AIR CONSTRUCTION PERMIT &
TITLE V PERMIT RENEWAL APPLICATION
CITY OF JACKSONVILLE
FACILITY ID: 0310358

PREPARED FOR:
City of Jacksonville
Solid Waste Division
1031 Superior Street
Jacksonville, Florida 32254

PREPARED BY:
Koogler and Associates, Inc.
4014 NW 13th St.
Gainesville, FL 32609

Submission Date: September 22, 2014

788-14-03

Department of
Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit:

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- To establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial, revised, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: **City of Jacksonville**	
2. Site Name: **Trail Ridge Landfill**	
3. Facility Identification Number: **0310358**	
4. Facility Location... Street Address or Other Locator: **5110 US Highway 301 South** City: **Baldwin** County: **Duval** Zip Code: **32234**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Max Lee**
2. Application Contact Mailing Address... Organization/Firm: **Koogler and Associates, Inc.** Street Address: **4014 NW 13th Street** City: **Gainesville** State: **Florida** Zip Code: **32609**
3. Application Contact Telephone Numbers... Telephone: (**352**) **377 - 5822** ext. Fax: (**352**) **377 - 7158**
4. Application Contact E-mail Address: **mlee@kooglerassociates.com**

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	3. PSD Number (if applicable):
2. Project Number(s):	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)

Air Construction Permit

☐ Air construction permit.

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

☐ Air construction permit and Title V permit revision, incorporating the proposed project.

☒ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

☐ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

Facility is subject to Federal Prevention of Significant Deterioration Permitting (PSD) program and Title V program.

This application is to renew permit 0310358-010-AV, which was revised in 0310358-013-AV. Because the 1,600 cfm flare and four of the ten IC engines have not been constructed, those systems are requested to be removed from the TV permit.

This application is also to allow the expansion of the current landfill. The current site capacity is 148 acres (on a 977 acre property) and a total airspace capacity of 26,243,907 cubic yards. The expansion consists of a 300 acre expansion, which will bring the total airspace capacity to 88,268,766 cubic yards.

Variances are requested to NSPS subpart WWW. See Appendix VAR.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
EU-001	**Municipal Solid Waste Landfill**		
EU-002	**Fugitive Dust Emissions**		
EU-004 – EU-009 ~~& EU-012 – EU-015~~	**Six ~~Ten~~ Caterpillar Model G3520C landfill gas fueled internal combustion engines and electricity generators**		
EU-010	**5,000 scfm open, non-assisted Flare**		

Application Processing Fee

Check one: ☐ Attached - Amount: $_____ ☒ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name :

2. Owner/Authorized Representative Mailing Address...
   Organization/Firm:
   Street Address:
   City: State: Zip Code:

3. Owner/Authorized Representative Telephone Numbers...
   Telephone: ( ) - ext. Fax: ( ) -

4. Owner/Authorized Representative E-mail Address:

5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.

   _____ _____
   Signature Date

APPLICATION INFORMATION

Application Responsible Official Certification

Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name: **Cleveland Ferguson**
   Deputy Chief Administrative Officer, City of Jacksonville

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):

   ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

   ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

   ☒ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

   ☐ The designated representative at an Acid Rain source or CAIR source.

3. Application Responsible Official Mailing Address...
   Organization/Firm: **Public Works Department**
   Street Address: **117 W. Duval St., Suite 400**
   City: **Jacksonville** State: **Florida** Zip Code: **32202**

4. Application Responsible Official Telephone Numbers...
   Telephone: **(904) 630 - 1776** ext. Fax: **(904) 630 - 2391**

5. Application Responsible Official E-mail Address: **CFerguson@coj.net**

APPLICATION INFORMATION

6. Application Responsible Official Certification:

I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

Signature

5/28/14
Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Max Lee, Ph.D., P.E.**
   Registration Number: **58091**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Koogler and Associates, Inc.**
   Street Address: **4014 NW 13th Street**
   City: **Gainesville** State: **Florida** Zip Code: **32609**
3. Professional Engineer Telephone Numbers...
   Telephone: **(352) 377 - 5822** ext. **13** Fax: **(352) 377 - 7157**
4. Professional Engineer E-mail Address: **mlee@kooglerassociates.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☐, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☒, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here , if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature 9/3/14
Date

(seal)

MAXWELL R. LEE
LICENSE
No. 58091
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone East (km) **399.873** North (km) **3344.309**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **30/13/40.42** Longitude (DD/MM/SS) **82/02/25.71**	
3. Governmental Facility Code: **4**	4. Facility Status Code: **C**	5. Facility Major Group SIC Code: **49**	6. Facility SIC(s): **4953**
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: **Eric Parker**
2. Facility Contact Mailing Address... Organization/Firm: **Waste Management Inc. of Florida** Street Address: **5110 US Hwy 301** City: **Baldwin** State: **Florida** Zip Code: **32234**
3. Facility Contact Telephone Numbers: Telephone: (**904**) **748 - 6006** ext. Fax: (**904**) **289 - 9013**
4. Facility Contact E-mail Address: **eparker1@wm.com**

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name: **Cleveland Ferguson** **Deputy Chief Administrative Officer, City of Jacksonville**
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: **Public Works Department** Street Address: **117 W. Duval St., Suite 400** City: **Jacksonville** State: **Florida** Zip Code: **32202**
3. Facility Primary Responsible Official Telephone Numbers... Telephone: (**904**) **630 - 1776** ext. Fax: (**904**) **630 - 2391**
4. Facility Primary Responsible Official E-mail Address: **cferguson@coj.net**

FACILITY INFORMATION

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☐ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☒ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☒ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

The facility:

1. **Is a PSD major source for CO**
2. **Has a voluntarily limit of HCl emissions of < 10 tpy and aggregate HAP emissions of < 25 tpy.**
3. **Operates devices that provide control for gas (NMOC) generated by the Trail Ridge Landfill, which is subject to the MSW Landfill NSPS and NESHAP.**

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
CO	**A**	**N**
NOx	**B**	**N**
NMOC/VOC	**B**	**N**
PM10	**B**	**N**
SO2	**B**	**N**
HAPS	**B**	**N**
H106	**SM**	**Y**

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility-Wide Cap [Y or N]? (all units)	3. Emissions Unit ID's Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap
H106	**Y**			**10**	**ESCMACT**

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

Trail Ridge Energy experience indicates that the AP-42 default LFG constituent concentrations overestimate the potential HCl content of the gas generated at the Trail Ridge Landfill. Therefore, Trail Ridge Energy will restrict the allowed HCl emissions from the proposed engine operations to less than 10 tpy through appropriate permit limits.

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Appendix FPP** [ ] Previously Submitted, Date:_____

2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Appendix PFD** [ ] Previously Submitted, Date:_____

3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Appendix A** [ ] Previously Submitted, Date:_____

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location:
   [ ] Attached, Document ID:_____ [X] Not Applicable (existing permitted facility)

2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL):
   [X] Attached, Document ID: **Appendix A**

3. Rule Applicability Analysis:
   [X] Attached, Document ID: **Appendix A**

4. List of Exempt Emissions Units:
   [ ] Attached, Document ID:_____ [ ] Not Applicable (no exempt units at facility)

5. Fugitive Emissions Identification:
   [ ] Attached, Document ID:_____ [ ] Not Applicable

6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.):
   [ ] Attached, Document ID:_____ [ ] Not Applicable

7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.):
   [ ] Attached, Document ID:_____ [ ] Not Applicable

8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.):
   [ ] Attached, Document ID:_____ [ ] Not Applicable

9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.):
   [ ] Attached, Document ID:_____ [ ] Not Applicable

10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):
    [ ] Attached, Document ID:_____ [ ] Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units:
   ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities: (Required for initial/renewal applications only)
   ☒ Attached, Document ID: **Appendix A** ☐ Not Applicable (revision application)

2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought)
   ☒ Attached, Document ID: **Appendix A**
   ☐ Not Applicable (revision application with no change in applicable requirements)

3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)
   ☒ Attached, Document ID: **Appendix A**
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.

4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities Onsite but Not Required to be Individually Listed
   ☐ Not Applicable

5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☐ Not Applicable

6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:_____ ☐ Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Facilities Subject to Acid Rain, CAIR, or Hg Budget Program

1. Acid Rain Program Forms:

   Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable (not an Acid Rain source)

   Phase II NO_X Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

   New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable (not a CAIR source)

Additional Requirements Comment

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☒ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☒ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Active landfill, gas collection system, leachate collection system, and emissions control system

3. Emissions Unit Identification Number: **EU001**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
A	**May 1992**	**May 1992**	**4953**

8. Federal Program Applicability: (Check all that apply)

☐ Acid Rain Unit

☐ CAIR Unit

9. Package Unit: **N/A**
Manufacturer: Model Number:

10. Generator Nameplate Rating: **MW N/A**

11. Emissions Unit Comment: **The emission unit consists of the Trail Ridge Landfill. The landfill gas is collected and sent to a 5,000 cfm flare or to the six LFG-fired electrical generators (EU-004 through EU-009). Landfill gas not collected assumed to be fugitive. Life of Site capacity request to expand to total 88,268,766 cubic yards.**

Emissions Unit Control Equipment/Method: Control **1** of **1**

1. Control Equipment/Method Description:

   - **5,000 cfm candlestick (open) flare. Manufactured by Parnell Biogas, Inc.**

2. Control Device or Method Code: **023 (flaring)**

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **5000 scfm**	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: **133 million Btu/hr**	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year
6. Operating Capacity/Schedule Comment: **Maximum throughput rate is the potential amount of LFG sent to the 5,000 cfm open flare plus the potential amount sent to the LFG generators. The maximum heat input rate is the portion of the LFG sent to the flare.**	

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Flare**	2. Emission Point Type Code: **3**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Trail Ridge Landfill flare (5,000) stack** **Ten stacks for IC generator exhaust**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **EU-001**		
5. Discharge Type Code: **V**	6. Stack Height: **51** feet	7. Exit Diameter: **1.2** feet
8. Exit Temperature: **< 1200** °F	9. Actual Volumetric Flow Rate: **130,000** acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): **399.875** North (km): **344.425**	14. Emission Point Latitude/Longitude… Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **Data in blocks 5 – 9 given for the 5,000 cfm landfill stack**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **2**

1. Segment Description (Process/Fuel Type): **Combustion of landfill gas in 5,000 cfm flare**		
2. Source Classification Code (SCC): **50100410**	3. SCC Units: **mmcf LFC burned**	
4. Maximum Hourly Rate: **0.30**	5. Maximum Annual Rate: **2,628**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **443.5**
10. Segment Comment:		

Segment Description and Rate: Segment **2** of **2**

1. Segment Description (Process/Fuel Type): **Combustion of landfill gas in 6 – IC engine generators at 530 cfm each**		
2. Source Classification Code (SCC): **20100802**	3. SCC Units: **mmcf LFC burned**	
4. Maximum Hourly Rate: **0.19**	5. Maximum Annual Rate: **1674**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **443.5**
10. Segment Comment:		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
NO_x		**N/A**	**NS**
CO		**N/A**	**NS**
SO_2		**N/A**	**NS**
VOC	**023**	**N/A**	**WP**
NMOC	**023**	**N/A**	**EL**
PM		**N/A**	**NS**
HAPs	**023**	**N/A**	**WP**
HCl		**N/A**	**NS**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **NMOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour **91.3** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **595 ppm inlet** Reference: **per testing**	7. Emissions Method Code: **1**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Appendix A for calculation of emissions. VOC PTE = 35.6 tpy**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions of

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **n/a** of **n/a**

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **1** of **1**

1. Parameter Code: **FLOW**	2. Pollutant(s): **N/A**
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information... **Yokogawa Digital Chart Recorder** Manufacturer: **Yokogawa** Model Number: **Model DX-06** Serial Number:	
5. Installation Date: **05/06**	6. Performance Specification Test Date: **N/A**
7. Continuous Monitor Comment: **40 CFR 60.756(b)(2) for 5,000 cfm flare. Also applies to EU 010.**	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **Appendix PFD** ☐ Previously Submitted, Date _____

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **N/A** ☐ Previously Submitted, Date _____

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **Appendix A** ☐ Previously Submitted, Date _____

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **Appendix SSM** ☐ Previously Submitted, Date ___

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **Flare procedures on file at facility**
   ☐ Previously Submitted, Date _____
   ☐ Not Applicable

6. Compliance Demonstration Reports/Records:
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☒ Previously Submitted, Date: **Submitted via email to DEP on 7/30/2014**
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   ☐ Attached, Document ID: _____ ☐ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☐ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☐ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☐ Not Applicable

Additional Requirements Comment

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☒ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☒ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Fugitive Dust Emissions

3. Emissions Unit Identification Number: **EU002**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
A	**May 1992**	**May 1992**	**4953**

8. Federal Program Applicability: (Check all that apply)

☐ Acid Rain Unit

☐ CAIR Unit

9. Package Unit: **N/A**
Manufacturer: Model Number:

10. Generator Nameplate Rating:

11. Emissions Unit Comment: **The emission unit consists of the fugitive dust emissions from unpaved roads and landfill work areas at the Trail Ridge Landfill.**

The emissions unit shall be subject to the requirements of Rule 62-296.320(4)(c), FAC and Rule 2.1001, JEPB

EMISSIONS UNIT INFORMATION
Section [2] of [4]

Emissions Unit Control Equipment/Method: Control **1** of **2**

1. Control Equipment/Method Description: **Application of water to unpaved roads to minimize the emission of unconfined PM, when needed.**
2. Control Device or Method Code: **061**

Emissions Unit Control Equipment/Method: Control **2** of **2**

1. Control Equipment/Method Description: **Minimization of speeds on unpaved roads through the use of posted speed limits**
2. Control Device or Method Code: **108**

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: **24** hours/day **52** weeks/year	**7** days/week **8,760** hours/year
6. Operating Capacity/Schedule Comment: **This emission unit is allowed to be utilized on a continuous basis.**	

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Fugitive**	2. Emission Point Type Code: **Fugitive**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code:	6. Stack Height: feet	7. Exit Diameter: feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude… Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **This emission unit is fugitive emissions from unpaved roads and landfill work areas.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM/PM10	**061,108**		

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **PM/PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Potential, Fugitive, and Actual Emissions Comment: **Fugitive dust emissions from unpaved roads and landfill work areas.** **Emissions unit subject to the requirements of Rule 62-296.320(4)(c)**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **n/a** of **n/a**

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): **Emissions unit subject to the requirements of Rule 62-296.320(4)(c)**	

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
4. Visible Emissions Comment: **Emissions unit subject to the requirements of Rule 62-296.320(4)(c)**	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **n/a** of **n/a**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **n/a** ☐ Previously Submitted, Date _____

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **n/a** ☐ Previously Submitted, Date _____

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **n/a** ☐ Previously Submitted, Date _____

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: **n/a** ☐ Previously Submitted, Date _____

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable

6. Compliance Demonstration Reports/Records:
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   ☐ Attached, Document ID: _____ ☒ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☒ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements Comment

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☒ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☒ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: **Six ~~Ten~~ (10) CAT G3520C IC engine electricity generator sets (each with its own exhaust stack) fueled by treated LFG.**

3. Emissions Unit Identification Number: **EU004 - EU009 ~~& EU012 - EU015~~**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
C			**49**

8. Federal Program Applicability: (Check all that apply)

☐ Acid Rain Unit

☐ CAIR Unit

9. Package Unit:
Manufacturer: **Caterpillar, Inc.** Model Number: **G3520C**

10. Generator Nameplate Rating: **1.6 MW for each engine**

11. Emissions Unit Comment:

EMISSIONS UNIT INFORMATION
Section [3] of [4]

Emissions Unit Control Equipment/Method: Control **n/a** of **n/a**

1. Control Equipment/Method Description:
2. Control Device or Method Code:

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **34,700 scf/hr (LFG fuel) per engine**	
2. Maximum Production Rate: **1.6 MW per engine**	
3. Maximum Heat Input Rate: **14.90 million Btu/hr per engine**	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: **24** hours/day **52** weeks/year	**7** days/week **8,760** hours/year
6. Operating Capacity/Schedule Comment: **14.90 MMBtu (LHV)/hr/engine maximum heat input** **1.6 MW/hr/engine maximum electricity generation** **34,700 scf/hr/engine maximum LFG fuel use** **Base load (100% design capacity) engine – generator operations. The proposed facility will not produce electricity under partial load engine – generator operating conditions.**	

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or **EU004 - EU009**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Six (6) identical IC engine generators (which comprise the emission unit), each engine has an exhaust stack (6 exhaust stacks, 1 for each engine).**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **23** feet	7. Exit Diameter: **1.5** feet
8. Exit Temperature: ≥ **898 °F, min**	9. Actual Volumetric Flow Rate: **13,700** acfm	10. Water Vapor: **11** %
11. Maximum Dry Standard Flow Rate: **4,700** dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): **var** North (km): **var**	14. Emission Point Latitude/Longitude… Latitude (DD/MM/SS) **var** Longitude (DD/MM/SS) **var**	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **1**

1. Segment Description (Process/Fuel Type): **Treated landfill gas used exclusively to fuel 6 IC engines.** **Air pollutant emissions (g/bhp-hr) are related to engine base load horsepower (2,233 hp/hr) or maximum fuel use pound per million cubic feet of gas consumed (lb/MMscf)**		
2. Source Classification Code (SCC): **20100802**	3. SCC Units: **MMcf of gas**	
4. Maximum Hourly Rate: **0.0834**	5. Maximum Annual Rate: **730.6**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.0083**	8. Maximum % Ash: **0**	9. Million Btu per SCC Unit: **472 (LHV)**
10. Segment Comment: **Hourly and annual maximum fuel use rates for the operation of 6 IC engines based on fuel heating value of 472 Btu/scf (LHV)**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			**EL**
NOx			**EL**
VOC			**EL**
PM10			**EL**
SO2			**EL**
HAPS			**EL**
H106			**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour **452.8** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **3.5 g/bhp-hr** Reference: **BACT**	7. Emissions Method Code: **5**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

2,233 hp/hr x 3.5 g/bhp-hr x 1 lb/453g = 17.23 lb/hr

17.23 lb/hr x 8760 hr/yr x 1 ton/2000 lb = 75.47 ton/yr

6 engines

11. Potential, Fugitive, and Actual Emissions Comment:

17.23 lb/hr/engine, 75.47 tons/year/engine

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **CO 3.5 g/bhp-hr**	4. Equivalent Allowable Emissions: **17.23** lb/hour/engine **75.47** tons/year/engine
5. Method of Compliance: **Every 8,760 engine hours or at least once every three years**	
6. Allowable Emissions Comment (Description of Operating Method): **Rule 62-212.400**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **NOx**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour **77.6** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.60 g/bhp-hr** Reference: **BACT**	7. Emissions Method Code: **5**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

2,233 hp/hr x 0.60 g/bhp-hr x 1 lb/453g = 2.95 lb/hr

2.95 lb/hr x 8760 hr/yr x 1 ton/2000 lb = 12.9 ton/yr

6 engines

11. Potential, Fugitive, and Actual Emissions Comment:

2.95 lb/hr/engine, 12.9 tons/year/engine

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **NOx 0.60 g/bhp-hr**	4. Equivalent Allowable Emissions: **2.95** lb/hour/engine **12.9** tons/year/engine
5. Method of Compliance: **Every 8,760 engine hours or at least once every three years**	
6. Allowable Emissions Comment (Description of Operating Method): **Rule 62-212.400**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **VOC/NMOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour **36** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.28 g/bhp-hr** Reference:	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

2,233 hp/hr x 0.28 g/bhp-hr x 1 lb/453g = 1.38 lb/hr

1.38 lb/hr x 8760 hr/yr x 1 ton/2000 lb = 6.0 ton/yr

6 engines.

VOC = NMOC.

11. Potential, Fugitive, and Actual Emissions Comment:

1.38 lb/hr/engine, 6.0 tons/yr/engine

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **VOC 0.28 g/bhp-hr**	4. Equivalent Allowable Emissions: **1.38** lb/hour/engine **6.0** tons/year/engine
5. Method of Compliance: **Every 8,760 engine hours or at least once every three years**	
6. Allowable Emissions Comment (Description of Operating Method): **Rule 62-212.400**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour **31.05** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.24 g/bhp-hr** Reference: **BACT**	7. Emissions Method Code: **5**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

2,233 hp/hr x 0.24 g/bhp-hr x 1 lb/453g = 1.18 lb/hr

1.18 lb/hr x 8760 hr/yr x 1 ton/2000 lb = 5.17 ton/yr

6 engines

11. Potential, Fugitive, and Actual Emissions Comment:

1.18 lb/hr/engine, 5.17 tons/yr/engine

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **PM10 0.24 g/bhp-hr**	4. Equivalent Allowable Emissions: **1.18** lb/hour/engine **5.17** tons/year/engine
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): **Rule 62-212.400**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **SO2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour **39.9** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **39.9 tons/year** Reference:	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Potential, Fugitive, and Actual Emissions Comment: **Requested unit cap to engines**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour/engine **39.9** tons/year
5. Method of Compliance: **Engine fuel sulfur content analysis**	
6. Allowable Emissions Comment (Description of Operating Method): **Rule 62-212.400. Requested unit cap.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **HAPS**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **< 10** ton/year Single HAP **< 25.0** ton/year Aggregate HAPs	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **ESCMACT**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **HAPS**	4. Equivalent Allowable Emissions: **< 10** ton/year Single HAP **< 25.0** ton/year Aggregate HAPs
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): **Rule 62-204.800**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **H106 (HCL)**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour **9.0** tons/year	4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **9.0 tons/year** Reference:	7. Emissions Method Code: **2**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: [ ] 5 years [ ] 10 years
10. Calculation of Emissions:	
11. Potential, Fugitive, and Actual Emissions Comment: **9 tons per 12 rolling months for the entire facility**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **ESCMACT**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **H106 9.0 tons cap for the facility**	4. Equivalent Allowable Emissions: ton/year
5. Method of Compliance: **Engine fuel chlorinated compound content analysis**	
6. Allowable Emissions Comment (Description of Operating Method): **Rule 62-204.800**	

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Engine exhaust stack emissions testing (once every five years)**	
5. Visible Emissions Comment: **Rule 62-296.320**	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **n/a** of **n/a**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Appendix PFD** [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Appendix FA** [ ] Previously Submitted, Date _____

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Appendix A** [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Appendix SSM** [ ] Previously Submitted, Date ___

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **ICE procedures on file at facility**
   [ ] Previously Submitted, Date _____
   [ ] Not Applicable

6. Compliance Demonstration Reports/Records:
   [ ] Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   [X] Previously Submitted, Date: **Submitted via email to DEP on 7/30/2014**
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   [ ] Attached, Document ID: _____ [X] Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☒ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements Comment

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

- [X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
- [ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

- [X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
- [ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
- [ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
5,000 scfm open, non-assisted flare

3. Emissions Unit Identification Number: **EU010**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
A			

8. Federal Program Applicability: (Check all that apply)

- [ ] Acid Rain Unit
- [ ] CAIR Unit

9. Package Unit:
Manufacturer: Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
5,000 scfm open, non-assisted flare manufactured by Parnel Biogas, Inc. Two centrifugal exhaust landfill gas blowers with a maximum design of 2,500 cfm each, with a minimum of -60 "w.c. inlet suction and 10" w.c. discharge pressure.

