters per megagram solid waste.
M_i = Mass of solid waste in the i^{th} section, megagrams.

t_i = Age of the i^{th} section, years.
C_{NMOC} = Concentration of NMOC, ppm by volume as hexane.
3.6×10^{-9} = Conversion factor.

e. The owner or operator shall use Equation 3 if the actual year-to-year solid waste acceptance rate is unknown. When calculating the value of R, the owner or operator may subtract the mass of nondegradable solid waste from the total mass of solid waste in a particular section of the landfill, if the owner or operator maintains documentation of the nature and amount of such wastes.

$$M_{NMOC} = 2L_o R(e^{-kc} - e^{-kt})C_{NMOC}(3.6\ x\ 10^{-9}) \qquad Equation\ 3$$

Where:
M_{NMOC} = Mass emission rate of NMOC, megagrams per year.
L_o = Methane generation potential, cubic meters per megagram solid waste.
R = Average annual acceptance rate, megagrams per year.
k = Methane generation rate constant, $year^{-1}$.
t = Age of landfill, years.
C_{NMOC} = Concentration of NMOC, ppm by volume as hexane.
c = Time since closure, years; for an active landfill c = 0 and $e^{-kc} = 1$.
3.6×10^{-9} = Conversion factor.

f. Tier 1 procedures. -- The owner or operator shall compare the calculated NMOC mass emission rate to the standard of 34 megagrams per year:

1. If the owner or operator calculates the NMOC emission rate by the methods specified in conditions 4.3.1.a through 4.3.1.c and it is less than 34 megagrams per year, then the owner or operator shall submit an NMOC emission rate report according to condition 4.5.2. and shall recalculate the NMOC mass emission rate annually as required by condition 4.5.4.

2. If the owner or operator calculates the NMOC emission rate by the methods specified in conditions 4.3.1.a through 4.3.1.c and it is equal to or greater than 34 megagrams per year, then the owner or operator shall either:

i. Submit a gas collection and control system design plan within one year as specified in condition 4.5.3 and install and operate a gas collection and control system within 30 months according to conditions 4.1.2 and 4.1.3; or

ii. Determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the Tier 2 procedures in condition 4.3.1.g; or

iii. Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the Tier 3 procedures in condition 4.3.3.

g. Tier 2 procedures -- NMOC calculation. The owner or operator shall determine the site specific NMOC concentration using the following sampling procedure:

1. Install a minimum of two sample probes per hectare, evenly distributed over the landfill surface that has retained waste for at least two years;

2. If the landfill is larger than 25 hectares in area, the owner or operator is required to take only 50 samples, with the probes evenly distributed across the sample area;

3. The owner or operator should locate the sample probes so as to avoid known areas of nondegradable solid waste;

4. The owner or operator shall collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using Method 25 or 25C of 40 CFR part 60, Appendix A and 45CSR16;

5. The owner or operator may take composite samples from different probes into a single cylinder: provided, that the owner or operator takes equal sample volumes from each probe and:

   i. The owner or operator shall record the sampling rate, collection times, beginning and ending cylinder vacuums or alternative volume measurements for each composite to verify that composite volumes are equal;

   ii. Composite sample volumes should not be less than one liter unless the owner or operator can provide evidence to substantiate the accuracy of smaller volumes; and

   iii. The owner or operator shall terminate compositing before the cylinder approaches ambient pressure when the measurement accuracy diminishes.

6. If the owner or operator takes more than the required number of samples, the owner or operator shall use all samples in the analysis.

7. The owner or operator shall divide the NMOC concentration from Method 25 or 25C by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.

8. If the landfill has an active or passive gas removal system in place, the owner or operator may collect Method 25 or 25C samples from these systems instead of surface probes: provided, that the owner or operator can demonstrate that the removal system sampling is as representative as the two sampling probes per hectare requirement of condition 4.3.1.g.1.

9. If the landfill has active collection systems, the owner or operator may collect samples from the common header pipe according to the following:

   i. The owner or operator shall use a sample location upstream from any gas moving, condensate removal or treatment system equipment; and

   ii. The owner or operator shall collect a minimum of three samples.

[45CSR§§23-7.6.a.1 through 7.6.a.7]

4.3.2. Tier 2 procedures.

a. The owner or operator shall submit the NMOC concentration results and the NMOC mass emission rate per condition 4.5.9.b within 60 days from the date the owner or operator determined the NMOC concentration and corresponding NMOC emission rate.

b. The owner or operator shall recalculate the NMOC mass emission rate using Equation 2 or Equation 3 using the average site-specific NMOC concentration from the collected samples instead of the default value provided in condition 4.3.1.c.

c. If the resulting NMOC mass emission rate is less than 34 megagrams per year, the owner or operator shall submit an estimate of NMOC emissions in the NMOC emission rate report according to condition 4.5.2 and shall recalculate the NMOC mass emission rate annually per condition 4.1.4. The owner or operator shall retest the site-specific NMOC concentration every five years using the methods specified in conditions 4.3.1 through 4.3.5 and 4.1.7.

d. If the owner or operator calculates the NMOC mass emission rate using the Tier 2 site specific NMOC concentration and it is equal to or greater than 34 megagrams per year, the owner or operator shall either:

1. Submit a gas collection and control system design plan within one year per condition 4.5.3 and install and operate a gas collection and control system within 30 months per conditions 4.1.2 and 4.1.3;

2. Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the site specific methane generation rate using the Tier 3 procedures specified in condition 4.3.3.; and

3. Conduct a surface emission monitoring demonstration using the Tier 4 procedures specified in condition 4.3.5.

[45CSR§23-7.6.a.8]

4.3.3. Tier 3 procedures. -- Site specific methane generation rate constant. The owner or operator shall:

a. Determine the site-specific methane generation rate constant using the procedures in Method 2E of 40 CFR part 60, Appendix A and 45CSR16;

b. Estimate the NMOC mass emission rate using Equation 2 or Equation 3 with the site-specific methane generation rate constant and the site-specific NMOC concentration as determined in condition 4.3.1.g;

c. Compare the resulting NMOC mass emission rate to the standard of 34 megagrams per year;

d. If the NMOC mass emission rate calculated using the Tier 2 site specific NMOC concentration and the Tier 3 site specific methane generation rate is equal to or greater than 34 megagrams per year, either:

1. Submit a gas collection and control system design plan within one year as per condition 4.5.3 and install and operate a gas collection and control system within 30 months according to conditions 4.1.2 and 4.1.3; or

2. Conduct a surface emission monitoring demonstration using the Tier 4 procedures specified in condition 4.3.5.

e. If the NMOC mass emission rate is less than 34 megagrams per year, the owner or operator shall:

1. Recalculate the NMOC mass emission rate annually using Equation 2 or Equation 3, using the site-specific Tier 2 NMOC concentration and the Tier 3 methane generation rate constant; and

2. Submit the NMOC emission rate report per condition 4.5.2.

f. Use the value obtained for the methane generation rate constant in all subsequent annual NMOC emission rate calculations. The methane generation rate constant is calculated only once.

[45CSR§23-7.6.a.9]

4.3.4. Other methods. -- The owner or operator may use other methods to determine the NMOC concentration or a site specific methane generation rate constant as an alternative to the methods required by conditions 4.3.1.c and 4.3.1.d if the Administrator approved the method in advance.

[45CSR§23-7.6.a.10]

4.3.5. Tier 4 procedures. -- Surface emission monitoring demonstration

a. Applicability. The owner or operator shall only use Tier 4 procedures if the owner or operator can

demonstrate the following for the unit:

1. Surface methane emissions are below 500 ppm;

2. NMOC emissions are greater than or equal to 34 Mg/yr but less than 50 Mg/yr using Tier 1 or Tier 2 procedures;

3. The landfill meets the requirements of condition 4.3.5.j below; and

4. NMOC emissions are less than 50 Mg/yr as indicated by both Tier 1 and Tier 2; if NMOC emissions are greater than 50 Mg/yr, the owner or operator shall not use Tier 4.

b. The owner or operator shall conduct surface emission monitoring quarterly according to the requirements in condition 4.3.5.

c. The owner or operator shall measure methane surface concentrations using an organic vapor analyzer, flame ionization detector or other portable monitor that meets the requirements of condition 4.2.1.d along the entire perimeter of the landfill and along a pattern that traverses the landfill at less than 30 meter intervals.

d. The owner or operator shall determine the background concentration by moving the probe inlet upwind and downwind at least 30 meters from the waste mass boundary of the landfill.

e. The owner or operator shall perform surface emission monitoring per section 8.3.1 of Method 21 of 40 CFR part 60, Appendix A and 45CSR16, except that the probe inlet shall be placed no more than five centimeters above the landfill surface and measured with a mechanical device such as a wheel on a pole.

1. The owner or operator shall use a wind barrier, similar to a funnel, when onsite average wind speed exceeds four miles per hour or two meters per second or gusts exceeding ten miles per hour. The owner or operator shall also determine average on-site wind speed in an open area at five minute intervals using an on-site anemometer with a continuous recorder and data logger for the entire duration of the monitoring event. The wind barrier shall surround the surface emission monitor and shall be placed on the ground to ensure wind turbulence is blocked. The owner or operator shall not conduct surface emission monitoring if average wind speed exceeds 25 miles per hour.

2. The owner or operator shall monitor landfill surface areas using a device that meets the specifications of condition 4.2.1.d where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover, and all cover penetrations.

f. The owner or operator shall maintain records of surface emission monitoring per condition 4.4.6 and submit a Tier 4 surface emissions report per condition 4.5.3.d.3.

g. The owner or operator shall submit a gas collection and control system design plan if there is any measured methane 500 ppm or greater from the surface of the landfill within one year of the first measured methane concentration of 500 ppm or greater from the surface of the landfill according to condition 4.5.3. The owner or operator shall install and operate a gas collection and control system according to conditions 4.1.2 and 4.1.3 within 30 months of the most recent NMOC emission rate report in which the NMOC emission rate equals or exceeds 34 megagrams per year based on Tier 2 requirements.

h. After four consecutive quarterly monitoring periods at a landfill, other than a closed landfill, if there is no measured methane concentration of 500 ppm or greater from the landfill surface, the owner or operator shall continue quarterly surface emission monitoring per Tier 4 requirements.

i. After four consecutive quarterly monitoring periods at a closed landfill, if there is no measured methane concentration of 500 ppm or greater from the landfill surface, the owner or operator shall conduct annual surface emission monitoring using the Tier 4 methods.

j. If the owner or operator installed and operated a collection and control system that is not required by 45CSR§23-7, then the collection and control system shall meet the following criteria:

1. Preceding the Tier 4 surface emissions monitoring demonstration, the gas collection and control system shall have operated for a minimum 6,570 out of 8,760 hours; and

2. During the Tier 4 surface emissions monitoring demonstration, the gas collection and control system shall operate as it would normally to collect and control as much landfill gas as possible.

[45CSR§23-7.6.a.11]

4.4. Recordkeeping Requirements

4.4.1. Except as provided in condition 4.5.3.b, each owner or operator of an MSWL subject to the provisions of condition 4.1.4 shall keep on-site records of the design capacity report that triggered condition 4.1.5, the current amount of solid waste in place, and the year-by-year waste acceptance rate for at least five years up-to-date, readily accessible. The owner or operator may maintain off-site records if they are retrievable within four hours. Either paper copy or electronic formats are acceptable.
[45CSR§23-7.10.a]

4.4.2. Except as provided in condition 4.5.3.b, the owner or operator shall of a controlled landfill keep up-to-date, readily accessible records for the life of the control system equipment of the data listed in conditions a through e below, as measured during the initial performance test or compliance determination. The owner or operator shall maintain records of subsequent tests or monitoring for a minimum of five years. Records of the control device vendor specifications shall be maintained until the control device is removed.

a. To demonstrate compliance with the collection system requirements of condition 4.1.2, the owner or operator shall keep a record of:

1. The maximum expected gas generation flow rate as calculated in condition 4.2.1.a.1. If the Administrator approved another method to determine the maximum gas generation flow rate, the owner or operator may use the other method; and

2. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined per condition 4.1.6.a.1.

b. To demonstrate compliance with the control system requirements of condition 4.1.3 through the use of an enclosed combustion device other than a boiler or process heater with a design heat input capacity equal to or greater than 44 megawatts, the owner or operator shall keep a record of:

1. The average temperature measured at least every 15 minutes and averaged over the same time period of the performance test; and

2. The percent reduction of NMOC achieved by the control device determined per condition 4.1.3.b.

c. To demonstrate compliance with condition 4.1.3.a through the use of a non-enclosed flare, the owner or operator shall keep a record of the flare type (i.e., steam assisted, air-assisted or non-assisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit

velocity determinations made during the performance test, as specified in 40 CFR § 60.18, as well as continuous records of the flare pilot flame or flare flame monitoring and records of all periods of operations during which the pilot flame or the flare flame is absent.

d. To demonstrate compliance with condition 4.1.3.b.1 through the use of a boiler or process heater of any size the owner or operator shall keep a record including a description of the location where the collected gas vent stream is introduced into the boiler or process heater over the same time period of the performance testing.

e. To demonstrate compliance with condition 4.1.3.c through the use of a landfill treatment system the owner or operator shall keep:

1. Bypass records. – Records of the flow of landfill gas to, and bypass of, the treatment system; and

2. A site-specific treatment monitoring plan, to include:

i. Monitoring records of parameters identified in the treatment system monitoring plan and that ensure the treatment system is operating properly for each intended end use of the treated landfill gas. At a minimum, the owner or operator shall include records of filtration, de-watering, and compression parameters that ensure the treatment system is operating properly for each intended end use of the treated landfill gas;

ii. Monitoring methods, frequencies, and operating ranges for each monitored operating parameter based on manufacturer's recommendations or engineering analysis for each intended end use of the treated landfill gas;

iii. Documentation of the monitoring methods and ranges, along with justification for their use;

iv. Identification of who is responsible (by job title) for data collection;

v. Documentation of processes and methods used to collect the necessary data; and

vi. Description of the procedures and methods that are used for quality assurance, maintenance, and repair of all continuous monitoring systems.

[45CSR§23-7.10.b]

4.4.3. Except as provided in condition 4.5.3.b, the owner or operator shall keep for five years up-to-date, readily accessible, continuous records of the equipment operating parameters required by condition 4.2.2, as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded.

a. The following constitute exceedances that the owner or operator shall record and report under section 4.5:

1. For enclosed combustors, except for boilers and process heaters with design heat input capacity greater than 44 megawatts (150 million British thermal unit per hour), all three-hour periods of operation that the average temperature was more than 28 degrees Celsius (82 degrees Fahrenheit) below the average combustion temperature that the owner or operator determined compliance with condition 4.1.3 during the most recent performance test; and

2. For boilers or process heaters, whenever there is a change in the location where the vent stream is introduced into the flame zone per condition 4.4.2.c.

b. The owner or operator shall keep up-to-date, readily accessible, continuous records of the indication of flow to the control system and the indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines, per condition 4.2.2.

c. If the owner or operator uses a boiler or process heater with a design heat input capacity greater than 44 megawatts to comply with condition 4.1.3, the owner or operator shall keep an up-to-date, readily accessible record of all periods of operation of the boiler or process heater (e.g. records of steam use, fuel use or monitoring data collected pursuant to other State, local, tribal or federal regulatory requirements).

d. Each owner or operator seeking to comply with the provisions of 45CSR§23-7 by use of a non-enclosed flare shall keep up-to-date, readily accessible, continuous records of the flame or flare pilot flame monitoring required by condition 4.2.2.c, and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent.

e. Each owner or operator seeking to comply with condition 4.1.4 using an active collection system designed per condition 4.1.2, shall keep records of periods when the collection system or control device is not operating.

[45CSR§23-7.10.c]

4.4.4. The owner or operator shall keep an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label on each collector that matches the labeling on the plot map for the life of the collection system, except as provided in condition 4.5.3.b. The owner or operator shall keep:

a. Up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified under subdivision 4.2.1.b.; and

b. Readily accessible documentation of the nature, date of deposition, amount, and location of asbestos containing or nondegradable waste excluded from collection under part 4.1.6.a.3.i and any nonproductive areas excluded from collection under part 4.1.6.a.3.ii.

[45CSR§23-7.10.d]

4.4.5. The owner or operator shall keep up-to-date, readily accessible records of the items in 4.4.5.a through 4.4.5.e, except as provided in condition 4.5.3.b, for a minimum of five years. Each owner or operator that chooses to comply with the provisions in 40 CFR §§ 63.1958, 63.1960 and 63.1961 of this chapter, as allowed in conditions 4.1.6.d, 4.2.1, and 4.2.2, shall keep the records in condition 4.4.5.f and shall keep records according to 40 CFR § 63.1983(e)(1) through (5) in lieu of conditions 4.4.5.a – 4.4.5.e.

a. All collection and control system exceedances of the operational standards in condition 4.1.6.d, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance;

b. Each wellhead temperature monitoring value of 55 degrees Celsius (131 degrees Fahrenheit) or above, each wellhead nitrogen level at or above 20 percent, and each wellhead oxygen level at or above five percent;

c. The root cause analysis conducted, including a description of the recommended corrective action(s) taken and the date(s) the corrective action(s) were completed, for which corrective actions are required by condition 4.2.1.a.3 or 4.2.1.a.4;

d. The root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, and, for action(s) not

already completed, a schedule for implementation, including proposed commencement and completion dates, for which corrective actions are required by conditions 4.2.1.a.3.ii or 4.2.1.a.4.ii; and

e. The root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates, and a copy of any comments or final approval on the corrective action analysis or schedule from the Secretary for any root cause analysis for which corrective actions are required by conditions 4.2.1.a.3.iii or 4.2.1.a.4.iii.

f. Each owner or operator that chooses to comply with the provisions in 40 CFR §§ 63.1958, 63.1960 and 63.1961, as allowed in conditions 4.1.6.d, 4.2.1, and 4.2.2, shall keep records of the date upon which the owner or operator started complying with the provisions in 40 CFR §§ 63.1958, 63.1960, and 63.1961.

[45CSR§23-7.10.e]

4.4.6. To demonstrate that site-specific surface methane emissions are below 500 ppm by conducting surface emission monitoring under the Tier 4 procedures specified in condition 4.3.5, the owner or operator shall keep for a minimum of five years up-to-date, readily accessible records of all surface emissions monitoring and information related to monitoring instrument calibrations conducted per sections 8 and 10 of 40 CFR part 60, Appendix A and 45CSR16 including all of the following items:

a. Calibration records:

1. Date of calibration and initials of operator performing the calibration;

2. Calibration gas cylinder identification, certification date, and certified concentration;

3. Instrument scale(s) used;

4. A description of any corrective action taken if the meter readout could not be adjusted to correspond to the calibration gas value; and

5. If the owner or operator makes its own calibration gas, a description of the procedure used.

b. Digital photographs of the instrument setup. -- For the duration of the Tier 4 monitoring demonstration, the owner or operator shall take time and date stamped digital photographs prior to sampling at the first sampling location and at the last sampling location after sampling at the end of each sampling day;

c. Time stamp of each surface scan reading:

1. The time stamp should be detailed to the nearest second, based on when the sample collection begins; and

2. A log for the length of time each sample was taken using a stopwatch (e.g., the time the probe was held over the area).

d. Location of each surface scan reading. – The owner or operator shall determine the coordinates using an instrument with an accuracy of at least four meters, which coordinates shall be in decimal degrees with at least five decimal places.

e. Monitored methane concentration (ppm) of each reading.

f. Background methane concentration (ppm) after each instrument calibration test.

g. Adjusted methane concentration using most recent calibration (ppm).

h. For readings taken at each surface penetration, the unique identification location label matching the label specified in condition 4.4.4.

i. Records of the operating hours of the gas collection system for each destruction device.
[45CSR§23-7.10.g]

4.4.7. The owner or operator shall keep up-to-date, readily accessible records of all collection and control system monitoring data for parameters measured in conditions 4.2.2.a.1, 4.2.2.a.2, and 4.2.2.a.3 for a minimum of five years, except as provided in condition 4.5.3.b.
[45CSR§23-7.10.h]

4.4.8. The owner or operator may maintain in electronic format any documents required to be maintained by section 4 that it submitted electronically via EPA's CDX.
[45CSR§23-7.10.i]

4.4.9. If the owner or operator reports leachate or other liquids addition under condition 4.5.11, the owner or operator shall keep records of any engineering calculations or company records used to estimate the quantities of leachate or liquids added, the surface areas for which the leachate or liquids were applied, and the estimates of annual waste acceptance or total waste in place in the areas where the owner or operator applied leachate or liquids.
[45CSR§23-7.10.j]

4.5. Reporting Requirements

4.5.1. Design Capacity Report – The owner or operator shall submit the initial design capacity report no later than one year from the effective date of 45CSR23. The initial design capacity report shall contain the following information:

a. A map or plot of the landfill, providing the size and location of the landfill and identifying all areas where solid waste may be landfilled according to the permit; and

b. The maximum design capacity of the landfill. If the permit specifies the maximum design capacity, the owner or operator may submit a copy of the permit specifying the maximum design capacity as part of the report. If the permit does not specify the maximum design capacity of the landfill, the owner or operator shall calculate the maximum design capacity using good engineering practices. The owner or operator shall provide the calculations, along with the relevant parameters, as part of the report. The owner or operator may calculate design capacity in either megagrams or cubic meters for comparison with the exemption values. If the owner or operator chooses to convert the design capacity from volume to mass or from mass to volume to demonstrate the design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, the calculation shall include a site-specific density, which the owner or operator shall recalculate annually. The owner or operator shall document any density conversions and submit them with the design capacity report. The Secretary may request other reasonable information as may be necessary to verify the maximum design capacity of the landfill.
[45CSR§23-7.9.a]

4.5.2. NMOC emission rate report - For existing MSWLs with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters, the owner or operator shall submit the NMOC emission rate report per condition 4.5.9.b no later than one year from the effective date of 45CSR23. The owner or operator shall submit the NMOC emission rate report to the Secretary annually per condition 4.5.9.b, except as provided for in condition 4.5.2.c. The Secretary may request additional information as may be necessary to verify the reported NMOC emission rate. The NMOC emission rate report shall:

a. Contain an annual or five-year estimate of the NMOC emission rate calculated using the formula and procedures in conditions 4.3.1 through 4.3.5 or 4.1.7.a, as applicable; and

b. Include all the data, calculations, sample reports, and measurements used to estimate the annual or five year emissions.

c. The owner or operator may follow the requirements in condition 4.5.9.b and submit an estimate of the NMOC emission rate for the next five-year period in lieu of the annual report if the estimated NMOC emission rate in the annual report is less than 34 megagrams per year in each of five consecutive years. This estimate shall include the current amount of solid waste in place and the estimated waste acceptance rate for each year of the five years for which an NMOC emission rate is estimated. The owner or operator shall submit to the Secretary all data and calculations upon which it based this estimate. The owner or operator shall revise this estimate at least once every five years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year reported in the five year estimate, the owner or operator shall submit to the Secretary a revised five-year estimate, which shall cover the five-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate.

d. The owner or operator is exempt from the requirement to submit an NMOC emission rate report after it installs a collection and control system that complies with conditions 4.1.2 and 4.1.3 during the time the collection and control system is in operation and complies with conditions 4.1.6.b and 4.2.1.

[45CSR§23-7.9.c]

4.5.3. Collection and control system design plan - The owner or operator shall prepare the collection and control system design plan, which shall be approved by a professional engineer and shall meet the following requirements:

a. The collection and control system described in the design plan shall meet the design requirements of subdivisions 4.1.2 and 4.1.3

b. The collection and control system design plan shall include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions of condition 4.1.6.d and 45CSR§§23-7.6 through 7.10 proposed by the owner or operator;

c. The collection and control system design plan shall either conform to specifications for active collection systems in condition 4.1.6.a through c or include a demonstration of sufficiency for the alternative provisions to condition 4.1.6.a through c that is satisfactory to the Administrator;

d. Each owner or operator of a MSWL having a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters shall submit to the Secretary, within one year of the first NMOC emission rate report in which the NMOC emission rate equals or exceeds 34 megagrams per year, a copy of the collection and control system design plan cover page that contains the professional engineer's seal, except as follows:

1. If the owner or operator elects to recalculate the NMOC emission rate after the Tier 2 NMOC

sampling and analysis in condition 4.3.3 and the resulting rate is less than 34 megagrams per year, the owner or operator shall resume annual periodic reporting using the Tier 2 determined site-specific NMOC concentration, until the calculated NMOC emission rate is equal to or greater than 34 megagrams per year or the owner or operator closes the landfill. The owner or operator shall submit, per condition 4.5.9.b and within 180 days of the first calculated exceedance of 34 megagrams per year, the revised NMOC emission rate report with the recalculated NMOC emission rate based on NMOC sampling and analysis.

2. If the owner or operator elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant k, for Tier 3 per condition 4.3.3, and the resulting NMOC emission rate is less than 34 megagrams per year, the owner or operator shall resume annual periodic reporting. The owner or operator shall use the resulting site-specific methane generation rate constant k in the NMOC emission rate calculation until such time as the emissions rate calculation results in an exceedance. The owner or operator shall submit to the Secretary, per condition 4.5.9.b and within one year of the first calculated NMOC emission rate equaling or exceeding 34 megagrams per year, the revised NMOC emission rate report based on the provisions of condition 4.3.3 and the resulting site specific methane generation rate constant k.

3. If the owner or operator elects to demonstrate that site-specific surface methane emissions are below 500 ppm methane, based on the provisions of condition 4.3.5, then the owner or operator shall annually submit a Tier 4 surface emissions report per condition 4.5.9.b until the report shows a surface emissions reading of 500 ppm methane or greater. If the Tier 4 surface emissions report shows no surface emissions readings of 500 ppm methane or greater for four consecutive quarters at a closed landfill, then the owner or operator may reduce Tier 4 monitoring from a quarterly to an annual frequency. The Secretary may request additional information that may be necessary to verify the reported instantaneous surface emission readings. The Tier 4 surface emissions report shall clearly identify the location, date and time (to the nearest second), average wind speeds (including wind gusts), and reading (in ppm) of any value 500 ppm methane or greater, other than nonrepeatable, momentary readings. The owner or operator shall determine the latitude and longitude coordinates using an instrument with an accuracy of at least four meters for location, stating the coordinates in decimal degrees with at least five decimal places. The Tier 4 surface emission report shall also include the results of the most recent Tier 1 and Tier 2 results in order to verify that the landfill does not exceed 50 Mg/yr of NMOC.

   i. The owner or operator shall submit the initial annual Tier 4 surface emissions report within 30 days of completing the fourth quarter of Tier 4 surface emissions monitoring that demonstrates that site specific surface methane emissions are below 500 ppm methane and following the procedure specified in condition 4.5.9.b below; and

   ii. The owner or operator shall submit the Tier 4 surface emissions rate report within one year of the first measured surface exceedance of 500 ppm methane, following the procedure specified in condition 4.5.9.b below.

4. If the landfill is in the closed landfill subcategory, the owner or operator shall submit a collection and control system design plan to the Secretary within one year of the first NMOC emission rate report in which the NMOC emission rate equals or exceeds 50 megagrams per year, except as follows:

   i. If the owner or operator elects to recalculate the NMOC emission rate after the Tier 2 NMOC sampling and analysis under condition 4.3.1.g and the resulting rate is less than 50 megagrams per year, the owner or operator shall resume annual periodic reporting using the Tier 2 determined site-specific NMOC concentration, until the calculated NMOC emission rate is equal to or greater than 50 megagrams per year or the owner or operator closes the landfill. The

owner or operator shall submit the revised NMOC emission rate report, with the recalculated NMOC emission rate based on NMOC sampling and analysis, following the procedure specified in condition 4.5.9.b, within 180 days of the first calculated exceedance of 50 megagrams per year.

ii. If the owner or operator elects to recalculate the NMOC emission rate after determining a site specific methane generation rate constant k for Tier 3 under condition 4.3.3, and the resulting NMOC emission rate is less than 50 megagrams per year, the owner or operator shall resume annual periodic reporting. The owner or operator shall use the resulting site specific methane generation rate constant k in the NMOC emission rate calculation until the emissions rate calculation results in an exceedance. The owner or operator shall submit the revised NMOC emission rate report per condition 4.3.3 and the resulting site-specific methane generation rate constant k, to the Secretary following the procedure specified in condition 4.5.9.b within one year of the first calculated NMOC emission rate equaling or exceeding 50 megagrams per year.

iii. If the owner or operator elects to demonstrate surface emissions are low, consistent with the provisions in condition 4.5.3.d.3.

iv. The owner or operator has already submitted a gas collection and control system design plan consistent with the provisions of section 4 or section 6 of 45CSR23.

e. The owner or operator shall notify the Secretary that the design plan is completed and submit a copy of the plan's signature page. The Secretary shall decide within 90 days whether the owner or operator should submit the design plan for review. If the Secretary chooses to review the plan, the approval process continues as described in condition 4.5.3.f. However, if the Secretary indicates that submission is not required or does not respond within 90 days, the owner or operator may continue to implement the plan with the recognition that it is proceeding at its own risk. If the Secretary requires the owner or operator to modify the design plan in order to obtain approval, the owner or operator shall take any steps necessary to conform any prior actions to the approved design plan, and the owner's or operator's failure to do so may result in an enforcement action by the Secretary.

f. Upon receipt of an initial or revised design plan, the Secretary shall review the information submitted under conditions 4.5.3.a through 4.5.3.c and either approve it, disapprove it or request that the owner or operator submit additional information. Because of the many site-specific factors involved with landfill gas system design, alternative systems may be necessary. A wide variety of system designs are possible, such as vertical wells, combination horizontal and vertical collection systems or horizontal trenches only, leachate collection components, and passive systems. If the Secretary does not approve or disapprove the design plan, or does not request that additional information be submitted within 90 days of receipt, then the owner or operator may continue with implementation of the design plan, recognizing that it will be proceeding at its own risk.

g. If the owner or operator chooses to demonstrate compliance with the emission control requirements using a treatment system, then the owner or operator shall prepare a site-specific treatment system monitoring plan as specified in condition 4.4.2.e.

[45CSR§23-7.9.d]

4.5.4. Revised design plan - If the owner or operator is required to submit a design plan under condition 4.5.3 or sections 4 or 6 of 45CSR23, the owner or operator shall submit a revised design plan to the Secretary for approval as follows:

a. At least 90 days before expanding operations to an area not covered by the previously approved design plan; or

b. Prior to installing or expanding the gas collection system in a way that is not consistent with the design plan submitted to the Secretary per subdivision 4.5.3.

[45CSR§23-7.9.e]

4.5.5. Closure Report - The owner or operator shall submit a closure report to the Secretary within 30 days of ceasing waste acceptance. The Secretary may request additional information as may be necessary to verify that permanent closure has taken place per the requirements of 40 CFR § 258.60. If the owner or operator has submitted a closure report to the Secretary, the owner or operator may not place any additional wastes into the landfill without filing a notification of modification as described under 40 CFR § 60.7(a)(4)**.**

[45CSR§23-7.9.f]

4.5.6. Equipment removal report – The owner or operator shall submit an equipment removal report to the Secretary 30 days prior to removal or cessation of operation of the control equipment, which report shall contain the following:

a. A copy of the closure report submitted per condition 4.5.5. and:

b. A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired, unless the performance test results report has been submitted to the EPA via the EPA's CDX or information that demonstrates that the gas collection and control system will be unable to operate for 15 years due to declining gas flows; or, in lieu thereof, a report stating the process unit(s) tested, the pollutant(s) tested, and the date that the performance test was conducted, if the owner or operator previously submitted this report to the EPA's CDX; and

c. Dated copies of three successive NMOC emission rate reports demonstrating the landfill is no longer producing 34 megagrams or greater of NMOC per year, unless the owner or operator submitted the NMOC emission rate reports to the EPA via the EPA's CDX; or, in lieu thereof, if the owner or operator has previously submitted the NMOC emission rate reports to the EPA's CDX, a statement that the owner or operator submitted the NMOC emission rate reports electronically, along with the dates that the reports were submitted; or

d. For the closed landfill subcategory, dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year; or, in lieu thereof, a statement that the owner or operator submitted the NMOC emission rate reports electronically to EPA's CDX, along with the dates that the owner or operator electronically submitted the reports.

e. The Secretary may request additional information as may be necessary to verify that the owner or operator has met all of the conditions for removal under condition 4.1.5.

[45CSR§23-7.9.g]

4.5.7. Annual report. -- If the owner or operator chooses to comply with condition 4.1.4.b using an active collection system designed per condition 4.1.2, the owner or operator shall submit an annual report to the Secretary according to condition 4.5.9.b, containing the information listed in condition 4.5.7. The owner or operator shall submit the initial annual report within 180 days of installation and startup of the collection and control system. The initial annual report shall include the initial performance test report required under 40 CFR § 60.8, as applicable, unless the performance test results report has been submitted to the EPA via the EPA's CDX, in which case, the owner or operator may submit, in lieu thereof, a statement that the owner or operator electronically filed the performance test report, the process unit(s) tested, the pollutant(s) tested, and the date that the owner or operator conducted the performance test. The owner or operator shall submit the initial performance test report per condition 4.5.9.a no later than the date the owner or operator submits the initial annual report. For enclosed combustion devices and flares, reportable exceedances are defined under condition 4.4.3.a. If the owner or operator chooses to comply with the operational provisions of 40 CFR §§

63.1958, 63.1960, and 63.1961, as allowed under conditions 4.1.6.d, 4.2.1, and 4.2.2, the owner or operator shall follow the semi-annual reporting requirements in 40 CFR § 63.1981(h) in lieu of this paragraph. The annual report shall contain:

a. The value and length of time for exceedance of applicable parameters monitored under condition 4.2.2.a.1 and conditions 4.2.2.b, 4.2.2.c, 4.2.2.d, and 4.2.2.g;

b. A description and duration of all periods when the gas stream was diverted from the control device or treatment system through a bypass line or the indication of bypass flow as specified in condition 4.2.2;

c. A description and duration of all periods when the control device or treatment system was not operating and length of time the control device or treatment system was not operating;

d. All periods when the collection system was not operating;

e. The location of each exceedance of the 500 ppm methane concentration per condition 4.1.6.d.4 and the concentration recorded at each location for which an exceedance was recorded in the previous month, determining the latitude and longitude coordinates using an instrument with an accuracy of at least four meters for the location, which coordinates shall be in decimal degrees with at least five decimal places;

f. The date of installation and the location of each well or collection system expansion added pursuant to 4.2.1.a.3, 4.2.1.a.4, 4.2.1.b, and 4.2.1.c.4; and

g. For any corrective action analysis for which corrective actions are required by 4.2.1.a.3 or 4.2.1.a.4 and that take more than 60 days to correct the exceedance, the root cause analysis conducted, including a description of the recommended corrective action(s), the date for corrective action(s) already completed following the positive pressure or elevated temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.

[45CSR§23-7.9.h]

4.5.8. Initial performance test report. -- To comply with condition 4.1.3, the owner or operator shall include the following information with the initial performance test report required under 40 CFR § 60.8 and 45CSR16:

a. A diagram of the collection system showing collection system positioning, including all wells, horizontal collectors, surface collectors or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion;

b. The data upon which the sufficient density of wells, horizontal collectors, surface collectors or other gas extraction devices and the gas mover equipment sizing are based;

c. The documentation of the presence of asbestos or nondegradable material for each area from which collection wells have been excluded based on the presence of asbestos or nondegradable material;

d. The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on nonproductivity and the calculations of gas generation flow rate for each excluded area;

e. The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill; and

f. The provisions for the control of off-site migration.

[45CSR§23-7.9.i]

4.5.9. Electronic Reporting – The owner or operator shall submit reports electronically according to the following:

a. Within 60 days after the date of completing each performance test (as defined in 40 CFR § 60.8), the owner or operator shall submit the results of each performance test according to the following procedures:

1. For data collected using test methods supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT website at the time of the test, the owner or operator shall submit the results of the performance test to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through EPA's Central Data Exchange (CDX). The owner or operator shall submit performance test data in a file format generated through the use of the EPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT website, once the XML schema is available. If the owner or operator claims that some of the performance test information being submitted is confidential business information (CBI), the owner or operator shall submit a complete file generated through the use of the EPA's ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT website, including information claimed to be CBI, on a compact disc, flash drive or other commonly used electronic storage media to the EPA. The owner or operator shall clearly mark electronic media shall be clearly marked as CBI and mailed to the EPA at the address listed on EPA's ERT website. The owner or operator shall submit the same ERT or alternate file with the CBI omitted to the EPA via the EPA's CDX as described earlier in this condition.

2. For data collected using test methods that are not supported by the EPA's ERT as listed on the EPA's ERT website at the time of the test, the owner or operator shall submit the results of the performance test to the Administrator at the appropriate address listed in 40 CFR § 60.4.

b. Each owner or operator required to submit reports following the procedure specified in this condition shall submit reports to the EPA via the CEDRI, which can be accessed through the EPA's CDX. The owner or operator shall use the appropriate electronic report in CEDRI for this submission or an alternate electronic file format consistent with the XML schema listed on the CEDRI website. If the specific reporting form is not available in CEDRI at the time that the report is due, the owner or operator shall submit the report to the Administrator at the appropriate address listed in 40 CFR § 60.4. Once the form has been available in CEDRI for 90 calendar days, the owner or operator shall submit all subsequent reports via CEDRI. The owner or operator shall submit the reports by the deadlines specified in section 4, regardless of the method of submittal.

[45CSR§23-7.9.j]

4.5.10. Corrective action and the corresponding timeline - The owner or operator shall submit the corrective action and the corresponding timeline reporting requirements according to conditions 4.5.10.a and 4.5.10.b. If the owner or operator chooses to comply with the operational provisions of 40 CFR §§ 63.1958, 63.1960, and 63.1961, as allowed under conditions 4.1.6.d, 4.2.1, and 4.2.2, the owner or operator shall follow the corrective action and the corresponding timeline reporting requirements in 40 CFR § 63.1981(j) in lieu of paragraphs 4.5.10.a and 4.5.10.b.

a. For corrective action that is required by condition 4.2.1.a.3.iii or 4.2.1.a.4.iii and that is expected to take longer to complete than 120 days after the initial exceedance, the owner or operator shall submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Secretary as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature monitoring value of 55 degrees Celsius (131 degrees Fahrenheit) or above. The Secretary shall approve the plan for corrective action and the corresponding timeline.

b. For corrective action that is required by conditions 4.2.1.a.3.iii or 4.2.1.a.4.iii and that is not completed within 60 days after the initial exceedance, the owner or operator shall submit a notification to the

Secretary as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature exceedance.

[45CSR§23-7.9.k]

4.5.11. Liquids addition. -- The owner or operator of an affected landfill with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters that has employed leachate recirculation or added liquids based on a Research, Development, and Demonstration permit (issued through Resource Conservation and Recovery Act, subtitle D, part 258) within the last ten years shall annually submit to the Secretary, per condition 4.5.9.b, the following information:

a. Volume of leachate recirculated (gallons per year) and the reported basis of those estimates (records or engineering estimates);

b. Total volume of all other liquids added (gallons per year) and the reported basis of those estimates (records or engineering estimates);

c. Surface area (acres) over which the leachate is recirculated (or otherwise applied);

d. Surface area (acres) over which any other liquids are applied;

e. The total waste disposed (megagrams) in the areas with recirculated leachate and/or added liquids based on on-site records, to the extent data are available, or engineering estimates and the reported basis of those estimates; and

f. The annual waste acceptance rates (megagrams per year) in the areas with recirculated leachate and/or added liquids based on on-site records, to the extent data are available, or engineering estimates.

g. The initial report shall contain items in conditions 4.5.11.a through 4.5.11.f on an annual basis for the most recent 365 days, as well as for each of the previous ten years, to the extent historical data are available in on-site records, which report shall be submitted no later than:

1. September 27, 2017 for landfills that commenced construction, modification or reconstruction after July 17, 2014 but before August 29, 2016; or

2. One year (365 days) after the date of commenced construction, modification or reconstruction for landfills that commence construction, modification or reconstruction after August 29, 2016.

h. Subsequent annual reports shall contain items in 4.5.11.a through 4.5.11.f for the annual (365 days) period following the period included in the previous annual report (365 days), which report shall be submitted no later than 365 days after the date the previous report was submitted.

i. Landfills in the closed landfill subcategory are exempt from the reporting requirements contained in conditions 4.5.11.a through 4.5.11.g.

j. The owner or operator may cease annual reporting of items in conditions 4.5.11.a through 4.5.11.f after the owner or operator has submitted the closure report per subdivision 4.5.5.

[45CSR§23-7.9.l]

4.5.12. Tier 4 notification.

a. The owner or operator of an affected landfill with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters shall provide a notification of the date(s) the owner or operator intends to demonstrate site specific surface methane emissions are below 500 ppm methane, based on the Tier 4 provisions of condition 4.3.5. The owner or operator shall also include a description in the notification of the wind barrier to be used during the surface emission monitoring. Notification shall be postmarked not less than 30 days prior to the Tier 4 surface emission monitor date.

b. If there is a delay to the scheduled Tier 4 surface emission monitor date due to weather conditions, including not meeting the wind requirements of condition 4.3.5.e.1 the owner or operator shall notify the Secretary by email or telephone no later than 48 hours before any known delay in the original test date and arrange with the Secretary a mutually agreeable new test date.

[45CSR§23-7.9.m]

4.5.13. Each owner or operator that chooses to comply with the provisions in 40 CFR §§ 63.1958, 63.1960, and 63.1961, as allowed in conditions 4.1.6.d, 4.2.1, and 4.2.2 shall submit the 24-hour high temperature report according to 40 CFR § 63.1981(k).

[45CSR§23-7.9.n]

4.6. Compliance Plan

4.6.1. None.

5.0 Flare Requirements [Flares GV-1 through GV-12 and LGF-1]

5.1. Limitations and Standards

5.1.1. The particulate matter discharged from each individual flare identified as GV-1 through GV-12 shall not exceed 0.59 lb/hr
[45CSR§6-4.1., 45CSR13, R13-2666, 4.1.1.]

5.1.2. Flares GV-1 through GV-12 and LGF-1 shall be operated with no visible emissions, except for periods not to exceed a total of five minutes during any two consecutive hours.

Compliance with the above 5.1.2, visible emission limit shall demonstrate compliance with the visible emission limit of 45CSR§§6-4.3. and 4.4.
[45CSR§§6-4.3. and 4.4, 45CSR13, R13-2666, 4.1.2.]

5.1.3. The permittee shall not operate the active gas flare (LGF-1) while any of the passive gas flares (GV-1 through GV-12) are in service.
[45CSR13, R13-2666, 4.1.3.]

5.1.4. The active landfill gas collection system and non-assisted flare identified as LGF-1 shall be installed, operated and maintained in accordance with the following:

a. Emissions from LGF-1 shall not exceed any of the limits listed in Table 5.1.4.a

Table 5.1.4.a. – Emission limits from LGF-1

Pollutant	Emission Rate	
	Lb/hr	TPY
$PM/PM_{10}/PM_{2.5}$	1.53	6.7
SO_2	1.49	6.5
NO_X	6.2	27.2
CO	33.73	147.8
VOCs	0.48	2.1
HCl	1.26	5.5

b. The annual amount of landfill gas to be flared by LGF-1 shall not exceed 1,576.8 MMscf per year;

c. The permittee shall install and maintain a device/system that continuously measures the total amount of landfill gas routed to the flare at all times;

d. The flare shall be operated with a flame present at all times while landfill gas is routed to the flare. The presence of a flare pilot light or flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame; and

e. The gas collection system and flare shall be designed and installed in accordance with "Good Engineering Practices".
Compliance with the above hourly particulate emission limit in 5.1.4.a shall demonstrate compliance with the hourly particulate matter emission limit of 45CSR§6-4.1.
[45CSR13, R13-2666, 4.1.4.; 45CSR§6-4.1.]

5.1.5. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11., 45CSR13, R13-2666, 4.1.5]

5.1.6. The emission of particles of unburned or partially burned refuse or ash from the flare which are large enough to be individually distinguished in the open air shall not be allowed or permitted.
[45CSR§6-4.5.]

5.1.7. The flare, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.
[45CSR§6-4.6.]

5.2. Monitoring Requirements

5.2.1. For the purpose of determining compliance with the visible emissions limits of 5.1.2, visible emission checks of the flares (listed in Section 1.1) that have been placed into active service shall be conducted.. The visible emission check shall determine the presence or absence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40 C.F.R. Part 60, Appendix A, Method 22 or from the lecture portion of the 40 C.F.R. Part 60, Appendix A, Method 9 certification course.

Visible emission checks shall be conducted at least once per calendar month with a maximum of forty-five (45) days between consecutive readings. These checks shall be performed at each source flare for a sufficient time interval, but no less than one (1) minute, to determine if any visible emissions are present. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions

If visible emissions are present at a source(s) for three (3) consecutive monthly checks, the permittee shall conduct an opacity reading at that source(s) using the procedures and requirements of Method 9 as soon as practicable, but within seventy-two (72) hours of the final visual emission check. A Method 9 observation at a source(s) restarts the count of the number of consecutive readings with the presence of visible emissions.
[45CSR13, R13-2666, 4.2.1.]

5.2.2. In order to demonstrate compliance with the continuous flame requirements of 5.1.4.d., the permittee shall monitor the presence or absence of a flame using a thermocouple or any other equivalent device.
[45CSR13, R13-2666, 4.2.2.]

5.2.3. The permittee shall record the total amount of landfill gas routed to LGF-1 on a monthly basis and determine the 12-month rolling total to demonstrate compliance with the limits set forth in 5.1.4.b. and to determine actual emissions. Records of such monitoring shall be maintained in accordance with 3.4.2. of this permit.
[45CSR13, R13-2666, 4.2.3.]

5.3. Testing Requirements

5.3.1. At such reasonable times as the Director may designate, the operator of any incinerator shall be required to conduct or have conducted stack tests for the flares to determine the particulate matter loading, by using 40 CFR Part 60, Appendix A, Method 5 or other equivalent EPA approved method approved by the Director, in exhaust gases. Such tests shall be conducted in such manner as the Director may specify and be filed on forms and in a manner acceptable to the Director. The Director, or the Director's authorized representative, may at the Director's option witness or conduct such stack tests. Should the Director exercise his option to conduct such tests, the operator will provide all the necessary sampling connections and sampling ports to be located in such manner as the Director may require, power for test equipment and the required safety equipment such as scaffolding, railings and ladders to comply with generally accepted good safety practices. **[45CSR§6-7.1.]**

5.3.2. For the purposes of determining compliance with VOC emission limits for the LGF-1 in Condition 5.1.4.a., the permittee shall conduct a flare compliance assessment for concentration of sample (i.e. Method 18) and tip velocity (i.e. Method 2) for the purposes of determining if the flare is achieving a 98% destruction efficiency within 180 days after a single monthly amount total of landfill gas routed to LGF-1 exceeds 114.5 MMscf. The permittee may use an alternative testing method or assessment procedure if approved by the Director in writing prior to conducting such testing or assessment. Such testing/assessment shall be conducted in accordance with Condition 3.3.1. of this permit. Records of such testing shall be maintained in accordance with Condition 3.4.2. of this permit.
[45CSR13, R13-2666, 4.3.1.]

5.4. Recordkeeping Requirements

5.4.1. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.
[45CSR13, R13-2666, 4.4.2.]

5.4.2. **Record of Malfunctions of Air Pollution Control Equipment**. For all air pollution control equipment listed in Section 1.0, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.

b. Steps taken to minimize emissions during the event.

c. The duration of the event.

d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

e. The cause of the malfunction.

f. Steps taken to correct the malfunction.

g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

[45CSR13, R13-2666, 4.4.3.]

5.4.3. The permittee shall maintain records of all monitoring data required by 5.2.1., documenting the date and time of each visible emission check, the emission point or equipment/source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6 - 10 mph NE wind) during the visible emission check(s). For an emission unit out of service during the normal monthly evaluation, the record of observation may note "out of service" (O/S) or equivalent.
[45CSR13, R13-2666, 4.4.4.]

5.4.4. For the purpose of demonstrating compliance with sections 5.1.4.d. and 5.2.2, the permittee shall maintain records of the times and duration of all periods which the flame was absent. This condition is only applicable to the active gas collection system flare identified as LGF-1. Said records shall be maintained in accordance with 3.4.2. of this permit.
[45CSR13, R13-2666, 4.4.5.]

5.4.5. For the purpose of demonstrating compliance with condition 5.1.2., the permittee shall maintain a record of the flare design evaluation. The flare design evaluation shall include, but not be limited to, net heat value calculations, tip velocity calculations, and all supporting concentration calculations. Said records shall be maintained on-site for a period of five (5) years. Said records shall be maintained in accordance with 3.4.2 of this permit.
[45CSR13, R13-2666, 4.4.6.]

5.4.6. For the purpose of demonstrating compliance with condition 5.1.2, the permittee shall maintain records of the visible emission opacity tests conducted. Said records shall be maintained on-site or in a readily accessible off-site location maintained in accordance with 3.4.2 of this permit.
[45CSR13, R13-2666, 4.4.7.]

5.4.7. The permittee shall keep records of the date when any flare(s) is placed in operation, taken out of operation and the identification of the specific flare. Such records shall be maintained in accordance with 3.4.2. of this permit.
[45CSR13, R13-2666, 4.4.8.]

5.5. Reporting Requirements

5.5.1. Any exceedances of the allowable visible emission requirement for any emission source discovered during observations using 40 C.F.R. Part 60, Appendix A, Method 22 must be reported in writing to the Director of the Division of Air Quality as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.
[45CSR13, R13-2666, 4.5.1.]

5.5.2. The permittee shall submit the results of any testing/assessment conducted as a requirement from Section 5.3.2. of this permit to the Director within 60 days after conducting such testing.
[45CSR13, R13-2666, 4.5.2]

5.6. Compliance Plan

5.6.1. None.

6.0 40 C.F.R 63 Subpart AAAA Requirements

6.1. Limitations and Standards

6.1.1. Each owner or operator of a MSW landfill with a gas collection and control system used to comply with the provisions of 40 C.F.R. §63.1957 must:

a. Operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for:

i. 5 years or more if active; or

ii. 2 years or more if closed or at final grade;

b. Operate the collection system with negative pressure at each wellhead except under the following conditions:

i. A fire or increased well temperature. The owner or operator must record instances when positive pressure occurs in efforts to avoid a fire. These records must be submitted with the semi-annual reports as provided in 40 C.F.R. §63.1981(h);

ii. Use of a geomembrane or synthetic cover. The owner or operator must develop acceptable pressure limits in the design plan;

iii. A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes must be approved by the Administrator as specified in 40 C.F.R. §63.1981(d)(2);

c. Operate each interior wellhead in the collection system as specified in 40 CFR 60.753(c), until the landfill owner or operator elects to meet the operational standard for temperature in paragraph (c)(i) of this condition.

i. Beginning no later than September 27, 2021, operate each interior wellhead in the collection system with a landfill gas temperature less than 62.8 degrees Celsius (145 degrees Fahrenheit).

ii. The owner or operator may establish a higher operating temperature value at a particular well. A higher operating value demonstration must be submitted to the Administrator for approval and must include supporting data demonstrating that the elevated parameter neither causes fires nor significantly inhibits anaerobic decomposition by killing methanogens. The demonstration must satisfy both criteria in order to be approved (i.e., neither causing fires nor killing methanogens is acceptable).

d.

i. Operate the collection system so that the methane concentration is less than 500 parts per million (ppm) above background at the surface of the landfill. To determine if this level is exceeded, the owner or operator must conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at no more than 30-meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The owner or operator may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan must be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30-meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing.

ii. Beginning no later than September 27, 2021, the owner or operator must:

1. Conduct surface testing using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in 40 C.F.R. §63.1960(d).

2. Conduct surface testing at all cover penetrations. Thus, the owner or operator must monitor any cover penetrations that are within an area of the landfill where waste has been placed and a gas collection system is required.

3. Determine the latitude and longitude coordinates of each exceedance using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places.

e. Operate the system as specified in 40 C.F.R. §60.753(e) of this chapter, except:

i. Beginning no later than September 27, 2021, operate the system in accordance to 40 C.F.R. §63.1955(c) such that all collected gases are vented to a control system designed and operated in compliance with 40 C.F.R. §63.1959(b)(2)(iii). In the event the collection or control system is not operating:

1. The gas mover system must be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere must be closed within 1 hour of the collection or control system not operating; and

2. Efforts to repair the collection or control system must be initiated and completed in a manner such that downtime is kept to a minimum, and the collection and control system must be returned to operation.

f. Operate the control system at all times when the collected gas is routed to the system.

g. If monitoring demonstrates that the operational requirements in paragraph (b), (c), or (d) of this section are not met, corrective action must be taken as specified in 40 C.F.R. §63.1960(a)(3) and (5) or (c). If corrective actions are taken as specified in 40 C.F.R. §63.1960, the monitored exceedance is not a deviation of the operational requirements in this section.

[40 C.F.R §63.1958, 45CSR34]

6.1.2.

a. Calculate the NMOC emission rate using the procedures specified in 40 C.F.R. §60.754(a) except:

i. NMOC emission rate. Beginning no later than September 27, 2021, the landfill owner or operator must calculate the NMOC emission rate using either Equation 1 provided in condition 6.1.2.a.i.1 or Equation 2 provided in condition 6.1.2.a.i.2. Both Equation 1 and Equation 2 may be used if the actual year-to-year solid waste acceptance rate is known, as specified in condition 6.1.2.a.i.1, for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in paragraph condition 6.1.2.a.i.2, for part of the life of the landfill. The values to be used in both Equation 1 and Equation 2 are 0.05 per year for k, 170 cubic meters per megagram (m^3/Mg) for L_O, and 4,000 parts per million by volume (ppmv) as hexane for the C_{NMOC}. For landfills located in geographical areas with a 30-year annual average precipitation of less than 25 inches, as measured at the nearest representative official meteorologic site, the k value to be used is 0.02 per year.

1.

A. Equation 1 must be used if the actual year-to-year solid waste acceptance rate is known.

$$M_{NMOC} = \sum_{i=1}^{n} 2kL_0M_i(e^{-kt_i})(C_{NMOC})(3.6 * 10^{-9}) \qquad \text{(Equation 1)}$$

Where:
M_{NMOC} = Total NMOC emission rate from the landfill, Mg/yr.
k = Methane generation rate constant, $year^{-1}$.
L_0 = Methane generation potential, m^3/Mg solid waste.
M_i = Mass of solid waste in the ith section, Mg.
t_i = Age of the ith section, years.
C_{NMOC} = Concentration of NMOC, ppmv as hexane.
$3.6 * 10^{-9}$ = Conversion factor.

B. The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for Mi if documentation of the nature and amount of such wastes is maintained.

2.

A. Equation 2 must be used if the actual year-to-year solid waste acceptance rate is unknown.

$$M_{NMOC} = 2L_0R(e^{-kc} - e^{-kt})C_{NMOC}(3.6 * 10^{-9}) \quad \text{(Equation 2)}$$

Where:
M_{NMOC} = Mass emission rate of NMOC, Mg/yr
L_0 = Methane generation potential, m^3/Mg solid waste.
R = Average annual acceptance rate, Mg/yr
k = Methane generation rate constant, $year^{-1}$
t = Age of landfill, years.
C_{NMOC} =Concentration of NMOC, ppmv as hexane
$3.6 * 10^{-9}$ = Conversion factor.

B. The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value of R, if documentation of the nature and amount of such wastes is maintained.

ii. Tier 1. The owner or operator must compare the calculated NMOC mass emission rate to the standard of 50 Mg/yr.

1. If the NMOC emission rate calculated in paragraph (a)(1) of this section is less than 50 Mg/yr, then the landfill owner or operator must submit an NMOC emission rate report according to §63.1981(c) and must recalculate the NMOC mass emission rate annually as required under paragraph (b) of this section.

2. If the calculated NMOC emission rate as calculated in paragraph (a)(1) of this section is equal to or greater than 50 Mg/yr, then the landfill owner must either:

A. Submit a gas collection and control system design plan within 1 year as specified in 63 C.F.R. §63.1981(d) and install and operate a gas collection and control system within 30 months of the first annual report in which the NMOC emission rate equals or exceeds 50 Mg/yr, according to paragraphs 6.1.2.b.ii.2 and 3;

B. Determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the Tier 2 procedures provided in paragraph 6.1.2.a.iii; or

C. Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the Tier 3 procedures provided in paragraph 6.1.2.a.iv.

iii. Tier 2. The landfill owner or operator must determine the site-specific NMOC concentration using the following sampling procedure. The landfill owner or operator must install at least two sample

probes per hectare, evenly distributed over the landfill surface that has retained waste for at least 2 years. If the landfill is larger than 25 hectares in area, only 50 samples are required. The probes should be evenly distributed across the sample area. The sample probes should be located to avoid known areas of nondegradable solid waste. The owner or operator must collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using EPA Method 25 or 25C of appendix A-7 to part 60. Taking composite samples from different probes into a single cylinder is allowed; however, equal sample volumes must be taken from each probe. For each composite, the sampling rate, collection times, beginning and ending cylinder vacuums, or alternative volume measurements must be recorded to verify that composite volumes are equal. Composite sample volumes should not be less than one liter unless evidence can be provided to substantiate the accuracy of smaller volumes. Terminate compositing before the cylinder approaches ambient pressure where measurement accuracy diminishes. If more than the required number of samples are taken, all samples must be used in the analysis. The landfill owner or operator must divide the NMOC concentration from EPA Method 25 or 25C of appendix A-7 to part 60 by 6 to convert from C_{NMOC} as carbon to C_{NMOC} as hexane. If the landfill has an active or passive gas removal system in place, EPA Method 25 or 25C samples may be collected from these systems instead of surface probes provided the removal system can be shown to provide sampling as representative as the two-sampling probe per hectare requirement. For active collection systems, samples may be collected from the common header pipe. The sample location on the common header pipe must be before any gas moving, condensate removal, or treatment system equipment. For active collection systems, a minimum of three samples must be collected from the header pipe.

1. Within 60 days after the date of completing each performance test (as defined in 40 C.F.R. §63.7 of subpart A, the owner or operator must submit the results according to 40 C.F.R. §63.1981(l)(1).

2. The landfill owner or operator must recalculate the NMOC mass emission rate using Equation 1 or Equation 2 provided in paragraph 6.1.2.a.i.1 or 2 and use the average site-specific NMOC concentration from the collected samples instead of the default value provided in paragraph 6.1.2.a.i.

3. If the resulting NMOC mass emission rate is less than 50 Mg/yr, then the owner or operator must submit a periodic estimate of NMOC emissions in an NMOC emission rate report according to 40 C.F.R. §63.1981(c) and must recalculate the NMOC mass emission rate annually as required under paragraph (b) of this section. The site-specific NMOC concentration must be retested every 5 years using the methods specified in this section.

4. If the NMOC mass emission rate as calculated using the Tier 2 site-specific NMOC concentration is equal to or greater than 50 Mg/yr, the landfill owner or operator must either:

   A. Submit a gas collection and control system design plan within 1 year as specified in 40 C.F.R. §63.1981(d) and install and operate a gas collection and control system within 30 months according to paragraphs 6.1.2.b.ii.2 and 3; or

   B. Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the site-specific methane generation rate using the Tier 3 procedures specified in paragraph 6.1.2.a.iv.

iv. Tier 3. The site-specific methane generation rate constant must be determined using the procedures provided in EPA Method 2E of appendix A-1 to part 60 of this chapter. The landfill owner or operator must estimate the NMOC mass emission rate using Equation 1 or Equation 2 in paragraph 6.1.2.a.i.1 or 2 of this section and using a site-specific methane generation rate constant, and the site-specific NMOC concentration as determined in paragraph 6.1.2.a.iii instead of the default

values provided in paragraph 6.1.2.a.i. The landfill owner or operator must compare the resulting NMOC mass emission rate to the standard of 50 Mg/yr.

1. If the NMOC mass emission rate as calculated using the Tier 2 site-specific NMOC concentration and Tier 3 site-specific methane generation rate is equal to or greater than 50 Mg/yr, the owner or operator must:

   A. Submit a gas collection and control system design plan within 1 year as specified in 40 C.F.R. §63.1981(d) and install and operate a gas collection and control system within 30 months of the first annual report in which the NMOC emission rate equals or exceeds 50 Mg/yr, according to paragraphs 6.1.2.b.ii.2 and 3.

2. If the NMOC mass emission rate is less than 50 Mg/yr, then the owner or operator must recalculate the NMOC mass emission rate annually using Equation 1 or Equation 2 in paragraph 6.1.2.a.i and using the site-specific Tier 2 NMOC concentration and Tier 3 methane generation rate constant and submit a periodic NMOC emission rate report as provided in 40 C.F.R. §63.1981(c). The calculation of the methane generation rate constant is performed only once, and the value obtained from this test must be used in all subsequent annual NMOC emission rate calculations.

v. *Other methods*. The owner or operator may use other methods to determine the NMOC concentration or a site-specific methane generation rate constant as an alternative to the methods required in paragraphs 6.1.2.a.iii and iv if the method has been approved by the Administrator.

b. Each owner or operator of an affected source having a design capacity equal to or greater than 2.5 million Mg and 2.5 million m^3 must either comply with paragraph 6.1.2.b.ii or calculate an NMOC emission rate for the landfill using the procedures specified in condition 6.1.2.a. The NMOC emission rate must be recalculated annually, except as provided in 40 C.F.R. §63.1981(c)(1)(ii)(A).

i. If the calculated NMOC emission rate is less than 50 Mg/yr, the owner or operator must:

1. Submit an annual NMOC emission rate emission report to the Administrator, except as provided for in 40 C.F.R. §63.1981(c)(1)(ii); and

2. Recalculate the NMOC emission rate annually using the procedures specified in condition 6.1.2.a.i until such time as the calculated NMOC emission rate is equal to or greater than 50 Mg/yr, or the landfill is closed.

   A. If the calculated NMOC emission rate, upon initial calculation or annual recalculation required in condition 6.1.2.b, is equal to or greater than 50 Mg/yr, the owner or operator must either: comply with paragraph 6.1.2.b.ii or calculate NMOC emissions using the next higher tier in paragraph (a) of this section.

   B. If the landfill is permanently closed, a closure report must be submitted to the Administrator as provided for in §63.1981(f).

ii. If the calculated NMOC emission rate is equal to or greater than 50 Mg/yr using Tier 1, 2, or 3 procedures, the owner or operator must either:

1. Submit a collection and control system design plan prepared by a professional engineer to the Administrator within 1 year as specified in 40 C.F.R. §63.1981(d) or calculate NMOC emissions using the next higher tier in condition 6.1.2.a. The collection and control system must meet the requirements in paragraphs 6.1.2.b.ii.2 and 3.

2. Collection system. Install and start up a collection and control system that captures the gas generated within the landfill as required by conditions 6.1.2.b.ii.2.B or C and 6.1.2.b.ii.3 within 30 months after:

   A. The first annual report in which the NMOC emission rate equals or exceeds 50 Mg/yr, unless Tier 2 or Tier 3 sampling demonstrates that the NMOC emission rate is less than 50 Mg.

   B. An active collection system must:

      i. Be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control system equipment;

      ii. Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of 5 years or more if active; or 2 years or more if closed or at final grade;

      iii. Collect gas at a sufficient extraction rate; and

      iv. Be designed to minimize off-site migration of subsurface gas.

   C. A passive collection system must:

      i. Comply with the provisions specified in conditions 6.1.2.b.ii.2.B.i, ii, and iii; and

      ii. Be installed with liners on the bottom and all sides in all areas in which gas is to be collected. The liners must be installed as required under §258.40 of this chapter.

3. Control system. Route all the collected gas to a control system that complies with the requirements in either paragraph 6.1.2.b.ii.3.A, B, or C.

   A. A non-enclosed flare designed and operated in accordance with the parameters established in 40 C.F.R §63.11(b) except as noted in paragraph 6.1.2.e; or

   B. A control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight-percent or reduce the outlet NMOC concentration to less than 20 ppmv, dry basis as hexane at 3-percent oxygen. The reduction efficiency or ppmv must be established by an initial performance test to be completed no later than 180 days after the initial startup of the approved control system using the test methods specified in paragraph (e) of this section. The performance test is not required for boilers and process heaters with design heat input capacities equal to or greater than 44 megawatts that burn landfill gas for compliance with 40 C.F.R. 63 subpart AAAA.

      i. If a boiler or process heater is used as the control device, the landfill gas stream must be introduced into the flame zone.

      ii. The control device must be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in 40 C.F.R. §§63.1961(b) through (e);

   C. A treatment system that processes the collected gas for subsequent sale or beneficial use such as fuel for combustion, production of vehicle fuel, production of high-British thermal

unit (Btu) gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to either paragraph 6.1.2.b.ii.3.A or B.

D. All emissions from any atmospheric vent from the gas treatment system are subject to the requirements of condition 6.1.2.b.ii.3.A or B. For purposes of this subpart, atmospheric vents located on the condensate storage tank are not part of the treatment system and are exempt from the requirements of condition 6.1.2.b.ii.3.A or B.

c. After the installation and startup of a collection and control system in compliance with this subpart, the owner or operator must calculate the NMOC emission rate for purposes of determining when the system can be capped, removed, or decommissioned as provided in 40 C.F.R. §63.1957(b)(3), using Equation 3:

$$M_{NMOC} = 1.89 * 10^{-3} Q_{LFG} C_{NMOC} \qquad \text{(Eq. 3)}$$

Where:
M_{NMOC} = Mass emission rate of NMOC, Mg/yr.
Q_{LFG} = Flow rate of landfill gas, m^3 per minute.
C_{NMOC} = Average NMOC concentration, ppmv as hexane.
1.89×10^{-3} = Conversion factor.

i. The flow rate of landfill gas, Q_{LFG}, must be determined by measuring the total landfill gas flow rate at the common header pipe that leads to the control system using a gas flow measuring device calibrated according to the provisions of section 10 of EPA Method 2E of appendix A-1 of part 60.

ii. The average NMOC concentration, C_{NMOC}, must be determined by collecting and analyzing landfill gas sampled from the common header pipe before the gas moving or condensate removal equipment using the procedures in EPA Method 25 or 25C of appendix A-7 to part 60 of this chapter. The sample location on the common header pipe must be before any condensate removal or other gas refining units. The landfill owner or operator must divide the NMOC concentration from EPA Method 25 or 25C of appendix A-7 to part 60 by 6 to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.

iii. The owner or operator may use another method to determine landfill gas flow rate and NMOC concentration if the method has been approved by the Administrator.

1. Within 60 days after the date of completing each performance test (as defined in 40 C.F.R. §63.7), the owner or operator must submit the results of the performance test, including any associated fuel analyses, according to 40 C.F.R. §63.1981(l)(1).

d. For the performance test required in 40 C.F.R. §63.1959(b)(2)(iii)(B), EPA Method 25 or 25C (EPA Method 25C of appendix A-7 to part 60 of this chapter may be used at the inlet only) of appendix A of this part must be used to determine compliance with the 98 weight-percent efficiency or the 20- ppmv outlet concentration level, unless another method to demonstrate compliance has been approved by the Administrator as provided by 40 C.F.R. §63.1981(d)(2). EPA Method 3, 3A, or 3C of appendix A-7 to part 60 must be used to determine oxygen for correcting the NMOC concentration as hexane to 3 percent. In cases where the outlet concentration is less than 50 ppm NMOC as carbon (8 ppm NMOC as hexane), EPA Method 25A should be used in place of EPA Method 25. EPA Method 18 may be used in conjunction with EPA Method 25A on a limited basis (compound specific, e.g., methane) or EPA Method 3C may be used to determine methane. The methane as carbon should be subtracted from the EPA Method 25A total hydrocarbon value as carbon to give NMOC concentration as carbon. The

landowner or operator must divide the NMOC concentration as carbon by 6 to convert from the C_{NMOC} as carbon to C_{NMOC} as hexane. Equation 4 must be used to calculate efficiency:

$$Control\ Efficiency = (NMOC_{in} - NMOC_{out})/(NMOC_{in}) \qquad \text{(Eq.4)}$$

Where:
$NMOC_{in}$ = Mass of NMOC entering control device.
$NMOC_{out}$ = Mass of NMOC exiting control device.

e. For the performance test required in 40 C.F.R. §63.1959(b)(2)(iii)(A), the net heating value of the combusted landfill gas as determined in 40 C.F.R. §63.11(b)(6)(ii) is calculated from the concentration of methane in the landfill gas as measured by EPA Method 3C of appendix A to part 60 of this chapter. A minimum of three 30-minute EPA Method 3C samples are determined. The measurement of other organic components, hydrogen, and carbon monoxide is not applicable. EPA Method 3C may be used to determine the landfill gas molecular weight for calculating the flare gas exit velocity under 40 C.F.R. §63.11(b)(7) of subpart A.

i. Within 60 days after the date of completing each performance test (as defined in 40 C.F.R. §63.7), the owner or operator must submit the results of the performance tests, including any associated fuel analyses, required by 40 C.F.R. §63.1959(c) or (e) according to 40 C.F.R. §63.1981(l)(1).

f. The performance tests required in 40 C.F.R. §§63.1959(b)(2)(iii)(A) and (B), must be conducted under such conditions as the Administrator specifies to the owner or operator based on representative performance of the affected source for the period being tested. Representative conditions exclude periods of startup and shutdown unless specified by the Administrator. The owner or operator may not conduct performance tests during periods of malfunction. The owner or operator must record the process information that is necessary to document operating conditions during the test and include in such record an explanation to support that such conditions represent normal operation. Upon request, the owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests.