Emissions Unit Control Equipment/Method: Control **1** of **1**

1. Control Equipment/Method Description: **5,000 scfm candlestick (open) flare. Manufactured by Parnell Biogas, Inc.**
2. Control Device or Method Code: **023 (flaring)**

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **5000 scfm**	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: **133 million Btu/hr**	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year
6. Operating Capacity/Schedule Comment: **Maximum throughput rate is the potential amount of LFG sent to the 5,000 cfm open flare plus the potential amount sent to the LFG generators. The maximum heat input rate is the portion of the LFG sent to the flare.**	

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Flare**	2. Emission Point Type Code: **3**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Trail Ridge Landfill flare (5,000) stack**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **51** feet	7. Exit Diameter: **1.2** feet
8. Exit Temperature: **< 1200** °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): **399.875** North (km): **344.425**	14. Emission Point Latitude/Longitude… Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **Maximum LFG Flow Rate: 5,000 scfm** **Minimum LFG Flow Rate: 500 scfm** **Starter Fuel Type: Propane** **Destruction Efficiency: 98% NMOCs @ Methane content of 40-60%**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **2**

1. Segment Description (Process/Fuel Type): **Combustion of landfill gas in 5,000 cfm flare**		
2. Source Classification Code (SCC): **50100410**	3. SCC Units: **mmcf LFC burned**	
4. Maximum Hourly Rate: **0.30**	5. Maximum Annual Rate: **2,628**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **443.5**
10. Segment Comment: **Maximum LFG Flow Rate: 5,000 scfm** **Minimum LFG Flow Rate: 500 scfm**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
NO_x		**N/A**	**NS**
CO		**N/A**	**NS**
SO_2		**N/A**	**NS**
VOC	**023**	**N/A**	**WP**
NMOC	**023**	**N/A**	**EL**
PM		**N/A**	**NS**
HAPs	**023**	**N/A**	**WP**
HCl		**N/A**	**NS**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **NMOC/VOC**	2. Total Percent Efficiency of Control: **99.2% (flare)**
3. Potential Emissions: lb/hour **4.70** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **595 ppm inlet** Reference: **per testing**	7. Emissions Method Code: **1**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

See Appendix A for calculation of emissions

NMOC = VOC

11. Potential, Fugitive, and Actual Emissions Comment:

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **98% reduction or 20 ppm outlet**	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **Initial performance testing**	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE0**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: **N/A** Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Method 22 – annually**	
5. Visible Emissions Comment: **Rule: 40 CFR 60.752(b)(2)(iii)(A)** **40 CFR 60.18**	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **n/a** of **n/a**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement: ☐ Rule ☐ Other	
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Appendix PFD** [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Appendix FA** [ ] Previously Submitted, Date _____

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Appendix A** [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Appendix SSM** [ ] Previously Submitted, Date _____

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **Flare procedures on file at facility**
   [ ] Previously Submitted, Date _____
   [ ] Not Applicable

6. Compliance Demonstration Reports/Records:
   [ ] Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   [X] Previously Submitted, Date: **Submitted via email to DEP on 7/30/2014**
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   [ ] Attached, Document ID: _____ [X] Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☒ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements Comment

APPENDIX A.

Trail Ridge Landfill
Facility ID: 0310358
Air Construction Permit & Title V Permit Renewal Application

Contents

1. Introduction

The existing Trail Ridge Landfill is:

1. Located at 5110 US Highway 301 South, Baldwin, Duval County
2. Is a Class I MSW landfill.
3. Owned by Trail Ridge Landfill, Inc.
4. Operated by Waste Management

The facility includes six lean-burn spark-ignition reciprocating internal combustion engine (RICE)-generators. The other four permitted lean-burn spark-ignition RICE generators have not been installed onsite as of the submission of this application. Since they have not yet begun construction before 18-months following the issuance of the air construction permit that allowed their construction, these engines are no longer able to be installed under the already issued permit and will then be removed from the facility's PTE emission calculations. The facility is categorized under Standard Industrial Classification (SIC) Code No. 4953.

The landfill currently consists of 176 acres and commenced construction in 1992. It receives approximately 2,500-3,000 tons of waste daily, has a total site area of 977 acres of land and currently has a 148 acre "footprint" which serves residential and commercial customers. LGF produced from the decomposition of disposed waste materials at both active and capped cells is being collected by an active gas recovery system at the Trail Ridge Landfill. A blower station connected to the gas recovery system moves the collected LGF to a central location. LGF that is not currently being used for its energy value is directed to open utility flare(s) where methane, NMOC and HAPs contained in the gas are destroyed (oxidized) at high temperatures. The non-methane organic compounds (NMOC) emissions are greater than 50 megagrams per year. The facility currently operates one flare – a 5,000 scfm open flare. In addition to the 5,000 scfm open flare, the site was permitted to have another 1,600 scfm open flare; however, that flare was never constructed.

The Trail Ridge Landfill is subject to the regulatory requirements of federal New Source Performance Standards for Municipal Solid Waste (MSW) Landfills (MSW Landfill NSPS, 40 CFR Part 60 Subpart WWW). The provisions of the MSW Landfill NSPS require that an adequate number of wells and sufficiently sized equipment be installed and operated to control all of the LFG generated at the facility. Trail Ridge Landfill collects the gas using a wellfield and either combusts the gas in open flare(s) or transfers it to Trail Ridge Energy where it is treated and used as fuel to power the IC engine electricity generation facility.

2. Description of Proposed Construction

Trail Ridge Energy, LLC (TRE) has prepared this air permit application to request the removal of an existing emission unit (EU), an expansion to the current site capacity and for the renewal of their current Title V Permit, 0310358-010-AV, which expires on May 10th, 2015. The existing landfill facility consists of the following EU's:

1.) EU-001: Municipal Solid Waste Landfill

2.) EU-002: Fugitive Dust Emissions

3.) EU-004 – EU-009 & EU-012 – EU-015: Ten Caterpillar Model G3520C landfill gas fuel internal combustion engines and electricity generators

4.) EU-010: 5,000 scfm open, non-assisted flare

5.) EU-011: 1,600 scfm open, non-assisted flare

This construction permit requests the removal of EU-011. The current air permit states that if landfill gas volume exceeds the volume that TRE is able to accept, than the excess gas will be diverted to the 5,000 scfm or the de-rated 1,600 scfm open flares for control. However, the 1,600 scfm flare was never constructed and it was determined that the 5,000 scfm open flare was sufficient to accept landfill gas that exceeded the engine capacity. As such, the facility is requesting the removal of this flare. As well, EU012 – EU015 will be eliminated from the Title V permit because these engines have not been constructed.

In addition, Solid Waste Permits #0013493-025-SO-01 and #0013493-026-SC-01 gave TRE the authorization for the operation of Phases 1-5 and the construction and operation of Phases 6-14 of the landfill. The current site capacity of the facility is 148 acres (on a 977-acre property) and a total airspace capacity of 26,243,907 cubic yards. The 300-acre expansion will bring the combined total airspace capacity to 88,268,766 cubic yards. The approval most recent solid waste permit includes a new gas collection plan that supercedes the June 1997 plan appended to the current TV permit.

Finally, this permit application seeks to renew the current Title V permit for the facility, 0310358-010-AV.

3. Rule Applicability Analysis

The Trail Ridge Landfill is an existing major source of air pollutants under PSD regulations. The facility has potential CO emissions greater than 250 TPY. In this simultaneous Title V renewal and air construction permit, changes in potential to emit emissions will only result from the expansion of the landfill capacity. This increase will only result in the addition of fugitive. Since the facility is not part of the listed categories in 62-212.400(3)(b), F.A.C., fugitive emissions shall not be included in determining whether a physical change in or change in the method of operation of a major stationary source is a major modification. EPA provided clarification of this position in its guidance document issued December 12, 2013 titled "Counting GHG Fugitive Emissions in Permitting Applicability."

Spark Ignition IC Engine NSPS

The LFG fueled CAT® G3520C gas IC engines that are at the Trail Ridge Landfill are applicable to Subpart JJJJ and the limitations for these engines were defined in 0310358-013-AV and will carry over into this renewal.

Reciprocating Internal Combustion Engine NESHAP

The reciprocating IC engine National Emission Standard for Hazardous Air Pollutants (40 CFR Part 63 Subpart ZZZZ) applies to major sources and area sources of HAPs that operate RICE rated above 100 hp that

are not operated as a stationary test cell or stand, or a non-road vehicle (40 CFR 63.6585). The RICE at the Trail Ridge Landfill have power ratings that exceed 100 bhp (i.e., 2,233 bhp). Based on the amount of landfill gas generation and combustion predicted for the Trail Ridge Landfill stationary source, the source is considered an area source with respect to HAPs

40 CFR Part 63.6603(a) requires that existing RICE at an area source are only required to perform maintenance and inspection requirements per Table 2d of 40 CFR 63 Subpart ZZZZ, with a compliance date of October 19, 2013. 40 CFR 63.6590(c) requires new RICE at area sources to meet the requirements of 40 CFR Part 60 Subpart JJJJ, for spark ignition engines for compliance with the RICE NESHAP. 40 CFR 63.6625(c) specifies requirements for monitoring fuel use in regulated RICE. The onsite RICE engines are exclusively run off of LFG. No other fuel supply source is available for these engines. All treated LFG fuel consumption is recorded by a fuel meter as described in this document. All of these requirements have already been adopted at the facility, as outlined in 0310358-013-AV.

Municipal Solid Waste Landfill NSPS & NESHAP

The Trail Ridge Landfill is subject to the MSW Landfill NSPS (Subpart WWW) and NESHAP (Subpart AAAA). Therefore, provisions (i.e., development and implement a start-up, shutdown and malfunction plan, submittal of periodic deviation reports and compliance with recordkeeping, notification and reporting requirements) associated these subsections are applicable to the facility. In addition, the landfill accepts asbestos and therefore subject to NESHAP Subpart M. Since this permit application does not add any applicable emission units to the facility and functions to renew the existing Title V permit, with minor additions, these rules are not newly applicable and are already present in the current Title V permit.

4. Precautions to Prevent Emissions of Unconfined Particulate Matter

Unconfined and fugitive particulate matter is considered in EU-002 of the existing Title V permit. Reasonable precautions to prevent emissions from this EU include:

1. The application of water to unpaved roads to minimize the emission of unconfined particulate matter.
2. Minimization of speeds on unpaved roads through the use of posted speed limits and enforcement.
3. Small phased work areas to minimize the amount of exposed area.
4. As practical and as needed, the installation of grass cover for completed areas of work.

5. List of Insignificant Activities

Activity	Rational for Exemption
Fugitive VOC and HAP emissions from leachate storage tanks (6 – 22,000 gallon tanks)	Leachate vapor pressure is less than 15 kPa therefore VOC potential to emit is < 5 tpy. The leachate is 99+% water, therefore HAP emissions will be minimal. Tanks are not subject to 40 CFR 60 Subpart Kb.
VOC emissions from 550 gallon gasoline storage tank	Rule 62-210.300(3)(a)19. ,F.A.C.

Aggregate handling and storage piles.	Particulate matter potential to emit is less than 5 tpy.
Yard trash mulching program.	Particulate matter potential to emit is less than 5 tpy.
Fugitive VOC emissions from spray painting from spray cans.	Minor touch-up aerosol painting during maintenance activities. VOC potential to emit is less than 5 tpy.
(2) Emergency backup generators – a 465 and 166.	Rule 62-210.300(3)(a)35., F.A.C. All generators are diesel and the collective fuel usage is less than 32, 000 gallons of diesel fuel.
A portable generator of 125 hP at the borrow pit	Rule 62-210.300(3)(a)35., F.A.C. All generators are diesel and the collective fuel usage is less than 32, 000 gallons of diesel fuel.
(2) generators (9 and 12 hP) for lighting	Rule 62-210.300(3)(a)35., F.A.C. All generators are diesel and the collective fuel usage is less than 32, 000 gallons of diesel fuel.
Parts cleaning/solvent degreasing	Rule 62-210.300(3)(a)24., F.A.C.
Welding, cutting and grinding activities	Rule 62-210.300(3)(a)13., F.A.C.
VOC emissions from diesel tanks and refueling operations	Rule 62-210.300(3)(b)1., F.A.C.
(3) 12,000 gallon diesel fuel tanks	Diesel storage tanks not subject to 40 CFR 60 Subpart Kb
Engine coolant for the 6 stand-alone fan-cooled radiators (drum quantities) located at the Trail Ridge Energy Plant	Rule 62-210.300(3)(b)1., F.A.C.
New Engine lube oil 2,000 gallon above-ground storage tank Used/Waste Engine lube oil 1,000 gallon above-ground storage tank	Rule 62-210.300(3)(a)16., F.A.C.

6. Compliance Plan

TRE is not constructing any new emission units. Therefore, the facility will continue to maintain compliance following the standard procedures in place at the facility. Because the four additional IC engines were not constructed, the compliance plan that was developed for construction of those engines is no longer required. Similarly, the compliance plan for construction of the 1,600 cfm flare is no longer required. These plans are listed in the current title V permit as CP-1 and CP-2.

7. Emissions Calculations

Flare Emission Constants

Constants	
Flare Capacity	5,000 scfm
CH_4 Capacity	2,500 scfm
CO_2 Capacity	2,500 scfm
Moisture Content	20%
CH_4 Corrected	2,000 scfm
BTU Landfill Gas	443.5 Btu/ft^3

Flare Burner	133.05 mmBtu/hr
Flare Gas Density	0.07805 lb/ft^3
Flare Efficiency	99.7%

Flare Emission Calculations

Pollutant	Emission Factor	Reference	Potential to Emit [tpy]
NOx	0.068 lb/10^6 mmBtu	Manufacturer Data	**39.6**
CO	0.37 lb/10^6 mmBtu	Manufacturer Data	**215.6**
PM/PM$_{10}$	17 lb/10^6 dscf methane	AP-42; 2.4-5	**8.94**
NMOC/VOC	134 lb/hr	Test Data	**4.70**
SO2	46.9 ppmv	AP-42; Sect. 2.4	**8.18**
HCl	42 ppmv	AP-42; Sect. 2.4	**8.94**

ICE Emission Calculations

Pollutant	Emission Limit (per engine) g/bhp-hr	Emission Limit (per engine) lb/hr	Potential to Emit** (per engine) [tpy]
NOx	0.6	3.0	**12.9**
CO	3.5	17.2	**75.5**
PM/PM$_{10}$	0.24*	1.5*	**5.2**
NMOC/VOC	0.28	1.4	**6.0**
SO2	**39.9** tons/rolling 12 months; all engines included in this requested unit cap		
HCl	**9.0** tons/rolling 12 months; entire facility included in this cap		

* - These are expected emissions on a per engine basis. Per rule, limit is 10% opacity

** - PTE determined by multiplying emission limit by 8,760 hrs/yr

Landfill Emission Calculations*

Pollutant	Potential to Emit [tpy]
SO_2	**28.5**
VOC	**35.6**
NMOC	**91.3**
CO_2	**315,652**

CH_4 as (CO_{2e})	**364,544**
N_2O as (CO_{2e})	**481**
CO_{2e}	**680,678**

* - Calculations and summary of Landfill Emission Calculations in Appendix LFE

Facility Wide PTE

Pollutant	Flare PTE [tpy]	ICE PTE (6 engines) [tpy]	Landfill PTE [tpy]	Total PTE [tpy]
NOx	**39.63**	**77.62**	**--**	**117.25**
CO	**215.62**	**452.81**	**--**	**668.43**
PM/PM_{10}	**8.94**	**31.05**	**--**	**39.99**
VOC	**4.70**	**36.22**	**35.6**	**76.52**
NMOC	**4.70**	**36.22**	**91.3**	**132.22**
SO2	**8.18**	**39.9**	**28.5**	**76.58**
HCl	**9.0** tons/rolling 12 months; entire facility included in this cap			
CO_{2e} (biogenic)	*	*	**315,652**	**315,652**
CO_{2e} (anthropogenic)	*	*	**365,026**	**365,026**
CO_{2e} (total)	*	*	**680,678**	**680,678**

* - GHG emissions from flare and ICE accounted for in landfill GHG emission calculations

APPENDIX FPP.

Trail Ridge Landfill
Facility ID: 0310358
Facility Plot Plan

FUTURE PHASE 8

FUTURE PHASE 7

PHASE 6

PIEZOMETER (TYP.) (TO BE DEMOLISHED) (SEE NOTE 2)

PIEZOMETER #16
PIEZOMETER #15
PIEZOMETER #14
PIEZOMETER #13
PIEZOMETER #12
PIEZOMETER #11
PIEZOMETER #10
PIEZOMETER #9
PIEZOMETER #8
PIEZOMETER #7
PIEZOMETER #6
PIEZOMETER #5
PIEZOMETER #4
PIEZOMETER #3
PIEZOMETER #2
PIEZOMETER #1

EXISTING PIPES AND STRUCTURES TO BE REMOVED
EXISTING ALL WEATHER ROAD TO BE REMOVED
EXISTING PIPES AND STRUCTURES TO BE REMOVED
EXISTING PIPES AND STRUCTURES TO BE REMOVED
ANCHOR TRENCH
EXISTING PIPES AND STRUCTURES TO BE REMOVED
18" RCP FOR STORMWATER CONVEYANCE (TYP.). SEE ERP DRAWING SET FOR DETAILS.
EXISTING PIPES AND STRUCTURES TO BE REMOVED
LFG FLARE STATION
EXISTING CONCRETE LINED DITCH TO BE REMOVED
AREA OF CAP (TO BE REMOVED) HATCH AND CONTOURS NOT SHOWN FOR CLARITY
20" GAS MAIN (TO BE REMOVED)
REMOVE LIMEROCK AND STOCKPILE ON SITE (SEE SPEC 02050)
EXISTING ALL WEATHER ROAD TO BE REMOVED
EXISTING INLET AND CROSS-DRAIN TO BE REMOVED (TYP)
EXIST. ANCHOR TRENCH
20" WELL HEADERS (TYP.) (TO BE DEMOLISHED) (SEE NOTE 3)
FINAL CAP (TO BE REMOVED)
LEACHATE TANKS AREA
BUILDING AREA
GUARDRAIL
10'± TRAILROAD
GATE
DIRT PILE (BLOCKADE)
CONC PAD

MW 3" PVC ELV=145.73' MW 6" METAL ON 3'X3' CONC PAD ELV=144.62'
MW 3" PVC ELV=141.37'
MW 6" METAL ELV=138.92'
MW 6" METAL ON 3'X3' CONC PAD ELV=138.98'
MW 6" METAL ON 3'X3' CONC PAD ELV=134.94'
MW 6" METAL ON 3'X3' CONC PAD ELV=128.35'
MW 6" METAL ON 3'X3' CONC PAD ELV=128.18'
MW 6" METAL ON 3'X3' CONC PAD ELV=128.51'

N2144181.31 E324999.58
N2144181.06 E325911.29
N2144187.93 E325685.96
N2144109.63 E325911.29
N2143960.47 E325216.23
N2143955.01 E325639.38
N2143952.67 E326018.33
N2144099.65 E327399.88
N2143883.54 E327110.90

EW-9 EW-10 EW-25 EW-6 EW-5 EW-4 EW-3 EW-2 EW-1 EW-17
RW-2 RW-4 RW-6 RW-1 RW-3
W-89 W-86 W-87 W-85 W-84 W-88
TW-22 TW-23 TW-75 TW-9 TW-68 TW-77 TW-12R TW-15 TW-17 TW-67 TW-3R TW-2 TW-69 TW-20R TW-18R
LCR-5 LCR-4 LSR-3

NOTE:
1. SEE ERP-8 DRAWING FOR DEMOLITION OF EXISTING CULVERTS.
2. FOR PIEZOMETER AND MOINTORING WELL DEMOLITION PROCEDURES, REFER TO SPECIFICATION SECTION 02050
3. FOR WELL HEADER AND VERTICAL GAS WELL DEMOLITION PROCEDURES, REFER TO SPECIFICATION SECTION 02050
4. REMOVE EXISTING CAP IN AREA SHOWN.

N
1" = 100'
50 0 100

JOHN G. LADNER
P.E. NO. 037969

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: R. KADAMBALA
DRAWN BY: B. CHAPMAN
SHEET CHK'D BY: C. SCOTT
CROSS CHK'D BY: I. POLEMATIDIS
APPROVED BY: J. LADNER
DATE: FEBRUARY 2014

CDM Smith
8381 Dix Ellis Trail., Suite 400
Jacksonville, Fl 32256
Tel: (904) 731-7109
FL COA NO. ED-0000020

CITY OF JACKSONVILLE

TRAIL RIDGE LANDFILL PHASES 6-14
CLASS 1 CELL EXPANSION

REMOVAL AND ABANDONMENT PLAN FOR PERMIT

PROJECT NO. 9012-80695
FILE NAME: C006STPL
SHEET NO. C-6

FOR PERMIT- NOT FOR CONSTRUCTION

NOTES:

1. FOR DEMOLITION OF EXISTING GAS MANAGEMENT SYSTEM, REFER TO SHEET C-6 AND C-6A.
2. NOTE THAT RELOCATED 20 INCH GAS MAIN LOCATED UNDER EXISTING ROAD IN PHASE 1 SHALL BE ENCASED IN CORRUGATED PIPE AND ABLE TO WITHSTAND THE DYNAMIC SOIL LOADING BASED ON AASHTO H-20 LOADING OF 16,000 LBS.
3. ALL HORIZONTAL COLLECTOR AND VERTICAL WELLS SHALL HAVE A CONDENSATE FM AND AIRLINE ASSOCIATED, SIMILAR TO THE EXISTING GAS MANAGEMENT SYSTEM.
4. FIRST ROW OF HORIZONTAL GAS COLLECTOR SHALL BE PUT INTO PLACE AFTER 40FT OF WASTE. SECOND ROW OF HORIZONTAL COLLECTOR SHALL BE PLACED AFTER ANOTHER 50FT OF WASTE AND SHALL BE STAGGERED IN ARRANGEMENT FROM FIRST LAYER VERTICAL WELLS WILL PROCEED BEYOND THAT LEVEL AND BE AT A MINIMUM OF 60-80FT FROM THE BASE STARTING AT THE SIDE SLOPE.
5. GAS MANAGEMENT SHOWN DEPICTS DIFFERENT STAGES UNDER THE FILL SEQUENCE. EAST SIDE OF PHASE 7 IS SHOWN TO HAVE LESS THAN 40 FEET OF WASTE AND THEREFOR HAS NOT REACHED THE LEVEL NECESSARY TO ADD THE FIRST LAYER HORIZONTAL COLLECTORS.