[45CSR34; 40 C.F.R. §63.1959]

6.1.3.

a. Except as provided in 40 C.F.R. §63.1981(d)(2), the specified methods in paragraphs (a)(i) through (v) of this section must be used to determine whether the gas collection system is in compliance with §63.1959(b)(2)(ii).

i. For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with 40 C.F.R. §63.1959(b)(2)(ii)(C)(1), either Equation 5 or Equation 6 must be used. The owner or operator may use another method to determine the maximum gas generation flow rate, if the method has been approved by the Administrator. The methane generation rate constant (k) and methane generation potential (Lo) kinetic factors should be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42) or other site-specific values demonstrated to be appropriate and approved by the Administrator. If k has been determined as specified in 40 C.F.R. §63.1959(a)(4), the value of k determined from the test must be used. A value of no more than 15 years must be used for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure.

1. For sites with unknown year-to-year solid waste acceptance rate:

$$Qm = 2L_0R\ (e^{-kc} - e^{-kt}) \qquad \text{Eq. 5}$$

Where:
Qm = Maximum expected gas generation flow rate, m^3/yr.

L_o = Methane generation potential, m^3/Mg solid waste.
R = Average annual acceptance rate, Mg/yr.
k = Methane generation rate constant, $year^{-1}$.
t = Age of the landfill at equipment installation plus the time the owner or operator intends to use the gas mover equipment or active life of the landfill, whichever is less. If the equipment is installed after closure, t is the age of the landfill at installation, years.
c = Time since closure, years (for an active landfill c = 0 and $e^{-kc} = 1$).
2 = Constant.

2. For sites with a known year-to-year solid waste acceptance rate:

$$Qm = \sum_{i=1}^{n} 2kL_0M_i(e^{-kt_i}) \quad \text{Eq. 6}$$

Where:
Qm = maximum expected gas generation flow rate, m^3/yr.
k = Methane generation rate constant, $year^{-1}$.
L_o = Methane generation potential, m^3/Mg solid waste.
M_i = Mass of solid waste in the ith section, Mg.
t_i = Age of the ith section, years.

3. If a collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, Equation 5 or Equation 6 in condition 6.1.3. If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using Equation 5 or Equation 6 in condition 6.1.3 or other methods must be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment.

ii. For the purposes of determining sufficient density of gas collectors for compliance with 40 C.F.R. §63.1959(b)(2)(ii)(B)(2), the owner or operator must design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the Administrator, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards.

iii. For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with 40 C.F.R. §63.1959(b)(2)(ii)(B)(3), the owner or operator must measure gauge pressure in the gas collection header applied to each individual well monthly. Any attempted corrective measure must not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to the Administrator for approval. If a positive pressure exists, follow the procedures as specified in 40 C.F.R. §60.755(a)(3), except:

1. Beginning no later than September 27, 2021, if a positive pressure exists, action must be initiated to correct the exceedance within 5 days, except for the three conditions allowed under 40 C.F.R. §63.1958(b).

A. If negative pressure cannot be achieved without excess air infiltration within 15 days of the first measurement of positive pressure, the owner or operator must conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after positive pressure was first measured. The owner or operator must keep records according to 40 C.F.R. §63.1983(e)(3).

B. If corrective actions cannot be fully implemented within 60 days following the positive pressure measurement for which the root cause analysis was required, the owner or

operator must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the positive pressure measurement. The owner or operator must submit the items listed in 40 C.F.R. §63.1981(h)(7) as part of the next semi-annual report. The owner or operator must keep records according to 40 C.F.R. §63.1983(e)(4).

C. If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the owner or operator must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Administrator, according to 40 C.F.R. §63.1981(j). The owner or operator must keep records according to 40 C.F.R. §63.1983(e)(5).

2. [Reserved]

iv. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the temperature and nitrogen or oxygen operational standards in introductory paragraph 40 C.F.R. §63.1958(c), for the purpose of identifying whether excess air infiltration into the landfill is occurring, the owner or operator must follow the procedures as specified in 40 C.F.R. §60.755(a)(5) of this chapter, except:

1. Once an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in 40 C.F.R. §63.1958(c)(1), the owner or operator must monitor each well monthly for temperature. If a well exceeds the operating parameter for temperature as provided in 40 C.F.R. §63.1958(c)(1), action must be initiated to correct the exceedance within 5 days. Any attempted corrective measure must not cause exceedances of other operational or performance standards.

A. If a landfill gas temperature less than or equal to 62.8 degrees Celsius (145 degrees Fahrenheit) cannot be achieved within 15 days of the first measurement of landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit), the owner or operator must conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after a landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit) was first measured. The owner or operator must keep records according to 40 C.F.R. §63.1983(e)(3).

B. If corrective actions cannot be fully implemented within 60 days following the temperature measurement for which the root cause analysis was required, the owner or operator must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the measurement of landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit). The owner or operator must submit the items listed in 40 C.F.R. §63.1981(h)(7) as part of the next semi-annual report. The owner or operator must keep records according to 40 C.F.R. §63.1983(e)(4).

C. If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the owner or operator must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Administrator, according to 40 C.F.R. §63.1981(h)(7) and (j). The owner or operator must keep records according to 40 C.F.R. §63.1983(e)(5).

D. If a landfill gas temperature measured at either the wellhead or at any point in the well is greater than or equal to 76.7 degrees Celsius (170 degrees Fahrenheit) and the carbon monoxide concentration measured, according to the procedures in 40 C.F.R. §63.1961(a)(5)(vi) is greater than or equal to 1,000 ppmv the corrective action(s) for the

wellhead temperature standard (62.8 degrees Celsius or 145 degrees Fahrenheit) must be completed within 15 days.

v. An owner or operator seeking to demonstrate compliance with 40 C.F.R. §63.1959(b)(2)(ii)(B)(4) through the use of a collection system not conforming to the specifications provided in 40 C.F.R. §63.1962 must provide information satisfactory to the Administrator as specified in 40 C.F.R. §63.1981(d)(3) demonstrating that off-site migration is being controlled.

b. For purposes of compliance with 40 C.F.R. §63.1958(a), each owner or operator of a controlled landfill must place each well or design component as specified in the approved design plan as provided in 40 C.F.R. §63.1981(d). Each well must be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of:

i. 5 years or more if active; or

ii. 2 years or more if closed or at final grade.

c. The following procedures must be used for compliance with the surface methane operational standard as provided in 40 C.F.R. §63.1958(d).

i. After installation and startup of the gas collection system, the owner or operator must monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals (or a site-specific established spacing) for each collection area on a quarterly basis using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in condition 6.1.3.d

ii. The background concentration must be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells.

iii. Surface emission monitoring must be performed in accordance with section 8.3.1 of EPA Method 21 of appendix A-7 of part 60 of this chapter, except that the probe inlet must be placed within 5 to 10 centimeters of the ground. Monitoring must be performed during typical meteorological conditions.

iv. Any reading of 500 ppm or more above background at any location must be recorded as a monitored exceedance and the actions specified in conditions 6.1.3.c.iv.1 through 5 must be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of 40 C.F.R. §63.1958(d).

1. The location of each monitored exceedance must be marked and the location and concentration recorded. Beginning no later than September 27, 2021, the location must be recorded using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places.

2. Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance must be made and the location must be re-monitored within 10 days of detecting the exceedance.

3. If the re-monitoring of the location shows a second exceedance, additional corrective action must be taken and the location must be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified in condition 6.1.3.c.iv.5 must be taken, and no further monitoring of that location is required until the action specified in condition 6.1.3.c.iv.5 has been taken.

4. Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified in condition 6.1.3.c.iv.2 or 3 must be re-monitored 1 month from the initial exceedance. If the 1-month re-monitoring shows a concentration less than 500 ppm above background, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month re-monitoring shows an exceedance, the actions specified in condition 6.1.3.c.iv.3 or 5 must be taken.

5. For any location where monitored methane concentration equals or exceeds 500 ppm above background three times within a quarterly period, a new well or other collection device must be installed within 120 days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the Administrator for approval.

v. The owner or operator must implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

d. Each owner or operator seeking to comply with the provisions in condition 6.1.3.c must comply with the following instrumentation specifications and procedures for surface emission monitoring devices:

i. The portable analyzer must meet the instrument specifications provided in section 6 of EPA Method 21 of appendix A of part 60 of this chapter, except that “methane” replaces all references to “VOC”.

ii. The calibration gas must be methane, diluted to a nominal concentration of 500 ppm in air.

iii. To meet the performance evaluation requirements in section 8.1 of EPA Method 21 of appendix A of part 60 of this chapter, the instrument evaluation procedures of section 8.1 of EPA Method 21 of appendix A of part 60 must be used.

iv. The calibration procedures provided in sections 8 and 10 of EPA Method 21 of appendix A of part 60 of this chapter must be followed immediately before commencing a surface monitoring survey.

e.

i. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standards in introductory paragraph 40 C.F.R. §63.1958(e), the provisions of this subpart apply at all times, except during periods of SSM, provided that the duration of SSM does not exceed 5 days for collection systems and does not exceed 1 hour for treatment or control devices. You must comply with the provisions in Table 1 to subpart AAAA that apply before September 28, 2021.

ii. Once an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard in 40 C.F.R. §63.1958(e)(1), the provisions of this subpart apply at all times, including periods of SSM. During periods of SSM, you must comply with the work practice requirement specified in 40 C.F.R. §63.1958(e) in lieu of the compliance provisions in 40 C.F.R. §63.1960.

[40 C.F.R §63.1960, 45CSR34]

6.1.4. Specifications for active collection systems.

a. Each owner or operator seeking to comply with 40 C.F.R. §63.1959(b)(2)(i) must site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless alternative procedures have been approved by the Administrator as provided in 40 C.F.R. §63.1981(d)(2) and (3):

i. The collection devices within the interior must be certified to achieve comprehensive control of surface gas emissions by a professional engineer. The following issues must be addressed in the design: Depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, resistance to the refuse decomposition heat, and ability to isolate individual components or sections for repair or troubleshooting without shutting down entire collection system.

ii. The sufficient density of gas collection devices determined in condition 6.1.4.a.i must address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

iii. The placement of gas collection devices determined in condition 6.1.4.a.i must control all gas producing areas, except as provided by conditions 6.1.4.a.iii.1 and 2.

1. Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under 40 C.F.R. §63.1983(d). The documentation must provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area and must be provided to the Administrator upon request.

2. Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Administrator upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill.

A. The NMOC emissions from each section proposed for exclusion must be computed using Equation 7:

$$Q_i = 2kL_0M_i(e^{-kt_i})(C_{NMOC})(3.6 * 10^{-9}) \quad \text{Eq 7.}$$

Where:
Q_i = NMOC emission rate from the ith section, Mg/yr.
k = Methane generation rate constant, year $^{-1}$.
L_o = Methane generation potential, m^3/Mg solid waste.
M_i = Mass of the degradable solid waste in the ith section, Mg.
t_i = Age of the solid waste in the ith section, years.
C_{NMOC} = Concentration of NMOC, ppmv.
$3.6 * 10^{-9}$ = Conversion factor.

B. If the owner/operator is proposing to exclude, or cease gas collection and control from, nonproductive physically separated (e.g., separately lined) closed areas that already have gas collection systems, NMOC emissions from each physically separated closed area must be computed using either Equation 3 in 40 C.F.R. §63.1959(c) or Equation 7 in condition 6.1.4.

3. The values for k and C_{NMOC} determined in field testing must be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (the distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k, L_o and C_{NMOC} provided in 40 C.F.R. §63.1959(a)(1) or the alternative values from §63.1959(a)(5) must be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions

provided the nature, location, age, and amount of the nondegradable material is documented as provided in condition 6.1.4.a.iii.1.

b. Each owner or operator seeking to comply with 40 C.F.R. §63.1959(b)(2)(ii) must construct the gas collection devices using the following equipment or procedures:

i. The landfill gas extraction components must be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: Convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system must extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors must be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations must be situated with regard to the need to prevent excessive air infiltration.

ii. Vertical wells must be placed so as not to endanger underlying liners and must address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors must be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices must be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations.

iii. Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly must include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices must be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness.

c. Each owner or operator seeking to comply with 40 C.F.R. §63.1959(b)(2)(iii) must convey the landfill gas to a control system in compliance with 40 C.F.R. §63.1959(b)(2)(iii) through the collection header pipe(s). The gas mover equipment must be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures:

i. For existing collection systems, the flow data must be used to project the maximum flow rate. If no flow data exists, the procedures in condition 6.1.4.c.ii must be used.

ii. For new collection systems, the maximum flow rate must be in accordance with 40 C.F.R. §63.1960(a)(1).

[40 C.F.R §63.1962, 45CSR34]

6.2. Monitoring Requirements

6.2.1. Except as provided in 40 C.F.R. §63.1981(d)(2):

a. Each owner or operator seeking to comply with 40 C.F.R. §63.1959(b)(2)(ii)(B) for an active gas collection system must install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead and:

1. Measure the gauge pressure in the gas collection header on a monthly basis as provided in 40 C.F.R. §63.1960(a)(3); and

2. Monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis as follows:

i. The nitrogen level must be determined using EPA Method 3C of appendix A-2 to part 60 of this chapter, unless an alternative test method is established as allowed by 40 C.F.R. §63.1981(d)(2).

ii. Unless an alternative test method is established as allowed by 40 C.F.R. §63.1981(d)(2), the oxygen level must be determined by an oxygen meter using EPA Method 3A or 3C of appendix A-2 to part 60 of this chapter or ASTM D6522-11 (incorporated by reference, see 40 C.F.R. §63.14). Determine the oxygen level by an oxygen meter using EPA Method 3A or 3C of appendix A-2 to part 60 or ASTM D6522-11 (if sample location is prior to combustion) except that:

A. The span must be set between 10- and 12-percent oxygen;

B. A data recorder is not required;

C. Only two calibration gases are required, a zero and span;

D. A calibration error check is not required; and

E. The allowable sample bias, zero drift, and calibration drift are ±10 percent.

iii. A portable gas composition analyzer may be used to monitor the oxygen levels provided:

A. The analyzer is calibrated; and

B. The analyzer meets all quality assurance and quality control requirements for EPA Method 3A of appendix A-2 to part 60 of this chapter or ASTM D6522-11 (incorporated by reference, see 40 C.F.R. §63.14).

3. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the temperature and nitrogen or oxygen operational standards in introductory paragraph 40 C.F.R. §63.1958(c), the owner or operator must follow the procedures as specified in 40 C.F.R. §60.756(a)(2) and (3) of this chapter. Monitor temperature of the landfill gas on a monthly basis as provided in 40 C.F.R. §63.1960(a)(4). The temperature measuring device must be calibrated annually using the procedure in Section 10.3 of EPA Method 2 of appendix A-1 to part 60 of this chapter.

4. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in 40 C.F.R. §63.1958(c)(1), monitor temperature of the landfill gas on a monthly basis as provided in 40 C.F.R. §63.1960(a)(4). The temperature measuring device must be calibrated annually using the procedure in Section 10.3 of EPA Method 2 of appendix A-1 to part 60 of this chapter. Keep records specified in 40 C.F.R. §63.1983(e).

5. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in 40 C.F.R. §63.1958(c)(1), unless a higher operating temperature value has been approved by the Administrator under this subpart or under 40 CFR part 60, subpart WWW; 40 CFR part 60, subpart XXX; or a federal plan or EPA-approved and effective state plan or tribal plan that implements either 40 CFR part 60, subpart Cc or 40 CFR part 60, subpart Cf, you must initiate enhanced monitoring at each well with a measurement of landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit) as follows:

i. Visual observations for subsurface oxidation events (smoke, smoldering ash, damage to well) within the radius of influence of the well.

ii. Monitor oxygen concentration as provided in paragraph 6.2.1.a.2.

iii. Monitor temperature of the landfill gas at the wellhead as provided in paragraph (a)(4) of this section.

iv. Monitor temperature of the landfill gas every 10 vertical feet of the well as provided in paragraph (a)(6) of this section.

v. Monitor the methane concentration with a methane meter using EPA Method 3C of appendix A-6 to part 60, EPA Method 18 of appendix A-6 to part 60 of this chapter, or a portable gas composition analyzer to monitor the methane levels provided that the analyzer is calibrated and the analyzer meets all quality assurance and quality control requirements for EPA Method 3C or EPA Method 18.

vi. Monitor carbon monoxide concentration, as follows:

A. Collect the sample from the wellhead sampling port in a passivated canister or multi-layer foil gas sampling bag (such as the Cali-5-Bond Bag) and analyze that sample using EPA Method 10 of appendix A-4 to part 60 of this chapter, or an equivalent method with a detection limit of at least 100 ppmv of carbon monoxide in high concentrations of methane; and

B. Collect and analyze the sample from the wellhead using EPA Method 10 of appendix A-4 to part 60 to measure carbon monoxide concentrations.

vii. The enhanced monitoring this paragraph 6.2.1.a.5 must begin 7 days after the first measurement of landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit); and

viii. The enhanced monitoring in this paragraph 6.2.1.a.5 must be conducted on a weekly basis. If four consecutive weekly carbon monoxide readings are under 100 ppmv, then enhanced monitoring may be decreased to monthly. However, if carbon monoxide readings exceed 100 ppmv again, the landfill must return to weekly monitoring.

ix. The enhanced monitoring in this paragraph 6.2.1.a.5 can be stopped once a higher operating value is approved, at which time the monitoring provisions issued with the higher operating value should be followed, or once the measurement of landfill gas temperature at the wellhead is less than or equal to 62.8 degrees Celsius (145 degrees Fahrenheit).

6. For each wellhead with a measurement of landfill gas temperature greater than or equal to 73.9 degrees Celsius (165 degrees Fahrenheit), annually monitor temperature of the landfill gas every 10 vertical feet of the well. This temperature can be monitored either with a removable thermometer, or using temporary or permanent thermocouples installed in the well.

b. Each owner or operator seeking to comply with 40 C.F.R. §63.1959(b)(2)(iii) using an enclosed combustor must calibrate, maintain, and operate according to the manufacturer's specifications, the following equipment:

1. A temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of ±1 percent of the temperature being measured expressed in degrees Celsius or ±0.5 degrees Celsius, whichever is greater. A temperature monitoring device is not required for boilers or process heaters with design heat input capacity equal to or greater than 44 megawatts.

2. A device that records flow to the control device and bypass of the control device (if applicable). The owner or operator must:

   i. Install, calibrate, and maintain a gas flow rate measuring device that must record the flow to the control device at least every 15 minutes; and

   ii. Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

c. Each owner or operator seeking to comply with 40 C.F.R. §63.1959(b)(2)(iii) using a non-enclosed flare must install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:

   1. A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame; and

   2. A device that records flow to the flare and bypass of the flare (if applicable). The owner or operator must:

      i. Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the control device at least every 15 minutes; and

      ii. Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

d. Each owner or operator seeking to demonstrate compliance with 40 C.F.R. §63.1959(b)(2)(iii) using a device other than a non-enclosed flare or an enclosed combustor or a treatment system must provide information satisfactory to the Administrator as provided in 40 C.F.R. §63.1981(d)(2) describing the operation of the control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Administrator must review the information and either approve it, or request that additional information be submitted. The Administrator may specify additional appropriate monitoring procedures.

e. Each owner or operator seeking to install a collection system that does not meet the specifications in 40 C.F.R. §63.1962 or seeking to monitor alternative parameters to those required by 40 C.F.R. §§63.1958 through 63.1961 must provide information satisfactory to the Administrator as provided in 40 C.F.R. §63.1981(d)(2) and (3) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Administrator may specify additional appropriate monitoring procedures.

f. Each owner or operator seeking to demonstrate compliance with the 500-ppm surface methane operational standard in 40 C.F.R. §63.1958(d) must monitor surface concentrations of methane according to the procedures in 40 C.F.R. §63.1960(c) and the instrument specifications in 40 C.F.R. §63.1960(d). If you are complying with the 500-ppm surface methane operational standard in 40 C.F.R. §63.1958(d)(2), for location, you must determine the latitude and longitude coordinates of each exceedance using an instrument with an accuracy of at least 4 meters and the coordinates must be in decimal degrees with at least five decimal places. In the semi-annual report in 40 C.F.R. §63.1981(h), you must report the location of each exceedance of the 500-ppm methane concentration as provided in 40 C.F.R. §63.1958(d) and the concentration recorded at each location for which an exceedance was

recorded in the previous month. Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring.

g. Each owner or operator seeking to demonstrate compliance with 40 C.F.R. §63.1959(b)(2)(iii)(C) using a landfill gas treatment system must calibrate, maintain, and operate according to the manufacturer's specifications a device that records flow to the treatment system and bypass of the treatment system (if applicable). Beginning no later than September 27, 2021, each owner or operator must maintain and operate all monitoring systems associated with the treatment system in accordance with the site-specific treatment system monitoring plan required in 40 C.F.R. §63.1983(b)(5)(ii). The owner or operator must:

1. Install, calibrate, and maintain a gas flow rate measuring device that records the flow to the treatment system at least every 15 minutes; and

2. Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

h. The monitoring requirements of conditions 6.2.1.a, b, c, d, and g of this section apply at all times the affected source is operating, except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. You are required to complete monitoring system repairs in response to monitoring system malfunctions and to return the monitoring system to operation as expeditiously as practicable. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the temperature and nitrogen or oxygen operational standards in introductory paragraph 40 C.F.R. §63.1958(c)(1), (d)(2), and (e)(1), the standards apply at all times.

[45CSR34, 40 C.F.R. §63.1961]

6.3. Testing Requirements

None

6.4. Recordkeeping Requirements

6.4.1.

a. Except as provided in 40 C.F.R. §63.1981(d)(2), each owner or operator of an MSW landfill subject to the provisions of 40 C.F.R. §63.1959(b)(2)(ii) and (iii) of this chapter must keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report that triggered 40 C.F.R. §63.1959(b), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

b. Except as provided in §63.1981(d)(2), each owner or operator of a controlled landfill must keep up-to-date, readily accessible records for the life of the control system equipment of the data listed in paragraphs (b)(1) through (5) of this section as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring must be maintained for a minimum of 5 years. Records of the control device vendor specifications must be maintained until removal.

1. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 C.F.R. §63.1959(b)(2)(ii):

   i. The maximum expected gas generation flow rate as calculated in 40 C.F.R. §63.1960(a)(1).

   ii. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 C.F.R. §63.1962(a)(1) and (2).

2. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 C.F.R. §63.1959(b)(2)(iii) through use of an enclosed combustion device other than a boiler or process heater with a design heat input capacity equal to or greater than 44 megawatts:

   i. The average temperature measured at least every 15 minutes and averaged over the same time period of the performance test

   ii. The percent reduction of NMOC determined as specified in 40 C.F.R. §63.1959(b)(2)(iii)(B) achieved by the control device.

3. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 C.F.R. §63.1959(b)(2)(iii)(B)(1) through use of a boiler or process heater of any size: A description of the location at which the collected gas vent stream is introduced into the boiler or process heater over the same time period of the performance testing.

4. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 C.F.R. §63.1959(b)(2)(iii)(A) through use of a non-enclosed flare, the flare type (i.e., steam-assisted, air-assisted, or nonassisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in §63.11; continuous records of the flare pilot flame or flare flame monitoring and records of all periods of operations during which the pilot flame or the flare flame is absent.

5. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 C.F.R. §63.1959(b)(2)(iii)(C) through use of a landfill gas treatment system:

   i. Bypass records. Records of the flow of landfill gas to, and bypass of, the treatment system.

   ii. Site-specific treatment monitoring plan. Beginning no later than September 27, 2021, the owner or operator must prepare a site-specific treatment monitoring plan to include:

      A. Monitoring records of parameters that are identified in the treatment system monitoring plan and that ensure the treatment system is operating properly for each intended end use of the treated landfill gas. At a minimum, records should include records of filtration, de-watering, and compression parameters that ensure the treatment system is operating properly for each intended end use of the treated landfill gas.

      B. Monitoring methods, frequencies, and operating ranges for each monitored operating parameter based on manufacturer's recommendations or engineering analysis for each intended end use of the treated landfill gas.

      C. Documentation of the monitoring methods and ranges, along with justification for their use.

      D. List of responsible staff (by job title) for data collection.

E. Processes and methods used to collect necessary data.

F. Description of the procedures and methods that are used for quality assurance, maintenance, and repair of all continuous monitoring systems (CMS).

c. Except as provided in 40 C.F.R. §63.1981(d)(2), each owner or operator of a controlled landfill subject to the provisions of this subpart must keep for 5 years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in 40 C.F.R. §63.1961 as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded.

1. The following constitute exceedances that must be recorded and reported under 40 C.F.R. §63.1981(h):

i. For enclosed combustors except for boilers and process heaters with design heat input capacity of 44 megawatts (150 million Btu per hour) or greater, all 3-hour periods of operation during which the average temperature was more than 28 degrees Celsius (82 degrees Fahrenheit) below the average combustion temperature during the most recent performance test at which compliance with 40 C.F.R. §63.1959(b)(2)(iii) was determined.

ii. For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under paragraph (b)(3) of this section.

2. Each owner or operator subject to the provisions of this subpart must keep up-to-date, readily accessible continuous records of the indication of flow to the control system and the indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines, specified under 40 C.F.R. §63.1961(b)(2)(ii), (c)(2)(ii), and (g)(2).

3. Each owner or operator subject to the provisions of this subpart who uses a boiler or process heater with a design heat input capacity of 44 megawatts or greater to comply with 40 C.F.R. §63.1959(b)(2)(iii) must keep an up-to-date, readily accessible record of all periods of operation of the boiler or process heater. Examples of such records could include records of steam use, fuel use, or monitoring data collected pursuant to other state, local, tribal, or federal regulatory requirements.

4. Each owner or operator seeking to comply with the provisions of this subpart by use of a non-enclosed flare must keep up-to-date, readily accessible continuous records of the flame or flare pilot flame monitoring specified under 40 C.F.R. §63.1961(c), and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent.

5. Each owner or operator of a landfill seeking to comply with 40 C.F.R. §63.1959(b)(2) using an active collection system designed in accordance with 40 C.F.R. §63.1959(b)(2)(ii) must keep records of periods when the collection system or control device is not operating.

6. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard in 40 C.F.R. §63.1958(e)(1), the date, time, and duration of each startup and/or shutdown period, recording the periods when the affected source was subject to the standard applicable to startup and shutdown.

7. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard in §63.1958(e)(1), in the event that an affected unit fails to meet an applicable standard, record the information below in this paragraph:

i. For each failure record the date, time and duration of each failure and the cause of such events (including unknown cause, if applicable).

ii. For each failure to meet an applicable standard; record and retain a list of the affected sources or equipment.

iii. Record actions taken to minimize emissions in accordance with the general duty of 40 C.F.R. §63.1955(c) and any corrective actions taken to return the affected unit to its normal or usual manner of operation.

8. Beginning no later than September 27, 2021, in lieu of the requirements specified in 40 C.F.R. §63.8(d)(3) of subpart A you must keep the written procedures required by 40 C.F.R. §63.8(d)(2) on record for the life of the affected source or until the affected source is no longer subject to the provisions of this part, to be made available for inspection, upon request, by the Administrator. If the performance evaluation plan is revised, you must keep previous (i.e., superseded) versions of the performance evaluation plan on record to be made available for inspection, upon request, by the Administrator, for a period of 5 years after each revision to the plan. The program of corrective action should be included in the plan required under 40 C.F.R. §63.8(d)(2).

d. Except as provided in 40 C.F.R. §63.1981(d)(2), each owner or operator subject to the provisions of this subpart must keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector.

1. Each owner or operator subject to the provisions of this subpart must keep up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified under 40 C.F.R. §63.1960(b).

2. Each owner or operator subject to the provisions of this subpart must keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in 40 C.F.R. §63.1962(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in 40 C.F.R. §63.1962(a)(3)(ii).

e. Except as provided in 40 C.F.R. §63.1981(d)(2), each owner or operator subject to the provisions of this subpart must keep for at least 5 years up-to-date, readily accessible records of the following:

1. All collection and control system exceedances of the operational standards in 40 C.F.R. §63.1958, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.

2. Each owner or operator subject to the control provisions of this subpart must keep records of each wellhead temperature monitoring value of greater than 55 degrees Celsius (131 degrees Fahrenheit), each wellhead nitrogen level at or above 20 percent, and each wellhead oxygen level at or above 5 percent, except:

i. When an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the compliance provisions for wellhead temperature in 40 C.F.R. §63.1958(c)(1), but no later than September 27, 2021, the records of each wellhead temperature monitoring value of 62.8 degrees Celsius (145 degrees Fahrenheit) or above instead of values greater than 55 degrees Celsius (131 degrees Fahrenheit).

ii. Each owner or operator required to conduct the enhanced monitoring provisions in 40 C.F.R. §63.1961(a)(5), must also keep records of all enhanced monitoring activities.

iii. Each owner or operator required to submit the 24-hour high temperature report in 40 C.F.R. §63.1981(k), must also keep a record of the email transmission.

3. For any root cause analysis for which corrective actions are required in 40 C.F.R. §63.1960(a)(3)(i)(A) or (a)(4)(i)(A), keep a record of the root cause analysis conducted, including a description of the recommended corrective action(s) taken, and the date(s) the corrective action(s) were completed.

4. For any root cause analysis for which corrective actions are required in 40 C.F.R. §63.1960(a)(3)(i)(B) or (a)(4)(i)(B), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.

5. For any root cause analysis for which corrective actions are required in 40 C.F.R. §63.1960(a)(3)(i)(C) or (a)(4)(i)(C), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates, and a copy of any comments or final approval on the corrective action analysis or schedule from the Administrator.

f. Landfill owners or operators who convert design capacity from volume to mass or mass to volume to demonstrate that landfill design capacity is less than 2.5 million Mg or 2.5 million m^3, as provided in the definition of "design capacity," must keep readily accessible, on-site records of the annual recalculation of site-specific density, design capacity, and the supporting documentation. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

g. Except as provided in 40 C.F.R. §63.1981(d)(2), each owner or operator subject to the provisions of this subpart must keep for at least 5 years up-to-date, readily accessible records of all collection and control system monitoring data for parameters measured in 40 C.F.R. §63.1961(a)(1) through (6).

h. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in 40 C.F.R. §63.1958(c)(1), you must keep the following records.

1. Records of the landfill gas temperature on a monthly basis as monitored in 40 C.F.R. §63.1960(a)(4).

2. Records of enhanced monitoring data at each well with a measurement of landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit) as gathered in 40 C.F.R. §63.1961(a)(5) and (6).

i. Any records required to be maintained by this subpart that are submitted electronically via the EPA's CEDRI may be maintained in electronic format. This ability to maintain electronic copies does not affect the requirement for facilities to make records, data, and reports available upon request to a delegated air agency or the EPA as part of an on-site compliance evaluation.

[45CSR34; 40 C.F.R. §63.1983]

6.5. Reporting Requirements

6.5.1. You must submit the reports specified in this section and the reports specified in Table 1 to this subpart. If you have previously submitted a design capacity report, amended design capacity report, initial NMOC emission rate report, initial or revised collection and control system design plan, closure report, equipment removal report, or initial performance test under 40 CFR part 60, subpart WWW; 40 CFR part 60, subpart XXX; or a federal plan or EPA-approved and effective state plan or tribal plan that implements either 40

CFR part 60, subpart Cc or 40 CFR part 60, subpart Cf, then that submission constitutes compliance with the design capacity report in condition (a) of this section, the amended design capacity report in condition (b) of this section, the initial NMOC emission rate report in condition (c) of this section, the initial collection and control system design plan in condition (d) of this section, the revised design plan in condition (e) of this section, the closure report in condition (f) of this section, the equipment removal report in condition (g) of this section, and the initial performance test report in condition (i) of this section. You do not need to re-submit the report(s). However, you must include a statement certifying prior submission of the respective report(s) and the date of submittal in the first semi-annual report required in this section.

a. Initial design capacity report. The initial design capacity report must contain the information specified in 40 C.F.R. §60.757(a)(2) of this chapter, except beginning no later than September 28, 2021, the report must contain:

    1. A map or plot of the landfill, providing the size and location of the landfill, and identifying all areas where solid waste may be landfilled according to the permit issued by the state, local, or tribal agency responsible for regulating the landfill.

    2. The maximum design capacity of the landfill. Where the maximum design capacity is specified in the permit issued by the state, local, or tribal agency responsible for regulating the landfill, a copy of the permit specifying the maximum design capacity may be submitted as part of the report. If the maximum design capacity of the landfill is not specified in the permit, the maximum design capacity must be calculated using good engineering practices. The calculations must be provided, along with the relevant parameters as part of the report. The landfill may calculate design capacity in either Mg or m^3 for comparison with the exemption values. If the owner or operator chooses to convert the design capacity from volume to mass or from mass to volume to demonstrate its design capacity is less than 2.5 million Mg or 2.5 million m^3, the calculation must include a site-specific density, which must be recalculated annually. Any density conversions must be documented and submitted with the design capacity report. The state, tribal, local agency or Administrator may request other reasonable information as may be necessary to verify the maximum design capacity of the landfill.

b. Amended design capacity report. An amended design capacity report must be submitted to the Administrator providing notification of an increase in the design capacity of the landfill, within 90 days of an increase in the maximum design capacity of the landfill to meet or exceed 2.5 million Mg and 2.5 million m^3. This increase in design capacity may result from an increase in the permitted volume of the landfill or an increase in the density as documented in the annual recalculation required in 40 C.F.R. §63.1983(f).

c. NMOC emission rate report. Each owner or operator subject to the requirements of this subpart must submit a copy of the latest NMOC emission rate report that was submitted according to 40 C.F.R. §60.757(b) of this chapter or submit an NMOC emission rate report to the Administrator initially and annually thereafter, except as provided for in paragraph 6.5.1.c.1.ii.A. The Administrator may request such additional information as may be necessary to verify the reported NMOC emission rate. If you have submitted an annual report under 40 CFR part 60, subpart WWW; 40 CFR part 60, subpart XXX; or a Federal plan or EPA-approved and effective state plan or tribal plan that implements either 40 CFR part 60, subpart Cc or 40 CFR part 60, subpart Cf, then that submission constitutes compliance with the annual NMOC emission rate report in this paragraph. You do not need to re-submit the annual report for the current year. Beginning no later than September 27, 2021, the report must meet the following requirements:

    1. The NMOC emission rate report must contain an annual or 5-year estimate of the NMOC emission rate calculated using the formula and procedures provided in 40 C.F.R. §63.1959(a) or (b), as applicable.

i. The initial NMOC emission rate report must be submitted no later than 90 days after the date of commenced construction, modification, or reconstruction for landfills that commence construction, modification, or reconstruction on or after March 12, 1996.

ii. Subsequent NMOC emission rate reports must be submitted annually thereafter, except as provided for in condition 6.5.1.c.1.ii.A.

A. If the estimated NMOC emission rate as reported in the annual report to the Administrator is less than 50 Mg/yr in each of the next 5 consecutive years, the owner or operator may elect to submit, an estimate of the NMOC emission rate for the next 5-year period in lieu of the annual report. This estimate must include the current amount of solid waste-in-place and the estimated waste acceptance rate for each year of the 5 years for which an NMOC emission rate is estimated. All data and calculations upon which this estimate is based must be provided to the Administrator. This estimate must be revised at least once every 5 years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year reported in the 5-year estimate, a revised 5-year estimate must be submitted to the Administrator. The revised estimate must cover the 5-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate.

B. The report must be submitted following the procedure specified in condition 6.5.1.l.2.

2. The NMOC emission rate report must include all the data, calculations, sample reports and measurements used to estimate the annual or 5-year emissions.

3. Each owner or operator subject to the requirements of this subpart is exempted from the requirements to submit an NMOC emission rate report, after installing a collection and control system that complies with 40 C.F.R. §63.1959(b)(2), during such time as the collection and control system is in operation and in compliance with 40 C.F.R. §§63.1958 and 63.1960.

d. Collection and control system design plan. Each owner or operator subject to the provisions of 40 C.F.R. §63.1959(b)(2) must submit a collection and control system design plan to the Administrator for approval according to 40 C.F.R. §60.757(c) of this chapter and the schedule in 40 C.F.R. §60.757(c)(1) and (2). Beginning no later than September 27, 2021, each owner or operator subject to the provisions of 40 C.F.R. §63.1959(b)(2) must submit a collection and control system design plan to the Administrator according to conditions 6.5.1.d.1 through 6. The collection and control system design plan must be prepared and approved by a professional engineer.

1. The collection and control system as described in the design plan must meet the design requirements in 40 C.F.R. §63.1959(b)(2).

2. The collection and control system design plan must include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions of 40 C.F.R. §§63.1957 through 63.1983 proposed by the owner or operator.

3. The collection and control system design plan must either conform with specifications for active collection systems in 40 C.F.R. §63.1962 or include a demonstration to the Administrator's satisfaction of the sufficiency of the alternative provisions to 40 C.F.R. §63.1962.

4. Each owner or operator of an MSW landfill affected by this subpart must submit a collection and control system design plan to the Administrator for approval within 1 year of becoming subject to this subpart.

5. The landfill owner or operator must notify the Administrator that the design plan is completed and submit a copy of the plan's signature page. The Administrator has 90 days to decide whether the

design plan should be submitted for review. If the Administrator chooses to review the plan, the approval process continues as described in condition 6.5.1.d.6. In the event that the design plan is required to be modified to obtain approval, the owner or operator must take any steps necessary to conform any prior actions to the approved design plan and any failure to do so could result in an enforcement action.

6. Upon receipt of an initial or revised design plan, the Administrator must review the information submitted under conditions 6.5.1.d.1 through 3 and either approve it, disapprove it, or request that additional information be submitted. Because of the many site-specific factors involved with landfill gas system design, alternative systems may be necessary. A wide variety of system designs are possible, such as vertical wells, combination horizontal and vertical collection systems, or horizontal trenches only, leachate collection components, and passive systems.

e. Revised design plan. Beginning no later than September 27, 2021, the owner or operator who has already been required to submit a design plan under condition 6.5.1.d must submit a revised design plan to the Administrator for approval as follows:

1. At least 90 days before expanding operations to an area not covered by the previously approved design plan.

2. Prior to installing or expanding the gas collection system in a way that is not consistent with the design plan that was submitted to the Administrator according to condition 6.5.1.d.

f. Closure report. Each owner or operator of a controlled landfill must submit a closure report to the Administrator within 30 days of waste acceptance cessation. The Administrator may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of §258.60 of this chapter. If a closure report has been submitted to the Administrator, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 C.F.R. §63.9(b) of subpart A.

g. Equipment removal report. Each owner or operator of a controlled landfill must submit an equipment removal report as provided in 40 C.F.R. §60.757(e) of this chapter. Each owner or operator of a controlled landfill must submit an equipment removal report to the Administrator 30 days prior to removal or cessation of operation of the control equipment.

1. Beginning no later than September 27, 2021, the equipment removal report must contain all of the following items:

i. A copy of the closure report submitted in accordance with condition 6.5.1.f;

ii. A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired, or information that demonstrates that the gas collection and control system will be unable to operate for 15 years due to declining gas flows. In the equipment removal report, the process unit(s) tested, the pollutant(s) tested, and the date that such performance test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the EPA's Central Data Exchange (CDX); and

iii. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 Mg or greater of NMOC per year. If the NMOC emission rate reports have been previously submitted to the EPA's CDX, a statement that the NMOC emission rate reports have been submitted electronically and the dates that the reports were submitted to the EPA's CDX may be submitted in the equipment removal report in lieu of the NMOC emission rate reports.

2. The Administrator may request such additional information as may be necessary to verify that all of the conditions for removal in 40 C.F.R. §63.1957(b) have been met.

h. Semi-annual report. The owner or operator of a landfill seeking to comply with 40 C.F.R. §63.1959(b)(2) using an active collection system designed in accordance with 40 C.F.R. §63.1959(b)(2)(ii) must submit to the Administrator semi-annual reports. Beginning no later than September 27, 2021, you must submit the report, following the procedure specified in condition 6.5.1.l. The initial report must be submitted within 180 days of installation and startup of the collection and control system and must include the initial performance test report required under 40 C.F.R. §63.7 of subpart A, as applicable. In the initial report, the process unit(s) tested, the pollutant(s) tested, and the date that such performance test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the EPA's CDX. For enclosed combustion devices and flares, reportable exceedances are defined under 40 C.F.R. §63.1983(c). The semi-annual reports must contain the information in paragraphs 6.5.1.h.1 through 8.

1. Number of times that applicable parameters monitored under 40 C.F.R. §63.1958(b), (c), and (d) were exceeded and when the gas collection and control system was not operating under 40 C.F.R. §63.1958(e), including periods of SSM. For each instance, report the date, time, and duration of each exceedance.

i. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the temperature and nitrogen or oxygen operational standards in introductory paragraph 40 C.F.R. §63.1958(c), provide a statement of the wellhead operational standard for temperature and oxygen you are complying with for the period covered by the report. Indicate the number of times each of those parameters monitored under 40 C.F.R. §63.1961(a)(3) were exceeded. For each instance, report the date, time, and duration of each exceedance.

ii. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in 40 C.F.R. §63.1958(c)(1), provide a statement of the wellhead operational standard for temperature and oxygen you are complying with for the period covered by the report. Indicate the number of times each of those parameters monitored under 40 C.F.R. §63.1961(a)(4) were exceeded. For each instance, report the date, time, and duration of each exceedance.

iii. Beginning no later than September 27, 2021, number of times the parameters for the site-specific treatment system in 40 C.F.R. §63.1961(g) were exceeded.

2. Description and duration of all periods when the gas stream was diverted from the control device or treatment system through a bypass line or the indication of bypass flow as specified under 40 C.F.R. §63.1961.

3. Description and duration of all periods when the control device or treatment system was not operating and length of time the control device or treatment system was not operating.

4. All periods when the collection system was not operating.

5. The location of each exceedance of the 500-ppm methane concentration as provided in 40 C.F.R. §63.1958(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month. Beginning no later than September 27, 2021, for location, you record the latitude and longitude coordinates of each exceedance using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places.

6. The date of installation and the location of each well or collection system expansion added pursuant to 40 C.F.R. §63.1960(a)(3) and (4), (b), and (c)(4).

7. For any corrective action analysis for which corrective actions are required in 40 C.F.R. §63.1960(a)(3)(i) or (a)(5) and that take more than 60 days to correct the exceedance, the root cause analysis conducted, including a description of the recommended corrective action(s), the date for corrective action(s) already completed following the positive pressure or high temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.

8. Each owner or operator required to conduct enhanced monitoring in 40 C.F.R. §§63.1961(a)(5) and (6) must include the results of all monitoring activities conducted during the period.

   i. For each monitoring point, report the date, time, and well identifier along with the value and units of measure for oxygen, temperature (wellhead and downwell), methane, and carbon monoxide.

   ii. Include a summary trend analysis for each well subject to the enhanced monitoring requirements to chart the weekly readings over time for oxygen, wellhead temperature, methane, and weekly or monthly readings over time, as applicable for carbon monoxide.

   iii. Include the date, time, staff person name, and description of findings for each visual observation for subsurface oxidation event.

i. Initial performance test report. Each owner or operator seeking to comply with 40 C.F.R. §63.1959(b)(2)(iii) must include the following information with the initial performance test report required under 40 C.F.R. §63.7 of subpart A:

1. A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion;

2. The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based;

3. The documentation of the presence of asbestos or nondegradable material for each area from which collection wells have been excluded based on the presence of asbestos or nondegradable material;

4. The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on nonproductivity and the calculations of gas generation flow rate for each excluded area;

5. The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill; and

6. The provisions for the control of off-site migration.

j. Corrective action and the corresponding timeline. The owner or operator must submit information regarding corrective actions according to paragraphs 6.5.1.j.1 and 2.

1. For corrective action that is required according to 40 C.F.R. §63.1960(a)(3) or (4) and is not completed within 60 days after the initial exceedance, you must submit a notification to the Administrator as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature exceedance.

2. For corrective action that is required according to 40 C.F.R. §63.1960(a)(3) or (4) and is expected to take longer than 120 days after the initial exceedance to complete, you must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Administrator as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature monitoring value of 62.8 degrees Celsius (145 degrees Fahrenheit) or above. The Administrator must approve the plan for corrective action and the corresponding timeline.

k. 24-hour high temperature report. Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with the operational standard for temperature in 40 C.F.R. §63.1958(c)(1) and a landfill gas temperature measured at either the wellhead or at any point in the well is greater than or equal to 76.7 degrees Celsius (170 degrees Fahrenheit) and the carbon monoxide concentration measured is greater than or equal to 1,000 ppmv, then you must report the date, time, well identifier, temperature and carbon monoxide reading via email to the Administrator within 24 hours of the measurement unless a higher operating temperature value has been approved by the Administrator for the well under this subpart or under 40 CFR part 60, subpart WWW; 40 CFR part 60, subpart XXX; or a Federal plan or EPA approved and effective state plan or tribal plan that implements either 40 CFR part 60, subpart Cc or 40 CFR part 60, subpart Cf.

l. Electronic reporting. Beginning no later than September 27, 2021, the owner or operator must submit reports electronically according to conditions 6.5.1.l.1 and 2.

1. Within 60 days after the date of completing each performance test required by this subpart, you must submit the results of the performance test following the procedures specified in conditions 6.5.1.l.1.i through iii.

i. Data collected using test methods supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT website (https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert) at the time of the test. Submit the results of the performance test to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the EPA's CDX (https://cdx.epa.gov/). The data must be submitted in a file format generated through the use of the EPA's ERT. Alternatively, you may submit an electronic file consistent with the extensible markup language (XML) schema listed on the EPA's ERT website.

ii. Data collected using test methods that are not supported by the EPA's ERT as listed on the EPA's ERT website at the time of the test. The results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT website. Submit the ERT generated package or alternative file to the EPA via CEDRI.

iii. Confidential business information (CBI). If you claim some of the information submitted under paragraph 6.5.1.a is CBI, you must submit a complete file, including information claimed to be CBI, to the EPA. The file must be generated through the use of the EPA's ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT website. Submit the file on a compact disc, flash drive, or other commonly used electronic storage medium and clearly mark the medium as CBI. Mail the electronic medium to U.S. EPA/OAQPS/CORE CBI Office, Attention: Group Leader, Measurement Policy Group, MD C404-02, 4930 Old Page Rd., Durham, NC 27703. The same file with the CBI omitted must be submitted to the EPA via the EPA's CDX as described in paragraph (l)(1)(i) of this section.

2. Each owner or operator required to submit reports following the procedure specified in this paragraph must submit reports to the EPA via CEDRI. CEDRI can be accessed through the EPA's CDX. The owner or operator must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website

(https://www.epa.gov/electronic-reporting-air-emissions/compliance-and-emissions-data-reporting-interface-cedri). Once the spreadsheet template upload/forms for the reports have been available in CEDRI for 90 days, the owner or operator must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. The NMOC emission rate reports, semi-annual reports, and bioreactor 40-percent moisture reports should be electronically reported as a spreadsheet template upload/form to CEDRI. If the reporting forms specific to this subpart are not available in CEDRI at the time that the reports are due, the owner or operator must submit the reports to the Administrator at the appropriate address listed in 40 C.F.R. §63.13 of subpart A.

m. Claims of EPA system outage. Beginning no later than September 27, 2021, if you are required to electronically submit a report through CEDRI in the EPA's CDX, you may assert a claim of EPA system outage for failure to comply timely with the reporting requirement. To assert a claim of EPA system outage, you must meet the following requirements:

1. You must have been or will be precluded from accessing CEDRI and submitting a required report within the time prescribed due to an outage of either the EPA's CEDRI or CDX systems.

2. The outage must have occurred within the period of time beginning 5 business days prior to the date that the submission is due.

3. The outage may be planned or unplanned.

4. You must submit notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

5. You must provide to the Administrator a written description identifying:

i. The date(s) and time(s) when CDX or CEDRI was accessed and the system was unavailable;

ii. A rationale for attributing the delay in reporting beyond the regulatory deadline to EPA system outage;

iii. Measures taken or to be taken to minimize the delay in reporting; and

iv. The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

6. The decision to accept the claim of EPA system outage and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

7. In any circumstance, the report must be submitted electronically as soon as possible after the outage is resolved.

n. Claims of force majeure. Beginning no later than September 2, 2021, if you are required to electronically submit a report through CEDRI in the EPA's CDX, you may assert a claim of force majeure for failure to comply timely with the reporting requirement. To assert a claim of force majeure, you must meet the following requirements:

1. You may submit a claim if a force majeure event is about to occur, occurs, or has occurred or there are lingering effects from such an event within the period of time beginning 5 business days prior to the date the submission is due. For the purposes of this section, a force majeure event is defined as an event that will be or has been caused by circumstances beyond the control of the affected

facility, its contractors, or any entity controlled by the affected facility that prevents you from complying with the requirement to submit a report electronically within the time period prescribed. Examples of such events are acts of nature (e.g., hurricanes, earthquakes, or floods), acts of war or terrorism, or equipment failure or safety hazard beyond the control of the affected facility (e.g., large scale power outage).

2. You must submit notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

3. You must provide to the Administrator:

   i. A written description of the force majeure event;

   ii. A rationale for attributing the delay in reporting beyond the regulatory deadline to force majeure event;

   iii. Measures taken or to be taken to minimize the delay in reporting; and

   iv. The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

4. The decision to accept the claim of force majeure and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

5. In any circumstance, the reporting must occur as soon as possible after the force majeure event occurs.

[45CSR34; 40 C.F.R. §63.1981]

6.6. Compliance Plan

None

7.0 Source-Specific Requirements [Tire Shredder (2S)]

7.1. Limitations and Standards

7.1.1. The throughput to the Tire Shredder (2S) shall not exceed 10 tons of used tires per hour.
[45CSR13, R13-2596, 4.1.1.]

7.1.2. Maximum emissions of Particulate Matter-10 (PM_{10}) from the Tire Shredder (2S) to the atmosphere shall not exceed 0.25 lb/hr and 1.10 tons/yr.
[45CSR13, R13-2596, 4.1.2.]

7.1.3. The permittee shall maintain and operate a water spray on the Tire Shredder (2S) as often as is necessary in order to minimize the atmospheric entrainment of fugitive particulate emissions that may be generated from the Tire Shredder (2S) and other work areas where mobile equipment is used.

The spray bar shall be equipped with commercially available spray nozzles, of sufficient size and number, so as to provide adequate coverage to the surface being treated.

The pump delivering the water, or solution, shall be of sufficient size and capacity so as to be capable of delivering to the spray nozzle(s) an adequate quantity of water, or solution, and at a sufficient pressure.
[45CSR13, R13-2596, 4.1.3.]

7.1.4. No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except the provisions shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§§7-3.1. and 3.2., 45CSR13, R13-2596, 4.1.5.]

7.1.5. No person shall cause, suffer, allow or permit visible emissions from any storage structure(s) associated with any manufacturing process(es) that pursuant to subsection 5.1 is required to have a full enclosure and be equipped with a particulate matter control device.
[45CSR§7-3.7, 45CSR13, R13-2596, 4.1.6.]

7.1.6. No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A of 45CSR7. For the Tire Shredder, particulate emissions shall not exceed 16 pounds per hour.
[45CSR§7-4.1., 45CSR13, R13-2596, 4.1.7.]

7.1.7. Any stack serving any process source operation or air pollution control equipment on any process source operation shall contain flow straightening devices or a vertical run of sufficient length to establish flow patterns consistent with acceptable stack sampling procedures.
[45CSR§7-4.12.]

7.1.8. No person shall cause, suffer, allow, or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design, or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained, and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1., 45CSR13, R13-2596, 4.1.8.]

7.1.9. The owner or operator of a plant shall maintain particulate matter control of the plant premises, and plant owned, leased or controlled access roads, by paving, application of asphalt, chemical dust suppressants or other suitable dust control measures. Good operating practices shall be implemented and when necessary dust suppressants shall be applied in relation to stockpiling and general material handling to prevent dust generation and atmospheric entrainment.
[45CSR§7-5.2., 45CSR13, R13-2596, 4.1.9.]

7.1.10. Due to unavoidable malfunction of equipment, emissions exceeding those set forth in 45CSR7 may be permitted by the Director for periods not to exceed ten (10) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.
[45CSR§7-9.1., 45CSR13, R13-2596, 4.1.12.]

7.1.11. **Operation and Maintenance of Air Pollution Control Equipment**. The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11., 45CSR13, R13-2596, 4.1.14.]

7.2. Monitoring Requirements

7.2.1. Except during startup and shutdown, opacity from the Tire Shredder (2S) shall not exceed 10 percent based on a six minute block average. In order to determine compliance with this limit, the permittee shall conduct monthly visual emission observations in accordance with Method 22 of 40 CFR 60, Appendix A for the Tire Shredder (2S). These observations shall be conducted during periods of normal facility operation for a sufficient time interval, but no less than one (1) minute, to determine if the unit has visible emissions using procedures outlined in 40CFR60 Appendix A, Method 22. If sources of visible emissions are identified during the survey, the permittee shall conduct an opacity evaluation in accordance with 40CFR60 Appendix A, Method 9, within 24 hours. A 40CFR60 Appendix A, Method 9 evaluation shall not be required if the visible emission condition is corrected within 24 hours and the unit is operated at normal operating conditions with no visible emissions being observed. Records shall be maintained on site reporting the results of each test. Upon observing any visible emissions in excess of twenty percent (20%) opacity, or excess of forty (40%) for any period or periods aggregating more than five (5) minutes in any sixty (60) minute period, the Company shall submit a written report, certified by a responsible official, to the Director of the Division of Air Quality within five (5) days after taking said reading.
[45CSR13, R13-2596, 4.1.4.]

7.2.2. The permittee shall inspect all fugitive dust control systems weekly to ensure that they are operated and maintained in conformance with their designs.
[45CSR13, R13-2596, 4.2.1.]

7.3. Testing Requirements

7.3.1. At such reasonable times as the Director may designate, the operator of any manufacturing process source operation may be required to conduct or have conducted stack tests to determine the particulate matter loading in exhaust gases. Such tests shall be conducted in such manner as the Director may specify and be filed on forms and in a manner acceptable to the Director. The Director, or his duly authorized representative, may at his option witness or conduct such stack tests. Should the Director exercise his option to conduct such tests, the operator will provide all the necessary sampling connections and sampling ports to be located in such manner as the Director may require, power for test equipment and the required safety equipment such as scaffolding, railings and ladders to comply with generally accepted good safety practices.
[45CSR§7-8.1., 45CSR13, R13-2596, 4.1.10.]

7.3.2. The Director, or his duly authorized representative, may conduct such other tests as he or she may deem necessary to evaluate air pollution emissions.
[45CSR§7-8.2., 45CSR13, R13-2596, 4.1.11.]

7.3.3. At the time a stationary source is alleged to be in compliance with an applicable emission standard and at reasonable times to be determined by the Secretary thereafter, appropriate tests consisting of visual determinations or conventional in-stack measurements or such other tests the Secretary may specify shall be conducted to determine compliance.
[45CSR§13-6.1, 45CSR13, R13-2596, 4.1.13.]

7.4. Recordkeeping Requirements

7.4.1. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.
[45CSR13, R13-2596, 4.4.2.]

7.4.2. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0, the permittee shall maintain records of the occurrence and duration of any malfunctions or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.

b. Steps taken to minimize emissions during the event.

c. The duration of the event.

d. The estimated increase in emissions during the event

For each such case associated with an equipment malfunction, the additional information shall also be recorded.

e. The cause of the malfunction.

f. Steps taken to correct the malfunction

g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

[45CSR13, R13-2596, 4.4.3.]

7.4.3. For the purpose of determining compliance with Sections 7.1.1 and 7.1.2, the permittee shall keep daily records of the amount of used tires entering the Tire Shredder (2S). These records shall be maintained on-site for a period of five (5) years and certified records shall be made available to the Director of the Division of Air Quality or his/her duly authorized representative upon request.
[45CSR13, R13-2596, 4.4.4.]

7.4.4. The permittee shall maintain records of all scheduled and non-scheduled maintenance. Records shall be maintained on site for a period of no less than five (5) years stating any maintenance or corrective actions taken as a result of the weekly inspections (as called for in section 7.2.2.), the times fugitive dust control system(s) are inoperable and any corrective actions taken.
[45CSR13, R13-2596, 4.4.5.]

7.4.5. The permittee shall maintain daily records indicating the use of any dust suppressants or any other suitable dust control measures applied at the facility. These records shall be maintained on-site for a period of five (5) years and be made available to the Director of the Division of Air Quality or his/her duly authorized representative upon request.
[45CSR13, R13-2596, 4.4.6.]

7.5. Reporting Requirements

7.5.1. None

7.6. Compliance Plan

7.6.1. None

Appendix A:
Approved Landfill Gas Collection and Control System Plan

west virginia department of environmental protection

Division of Air Quality
601 57th Street, SE, Charleston, WV 25304
(304)926-0440

Austin Caperton, Cabinet Secretary
dep.wv.gov

November 18, 2020

Mr. Travis Bayes, P.E.
Waste Management
1488 Dawson Drive
Bridgeport, WV 26330

Subject: Meadowfill Landfill Gas Collection and Control System (GCCS) Design Plan Approval

Dear Mr. Bayes:

The West Virginia Department of Environmental Protection, Division of Air Quality (DAQ) received your Landfill Gas Collection and Control System (GCCS) Design Plan for the Meadowfill Landfill located in Clarksburg, West Virginia on September 25, 2020.

Upon review of the GCCS Design Plan, the DAQ has determined that the plan as submitted is complete and adequately provides a well-engineered approach to the collection and control of landfill generated gas. Meadowfill Landfill may proceed with installation of the GCCS and subsequent Performance Test as required in 40CFR60 to determine the final compliance with the gas collection system and control devices capable of reducing NMOC emission by 98 percent.

Should you have any questions or comments, please contact the undersigned engineer at (304) 926-0499 x. 41246.

Sincerely,

Richard A. Boehm
Engineer

cc: Mike Gordon, USEPA Region III
James Gardner, Golder Associates Inc.
File

Promoting a healthy environment.

1 INTRODUCTION

1.1 Purpose

This document serves as a Landfill Gas Collection and Control System (GCCS) design plan (Plan) for the Meadowfill Landfill (Meadowfill) in accordance with requirements Title 45 of the West Virginia Code of State Rules (CSR), Series 23 ("Control of Air Pollution from Municipal Solid Waste Landfills") and the Title 40 of the Code of Federal Regulations (CFR), Part 63, Subpart AAAA ("National Air Emissions Standards for Hazardous Air Pollutants [NESHAP]: Municipal Solid Waste Landfills").

The revisions to 45CSR§23 became effective on June 1, 2018. Section 7 of this rule applies to municipal solid waste (MSW) landfills that commenced construction, reconstruction or modification before July 17, 2014; and the rule was promulgated pursuant to 40 CFR Part 60, Subpart Cf. The U.S. EPA approved West Virginia's state plan to implement Subpart Cf (via the revisions to 45CSR§23) on November 22, 2019.

The NESHAP was revised and promulgated on March 26, 2020 and applies to all landfills with NMOC emissions greater than 50 Mg/year. The purpose of this document is to provide a design plan that meets the requirements of 45CSR§23-7 and the NESHAP AAAA and to provide the Administrator the design standards and calculations used to prepare this GCCS Design Plan.

The regulatory language in 45CSR§23-7 and NESHAP AAAA is similar but not identical. For ease of review, similar citations are grouped together with the requirements summarized, rather than reproduced exactly, for each.

1.2 Applicability

> **45CSR§23-7.4.e.2 & §63.1959(b)(2)** If the calculated NMOC emission rate is equal to or greater than 34 megagrams/50 megagrams per year, the owner or operator shall:

In accordance with 45CSR§23-7.4.e.2, a NMOC emission rate report that demonstrated that Meadowfill equaled or exceeded the 34 Mg/year threshold was submitted to the West Virginia Department of Environmental Protection (WVDEP) on September 26, 2019, as required. Prior to that, the site had been conducting Tier 2 tests every five years in accordance with 40 CFR 60, New Source Performance Standards (NSPS), Subpart WWW. The September 26, 2019 report also showed that

NMOC emissions were above 50 Mg/year for the first time. A GCCS will be installed and operated in accordance with the applicable rules as described below.

> **45CSR§23-7.4.e.2.A & §63.1959(b)(2)(i)** Submit a collection and control system design plan prepared by a professional engineer to the Administrator within 1 year:
>
> **45CSR§23-7.4.b.1 & §63.1959(b)(2)(ii)** Install and start up a collection and control system that captures the gas generated within the landfill within 30 months after:
>
> (A) The first annual report in which the NMOC emission rate equals or exceeds 34/50 Mg/yr, unless Tier 2 or Tier 3 sampling demonstrates that the NMOC emission rate is less than 34/50 Mg/yr.

The submittal of this document fulfills the requirement for the Facility to prepare a GCCS Design Plan in accordance with 45CSR§23-7.4 and §63.1959(b)(2) in Sections 2 through 5. The Design Plan outlines the methodology employed to design a landfill gas collection and control system that will collect, transport, and dispose of the landfill gas generated in the entire permitted landfill at final grades. In addition, the Facility's proposed alternatives and variances to the standard, including monitoring, recordkeeping, and reporting requirements of the rules are discussed in Section 6. Section 7 outlines how the site will implement certain monitoring, recordkeeping and reporting requirements.

The GCCS design outlined in this Plan complies with the specifications for active collection systems as stipulated in 45CSR§23-7.5.a and §63.1962 of the NESHAP AAAA. If future expansions of the GCCS are necessary, they will be designed to comply with the applicable requirements (or any approved alternatives) and accommodate existing site conditions.

Furthermore, the 45CSR§23-7 and NESHAP AAAA specifically require the gas collection system to be designed in accordance with general conditions that are contained within the rules. These regulations will be referenced throughout this document, along with a description of how the landfill is meeting or plans to meet these regulations.

As of the date of this Plan, Meadowfill is also subject to NSPS WWW. As noted above, NMOC emissions greater than 50 Mg/yr were reported in a NSPS WWW Tier 2 report on September 26, 2019. NSPS WWW was amended in the March 26, 2020 Federal Register to note that an affected landfill must comply with NSPS WWW until it becomes subject to more stringent requirements in an approved state plan that implements Subpart Cf; however, NESHAP AAAA requires compliance with NSPS WWW before September 28, 2021.

This Plan therefore fulfills the requirement to prepare a plan under NSPS WWW. However, implementation of the 45CSR§23-7 and NESHAP AAAA operating requirements will begin in March 2022 (see Table 1 in the following section), which is after the end date for NSPS WWW compliance described in the prior paragraph.

As a practical matter, the Facility will not be subject to NSPS WWW once system operations begin, so compliance with NSPS WWW requirements is not specifically addressed in this Plan.

1.3 Implementation Schedule for GCCS Operations

The site will initiate GCCS operation, including associated monitoring, recordkeeping and reporting, 30-months after the date of the first annual NMOC Emission Rate report which indicates the NMOC emission rate equals or exceeds 34/50 Mg/yr. Table 1 below illustrates the implementation/compliance schedule for GCCS operations.

If the Agency requires the landfill to modify this design plan, the modification(s) apply prospectively, not retroactively to the landfill.

Table 1 – Implementation Schedule for GCCS Operations*

Regulatory Milestone	Date
NMOC Emission Rate Report submitted (NMOC equals or exceeds 34/50 Mg/yr)	09/26/2019
GCCS Design Plan submitted	09/26/2020
Updated NESHAP AAAA standards become effective	09/27/2021
45CSR§23-7/NESHAP AAAA GCCS operations commence	03/26/2022
45CSR§23-7/NESHAP AAAA Monitoring, Recordkeeping and Reporting (MRR) commences	03/26/2022
45CSR§23-7Initial Annual Report *	09/22/2022

The Initial Annual Report required by 45CSR§23-7.9.h will contain the performance test results as required by 60.8 for initial start-up of the collection and control system. See Section 3.3 for more information.

2 DESIGN CRITERIA

The GCCS at this site has been designed in a manner consistent with 45CSR§23-7 and NESHAP AAAA requirements as outlined below.

2.1 Landfill Gas Collection Design

The following listed regulations dictate when gas must be collected from areas in which municipal solid waste (MSW) has been deposited in the landfill:

> **45CSR§23-7.4.b.2.B & §63.1958(a)** Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of 5 years or more if active; or 2 years or more if closed or at final grade.
>
> *[This regulatory citation is commonly known as the 5/2 yr rule, and will be called such when referenced in this design plan.]*

Gas extraction devices and the installation and/or expansion of the pipe network to connect the devices into the gas collection system, are designed to be installed in all areas with waste that has reached the age of 5 years or older if active; and in waste that has reached the age of 2 years or more if closed or at final grade. Furthermore, the surface emission monitoring (SEM) performed in these same areas, and addressed below in the Gas Collection Density, Section 2.1.1, will demonstrate compliance with this requirement.

Additionally, the GCCS is designed to comply with the following regulations:

> **45CSR§23-7.4.b.2.C & §63.1959(b)(2)(ii)(B)(3)** Collect gas at a sufficient extraction rate;
>
> **45CSR§23-7.4.b.2.D & §63.1959(b)(2)(ii)(B)(4)** Be designed to minimize off-site migration of subsurface gas.

The GCCS is designed to extract LFG at a sufficient rate to minimize the subsurface lateral migration and surface emissions of LFG. This is achieved by sizing, installing, and operating collection elements (which are discussed in the sections below) that sufficiently collects the landfill gas, which include, adequately sized transmission headers and laterals (pipe network), gas moving equipment (blower(s)), and controlled in a manner that is expected to handle the estimated LFG flow rate. Per the definition in §63.1990, collecting at sufficient rate can be determined by maintaining negative [gauge] pressure at all wellheads without causing air infiltration.

Design criteria are discussed below and the calculations and drawings for the designs are provided in Appendices A and B.

The USEPA's Landfill Gas Emissions Model (LandGEM) is a design tool, which incorporates site-specific data and forecasts to project future landfill gas generation.

In addition to the site-specific data (waste acceptance rate, type, liner/cap configuration, etc.), the current LFG extraction rate is also being used to determine the site's projected gas curve. Actual operating parameters may dictate changes in the system flow characteristics and process equipment as the system is modified. If the revisions are significant enough to change the overall system design, a revised design plan will be submitted for approval as required by 45CSR§23-7.9.e.2 and §63.1981(e)(2).

The GCCS header/lateral pipe network at final build-out is designed to accommodate the anticipated maximum flows; however, there may be interim site conditions that require the temporary installation of a sacrificial pipe network sized to convey interim gas flows.

The portions of the pipe network that are planned for use as part of the final design will be appropriately sized to handle the maximum anticipated gas flows in the portion of the landfill at closure.

2.1.1 Gas Collection Density

The applicable rules require a gas collection system be designed to ensure sufficient density of the LFG extraction points, as stated below:

> **45CSR§23-7.5.a.1.B & §63.1962(a)(2)** The sufficient density of gas collection devices determined in paragraph (a)(1) of this section shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

Per the definition stated in §63.1990, "sufficient density" means "any number, spacing, and combination of collection system components, including vertical wells, horizontal collectors, and surface collectors, necessary to maintain emission and migration control as determined by measures of performance set forth in this subpart."

The well spacing required to achieve comprehensive control of LFG is a function of many parameters including liner type, cover type, surrounding geology/hydrogeology, landfill geometry, well depth, waste composition and age, and the presence of liquids within the landfill. Mathematical models can be developed to estimate the zone of influence of a well. However, due to the conditions listed below and the inherent variability of waste properties within a landfill, many parameters such as permeability, channelized flow, saturated zones, and the effect of daily and intermediate cover soil layers are extremely difficult or impossible to define adequately. The error introduced because of the required

simplifying assumptions and estimated properties produces results that are often less reliable than the application of extensive industry experience.