KEY

- NEW HORIZONTAL COLLECTOR
- NEW GAS HEADER
- NEW VERTICAL WELL

BLIND FLANGE N 2145461.83 E 324893.91
BLIND FLANGE N 2145461.64 E 324915.91
ZONE VALVE N 2145448.49 E 324915.79
20" WYE N 2145433.39 E 324893.96
20" ZONE VALVE 20" TEE
CONDENSATE SUMP WITH PNEUMATIC PUMP (TYP.) C CD-12
18" GAS COLLECTION HEADER
PHASE MIDWAY POINT
18" BLIND FLANGE AND ZONE VALVE
℄ PERIMETER DITCH
℄ PERIMETER ROAD
HORIZONTAL COLLECTOR B CD-12
PROP. PERIMETER ROAD (TYP.)
PROP. PERIMETER DITCH CENTERLINE (TYP.)
PITCH 1% MIN.
FUTURE PHASE 7
VERTICAL COLLECTOR A CD-12
100' (TYP.)
SEE NOTE 4
18" GAS COLLECTION
CONDENSATE SUMP WITH PNEUMATIC PUMP (TYP.)
18" GAS HEADER
18" GAS COLLECTION
FIRST ROW OF HORIZONTAL COLLECTORS
SECOND ROW OF HORIZONTAL COLLECTORS
SLOPE 1%
HP
20" ZONE VALVE 20" TEE
HORIZONTAL COLLECTOR SLOPE PER DETAIL B ON CD-12 (TYP.)
200'
PHASE 6
ANCHOR TRENCH
100' (TYP.)
20" GAS MAIN
LFG ENERGY PLANT
NEW 20" ZONE VALVE N 2144288.54 E 324902.37
1 CD-12
20" TEE ISOLATION VALVE W/ BLIND FLANGE N 2144268.01 E 327357.82
NEW ISOLATION VALVE N 2144281.69 E 324917.38
18" TERMINAL GAS HEADER
GAS COLLECTION WELLHEAD ASSEMBLY A CD-12
LFG FLARE STATION
EXIST. ANCHOR TRENCH
EXISTING LIMITS OF LINER
SEE NOTE 2
TIE INTO EXISTING 22" GAS MAIN
22"X22"X20" TEE N 2144053.00 E 327388.00
BLIND FLANGE
GAS PIPE ENCASEMENT G CD-12
GAS PIPING EXTENT CASING SHALL EXTEND 6-FEET ON EITHER SIDE FROM EDGE OF OPERATIONS ROADWAY.
20" GAS MAIN
PITCH 4% MIN.
WELL T-2 ABANDONED
6" Lateral
W-1 W-2 W-10 W-17 V-1 V-2 V-3 V-7 V-9
T-1 T-1U T-2R T-3U T-4 T-4U T-8 T-9 T-10 T-22 T-23
OK-5 SCR-25 DL-5

N
1" = 100'
50 0 100

JOHN G. LADNER
P.E. NO. 037969

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: R. KADAMBALA
DRAWN BY: B. CHAPMAN
SHEET CHK'D BY: C. SCOTT
CROSS CHK'D BY: A. SALEH
APPROVED BY: J. LADNER
DATE: FEBRUARY 2014

CDM Smith
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FL COA NO. ED-0000020

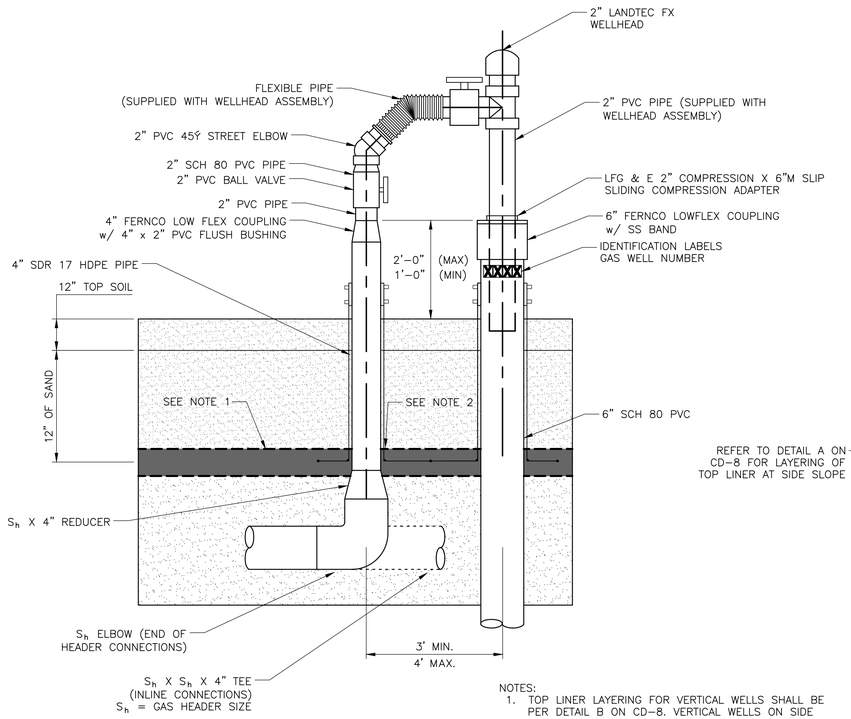
CITY OF JACKSONVILLE

TRAIL RIDGE LANDFILL PHASES 6-14
CLASS 1 CELL EXPANSION

GAS MANAGEMENT SYSTEM

PROJECT NO. 9012-80695
FILE NAME: C034STPL
SHEET NO. C-34

FOR PERMIT- NOT FOR CONSTRUCTION



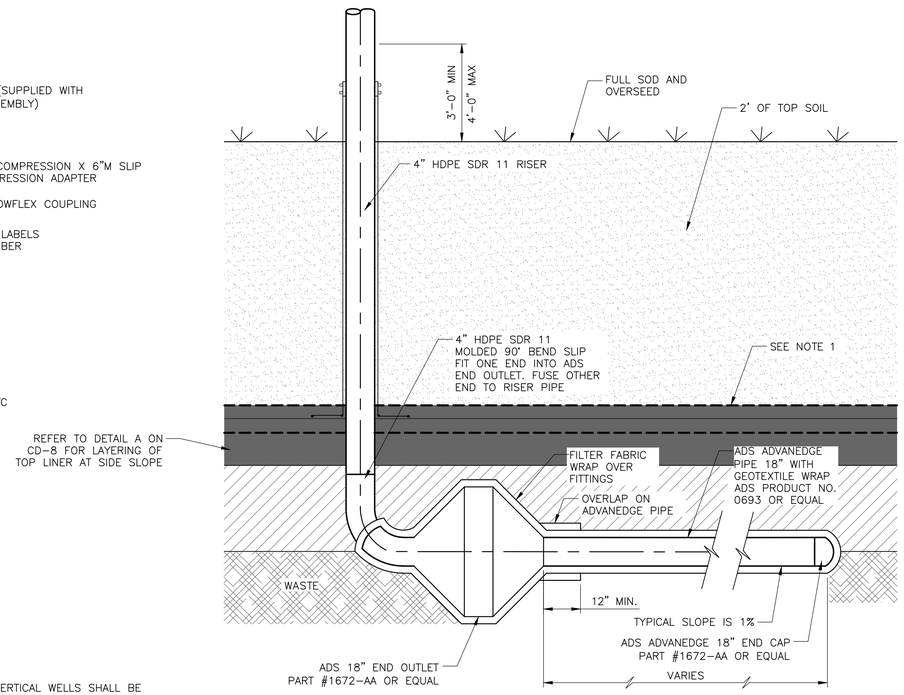
GAS COLLECTION WELLHEAD ASSEMBLY (TYP)

DETAIL A / C-34

NTS

NOTES:

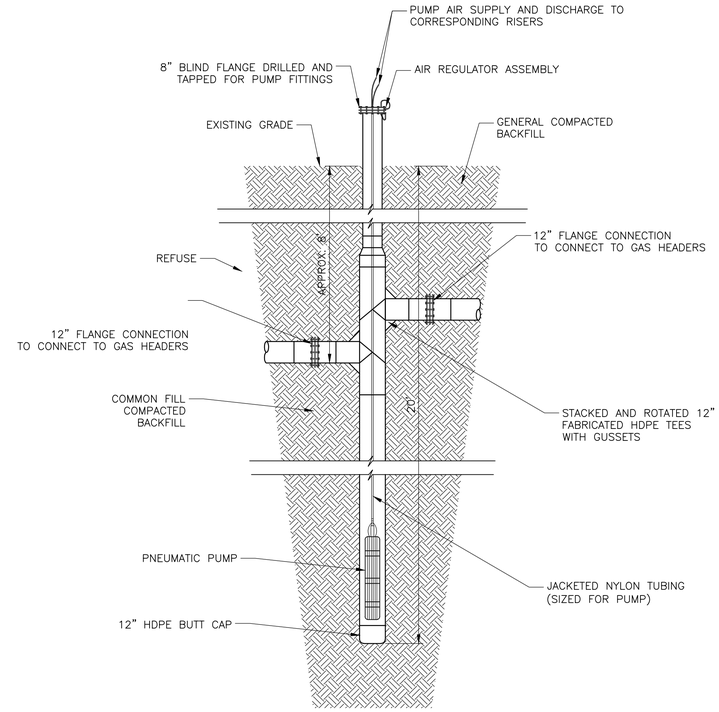
1. TOP LINER LAYERING FOR VERTICAL WELLS SHALL BE PER DETAIL B ON CD-8. VERTICAL WELLS ON SIDE SLOPE LOCATIONS SHALL HAVE LAYERING AS PER DETAIL A ON CD-8.
2. CONTRACTOR SHALL IMPLEMENT A BOOT AROUND WELL CASINGS FOR PENETRATION OF GEOMEMBRANE LAYER FOR TOP COVER PENETRATION.



HORIZONTAL COLLECTOR AND RISER

DETAIL B / C-34

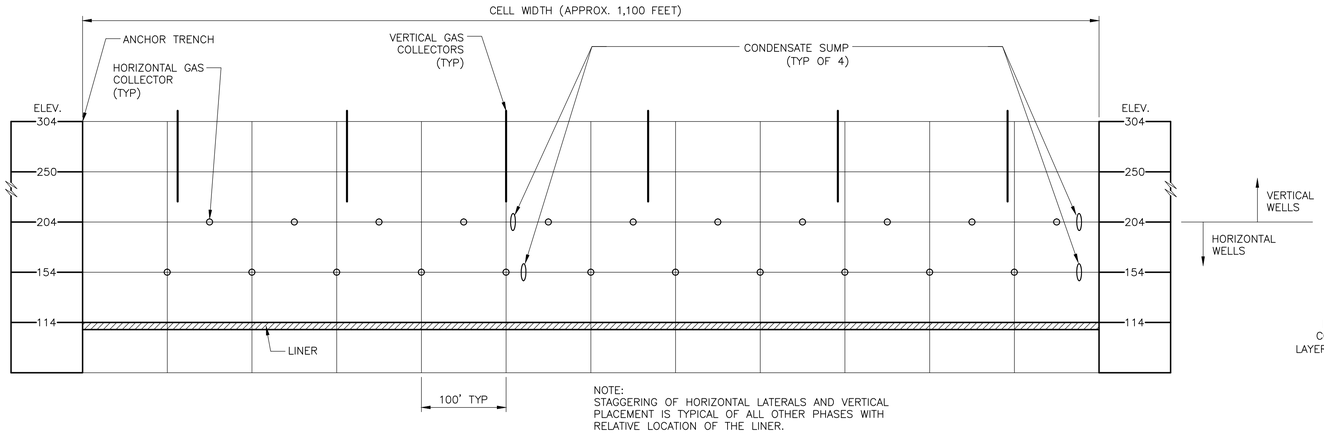
NTS



CONDENSATE SUMP WITH PNEUMATIC PUMP

DETAIL C / C-34

NTS

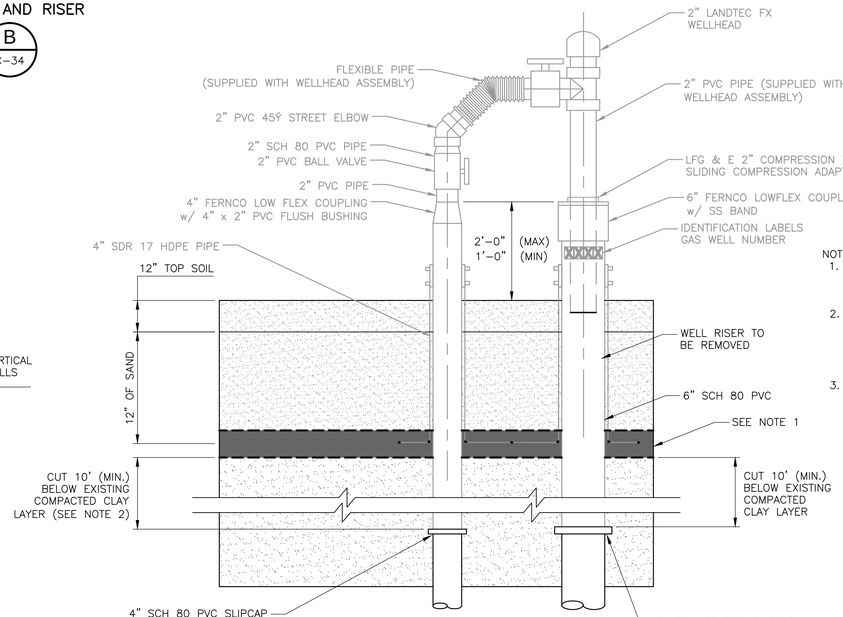


NOTE:
STAGGERING OF HORIZONTAL LATERALS AND VERTICAL PLACEMENT IS TYPICAL OF ALL OTHER PHASES WITH RELATIVE LOCATION OF THE LINER.

PHASE 6A HORIZONTAL AND VERTICAL GAS COLLECTORS SECTION LOOKING WEST

SECTION 1 / C-20

NTS



NOTES:

1. VERTICAL WELLS ON SIDE SLOPES LOCATIONS SHALL HAVE LAYERING AS PER DETAIL A ON CD-8.
2. CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO DEMOLITION OF RISER IF A GAS LATERAL IS RECOVERED ON-SITE WITH IN THE MINIMUM 10 FEET REQUIRED FOR CAPPING.
3. CONTRACTOR SHALL BACKFILL THE VOID AREAS WITH COMMON FILL AFTER REMOVAL OF WELL RISERS.

LANDFILL GAS EXTRACTION WELL ASSEMBLY ABANDONMENT

DETAIL D / -

NTS

JOHN G. LADNER
P.E. NO. 037969

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: R. KADAMBALA
DRAWN BY: B. CHAPMAN
SHEET CHK'D BY: J. HOFFMAN
CROSS CHK'D BY: A. MULLA SALEH
APPROVED BY: J. LADNER
DATE: FEBRUARY 2014

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CITY OF JACKSONVILLE

TRAIL RIDGE LANDFILL PHASES 6-14
CLASS 1 CELL EXPANSION

CIVIL DETAILS - GAS MANAGEMENT SYSTEM

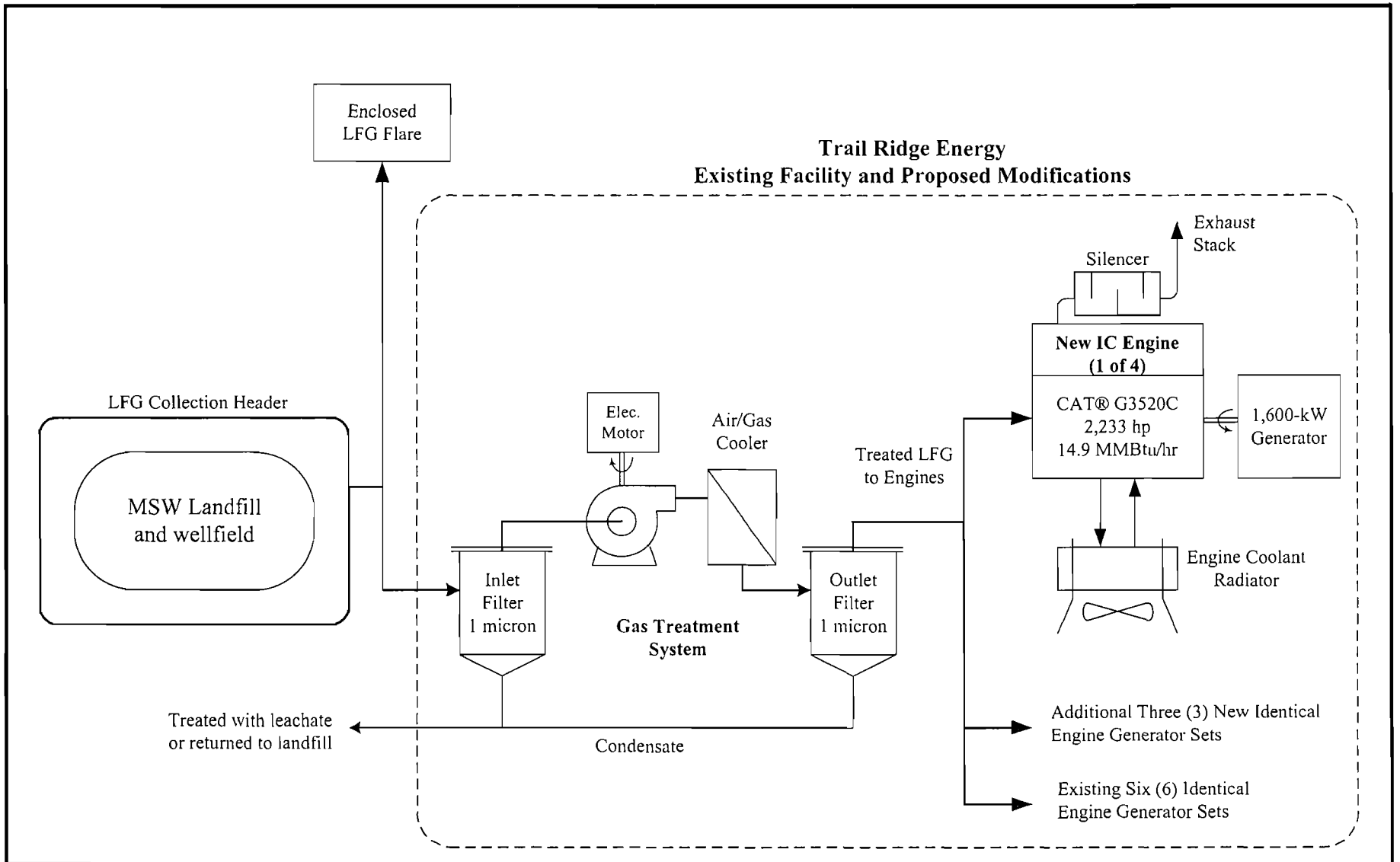
PROJECT NO. 9012-80695
FILE NAME: CD12SDDT

SHEET NO.
CD-12

FOR PERMIT - NOT FOR CONSTRUCTION

APPENDIX PFD.

Trail Ridge Landfill
Facility ID: 0310358
Process Flow Diagram



10/1/2009 3/14/2011	**Trail Ridge Energy, LLC** **LFG-Fueled Electricity Generation Facility**		
	Scale None	Sheet 1 of 1	Derenzo and Associates Project No. 0905002

APPENDIX SSM.

Trail Ridge Landfill
Facility ID: 0310358
Startup, Shutdown & Malfunction

MUNICIPAL SOLID WASTE LANDFILL
GAS COLLECTION AND CONTROL SYSTEM (GCCS)

STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

TRAIL RIDGE MUNICIPAL SOLID WASTE LANDFILL
DUVAL COUNTY

Prepared by:
Trail Ridge Municipal Solid Waste (MSW) Landfill
5110 US Highway 301 South
Baldwin, FL 32234

Date of Issuance:
May 1, 2014

☐ This version of this plan has been superseded.

If the box above has been checked, complete the following information:

This copy of the plan may be discarded after
(enter the date that is 5 years after date on which this version was superseded by a newer version)

MUNICIPAL SOLID WASTE LANDFILL
GAS COLLECTION AND CONTROL SYSTEM (GCCS)

STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

TRAIL RIDGE MUNICIPAL SOLID WASTE LANDFILL
DUVAL COUNTY

This startup, shutdown, and malfunction (SSM) plan (SSM Plan) was prepared by Waste Management Inc. of Florida in order to comply with the requirements of 40 CFR 63.6(e)(3), as this facility is subject to 40 CFR Part 63, Subpart AAAA, the National Emission Standard for Hazardous Air Pollutants (NESHAPs) for Municipal Solid Waste (MSW) landfills. The SSM Plan contains all of the required elements set forth within 40 CFR 63.6(e)(3).

This SSM Plan will be revised if the procedures described herein do not adequately address any malfunction or startup/shutdown events that occur at the facility. A copy of the original plan and all revisions/addenda will be kept on file at the facility for at least five (5) years. The Site Manager is responsible for assuring that the most recent copy of this SSM Plan is made available to all personnel involved with the landfill gas (LFG) collection and control system (GCCS) at Trail Ridge Municipal Solid Waste Landfill (TRLF).

as well as to appropriate regulatory agency personnel for inspection.

Name of Plan Preparer: Eric Parker (Name) — May 1, 2014 (Date)

Approved:
Site Manager: _____ (Name) _____ (Date)

TABLE OF CONTENTS

Appendices

1 Revision History

Add the effective date of the most-recent revision to the list below. Do not overwrite or delete any dates. This is intended to be a complete record of all revisions made to this plan, and assists in making certain that all plan versions are retained for at least 5 years as required by §63.6(e)(3)(v).

Date of Initial Issuance
January 16, 2004
Revision Dates
November 2, 2010
May 1, 2014

2 Introduction

2.1 Purpose and Scope

The owner or operator of an affected municipal solid waste (MSW) landfill must develop a written startup, shutdown, and malfunction (SSM) Plan. The SSM Plan must describe, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction; a program of corrective action for malfunctioning processes; and air pollution control and monitoring equipment used to comply with the relevant standard. The SSM Plan does not need to address scenarios that would not cause the source to exceed an applicable emission limitation in the relevant standard. Further, the elements of the SSM plan shall not be considered to be an applicable requirement (of a facility's Title V Operating Permit) as defined in 40 CFR Section 70.2 and 71.2.

The SSM Plan serves the following purposes:

- Ensure that, at all times, the MSW landfill owner or operator operates and maintains the affected source, including associated air pollution control and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions;
- Ensure that MSW landfill owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants; and
- Reduce the reporting burden associated with periods of startup, shutdown, and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

Trail Ridge Municipal Solid Waste Landfill (TRLF) is an existing affected source under the Maximum Achievable Control Technology (MACT) rule for MSW landfills. TRLF commenced construction in 1991, and operation of the NSPS WWW required GCCS began in 1998 (initial performance test for the GCCS was on April 20, 1999). As such, a SSM Plan was required to be prepared and implemented for this landfill site by January 16, 2004, and this revised SSM Plan meets or exceeds this requirement.

The management of the TRLF fully understands and acknowledges the SSM Plan requirements of the MACT rule. This SSM Plan has been developed to specifically address these requirements as summarized above.

2.2 Description of SSM Plan

This SSM Plan has been divided into three major sections comprising the major elements related to startup, shutdown, and/or malfunction of a landfill gas (LFG) collection and control system (GCCS) at a MSW landfill. Malfunction events are sudden, infrequent, and not reasonably preventable failures of the GCCS (and related monitoring equipment) to operate in a normal or

usual manner and which result, or have the potential to result, in an exceedance of one or more emission limitations under the New Source Performance Standards for MSW Landfills Subpart WWW (NSPS). Startup and shutdown events are generally planned events associated with system repair, maintenance, testing, and upgrade, and may or may not be related to or occur in association with a malfunction of the GCCS.

2.3 Site Equipment Subject To This SSM Plan

The following components of the GCCS are subject to this SSM Plan:

Landfill gas moving equipment (entire collection system)
Flame monitoring and recording equipment
Flow monitoring and recording equipment
5,000 scfm Landfill gas open flare
Landfill gas treatment equipment

3 Startup Plan

This section details procedures for the startup of the GCCS to ensure that, at all times, good safety and air pollution control practices are used for minimizing emissions.

Pursuant to the requirements of NSPS for MSW landfills, a GCCS must be installed and operated when an applicable landfill exceeds a threshold of 50 Mg/year NMOC and meets all the other criteria requiring gas collection and control at a landfill.

3.1 How to Identify a GCCS Startup Event

The regulatory definition of "startup" reads as follows:

> **"Startup** means the setting in operation of an affected source or portion of an affected source for any purpose." (§63.2)

GCCS startup operations generally include startup of gas mover equipment, LFG control devices, and any ancillary equipment that could affect the operation of the GCCS (e.g., power supply, air compressors, etc.). The start-up period is the amount of time that it takes for the equipment to go from stop to normal operation.

3.2 Actions to Take When the GCCS is Started

The following provides a summary of typical response actions for startup of the GCCS.

3.2.1 Gas Mover and Collection System

The following activities may have the potential to emit regulated air pollutants to the atmosphere during startup of the collection system portion of GCCS: (1) purging of gases trapped within piping system prior to normal operation; (2) repair of system leaks discovered during startup, and (3) all other activities after construction of the system but prior to fulltime operation, which could release HAPs from the collection system. These activities could potentially be subject to the Startup Plan portion of the SSM Plan. However, it is unlikely that these events would cause the source to exceed any applicable emission.

During such activities, work shall progress such that air emissions are minimized to the greatest extent possible by:

- Temporarily capping pipes venting gas if such capping does not impact safety or the effective construction of the system.

- Minimizing surface area allowing gas to emit to the atmosphere to the extent that it does not impact safety or the effective construction of the system.
- Ensuring that other parts of the system, not impacted by the activity, are operating in accordance with the applicable requirements of NSPS WWW.
- Limiting the purging of piping to as short a duration as possible to ensure safe combustion of the gas in the control device.