The factors and site-specific conditions that are typically used to establish adequate well spacing, which may change as the landfill is built out and ages, may include the following:

- Surface Emission Monitoring (SEM) Results
- Site-Specific Conditions at the time of installation
- Permeability of soils, waste materials, and/or final cover capping systems
- LFG generation rate
- Moisture
- Past Experience/Engineering Judgment
- LFG temperature
- Waste Age
- Waste composition

Please note that the preceding list is not intended to be comprehensive.

This approach is consistent with spacing criteria used at other landfills and should effectively reduce the potential for surface emissions and subsurface migration. The average spacing of the existing extraction wells varies from 60 to 180 feet apart, with a maximum of 200 feet for future wells. This spacing may vary in current or interim conditions. In addition, if needed, horizontal collection trenches will be used to control LFG. Based on extensive industry experience, the LFG collector spacing shown should be adequate to provide comprehensive control of the LFG as required at full GCCS build out. If this spacing is not adequate to meet the required operating standards, additional collectors will be installed as necessary.

Additionally, properly designed, installed, and operated gas collection component density can be demonstrated in the field by use of the SEM requirements contained in 45CSR§23-7.7 and 40 CFR §63.1958. Refer to Appendix C for the Surface Emissions Monitoring Plan.

2.1.2 Landfill Gas Collection System Expandability

45CSR§23-7.5.a.1.A & §63.1962(a)(1) The collection devices within the interior must be certified to achieve comprehensive control of surface gas emissions by a professional engineer. The following issues must be addressed in the design: Depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, resistance to the refuse

decomposition heat, and ability to isolate individual components or sections for repair or troubleshooting without shutting down entire collection system.

Expandability of the GCCS is achieved by installing items such as in-line isolation valves, flange adapters with blind flanges, and/or HDPE butt caps along the header and lateral piping. This allows the GCCS to be modified/expanded as needed in the future.

2.1.3 Fill Settlement

Settlement will occur due to decomposition of the refuse. To accommodate this condition, the GCCS components are designed and installed with several features to account for this settlement including:

- Connection of LFG extraction devices to the LFG transmission piping via a flexible pipe or hose connection. This allows the LFG piping to accommodate changes in the orientation of the LFG transmission piping or LFG extraction well.
- Installation of LFG transmission piping at sufficient slopes so that reasonable amounts of differential and total settlement may occur without causing pipe breakage or disrupting the overall flow gradient of the LFG transmission piping.
- Adequate piping used for the construction of the header and lateral transmission system. Piping materials will be determined as needed during each phase of the construction. Typically, piping that is flexible and absorbs differential settlement without breaking or cracking will be used.

2.1.4 Landfill Gas Extraction Component Connections to LFG Transmission Piping

This section details how the collection devices are connected to the GCCS.

45CSR§23-7.5.a.2.F & §63.1962(b)(3) Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly must include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices shall be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness.

The collection devices will be connected to the collection header pipes via lateral piping. The lateral piping will be connected to the header either above or below the landfill surface.

The connector assemblies (extraction wellheads) will be located above grade. These assemblies include a positive closing throttle valve, necessary seals and couplings, access couplings, and sampling ports.

At times, vertical LFG wells may fill with water. During these times, it may be necessary to install pumps to remove liquid from the wells. When pumps are installed to lower liquid levels this installation and operation is considered corrective action under the applicable regulations.

2.1.5 GCCS Materials

GCCS piping materials will be constructed of PVC, HDPE, fiberglass, stainless steel, or other non-porous corrosion resistant material. These materials will be designed and installed to:

- Withstand installation forces;
- Withstand static and settlement loads;
- Withstand traffic loads;
- Allow for extension to comply with emission and migration control standards;
- Resist decomposition heat; and
- Include sufficient perforation to allow for adequate gas collection.

2.1.6 Well, Collection Device, & Pipe Network Loading

The applied loads on GCCS components within the landfill, as well as settlement forces, cannot accurately be predicted due to the non-homogeneous nature of the refuse within the landfill. The GCCS components within the landfill are consistent with those at other landfills, which have been in-place for extended periods of time and verified to be capable of withstanding applied static and settlement forces. Various sections of the header or laterals may lose grade, collect condensate, requiring replacement or repair. In the event, those GCCS component failures occur, the landfill will repair/replace each component as required to maintain compliance with applicable rules.

2.1.7 Nonproductive Areas

Nonproductive areas may be excluded from the requirements to have collection/control device(s) in the area, as stated below:

> **45CSR§23-7.5.a.1.C.2 & §63.1962(a)(3)(ii)** Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Administrator upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill.

As areas of the landfill that are determined to be nonproductive, will be excluded per the requirement stated above. Copies of required documentation, including supporting calculations will be on file. The nonproductive areas at the landfill may change over time and therefore, records of these areas will also be kept on file. Nonproductive areas may occur during active, interim, and closed conditions.

2.1.8 Asbestos and Non-Degradable Materials

Any area of the landfill that contain only asbestos and/or non-degradable materials are not required to be controlled in accordance with the applicable rules, as stated below:

> **45CSR§23-7.5.a.1.C.1 & §63.1962(a)(3)(i)** Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under the rule. The documentation must provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and must be provided to the Administrator upon request.

If the landfill excludes asbestos or nondegradable material the landfill will retain supporting documentation and will not be required to collect LFG from these segregated areas. Areas or planned areas containing these types of waste are described in the appropriate section of this Design Plan.

2.1.9 Landfill Gas Extraction Design

Landfill gas extraction is normally implemented using gas collection devices that are connected to a vacuum source. This section describes the design consideration of these gas collection devices. Specific requirements that apply to the landfill gas collection and extraction components include the following:

> **45CSR§23-7.5.a.1.A & §63.1962(a)(1)** The collection devices within the interior must be certified to achieve comprehensive control of surface gas emissions by a professional engineer. The following issues must be addressed in the design: Depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, and resistance to the refuse decomposition heat, and ability to isolate individual components or sections for repair or troubleshooting without shutting down entire collection system.
>
> **45CSR23-7.5.a.2.A & §63.1962(b)(1)** The landfill gas extraction components must be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other non-porous corrosion resistant material of suitable dimensions to: Convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system must extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors must be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations must be situated with regard to the need to prevent excessive air infiltration.

45CSR§23-7.5.a.2.A.5; 45CSR§23-7.5.a.2.B & C; & §63.1962(b)(2) Vertical wells must be placed so as not to endanger underlying liners and must address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors must be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices must be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations.

In general, the collection devices are connected to the collection system via header and lateral piping. The lateral piping is connected to the header above or below the landfill surface depending on the sequencing of the refuse addition to the landfill, and the final GCCS design.

Vertical collection wells, commonly known as "gas wells," include extraction wellheads (connector assemblies) that are located above grade. These wellheads include a positive closing throttle valve, necessary seals and couplings, access couplings, and a minimum of two sampling ports; all which aid in the prevention of air intrusion, allow for proper operation of the wellheads, and allow the wellheads to be sampled and monitored.

2.1.10 Depths of Extraction Wells/Collection Device

Vertical wells cannot endanger the underlying liner system and must address the occurrence of perched liquids within the landfill. The vertical wells will be installed at the appropriate depths as designed by the professional engineer in a manner to capture as much landfill gas without putting the landfill liner system at risk.

Practical site-specific factors that may change over time will impact the depths of the vertical wells. Some of these factors include the following:

- Availability of accurate liner construction records;
- Well locations above or near liner side-slopes or other areas in which the liner elevation changes rapidly; and
- Obstructions or other technical difficulties that may impact the drilling operations.

2.1.11 LFG Collection Devices

Vertical and horizontal gas wells are typically used to extract LFG from the landfill. The design aspects that are used to address air intrusion in these types of gas wells are included in this section.

The gas collection system is designed to prevent air infiltration through the cover, refuse contamination of the collection elements, and direct venting of LFG to the atmosphere.

2.1.11.1 Vertical LFG Wells

To a large extent a well's zone of influence (ZOI) is dictated by the amount of vacuum that can be applied without causing an excessive amount of air intrusion into the landfill. Typically, to reduce air intrusion and thereby increase the ZOI, the final well depth will be determined by the site and a professional engineer. Industry experience will be used to determine the depths for the slotted and unslotted portion of the pipe that provides the proper balance between air intrusion control and LFG collection efficiency. Air intrusion is also minimized by using soil backfill in the upper zone of the vertical wells. In addition, a hydrated bentonite plug is used where the pipe penetrates the landfill soil cover.

Further, air intrusion and LFG emissions will be controlled through periodic monitoring and adjustment of the GCCS in coordination with appropriate maintenance of the landfill cover system.

Typical well design and vertical collection wells will be installed in the approximate locations found in Appendix B. The facility may utilize other designs (such as caisson wells) or designs which utilize more aggressive internal dewatering features as appropriate in the future. Details for these alternative vertical gas extraction wells will be provided to the Agency upon request.

2.1.11.2 Horizontal Gas Collectors

With horizontal gas collectors (HGCs), the best way to limit air intrusion is by increasing the amount of refuse that is placed on top of them. However, since HGCs are often installed near the surface of the landfill, atmospheric air is often pulled into them, resulting in some oxygen content.

2.1.12 Well and Collection Device Perforation/Slots and Backfill

Collectors are perforated to allow LFG entry without excessive head loss, and the surrounding gravel will be sized to prevent blocking of perforations

There are many site-specific factors that will be examined to determine the length of the slotted portion of the gas well. For example, perforated/slotted section of the gas collection device may vary based on the following conditions:

- Depths of perched liquids contained in the landfill;
- Mitigation of odors (slots/perforations may be extended for this reason); and
- Installation of deeper slots to extend ZOI (may be beneficial in sites with synthetic caps.)

2.1.13 Well/Collection Device Backfill

Gravel, washed aggregate, other acceptable crushed stone (with low carbonate content), and/or other inert non-calcareous material of sufficient size is specified to prevent penetration or blockages of the LFG collector pipe perforations/slots. Note that an acceptable substitute may be used in lieu of the aforementioned materials if it prevents blockage/penetration of the collector pipe perforations/slots.

2.1.14 Accessibility

Accessibility of the GCCS components is achieved by installing commonly accessed components (such as wellheads, monitoring ports, etc.) above the landfill surface. For future GCCS expansions, the valves, wellheads, and monitoring ports will continue to be installed to provide accessibility. 45CSR§23-7.5.a.1.A.13 and §63.1962(a)(1) require that the GCCS is designed with the ability to isolate individual components for repair or troubleshooting without having to shut down the entire collection system.

2.1.15 Landfill Gas Well/Collection Device – Installation Requirements

Vertical Gas Extraction Wells (VGEWs) and Horizontal Gas Collectors (HGCs) that are constructed for LFG collection will have sufficient cross-section to allow for their proper construction and completion, including centering of the pipes and placement of gravel or other approved backfill material. The wells and collectors will be constructed under supervision of a construction quality assurance program implemented by the landfill.

2.1.16 Leachate and Condensate Management

In accordance with the leachate and condensate management requirement included in 45CSR§23-7.5.a.1.A.5 and §63.1962(a)(1), leachate management is accomplished by using a leachate collection and management system.

Condensate management will be accomplished by sloping the LFG transmission piping to low points in the GCCS piping for collection of the condensate. Condensate collection sumps/drains are located at these low points, to collect the condensate and remove it from the transmission piping. Condensate collected in drains/sumps is re-introduced into the leachate management system and/or managed in accordance with the landfill's operating plan.

2.1.17 Control Systems

The regulations specifically require that LFG collected by an affected gas collection system be sent to compliant control device(s). These requirements are listed below:

45CSR§23-7.4.c & §63.1959(b)(2)(iii) Route all the collected gas to a treatment or control system that complies with the applicable requirements.

The operational performance of these components is stipulated by the following requirements, which state:

> **45CSR§23-7.4.c.1 & §63.1959(b)(2)(iii)(A)** A non-enclosed flare designed and operated in accordance with the parameters established in §60.18, except as noted.
>
> **45CSR§23-7.4.c.2 & §63.1959(b)(2)(iii)(B)** A control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen. The reduction efficiency or parts per million by volume must be established by an initial performance test to be completed no later than 180 days after the initial startup of the approved control system using the test methods specified in §60.764(d). The performance test is not required for boilers and process heaters with design heat input capacities equal or greater than 44 megawatts that burn landfill gas for compliance with this subpart.
>
> **45CSR§23-7.4.c.3 & §63.1959(b)(2)(iii)(C)** Route all collected gas to a treatment system that processes the collected gas for subsequent sale or beneficial use such as fuel for combustion, production of vehicle fuel, production of high-BTU gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to either paragraph (b)(2)(iii)(A) or (B) of this section.
>
> **45CSR§23-7.4.c.4 & §63.1959(b)(2)(iii)(D)** All emissions from any atmospheric vent from the gas treatment system are subject to the requirements of paragraph (b)(2)(iii)(A) or (B) of this section. For purpose of this subpart, atmospheric vents located on the condensate storage tank are not part of the treatment system and are exempt from the requirements of paragraph (b)(2)(iii)(A) or (B).

The control system may consist of one or more control devices and change over time; therefore, all chosen control devices will be designed, installed, and be operated in compliance with the required regulations.

The capacity of the control system may increase/decrease over time as the volume and quality of LFG produced by the landfill changes. Therefore, the control device(s) or extraction system(s) chosen for the active, interim, and closure timeframes may vary depending on the LFG quantities produced and collected by the GCCS. Proposed changes to the control system will be evaluated to determine if an air construction permit and/or modification to the site's Title V permit is necessary. The following control devices will be implemented as needed and as applicable.

2.1.18 Utility (Non-Enclosed) Flare

When in operation, the flare(s) will be continuously monitored for the presence of a flame. Monitoring for the presence of a flame will be accomplished by an ultraviolet flame scanner, thermocouple, or comparable device. Absence of a flame will cause

the monitoring system to automatically turn off the LFG mover(s), and initiate the closure of either an electric or pneumatic valve at the inlet to the mover(s).

3 DESIGN CONSIDERATIONS FOR ACTIVE CONDITIONS

3.1 Landfill Description

Meadowfill Landfill, Inc. is a permitted solid waste disposal and permitted asbestos disposal facility owned and operated by Waste Management and located in the town of Bridgeport, Harrison County, West Virginia. The facility consists of a closed MSW landfill area, an active MSW landfill area, an asbestos monofill area, and a special waste monofill area. The asbestos and monofill areas are excluded as "known areas of nondegradable waste."

At the time of this GCCS Plan preparation, a GCCS is currently installed and operating in most of the active MSW landfill area. The GCCS consists of vertical extraction wells and HDPE piping; collected gas is routed to a 3,000-cfm utility flare.

3.2 Existing Gas Collection Flow

In accordance with the applicable rules, the gas collection system must be designed to handle the expected gas flows during the anticipated life of each component of the gas collection system. Portions of the gas collection system that are planned for inclusion in the final design must be appropriately sized to accommodate both current and future gas flows.

Certain portions of the gas collection system may be deemed "sacrificial" due to filling operations or other site-specific conditions; these portions need only be sized to accommodate the gas flows that are anticipated during the time they will be in operation.

The following sections of the applicable rules discuss the proper sizing of gas collection system.

> **45CSR§23-7.5.a.3 & §63.1962(c)** Each owner or operator seeking to comply must convey the landfill gas to a compliant control system through the collection header pipe(s). The gas mover equipment must be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures:
>
> **45CSR§23-7.5.a.3.A & §63.1962(c)(1)** For existing collection systems, the flow data must be used to project the maximum flow rate. If no flow data exists, the procedures in paragraph (c)(2) of this section must be used.

45CSR§23-7.5.a.3.B & §63.1962(c)(2) For new collection systems, the maximum flow rate must be in accordance with the applicable rule.

The LFG generation and recovery rates for the landfill were estimated using the U.S. Environmental Protection Agency (EPA) Landfill Gas Emissions Model (LandGEM). The modeling results reflect the estimated waste quantities accepted over the operating life of the site. The accepted quantities of inert waste were not included in the model. Copies of the EPA LandGEM model print-outs are included in Appendix A.

The gas generation parameters established by the EPA in AP-42, Compilation of Air Pollutant Emission Factors, recommends a methane generation potential (L_o) of 100 cubic meters per megagram of solid waste, and a methane generation constant (k) of 0.04 year^{-1}. These values differ from the Tier 1 regulatory values in the applicable rules, but in most cases provide a more accurate representation of gas production. LandGEM models the production of methane from waste decomposition; to calculate the corresponding production of landfill gas, a methane content of 50 percent was assumed.

The existing LFG flow rate based on the 2019 annual average data is approximately 650 scfm. The EPA LandGEM results indicate a peak LFG generation rate of approximately 3,130 scfm in 2026.

3.3 Control Devices and Initial Performance Test

The Initial Performance Test (IPT) on the control system at the landfill will be conducted on the open flare within 180 days of the initiation of 45CSR§23-7/NESHAP AAAA monitoring activities on March 26, 2022.

Currently, the Facility operates the control devices listed below. As new or additional control devices are added, the site will obtain proper air authorizations without having to make revisions to this Design Plan. As new or additional control devices are added, a performance test will be completed and submitted, as required.

Table 2 - List of Control Devices

Open flare -Rated capacity of 3,000 cfm

3.3.1 Sizing Gas Collection System/Piping Network

The sizing of the headers and laterals are based on the maximum expected LFG generation rate as estimated using the landfill gas generation model as described above.

The final GCCS piping system has been sized to handle this maximum estimated LFG extraction rate while maintaining vacuum throughout the header pipe. Design computations for sizing the LFG transmission piping and determining system vacuum requirements were performed and are included in Appendix A.

3.3.2 Nonproductive Areas

The rules allows for nonproductive areas to be excluded from the requirements to collect and control gas under the applicable rules, as stated below:

> **45CSR§23-7.5.a.1.C.2 & §63.1962(a)(3)(ii)** Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Administrator upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill.

The Tier 2 NMOC Emission Report that was submitted for Meadowfill in September 2019 calculated a NMOC emission rate of 0.27 Mg/yr from the closed 12.8-acre disposal area and 57.51 Mg/yr from the currently constructed active area. The NMOC contribution from the closed area is calculated to be less than 0.5% of the total NMOC emissions from the facility. This percentage is expected to continue to decrease, as gas NMOC emissions from the active area continue to increase and NMOC emissions from the closed landfill continue to decrease. The waste in this area was placed between approximately 1975 and 1994, and a total of approximately 381,000 tons of waste is estimated to be contained in this area. Meadowfill proposes to exclude this area from control in accordance with this provision.

3.3.3 Asbestos and Non-Degradable Materials

The rules allow that any areas of the landfill that contain only asbestos and/or non-degradable materials are not required to be controlled in accordance with the applicable rules, as stated below:

> **45CSR§23-7.5.a.1.C.1 & §63.1962(a)(3)(i)** Any segregated area of asbestos or non-degradable material may be excluded from collection if documented as provided under the rules. The documentation must provide the nature, date of deposition, location and amount of asbestos or non-degradable material deposited in the area, and must be provided to the Administrator upon request.

Meadowfill includes a dedicated asbestos waste disposal monofill in which only asbestos wastes are disposed. In addition, the facility also includes a 17.5-acre special waste area in which only non-degradable inert wastes are disposed. These areas will thus be excluded from coverage of the required GCCS that is the subject of this Design Plan. Meadowfill will continue to retain documentation of the nature, date of deposition, location, and amount of asbestos and non-degradable wastes deposited in these areas. This documentation will be provided to the Agency upon request.

4 DESIGN CONSIDERATIONS FOR INTERIM CONDITIONS

This section of the GCCS Design Plan describes the procedures used during interim operating conditions. Interim operating conditions occur when the landfill is still actively accepting waste, and before it is closed or reaches final grades. During these interim conditions, the gas collection system is typically being installed or expanded to comply with applicable requirements, while the landfill is also balancing the requirements of the day-to-day activities of an active landfill.

According to the applicable rules, the maximum LFG flow rate shall be used to design the size of the GCCS pipe network. To facilitate compliance during active landfill operations, a flexible design was developed that incorporates the operational difficulties that can occur when installing a GCCS while the facility is actively accepting refuse. Collection device locations will be determined to maintain needed flexibility during daily operations, which may include changes in refuse fill patterns, weather, waste type, and waste volumes; natural disasters; and/or other significant area events.

Interim conditions may warrant gas collection and monitoring from areas where waste has been placed, but have not yet reached final grade. Complying with the applicable rules under these conditions can be difficult due to several factors, which may include, but are not limited to, the following:

- Components may be inadvertently damaged by heavy equipment collisions during filling operations;
- Areas requiring gas collection may not necessarily coincide with filling operations;
- Pipe slopes may be altered due to loads from heavy traffic or differential settlement; and
- Components may be more prone to water accumulation due to shallower waste depths.

4.1 Gas Collection System Expansion during Interim Conditions

During interim conditions, compliance with the applicable requirements that specify additional gas collection devices and the corresponding expansion of the overall gas collection system will be maintained. These expansions will ensure that LFG will be collected at sufficient rates over the interim time frame, and will be designed and installed properly to minimize off-site migration of gas. Specific requirements that apply to gas collection during interim conditions include the following:

§63.1990 *Sufficient density* means any number, spacing, and combination of collection system components, including vertical wells, horizontal collectors, and surface collectors, necessary to maintain emission and migration control as determined by measures of performance set forth in this subpart.

45CSR§23-7.5.a.1.A & §63.1962(a)(1) The collection devices within the interior must be certified to achieve comprehensive control of surface gas emissions by a professional engineer. The following issues must be addressed in the design: Depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, resistance to the refuse decomposition heat, and ability to isolate individual components or sections for repair or troubleshooting without shutting down entire collection system.

45CSR§23-7.5.a.1.B & §63.1962(a)(2) The sufficient density of gas collection devices determined in paragraph (a)(1) of this section must address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

45CSR§23-7.5.a.1.C & §63.1962(a)(3) The placement of gas collection devices determined in paragraph (a)(1) of this section must control all gas producing areas, except as provided by paragraphs (a)(3)(i) and (a)(3)(ii) of this section.

45CSR§23-7.7.b & §63.1960(b) For purposes of compliance with the applicable requirements, each owner or operator of a controlled landfill must place each well or design component as specified in the approved design plan as provided in the rules. Each well shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of:

Five (5) years or more if active; or

Two (2) years or more if closed or at final grade.

45CSR§23-7.5.a.3 & §63.1960(c) Each owner or operator seeking to comply with the applicable requirements must convey the landfill gas to a control system in compliance with the applicable rules through the collection header pipe(s). The gas mover equipment must be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures:

45CSR§23-7.5.a.3.A & §63.1960(c)(1) For existing collection systems, the flow data must be used to project the maximum flow rate. If no flow data exists, the procedures in paragraph (c)(2) of this section must be used.

45CSR§23-7.5.a.3.B & §63.1960(c)(2) For new collection systems, the maximum flow rate must be in accordance with the applicable requirements.

In compliance with these regulations, the GCCS has been designed and will be further expanded as necessary over the life of the system, to extract LFG at a sufficient rate to minimize the subsurface lateral migration and surface emissions of LFG. This is achieved, in part by, appropriately sizing and installing sufficient

collection elements, transmission piping, gas moving equipment, and control device(s) for the estimated maximum flow rate of LFG.

Since the operations of the landfill, which include the filling patterns and amounts of waste accepted at the landfill, may change over time, there is no single design that can be presented at this time to address the location of each gas collection device and the vacuum providing network that accompanies them. Instead, during the interim period, conformance with the above regulations will be maintained and be used as the tool to determine when the system will be expanded and when upgrades to the system will be added.

A professional engineer will certify expansion of the GCCS and the measures of system performance will be verified as set forth in the applicable rules. Based upon the outcome of the system performance metrics contained in the rules, such as the SEM and monthly collection device monitoring requirements, the GCCS will be adjusted or modified in accordingly. This information will be used as an additional tool to evaluate the need for future expansion of the GCCS.

In §63.1990 of the NESHAP, "sufficient density" is defined as "any number, spacing, and combination of collection system components . . . necessary to maintain emission and migration control as determined by measures of performance set forth in this subpart." Well spacing at the landfill is established based on SEM Results, site-specific conditions (waste age, waste density, moisture content, etc.), operational experience, and engineering judgment. This is consistent with spacing criteria used at other landfills and should effectively control surface emissions and subsurface migration of LFG in accordance with applicable requirements.

In accordance with the requirements, a collection device must be installed in all areas containing waste that is 5-years or older if active; and 2-years or more if closed or at final grade. The placement of collection devices will occur in a manner that will maintain compliance with all applicable requirements. Additionally, collection device locations and density will be determined at the time of installation to support normal operations of the landfill regarding roadways, equipment, and fill sequencing. Actual well placement may vary from the preliminary locations selected for closure conditions (see Section 5) to accommodate actual site conditions at the time of installation.

If the actual landfill gas extraction rate exceeds the capacity of the system, additional GCCS components will be designed and installed in accordance with applicable requirements. The system flow characteristics and installed process equipment will be determined by the actual gas flow trends and site-specific conditions at the time of the modification.

The header and lateral pipeline systems will be sized to accommodate the peak flows depending on the planned life of the pipeline. If the landfill plans to operate the header and lateral pipelines only during interim conditions, and the pipelines will be dismantled/replaced prior to final build out of the system, then the pipelines

will be sized for the anticipated gas flows during the period of time they are planned to be operational. The portions of the pipe network that will be incorporated into the final design will be appropriately sized to handle the anticipated gas flows into the pipeline at final build-out.

Many of the design requirements for both collection devices and the expansion of the gas collection system are found in other sections of this Design Plan.

4.1.1 Compatibility with Refuse Filling Operations

During the operating life of the site, the gas collection system will be designed to be compatible with the waste filling operations of an active landfill. As waste filling operations proceed and portions of the site reach final or near-final grades, additional GCCS components may be installed to comply with the 5-year/2-year requirement. Using this method allows GCCS components to be installed while minimizing interference with ongoing filling operations.

During filling operations, vertical gas extraction wells (VGEWs) may be "raised" periodically so that new refuse is not placed over the top of an existing VGEW, thereby preventing access to the well. To maintain worker safety, VGEWs will be raised as needed in advance of waste filling operations. This may require the well to be raised more than 30 days before refuse is placed around the well. During this period, the well may be inaccessible for monitoring. A variance request for these situations is described in Section 6 of this Design Plan.

4.1.2 Landfill Cover Properties

During the normal course of operations, daily intermediate and final cover will be installed over the waste. This system limits LFG emissions, as well as water and air infiltration. The thickness and type of cover system will vary depending on when the landfill plans to place additional waste in the affected area.

5 DESIGN CONSIDERATIONS FOR CLOSURE CONDITIONS

Closure conditions apply for the closed landfill, or in areas of the active landfill that have a certified cap in place. Final design conditions also apply to the closed landfill or closed portions of an active landfill that achieved final waste grades.

5.1 Landfill Gas Collection

This section addresses the locations of GCCS components after the landfill is no longer operating under interim conditions. The GCCS will be operated in accordance with the applicable requirements for a closed landfill.

> **45CSR§23-7.7.b & §63.1960(b)** For purposes of compliance with the applicable requirements, each owner or operator of a controlled landfill must place each well or design component as specified in the approved design plan as provided in the rules. Each well shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of:
>
> Five (5) years or more if active; or
>
> Two (2) years or more if closed or at final grade.

In accordance with this requirement, a GCCS must be installed in all areas with waste that is five years or older if open, and two years or more if closed or at final grade. The current placements of collectors at the site follow this requirement.

> **45CSR§23-7.4.b.2.C & §63.1959(b)(2)(ii)(B)(3)** Collect gas at a sufficient extraction rate;
>
> **45CSR§23-7.4.b.2.D & §63.1959(b)(2)(ii)(B)(4)** Be designed to minimize off-site migration of subsurface gas.
>
> **45CSR§23-7.5.a.1.B & §63.1962(a)(2)** The sufficient density of gas collection devices determined in paragraph (a)(1) of this section must address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

In compliance with these requirements, the GCCS is designed to extract LFG at a sufficient rate to minimize the subsurface lateral migration and surface emissions of LFG. This is achieved by sizing and installing sufficient collection elements, transmission piping, blower(s), and control device(s) for the estimated maximum flow rate of LFG.

The GCCS is designed to collect LFG at a sufficient rate, which is defined in §63.1990 as maintaining negative gauge pressure at all wellheads. Application of a negative gauge pressure and minimization of air infiltration will be verified by monitoring temperature, pressure, and oxygen concentrations at each LFG wellhead in accordance with applicable requirements.

"Sufficient density" is defined in §63.1990 as "any number, spacing, and combination of collection system components, including vertical wells, horizontal collectors, and surface collectors, necessary to maintain emission and migration control as determined by measures of performance set forth in this subpart." Well spacing at the landfill will be established based on SEM results, site-specific conditions (waste age, waste density, moisture content, etc.), experience, and engineering judgment. This is consistent with spacing criteria used at other landfills and should effectively control surface emissions and subsurface migration of LFG in accordance with applicable requirements. The proposed GCCS build-out layout for closure conditions can be found in Appendix B.

The final configuration of wells, collectors, and piping may vary from this proposed design due to modifications required during active and interim conditions. In addition, wells/collectors may have to be replaced, re-drilled, or relocated due site-specific conditions. As-built drawings of the gas collection system will be updated as required and a copy of the as-built drawing will be kept on-site.

The landfill will conduct SEM events as specified in the applicable rules in all accessible areas that have waste in-place for 5-years if active and 2-years if at or near final grade to ensure that the gas collection system was designed, installed, and is being operated properly. If the GCCS at the landfill does not meet the measures of performance set forth in the rules, the GCCS will be adjusted or modified in accordance with applicable requirements. Typical adjustments or modifications are described in Section 6.

5.1.1 Landfill Gas Generation Rates and Flow Characteristics

The peak LFG flow rates, were used in designing the GCCS for closure conditions, as described in this section.

> **45CSR§23-7.4.b.2.A & §63.1959(b)(2)(ii)(B)(1)** An active collection system must be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control system equipment

In accordance with these requirements, the maximum expected LFG flow rate for the site was used for sizing the GCCS. The actual sizing and configuration of the system may change based on actual gas flows obtained from the landfill as the site nears closure. The final GCCS piping system has been sized to handle the estimated peak LFG extraction rate while maintaining vacuum throughout the header pipe. Design computations for sizing the LFG transmission piping and determining system

vacuum requirements were performed using the computerized KYGas® model. A copy of the model printout and its description are included in Appendix A.

5.1.2 Landfill Cover Properties

The purpose of the final cover system is to provide a barrier to LFG emissions, as well as water and air infiltration. The agency-approved final cover system will be installed upon closure.

5.1.3 Integration with Closure End Use

Currently, the closure end-use for the site is unspecified. Any modifications to the closure end use will be reviewed by the landfill to evaluate compatibility with the GCCS. Items of concern will be mitigated by either altering the proposed closure end-use or by adjusting and/or modifying the GCCS in accordance with applicable requirements.

5.1.4 Operation of GCCS After Closure

The landfill is not required to operate the GCCS indefinitely after closure of the landfill. The requirements that pertain to removal of the GCCS are listed below:

> **45CSR§23-7.4.f & §63.1957(b)** The collection and control system may be capped, removed, or decommissioned if the following criteria are met:
>
> > The landfill shall be a closed landfill. A closure report must be submitted to the Administrator;
> >
> > The collection and control system has been in operation a minimum of 15 years or the landfill owner or operator demonstrates that the GCCS will be unable to operate for 15 years due to declining gas flow; and
> >
> > The calculated NMOC emission rate at the landfill is less than 34 megagrams per year on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart.

The GCCS will be operated in accordance with applicable sections of the rules. After the GCCS meets the above-referenced requirements for removal, the GCCS may remain in place and functional, but it will no longer be required to comply with the operational requirements of the referenced rules.

6 PROPOSED ALTERNATIVES

The rules allow for alternatives to the operational standards, test methods, procedures, compliance requirements, monitoring, record keeping, and reporting provisions to be requested in the design plan:

> **45CSR§23-7.9.d.2 & §63.1981(d)(2)** The collection and control system design plan must include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions proposed by the owner or operator.

The following sections describe proposed alternatives to these provisions.

6.1 Monthly Monitoring Methods

45CSR§23-7.8.a.2 & §63.1961(a)(2) require monthly monitoring of nitrogen or oxygen concentrations in the landfill gas. The rules allow for the use of EPA Method 3C to measure the nitrogen levels and the use of either EPA Method 3A, 3C, or ASTM D6522-11 to establish the oxygen content. In accordance with the general state-of-the-practice procedures, the landfill proposes to use a portable monitoring instrument (e.g., Landtec GEM 500, Landtec GEM 2000, LMS, Envision, or equivalent instrument) to perform this monitoring. The monitoring equipment will be calibrated in accordance with manufacturer's recommendations to ensure accurate measurement of all parameters for which it is used to monitor. [The alternative has been approved by the EPA for NSPS WWW at other sites as noted in Appendix D (EPA Determination Letter Dated May 14, 2001).]

6.2 Operational Changes to Accommodate Declining Flows

Under 45CSR§23-7.5.b.2.C and §63.1958(b)(3), collection devices that experience positive pressure after being shut down to accommodate declining LFG flows can be decommissioned. It should be noted that the term "decommissioned" is not meant to be used in the same way as the term "abandonment". A decommissioned well is simply shut down for a period of time by fully closing the well valve or by disconnecting the well from the gas collection lateral but is maintained for potential future use. Well decommissioned might be necessary, for example if a well's temperature becomes elevated and it is turned off as a remedial method for a period of time, or if a well is shut down based on poor gas quality until the gas is able to recharge sufficiently. The following procedure will be used for decommissioned wells;

a. The reason for well decommissioning will be noted in the monthly monitoring report;

b. The decommissioned well still be monitored monthly per the applicable requirements;

c. Although, the pressure may be positive for a decommissioned well, the temperature levels must continue to meet and be monitored per applicable requirements;

d. The well may be temporarily opened during a monitoring event or left open only very slightly to relieve pressure buildup;

e. Quarterly surface monitoring will continue as if the well was active to make sure fugitive gas emissions are still in control;

If a well remains decommissioned for six consecutive months, then a notification to WVDEP will be included in the first annual/semiannual report after this six-month consecutive period of decommissioning. This notification will describe whether the well is proposed for abandonment or will provide a plan as to how this well will eventually be brought back online.

6.3 Positive Pressure under a Synthetic Cover

In areas of a landfill where a geomembrane or synthetic cover is being used, 45CSR§23-7.5.b.2.B and §63.1958(b)(2) allow the owner or operator to develop acceptable pressure limits in the design plan. Based on the experience at similar landfills, 5" W.C. of pressure is acceptable in all areas where a geomembrane or synthetic cover is being used as part of the final cover system. For this reason, incidents of positive pressure less than 5" W.C. in areas where a geomembrane or synthetic cover is installed will not be recorded as exceedances.

6.4 Collection Device Abandonment

If a collection device in no longer functioning effectively, the landfill may elect to abandon the device permanently if the device has been decommissioned for six months while operating under the Operational Change described above; and no surface emission monitoring exceedances have been observed within 50 feet of the device. To document this action, the landfill will provide information in a letter, certified by a professional engineer, to the Agency stating that the landfill will still maintain sufficient well field density in compliance with the applicable requirements without the well. Once abandoned, the well will no longer be monitored monthly under the rules. If the Landfill has not been given a response by the Agency within 90 days of submittal, the landfill will assume that the Agency concurs with the request and it will be assumed to be approved.

If a collection device is replaced or redrilled, the existing collection device may be abandoned/removed by the landfill without notification or prior approval to the

Administrator. The replacement well will be renamed for ease of data evaluation and noted in the annual/semiannual report.

6.5 Early Installation of Collection Devices

The requirements of 45CSR§23-7.7.b and §63.1960(b) state that each collection device shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of five years or more in active areas, or two years or more if closed or at final grade. However, there may be occasions when the landfill will install collection devices prior to the onset of these requirements.

Any collection device installed prior to these requirements will not be subject to the operational, monitoring, and/or recordkeeping requirements of the rules until the age of the initial waste placed in the affected area reaches five years old if active, or two years if closed or at final grade. Correspondence prepared by the EPA Region IV (letter dated May 31, 2007 for NSPS WWW) regarding this matter has been included in Appendix D.

6.6 Monitoring During Collection Device Extension

During filling operations, vertical gas extraction wells (VGEWs) may be extended (raised) periodically so that new refuse is not placed over the top of an existing VGEW, thereby preventing access to the well. To maintain worker safety, VGEWs will be raised as needed in advance of waste filling operations. This may require the well to be raised more than 30 days before refuse is placed around the well. During this period, the well may be inaccessible for monitoring.

Due to the dangers associated with well raising, the landfill is requesting that raised collection devices be exempt from the monthly monitoring for a period not greater than 60 days to eliminate potentially dangerous situations for monitoring personnel. Any times that a collection device is not monitored due to raising activities will be noted on the annual/semiannual reports.

USEPA Region 5 has approved this previously for landfills under NSPS WWW since the relative number of wells affected is a small percentage of a site's overall collection system. See Letter dated 10/03/2008 in Appendix D.

6.7 Monitoring of Leachate Risers

During the operating life of the landfill, the facility may connect the leachate collection system to the GCCS to help control odors or meet other landfill operating needs beyond regulatory compliance with the rule. This Design Plan has been prepared to meet the required level of LFG control without the use of these connections. For this reason, the landfill does not believe that the operating requirements of the rule should be applied to voluntarily-added collectors because

these collectors only act to enhance the performance of the system beyond that required by the rule. Further, because these devices are installed for purposes other than to meet the requirements of the rule, their design may preclude their ability to meet the stipulated operational requirements.

Leachate collection and cleanout risers often operate with positive pressure because these risers, when connected to the gas collection system, are not always operated under a negative pressure because they are sometimes closed off for operational purposes or measure positive pressure due to the pumping action of the leachate pumps. Therefore, if the leachate risers are connected to the gas collection system for any reason other to correct a surface emission monitoring exceedance, then the leachate riser will not be a regulated gas collection device. These leachate risers can be connected to the GCCS when needed and can be disconnected at any time the landfill deems it necessary. A copy of the EPA Determination letter dated November 7, 2008 is included in Appendix D.

6.8 Operation of Surface Collectors for Cap Stability

The buildup of excessive landfill gas (LFG) pressure below the geomembranes can cause or contribute to cover system stability failure. Excessive pressure reduces the effective normal stress on the lower geomembrane interface and can cause veneer instability and/or cap system failure resulting in environmental impacts. Therefore, to protect the cover system surface collectors/vents maybe installed underneath the final cap. Given that near surface collectors/vents will not be installed in waste they are not considered part of the required GCCS and as such not subject to the monitoring and operating requirements of the rules. Furthermore, given that these collectors/vents are not installed in the waste, they are not considered penetrations for purposes of the rules.

6.9 Surface Emission Monitoring (SEM)

6.9.1 Exclusion of Dangerous Areas from SEM requirements

Areas with steep slopes or other dangerous areas are excluded from the SEM requirements under the rules:

> **45CSR§23-7.5.b.4.F.2 & §63.1958(d)(1)** Areas with steep slopes or other dangerous areas may be excluded from surface testing.

The landfill is proposing to exclude the following dangerous areas from SEM:

a. Roads;

b. Working areas and/or the working face;

c. Truck traffic areas;

d. steep and dangerous slopes;

e. Icy, snow covered, and/or extremely muddy side slopes;

f. Areas where the landfill cover material has been exposed for the express purpose of installing, expanding, replacing, or repairing components of the LFG, leachate, or gas condensate collection and removal systems.

6.9.2 Alternative Remedy for SEM events

The applicable rules require the landfill owner or operator to take corrective action to remedy any incidents of methane concentrations more than 500 ppm above background that are detected during SEM. The landfill will perform the initial SEM event and 10-day/1-month remonitoring events in accordance with the rules. For SEM exceedances, corrective measures may include modifications to the GCCS other than the installation of additional LFG collection devices to meet the 120-day timeline unless an alternative timeline has been established. The following alternative remedies will be implemented to correct SEM exceedances within the 120-day timeline. These corrective actions may include, but are not limited to, one or more of the following measures:

a. Installation of, or upgrades to, conveyance and/or control equipment (e.g., larger flare, additional blowers, etc.).

b. Installation of a liquid management system in the extraction wells or sumps.

c. Installation/modification of other ancillary equipment (e.g., larger air compressor, additional air and condensate force main lines, etc.)

d. Installation of additional or replacement LFG collection devices;

e. Repair of the landfill cap to minimize LFG migration and/or air infiltration.

f. Repair or replace header valves.

Please note that this list is not intended to be exhaustive. Other actions that result in the remediation of an exceedance within the 120-day timeframe would also be covered under this alternative. Any enhancements made to the existing GCCS will be documented in the annual/semiannual. Please note that the landfill will be proactively implementing this variance to ensure that exceedances are addressed as expeditiously as possible. If the GCCS cannot be brought back into compliance during the 120-day assessment period, the landfill will prepare an alternative compliance schedule for review and approval by the Administrator.

6.9.3 SEM for Closed Portions of the Landfill

The landfill is requesting that any portions of the landfill that have been certified closed or have been closed and capped in accordance with applicable requirements be treated as a closed landfill for SEM events. These closed portions of the landfill will be monitored in accordance with the following sections of the rules:

> **45CSR§23-7.8.f & §63.1961(f)** Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for the landfill to quarterly monitoring.

7 OPERATING CLARIFICATIONS

This section clarifies how this site will implement certain monitoring, recordkeeping and reporting obligations under 43CSR§23-7 and NESHAP AAAA.

7.1 Alternative Timeline Request

According to the rules, the landfill must request an alternative timeline if the site requires more than 120 days from the initial exceedance to correct a well exceedance.

45CSR§23-7.7.a.3 & §63.1960(a)(3) For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with the rule, the owner or operator must measure gauge pressure in the gas collection header applied to each individual well, monthly. If a positive pressure exists, action must be initiated to correct the exceedance within 5 calendar days, except for the three conditions allowed under the rule. Any attempted corrective measure must not cause exceedances of other operational or performance standards.

(i) If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement of positive pressure, the owner or operator must conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after positive pressure was first measured. The owner or operator must keep records according to the rule.

(ii) If corrective actions cannot be fully implemented within 60 days following the positive pressure measurement for which the root cause analysis was required, the owner or operator must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the positive pressure measurement. The owner or operator must submit the items listed in the rule as part of the next annual report. The owner or operator must keep records according to the applicable requirements.

(iii) If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the owner or operator must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Administrator, according to the applicable requirements. The owner or operator must keep records according to the rules.

45CSR§23-7.7.a.4 & §63.1960(a)(4) For the purpose of identifying whether excess air infiltration into the landfill is occurring, the owner or operator must monitor each well monthly for temperature as provided in the rule. If a well exceeds the operating parameter for temperature, action must be initiated to correct the exceedance within 5 calendar days. Any attempted corrective measure must not cause exceedances of other operational or performance standards.

BEFORE SEPTEMBER 27, 2021

(i) If the owner or operator cannot achieve a landfill gas temperature less than 55 degrees Celsius (131 degrees Fahrenheit) within 15 calendar days of the first measurement of landfill gas temperature greater than 55 degrees Celsius (131 degrees Fahrenheit), the owner or operator shall conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after the first measurement of landfill gas temperature greater than 55 degrees Celsius (131 degrees Fahrenheit). The owner or operator shall maintain records per the rule.

(ii) If the owner or operator cannot fully implement corrective actions within 60 days following the measurement for which the root cause analysis was required, the owner or operator shall also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the measurement of landfill gas temperature greater than 55 degrees Celsius (131 degrees Fahrenheit). The owner or operator shall maintain records in accordance with the rule and submit the required information in the next annual report.

(iii) If the owner or operator expects corrective action to take longer than 120 days after the initial exceedance to complete, the owner or operator shall submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Secretary and maintain records as required under the rule.

ON/AFTER SEPTEMBER 27, 2021 (or earlier if site has elected to comply before this date)

(i) If a landfill gas temperature less than 145 degrees Fahrenheit cannot be achieved within 15 calendar days of the first measurement of landfill gas temperature greater than 145 degrees Fahrenheit, the owner or operator must conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after a landfill gas temperature greater than 145 degrees was first measured. The owner or operator must keep records according to the rule.

(ii) If corrective actions cannot be fully implemented within 60 days following the elevated temperature measurement for which the root cause analysis was required, the owner or operator must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the measurement of landfill gas temperature greater than 145 degrees Fahrenheit. The owner or operator must submit the items listed in the applicable requirements as part of the next semiannual report. The owner or operator must keep records according to the rule.

(iii) If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the owner or operator must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Administrator, according to the applicable requirements. The owner or operator must keep records according to the rule.

According to these requirements, the site is only required to submit the root cause analysis and corrective action analysis to the Administrator as part of an alternative timeline request for corrective actions that may take longer than 120 days from the initial exceedance date. This alternative timeline request with the root cause analysis and corrective action analysis must be submitted within 75 days after the initial exceedance. However, in accordance with requirements for the annual/semiannual report, if the exceedance takes more than 60 days to correct, the corrective action analysis should be included in the annual/semiannual report. As such, for landfill gas collection components that are remediated after 15 days but before 60 days of the initial exceedance, the root cause analysis and corrective action analysis will not be submitted to the WVDEP.

For remediation efforts that are corrected between 60-days and 120-days of the initial exceedance, the root cause and corrective action analyses will be submitted in the annual/semiannual report. If, however, remediation efforts are expected to require more than 120 days, an alternative timeline request will be submitted by day 75 and will include the root cause and corrective action analysis.

If the site receives no agency response within 30 calendar-days of submittal of the alternative timeline request to the WVDEP, the site will assume the alternative timeline is approved and the exceedance and corresponding alternative timeline will not be considered a reportable deviation in subsequent Title V reports.

7.2 Establishment of a Higher Operating Value (HOV) for Temperature

To establish a Temperature HOV for a particular collection component, the landfill must submit a demonstration to the Administrator for approval. The purpose of this section is to clarify the data collection, recordkeeping and reporting procedure the landfill will follow to establish the HOV for WVDEP review and approval.

> **45CSR§23-7.5.b.3 & §63.1958(c)** Operate each interior wellhead in the collection system with a landfill gas temperature less than 55/62.8 degrees Celsius (131 degrees Fahrenheit before September 27, 2021 and 145 degrees Fahrenheit on/after September 27, 2021). The owner or operator may establish a higher operating temperature value at a particular well. A higher operating value demonstration must be submitted to the Administrator for approval and must include supporting data demonstrating that the elevated parameter neither causes fires nor significantly inhibits anaerobic decomposition by killing methanogens. The demonstration must satisfy both criteria in order to be approved (i.e., neither causing fires nor killing methanogens is acceptable).

To establish a HOV, the landfill will retain supporting data that the proposed standard will not cause an environment conducive to subsurface oxidation, nor inhibit anaerobic decomposition by killing methanogens. If a collection device is observed to have a normal operating temperature that is stable above what is currently approved, a higher operating temperature threshold will be established

for the collection device. The landfill will provide at least two (2) months of operational data to support the establishment of a higher operating temperature range for any the landfill gas collection device. The following information will be included in the request to prove that the elevated temperature neither causes fires nor significantly inhibits anaerobic decomposition by killing methanogens:

- The monthly and average oxygen content of the LFG;
- The monthly and average carbon dioxide of the LFG;
- The monthly and average methane content of the LFG;
- Well logs provided by drilling contractors during initial installation, if available;
- The monthly and average temperature of the LFG; and
- A discussion of any conditions that might suggest subsurface oxidation (e.g., smoke, excessive settlement, etc.).

If the site receives no agency response within 30 days of submittal to the WVDEP, the site will assume the alternative timeline is approved.

Copies of the written approved and deemed approved HOVs will be listed in the report.

7.3 Frequency to Update As-built Drawings

The landfill is required to keep an up-to-date readily accessible plot map showing each existing and planned collector. An up-to-date plot map is more commonly called an as-built.

> **45CSR§23-7.10.d & §63.1983(d)** Except as provided in the rule, each owner or operator subject to the provisions of this subpart must keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector.
>
> **(1)** Each owner or operator subject to the provisions of this subpart must keep up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified under the rule.

The as-built can only be generated for a landfill after construction projects that include upgrades and additions to the gas collection system are completed. Since there is no defined frequency for preparing/updating an as-built of the gas collection system, the landfill will update the as-built on an annual basis in years that changes or construction of the gas collection system are performed.

7.4 Clarifications for Enhanced Monitoring

7.4.1 Timing for Initiation

The enhanced monitoring provisions of the NESHAP apply no later than September 27, 2021, unless the site has elected to meet the requirements of the NESHAP before that date. §63. 1961(a)(5) states "you must initiate enhanced monitoring at each well with a measurement of landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit) as follows...(vii) The enhanced monitoring [in] this paragraph (a)(5) must begin 7 days after the first measurement of landfill gas temperature greater than 62.8 degrees Celsius (145 degrees Fahrenheit)..."

The following two clarifications are necessary for this new requirement:

First, the regulation as written requires a site to conduct enhanced monitoring after ANY occurrence of a temperature measurement in excess of 145°F. The preamble to the NESHAP includes the following statement: "Enhanced monitoring begins 7 days after the first reading exceeding 145°F is recorded and continues until the measured wellhead operating temperature is 145°F or less, or an HOV is approved."

However, the preamble goes on to state the following: "Furthermore, the concern that the enhanced monitoring requirements would continue in perpetuity is unsubstantiated. First, landfills have up to 7 days to adjust the well to achieve a lower temperature before the enhanced monitoring requirements are triggered (40 CFR 63.1961(a)(5)(vii)). Second, the enhanced monitoring can stop once the well temperature drops back to 145°F or less."

This seems to be a more reasonable approach – i.e., additional monitoring and tuning can be performed during that 7-day period after the initial exceedance before enhanced monitoring activities are required. If an exceedance is corrected within that 7-day period, enhanced monitoring will not be initiated for that well.

Second, the regulation as written establishes a set date on the initiation of enhanced monitoring. The phrase "must begin 7 days after the first measurement" requires a site to start the corrective actions exactly 7 days after the measurement, even if that date falls on a holiday, or a weekend. The facility is proposing to initiate enhanced monitoring any time within 7 days of the initial measurement, unless the corrective actions taken within the first 7 days (as discussed above) reduce the well temperature to 145°F or less.

7.4.2 Downwell Monitoring

The enhanced monitoring provisions of the NESHAP include the requirement to measure the temperature of the landfill gas every 10 vertical feet of the well on an annual basis for each wellhead with a gas temperature greater than 165°F. Based

on the facility's understanding of this provision, the following provisions will apply for down-well monitoring:

- The requirement for annual down-well monitoring is understood to require that the monitoring be performed at least once at any time during the 12 months following the first temperature measurement greater than 165°F.

- If the measured temperature at the wellhead drops below 165°F during that 12-month period following the initial exceedance, down-well monitoring is no longer required for that well. If the measured temperature drops below 165°F before the initial annual down-well monitoring is performed, that initial monitoring is no longer required. Similarly, if a Higher Operating Value is approved by the Agency before the initial annual down-well monitoring is performed, that initial monitoring is no longer required.

- The well will be shut off, and the wellhead removed, in order to perform down-well monitoring. Based on experience at other sites, down-well temperatures recorded while the well is operating are not representative due to heat transfer and mixing that occurs during gas extraction. Shutting off the well prior to monitoring also reduces risk to the technician performing the monitoring. Additional measures to ensure the technician's safety will also be implemented as needed.

- If conditions (temperature, gas quality, carbon monoxide, visual indicators, etc.) at the wellhead suggest that a subsurface fire is occurring, the well will be shut off in accordance with §60.763(b)(1) and §63.1958(b)(1). To prevent potential oxygen intrusion and unnecessary risk to personnel, the wellhead will not be removed, and down-well temperature will not be measured, until data indicate the subsurface fire is no longer occurring. In these cases, the status of the affected well will be reported in the semi-annual report in accordance with §63.1981(h)(8).

- The liquid level in the well will be measured prior to temperature monitoring. To minimize the potential for damage to the temperature monitoring probe, the down-well temperature monitoring will terminate above the liquid level.

7.4.3 Carbon Monoxide Measurement

The NESHAP requires measurement of carbon monoxide during enhanced monitoring at affected wells using EPA Method 10 (§63.1961(a)(5)(vi)(A) and (B)). EPA Method 10 is a field method principally developed for measuring carbon monoxide from stationary combustion units by extracting continuous samples from an exhaust stack. Use of this method at a landfill gas extraction well operating under vacuum presents numerous technical issues, and its use is not suitable for field or laboratory testing of carbon monoxide concentrations in raw landfill gas.

At the time of this plan preparation, industry groups are working with USEPA to obtain approval for an alternative to Method 10 for this monitoring. The site anticipates that this alternative will be approved before any enhanced monitoring is required; absent that approval, however, the site proposes to collect and analyze samples for carbon monoxide using any of the following (or equivalent) analytical methods:

- ASTM D 1945-03 or the latest version;
- ASTM D 1946-90 or the latest version;
- EPA Method 3-C;
- Modified Method 25-C reporting only the CO fraction;
- On-site portable gas chromatograph capable of measuring CO; or
- Other instruments demonstrated to measure CO in landfill gas with similar performance as the methods described above.

7.5 Computation of 3-Hour Block Average Temperatures

The NESHAP requires inclusion of data collected during *"[m]onitoring system breakdowns, repairs, calibration checks, and zero (low-level) and high-level adjustments"* and during startups, shutdowns and malfunctions, in calculating the 3-hour combustion temperature average for compliance (§63.1975). This approach is inconsistent with general provisions in Subpart A (i.e., §63.8(c)(2)-(8) and 63.10(e)); as well as §63.1961(h), which excludes monitoring system malfunctions, breakdown, repairs, and system checks from the 3-hour temperature average.

Eighteen other NESHAPs exclude monitoring breakdown, repairs etc. from compliance averaging requirements (see 63.7120 of Lime Plants Subpart AAAAA and 63.1416 of Amino/Phenolic Resins Subpart OOO as examples). At the time of this plan preparation, the issue of determining the 3-hour average combustion temperature has been raised to EPA as part of an industry petition, and the site expects that this will result in rule correction/clarification. In the interim, the facility will exclude monitoring system malfunctions, breakdown, repairs, and system checks from the 3-hour temperature average in accordance with the applicable provisions of the NESHAP.

7.6 Certification of Prior Reports

As described in §63.1981, the NESHAP does not require re-submittal of the following reports if they were previously submitted under 40 CFR part 60, subpart WWW; 40 CFR part 60, subpart XXX; or a federal plan or EPA-approved and

effective state plan or tribal plan that implements either 40 CFR part 60, subpart Cc or 40 CFR part 60, subpart Cf:

- Design capacity report;
- Amended design capacity report;
- Initial NMOC emission rate report;
- Initial or revised collection and control system design plan;
- Closure report;
- Equipment removal report; or
- Initial performance test report.

§63.1981 also notes, however, that "*[Y]ou must include a statement certifying prior submission of the respective report(s) and the date of submittal in the first semi-annual report required in this section.*" This certification will be included, as applicable, in the first semi-annual report submitted after September 27, 2021. If the facility elects to begin complying with the NESHAP before that date, the certification will be included in the first semi-annual report due after the date the facility began complying with the NESHAP provisions.

7.7 Flow Monitoring Where No Bypass Exists

Both the NESHAP (§63.1961(b)(2), (c)(2), and (g)) and the NSPS (§60.766(b)(2), (c)(2), and (g)) contain a requirement that the owner or operator calibrate, maintain, and operate a device that records flow to the control device or treatment system, as well as bypass of the control device or treatment system, if applicable. The requirement to monitor bypass flow is not a separate requirement and does not apply to closed loop control systems; most GCCS are not designed to bypass emissions to atmosphere. EPA included the phrase "as applicable" in the regulations to acknowledge not every system will have a bypass. If the system is designed such that there is no physical means to bypass the control device or treatment system, only the flow to the control device or treatment system needs to be monitored, including flow that is re-routed from one device to another.

Moats, Nikki B <nikki.b.moats@wv.gov>

Quick question about Meadowfill landfill

5 messages

Moats, Nikki B <nikki.b.moats@wv.gov> Tue, Sep 28, 2021 at 8:24 AM
To: afinley@wm.com
Cc: jlish@trinityconsultants.com

Hello Adam,

I just wanted to ask about the zip code on the application. The one given there is 25427, and that is for the Hedgesville area. This landfill is in Bridgeport, which usually has a zip code of 26330, and I was wondering if there was some sort of mistake on the application and which zip code was correct.

Sincerely,
Nikki B. Moats

Finley, Adam <AFinley@wm.com> Tue, Sep 28, 2021 at 8:34 AM
To: "Runner, Michael" <mrunner@wm.com>, "Bayes, Travis" <tbayes@wm.com>
Cc: Nikki B Moats <Nikki.B.Moats@wv.gov>

Mike/Travis,

Please confirm. Thanks.

Adam Finley, P.E.
Director of Disposal Operations
Western Pennsylvania/West Virginia
afinley@wm.com

Waste Management
100 Rangos Lane
Washington, PA 15301
Office-724-206-7940
Cell-304-844-0932

Waste Management renewable energy projects create enough energy to power more than one million homes. Learn more at www.wm.com

Begin forwarded message:

> **From:** "Moats, Nikki B" <nikki.b.moats@wv.gov>
> **Date:** September 28, 2021 at 8:25:28 AM EDT
> **To:** "Finley, Adam" <AFinley@wm.com>
> **Cc:** jlish@trinityconsultants.com
> **Subject: [EXTERNAL] Quick question about Meadowfill landfill**
>
> [Quoted text hidden]

Runner, Michael <mrunner@wm.com> Tue, Sep 28, 2021 at 9:34 AM
To: "Finley, Adam" <AFinley@wm.com>, "Bayes, Travis" <tbayes@wm.com>
Cc: Nikki B Moats <Nikki.B.Moats@wv.gov>

Nikki,

Not sure what happened with the Meadowfill application, but yes the zip code should be 26330.

[Quoted text hidden]
[Quoted text hidden]

Moats, Nikki B <nikki.b.moats@wv.gov> Tue, Sep 28, 2021 at 4:03 PM
To: "Runner, Michael" <mrunner@wm.com>
Cc: "Finley, Adam" <AFinley@wm.com>, "Bayes, Travis" <tbayes@wm.com>

Michael,

After getting that information, I've finished up a draft of the permit and fact sheet and attached them here for you all to review. I plan on going out to notice with this next Wednesday, but if you need more time to send this to others and/or review it, please just let me know.

Thanks,
Nikki B. Moats

[Quoted text hidden]

2 attachments

DPFactSheet R30-03300128-2021.doc
114K

DPPermit R30-03300128-2021.docx
3772K

Runner, Michael <mrunner@wm.com> Wed, Sep 29, 2021 at 11:12 AM
To: "Moats, Nikki B" <nikki.b.moats@wv.gov>
Cc: "Finley, Adam" <AFinley@wm.com>, "Bayes, Travis" <tbayes@wm.com>

OK, thanks. We will take a look and let you know.

[Quoted text hidden]

Received
February 15, 2021
WV DEP/Div of Air Quality

Division of Air Quality Permit Application Submittal

Please find attached a permit application for : Meadowfill Landfill, Inc.; Bridgeport, West Virginia
[Company Name; Facility Location]

- DAQ Facility ID (for existing facilities only): 03-54-033-00128
- Current 45CSR13 and 45CSR30 (Title V) permits associated with this process (for existing facilities only): R13-2666A, R13-2596A, R30-03300128-2016

- Type of NSR Application (check all that apply):
  - ☐ Construction
  - ☐ Modification
  - ☐ Class I Administrative Update
  - ☐ Class II Administrative Update
  - ☐ Relocation
  - ☐ Temporary
  - ☐ Permit Determination

- Type of 45CSR30 (TITLE V) Application:
  - ☐ Title V Initial
  - ☑ Title V Renewal
  - ☐ Administrative Amendment**
  - ☐ Minor Modification**
  - ☐ Significant Modification**
  - ☐ Off Permit Change

****If the box above is checked, include the Title V revision information as ATTACHMENT S to the combined NSR/Title V application.**

- Payment Type:
  - ☐ Credit Card (Instructions to pay by credit card will be sent in the Application Status email.)
  - ☐ Check (Make checks payable to: WVDEP – Division of Air Quality)
    Mail checks to:
    WVDEP – DAQ – Permitting
    Attn: NSR Permitting Secretary
    601 57th Street, SE
    Charleston, WV 25304

Please wait until DAQ emails you the Facility ID Number and Permit Application Number. Please add these identifiers to your check or cover letter with your check.

- If the permit writer has any questions, please contact (all that apply):
  - ☑ Responsible Official/Authorized Representative
    - Name: Adam Finley
    - Email: afinley@wm.com
    - Phone Number: (724) 206-7940
  - ☐ Company Contact
    - Name:
    - Email:
    - Phone Number:
  - ☑ Consultant
    - Name: Joyce M. Lish
    - Email: jlish@trinityconsultants.com
    - Phone Number: (412) 737-6568

Trinity Consultants
4500 Brooktree Rd, Ste 310, Wexford, PA 15090 / P 724.935.2611 / trinityconsultants.com

Received
February 15, 2021
WV DEP/Div of Air Quality

February 15, 2021

Ms. Laura M. Crowder, Director
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street SE
Charleston, WV 25304

RE: Meadowfill Landfill Inc. – Bridgeport, West Virginia
Title V Operating Permit No. R30-03300128-2016
Title V Permit Renewal Application

VIA E-MAIL: DEPAirQualityPermitting@wv.gov

Dear Ms. Crowder:

Enclosed please find a complete application for the renewal of the Title V Operating Permit (TVOP) referenced above for the Meadowfill Landfill, Inc. (Landfill) in Bridgeport, West Virginia. This facility is located in Harrison County, West Virginia. The Landfill is currently operating in accordance with West Virginia Department of Environmental Protection (WVDEP) Division of Air Quality Title V Operating Permit R30-03300128-2016 issued on August 15, 2016. The Operating Permit expires on August 15, 2021.

The Landfill wishes to inform the WVDEP that the TVOP will need to be updated for consistency with the extensive rule changes within 45 CSR 23, which became effective June 1, 2018.[1] These rule changes were finalized when West Virginia developed an initial State Plan to address the Emission Guidelines (NSPS/EG) Subpart Cf in 2018.

Also, 40 CFR Subpart WWW actually will not apply to the Landfill after September 2021 due to recent NSPS and NESHAP rule changes for landfills. 45 CSR 23 will be the applicable regulation for the Landfill as well as the NESHAP Subpart AAAA as the current NMOC emissions exceed the threshold of 50 Mg/yr.

As discussed during our conversation with the Department on February 8, 2021 the Meadowfill Landfill Title V Permit Renewal is due at the same time as the Title V Permit Modification to address the GCCS Design Plan (TV Permit Condition 4.1.4). It was confirmed during this call that it would be acceptable for this submittal to satisfy both the permit renewal and permit modification submittal requirements.

The Landfill has updated the phases within the recent construction of the site. Please note the request for addition to the Emissions Unit Table. The Tire Shredder (Emission Unit 2S) does not operate at the site. This application documents removal of the shredder as a permitted Emission Unit. Additionally, the Landfill has reviewed the current Title V Operating Permit terms and conditions as part of this renewal application. Due

[1] Please also note that the public comment period for further rule changes (to 45 CSR 23), based on revisions to the federal performance and emission standards for MSW landfills, ended on July 28, 2020. Once finalized, these additional rule changes will likely need incorporation into this Title V Operating Permit Renewal.

to the apparent insignificant nature of the many tanks listed as Miscellaneous Sources in the Title V Operating Permit, we are requesting that the Department consider removing these sources as formal emission units from within the permit. There are no substantive requirements for these sources within the Operating Permit.

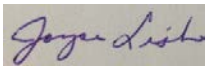
Attached with this cover letter, please find one (1) PDF copy of the complete permit application package, including a signed copy of the required signatory page. This package contains the following:

- **Table of Contents**
- **Title V Permit Application Checklist**
- **General Application Forms**
- **Attachment A – Area Map**
- **Attachment B – Plot Plan**
- **Attachment C – Process Flow Diagrams**
- **Attachment D – Title V Equipment Table**
- **Attachment E – Emission Unit Forms**
- **Attachment G – Air Pollution Control Device Forms**
- **Appendix A – Emission Calculations**

If you need further clarification or information on any aspect of the renewal application, please contact me by phone at (412) 737-6568, or via email at jlish@trinityconsultants.com. Thank you for working with us in reviewing this submittal.

Sincerely,

TRINITY CONSULTANTS



Joyce Lish
Senior Consultant

Enclosures:

CC: **Michael Runner, Waste Management (via email)**
Craig Arnold, Waste Management (via email)
Michael Trupin, Trinity Consultants (via email)
Nikki Moats, WVDEP
Richard Boehm, WVDEP

Division of Air Quality Permit Application Submittal

Please find attached a permit application for : Meadowfill Landfill, Inc.; Bridgeport, West Virginia

[Company Name; Facility Location]

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- If the permit writer has any questions, please contact (all that apply):
  - ☑ Responsible Official/Authorized Representative
    - Name: Adam Finley
    - Email: afinley@wm.com
    - Phone Number: (724) 206-7940
  - ☐ Company Contact
    - Name:
    - Email:
    - Phone Number:
  - ☑ Consultant
    - Name: Joyce M. Lish
    - Email: jlish@trinityconsultants.com
    - Phone Number: (412) 737-6568

TITLE V RENEWAL

Waste Management – Meadowfill Landfill, Inc.
Bridgeport Landfill

Title V Permit Renewal Application / Bridgeport, West Virginia

Prepared By:

TRINITY CONSULTANTS
Pittsburgh Office
4500 Brooktree Road
Suite 310
Wexford, PA 15090
(724) 935-2611

February 2021

Trinity Consultants

TABLE OF CONTENTS

TITLE V PERMIT APPLICATION CHECKLIST
FOR ADMINISTRATIVE COMPLETENESS

A complete application is demonstrated when all of the information required below is properly prepared, completed and attached. The items listed below are required information which must be submitted with a Title V permit application. Any submittal will be considered incomplete if the required information is not included.*

☑	A signed copy of the application ("Certification" page must be signed and dated by a Responsible Official as defined in 45CSR30)
☑	*Table of Contents (needs to be included but not for administrative completeness)
☑	Facility information
☑	Description of process and products, including NAICS and SIC codes, and including alternative operating scenarios
☑	Area map showing plant location
☑	Plot plan showing buildings and process areas
☑	Process flow diagram(s), showing all emission units, control equipment, emission points, and their relationships
☑	Identification of all applicable requirements with a description of the compliance status, the methods used for demonstrating compliance, and a Schedule of Compliance Form (ATTACHMENT F) for all requirements for which the source is not in compliance
☑	Listing of all active permits and consent orders (if applicable)
☑	Facility-wide emissions summary
☑	Identification of Insignificant Activities
☑	ATTACHMENT D – Title V Equipment Table completed for all emission units at the facility except those designated as insignificant activities
☑	ATTACHMENT E – Emission Unit Form completed for each emission unit listed in the Title V Equipment Table (ATTACHMENT D) and a Schedule of Compliance Form (ATTACHMENT F) for all requirements for which the emission unit is not in compliance
☑	ATTACHMENT G – Air Pollution Control Device Form completed for each control device listed in the Title V Equipment Table (ATTACHMENT D)
☐	ATTACHMENT H – Compliance Assurance Monitoring (CAM) Plan Form completed for each control device for which the "Is the device subject to CAM?" question is answered "Yes" on the Air Pollution Control Device Form (ATTACHMENT G)
☑	General Application Forms signed by a Responsible Official
☐	Confidential Information submitted in accordance with 45CSR31

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street SE
Charleston, WV 25304
Phone: (304) 926-0475
www.dep.wv.gov/daq

Received
February 15, 2021
WV DEP/Div of Air Quality

INITIAL/RENEWAL TITLE V PERMIT APPLICATION - GENERAL FORMS

Section 1: General Information

1. **Name of Applicant (As registered with the WV Secretary of State's Office):** Meadowfill Landfill, Inc.	**2. Facility Name or Location:** Bridgeport, WV
3. DAQ Plant ID No.: 0 3 3 — 0 0 1 2 8	**4. Federal Employer ID No. (FEIN):** 3 1 1 5 0 9 7 0 1

5. **Permit Application Type:**

☐ Initial Permit — When did operations commence? MM/DD/1991
☒ Permit Renewal — What is the expiration date of the existing permit? 08/15/2021
☐ Update to Initial/Renewal Permit Application

6. Type of Business Entity:

☒ Corporation ☐ Governmental Agency ☐ LLC
☐ Partnership ☐ Limited Partnership

8. Number of onsite employees:

18

7. Is the Applicant the:

☐ Owner ☐ Operator ☒ Both

If the Applicant is not both the owner and operator, please provide the name and address of the other party.