A GCCS, is a "closed" system designed to prevent the uncontrolled release of LFG to the atmosphere. The network of piping installed at the site connects each extraction point with the control system with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed in the system from time to time and subsequently opened. Opening these valves shall not be considered a startup, unless such an activity causes the source to exceed an applicable emission limitation. If the activity results in such an exceedance, the actions listed in Sections 3.3 through 3.5 shall be followed.

The operation of the collection system, once installed, shall be consistent with the provisions of NSPS WWW as well as the GCCS Design Plan, which has been developed and approved for the facility.

3.2.2 Open Flares

Under normal circumstances, startup of the open flares does not result in exceedance of an emission limitation. Appendix A contains the standard operating procedures associated with open flare.

3.2.2.1 Manual Startup

Personnel shall follow the procedures identified in Appendix B when manually starting the open flares.

3.2.2.2 Automatic Startup

The open flares are designed for unattended operation. After a shutdown (either planned or unplanned), one or more of the flares will automatically attempt to re-start itself (via an automatic sparker, pilot flame, or similar device). Appendix C is the procedures for an Automatic Startup for an Open Flare.

3.2.3 LFG Treatment System

Under normal circumstances, startup of the landfill gas treatment system does not result in exceedance of an emission limitation. Under current USEPA interpretation, the "treatment system" consists of the equipment that compresses, dewaters, and filters the landfill gas prior to its introduction into an engine or other manner of beneficial use. Treated landfill gas from Trail

Ridge Municipal Solid Waste Landfill is conveyed (via pipeline) to end users for use in landfill gas to energy facility.

Personnel shall follow the standard operating procedures identified in Appendix D when starting and shutting down the landfill gas treatment system.

3.3 What to Record for Any Startup Event That Causes an Emission Exceedance

Based on changes in SSM regulations published on April 20, 2006, startups that do not cause an emission limitation to be exceeded do not need to be recorded. Startups that do not result in free-venting of landfill gas are not considered events that cause exceedance of an emission limit. Facilities may, at their discretion, record all startup events regardless of whether an emission limitation was exceeded.

In the event that a startup caused an emission limitation to be exceeded (typically identified as a period during which free-venting of landfill gas occurred), the operator shall record the following information:

- The date and time the startup occurred.
- The duration of the startup.
- Records (e.g., in the form of a checklist) that demonstrate that the procedures specified in this SSM Plan were followed.
- If the actions were not consistent with this SSM Plan, then the facility must record the actions taken for that event. The facility may use the **SSM Plan Departure Report Form** (Appendix E) to record such events. Actions not consistent with this SSM Plan must be reported within 2 working days, followed by a letter within 7 working days after the end of the event.
- The gas technician/manager or other appropriate personnel shall prepare the initial records upon discovery of a startup that caused an emission limitation of the relevant emission standards to be exceeded.
- The gas technician/manager or other appropriate personnel shall finalize the records upon successful implementation of the SSM Plan and notification shall be provided to the Site Manager.
- The relevant records shall be retained electronically (or hard-copy files) for five (5) years.

Note: The facility may use the GCCS Recordkeeping System template prepared by Corporate Air Programs to record/document SSM events and SSM Plan Departures.

3.4 Whom to Notify in Case of a Startup Event that Causes an Emission Exceedance

If the startup did not cause an emission limitation to be exceeded, then no notifications for such startup are necessary. Startups that do not result in free-venting of landfill gas are not considered events that cause exceedance of an emission limit.

- Notify the Site Manager or other appropriate personnel immediately of the startup that causes an emission limitation of the relevant emission standards to be exceeded.

- Notify Site Manager or other appropriate personnel within a reasonable timeframe of progress of the diagnosis and resolution of the startup that causes an emission limitation of the relevant emission standards to be exceeded.

- Notify the Site Manager or other appropriate personnel when the alternative timeframe for startup has been established if it is outside of the timeframes currently allowed by the NSPS for particular compliance elements.

3.5 What to Report for a Startup Event That Causes an Emission Exceedance

If the startup did not cause an emission limitation to be exceeded, then no report for such startup is necessary. Startups that do not result in free-venting of landfill gas are not considered events that cause exceedance of an emission limit.

If the actions taken during the startup were consistent with this SSM Plan, then state such information in your semi-annual SSM report (within 30 days following the end of each 6-month period or other Agency mutually agreed upon due date) with the following information included:

1. Name and title of Site Manager or other appropriate personnel;
2. Certifying signature of the owner/operator or other responsible official; and
3. A summary of the actions taken to minimize emissions during applicable startups. This may be prepared once for similar events.

If the actions taken during a startup were not consistent with this SSM Plan, **and** the startup caused an exceedance of an emission limitation, the Site Manager or other appropriate personnel must report the actions taken to the enforcing authority by telephone or facsimile transmission (or an otherwise acceptable manner) within two (2) working days after the startup. A letter must be sent to the enforcing authority within seven (7) working days after the startup. The letter shall

be sent by certified or registered mail or overnight delivery service, and must include the following information:

1. Name and title of Site Manager or other appropriate personnel;
2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);
3. Detailed explanation of the circumstances of the startup causing an emission limitation of the relevant emission standards to be exceeded;
4. The reasons for not following the SSM plan, describing all excess emissions and/or parameter monitoring exceedances which are believed to have occurred, and actions taken to minimize emissions.
5. A copy of the **SSM Plan Departure Report Form or other records that document the departure.**

Note: If the SSM Plan is revised to re-define activities that constitute a startup, shutdown, or malfunction; or otherwise modifies the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule, the revised SSM Plan does not take effect until written notice has been provided to the permitting authority describing the SSM Plan revision(s).

4 Shutdown Plan

This section details procedures for the shutdown of the GCCS to ensure that, at all times, good safety and air pollution control practices are used for minimizing emissions.

Pursuant to the requirements of NSPS for MSW landfills, a GCCS can not be removed unless the landfill meets all the applicable criteria for removal of collection and control system in 40 CFR 60, Subpart WWW.

4.1 How to Identify a GCCS Shutdown Event

The regulatory definition of "shutdown" reads as follows:

> **"Shutdown** means the cessation of an affected source or portion of an affected source or portion of an affected source for any purpose." (§63.2)

With GCCS, shutdown events would generally include shutdown of gas mover equipment, LFG control devices, and any ancillary equipment that could affect the operation of the GCCS (e.g., power supply, air compressors, etc.). The activities listed in Table 4-1 could potentially be subject to the Shutdown Plan portion of the SSM Plan. However, it is unlikely that these events would cause the source to exceed any applicable emission limitation in NSPS WWW.

The following list includes events that may cause a shutdown of the entire GCCS at a MSW Landfill. This list is not be considered exhaustive.

Table 4-1—Potential Events That May Cause a Shutdown of the entire GCCS

Control Device Maintenance, Repair, or Cleaning
Addition of New GCCS Components
Raising or Other Modification of Gas Extraction Wells
Movement of LFG Piping to Accommodate New Components or Filling Operations
Source Testing
Gas Mover Equipment Maintenance, Repair, or Cleaning
Gas Processing Equipment Maintenance, Repair, or Cleaning
Ancillary Equipment (e.g., compressors, etc.) Maintenance, Repair, or Cleaning
New Equipment Testing and Debugging
Shutdown and Subsequent Startup to Address Malfunctions or Other Occurrences
Planned Electrical Outages
Unplanned Electrical Outages
Sudden Change in Gas Quality

4.2 Actions To Take When The GCCS Is Shutdown

4.2.1 Collection System

GCCSs, once installed, are "closed" systems designed to prevent the uncontrolled release of LFG to the atmosphere. The network of piping installed at the site connects each extraction point with the control system with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed in the system from time to time. Closing these valves shall not be considered a shutdown, unless such activity causes an exceedance of the provisions of NSPS, the facility's GCCS design plan, or other applicable approval. If a shutdown causes the source to exceed an applicable emission limitation, the recordkeeping, notification, and reporting procedures outlined in Sections 4.3, 4.4, and 4.5, respectively, should be followed.

4.2.2 Open Flares

Under normal circumstances, shutdown of one of an open flare does not result in exceedance of an emission limitation. Appendix A contains the standard operating procedures associated with open flare.

4.2.2.1 Manual Shutdown

Personnel shall follow the procedures as identified below when shutting down the respective control devices in the control system. Control device shutdown procedures can be located in operations manuals, notes, reports, or other sources. Under normal circumstances, shutdown of a flare causes an automatic shutdown of the gas moving equipment and does not result in exceedance of an emission limitation.

4.2.2.2 Automatic Shutdown

The open flares will automatically shut down if power is lost, gas flow/low temperature drops below a pre-set point, or other conditions occur. Under normal circumstances, shutdown of a flare causes an automatic shutdown of the gas moving equipment and does not result in exceedance of an emission limitation.

4.2.3 LFG Treatment System

Under normal circumstances, shutdown of the landfill gas treatment system does not result in exceedance of an emission limitation. Under current USEPA interpretation, the "treatment system" consists of the equipment that compresses, dewaters, and filters the landfill gas prior to its introduction into the pipeline.

Personnel shall follow the proper procedures when shutting down the treatment system. To protect downstream equipment, most treatment systems will automatically shut down if power is lost, gas flow/quality drops below a pre-set point, or other conditions occur. Personnel shall follow the procedures identified in Appendix D when manually shutting down the landfill gas treatment system.

4.3 What to Record for Any Shutdown Events That Causes an Emission Exceedance

Based on changes in SSM regulations published on April 20, 2006, shutdowns that do not cause an emission limitation to be exceeded do not need to be recorded. Shutdowns that do not result in free-venting of landfill gas are not considered events that cause exceedance of an emission limit. Note, however, that shutdowns lasting longer than 5 days are reportable under NSPS and should be recorded even if an emission limit is not exceeded.

Facilities may, at their discretion, record all shutdown events regardless of whether an emission limitation was exceeded.

The operator shall record the following information for any shutdown that caused an emission limitation of the relevant emission standards to be exceeded.

- The date and time the shutdown occurred.
- The duration of the shutdown.
- Records (e.g., in the form of a checklist) that demonstrate that the procedures specified in this SSM Plan were followed.
- If the actions taken were not consistent with this SSM Plan, then the facility must record the actions taken for the event. The Facility may use the **SSM Plan Departure Report Form (**Appendix E) to record such events. Actions not consistent with this SSM Plan must be reported within 2 working days, followed by a letter within 7 working days after the end of the event.
- The gas technician/manager or other appropriate personnel shall prepare the initial records upon discovery of a startup that caused an emission limitation of the relevant emission standards to be exceeded.
- The gas technician/manager or other appropriate personnel shall finalize the records upon successful implementation of the SSM Plan and notification shall be provided to the Site Manager or other appropriate personnel.
- The relevant records shall be retained electronically (or hard-copy files) for five (5) years.

Note: The facility may use the GCCS Recordkeeping System template prepared by Corporate Air Programs to record/document SSM events and SSM Plan Departures.

4.4 Whom to Notify in Case of a Shutdown Event that Causes an Emission Exceedance

If the shutdown did not cause an emission limitation to be exceeded, then no notifications for such shutdown are necessary. Shutdowns that do not result in free-venting of landfill gas are not considered events that cause exceedance of an emission limit.

- Notify the Site Manager or other appropriate personnel immediately of the shutdown that causes an emission limitation of the relevant emission standards to be exceeded.

- Notify the Site Manager or other appropriate personnel within a reasonable timeframe of progress of the diagnosis and resolution of the shutdown that causes an emission emission limitation of the relevant emission standards to be exceeded.

- Notify the Site Manager or other appropriate personnel when the alternative timeframe for shutdown has been established if it is outside of the timeframes currently allowed by the NSPS WWW for particular compliance elements.

4.5 What to Report for a Shutdown Event That Causes an Emission Exceedance

If the shutdown did not cause an emission limitation to be exceeded, then no report for such shutdown is necessary. Shutdowns that do not result in free-venting of landfill gas are not considered events that cause exceedance of an emission limit.

If the actions taken during the shutdown causing an emission limitation of the relevant emission standards to be exceeded **were consistent** with this SSM Plan, then state such information in your semi-annual SSM report (within 30 days following the end of each 6-month *period* or other Agency mutually agreed upon due date) with the following information included:

1. Name and title of Site/Facility Manager or Other appropriate Facility Personnel;
2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.); and
3. A summary of the actions taken to minimize emissions during applicable startups. This may be prepared once for similar events.

If the actions taken during a shutdown were not consistent with this SSM Plan, **and** the shutdown caused an exceedance of an emission limitation, the Site Manager or other appropriate personnel must report the actions taken to the enforcing authority by telephone or facsimile transmission (or an otherwise acceptable manner) within two (2) working days after commencing the actions that were inconsistent with the plan. A letter must then be sent to the enforcing authority within seven (7) working days after the shutdown. The letter shall be sent by certified or registered mail or overnight delivery service, and must include the following information:

1. Name and title of Site Manager or other appropriate personnel;
2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);
3. Detailed explanation of the circumstances of the shutdown causing an emission limitation of the relevant emission standards to be exceeded;
4. The reasons for not following the SSM plan, describing all excess emissions and/or parameter monitoring exceedances which are believed to have occurred, and actions taken to minimize emissions.
5. A copy of the **SSM Plan Departure Report Form or other records that document the departure.**

Note: If the SSM Plan is revised to re-define activities that constitute a startup, shutdown, or malfunction; or otherwise modifies the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule, the revised SSM Plan does not take effect until written notice has been provided to the permitting authority describing the SSM Plan revision(s).

5 Malfunction Plan

5.1 How to Identify a GCCS Malfunction

The regulatory definition of "malfunction" reads as follows:

> **"Malfunction** means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions." (§63.2, revised 5/30/03)

The following list includes events that may constitute a malfunction of the GCCS at CGL. The cause of these events will be investigated immediately in order to determine the best course of action to correct the malfunction. Each of these malfunctions could have multiple causes that need to be evaluated and possibly considered. It is the intent of this SSM Plan to include all possible causes for the specific malfunction events. Common malfunction events for LFG collection and control systems are listed in Table 5-1.

Table 5-1—Potential Malfunction Events

Possible Malfunction	Section
Loss of LFG Flow/Gas Mover Malfunction	5.3
Loss of Flame at the Control Device	5.4
Malfunction of Flow Measuring/Recording Device	5.5
Malfunction of Flame Presence/Recording Device	5.6
Other Flare/Treatment System Malfunctions	5.7

The following list constitutes the possible exceedances of emission limits that could occur due to a malfunction of GCCS, thereby necessitating implementation of this SSM Plan:

Table 5-2— Potential Emission Limitation Exceedances Caused by Malfunction Events

GCCS downtime of greater than 5 days (if alternative timeframe has not been established)
Free venting of collected LFG without control for greater than one hour
Any downtime for flame presence/recording equipment (if alternative timeframe has not been established)
Any downtime for LFG flow monitoring and/or recording equipment (if alternative timeframe has not been established)
Open flare visible emissions for greater than 5 minutes during any consecutive 2 hours.

Malfunctions shall be considered actionable under this SSM Plan whether they are discovered by CDL personnel during normal operations, or by a regulatory agency during compliance inspections.

The operator shall follow all the corrective action, notification, recordkeeping, and reporting procedures described herein in case of malfunction of the GCCS.

5.2 Actions to Take When the GCCS Malfunctions—All Malfunctions

- Determine whether the malfunction has caused an exceedance, or has the potential to cause an exceedance, of any applicable emission limitation.

- Identify whether the malfunction is causing or has caused excess emissions to the atmosphere. If excess emissions are occurring, take necessary steps to reduce emissions to the greatest extent possible using good air pollution control practices and safety procedures.

- Some common malfunctions, along with their associated remedies, are summarized in Appendix F. Personnel shall follow these procedures when addressing a malfunction of a collection system or control device.

- Contact the Site Manager or other appropriate personnel immediately and proceed with the malfunction diagnosis and correction procedures for each specific malfunction.

- Notify the Site Manager or other appropriate personnel of the progress of the diagnosis and correction procedures and status of the malfunction as soon as practicable.

- If the GCCS malfunction cannot be corrected within the time frame specified in the NSPS WWW, notify the Site Manager or other appropriate personnel and proceed to shutdown the control device and/or the process(es) venting to the control device, if this has not already occurred automatically.

- If the GCCS malfunction cannot be corrected within the time frame allowed by the NSPS WWW for each specific malfunction, define the appropriate alternative timeframe for

corrective action that is reasonable for the type of repair or maintenance that is required to correct the malfunction.

- If the GCCS malfunction cannot be corrected within alternative timeframe for corrective action specified above, notify the Site Manager or other appropriate personnel and conduct the appropriate record keeping and reporting required for deviations of the MACT rule and Title V permit.

- Once the malfunction is corrected, notify the Site Manager or other appropriate personnel as soon as the system is operational.

- Complete records after the malfunction diagnosis and correction procedures are completed.

- Follow procedures in Sections 5.8 through 5.10, as appropriate, to adequately document, notify, and report the malfunction and corrective action. If the SSM Plan must be revised based on this information, follow the procedures listed below below.

If the procedures in this SSM Plan do not address or adequately address the malfunction that has occurred, the operator shall record the circumstances and the actual steps taken to correct the malfunction. The Site Manager or other appropriate personnel shall be notified of this situation immediately. The facility must record deficiencies with procedures for addressing the malfunction and may use the **SSM Plan Departure Report Form** (Appendix E) to record such event(s).

Note: The facility may use the GCCS Recordkeeping System template prepared by Corporate Air Programs to record/document the deficiencies with procedures for addressing the malfunction and SSM Plan departures.

The SSM Plan must be updated, within 45 days after the event, to better address this type of malfunction. In general, revised SSM Plans shall not take effect until after the facility has provided a written notice (describing the revision) to the permitting authority. Revisions made to the SSM Plan are not to be considered revisions to the facility's Title V Operating Permit and the elements of the plan are not applicable requirements of the Title V Operating Permit.

5.3 Loss of LFG Flow/Gas Mover Malfunction

- Follow the procedures in Section 5.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shutdown. If control device has shut down, make sure that gas mover equipment has shut down to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendices F.

- If the malfunction cannot be corrected within the timeframe allowed by the NSPS WWW, follow the procedures under Section 5.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

5.4 Loss of Flame at a Open Flare

- Follow also the procedures in Section 5.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see a control device has shutdown. If a control device has shutdown, make sure that gas mover equipment has shutdown to prevent free venting of LFG. Attempt to restart a control device to determine if system will remain operational.

- If system will not restart, follow also the procedures in Section 5.3, above: **Loss of LFG Flow.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendices F.

- If the malfunction cannot be corrected within the time frame allowed by the NSPS WWW, follow the procedures under Section 5.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

5.5 Malfunctions of Flow Monitoring/Recording Device

- Follow the procedures in Section 5.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendices F.

- If the malfunction cannot be corrected in the time frame allowed by the NSPS WWW, follow the procedures under Section 5.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

5.6 Malfunctions of Flame Presence/Recording Device

- Follow the procedures in Section 5.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendices F.

- If the malfunction cannot be corrected within 15 minutes, follow the procedures under Section 5.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

5.7 Other Flare/Treatment System Malfunctions

- Follow also the procedures in Section 5.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if a flare or the treatment system has shut down. If a flare or the treatment system has shut down, make sure that gas mover equipment has shut down to prevent free venting of LFG. Attempt to restart a flare and/or treatment system to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendices F.

- If the malfunction causes the entire GCCS to go off-line and cannot be corrected within 5 days, follow the procedures under Section 5.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

5.8 What to Record for a Malfunction Event

The gas technician/manager or operator must record the following information for each malfunction that occurs:

- The date and time the malfunction occurred.

- The duration of the malfunction.

- A description of the affected equipment.

- The cause or reason for the malfunction (if known).

- The actions taken to correct the malfunction and minimize emissions (checklist).

- Whether the procedures in this SSM Plan were followed. If the procedures in the plan were not followed, the facility must complete records. The **SSM Plan Departure Report Form** (Appendix E) may be used to record such events.

- If applicable, a description of the emission standard that was exceeded or had the potential to be exceeded.

- The gas technician/manager or other appropriate personnel shall prepare the initial records upon discovery of the malfunction and implementation of the SSM Plan.

- The records shall be finalized by the gas technician/manager or other appropriate personnel upon successful implementation of the SSM Plan and the Site Manager and/or other appropriate personnel shall be notified of the system update.

- The data must be retained in the landfill files for five (5) years.

Note: The facility may use the GCCS Recordkeeping System template prepared by Corporate Air Programs to record/document SSM events and SSM Plan Departures.

5.9 Whom to Notify at the Facility for a Malfunction Event

- Notify the Site Manager or other appropriate personnel immediately of the malfunction.

- Notify the Site Manager or other appropriate personnel within a reasonable timeframe of progress of the diagnosis and corrective action of the malfunction.

- Notify the Site Manager or other appropriate personnel when the alternative timeframe for corrective action has been established if it is outside of the timeframes currently allowed by the NSPS for particular compliance elements.

- Notify the Site Manager or other appropriate personnel if the malfunction cannot be corrected within the timeframe allowed by the NSPS rule or the alternate timeframe established under this SSM Plan. Notification shall also occur if the malfunction that occurred is not addressed b by the current SSM Plan.

5.10 What to Report for a Malfunction Event

Reporting of a malfunction event is required <u>regardless</u> of whether the malfunction caused, or had the potential to cause, an exceedance of an applicable emission limitation.

If the actions taken during the malfunction **<u>were consistent</u>** with this SSM Plan, file the necessary information in your semi-annual SSM report (*within 30 days following the end of each*

6-month period or other Agency mutually agreed upon due date) with the following information included:

1. Name and title of Site Manager or other appropriate personnel;
2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);
3. Statement that the actions taken during the malfunction were consistent with the SSM Plan; and
4. Number, duration, and brief description of each malfunction.

If the actions taken during a malfunction **were not consistent** with this SSM Plan, the Site Manager or other appropriate personnel must report the actions taken to the enforcing authority by telephone or facsimile (FAX) transmission within two (2) working days after commencing the actions that were inconsistent with the plan. A letter must then be sent to the enforcing authority within seven (7) working days after the malfunction. The letter shall be sent by certified or registered mail or overnight delivery service, and must include the following information:

1. Name and title of Site Manager or other appropriate personnel;
2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);
3. Number, duration, and brief description of each malfunction.;
4. Detailed explanation of the circumstances of the malfunction;
5. The reasons the SSM Plan was not adequate; and
6. The excess emissions and/or parameter monitoring exceedance that is believed to have occurred during the event.
7. Actions taken to minimize emissions**.**

In addition, if the actions taken during the malfunction **were not consistent** with this SSM Plan, the Site Manager or other appropriate personnel at the landfill must:

1. Revise the SSM Plan within 45 days after the malfunction to include procedures for operating and maintaining the GCCS during similar malfunction events.
2. Report that the facility revised the SSM Plan within the next semi-annual submittal (within 30 days following the end of each 6-month period).

Note: If the SSM Plan is revised to re-define activities that constitute a startup, shutdown, or malfunction; or otherwise modifies the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule, the revised SSM Plan does not take effect until written notice has been provided to the permitting authority describing the SSM Plan revision(s).

APPENDIX A

Standard Operating Procedure for Open Flares

Standard Operating Procedure for Open Flare Startup

1. Ensure that there are no unsafe conditions present. If flare is associated with a WMRE facility or third party notify plant manager of flare startup or shutdown.

2. Ensure that the system is ready to start by one or more of the following:

    a. Valves are in correct operating position
    b. Levels, pressures, temperatures are within normal starting range
    c. Alarms are cleared
    d. Power is on and available to control panel and energized equipment
    e. Emergency Stop is de-energized

3. Initiate start sequence (Note time and date on top section of form as Start) Refer to Manufacturer's Information (if applicable) as an additional resource.

4. Observe that system achieves normal operating ranges for levels, pressures, and temperatures (Note time and date on form as End).