_____

9. Governmental Code:

☒ Privately owned and operated; 0
☐ Federally owned and operated; 1
☐ State government owned and operated; 2
☐ County government owned and operated; 3
☐ Municipality government owned and operated; 4
☐ District government owned and operated; 5

10. Business Confidentiality Claims

Does this application include confidential information (per 45CSR31)? ☐ Yes ☒ No

If yes, identify each segment of information on each page that is submitted as confidential, and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's *"PRECAUTIONARY NOTICE-CLAIMS OF CONFIDENTIALITY"* guidance.

11. Mailing Address		
Street or P.O. Box: 1488 Dawson Drive		
City: Bridgeport	**State:** WV	**Zip: 25427-**
Telephone Number: (888) 964-9724	**Fax Number:** (304) 842-4613	

12. Facility Location		
Street: 1488 Dawson Drive	**City:** Bridgeport	**County:** Harrison
UTM Easting: 564.04 km	**UTM Northing:** 4,3854.44 km	**Zone:** ☒ 17 or ☐ 18
Directions: From I-79 take exit 121 (Meadowbrook Road). Turn west onto Meadowbrook Road. Go approximately 1.5 miles and turn right onto Dawson Drive. Follow Dawson Drive approximately 1.5 miles to the landfill entrance.		
Portable Source? ☐ Yes ☒ No		
Is facility located within a nonattainment area? ☐ Yes ☒ No		**If yes, for what air pollutants?**
Is facility located within 50 miles of another state? ☒ Yes ☐ No		**If yes, name the affected state(s).** Pennsylvania Maryland
Is facility located within 100 km of a Class I Area[1]? ☒ Yes ☐ No **If no, do emissions impact a Class I Area[1]?** ☐ Yes ☐ No		**If yes, name the area(s).** Dolly Sods Wilderness Area Otter Creek Wilderness Area

[1] *Class I areas include Dolly Sods and Otter Creek Wilderness Areas in West Virginia, and James River Face Wilderness Area in Virginia*

13. Contact Information		
Responsible Official: Adam Finley		**Title:** Director of Disposal Operations Senior District Manager
Street or P.O. Box: 100 Rangos Lane		
City: Washington	**State:** PA	**Zip: 15301-**
Telephone Number: (724)206-7940	**Fax Number:**	
E-mail address: afinley@wm.com		
Environmental Contact: Michael Runner		**Title:** Mgr. Environmental Protection
Street or P.O. Box: 1488 Dawson Drive, Suite 101		
City: Bridgeport	**State:** WV	**Zip: 26330-**
Telephone Number: (681) 758-5719	**Fax Number:**	
E-mail address: mrunner@wm.com		
Application Preparer: Joyce Lish		**Title:** Senior Consultant
Company: Trinity Consultants, Inc.		
Street or P.O. Box: 4500 Brooktree Road, Suite 310		
City: Wexford	**State:** PA	**Zip: 15090-**
Telephone Number: (412)737-6568	**Fax Number:**	
E-mail address: jlish@trinityconsultants.com		

14. Facility Description

List all processes, products, NAICS and SIC codes for normal operation, in order of priority. Also list any process, products, NAICS and SIC codes associated with any alternative operating scenarios if different from those listed for normal operation.

Process	Products	NAICS	SIC
Sanitary Landfill	Waste disposal	562212	4953

Provide a general description of operations.

Meadowfill Landfill is a municipal solid waste landfill that began operation in 1994. The landfill has the potential to receive approximately 30,000 tons of waste per month on the approximate 177.7 acre site. Waste is brought to the landfill by truck and disposed. The waste is spread and compacted with soil placed over the active area each day for cover. The landfill also has a flare for odor control and above ground tanks which are used for leachate treatment and storage. The flare and associated gas collection system will be used (in the future) for the purposes of satisfying the substantive requirement of the NSPS and NESHAP Rules (along with 45 CSR 23).

15. Provide an **Area Map** showing plant location as **ATTACHMENT A**.

16. Provide a **Plot Plan(s)**, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is located as **ATTACHMENT B**. For instructions, refer to "Plot Plan - Guidelines."

17. Provide a detailed **Process Flow Diagram(s)** showing each process or emissions unit as **ATTACHMENT C**. Process Flow Diagrams should show all emission units, control equipment, emission points, and their relationships.

Section 2: Applicable Requirements

18. Applicable Requirements Summary	
Instructions: Mark all applicable requirements.	
☐ SIP	☐ FIP
☐ Minor source NSR (45CSR13)	☐ PSD (45CSR14)
☒ NESHAP (45CSR34)	☐ Nonattainment NSR (45CSR19)
☒ Section 111 NSPS	☒ Section 112(d) MACT standards
☐ Section 112(g) Case-by-case MACT	☐ 112(r) RMP
☐ Section 112(i) Early reduction of HAP	☐ Consumer/commercial prod. reqts., section 183(e)
☐ Section 129 Standards/Reqts.	☐ Stratospheric ozone (Title VI)
☐ Tank vessel reqt., section 183(f)	☐ Emissions cap 45CSR§30-2.6.1
☐ NAAQS, increments or visibility (temp. sources)	☐ 45CSR27 State enforceable only rule
☒ 45CSR4 State enforceable only rule	☐ Acid Rain (Title IV, 45CSR33)
☐ Emissions Trading and Banking (45CSR28)	☐ **C**ompliance **A**ssurance **M**onitoring (40CFR64)
☐ CAIR NO_x Annual Trading Program (45CSR39)	☐ CAIR NO_x Ozone Season Trading Program (45CSR40)
☐ CAIR SO_2 Trading Program (45CSR41)	

19. Non Applicability Determinations

List all requirements which the source has determined not applicable and for which a permit shield is requested. The listing shall also include the rule citation and the reason why the shield applies.

40CFR60.757(a)(3) and corresponding State Regulation. The design capacity of this facility is greater than 2.5 million megagrams and 2.5 million cubic meters. Therefore, amended design capacity reports are not required.

40 C.F.R. 64 – Compliance Assurance Monitoring. The landfill NSPS and NESHAP were established after 11/15/1990. Therefore, the landfill is exempt from the CAM Rule.

40 CFR 60, Subpart Kb – All of the tanks at this facility were constructed after July 23, 1984 but have a design capacity less than 75 m3. Therefore, none of the tanks at this facility are subject to 40 C.F.R. 60 Subpart Kb. Due to the Vp threshold in Subpart Kb, the leachate tanks are not Subpart Kb applicable.

☒ Permit Shield

19. Non Applicability Determinations *(Continued)* - *Attach additional pages as necessary.*

List all requirements which the source has determined not applicable and for which a permit shield is requested. The listing shall also include the rule citation and the reason why the shield applies.

☒ Permit Shield

20. Facility-Wide Applicable Requirements

List all facility-wide applicable requirements. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*).

45CSR§6-3.1. – Open burning

45CSR§6-3.2. – Open burning exemptions

40 C.F.R. §61.145(b) and 45CSR34 – Asbestos

45CSR§4-3.1. State-Enforceable only – Odor

45CSR§11-5.2. – Standby plan for reducing emissions

W.Va. Code § 22-5-4(a)(14) – Emission inventory

40 C.F.R. 82, Subpart F – Ozone-depleting substances

40 C.F.R. 68 – Risk Management Plan

45CSR§17-3.1. – Fugitive particulate matter

45CSR§17-3.2. & 4.1. – Fugitive particulate matter control

☒ Permit Shield

For all facility-wide applicable requirements listed above, provide monitoring/testing / recordkeeping / reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number and/or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

W.Va. Code § 22-5-4(a)(15) and 45CSR13 – Stack testing

45CSR§30-5.1.c.2.A, 45CSR13, R13-2666, 4.4.1., R13-2596, 4.4.1.. – Monitoring information

45CSR§30-5.1.c.2.B. – Retention of records

45CSR§30-5.1.c. State-Enforceable only – Odors

45CSR§30-5.1.c. Monitor dust control systems and maintain records of dust control

45CSR§§30-4.4. and 5.1.c.3.D. – Responsible official

45CSR§30-5.1.c.3.E. – Reporting requirements for confidential information

45CSR§30-8. – Certified emissions statement

45CSR§30-5.3.e. – Compliance certification

45CSR§30-5.1.c.3.A. – Semi-annual monitoring reports

45CSR§30-5.1.c.3.C. - Deviations

45CSR§30-5.1.c.3.B. – Reporting of deviations

45CSR§30-4.3.h.1.B. – New applicable requirements

Are you in compliance with all facility-wide applicable requirements? ☒ Yes ☐ No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

20. Facility-Wide Applicable Requirements *(Continued)* - *Attach additional pages as necessary.*

List all facility-wide applicable requirements. For each applicable requirement, include the rule citation and/or permit with the condition number.

For all facility-wide applicable requirements listed above, provide monitoring/testing/recordkeeping/ reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number and/or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Are you in compliance with all facility-wide applicable requirements? ☒ Yes ☐ No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

21. Active Permits/Consent Orders		
Permit or Consent Order Number	Date of Issuance MM/DD/YYYY	List any Permit Determinations that Affect the Permit *(if any)*
R13-2666A	11/30/2009	NA
R13-2596A	06/07/2016	NA
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22. Inactive Permits/Obsolete Permit Conditions		
Permit Number	Date of Issuance	Permit Condition Number
None	MM/DD/YYYY	
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Section 3: Facility-Wide Emissions

23. Facility-Wide Emissions Summary [Tons per Year]	
Criteria Pollutants	Potential Emissions
Carbon Monoxide (CO)	192.92
Nitrogen Oxides (NO_X)	42.32
Lead (Pb)	
Particulate Matter ($PM_{2.5}$)[1]	26.48
Particulate Matter (PM_{10})[1]	37.33
Total Particulate Matter (TSP)	198.61
Sulfur Dioxide (SO_2)	9.59
Volatile Organic Compounds (VOC)	96.18
Hazardous Air Pollutants[2]	Potential Emissions
Total HAPs	22.78
HCl	1.05
Toluene	7.83
Xylenes	2.78
Methylene Chloride	2.63
Perchloroethylene	1.34
Hexane	1.22
Ethylbenzene	1.06
Regulated Pollutants other than Criteria and HAP	Potential Emissions
Methane	38,650
Carbon Dioxide (CO_2)	108,314
Non-Methane Organic Compounds (NMOC)	226.5 Mg

[1]$PM_{2.5}$ and PM_{10} are components of TSP.
[2]For HAPs that are also considered PM or VOCs, emissions should be included in both the HAPs section and the Criteria Pollutants section.

Section 4: Insignificant Activities

24. Insignificant Activities (Check all that apply)		
☒	1.	Air compressors and pneumatically operated equipment, including hand tools.
☒	2.	Air contaminant detectors or recorders, combustion controllers or shutoffs.
☒	3.	Any consumer product used in the same manner as in normal consumer use, provided the use results in a duration and frequency of exposure which are not greater than those experienced by consumer, and which may include, but not be limited to, personal use items; janitorial cleaning supplies, office supplies and supplies to maintain copying equipment.
☒	4.	Bathroom/toilet vent emissions.
☒	5.	Batteries and battery charging stations, except at battery manufacturing plants.
☒	6.	Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents. Many lab fume hoods or vents might qualify for treatment as insignificant (depending on the applicable SIP) or be grouped together for purposes of description.
☒	7.	Blacksmith forges.
☒	8.	Boiler water treatment operations, not including cooling towers.
☒	9.	Brazing, soldering or welding equipment used as an auxiliary to the principal equipment at the source.
☒	10.	CO_2 lasers, used only on metals and other materials which do not emit HAP in the process.
☒	11.	Combustion emissions from propulsion of mobile sources, except for vessel emissions from Outer Continental Shelf sources.
☒	12.	Combustion units designed and used exclusively for comfort heating that use liquid petroleum gas or natural gas as fuel.
☒	13.	Comfort air conditioning or ventilation systems not used to remove air contaminants generated by or released from specific units of equipment.
☒	14.	Demineralized water tanks and demineralizer vents.
☒	15.	Drop hammers or hydraulic presses for forging or metalworking.
☐	16.	Electric or steam-heated drying ovens and autoclaves, but not the emissions from the articles or substances being processed in the ovens or autoclaves or the boilers delivering the steam.
☐	17.	Emergency (backup) electrical generators at residential locations.
☒	18.	Emergency road flares.
☒	19.	Emission units which do not have any applicable requirements and which emit criteria pollutants (CO, NO_x, SO_2, VOC and PM) into the atmosphere at a rate of less than 1 pound per hour and less than 10,000 pounds per year aggregate total for each criteria pollutant from all emission units. Please specify all emission units for which this exemption applies along with the quantity of criteria pollutants emitted on an hourly and annual basis: Chippers Rock crushers Portable compressors _____ _____ _____ _____ _____ _____

24. Insignificant Activities (Check all that apply)		
☐	20.	Emission units which do not have any applicable requirements and which emit hazardous air pollutants into the atmosphere at a rate of less than 0.1 pounds per hour and less than 1,000 pounds per year aggregate total for all HAPs from all emission sources. This limitation cannot be used for any source which emits dioxin/furans nor for toxic air pollutants as per 45CSR27. Please specify all emission units for which this exemption applies along with the quantity of hazardous air pollutants emitted on an hourly and annual basis: _____ _____ _____ _____ _____
☒	21.	Environmental chambers not using hazardous air pollutant (HAP) gases.
☒	22.	Equipment on the premises of industrial and manufacturing operations used solely for the purpose of preparing food for human consumption.
☒	23.	Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment.
☒	24.	Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis.
☒	25.	Equipment used for surface coating, painting, dipping or spray operations, except those that will emit VOC or HAP.
☒	26.	Fire suppression systems.
☒	27.	Firefighting equipment and the equipment used to train firefighters.
☒	28.	Flares used solely to indicate danger to the public.
☒	29.	Fugitive emission related to movement of passenger vehicle provided the emissions are not counted for applicability purposes and any required fugitive dust control plan or its equivalent is submitted.
☒	30.	Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formulation.
☒	31.	Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal or plastic.
☐	32.	Humidity chambers.
☒	33.	Hydraulic and hydrostatic testing equipment.
☒	34.	Indoor or outdoor kerosene heaters.
☒	35.	Internal combustion engines used for landscaping purposes.
☒	36.	Laser trimmers using dust collection to prevent fugitive emissions.
☒	37.	Laundry activities, except for dry-cleaning and steam boilers.
☒	38.	Natural gas pressure regulator vents, excluding venting at oil and gas production facilities.
☒	39.	Oxygen scavenging (de-aeration) of water.
☒	40.	Ozone generators.

24. Insignificant Activities (Check all that apply)		
☒	41.	Plant maintenance and upkeep activities (e.g., grounds-keeping, general repairs, cleaning, painting, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots) provided these activities are not conducted as part of a manufacturing process, are not related to the source's primary business activity, and not otherwise triggering a permit modification. (Cleaning and painting activities qualify if they are not subject to VOC or HAP control requirements. Asphalt batch plant owners/operators must still get a permit if otherwise requested.)
☒	42.	Portable electrical generators that can be moved by hand from one location to another. "Moved by Hand" means that it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance, or device.
☒	43.	Process water filtration systems and demineralizers.
☒	44.	Repair or maintenance shop activities not related to the source's primary business activity, not including emissions from surface coating or de-greasing (solvent metal cleaning) activities, and not otherwise triggering a permit modification.
☒	45.	Repairs or maintenance where no structural repairs are made and where no new air pollutant emitting facilities are installed or modified.
☐	46.	Routing calibration and maintenance of laboratory equipment or other analytical instruments.
☐	47.	Salt baths using nonvolatile salts that do not result in emissions of any regulated air pollutants. Shock chambers.
☐	48.	Shock chambers.
☐	49.	Solar simulators.
☒	50.	Space heaters operating by direct heat transfer.
☒	51.	Steam cleaning operations.
☐	52.	Steam leaks.
☐	53.	Steam sterilizers.
☐	54.	Steam vents and safety relief valves.
☒	55.	Storage tanks, reservoirs, and pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized.
☒	56.	Storage tanks, vessels, and containers holding or storing liquid substances that will not emit any VOC or HAP. Exemptions for storage tanks containing petroleum liquids or other volatile organic liquids should be based on size limits such as storage tank capacity and vapor pressure of liquids stored and are not appropriate for this list.
☒	57.	Such other sources or activities as the Director may determine.
☒	58.	Tobacco smoking rooms and areas.
☒	59.	Vents from continuous emissions monitors and other analyzers.

Section 5: Emission Units, Control Devices, and Emission Points

25. Equipment Table

Fill out the **Title V Equipment Table** and provide it as **ATTACHMENT D**.

26. Emission Units

For each emission unit listed in the **Title V Equipment Table**, fill out and provide an **Emission Unit Form** as **ATTACHMENT E**.

For each emission unit not in compliance with an applicable requirement, fill out a **Schedule of Compliance Form** as **ATTACHMENT F**.

27. Control Devices

For each control device listed in the **Title V Equipment Table**, fill out and provide an **Air Pollution Control Device Form** as **ATTACHMENT G**.

For any control device that is required on an emission unit in order to meet a standard or limitation for which the potential pre-control device emissions of an applicable regulated air pollutant is greater than or equal to the Title V Major Source Threshold Level, refer to the **Compliance Assurance Monitoring (CAM) Form(s)** for CAM applicability. Fill out and provide these forms, if applicable, for each Pollutant Specific Emission Unit (PSEU) as **ATTACHMENT H**.

Section 6: Certification of Information

28. Certification of Truth, Accuracy and Completeness and Certification of Compliance

*Note: This Certification must be signed by a responsible official. The **original**, signed in **blue ink**, must be submitted with the application. Applications without an **original** signed certification will be considered as incomplete.*

a. Certification of Truth, Accuracy and Completeness

I certify that I am a responsible official (as defined at 45CSR§30-2.38) and am accordingly authorized to make this submission on behalf of the owners or operators of the source described in this document and its attachments. I certify under penalty of law that I have personally examined and am familiar with the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine and/or imprisonment.

b. Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

Responsible official (type or print)

Name: Adam Finley	Title: Director of Disposal Operations

Responsible official's signature:

Signature: _____ Signature Date: 2/10/21

(Must be signed and dated in blue ink)

Received
February 15, 2021
WV DEP/Div of Air Quality

Note: Please check all applicable attachments included with this permit application:

☒	ATTACHMENT A: Area Map
☒	ATTACHMENT B: Plot Plan(s)
☒	ATTACHMENT C: Process Flow Diagram(s)
☒	ATTACHMENT D: Equipment Table
☒	ATTACHMENT E: Emission Unit Form(s)
☐	ATTACHMENT F: Schedule of Compliance Form(s)
☒	ATTACHMENT G: Air Pollution Control Device Form(s)
☐	ATTACHMENT H: Compliance Assurance Monitoring (CAM) Form(s)

All of the required forms and additional information can be found and downloaded from, the DEP website at www.dep.wv.gov/daq, requested by phone (304) 926-0475, and/or obtained through the mail.

ATTACHMENT A

Area Map

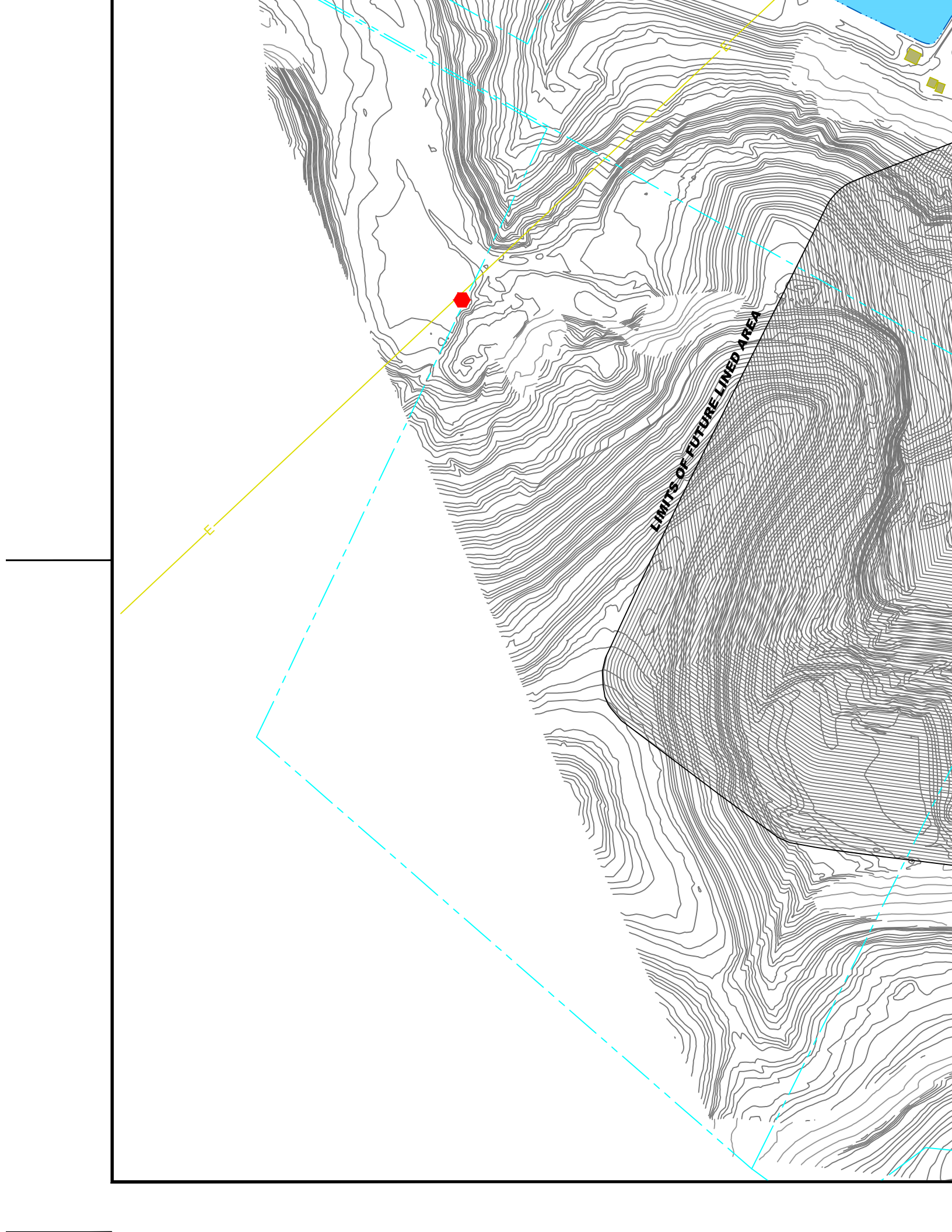
Title: A

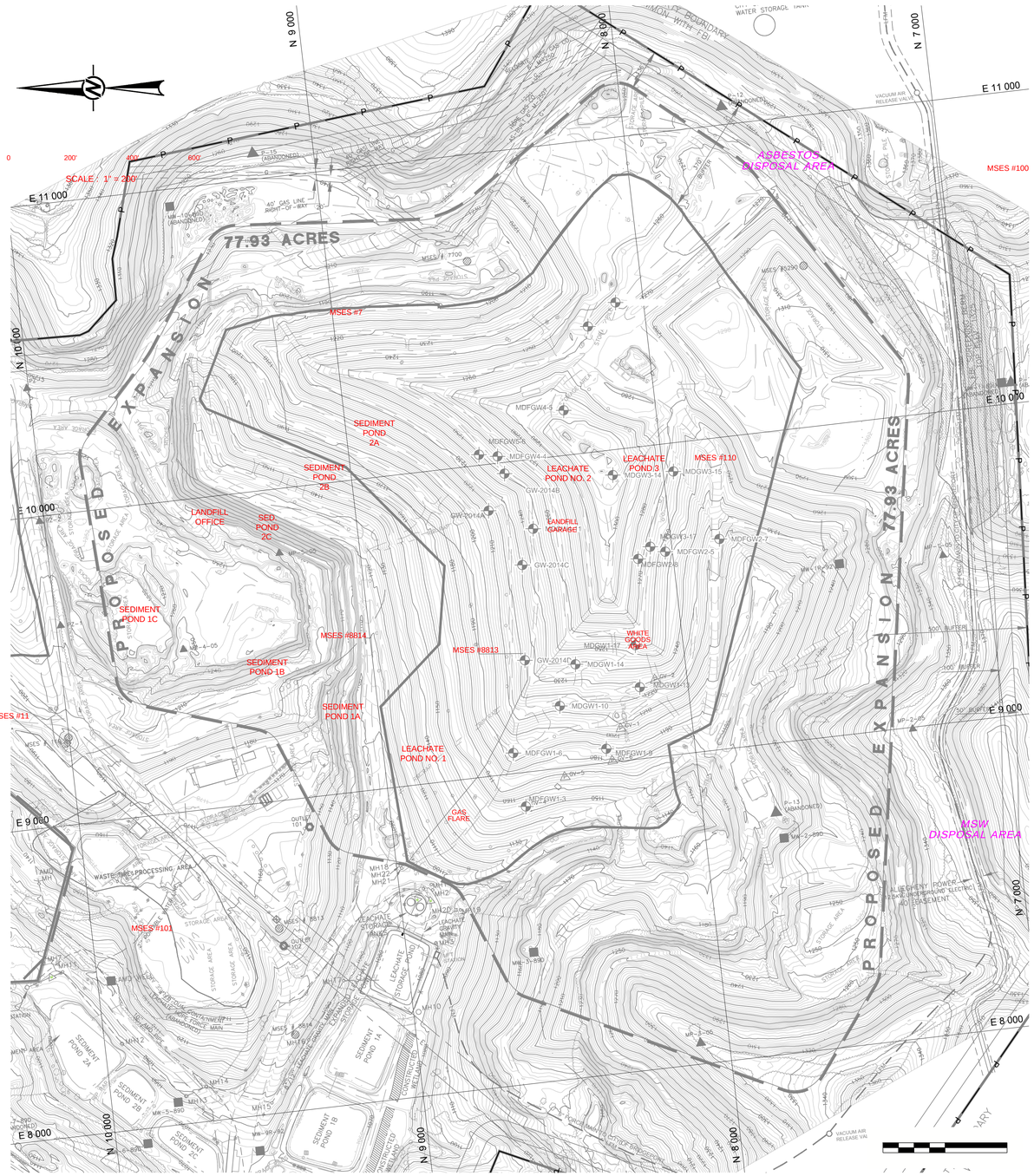
Trinity Consultants

ATTACHMENT B

Plot Plan(s)

PREPARED BY		PROJECT	DATE	SHEET	REV
TRINITY CONSULTANTS	Waste Management - Meadowfill Landfill, Inc. Bridgeport West Virginia	213101.0013	February 2021	1 of 1	001


LIMITS OF FUTURE LINED AREA



L E G E N D

- PROPERTY LINE
- DISPOSAL CELL LIMITS
- TOP OF COLLECTION PROTECTION CONTOUR
- EXISTING SUBSIDENCE CRACK
- CONCRETE MONUMENT
- BUILDING
- CAPPED DISPOSAL AREA
- APPROXIMATE DISPOSAL AREA AS KNOWN (PRE-1988)
- LINED AREA
- CELL LIMITS THAT BEEN OVERLAID BY LATER CELL CONSTRUCTION (SEE NOTE)
- SALT CELL LIMITS
- SMOOTH HDPE LINED AREA
- POND

P
1320
GW-2014D

MSES #7700

MSES #9

N O T E

PHASES 7A, 7B, 7C, 10A, 11A, AND SALT CELL ARE SYNTHETIC LINERS BUILT OVER EXISTING PHASES AT ELEVATION IN THE WASTE FILL TO ISOLATE SPECIAL WASTES FROM INTERMIXING WITH MUNICIPAL SOLID WASTE.

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2020-09-25	ISSUED WITH GCCS DESIGN PLAN	CHC	CHC	PAW	JPG

CLIENT
MEADOWFILL LANDFILL
BRIDGEPORT, HARRISON COUNTY,
WEST VIRGINIA

CONSULTANT
GOLDER
BRISTOL, PA
10 CANAL STREET, SUITE 217
BRISTOL, PENNSYLVANIA
USA
(215) 826-1560
www.golder.com

PROJECT
MEADOWFILL LANDFILL
GAS COLLECTION AND CONTROL SYSTEM
PLAN

TITLE
OVERALL SITE PLAN

PROJECT NO.
20138662

CONTROL
0001-001

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

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REVISIONS

NO.	DESCRIPTION	DWN.	DATE

JAMES P. GARDNER
REGISTERED
23979
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER

James P. Gardner

Title

MEADOWFILL LANDFILL INC.

MEADOWFILL LANDFILL
MSW Stability Evaluation
Liner System - Site Plan

Drawn	SARC	12/17	Scale	AS SHOWN
Engineer	CHM	12/17	Dwg. No.	1
Checked	CHM	12/17		

Path: \\bristol\ComplexData\Waste Management\Meadowfill\20138662 - Meadowfill GCCS Update\0001_Updated GCCS\Active\ | File Name: 20138662-0001-01 - Overall Site Plan.dwg | Last Edited By: chchan Date: 2020-09-23 Time:3:08:36 PM | Printed By: CHChan Date: 2020-09-25 Time:10:20:33 AM

CAD FILE NO. 17-240 MSW Stability Evaluation Site Plan

ATTACHMENT C

Process Flow Diagram(s)

LEGEND

PROPERTY BOUNDARY

EXISTING CONTOURS

EXISTING VERTICAL GAS EXTRACTION WELL

REFERENCE(S)

1. BASE TOPOGRAPHY TAKEN FROM AERIAL MAPPING COMPILED BY SOUTHERN RESOURCES MAPPING CORPORATION DATED APRIL 2019 (FLOWN MARCH 27, 2019).

NOTE(S)

1. HORIZONTAL COORDINATES ARE LOCAL BASED ON STATE PLANE COORDINATE SYSTEM, WEST VIRGINIA, NORTH ZONE, NAD83.
2. VERTICAL DATUM BASED ON NAVD88.

SEAL

2020-09-25

REV. 0

1 of

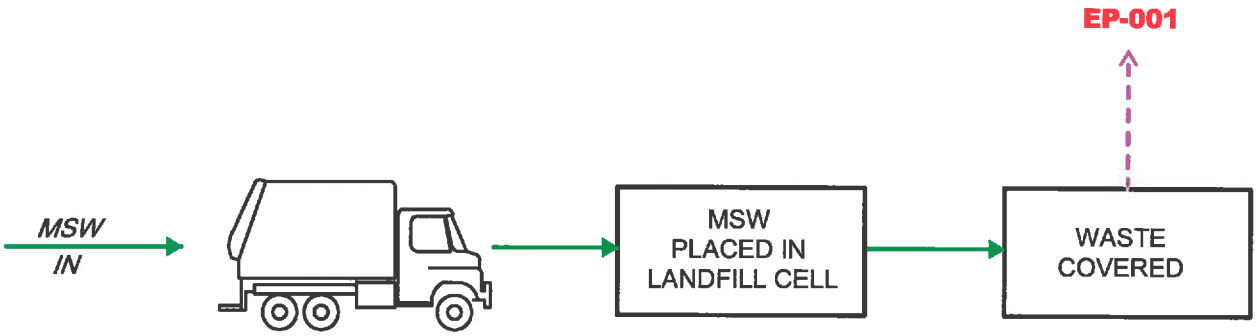
FIGURE 01

LEGEND

PROCESS FLOW

FUGITIVE EMISSIONS

EP-001 EMISSION POINT



MEADOWFILL LANDFILL, INC.

Regulation 30 Permit Application
Facility Process Flow Diagram

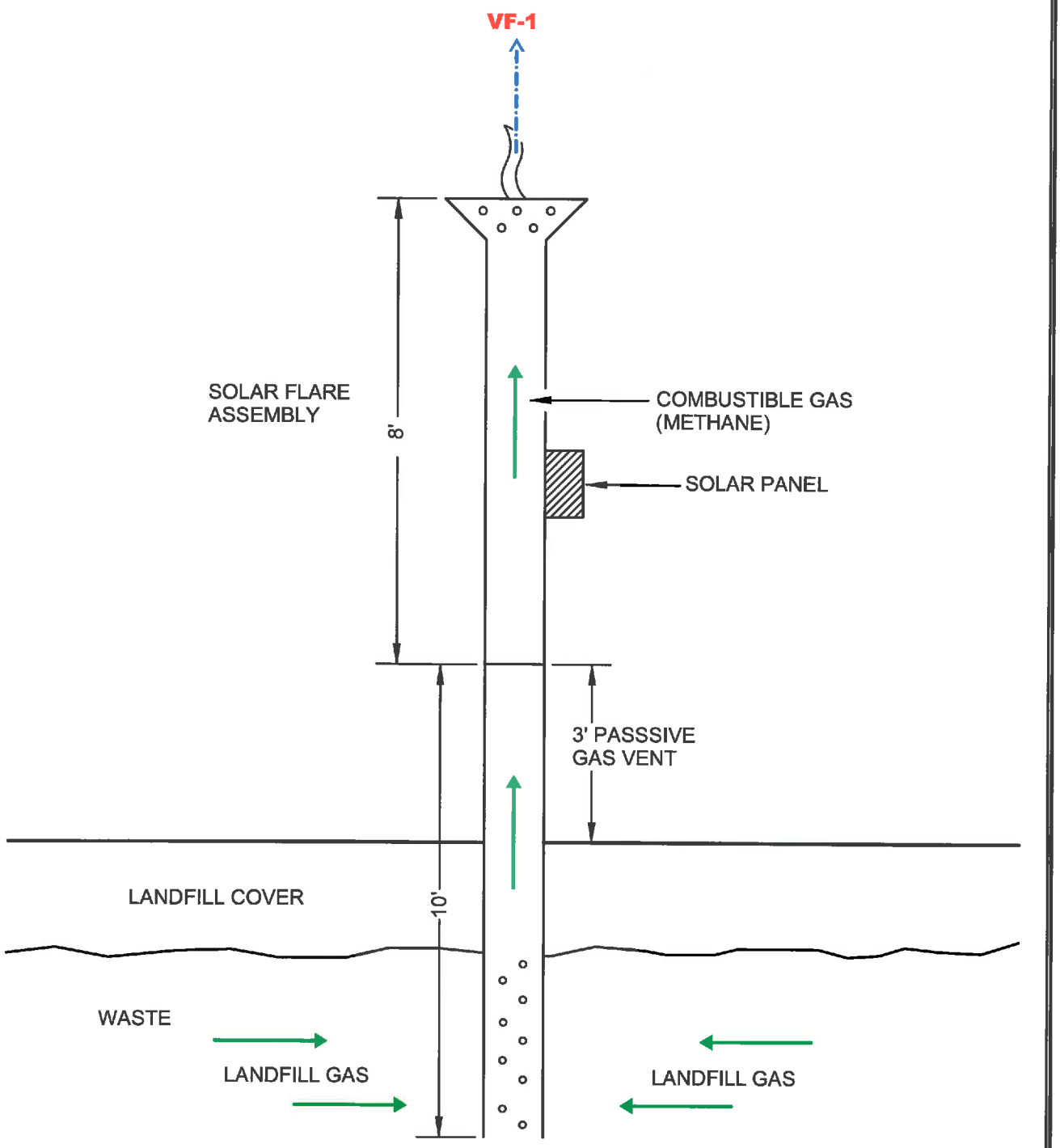
Drawn by	RLR / SARC	11/10
Engineer	JJK / LLS	11/10
Checked by	JJK / LLS	11/10
		Date

Scale: NONE

Prepared by MSES consultants, inc.

Attachment C
FIGURE 3

CAD FILE NO. 10-113-1 Process Flow Diagrams



LEGEND

PROCESS FLOW

AIR EMISSION FLOW

VF-1 EMISSION POINT

MEADOWFILL LANDFILL, INC.

Regulation 30 Permit Application
Vent Flares Process Flow Diagram

Drawn by	LFL / SARC	11/10
Engineer	JJK / LLS	11/10
Checked by	JJK / LLS	11/10
		Date

Scale NONE

Prepared by MSES consultants, inc.

FIGURE 5

CAD FILE NO. 10-113-1 Process Flow Diagrams

ATTACHMENT D - Emission Units Table

(includes all emission units at the facility except those designated as insignificant activities in Section 4, Item 24 of the General Forms)

Emission Unit ID[1]	Emission Point ID[1]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device[1]
Phase 1	Cell 1-A	Phase 1 Cell 1-A	1994	180,374 Mg	None
Phase 1	Cell 1-B	Phase 1 Cell 1-B	1994	223,581 Mg	None
Phase 2	Cell 2-A	Phase 2 Cell 2-A	1995	160,028 Mg	None
Phase 2	Cell 2-B	Phase 2 Cell 2-B	1996	551,581 Mg	None
Phase 3	Cell 3-A	Phase 3 Cell 3-A	1997	519,633 Mg	None
Phase 3	Cell 3-B	Phase 3 Cell 3-B	1998	229,125 Mg	None
Phase 3	Cell 3-C	Phase 3 Cell 3-C	1999	449,106 Mg	None
Phase 4	Cell 4-A	Phase 4 Cell 4-A	2000	410,357 Mg	None
Phase 4	Cell 4-B	Phase 4 Cell 4-B	2001	331,267 Mg	None
Phase 4	Cell 4-C	Phase 4 Cell 4-C	2002	338,495 Mg	None
Phase 4	Cell 4-D	Phase 4 Cell 4-D	2003	348,131 Mg	None
Phase 5	Cell 5-A	Phase 5 Cell 5-A	2005	649,283 Mg	None
Phase 5	Cell 5-B	Phase 5 Cell 5-B	2005	357,768 Mg	None
Phase 6	Cell6-A	Phase 6 Cell 6-A	2008	314,340 Mg	None
Phase 7	NA	Phase 7	2012	278,562 Mg	None
Phase 8	NA	Phase 8	2011	290,299 Mg	None
Phase 9	NA	Phase 9	2015	367,954 Mg	None
Phase 10	NA	Phase 10	2015	683,563 Mg	None
Phase 11	NA	Phase 11	2017	726,749 Mg	None
Phase 12	NA	Phase 12	2019	169,053 Mg	None
Phase 13	NA	Phase 13	2020	493,171 Mg	None
Pre-existing	NA	Inactive 12.20 Acres	1975	347,753 Mg	None
Phase A1	Cell A1-A	Asbestos/C&D Phase A1 Cell A1-A	1992	64,613 Mg	None
Phase A1	Cell A1-B	Asbestos/C&D Phase A1 Cell A1-B	1997	42,041 Mg	None
Phase A2	Cell A2-A	Asbestos/C&D Phase A1 Cell A2-A	2003	23,394 Mg	None
Phase A2	NA	Asbestos/C&D Phase A2 Remainder	NA	151,467 Mg	None
Pre-1990	NA	Asbestos/C&D Pre-Existing	Pre-1990	486,495 Mg	None
LGF-1	LGF-1	Landfill Gas Flare	2010	3,000 scfm	Flare

GV-1	VF-1	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-2	VF-2	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-3	VF-3	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-4	VF-4	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-5	VF-5	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-6	VF-6	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-7	VF-7	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-8	VF-8	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-9	VF-9	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-10	VF-10	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-11	VF-11	Solar Spark Vent Flare CF5	2006	140 cfm	None
GV-12	VF-12	Solar Spark Vent Flare CF5	2006	140 cfm	None
LST001	LST001	Leachate Storage Tank	Post 1984	125,000 gal	None
LST002	LST002	Leachate Storage Tank	Post 1984	125,000 gal	None
T1	T1	Sanitary Waste Water Tank	1999	1,000 gal	None
T10	T10	Diesel Tank	2001	1,200 gal	None
T10b	T10b	New/Lube Oil Tank (15W40)	2001	200 gal	None
T10c	T10c	New/Lube Oil Tank (10W)	2001	200 gal	None
T11	T11	Truck Wash Water Tank	2000	1,500 gal	None
T2	T2	Sanitary Waste Water Tank	1991	1,000 gal	None
T3	T3	MSW Leachate Tank	1993	1,000 gal	None
T3a	T3a	Oil/Water Tank	1993	1,000 gal	None
T3b	T3b	Oil/Water Tank	2003	1,000 gal	None
T4a	T4a	Waste Oil/Used Oil Tank	1993	2,000 gal	None
T4b	T4b	New/Lube Oil (15W40) Tank	1993	500 gal	None
T4c	T4c	Hydraulic Oil/Fluid Tank	1993	500 gal	None
T4d	T4d	New/Lube Oil Tank	1993	275 gal	None

T5	T5	Unleaded Gasoline Tank	1997	1,000 gal	None
T6	T6	Leachate Sump Tank	1995	2,250 gal	None
T7	T7	Leachate Sump Tank	1993	2,250 gal	None
T8	T8	Leachate Sump Tank	1995	2,250 gal	None
T9	T9	Waste Oil/Used Oil Tank	1992	1,200 gal	None
T9f	T9f	New/Lube Oil (15W40) Tank	1997	550 gal	None
T9h	T9h	Waste Oil/Used Oil Tank	1997	205 gal	None
01-SP	Fugitive	Solidification Pit	2010	10,000 ft^2	None

[1]For 45CSR13 permitted sources, the numbering system used for the emission points, control devices, and emission units should be consistent with the numbering system used in the 45CSR13 permit. For grandfathered sources, the numbering system should be consistent with registrations or emissions inventory previously submitted to DAQ. For emission points, control devices, and emissions units which have not been previously labeled, use the following 45CSR13 numbering system: 1S, 2S, 3S,... or other appropriate description for emission units; 1C, 2C, 3C,... or other appropriate designation for control devices; 1E, 2E, 3E, ... or other appropriate designation for emission points.

ATTACHMENT E

EMISSION UNIT FORMS

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:**
Phase 1 through 7, Pre-existing, Phase A1 and A2, and Pre-1990	Landfill Operations	None

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Pre-existing (closed and capped) landfill area (Inactive 12.20 acres and Pre-existing Asbestos/C&D) Active (working) landfill area (Cells 1-A, 1-B, 2-A, 2-B, 3-A, 3-B, 3-C, 4-A, 4-B, 4-C, 4-D, 5-A, 5-B, 6-A, (Phase 7,8,9,10,11,12,13) Future Asbestos/C&D area (Phase A2 Remainder)

Manufacturer:	**Model number:**	**Serial number:**
NA	NA	NA
Construction date:	**Installation date:**	**Modification date(s):**
1975, 1994	MM/DD/YYYY	MM/DD/YYYY

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): approximately 6,457,394 Mg

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
	360,000 tons of waste disposed	24 hr/day, 365 days/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? ___Yes __X_ No	**If yes, is it?** ___ Indirect Fired ___Direct Fired
Maximum design heat input and/or maximum horsepower rating: NA	**Type and Btu/hr rating of burners:** NA

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

NA

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
NA			

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)		
Nitrogen Oxides (NO_X)		
Lead (Pb)		
Particulate Matter ($PM_{2.5}$)		16.00
Particulate Matter (PM_{10})		26.71
Total Particulate Matter (TSP)		187.82
Sulfur Dioxide (SO_2)		
Volatile Organic Compounds (VOC)		91.56
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAPs including below		21.10
Toluene		7.61
Xylenes		2.70
Methylene Chloride		2.55
Perchloroethylene		1.30
Hexane		1.19
Ethylbenzene		1.03
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide		106,048
Methane		38,650
Non Methane Organic Compounds (NMOC)		226.5 Mg

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

USEPA LandGEM 3.02 software with regulatory default values, and AP-42 Chapters 2.4, 11.9.1, 13.2.1, 11.2.2, and 11.2.4.

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

45CSR23, 40CFR60.757, and 40CFR60.754(a)(3). Requirements When Reported NMOC Emission Rate is ≥ 50 Mg/yr.

45CSR23, 40CFR60.757, and 40CFR60.754(a)(4). Requirements When Reported NMOC Emission Rate is ≥ 50 Mg/yr. (when using site specific C_{NMOC})

45CSR23, 40CFR60.752, and 40CFR60.753. Standards for Landfill and Gas Collection and Control. Design parameters for a landfill gas collection and control system which conforms to 40CFR60.759. Standards applicable once over 50 Mg/yr threshold.

45CSR23, 40CFR60.757(c). LFG Collection and Control System Design Plan.

45CSR23, 40 CFR 60.755. Compliance provisions (when over 50 Mg/yr threshold).

40 CFR 63, Subpart AAAA—NESHAP for Municipal Solid Waste Landfill**s**

40 CFR 61.154, Subpart M – NESHAP for Asbestos

Note: 45CSR23 has been revised and is no longer consistent with the current operating permit. The facility will work with WVDEP to determine applicable changes (including a revised NMOC "threshold" of 34 Mg/yr). Please note that per the September 26, 2019 Tier 2 report, the facility has exceeded the NMOC threshold and is preparing to comply with the substantive GCCS requirements of 45CSR23 and applicable Federal Standards.

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

45CSR23, 40CFR60.758. Maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit.

45CSR23, 40CFR60.757(d) and 40CFR60.758. Closure Report.

Note: 45CSR23 has been revised and is no longer consistent with the current operating permit. The facility will work with WVDEP to determine applicable changes (including a revised NMOC "threshold" of 34 Mg/yr).

Are you in compliance with all applicable requirements for this emission unit? __X_Yes ___No If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:**
GV-1 through GV-12 and LGF-1	Landfill Gas Vents and Flares	Flares VF-1 through VF-12 and LGF-1

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
The purpose of the flares is to provide improved odor control at the facility. Flares VF-1 through VF-12 are mounted to a landfill gas vent. The flares are equipped with a solar panel and battery. A charge is stored in the battery that is connected to a spark plug. The spark ignites the combustible gas. LFG-1 is a 3,000 cfm skid-mounted flare. The solar flares do not operate when LFG-1 is in operation. The flare LFG-1 will be used for NSPS compliance once the substantive gas collection and control rules apply.

Manufacturer:	**Model number:**	**Serial number:**
Landfill Services Corporation and LFG Specialties, Inc.	Solar Spark Vent Flare CF-5 and PCF1230I10	

Construction date:	**Installation date:**	**Modification date(s):**
2006 and 2010	2006 and 2010	MM/DD/YYYY

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 140 cfm each for GV-1 through GV-12 and 3000 scfm for LGF-1of landfill gas

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
180,000 cubic feet per hour	1,576.8 mmscf/yr each	8760 hours/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating:	**Type and Btu/hr rating of burners:** NA

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

180,000 cubic feet per hour of landfill gas per flare.
1,576.8 mmscf per year of landfill gas per flare.

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Landfill Gas	NA	NA	507

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	33.73	192.92
Nitrogen Oxides (NO_X)	6.20	42.32
Lead (Pb)		
Particulate Matter ($PM_{2.5}$)	1.53	10.45
Particulate Matter (PM_{10})	1.53	10.45
Total Particulate Matter (TSP)	1.53	10.45
Sulfur Dioxide (SO_2)	1.49	9.59
Volatile Organic Compounds (VOC)	0.48	3.27
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Hydrogen Chloride	1.26	1.05
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

Manufacturer's emissions data and AP-42 Chapter 2.4

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

45CSR6-4.1., R13-2666A, 4.1.1. Particulate matter from GV-1 through GV-12 shall not exceed 0.59 lb/hr each.

45CSR6-4.3 and 4.4., R13-2666A, 4.1.2. No visible emissions except for 5 minutes in 2 hours.

45CSR13, R13-2666A, 4.1.3. The active gas flare (LGF-1) shall not operate while any passive gas flares (GV-1 through GV-12) are in service.

45CSR13, R13-2666A, 4.1.4. LGF-1 emissions shall not exceed the following limits: 6.20 lb/hr and 27.2 tpy of nitrogen oxides, 33.73 lb/hr and 147.8 tpy of carbon monoxide, 1.53 lb/hr and 6.7 tpy of $PM/PM_{10}/PM_{2.5}$, 1.49 lb/hr and 6.5 tpy of sulfur dioxide, 0.48 lb/hr and 2.1 tpy of volatile organic compounds, and 1.26 lb/hr and 5.5 tpy of hydrogen chloride. The annual amount of landfill gas flared shall not exceed 1,576.8 MMscf per year. Install and maintain a system/device that continually measures and records the total amount of landfill gas routed to the flare at all times. Operate the flare with a flame present at all times while landfill gas is routed to the flare. Monitor the presence of a pilot light or flame. Design and install the gas collection system and flare in accordance with "Good Engineering Practices."

45CSR13, 45CSR13-5.11., R13-2666A, 4.1.5. Install, maintain, and operate all pollution control equipment and associated monitoring equipment in a manner consistent with safety and good air pollution control practices.

45CSR6-4.5. The emission of particles of unburned or partially burned refuse or ash from the flare which are large enough to be individually distinguished in the open air shall not be allowed or permitted.

45CSR6-4.6. The flare, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.

40 CFR 60.752(b)(2)(iii), 45CSR23. Route all the collected gas to a control system that complies with the requirements.

_X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

45CSR13, R13-2666A, 4.2.1. Monthly Method 22 visible emission checks shall be conducted to determine compliance with opacity limits with a maximum of forty-five (45) days between consecutive readings.

45CSR13, R13-2666A, 4.2.2. The permittee shall monitor the presence or absence of a flame using a thermocouple or any other equivalent device.

45CSR13, R13-2666A, 4.2.3. The permittee shall record the total amount of landfill gas routed to LGF-1 on a monthly basis and determine the 12-month rolling total to demonstrate compliance with the air emission limits and to determine actual emissions. Records of such monitoring shall be maintained in accordance with the facility-wide requirements of this permit.

45CSR6-7.1. The Director may require the operator to conduct stack tests for the flares to determine the particulate matter loading in the exhaust gases.

45CSR13, R13-2666A, 4.3.1. For the purposes of determining compliance with VOC emission limits for LGF-1, the permittee shall conduct a flare compliance assessment for concentration of sample and tip velocity for the purposes of determining if the flare is achieving a 98% destruction efficiency within 180 days after a single monthly amount total of landfill gas routed to LGF-1 exceeds 114.5 MMscf.

45CSR13, R13-2666A, 4.4.2. The permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

45CSR13, R13-2666A, 4.4.3. The permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. The records shall include the equipment involved; steps taken to minimize emissions during the event; duration of the event; estimated increase in emissions during the event; cause of the malfunction; steps taken to correct the malfunction; and any changes or modifications to equipment or procedures that would prevent future recurrences of the malfunction.

45CSR13, R13-2666A, 4.4.4. The permittee shall maintain records of all monitoring data required, documenting the time of each visible emission check, the emission point or equipment/source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned.

45CSR13, R13-2666A, 4.4.5. The permittee shall maintain records of the times and duration of all periods which the flame was absent.

45CSR13, R13-2666A, 4.4.6. The permittee shall maintain records of the flare design evaluation.

45CSR13, R13-2666A, 4.4.7. The permittee shall keep records of visible emission opacity tests conducted. The records shall be maintained on-site or in a readily accessible off-site location.

45CSR13, R13-2666A, 4.4.8. The permitee shall keep records of the date when any flare(s) is placed in operation, taken out of operation and the identification of the specific flare.

45CSR13, R13-2666A, 4.5.1. Any exceedances of the allowable visible emission requirement for any emission source discovered during observations using 40CFR60, Appendix A, Method 22 must be reported in writing to the Director of the Division of Air Quality as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the cause, suspected cause of the exceedances and any corrective measures taken or planned.

45CSR13, R13-2666A, 4.5.2. The permittee shall submit the results of any testing/assessment conducted as a requirement of this permit to the Director within 60 days after completing such testing.

40 CFR 60.756(c), 40 CFR 758(b)(4), CSR. The permittee shall install, calibrate, maintain and operate open flare equipment according to the manufacturer's specification and maintain required records.

Are you in compliance with all applicable requirements for this emission unit? _X_Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:**
T1, T2, T3, T3a, T3b, T4a, T4b, T4c, T4d, T5, T6, T7, T8, T9, T9f, T9h, T10, T10b, T10c, T11	T1, T2, T3, T3a, T3b, T4a, T4b, T4c, T4d, T5, T6, T7, T8, T9, T9f, T9h, T10, T10b, T10c, T11	None

Provide a description of the emission unit (type, method of operation, design parameters, etc.):

Storage vessels containing diesel fuel, waste oil, lube oil and lubricants, unleaded gasoline, oil/water, and water

Manufacturer:	**Model number:**	**Serial number:**

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYYY	1992 - 2003	MM/DD/YYYY

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 200 to 2,250 gallons

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		24 hrs/day, 365 days/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? ___Yes _X__ No	**If yes, is it?** ___ Indirect Fired ___Direct Fired
Maximum design heat input and/or maximum horsepower rating: NA	**Type and Btu/hr rating of burners:** NA

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

NA

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
NA			

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)		
Nitrogen Oxides (NO_X)		
Lead (Pb)		
Particulate Matter ($PM_{2.5}$)		
Particulate Matter (PM_{10})		
Total Particulate Matter (TSP)		
Sulfur Dioxide (SO_2)		
Volatile Organic Compounds (VOC)		0.35
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

USEPA TANKS 4.09

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:**
LST001 and LST002	Leachate Tanks	NA

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Storage vessels containing leachate

Manufacturer:	**Model number:**	**Serial number:**

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYYY	After 1984	MM/DD/YYYY

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 125,000 gallons each

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		24 hrs/day, 365 days/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? ___Yes _X__ No	**If yes, is it?** ___ Indirect Fired ___Direct Fired
Maximum design heat input and/or maximum horsepower rating: NA	**Type and Btu/hr rating of burners:** NA

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

NA

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
NA			

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)		
Nitrogen Oxides (NO_X)		
Lead (Pb)		
Particulate Matter ($PM_{2.5}$)		
Particulate Matter (PM_{10})		
Total Particulate Matter (TSP)		
Sulfur Dioxide (SO_2)		
Volatile Organic Compounds (VOC)		1.0
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

USEPA TANKS 4.0

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:**
01-SP	Solidification Pit	None

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Flyash and sawdust storage pile used to mix with liquid waste to solidify prior to disposal in the landfill.

Manufacturer:	**Model number:**	**Serial number:**
None	None	None
Construction date:	**Installation date:**	**Modification date(s):**
2010	2010	Not applicable

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 140 tons per day; 10,000 ft^2 storage pile

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
14 tons per hour	51,100 tons per year	10 hrs/day, 365 days/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? ___Yes _X__ No	**If yes, is it?** ___ Indirect Fired ___Direct Fired
Maximum design heat input and/or maximum horsepower rating: NA	**Type and Btu/hr rating of burners:** NA

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

NA

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
NA			

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)		
Nitrogen Oxides (NO_X)		
Lead (Pb)		
Particulate Matter ($PM_{2.5}$)		0.025
Particulate Matter (PM_{10})		0.17
Total Particulate Matter (TSP)		0.34
Sulfur Dioxide (SO_2)		
Volatile Organic Compounds (VOC)		
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY

ATTACHMENT G

Air Pollution Control Device Form

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

AP-42 Chapters 13.2.4. for aggregate handling and storage piles and 13.2.5. for industrial wind erosion. These are fugitive emissions which are part of landfill operations.

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT G - Air Pollution Control Device Form

Control device ID number: LGF-1	**List all emission units associated with this control device.** LGF-1	
Manufacturer: LFG Specialties, Inc.	**Model number:** PCF1230I10	**Installation date:** 2010

Type of Air Pollution Control Device:

___ Baghouse/Fabric Filter	___ Venturi Scrubber	___ Multiclone
___ Carbon Bed Adsorber	___ Packed Tower Scrubber	___ Single Cyclone
___ Carbon Drum(s)	___ Other Wet Scrubber	___ Cyclone Bank
___ Catalytic Incinerator	___ Condenser	___ Settling Chamber
___ Thermal Incinerator	_X_ Flare	___ Other (describe) _____
___ Wet Plate Electrostatic Precipitator		___ Dry Plate Electrostatic Precipitator

List the pollutants for which this device is intended to control and the capture and control efficiencies.

Pollutant	Capture Efficiency	Control Efficiency
VOC	75%	98%

Explain the characteristic design parameters of this control device (flow rates, pressure drops, number of bags, size, temperatures, etc.).

Maximum 3,000 cfm of landfill gas. Minimum Btu value is 507.

Is this device subject to the CAM requirements of 40 C.F.R. 64? ___ Yes _X_ No

If Yes, **Complete ATTACHMENT H**

If No**, Provide justification.** NSPS Date does not require CAM.

Describe the parameters monitored and/or methods used to indicate performance of this control device.

Monthly Method 22-like visible emission checks. Presence of a pilot light or flame. Monitor volume of landfill gas routed to the flare.

APPENDIX A

EMISSION CALCULATIONS

Meadowfill Landfill - Summary of Facility Wide Pollutant Emission (Changes)

	Landfill Operations	Vents & Flares	Leachate	Tire Shredder	Tanks	Solidification	Updated Total	Past Fact Sheet	Change	2019 Actuals
(All Values TPY)										
CO		**192.92**					**192.92**	179.68	13.24	16.74
Nox		**42.32**					**42.32**	88.23	-45.91	3.67
Lead										
PM2.5	16	**10.45**		**0**		0.025	**26.48**	28.13	-1.65	11.42
PM10	26.71	**10.45**		**0**		0.17	**37.33**	38.85	-1.52	20.01
TSP	187.82	**10.45**		**0**		0.34	**198.61**	199.86	-1.25	129.37
SO2		**9.59**					**9.59**	10.48	-0.89	1.06
VOC	**91.56**	**3.27**	1		0.35		**96.18**	83.58	12.60	17.48
HAP	**21.10**	**1.68**					**22.78**	50.84	-28.06	11.52
Toluene	**7.61**	**0.23**					**7.83**	17.33	-9.50	4.11
Xylenes	**2.70**	**0.08**					**2.78**	6.14	-3.36	1.46
Methylene Chloride	**2.55**	**0.08**					**2.63**	5.74	-3.11	1.38
Perchloroethylene	**1.30**	**0.04**					**1.34**	2.96	-1.62	0.7
Hexane	**1.19**	**0.04**					**1.22**	2.74	-1.52	0.64
Ethylbenzene	**1.03**	**0.03**					**1.06**	2.36	-1.30	0.56
HCl		**1.05**					**1.05**	3.08	-2.03	0.12

Notes: Updated Values are in Bold

No changes are being requested for GHG Pollutant Values or NMOC

FLARE COMBUSTION EMISSIONS CALCULATION
MEADOWOFILL LANDFILL

Combustor Type	*Operating Conditions*						*Potential Emissions (TPY)* [4]				
	Total LFG Combusted	*Methane Conc.*	*Hours of Operation*	*Operating LFG Flow*	*Normal LFG Flow*	*Adjusted LFG Combusted*	*NMOC*	*CO*	*NO_X*	*SO_2*	*PM*
	(MMSCF) [1]	*(%)* [1]	*(hours)* [1]	*(CFM)*	*(CFM)* [2]	*(MMScf)* [3]	*(tons)*	*(tons)*	*(tons)*	*(tons)*	*(tons)*
Flare Combustion	2459.808	50.0	8,760.0	4680.0	4680.0	2459.8	3.27	192.92	42.32	9.59	10.45

Emission Factors (Combustion) [5]
(lb/MMscf of Landfill Gas)

	PM	*NMOC*	*SO2*	*NOX* [6]	*CO* [6]
Flare Combustion	8.50	2.66	7.80	34.41	156.86

Notes:

1)Assumed Methane Concentration and Continuous Operation

2)Normal LFG flow determined by averaging the total amount of LFG combusted over 8,760 hours

3)Adjusted LFG Combusted = (% Methane Concentration / 50%) x (Total LFG Combusted)

4)Potential Emissions for NMOC and SO_2 calculated using following formula: (Total LFG Combusted [MMscf]) x (EF [lb/MMscf]) x (1 ton / 2,000 lb)

Potential Emissions for NOx, CO and PM calculated using following formula: (Adjusted LFG Combusted [MMscf]) x (EF [lb/MMscf]) x (1 ton / 2,000 lb)

5)Emissions factors were derived as follows:

PM: 17 lb/10^6 dscf methane per AP-42, Section 2.4 (11/98) [Emission factor based on 50% CH_4]

NMOC: Based on AP-42 NMOC concentration of 595 ppm as hexane and 98% destruction efficiency

CO: Based on AP-42 emission factor (Table 13.5-2) of 0.31 lb/MMBtu

NO_x: Based on AP-42 emission factor (Table 13.5-1) of 0.068 lb/MMBtu

SO_2: Based on AP-42 default 46.9 ppmv total reduced sulfur (Section 2.4) and 100% conversion of sulfur compounds to SO_2.

6) Assumes 50% CH_4 in LFG and a heat content of 1012 Btu/scf (of methane)

TABLE 3

FLARE COMBUSTION HAP EMISSIONS
MEADOWFILL LANDFILL

Landfill Gas Flares - HAP Emission Estimates

Average LFG Collected[4] = 4680 cfm

Hours of Operation[4] = 8760.0

CAS #	LFG Constituent	Molecular Weight	Median[1] (ppmv)	Uncontrolled Emissions					Controlled Emissions		
				lb/hr	lb/yr	TPY	mg/m^3	Average Control	lb/hr	lb/yr	TPY
71-55-6	1,1,1-Trichloroethane	133.41	0.48	0.046	402.26	0.20	2.62	98%	0.0009	8.05	0.00
79-34-5	1,1,2,2-Tetrachloroethane	167.85	1.11	0.134	1170.36	0.59	7.62	98%	0.0027	23.41	0.01
75-34-3	1,1-Dichloroethane	98.97	2.35	0.167	1460.99	0.73	9.51	98%	0.0033	29.22	0.01
75-35-4	1,1-Dichloroethene	96.94	0.2	0.014	121.79	0.06	0.79	98%	0.0003	2.44	0.00
107-06-2	1,2-Dichloroethane	98.96	0.41	0.029	254.87	0.13	1.66	98%	0.0006	5.10	0.00
78-87-5	1,2-Dichloropropane	112.99	0.18	0.015	127.76	0.06	0.83	98%	0.0003	2.56	0.00
107-13-1	Acrylonitrile	53.06	6.33	0.241	2109.82	1.05	13.74	98%	0.0048	42.20	0.02
75-15-0	Carbon disulfide	76.13	0.58	0.032	277.37	0.14	1.81	98%	0.0006	5.55	0.00
56-23-5	Carbon tetrachloride	153.84	0.004	0.000	3.87	0.00	0.03	98%	0.0000	0.08	0.00
463-58-1	Carbonyl sulfide	60.07	0.49	0.021	184.90	0.09	1.20	98%	0.0004	3.70	0.00
108-90-7	Chlorobenzene	112.56	0.25	0.020	176.77	0.09	1.15	98%	0.0004	3.54	0.00
75-00-3	Chloroethane	64.52	1.25	0.058	506.62	0.25	3.30	98%	0.0012	10.13	0.01
67-66-3	Chloroform	119.39	0.03	0.003	22.50	0.01	0.15	98%	0.0001	0.45	0.00
75-09-2	Dichloromethane	84.94	14.3	0.871	7629.99	3.81	49.68	98%	0.0174	152.60	0.08
100-41-4	Ethylbenzene	106.16	4.61	0.351	3074.24	1.54	20.02	98%	0.0070	61.48	0.03
110-54-3	Hexane	86.18	6.57	0.406	3556.70	1.78	23.16	98%	0.0081	71.13	0.04
7439-97-6	Mercury	200.61	0.000292	0.000	0.37	0.00	0.00	0%	0.0000	0.37	0.00
108-10-1	Methyl isobutyl ketone	100.16	1.87	0.134	1176.55	0.59	7.66	98%	0.0027	23.53	0.01
127-18-4	Perchloroethylene	165.83	3.73	0.444	3885.50	1.94	25.30	98%	0.0089	77.71	0.04
79-01-6	Trichloroethene	131.4	2.82	0.266	2327.66	1.16	15.16	98%	0.0053	46.55	0.02
75-01-4	Vinyl chloride	62.5	7.34	0.329	2881.72	1.44	18.76	98%	0.0066	57.63	0.03
7647-01-0	HCl[2]	35.45	9.43	0.240	2099.92	1.05	13.67	0%	0.2397	2099.92	1.05
1330-20-7	Xylene	106.16	12.1	0.921	8069.04	4.03	52.54	98%	0.0184	161.38	0.08
7783-06-4	Hydrogen Sulfide[3]	34.08	46.9	1.146	10040.33	5.02	65.37	98%	0.0229	200.81	0.10
71-43-2	Benzene	78.11	1.91	0.107	937.16	0.47	6.10	98%	0.0021	18.74	0.01
108-88-3	Toluene	92.13	39.3	2.596	22744.11	11.37	148.09	98%	0.0519	454.88	0.23
TOTAL HAPs						**32.60**					**1.68**

Notes:

1) Concentration of individual HAPs were taken from AP-42, Section 2.4, 11/98

2) HCL Concentration was taken from "Measurement of Toxic Emissions from Landfill: History and Current Developments"; Will continue to use past value of 5.5 TPY.

3) Based on AP-42 default 46.9 ppmv total reduced sulfur (Section 2.4) (non-HAP)

4) Based on maximum combustion capacity of all flares, operationg 8760

FUGITIVE HAP (& SELECT POLLUTANT) EMISSIONS
MEADOWFILL LANDFILL

Fugitive Emission Estimates

Fugitive Emissions[2] = 3130 cfm

Hours of Operation = 8760

CAS #	LFG Constituent	Molecular Weight	Median[1] (ppmv)	Uncontrolled Emissions			
				lb/hr	lb/yr	TPY	mg/m^3
71-55-6	1,1,1-Trichloroethane	133.41	0.48	0.031	269.03	0.13	2.62
79-34-5	1,1,2,2-Tetrachloroethane	167.85	1.11	0.089	782.74	0.39	7.62
75-34-3	1,1-Dichloroethane	98.97	2.35	0.112	977.11	0.49	9.51
75-35-4	1,1-Dichloroethene	96.94	0.2	0.009	81.45	0.04	0.79
107-06-2	1,2-Dichloroethane	98.96	0.41	0.019	170.46	0.09	1.66
78-87-5	1,2-Dichloropropane	112.99	0.18	0.010	85.44	0.04	0.83
107-13-1	Acrylonitrile	53.06	6.33	0.161	1411.06	0.71	13.74
75-15-0	Carbon disulfide	76.13	0.58	0.021	185.51	0.09	1.81
56-23-5	Carbon tetrachloride	153.84	0.004	0.000	2.59	0.00	0.03
463-58-1	Carbonyl sulfide	60.07	0.49	0.014	123.66	0.06	1.20
108-90-7	Chlorobenzene	112.56	0.25	0.013	118.22	0.06	1.15
75-00-3	Chloroethane	64.52	1.25	0.039	338.83	0.17	3.30
67-66-3	Chloroform	119.39	0.03	0.002	15.05	0.01	0.15
75-09-2	Dichloromethane	84.94	14.3	0.583	5102.96	2.55	49.68
100-41-4	Ethylbenzene	106.16	4.61	0.235	2056.06	1.03	20.02
110-54-3	Hexane	86.18	6.57	0.272	2378.73	1.19	23.16
7783-06-4	Hydrogen Sulfide[3]	34.08	46.9	0.767	6715.00	3.36	65.37
7439-97-6	Mercury	200.61	0.000292	0.000	0.25	0.00	0.00
108-10-1	Methyl isobutyl ketone	100.16	1.87	0.090	786.88	0.39	7.66
127-18-4	Perchloroethylene	165.83	3.73	0.297	2598.64	1.30	25.30
79-01-6	Trichloroethene	131.4	2.82	0.178	1556.75	0.78	15.16
75-01-4	Vinyl chloride	62.5	7.34	0.220	1927.30	0.96	18.76
1330-20-7	Xylene	106.16	12.1	0.616	5396.60	2.70	52.54
71-43-2	Benzene	78.11	1.91	0.072	626.78	0.31	6.10
108-88-3	Toluene	92.13	39.3	1.736	15211.34	7.61	148.09
	NMOC	86.18	595	24.592	215425.62	107.71	2097.22
	VOC	86.18	505.75	20.903	183111.78	91.56	1782.64
TOTAL - HAPS						**21.10**	**2573.46**

Notes:

1) Concentration of individual HAPs were taken from AP-42, Section 2.4, 11/98

2) Total gas generation of 3,130 scfm (annual average) is from GCCS Design Plan. Conservatively assume all LFG is fugitive.

3) Based on AP-42 default 46.9 ppmv total reduced sulfur (Section 2.4) (Non-HAP)