5. Complete form. Duration is the time it takes to go from Step 3 to 4.

Shutdown

1. Ensure that there are no unsafe conditions present

2. Contact site manager immediately. Contact GOM and DM as soon as possible notifying them of the shutdown.

3. Initiate shutdown sequence by one or more of the following (Note time and date on top of form as Start, if applicable) Refer to Manufacturer's Information (if applicable) as an additional resource.

    a. Press Emergency Stop if necessary.

    b. Close On/ Off switch(s) or Push On/ Off button(s).

    c. Close adjacent valves if necessary.

    d. Install lock out tag out lock and identification.

4. Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures (Note time and date in form as End).

5. Complete top section of form. Duration is the time it takes to go from Step 2 to 3.

Malfunction

1. Minimize/stop emissions of landfill gas (if present).

2. Determine cause of malfunction. Refer to Manufacturer's Information (if applicable) as an additional resource.

3. Fix/correct malfunction.

4. Duration is the time it takes to go from discovery of malfunction (unless continuous monitoring records indicate malfunction started earlier) to Step 3.

APPENDIX B

Manual Startup of Open Flare

APPENDIX B

Manual Startup of an Open Flare

OPERATING INSTRUCTIONS

I. Panel power is ON as indicated by the “PANEL POWER ON” light (*white light*).
II. The flare can be started in either AUTO or MANUAL.

A. To start the flare in a MANUAL mode, place the “FLARE START MODE” on Parnel Screen switch in the MANUAL position.

1. The following permissives are necessary for flare ignition: Emergency shutdown not tripped, no LFG valve failure, no blower failure, no flame arrestor high temperature, no high condensate level, and the ignition tries counter has not reached its maximum attempts.

2. Press “IGNITION START pushbutton. The pilot gas solenoid valve will open.

3. A timed sequence will pulse the ignition transformer, attempting to light the flare pilot.

4. When the pilot thermocouple temperature rises above the SV (set point) on the pilot temperature switch, the “FLAME PROVED will turn on. If the pilot temperature fails to prove a flame, the ignition sequence will try 2 more times.

5. Place the “VALVE OPEN button in the OPEN position. The valve will open and the “LFG VALVE OPEN” light will reverse to black on white on the Parnel screen.

6. Place the “HAND” switch in the ON position (Blower button). The blower will start and the “BLOWER RUNNING button willl turn on.

7. When one of the thermocouple’s temperature stays above the temperature switch set point, this will keep the “FLAME PROVED” button on.

SYSTEM FUNCTIONS:

Flame Fail Light: If the pilot fails to reach the setpoint temperature after 3 ignition periods, the system will shut down and stay shutdown until panel power is turned off and back on, or the LAMP TEST/RESET (*choose a name or add another*) button is pressed.

Action to take: Check propane supply, propane pressure during ignition should be 25-30 psi *(please verify this with your flares)*. Press The RESET button.

AUTO RELIGHT: System will allow 3 ignition attempts to light the pilot. The counter is reset: 1) every 24 hours, 2) by pressing the lamp test/reset *(choose a name or add name for your setup)* push button, 3) when panel power is lost, or 4) Flame Proved.

PILOT CUTOFF: The pilot is turned off 30 seconds (*please determine what this time is for your flares)* after the blower is running AND main flame is proved.

RESET: This button will reset the restart counter, and clear the shutdown alarms.

RESET*: Turning the panel power off and back on resets all shutdown alarms and timers*

APPENDIX C

Automatic Startup of Open Flare

Automatic Start-up of an Open Flare

OPERATING INSTRUCTIONS

I. Panel power is ON as indicated by the "PANEL POWER ON" light (white or determine color for your flare).

II. Pressing the lamp test pushbutton will test the indicating pilot lamps. *(is this applicable to your flare? If not, what is*)

III. The flare can be started in either AUTO or MANUAL.

A. To start the flare in AUTO mode, place the "START-UP SELECT", "LFG VALUE", and "WASTE BLOWER" *(please confirm names or insert your flare names into this section)* switches in the AUTO position.

1. The following permissives are necessary for flare ignition: Emergency shutdown not tripped, no LFG valve failure, no blower failure, no flame arrestor high temperature, no high condensate level, and the ignition tries counter has not reached its maximum setting. Thermocouple has to be below the ignition start set point.

2. The pilot gas solenoid valve will energize OPEN.

3. A timed sequence will start to pulse the ignition transformer, attempting to light the flare pilot.

4. When the pilot thermocouple temperature rises above the SV (set point) on the pilot temperature switch, the "FLAME PROVED (*or name of this on your flare)*" light will turn on. If the pilot temperature fails to prove a flame, the ignition sequence will try 3 more times.

5. Once a flame has been proven at the pilot, the LFG valve is energized OPEN, and the "LFG VALVE OPEN" (*or name of this on your flare)* light will turn on. The Blower will start, and the "BLOWER RUNNING (*confirm the name of the light and it may be nameless*)" light will turn on.

6. When one of the thermocouple's temperature stays above the temperature switch set point, this will keep the "FLAME PROVED (*or name of this on your flare)*" light on.

SYSTEM FUNCTIONS:

Flame Fail Light: If the pilot fails to reach the setpoint temperature after 3 ignition periods, the system will shut down and stay shutdown until panel power is turned off and back on, or the LAMP TEST/RESET (*choose a name or add another*) button is pressed.

Action to take: Check propane supply, propane pressure during ignition should be 25-30 psi *(please verify this with your flares, vendor specific)*. Press The RESET button.

AUTO RELIGHT: System will allow 3 ignition attempts to light the pilot. The counter is reset: 1)) by pressing the lamp test/reset *(choose a name or add name for your setup)* push button, 2) when panel power is lost, or 3) Flame Proved.

PILOT CUTOFF: The pilot is turned off 30 seconds (*please determine what this time is for your flares)* after the blower is running AND main flame is proved.

MANUAL RUN TIME: The valve or blower will only operate for 2 minutes once placed in the OPEN/ON positions with the control switches.

BLOWER FAILURE: The blower VFD's must engage within 3 seconds of the start signal from the PLC or the flare will shutdown and not restart (*does your blower have a VFD? If not, please insert new language)*.

LFG VALVE FAILURE: The LFG valve must fully open within 15 seconds of the open signal from the PLC or the flare will shutdown and not restart. This protects the blower from running with the valve closed. NOTE: This also engages if the compressed air supply gets low on pressure and fails to keep the valve fully open.

HIGH CONDENSATE LEVEL: The knock out pot high level switch will cause the system to shut down and stay down if the liquid level in the tank rises to the level of the switch. To reset, the liquid level must drop and the "reset" pushbutton must be pressed. This will clear the shutdown and allow the system to restart.

FLAME ARRESTOR HIGH TEMPERATURE: If the flame arrestor temperature rises above the set point on the flame arrestor temperature switch, the system will shut down.

RESET: This button will reset the restart counter, and clear the shutdown alarms.

RESET*: Turning the panel power off and back on resets all shutdown alarms and timers.*

APPENDIX D

Standard Operation Procedures for the Treatment System

Treatment System (Air Compressor) Start-Up

1. Ensure all pre-start checks/inspections have been completed.

2. Drain moisture from the system prior to start up to prevent saturation of the filter desiccant and avoid contamination of supported equipment.

3. Remove Lock – Out Tag Out Locks and identification. Verify that the MCC Breaker is set properly. Operation of electrical equipment should only be done by properly trained technicians.

4. Turn on/off selector switch to **ON**.

5. Ensure the Main Air Receiver Pressurizes and carefully monitor system components and piping for leaks.

6. Ensure Main Air Receiver Pressure Indicator registers appropriate pressure.

7. Briefly press the manual operation button on the Main Air Receiver electronic automatic water drain while compressor is running (loaded).

8. Ensure that valves are properly closed and opened. When opening a valve, open slowly.

9. Check Air Compressor Air Dryer Discharge Filter Differential Pressure Indicator and replace filter media as needed.

10. Continue to slowly open all necessary valves.

11. Continue to monitor system piping for leaks.

12. Verify that Treatment system is operating within design parameters.

Treatment System (Air Compressor) Shutdown.

1. Verify the Air Compressor Skid can be removed from service.

2. Verify that the MCC Breaker is set properly. Install proper Lock Out Tag Out Locks and Identifications. Operation of electrical components shall only be done by properly trained technicians.

3. Turn on/off selector switch to OFF.

4. Verify Air Compressor Skid shutdown.

5. Briefly press the manual operation button on the Main Air Receiver electronic automatic water drain.

6. Ensure no moisture is present the Main Air Receiver.

7. Close and open appropriate valves.

Treatment System (Air Compressor) Malfunction

1. Turn system off. See Shutdown.

APPENDIX E

Example of a typical SSM Departure Form

(This form, other equivalent form, can be used to keep records of SSM Departure events)

SSM Plan Departure Report Form

TRAIL RIDGE MUNICIPAL SOLID WASTE LANDFILL - SSM PLAN DEPARTURE REPORT FORM

1. Type of Event:	☐ Startup	☐ Shutdown	☐ Malfunction
2. Date:	Time:	Duration:	
3. Was there an exceedance of an applicable emission limit? YES NO If yes, what emission limit was exceeded? Explain.			
4. Were the SOPs in the Appendix followed? YES NO *If No, please include the procedures in a revised SSM Plan within 30 days of the incident.			
5. Provide detailed explanation of the circumstances of the startup, shutdown, or malfunction:*			
6. Provide description of corrective actions taken:*			
7. Describe the reasons the SSM Plan was not followed:*			
8. Describe any proposed revisions to the SSM Plan:*			
7. Name (print):			
8. Title			

*Use additional sheets if necessary.

Note: If the event documented in this form was a malfunction and if the SSM plan needs to be revised to address the particular type of malfunction that occurred, the revision of the SSM plan must be made within 45 days of the event.

This form is intended to assist in meeting the recordkeeping and reporting requirements of 40 CFR 63.6(e)(3)(iv).

APPENDIX F

Common Causes and Response Actions for GCCS Malfunctions

(Note that this list is not considered to be exhaustive. The list of response actions is not intended to be a sequence of events that are to be implemented in order. Certain malfunction incidents may or may not be associated with the listed "common causes" nor will the "common response actions" be appropriate in all instances. Incident-specific evaluation of the malfunctions and development of specific response actions is recommended in all cases.)

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment	Applies vacuum to wellfield to extract LFG and transport to control device	Loss of LFG Flow/Blower Malfunction	-Flame arrestor fouling/deterioration -Automatic valve problems -Blower failure (e.g., belt, motor, impeller, coupling, seizing, etc.) -Extraction piping failure -Condensate knock-out problems -Extraction piping blockages	-Repair breakages in extraction piping -Clean flame arrestor -Repair blockages in extraction piping -Verify automatic valve operation, compressed air/nitrogen supply -Provide/utilize auxiliary power source, if necessary -Repair Settlement in Collection Piping - Repair Blower -Activate back-up blower, if available -Clean knock-up pot/demister -Drain knock-out pot
Utility Flare	Combusts LFG	Loss of Flame	-Problems/failure of thermocouple -Loss/change of LFG flow -Loss/change of LFG quality -Problems with air/fuel controls -Problems/failure of flame sensor -Problems with temperature monitoring equipment	-Check/repair temperature monitoring equipment -Check/repair thermocouple -Follow procedures for loss of flow/blower malfunction -Check/adjust air/fuel controls -Check/adjust/repair flame sensor -Check/adjust LFG collectors
Flow Monitoring/ Recording Device	Measures and records gas flow from collection system to control	Malfunctions of Flow Monitoring/Recording Device	-Problems with orifice plate, pitot tube, or other in-line flow measuring device -Problems with device controls and/or wiring -Problems with chart recorder	-Check/adjust/repair flow measuring device and/or wiring -Check/repair chart recorder -Replace paper in chart recorder
Flame Presence/ Recording Device	Monitors and records presence of flame at utility flare.	Malfunctions of Flame Sensing/Recording Device	-Problems with thermocouple -Problems with device controls and/or wiring -Problems with chart recorder	-Check/adjust/repair thermocouple -Check/adjust/repair controller and/or wiring -Check/adjust/repair electrical panel components -Check/repair chart recorder -Replace paper in chart recorder

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Utility Flare	Combusts LFG	Other Malfunctions	-Control device smoking (i.e. visible emissions) -Problems with pilot light system -Problems with air/fuel controllers -Problems with thermocouple -Problems with burner -Problems with flame arrester -Alarmed malfunction conditions not covered above -Unalarmed conditions discovered during inspection not covered above	-Site-specific diagnosis procedures -Site-specific responses actions based on diagnosis -Clean pitot/orifice -Clean/drain flame arrestor -Refill propane supply -Check/repair pilot sparking system
Treatment System	Compresses, Dewaters, and Filters Landfill Gas	Other Malfunctions	-Alarmed malfunction conditions not covered above -Unalarmed conditions discovered during inspection not covered above	-Site-specific diagnosis procedures -Site-specific responses actions based on diagnosis

APPENDIX G

Example of a typical SSM Reporting Form

(This form, other equivalent form, or an electronic recordkeeping system can be used to keep records of SSM events)

TRAIL RIDGE MUNICIPAL SOLID WASTE LANDFILL SSM REPORT FORM

Affected Equipment (circle one): OPEN FLARE TREATMENT SYSTEM
Circle Event type: Malfunction Startup Shutdown
1. Beginning of Event Date: Time:
2. End of Event Date: Time:
3. Duration of Malfunction Event (hours):
4. Cause/Reason for Malfunction:
5. Did the event result in the release of landfill gas to the atmosphere > 1 hour? YES NO **If yes, go to box 8 below.**
6. Did this malfunction result in an exceedance of any applicable emission limitation? **YES NO** **If NO, then STOP filling out the form**
7. What emission limit was exceeded? Explain.
8. Was the SOP followed? YES NO If NO, describe the emission standard that was exceeded below. Complete a "SSM Plan Departure Report Form." Notify the appropriate regulatory agency verbally or by fax within 2 working days after commencing the actions that an event inconsistent with the SSM Plan and which resulted in an exceedance of an applicable emission limitation has occurred. Follow up in writing to the agency within working 7 days after the end of the event.
9. Was the Malfunction fixed? **YES NO** When?
Name of person completing this form (please print):

Appendix H

Monitoring Equipment Malfunction Form

(This form, other equivalent form, or an electronic recordkeeping system can be used to keep records of SSM events)

TRAIL RIDGE MUNICIPAL SOLID WASTE LANDFILL -MALFUNCTION REPORT FORM

This form is used to document actions taken during a malfunction **of any monitoring equipment**. If any of the steps taken are **not consistent with this procedure**, document the variations on a "SSM Plan Departure Form" and follow the reporting requirements in the SSM plan.

1. Beginning of Malfunction Event	Date:	Time:
2. End of Malfunction Event	Date:	Time:

3. Duration of Malfunction Event (hours and minutes):

4. Affected Equipment (circle appropriate device):

Thermocouple/Temp monitor Flowmeter Thermocouple

5. Cause/Reason for Malfunction:

6. Name of person completing this form (please print):

7. Date completed:

Follow the procedure listed below for each malfunction. This form is to be used to document the actions taken during each malfunction. Check off the steps completed.

8. MALFUNCTION PROCEDURE CHECKLIST	Check if procedure was followed
Were the procedures in Appendix F followed?	

9. Description of the event (if needed)

10. Did the actual steps taken vary from the procedure specified above? ☐ **YES** ☐ **NO**
If response is "Yes," proceed to box 11 below. If "No," stop.

11. Did this malfunction result in an exceedance of any applicable emission limitation? ☐ **YES** ☐ **NO**
If response is "Yes," proceed to box 12 below. If "No," stop.

12. Describe the emission standard that was exceeded below. Complete a "SSM Plan Departure Report Form." Notify the appropriate regulatory agency verbally or by fax within 2 working days after commencing the actions that an event inconsistent with the SSM Plan and which resulted in an exceedance of an applicable emission limitation has occurred. Follow up in writing to the agency within working 7 days after the end of the event.

APPENDIX FA.

Trail Ridge Landfill
Facility ID: 0310358
Fuel Analysis

TRAIL RIDGE ENERGY, LLC
46280 Dylan Drive, Suite 200, Novi, MI 48377
(248) 380-3920

April 22, 2014

Mr. Scott Johnston
Florida DEP
Northeast District Office
7825 Baymeadows Way, Suite B200
Jacksonville, Florida 32256-7590

Subject: Semi-annual landfill gas chlorine and sulfur analysis at the Trail Ridge Energy, LLC facility in Jacksonville, Florida.
DEP File No.: 0310358-013-AV

Dear Mr. Johnston,

Trail Ridge Energy, LLC is submitting the enclosed semi-annual landfill gas chlorine and sulfur report for the Trail Ridge Energy, LLC facility located at the Trail Ridge Landfill in Jacksonville, Florida.

Based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Sincerely,

TRAIL RIDGE ENERGY, LLC

Dennis Plaster
Vice President of Operations

Enclosure

TRAIL RIDGE ENERGY, LLC
46280 Dylan Drive, Suite 200, Novi, MI 48377
(248) 380-3920

April 22, 2014

Jacksonville Environmental Quality Division
117 West Duval Street, Suite 225
Jacksonville, Florida 32202

Subject: Semi-annual landfill gas chlorine and sulfur analysis at the Trail Ridge Energy, LLC facility in Jacksonville, Florida.
DEP File No.: 0310358-013-AV

Trail Ridge Energy, LLC is submitting the enclosed semi-annual landfill gas chlorine and sulfur report for the Trail Ridge Energy, LLC facility located at the Trail Ridge Landfill in Jacksonville, Florida.

Based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Sincerely,

TRAIL RIDGE ENERGY, LLC

Dennis Plaster
Vice President of Operations

Enclosure

Derenzo and Associates, Inc.
Environmental Consultants

April 22, 2014

Mr. Syed Arif, Bureau Chief
Bureau of Air Regulation
Department of Environmental Protection
STATE OF FLORIDA
2600 Blair Stone Road, MS 5505
Tallahassee, FL 32399-2400

Subject: Trail Ridge Energy, LLC
DEP File No. 0310358-013-AV (PSD-FL-374B)
LFG Monitoring Sulfur and Chlorine Contents

Dear Mr. Arif:

Condition E.24. of Section III – Emission Unit(s) Specific Conditions of Title V Air Operations Permit No. 0310358-013-AV (PSD-FL-374B) issued Trail Ridge Energy, LLC (Trail Ridge Energy) specifies that At least semi-annually, the permittee shall obtain the following representative samples of landfill gas…A representative sample shall be taken in each calendar semi-annual period (January-June and July-December) approximately six months apart. Each gas sample shall be collected under normal operating conditions…Each sample shall have an ultimate analysis conducted for at least sulfur and chlorine. Results shall also be reported as SO_2 and HCL emission factors in terms of lb/million standard cubic feet (lb/MMscf) of landfill gas.

Derenzo and Associates, Inc. (Derenzo and Associates), on behalf of Trail Ridge Energy, is submitting to the Florida Department of Environmental Protection, Division of Air Resource Management (FDEP-DARM) results of sulfur and chlorine analyses that were performed on a sample of landfill gas (LFG) obtained from the Trail Ridge Landfill in March 2014 (semi-annual collection and analyses). The required SO_2 and HCl emission factors (in terms of lb/MMscf of landfill gas) and supporting analytical data are provided in the attached documents.

The air permit application for Trail Ridge Energy developed (based on USEPA AP-42 default LFG composition data) a:

1. SO_2 emission factor of 27.5 lb/MMscf of LFG; and

2. HCl emission factor of 11.95 lb/MMscf of LFG.

The SO_2 emission factor developed from analyses of the March 26, 2014 samples of gas obtained from the Trail Ridge Landfill is 5.97 lb/MMscf of LFG (<7.91 lb/MMscf of LFG with the incorporation of all non-measured chemicals at its reporting limit).

The HCl emission factor developed from analyses of the March 26, 2014 samples of gas obtained from the Trail Ridge Landfill is 0.48 lb/MMscf of landfill gas (<2.55 lb/MMscf of landfill gas with the incorporation of all non-measured chemicals at its reporting limit).

Please contact us if you have questions or require clarifications.

Sincerely,

DERENZO AND ASSOCIATES, INC.

Charles Scamp
Environmental Consultant

attachments
c: Mike Laframboise, Landfill Energy Systems
Scott Johnston, Northeast District Office
Jacksonville Environmental Quality Division

Trail Ridge Energy, LLC (March 26, 2014 Samples)

Sulfur Dioxide Emission Factor for LFG Combustion

LFG Influent Sulfur Compound	Measured Concentrations[A] (ppmv)	Molecular Formula	No. Sulfur Atoms	Sulfur Content[B] as H_2S (ppmv)	Resulting SO_2 Emission Rate (lb./MMcf)
Hydrogen sulfide	27.0	H_2S	1	27.0	4.469
Methyl mercaptan	3.33	CH_4S	1	3.33	0.551
Dimethyl sulfide	5.13	C_2H_6S	1	5.13	0.849
Isopropyl mercaptan	0.60	C_3H_6S	1	0.60	0.099
Total				**36.1**	**5.97** [C]

Notes

A. Average of 3 March 27, 2014 LFG sample laboratory analytical results (see attachment)

B. Determined by multiplying concentration by number of sulfur atoms in the molecule.

C. Sample calculation: SO_2 generation from hydrogen sulfide (H_2S):

(36.1 scf H_2S/MMcf LFG) (1 scf SO_2/scf H_2S) (64.06 lb.SO_2/mol) / (387 ft^3/mol)

= 5.969 lb SO_2/MMcf LFG

Trail Ridge Energy, LLC (March 26, 2014 Samples)

.

Sulfur Dioxide Emission Factor for LFG Combustion

LFG Influent Sulfur Compound	Analytical Report Concentrations[A] (ppmv)	Molecular Formula	No. Sulfur Atoms	Sulfur Content[B] as H_2S (ppmv)	Resulting SO_2 Emission Rate (lb./MMcf)
Hydrogen sulfide	27.0	H_2S	1	27.0	4.469 *
Carbonyl sulfide	<0.60	CSO	1	<0.60	<0.099
Methyl mercaptan	3.33	CH_4S	1	3.33	0.551
Ethyl mercaptan	<0.60	C_2H_6S	1	<0.60	<0.099
Dimethyl sulfide	5.13	C_2H_6S	1	5.13	0.849
Carbon disulfide	<0.75	CS_2	2	<1.50	<0.248
Isopropyl mercaptan	0.60	C_3H_6S	1	0.60	0.099
tert-Butyl mercaptan	<0.60	$C_4H_{10}S$	1	<0.60	<0.099
n-Propyl mercaptan	<0.60	C_3H_8S	1	<0.60	<0.099
Ethyl methyl sulfide	<0.60	C_3H_8S	1	<0.60	<0.099
Thiophene	<0.60	C_4H_4S	1	<0.60	<0.099
Isobutyl mercaptan	<0.60	$C_4H_{10}S$	1	<0.60	<0.099
Diethyl sulfide	<0.60	$CH_3CH_2SCH_2CH_3$	1	<0.60	<0.099
n-Butyl mercaptan	<0.60	$C_4H_{10}S$	1	<0.60	<0.099
Dimethyl disulfide	<0.60	CH_3SSCH_3	2	<1.20	<0.199
3-Methyl Thiophene	<0.60	C_5H_6S	1	<0.60	<0.099
Tetrahydrothiophene	<0.60	$C_4H_8O_2S$	1	<0.60	<0.099
2,5-Dimethylthiophene	<0.60	C_6H_8S	1	<0.60	<0.099
2-Ethylthiophene	<0.60	C_6H_8S	1	<0.60	<0.099
Diethyl disulfide	<0.60	CH_3SSCH_3	2	<1.20	<0.199
Total				**<47.8**	**<7.91** [C]

Notes

A. Average of 3 March 27, 2014 LFG sample laboratory analytical results (see attachment)

B. Determined by multiplying concentration by number of sulfur atoms in the molecule.

C. Calculation of SO_2 emission factor from sulfur content, as H_2S:

(47.8 scf H_2S/MMcf LFG) (1 scf SO_2/scf H_2S) (64.06 lb.SO_2/mol) / (387 ft^3/mol)

= 7.906 lb SO_2/MMcf LFG

* Sample calculation: SO_2 generation from hydrogen sulfide (H_2S):

Trail Ridge Energy, LLC (March 26, 2014 Sample)

LFG Combustion Hydrogen Chloride Emission Factor

LFG Influent Chlorine Compounds	Measured Concentration[1] (ppm)	Molecular Formula	No. Chlorine Atoms	HCl Emission Factor (lb./MMcf)
Freon 12 (Dichlorodifluoromethane)	0.233	CCl_2F_2	2	0.044 *
Chlorodifluoromethane	1.170	$CHClF_2$	1	0.110
1,2-Dichloroethene (as cis-1,2-Dichloroethene)	0.333	$C_2H_2Cl_2$	2	0.063
1,2-Dichloroethane	0.223	$C_2H_4Cl_2$	2	0.042
Trichloroethene	0.220	C_2HCl_3	3	0.062
Tetrachloroethene (Perchloroethene)	0.273	C_2Cl_4	4	0.103
1,4-Dichlorobenzene	0.273	$C_6H_4Cl_2$	2	0.051
Total hydrogen chloride emission factor (lb./MMcf)				**0.48**

Notes

1. Average of 3 April 14, 2014 LFG sample laboratory analytical results (see attached)

* Example calculation for Freon 12 that assumes complete conversion of chloride to HCl

(0.233 ft^3 Freon 12/MMcf LFG) (2 mol HCl/mol Freon 12) (36.46 lb. HCl/mol) / (387 ft^3/mol)

= 0.044 lb. HCl/MMcf LFG

Trail Ridge Energy, LLC (March 26, 2014 Sample)

LFG Combustion Hydrogen Chloride Emission Factor

LFG Influent Chlorine Compounds	Analytical Report Concentration[1] (ppm)	Molecular Formula	No. Chlorine Atoms	HCl Emission Factor (lb./MMcf)
Freon 12 (Dichlorodifluoromethane)	0.233	CCl_2F_2	2	0.044 *
Freon 114 (Dichlorotetrafluroethane)	<0.220	$C_2Cl_2F_4$	2	<0.041
Chloromethane	<0.880	CH_3Cl	1	<0.083
Vinyl Chloride	<0.220	C_2HCl	1	<0.021
Chlorodifluoromethane	1.170	$CHClF_2$	1	0.110
Dichlorofluoromethane	<0.880	$CHCl_2F$	2	<0.166
Chloroethane	<0.880	C_2H_5Cl	1	<0.083
Freon 11 (Fluorotrichloromethane)	<0.220	$CFCl_3$	3	<0.062
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	<0.220	$C_2Cl_2F_3$	2	<0.041
1,1-Dichloroethene	<0.220	$C_2H_2Cl_2$	2	<0.041
Methylene Chloride (Dichloromethane)	<0.220	CH_2Cl_2	2	<0.041
1,2-Dichloroethene (as trans-1,2-Dichloroethene)	<0.220	$C_2H_2Cl_2$	2	<0.041
1,1-Dichloroethane	<0.220	$C_2H_4Cl_2$	2	<0.041
1,2-Dichloroethene (as cis-1,2-Dichloroethene)	0.333	$C_2H_2Cl_2$	2	0.063
Chloroform	<0.220	$CHCl_3$	3	<0.062
1,1,1-Trichloroethane	<0.220	$C_2H_3Cl_3$	3	<0.062
Carbon Tetrachloride	<0.220	CCl_4	4	<0.083
1,2-Dichloroethane	0.223	$C_2H_4Cl_2$	2	0.042
Trichloroethene	0.220	C_2HCl_3	3	0.062
1,2-dichloropropane	<0.220	$C_3H_6Cl_2$	2	<0.041
Bromodichloromethane	<0.220	$CBrCl_2$	2	<0.041
1,3-Dichloropropene (as cis-1,3-Dichloropropene)	<0.220	$C_3H_4Cl_2$	2	<0.041
1,3-Dichloropropene (as trans-1,3-Dichloropropene)	<0.220	$C_3H_4Cl_2$	2	<0.041
1,1,2-Trichloroethane	<0.220	$C_2H_3Cl_3$	3	<0.062
Tetrachloroethene (Perchloroethene)	0.273	C_2Cl_4	4	0.103
Dibromochloromethane	<0.220	$CHBr_2Cl$	1	<0.021
Chlorobenzene	<0.220	C_6H_5Cl	1	<0.021
1,1,2,2-Tetrachloroethane	<0.220	$C_2H_2Cl_4$	4	<0.083
1,3-Dichlorobenzene	<0.220	$C_6H_4Cl_2$	2	<0.041
1,4-Dichlorobenzene	0.273	$C_6H_4Cl_2$	2	0.051
alpha-Chlorotoluene	<0.220	C_7H_7Cl	1	<0.021
1,2-Dichlorobenzene	<0.220	$C_6H_4Cl_2$	2	<0.041
1,2,4-Trichlorobenzene	<0.880	$C_6H_3Cl_3$	3	<0.249
Hexachlorobutadiene	<0.880	C_4Cl_6	6	<0.497
Total hydrogen chloride emission factor (lb./MMcf)				**<2.55**

Notes

1. Average of 3 April 14, 2014 LFG sample laboratory analytical results (see attached)

* Example calculation for Freon 12 that assumes complete conversion of chloride to HCl

(0.233 ft^3 Freon 12/MMcf LFG) (2 mol HCl/mol Freon 12) (36.46 lb. HCl/mol) / (387 ft^3/mol)

= 0.044 lb. HCl/MMcf LFG

LABORATORY NARRATIVE
ASTM D-5504
Derenzo & Associates
Workorder# 1403484

Three 1 Liter Tedlar Bag samples were received on March 27, 2014. The laboratory performed the analysis of sulfur compounds via ASTM D-5504 using GC/SCD. The method involves direct injection of the air sample into the GC via a fixed 2.0 mL sampling loop. See the data sheets for the reporting limits for each compound.

Receiving Notes

All samples were received past the recommended hold time of 24 hours. Analysis proceeded.

The samples were characterized by a noxious odor of unknown characteristics. Due to this issue, the samples were placed in an exhaust hood prior to analysis.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

eurofins | Air Toxics

Summary of Detected Compounds
SULFUR GASES BY ASTM D-5504 GC/SCD

Client Sample ID: TRE-1

Lab ID#: 1403484-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	600	27000
Methyl Mercaptan	600	3300
Dimethyl Sulfide	600	4900
Isopropyl Mercaptan	600	600

Client Sample ID: TRE-2

Lab ID#: 1403484-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	600	26000
Methyl Mercaptan	600	3100
Dimethyl Sulfide	600	5100

Client Sample ID: TRE-3

Lab ID#: 1403484-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	600	28000
Methyl Mercaptan	600	3600
Dimethyl Sulfide	600	5400

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Client Sample ID: TRE-1

Lab ID#: 1403484-01A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	**k032721**	**Date of Collection:**	**3/26/14 10:35:00 AM**
Dil. Factor:	**150**	**Date of Analysis:**	**3/27/14 04:55 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	600	27000
Carbonyl Sulfide	600	Not Detected
Methyl Mercaptan	600	3300
Ethyl Mercaptan	600	Not Detected
Dimethyl Sulfide	600	4900
Carbon Disulfide	750	Not Detected
Isopropyl Mercaptan	600	600
tert-Butyl Mercaptan	600	Not Detected
n-Propyl Mercaptan	600	Not Detected
Ethyl Methyl Sulfide	600	Not Detected
Thiophene	600	Not Detected
Isobutyl Mercaptan	600	Not Detected
Diethyl Sulfide	600	Not Detected
n-Butyl Mercaptan	600	Not Detected
Dimethyl Disulfide	600	Not Detected
3-Methylthiophene	600	Not Detected
Tetrahydrothiophene	600	Not Detected
2-Ethylthiophene	600	Not Detected
2,5-Dimethylthiophene	600	Not Detected
Diethyl Disulfide	600	Not Detected

Container Type: 1 Liter Tedlar Bag

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Client Sample ID: TRE-2

Lab ID#: 1403484-02A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	**k032722**	**Date of Collection:**	**3/26/14 11:50:00 AM**
Dil. Factor:	**150**	**Date of Analysis:**	**3/27/14 05:19 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	600	26000
Carbonyl Sulfide	600	Not Detected
Methyl Mercaptan	600	3100
Ethyl Mercaptan	600	Not Detected
Dimethyl Sulfide	600	5100
Carbon Disulfide	750	Not Detected
Isopropyl Mercaptan	600	Not Detected
tert-Butyl Mercaptan	600	Not Detected
n-Propyl Mercaptan	600	Not Detected
Ethyl Methyl Sulfide	600	Not Detected
Thiophene	600	Not Detected
Isobutyl Mercaptan	600	Not Detected
Diethyl Sulfide	600	Not Detected
n-Butyl Mercaptan	600	Not Detected
Dimethyl Disulfide	600	Not Detected
3-Methylthiophene	600	Not Detected
Tetrahydrothiophene	600	Not Detected
2-Ethylthiophene	600	Not Detected
2,5-Dimethylthiophene	600	Not Detected
Diethyl Disulfide	600	Not Detected

Container Type: 1 Liter Tedlar Bag

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Client Sample ID: TRE-3

Lab ID#: 1403484-03A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	**k032723**	**Date of Collection: 3/26/14 1:05:00 PM**	
Dil. Factor:	**150**	**Date of Analysis: 3/27/14 05:43 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	600	28000
Carbonyl Sulfide	600	Not Detected
Methyl Mercaptan	600	3600
Ethyl Mercaptan	600	Not Detected
Dimethyl Sulfide	600	5400
Carbon Disulfide	750	Not Detected
Isopropyl Mercaptan	600	Not Detected
tert-Butyl Mercaptan	600	Not Detected
n-Propyl Mercaptan	600	Not Detected
Ethyl Methyl Sulfide	600	Not Detected
Thiophene	600	Not Detected
Isobutyl Mercaptan	600	Not Detected
Diethyl Sulfide	600	Not Detected
n-Butyl Mercaptan	600	Not Detected
Dimethyl Disulfide	600	Not Detected
3-Methylthiophene	600	Not Detected
Tetrahydrothiophene	600	Not Detected
2-Ethylthiophene	600	Not Detected
2,5-Dimethylthiophene	600	Not Detected
Diethyl Disulfide	600	Not Detected

Container Type: Client Tedlar Bag

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Client Sample ID: Lab Blank

Lab ID#: 1403484-04A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	**k032716**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/27/14 02:27 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	4.0	Not Detected
Carbonyl Sulfide	4.0	Not Detected
Methyl Mercaptan	4.0	Not Detected
Ethyl Mercaptan	4.0	Not Detected
Dimethyl Sulfide	4.0	Not Detected
Carbon Disulfide	5.0	Not Detected
Isopropyl Mercaptan	4.0	Not Detected
tert-Butyl Mercaptan	4.0	Not Detected
n-Propyl Mercaptan	4.0	Not Detected
Ethyl Methyl Sulfide	4.0	Not Detected
Thiophene	4.0	Not Detected
Isobutyl Mercaptan	4.0	Not Detected
Diethyl Sulfide	4.0	Not Detected
n-Butyl Mercaptan	4.0	Not Detected
Dimethyl Disulfide	4.0	Not Detected
3-Methylthiophene	4.0	Not Detected
Tetrahydrothiophene	4.0	Not Detected
2-Ethylthiophene	4.0	Not Detected
2,5-Dimethylthiophene	4.0	Not Detected
Diethyl Disulfide	4.0	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1403484-05A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	**k032714**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/27/14 01:42 PM**	

Compound	%Recovery	Method Limits
Hydrogen Sulfide	101	70-130
Carbonyl Sulfide	98	70-130
Methyl Mercaptan	102	70-130
Ethyl Mercaptan	106	70-130
Dimethyl Sulfide	101	70-130
Carbon Disulfide	98	70-130
Isopropyl Mercaptan	94	70-130
tert-Butyl Mercaptan	98	70-130
n-Propyl Mercaptan	96	70-130
Ethyl Methyl Sulfide	98	70-130
Thiophene	101	70-130
Isobutyl Mercaptan	101	70-130
Diethyl Sulfide	100	70-130
n-Butyl Mercaptan	93	70-130
Dimethyl Disulfide	97	70-130
3-Methylthiophene	103	70-130
Tetrahydrothiophene	107	70-130
2-Ethylthiophene	100	70-130
2,5-Dimethylthiophene	99	70-130
Diethyl Disulfide	102	70-130

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1403484-05AA

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	**k032715**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/27/14 02:04 PM**	

Compound	%Recovery	Method Limits
Hydrogen Sulfide	92	70-130
Carbonyl Sulfide	91	70-130
Methyl Mercaptan	89	70-130
Ethyl Mercaptan	96	70-130
Dimethyl Sulfide	92	70-130
Carbon Disulfide	93	70-130
Isopropyl Mercaptan	86	70-130
tert-Butyl Mercaptan	91	70-130
n-Propyl Mercaptan	88	70-130
Ethyl Methyl Sulfide	90	70-130
Thiophene	95	70-130
Isobutyl Mercaptan	90	70-130
Diethyl Sulfide	93	70-130
n-Butyl Mercaptan	81	70-130
Dimethyl Disulfide	88	70-130
3-Methylthiophene	92	70-130
Tetrahydrothiophene	95	70-130
2-Ethylthiophene	97	70-130
2,5-Dimethylthiophene	94	70-130
Diethyl Disulfide	99	70-130

Container Type: NA - Not Applicable

Air Toxics LTD.

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager Jason Logan

Collected by: (Print and Sign) Jason Logan

Company Derenzo + Associates, Inc. Email jlogan@derenzo.com

Address 39395 Schoolcraft City Livonia State MI Zip 48150

Phone 734 464 3880 Fax 734 464 4368

Project Info:
P.O. # 1755
Project # 1401918
Project Name Trail Ridge Energy

Turn Around Time:
☑ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	TRE-1	Tedlar Bag	3/26/14	10:35	D 5504				
02A	TRE-2		3/26/14	11:50	"				
03A	TRE-3		3/26/14	13:05	"				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	3/26/14 14:40	[signature]	EAT 3/27/14 1040
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only

Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
Fedex	7983-0639-4040	NA	SDR	Yes No None	1403484

Form 1293 rev.11

LABORATORY NARRATIVE
EPA Method TO-15
Derenzo & Associates
Workorder# 1404032

Three 6 Liter Summa Canister samples were received on April 02, 2014. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

The Chain of Custody (COC) was not relinquished properly. A signature and date was not provided by the field sampler.

Analytical Notes

The canisters in this work order were pressurized with Helium prior to sampling, per client request. Dilution factors have been adjusted accordingly.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

The Relative Percent Difference (RPD) of the LCS/LCSD exceeded acceptance limits for Freon 113.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds. Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Dilution was performed on samples TRE - 1, TRE - 2 and TRE - 3 due to the presence of high level target species.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS

Client Sample ID: TRE - 1

Lab ID#: 1404032-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	190	230	940	1100
Chlorodifluoromethane	760	1200	2700	4100
cis-1,2-Dichloroethene	190	340	750	1400
1,2-Dichloroethane	190	200	770	830
Tetrachloroethene	190	260	1300	1800

Client Sample ID: TRE - 2

Lab ID#: 1404032-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chlorodifluoromethane	950	1200	3400	4300
cis-1,2-Dichloroethene	240	330	940	1300
Trichloroethene	240	240	1300	1300
Tetrachloroethene	240	290	1600	2000
1,4-Dichlorobenzene	240	300	1400	1800

Client Sample ID: TRE - 3

Lab ID#: 1404032-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chlorodifluoromethane	930	1100	3300	4000
cis-1,2-Dichloroethene	230	330	920	1300
Tetrachloroethene	230	270	1600	1800
1,4-Dichlorobenzene	230	330	1400	2000

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Client Sample ID: TRE - 1

Lab ID#: 1404032-01A

EPA METHOD TO-15 GC/MS

File Name:	**14041425**	**Date of Collection:**	**3/26/14 10:15:00 AM**
Dil. Factor:	**38.0**	**Date of Analysis:**	**4/14/14 07:24 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	190	230	940	1100
Freon 114	190	Not Detected	1300	Not Detected
Chloromethane	760	Not Detected	1600	Not Detected
Vinyl Chloride	190	Not Detected	480	Not Detected
Chlorodifluoromethane	760	1200	2700	4100
Dichlorofluoromethane	760	Not Detected	3200	Not Detected
Chloroethane	760	Not Detected	2000	Not Detected
Freon 11	190	Not Detected	1100	Not Detected
Freon 113	190	Not Detected	1400	Not Detected
1,1-Dichloroethene	190	Not Detected	750	Not Detected
Methylene Chloride	190	Not Detected	660	Not Detected
trans-1,2-Dichloroethene	190	Not Detected	750	Not Detected
1,1-Dichloroethane	190	Not Detected	770	Not Detected
cis-1,2-Dichloroethene	190	340	750	1400
Chloroform	190	Not Detected	930	Not Detected
1,1,1-Trichloroethane	190	Not Detected	1000	Not Detected
Carbon Tetrachloride	190	Not Detected	1200	Not Detected
1,2-Dichloroethane	190	200	770	830
Trichloroethene	190	Not Detected	1000	Not Detected
1,2-Dichloropropane	190	Not Detected	880	Not Detected
Bromodichloromethane	190	Not Detected	1300	Not Detected
cis-1,3-Dichloropropene	190	Not Detected	860	Not Detected
trans-1,3-Dichloropropene	190	Not Detected	860	Not Detected
1,1,2-Trichloroethane	190	Not Detected	1000	Not Detected
Tetrachloroethene	190	260	1300	1800
Dibromochloromethane	190	Not Detected	1600	Not Detected
Chlorobenzene	190	Not Detected	870	Not Detected
1,1,2,2-Tetrachloroethane	190	Not Detected	1300	Not Detected
1,3-Dichlorobenzene	190	Not Detected	1100	Not Detected
1,4-Dichlorobenzene	190	Not Detected	1100	Not Detected
alpha-Chlorotoluene	190	Not Detected	980	Not Detected
1,2-Dichlorobenzene	190	Not Detected	1100	Not Detected
1,2,4-Trichlorobenzene	760	Not Detected	5600	Not Detected
Hexachlorobutadiene	760	Not Detected	8100	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	89	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: TRE - 2

Lab ID#: 1404032-02A

EPA METHOD TO-15 GC/MS

File Name:	**14041429**	**Date of Collection:**	**3/26/14 11:50:00 AM**
Dil. Factor:	**47.5**	**Date of Analysis:**	**4/14/14 09:37 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	240	Not Detected	1200	Not Detected
Freon 114	240	Not Detected	1700	Not Detected
Chloromethane	950	Not Detected	2000	Not Detected
Vinyl Chloride	240	Not Detected	610	Not Detected
Chlorodifluoromethane	950	1200	3400	4300
Dichlorofluoromethane	950	Not Detected	4000	Not Detected
Chloroethane	950	Not Detected	2500	Not Detected
Freon 11	240	Not Detected	1300	Not Detected
Freon 113	240	Not Detected	1800	Not Detected
1,1-Dichloroethene	240	Not Detected	940	Not Detected
Methylene Chloride	240	Not Detected	820	Not Detected
trans-1,2-Dichloroethene	240	Not Detected	940	Not Detected
1,1-Dichloroethane	240	Not Detected	960	Not Detected
cis-1,2-Dichloroethene	240	330	940	1300
Chloroform	240	Not Detected	1200	Not Detected
1,1,1-Trichloroethane	240	Not Detected	1300	Not Detected
Carbon Tetrachloride	240	Not Detected	1500	Not Detected
1,2-Dichloroethane	240	Not Detected	960	Not Detected
Trichloroethene	240	240	1300	1300
1,2-Dichloropropane	240	Not Detected	1100	Not Detected
Bromodichloromethane	240	Not Detected	1600	Not Detected
cis-1,3-Dichloropropene	240	Not Detected	1100	Not Detected
trans-1,3-Dichloropropene	240	Not Detected	1100	Not Detected
1,1,2-Trichloroethane	240	Not Detected	1300	Not Detected
Tetrachloroethene	240	290	1600	2000
Dibromochloromethane	240	Not Detected	2000	Not Detected
Chlorobenzene	240	Not Detected	1100	Not Detected
1,1,2,2-Tetrachloroethane	240	Not Detected	1600	Not Detected
1,3-Dichlorobenzene	240	Not Detected	1400	Not Detected
1,4-Dichlorobenzene	240	300	1400	1800
alpha-Chlorotoluene	240	Not Detected	1200	Not Detected
1,2-Dichlorobenzene	240	Not Detected	1400	Not Detected
1,2,4-Trichlorobenzene	950	Not Detected	7000	Not Detected
Hexachlorobutadiene	950	Not Detected	10000	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	88	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: TRE - 3

Lab ID#: 1404032-03A

EPA METHOD TO-15 GC/MS

File Name:	**14041430**	**Date of Collection:**	**3/26/14 1:47:00 PM**
Dil. Factor:	**46.5**	**Date of Analysis:**	**4/14/14 10:09 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	230	Not Detected	1100	Not Detected
Freon 114	230	Not Detected	1600	Not Detected
Chloromethane	930	Not Detected	1900	Not Detected
Vinyl Chloride	230	Not Detected	590	Not Detected
Chlorodifluoromethane	930	1100	3300	4000
Dichlorofluoromethane	930	Not Detected	3900	Not Detected
Chloroethane	930	Not Detected	2400	Not Detected
Freon 11	230	Not Detected	1300	Not Detected
Freon 113	230	Not Detected	1800	Not Detected
1,1-Dichloroethene	230	Not Detected	920	Not Detected
Methylene Chloride	230	Not Detected	810	Not Detected
trans-1,2-Dichloroethene	230	Not Detected	920	Not Detected
1,1-Dichloroethane	230	Not Detected	940	Not Detected
cis-1,2-Dichloroethene	230	330	920	1300
Chloroform	230	Not Detected	1100	Not Detected
1,1,1-Trichloroethane	230	Not Detected	1300	Not Detected
Carbon Tetrachloride	230	Not Detected	1500	Not Detected
1,2-Dichloroethane	230	Not Detected	940	Not Detected
Trichloroethene	230	Not Detected	1200	Not Detected
1,2-Dichloropropane	230	Not Detected	1100	Not Detected
Bromodichloromethane	230	Not Detected	1600	Not Detected
cis-1,3-Dichloropropene	230	Not Detected	1000	Not Detected
trans-1,3-Dichloropropene	230	Not Detected	1000	Not Detected
1,1,2-Trichloroethane	230	Not Detected	1300	Not Detected
Tetrachloroethene	230	270	1600	1800
Dibromochloromethane	230	Not Detected	2000	Not Detected
Chlorobenzene	230	Not Detected	1100	Not Detected
1,1,2,2-Tetrachloroethane	230	Not Detected	1600	Not Detected
1,3-Dichlorobenzene	230	Not Detected	1400	Not Detected
1,4-Dichlorobenzene	230	330	1400	2000
alpha-Chlorotoluene	230	Not Detected	1200	Not Detected
1,2-Dichlorobenzene	230	Not Detected	1400	Not Detected
1,2,4-Trichlorobenzene	930	Not Detected	6900	Not Detected
Hexachlorobutadiene	930	Not Detected	9900	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1404032-04A

EPA METHOD TO-15 GC/MS

File Name:	**14041407d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/14 10:59 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
Chlorodifluoromethane	20	Not Detected	71	Not Detected
Dichlorofluoromethane	20	Not Detected	84	Not Detected
Chloroethane	20	Not Detected	53	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Freon 113	5.0	Not Detected	38	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
1,1-Dichloroethane	5.0	Not Detected	20	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Chloroform	5.0	Not Detected	24	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	27	Not Detected
Carbon Tetrachloride	5.0	Not Detected	31	Not Detected
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
1,2-Dichloropropane	5.0	Not Detected	23	Not Detected
Bromodichloromethane	5.0	Not Detected	34	Not Detected
cis-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
trans-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
1,1,2-Trichloroethane	5.0	Not Detected	27	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
Dibromochloromethane	5.0	Not Detected	42	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	34	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
alpha-Chlorotoluene	5.0	Not Detected	26	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected
Hexachlorobutadiene	20	Not Detected	210	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	88	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: CCV

Lab ID#: 1404032-05A

EPA METHOD TO-15 GC/MS

File Name:	**14041403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/14 09:16 AM**	

Compound	%Recovery
Freon 12	90
Freon 114	101
Chloromethane	87
Vinyl Chloride	79
Chlorodifluoromethane	86
Dichlorofluoromethane	91
Chloroethane	95
Freon 11	95
Freon 113	87
1,1-Dichloroethene	77
Methylene Chloride	77
trans-1,2-Dichloroethene	94
1,1-Dichloroethane	83
cis-1,2-Dichloroethene	82
Chloroform	86
1,1,1-Trichloroethane	86
Carbon Tetrachloride	87
1,2-Dichloroethane	83
Trichloroethene	89
1,2-Dichloropropane	84
Bromodichloromethane	91
cis-1,3-Dichloropropene	86
trans-1,3-Dichloropropene	87
1,1,2-Trichloroethane	96
Tetrachloroethene	97
Dibromochloromethane	98
Chlorobenzene	96
1,1,2,2-Tetrachloroethane	95
1,3-Dichlorobenzene	105
1,4-Dichlorobenzene	105
alpha-Chlorotoluene	106
1,2-Dichlorobenzene	108
1,2,4-Trichlorobenzene	148 Q
Hexachlorobutadiene	153 Q

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	88	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: CCV

Lab ID#: 1404032-05A

EPA METHOD TO-15 GC/MS

File Name:	**14041403**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/14 09:16 AM**

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Client Sample ID: LCS

Lab ID#: 1404032-06A

EPA METHOD TO-15 GC/MS

File Name:	**14041404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/14 09:40 AM**	

Compound	%Recovery	Method Limits
Freon 12	107	70-130
Freon 114	114	70-130
Chloromethane	100	70-130
Vinyl Chloride	91	70-130
Chlorodifluoromethane	Not Spiked	
Dichlorofluoromethane	Not Spiked	
Chloroethane	64 Q	70-130
Freon 11	89	70-130
Freon 113	84	70-130
1,1-Dichloroethene	102	70-130
Methylene Chloride	94	70-130
trans-1,2-Dichloroethene	94	70-130
1,1-Dichloroethane	99	70-130
cis-1,2-Dichloroethene	105	70-130
Chloroform	100	70-130
1,1,1-Trichloroethane	99	70-130
Carbon Tetrachloride	97	70-130
1,2-Dichloroethane	93	70-130
Trichloroethene	101	70-130
1,2-Dichloropropane	95	70-130
Bromodichloromethane	105	70-130
cis-1,3-Dichloropropene	98	70-130
trans-1,3-Dichloropropene	86	70-130
1,1,2-Trichloroethane	104	70-130
Tetrachloroethene	107	70-130
Dibromochloromethane	113	70-130
Chlorobenzene	101	70-130
1,1,2,2-Tetrachloroethane	102	70-130
1,3-Dichlorobenzene	110	70-130
1,4-Dichlorobenzene	110	70-130
alpha-Chlorotoluene	123	70-130
1,2-Dichlorobenzene	115	70-130
1,2,4-Trichlorobenzene	148 Q	70-130
Hexachlorobutadiene	154 Q	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCS

Lab ID#: 1404032-06A

EPA METHOD TO-15 GC/MS

File Name:	**14041404**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/14 09:40 AM**

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Client Sample ID: LCSD

Lab ID#: 1404032-06AA

EPA METHOD TO-15 GC/MS

File Name:	**14041405**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/14 10:01 AM**	

Compound	%Recovery	Method Limits
Freon 12	104	70-130
Freon 114	113	70-130
Chloromethane	96	70-130
Vinyl Chloride	87	70-130
Chlorodifluoromethane	Not Spiked	
Dichlorofluoromethane	Not Spiked	
Chloroethane	71	70-130
Freon 11	107	70-130
Freon 113	109	70-130
1,1-Dichloroethene	101	70-130
Methylene Chloride	93	70-130
trans-1,2-Dichloroethene	91	70-130
1,1-Dichloroethane	96	70-130
cis-1,2-Dichloroethene	102	70-130
Chloroform	97	70-130
1,1,1-Trichloroethane	98	70-130
Carbon Tetrachloride	99	70-130
1,2-Dichloroethane	93	70-130
Trichloroethene	99	70-130
1,2-Dichloropropane	93	70-130
Bromodichloromethane	104	70-130
cis-1,3-Dichloropropene	99	70-130
trans-1,3-Dichloropropene	92	70-130
1,1,2-Trichloroethane	103	70-130
Tetrachloroethene	105	70-130
Dibromochloromethane	112	70-130
Chlorobenzene	101	70-130
1,1,2,2-Tetrachloroethane	101	70-130
1,3-Dichlorobenzene	111	70-130
1,4-Dichlorobenzene	112	70-130
alpha-Chlorotoluene	123	70-130
1,2-Dichlorobenzene	116	70-130
1,2,4-Trichlorobenzene	147 Q	70-130
Hexachlorobutadiene	149 Q	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCSD

Lab ID#: 1404032-06AA

EPA METHOD TO-15 GC/MS

File Name:	**14041405**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 4/14/14 10:01 AM**

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Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager Jason Logan

Collected by: (Print and Sign) Dan Wilson

Company Derenzo and Associates Email jlogan@derenzo.com

Address 39395 Schoolcraft City Livonia State MI Zip 48150

Phone 7344643880 Fax

Project Info:
P.O. # 1764
Project # 1401018
Project Name Trail Ridge

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	TRE-1	34482	3/26/14	9:30-10:15	TO-15 Chlorinated Only	26	5		
02A	TRE-2	12078	3/26/14	11:05-11:50	"	26	4.5		
03A	TRE-3	34374	3/26/14	12:32-13:17	"	25.5	4.5		

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
	FAT 4/2/14 1000
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fedex		NA	Good	Yes No None	1404032

1404032

APPENDIX LFE.

Trail Ridge Landfill
Facility ID: 0310358
Fuel Analysis

Waste Management , Inc. of Florida
Trail Ridge Landfill
Baldwin, Duval County, Florida
Facility ID: 0310358

Potential Emission Calcuations - Emissions Summary

Process Description	Pollutant (TPY) NOX	CO	PM/PM10	SO2	VOC	NMOC	CO2	CH4 (CO2e) [2]	N2O (CO2e) [1]	Total CO2e
Landfill (LF)	---	---	---	28.5	35.6	91.3	315652.0	364544.5	481.3	680677.8
Total	**0.0**	**0.0**	**0.0**	**28.5**	**35.6**	**91.3**	**315652.0**	**364544.5**	**481.3**	**680677.8**

LF GHG Analysis Summary
anthropogenic/biogenic and fugitive/point source

	"collected" anthropogenic N2O + CH4	*"collected"* biogenic CO2	*"uncollected"* biogenic CO2	*"uncollected"* biogenic CH4	anthropogenic + biogenic	*"uncollected"* fugitive	*"collected"* point source	fugitive + pt. source
	CO2e	**CO2**	**CO2**	**CO2e**	**Total CO2e**	**CO2e**	**CO2e**	**Total CO2e**
Landfill (LF)	686.4	266779.6	48872.4	364339.4	680677.8	413211.8	267466.0	680677.8
Total	**686.4**	**266779.6**	**48872.4**	**364339.4**	**680677.8**	**413211.8**	**267466.0**	**680677.8**

* GHG emissions from flare and ICE accounted for in landfill GHG emissions calculations. See "Summary of GHG Emissions"
(1) N2O produced from combustion of landfill gas, See "GHG Collected Fugitive Emissions"
(2) methane from both collected and uncollected source, see "GHG Collected Fugitive Emissions" and "GHG Uncollected Fugitive emissions"

WM, Inc. of Florida; Trail Ridge Landfill in Duval County
Emissions include 2014 permitted expansion project

Summary of GHG Emissions

		Biogenic CO2
Collected Fugitive Emissions		
Potential Collected Biogenic CO2 Emissions (short tons CO2e/yr)	266,779.6	266,779.6
Potential Collected Anthropogenic Emissions (short tons CO2e/yr)	686.4	
Uncollected Fugitive Emissions		
Potential Uncollected Biogenic CO2 Emissions (short tons CO2e/yr)	48,872.4	48,872.4
Potential Uncollected Methane Emissions (short tons CO2e/yr)	364,339.4	
Total Potential GHG Emissions (short tons CO2e/yr)	680,678	
Total Potential Hourly Emissions (@8760 hr/yr) (lb/hr)	155,406	
Total Biogenic CO2 Emissions (short tons CO2e/yr)		315,652
		365,026
Total Fugitive Emissions (short tons CO2e/yr)	413,212	
Total non-Fugitive Emissions (short tons CO2e/yr)	267,466	

WM, Inc. of Florida; Trail Ridge Landfill in Duval County
Emissions include 2014 permitted expansion project

GHG Collected Fugitive Emissions

General Information - Potential Collected GHG Generation

Unit Type	LandGEM modeled Increase of Total Fugitive Emissions* (scfm)	Fraction of Total Fugitive Emissions that are collected	LandGEM modeled Potential Increase Collected Fugitive Emissions (scfm)	Annual Potential Fugitive Gas Generation (mmscf/yr)	Potential Collected Methane Generation** (mmscf/yr)	Collected Potential CO2 Generation** (mmscf/yr)
Landfill	11660	75%	8745	4596.4	2298.2	2298.2

* LandGEM modeled Life-of-Site Year 2043 Peak Fugitive Emissions
** Use 50:50 volume ratio of methane:CO2 generated

Potential Collected Biogenic CO2 Emissions

Unit Type	Collected Landfill Gas Heat Rate* (MMBTU/Hr)	Combusted Gas CO2 Generation (metric tons/yr)**	Combusted Gas CO2 Generation (short tons/yr)	Passthrough CO2 *** (metric tons/yr)	Passthrough CO2 (short tons/yr)	Total (Combusted Gas and Passthrough) Biogenic CO2 (metric tons/yr)	**Total (Combusted Gas and Passthrough) Biogenic CO2 (short tons/yr)**
Landfill	265.50	121,102.5	133,491.3	120,918.3	133,288.3	242,020.9	**266,779.6**

* Based on Collected Fugitive Emissions and 506 BTU/scf. Pure methane has a heating value of 1012 BTU/scf and the model assumes that Landfill gas is 50% methane
** use 40 CFR 98, Table C-1, Landfill gas, CO2 generation rate = 52.07 kg CO2/mmbtu
*** Amount of Annual Potential CO2 Generation (mmscf/yr) converted to metric tons

Potential Collected Anthropogenic Emissions

Unit Type	Combusted Gas N2O Generation* (metric tons/yr)	Combusted Gas N2O Generation (short tons/yr)	Combusted Gas CH4 Generation (metric tons/yr)	Combusted Gas CH4 Generation (short tons/yr)	N2O (metric tons CO2e/yr) (298 GWP)	N2O (short tons CO2e/yr) (298 GWP)	CH4 (metric tons CO2e/yr) (25 GWP)	CH4 (short tons CO2e/yr) (25 GWP)	Total Anthropogenic (metric tons CO2e/yr)	**Total Anthropogenic (short tons CO2e/yr)**
Landfill	1.47	1.62	7.44	8.20	436.6	481.3	186.1	205.1	622.7	**686.4**

* use 40 CFR 98, Table C-2, Landfill gas, N2O generation rate = 0.00063 kg N2O/mmbtu
** use 40 CFR 98, Table C-2, Landfill gas, CH4 generation rate = 0.0032 kg CH4/mmbtu

Combined Collected Biogenic and Anthropogenic Generation Totals

Unit Type	**Total Collected GHG emissions (metric tons CO2e/yr)**	**Total Collected GHG emissions (short tons CO2e/yr)**
Landfill	**242,643.6**	**267,466.0**

WM, Inc. of Florida; Trail Ridge Landfill in Duval County
Emissions include 2014 permitted expansion project

GHG Uncollected Fugitive Emissions

Potential Uncollected Methane Emissions

Unit Type	Potential Collected Methane Generation** (mmscf/yr)	Fraction of Total Fugitive Emissions that are collected	Potential Uncollected Methane Generation** (mmscf/yr)	CH4 Oxidation Factor	Uncollected CH4 Emitted through cover (mmscf/yr)	Annual Potential Uncollected CH4 Generation ** (metric tons/yr)	CH4 (metric tons CO2e/yr) (25 GWP)	**Annual Potential Uncollected CH4 Generation ** (short tons CO2e/yr)**
Landfill	2,298.19	75%	766.1	10%	689.5	13,221.1	330526.6	**364,339.4**

* See Collected Methane Generation Rate from LandGEM modeled Life-of-Site Year 2043 Peak Fugitive Emissions
** CH4 metric tons/yr = CH4 generation (mmscf) X 1,000,000 scf/1mmscf X 1 m3/35.31 scf X 1000 L/1 m3 X 1 mole gas/23.689 L X 16.04 gm/1 mole CH4 X 1.00 E-6 metric tons/ 1gm.

Potential Uncollected Biogenic CO2 Emissions

Unit Type	Potential Collected CO2 Generation** (mmscf/yr)	Fraction of Total Fugitive Emissions that are collected	Potential Uncollected CO2 Generation** (mmscf/yr)	Uncollected CO2 Emitted through Cover (metric tons/yr)	CH4 oxidized to CO2 in Cover (mmscf/yr)	CH4 oxidized in Cover as CO2 (metric tons/yr)	Annual Potential Uncollected CO2 Generation (metric tons/yr)	**Annual Potential Uncollected CO2 Generation (short tons/yr)**
Landfill	2,298.19	75%	766.1	40,306.1	76.6	4,030.6	44,336.7	**48,872.4**

Waste Management , Inc. of Florida
Trail Ridge Landfill
Baldwin, Duval County, Florida
Facility ID: 0310358

Potential SO2, NMOC/VOC Emission Calculations - Landfill LF

Given:

Operational Information

Parameter		Reference
CH4 Generation Rate Q_{CH4}	86770000 m^3/yr	Methane Generation, Year 2043.
CH4 / LFG Ratio	50 %	Typical value
Heat Content of CH4	1012 BTU/ft^3	
Heat Content LFG	506 BTU/ft^3	
Operational Hours:	8760 hrs/yr	
Temperature (T)	25 C	Reference: AP-42, 2.4.4.1, Page 2.4-5.
N_{COL}	75 %	Reference: AP-42, 2.4.4.2, Page 2.4-6.
N_{flare}	99.2 %	Based on AP-42, Table 2.4-3.

Emission Factors (EF)

Sulfur Concentration C_S	1000 ppmv as S	1000 ppmv is conservative. Based on site 3/26/14 specific data sulfur compounds <47.1 ppm H2S (apply 32/34x 47.1 =44.2 ppm S
Sulfur Molecular Weight MW_S	32 g/gmol	
NMOC	595 ppmv as	Reference: AP-42, Table 2.4-2.
NMOC Molecular Weight MW_{NMOC}	86.18 g/gmol	Reference: AP-42, Table 2.4-2.
VOC	0.39 x NMOC	Reference: AP-42, Table 2.4-2.

Potential SO2, NMOC/VOC Emission Calculations - Landfill LF

Find: The potential fugitive emissions from the landfill LF.

Solution:

Pollutant	Emissions (TPY)
SO2	28.5
NMOC	91.3
VOC	35.6

Sample Calculations

Pollutant: SO2

First, find the Sulfur Emission Rate (QS) based on AP-42, 2.4, Equation (3). Assume 25% of the methane generation rate is fugitive emissions from the landfill.

Q_s (m^3/yr) = 1.82 x [Q_{CH4} (m^3/yr)] x [(100 - N_{col})/100] x [(C_s (ppmv)/10^6]

Q_s (m^3/yr)	39480.4

Next, find the uncontrolled mass emissions of sulfur (UM_S) using AP-42, 2.4, Equation (4).

UM_S (kg/yr) = [Q_S (m^3/yr)] x [MW_s (g/gmol) * 1 atm)]/[(8.205 x 10^{-5} (m^3 -atm/gmol-K) x (1,000 g/kg) x (273 + T (C)(K)]

UM_S (kg/yr)	51669.7

Find the fugitive mass emissions ofsulfur (CM_S) using the first term in AP-42, 2.4, Equation (5). The first term represents emissions from uncollected landfill gas.

CM_S (kg/yr) = [UM_S (kg/yr) x (1-(NCOL/100))]

CM_S(kg/yr)	12917.4

Convert CM_S to CM_{SO2}.

CM_{SO2} (kg/yr) = [CM_S (kg S/yr)] x [64 kg SO2/32 kg S]

CM_{SO2} (kg/yr)	25834.9
CM_{SO2} (TPY)	**28.5**

Pollutant: NMOC

First, find the total NMOC Emission Rate (Q_{NMOC}) usingAP-42, 2.4, Equation (3).

Q_s (m^3/yr) = 1.82 x [Q_{CH4} (m^3/yr)] x [(C_s (ppmv)/10^6]

Q_s (m^3/yr)	93963.2

Next, find the mass emissions of total NMOC (UM_{NMOC}) using AP-42, Equation (4).

UM_{NMOC} (kg/yr) = [Q_{NMOC} (m^3/yr)] x [MW_{NMOC} (g/gmol) * 1 atm)]/[(8.205 x 10^{-5} (m^3 -atm/gmol-K) x (1,000 g/kg) x (273 + T (C)(K)]

UM_{NMOC} (kg/yr)	331184.2

Find the uncollected mass emissions of NMOC (CM_{NMOC}) using the first term in AP-42, 2.4, Equation (5). The first term represents emissions from uncollected landfill gas.

CM_{NMOC} (kg/yr) = [UM_{NMOC} (kg/yr) x (1-(N_{col}/100))]

CM_{NMOC} (kg/yr)	82796.0
CM_{NMOC} (TPY)	**91.3**

Pollutant: VOC

CM_{VOC} (TPY) = 0.39 x [CM_{NMOC} (TPY)]

CM_{VOC} (TPY)	**35.59**

Summary Report

Landfill Name or Identifier: Trail Ridge Landfill Phase 6

Date: Wednesday, May 28, 2014

Description/Comments:
Tons of waste disposed from Waste Projections Final for buildout option 5252012.xlsx

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^{n} \sum_{j=0.1}^{1} kL_o \left(\frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

Q_{CH4} = annual methane generation in the year of the calculation ($m^3/year$)
i = 1-year time increment
n = (year of the calculation) - (initial year of waste acceptance)
j = 0.1-year time increment
k = methane generation rate ($year^{-1}$)
L_o = potential methane generation capacity (m^3/Mg)
M_i = mass of waste accepted in the i^{th} year (Mg)
t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at http://www.epa.gov/ttnatw01/landfill/landflpg.html.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for convential landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	**2018**	
Landfill Closure Year (with 80-year limit)	**2042**	
Actual Closure Year (without limit)	***2042***	
Have Model Calculate Closure Year?	**No**	
Waste Design Capacity	**70,615,013**	*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	**0.050**	*year^{-1}*
Potential Methane Generation Capacity, L_o	**170**	*m^3/Mg*
NMOC Concentration	**4,000**	*ppmv as hexane*
Methane Content	**50**	*% by volume*

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	**Total landfill gas**
Gas / Pollutant #2:	**Methane**
Gas / Pollutant #3:	**Carbon dioxide**
Gas / Pollutant #4:	**NMOC**

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2018	661,356	727,492	0	0
2019	741,045	815,150	661,356	727,492
2020	351,369	386,506	1,402,402	1,542,642
2021	575,007	632,508	1,753,771	1,929,148
2022	591,980	651,178	2,328,778	2,561,655
2023	546,791	601,470	2,920,758	3,212,834
2024	436,916	480,608	3,467,549	3,814,303
2025	510,276	561,304	3,904,465	4,294,911
2026	543,197	597,517	4,414,741	4,856,215
2027	638,017	701,819	4,957,937	5,453,731
2028	714,646	786,111	5,595,955	6,155,550
2029	772,845	850,129	6,310,601	6,941,661
2030	766,975	843,673	7,083,446	7,791,790
2031	816,651	898,316	7,850,421	8,635,463
2032	875,115	962,627	8,667,072	9,533,779
2033	922,328	1,014,560	9,542,187	10,496,406
2034	865,921	952,513	10,464,515	11,510,966
2035	766,943	843,638	11,330,436	12,463,479
2036	716,758	788,434	12,097,379	13,307,117
2037	676,896	744,586	12,814,138	14,095,551
2038	645,465	710,012	13,491,034	14,840,137
2039	718,232	790,055	14,136,499	15,550,149
2040	771,425	848,568	14,854,730	16,340,204
2041	777,874	855,661	15,626,156	17,188,771
2042	784,322	862,755	16,404,030	18,044,433
2043	0	0	17,188,352	18,907,187
2044	0	0	17,188,352	18,907,187
2045	0	0	17,188,352	18,907,187
2046	0	0	17,188,352	18,907,187
2047	0	0	17,188,352	18,907,187
2048	0	0	17,188,352	18,907,187
2049	0	0	17,188,352	18,907,187
2050	0	0	17,188,352	18,907,187
2051	0	0	17,188,352	18,907,187
2052	0	0	17,188,352	18,907,187
2053	0	0	17,188,352	18,907,187
2054	0	0	17,188,352	18,907,187
2055	0	0	17,188,352	18,907,187
2056	0	0	17,188,352	18,907,187
2057	0	0	17,188,352	18,907,187

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2058	0	0	17,188,352	18,907,187
2059	0	0	17,188,352	18,907,187
2060	0	0	17,188,352	18,907,187
2061	0	0	17,188,352	18,907,187
2062	0	0	17,188,352	18,907,187
2063	0	0	17,188,352	18,907,187
2064	0	0	17,188,352	18,907,187
2065	0	0	17,188,352	18,907,187
2066	0	0	17,188,352	18,907,187
2067	0	0	17,188,352	18,907,187
2068	0	0	17,188,352	18,907,187
2069	0	0	17,188,352	18,907,187
2070	0	0	17,188,352	18,907,187
2071	0	0	17,188,352	18,907,187
2072	0	0	17,188,352	18,907,187
2073	0	0	17,188,352	18,907,187
2074	0	0	17,188,352	18,907,187
2075	0	0	17,188,352	18,907,187
2076	0	0	17,188,352	18,907,187
2077	0	0	17,188,352	18,907,187
2078	0	0	17,188,352	18,907,187
2079	0	0	17,188,352	18,907,187
2080	0	0	17,188,352	18,907,187
2081	0	0	17,188,352	18,907,187
2082	0	0	17,188,352	18,907,187
2083	0	0	17,188,352	18,907,187
2084	0	0	17,188,352	18,907,187
2085	0	0	17,188,352	18,907,187
2086	0	0	17,188,352	18,907,187
2087	0	0	17,188,352	18,907,187
2088	0	0	17,188,352	18,907,187
2089	0	0	17,188,352	18,907,187
2090	0	0	17,188,352	18,907,187
2091	0	0	17,188,352	18,907,187
2092	0	0	17,188,352	18,907,187
2093	0	0	17,188,352	18,907,187
2094	0	0	17,188,352	18,907,187
2095	0	0	17,188,352	18,907,187
2096	0	0	17,188,352	18,907,187
2097	0	0	17,188,352	18,907,187

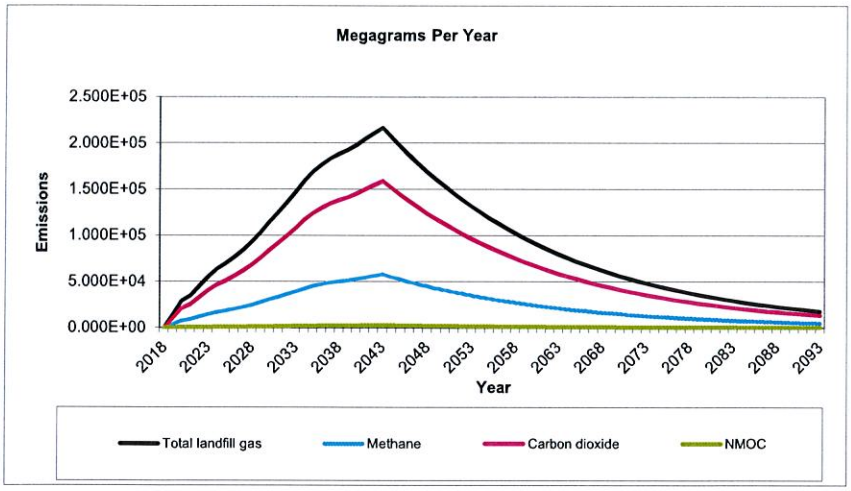
Pollutant Parameters

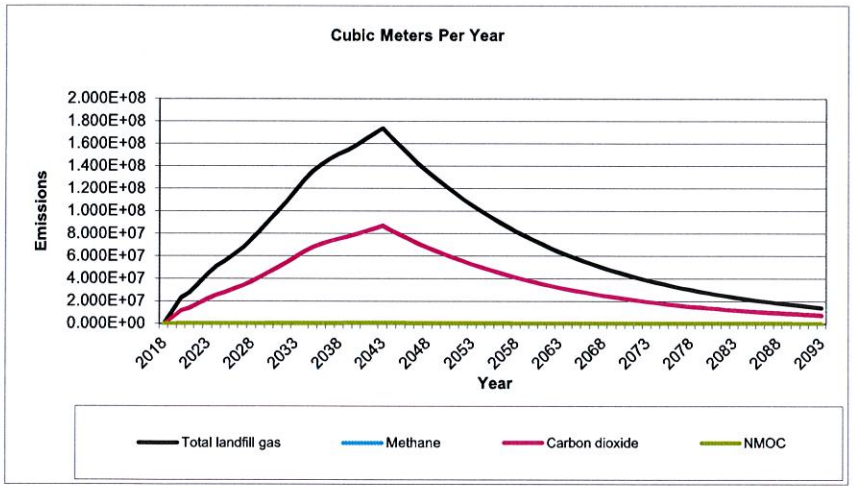
		Gas / Pollutant Default Parameters:		User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,2,2-Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

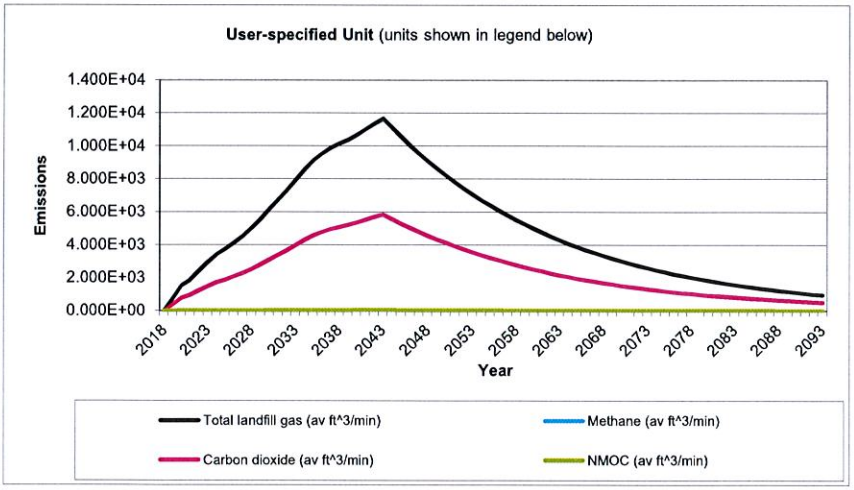
Pollutant Parameters (Continued)

	Gas / Pollutant Default Parameters:			User-specified Pollutant Parameters:	
	Compound	Concentration (*ppmv*)	Molecular Weight	Concentration (*ppmv*)	Molecular Weight
Pollutants	Ethyl mercaptan (ethanethiol) - VOC	2.3	62.13		
	Ethylbenzene - HAP/VOC	4.6	106.16		
	Ethylene dibromide - HAP/VOC	1.0E-03	187.88		
	Fluorotrichloromethane - VOC	0.76	137.38		
	Hexane - HAP/VOC	6.6	86.18		
	Hydrogen sulfide	36	34.08		
	Mercury (total) - HAP	2.9E-04	200.61		
	Methyl ethyl ketone - HAP/VOC	7.1	72.11		
	Methyl isobutyl ketone - HAP/VOC	1.9	100.16		
	Methyl mercaptan - VOC	2.5	48.11		
	Pentane - VOC	3.3	72.15		
	Perchloroethylene (tetrachloroethylene) - HAP	3.7	165.83		
	Propane - VOC	11	44.09		
	t-1,2-Dichloroethene - VOC	2.8	96.94		
	Toluene - No or Unknown Co-disposal - HAP/VOC	39	92.13		
	Toluene - Co-disposal - HAP/VOC	170	92.13		
	Trichloroethylene (trichloroethene) - HAP/VOC	2.8	131.40		
	Vinyl chloride - HAP/VOC	7.3	62.50		
	Xylenes - HAP/VOC	12	106.16		

Graphs


Megagrams Per Year
Emissions
2.500E+05
2.000E+05
1.500E+05
1.000E+05
5.000E+04
0.000E+00
2018 2023 2028 2033 2038 2043 2048 2053 2058 2063 2068 2073 2078 2083 2088 2093
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


Cubic Meters Per Year
Emissions
2.000E+08
1.800E+08
1.600E+08
1.400E+08
1.200E+08
1.000E+08
8.000E+07
6.000E+07
4.000E+07
2.000E+07
0.000E+00
2018 2023 2028 2033 2038 2043 2048 2053 2058 2063 2068 2073 2078 2083 2088 2093
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
Emissions
1.400E+04
1.200E+04
1.000E+04
8.000E+03
6.000E+03
4.000E+03
2.000E+03
0.000E+00
2018 2023 2028 2033 2038 2043 2048 2053 2058 2063 2068 2073 2078 2083 2088 2093
Year
Total landfill gas (av ft^3/min)
Methane (av ft^3/min)
Carbon dioxide (av ft^3/min)
NMOC (av ft^3/min)

Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2018	0	0	0	0	0	0
2019	1.373E+04	1.099E+07	7.387E+02	3.667E+03	5.497E+06	3.693E+02
2020	2.844E+04	2.278E+07	1.530E+03	7.598E+03	1.139E+07	7.652E+02
2021	3.435E+04	2.751E+07	1.848E+03	9.176E+03	1.375E+07	9.241E+02
2022	4.461E+04	3.572E+07	2.400E+03	1.192E+04	1.786E+07	1.200E+03
2023	5.473E+04	4.382E+07	2.944E+03	1.462E+04	2.191E+07	1.472E+03
2024	6.341E+04	5.077E+07	3.412E+03	1.694E+04	2.539E+07	1.706E+03
2025	6.939E+04	5.556E+07	3.733E+03	1.853E+04	2.778E+07	1.867E+03
2026	7.660E+04	6.133E+07	4.121E+03	2.046E+04	3.067E+07	2.061E+03
2027	8.414E+04	6.737E+07	4.527E+03	2.247E+04	3.369E+07	2.263E+03
2028	9.328E+04	7.469E+07	5.019E+03	2.492E+04	3.735E+07	2.509E+03
2029	1.036E+05	8.293E+07	5.572E+03	2.766E+04	4.147E+07	2.786E+03
2030	1.146E+05	9.173E+07	6.164E+03	3.060E+04	4.587E+07	3.082E+03
2031	1.249E+05	1.000E+08	6.720E+03	3.336E+04	5.000E+07	3.360E+03
2032	1.358E+05	1.087E+08	7.304E+03	3.626E+04	5.435E+07	3.652E+03
2033	1.473E+05	1.180E+08	7.925E+03	3.935E+04	5.898E+07	3.963E+03
2034	1.593E+05	1.275E+08	8.569E+03	4.254E+04	6.377E+07	4.284E+03
2035	1.695E+05	1.357E+08	9.118E+03	4.527E+04	6.785E+07	4.559E+03
2036	1.771E+05	1.418E+08	9.530E+03	4.731E+04	7.092E+07	4.765E+03
2037	1.834E+05	1.468E+08	9.866E+03	4.898E+04	7.342E+07	4.933E+03
2038	1.885E+05	1.509E+08	1.014E+04	5.035E+04	7.546E+07	5.070E+03
2039	1.927E+05	1.543E+08	1.037E+04	5.147E+04	7.715E+07	5.184E+03
2040	1.982E+05	1.587E+08	1.066E+04	5.294E+04	7.936E+07	5.332E+03
2041	2.045E+05	1.638E+08	1.101E+04	5.464E+04	8.190E+07	5.503E+03
2042	2.107E+05	1.687E+08	1.134E+04	5.629E+04	8.437E+07	5.669E+03
2043	2.167E+05	1.735E+08	1.166E+04	5.789E+04	8.677E+07	5.830E+03
2044	2.062E+05	1.651E+08	1.109E+04	5.507E+04	8.254E+07	5.546E+03
2045	1.961E+05	1.570E+08	1.055E+04	5.238E+04	7.851E+07	5.275E+03
2046	1.865E+05	1.494E+08	1.004E+04	4.983E+04	7.469E+07	5.018E+03
2047	1.774E+05	1.421E+08	9.547E+03	4.740E+04	7.104E+07	4.773E+03
2048	1.688E+05	1.352E+08	9.081E+03	4.508E+04	6.758E+07	4.541E+03
2049	1.606E+05	1.286E+08	8.638E+03	4.289E+04	6.428E+07	4.319E+03
2050	1.527E+05	1.223E+08	8.217E+03	4.079E+04	6.115E+07	4.108E+03
2051	1.453E+05	1.163E+08	7.816E+03	3.880E+04	5.817E+07	3.908E+03
2052	1.382E+05	1.107E+08	7.435E+03	3.691E+04	5.533E+07	3.718E+03
2053	1.315E+05	1.053E+08	7.072E+03	3.511E+04	5.263E+07	3.536E+03
2054	1.250E+05	1.001E+08	6.728E+03	3.340E+04	5.006E+07	3.364E+03
2055	1.189E+05	9.524E+07	6.399E+03	3.177E+04	4.762E+07	3.200E+03
2056	1.131E+05	9.060E+07	6.087E+03	3.022E+04	4.530E+07	3.044E+03
2057	1.076E+05	8.618E+07	5.790E+03	2.875E+04	4.309E+07	2.895E+03
2058	1.024E+05	8.198E+07	5.508E+03	2.735E+04	4.099E+07	2.754E+03
2059	9.738E+04	7.798E+07	5.239E+03	2.601E+04	3.899E+07	2.620E+03
2060	9.263E+04	7.418E+07	4.984E+03	2.474E+04	3.709E+07	2.492E+03
2061	8.811E+04	7.056E+07	4.741E+03	2.354E+04	3.528E+07	2.370E+03
2062	8.382E+04	6.712E+07	4.510E+03	2.239E+04	3.356E+07	2.255E+03
2063	7.973E+04	6.384E+07	4.290E+03	2.130E+04	3.192E+07	2.145E+03
2064	7.584E+04	6.073E+07	4.080E+03	2.026E+04	3.036E+07	2.040E+03
2065	7.214E+04	5.777E+07	3.881E+03	1.927E+04	2.888E+07	1.941E+03
2066	6.862E+04	5.495E+07	3.692E+03	1.833E+04	2.748E+07	1.846E+03
2067	6.528E+04	5.227E+07	3.512E+03	1.744E+04	2.614E+07	1.756E+03

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2068	6.209E+04	4.972E+07	3.341E+03	1.659E+04	2.486E+07	1.670E+03
2069	5.907E+04	4.730E+07	3.178E+03	1.578E+04	2.365E+07	1.589E+03
2070	5.618E+04	4.499E+07	3.023E+03	1.501E+04	2.249E+07	1.511E+03
2071	5.344E+04	4.280E+07	2.875E+03	1.428E+04	2.140E+07	1.438E+03
2072	5.084E+04	4.071E+07	2.735E+03	1.358E+04	2.035E+07	1.368E+03
2073	4.836E+04	3.872E+07	2.602E+03	1.292E+04	1.936E+07	1.301E+03
2074	4.600E+04	3.683E+07	2.475E+03	1.229E+04	1.842E+07	1.237E+03
2075	4.376E+04	3.504E+07	2.354E+03	1.169E+04	1.752E+07	1.177E+03
2076	4.162E+04	3.333E+07	2.239E+03	1.112E+04	1.666E+07	1.120E+03
2077	3.959E+04	3.170E+07	2.130E+03	1.058E+04	1.585E+07	1.065E+03
2078	3.766E+04	3.016E+07	2.026E+03	1.006E+04	1.508E+07	1.013E+03
2079	3.582E+04	2.869E+07	1.927E+03	9.569E+03	1.434E+07	9.637E+02
2080	3.408E+04	2.729E+07	1.833E+03	9.102E+03	1.364E+07	9.167E+02
2081	3.242E+04	2.596E+07	1.744E+03	8.659E+03	1.298E+07	8.720E+02
2082	3.083E+04	2.469E+07	1.659E+03	8.236E+03	1.235E+07	8.295E+02
2083	2.933E+04	2.349E+07	1.578E+03	7.835E+03	1.174E+07	7.890E+02
2084	2.790E+04	2.234E+07	1.501E+03	7.452E+03	1.117E+07	7.506E+02
2085	2.654E+04	2.125E+07	1.428E+03	7.089E+03	1.063E+07	7.139E+02
2086	2.525E+04	2.022E+07	1.358E+03	6.743E+03	1.011E+07	6.791E+02
2087	2.401E+04	1.923E+07	1.292E+03	6.414E+03	9.615E+06	6.460E+02
2088	2.284E+04	1.829E+07	1.229E+03	6.102E+03	9.146E+06	6.145E+02
2089	2.173E+04	1.740E+07	1.169E+03	5.804E+03	8.700E+06	5.845E+02
2090	2.067E+04	1.655E+07	1.112E+03	5.521E+03	8.275E+06	5.560E+02
2091	1.966E+04	1.574E+07	1.058E+03	5.252E+03	7.872E+06	5.289E+02
2092	1.870E+04	1.498E+07	1.006E+03	4.996E+03	7.488E+06	5.031E+02
2093	1.779E+04	1.425E+07	9.571E+02	4.752E+03	7.123E+06	4.786E+02
2094	1.692E+04	1.355E+07	9.105E+02	4.520E+03	6.775E+06	4.552E+02
2095	1.610E+04	1.289E+07	8.661E+02	4.300E+03	6.445E+06	4.330E+02
2096	1.531E+04	1.226E+07	8.238E+02	4.090E+03	6.131E+06	4.119E+02
2097	1.457E+04	1.166E+07	7.836E+02	3.891E+03	5.832E+06	3.918E+02
2098	1.385E+04	1.109E+07	7.454E+02	3.701E+03	5.547E+06	3.727E+02
2099	1.318E+04	1.055E+07	7.091E+02	3.520E+03	5.277E+06	3.545E+02
2100	1.254E+04	1.004E+07	6.745E+02	3.349E+03	5.019E+06	3.372E+02
2101	1.193E+04	9.549E+06	6.416E+02	3.185E+03	4.775E+06	3.208E+02
2102	1.134E+04	9.083E+06	6.103E+02	3.030E+03	4.542E+06	3.052E+02
2103	1.079E+04	8.640E+06	5.805E+02	2.882E+03	4.320E+06	2.903E+02
2104	1.026E+04	8.219E+06	5.522E+02	2.742E+03	4.109E+06	2.761E+02
2105	9.763E+03	7.818E+06	5.253E+02	2.608E+03	3.909E+06	2.626E+02
2106	9.287E+03	7.437E+06	4.997E+02	2.481E+03	3.718E+06	2.498E+02
2107	8.834E+03	7.074E+06	4.753E+02	2.360E+03	3.537E+06	2.377E+02
2108	8.403E+03	6.729E+06	4.521E+02	2.245E+03	3.365E+06	2.261E+02
2109	7.994E+03	6.401E+06	4.301E+02	2.135E+03	3.200E+06	2.150E+02
2110	7.604E+03	6.089E+06	4.091E+02	2.031E+03	3.044E+06	2.045E+02
2111	7.233E+03	5.792E+06	3.891E+02	1.932E+03	2.896E+06	1.946E+02
2112	6.880E+03	5.509E+06	3.702E+02	1.838E+03	2.755E+06	1.851E+02
2113	6.545E+03	5.241E+06	3.521E+02	1.748E+03	2.620E+06	1.761E+02
2114	6.225E+03	4.985E+06	3.349E+02	1.663E+03	2.493E+06	1.675E+02
2115	5.922E+03	4.742E+06	3.186E+02	1.582E+03	2.371E+06	1.593E+02
2116	5.633E+03	4.511E+06	3.031E+02	1.505E+03	2.255E+06	1.515E+02
2117	5.358E+03	4.291E+06	2.883E+02	1.431E+03	2.145E+06	1.441E+02
2118	5.097E+03	4.081E+06	2.742E+02	1.361E+03	2.041E+06	1.371E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2119	4.848E+03	3.882E+06	2.609E+02	1.295E+03	1.941E+06	1.304E+02
2120	4.612E+03	3.693E+06	2.481E+02	1.232E+03	1.846E+06	1.241E+02
2121	4.387E+03	3.513E+06	2.360E+02	1.172E+03	1.756E+06	1.180E+02
2122	4.173E+03	3.342E+06	2.245E+02	1.115E+03	1.671E+06	1.123E+02
2123	3.969E+03	3.179E+06	2.136E+02	1.060E+03	1.589E+06	1.068E+02
2124	3.776E+03	3.024E+06	2.032E+02	1.009E+03	1.512E+06	1.016E+02
2125	3.592E+03	2.876E+06	1.932E+02	9.594E+02	1.438E+06	9.662E+01
2126	3.417E+03	2.736E+06	1.838E+02	9.126E+02	1.368E+06	9.191E+01
2127	3.250E+03	2.602E+06	1.749E+02	8.681E+02	1.301E+06	8.743E+01
2128	3.091E+03	2.475E+06	1.663E+02	8.258E+02	1.238E+06	8.316E+01
2129	2.941E+03	2.355E+06	1.582E+02	7.855E+02	1.177E+06	7.911E+01
2130	2.797E+03	2.240E+06	1.505E+02	7.472E+02	1.120E+06	7.525E+01
2131	2.661E+03	2.131E+06	1.432E+02	7.107E+02	1.065E+06	7.158E+01
2132	2.531E+03	2.027E+06	1.362E+02	6.761E+02	1.013E+06	6.809E+01
2133	2.408E+03	1.928E+06	1.295E+02	6.431E+02	9.640E+05	6.477E+01
2134	2.290E+03	1.834E+06	1.232E+02	6.117E+02	9.169E+05	6.161E+01
2135	2.179E+03	1.744E+06	1.172E+02	5.819E+02	8.722E+05	5.860E+01
2136	2.072E+03	1.659E+06	1.115E+02	5.535E+02	8.297E+05	5.575E+01
2137	1.971E+03	1.578E+06	1.061E+02	5.265E+02	7.892E+05	5.303E+01
2138	1.875E+03	1.501E+06	1.009E+02	5.008E+02	7.507E+05	5.044E+01
2139	1.784E+03	1.428E+06	9.596E+01	4.764E+02	7.141E+05	4.798E+01
2140	1.697E+03	1.359E+06	9.128E+01	4.532E+02	6.793E+05	4.564E+01
2141	1.614E+03	1.292E+06	8.683E+01	4.311E+02	6.462E+05	4.342E+01
2142	1.535E+03	1.229E+06	8.260E+01	4.101E+02	6.146E+05	4.130E+01
2143	1.460E+03	1.169E+06	7.857E+01	3.901E+02	5.847E+05	3.928E+01
2144	1.389E+03	1.112E+06	7.474E+01	3.710E+02	5.562E+05	3.737E+01
2145	1.321E+03	1.058E+06	7.109E+01	3.529E+02	5.290E+05	3.555E+01
2146	1.257E+03	1.006E+06	6.762E+01	3.357E+02	5.032E+05	3.381E+01
2147	1.196E+03	9.574E+05	6.433E+01	3.194E+02	4.787E+05	3.216E+01
2148	1.137E+03	9.107E+05	6.119E+01	3.038E+02	4.553E+05	3.059E+01
2149	1.082E+03	8.663E+05	5.820E+01	2.890E+02	4.331E+05	2.910E+01
2150	1.029E+03	8.240E+05	5.537E+01	2.749E+02	4.120E+05	2.768E+01
2151	9.789E+02	7.838E+05	5.267E+01	2.615E+02	3.919E+05	2.633E+01
2152	9.311E+02	7.456E+05	5.010E+01	2.487E+02	3.728E+05	2.505E+01
2153	8.857E+02	7.092E+05	4.765E+01	2.366E+02	3.546E+05	2.383E+01
2154	8.425E+02	6.746E+05	4.533E+01	2.250E+02	3.373E+05	2.266E+01
2155	8.014E+02	6.417E+05	4.312E+01	2.141E+02	3.209E+05	2.156E+01
2156	7.623E+02	6.104E+05	4.102E+01	2.036E+02	3.052E+05	2.051E+01
2157	7.252E+02	5.807E+05	3.902E+01	1.937E+02	2.903E+05	1.951E+01
2158	6.898E+02	5.524E+05	3.711E+01	1.843E+02	2.762E+05	1.856E+01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2018	0	0	0	0	0	0
2019	1.006E+04	5.497E+06	3.693E+02	1.576E+02	4.398E+04	2.955E+00
2020	2.085E+04	1.139E+07	7.652E+02	3.266E+02	9.111E+04	6.121E+00
2021	2.518E+04	1.375E+07	9.241E+02	3.944E+02	1.100E+05	7.393E+00
2022	3.270E+04	1.786E+07	1.200E+03	5.122E+02	1.429E+05	9.601E+00
2023	4.011E+04	2.191E+07	1.472E+03	6.283E+02	1.753E+05	1.178E+01
2024	4.647E+04	2.539E+07	1.706E+03	7.280E+02	2.031E+05	1.365E+01
2025	5.085E+04	2.778E+07	1.867E+03	7.966E+02	2.222E+05	1.493E+01
2026	5.614E+04	3.067E+07	2.061E+03	8.794E+02	2.453E+05	1.648E+01
2027	6.166E+04	3.369E+07	2.263E+03	9.660E+02	2.695E+05	1.811E+01
2028	6.836E+04	3.735E+07	2.509E+03	1.071E+03	2.988E+05	2.007E+01
2029	7.590E+04	4.147E+07	2.786E+03	1.189E+03	3.317E+05	2.229E+01
2030	8.396E+04	4.587E+07	3.082E+03	1.315E+03	3.669E+05	2.465E+01
2031	9.153E+04	5.000E+07	3.360E+03	1.434E+03	4.000E+05	2.688E+01
2032	9.949E+04	5.435E+07	3.652E+03	1.559E+03	4.348E+05	2.922E+01
2033	1.080E+05	5.898E+07	3.963E+03	1.691E+03	4.718E+05	3.170E+01
2034	1.167E+05	6.377E+07	4.284E+03	1.829E+03	5.101E+05	3.428E+01
2035	1.242E+05	6.785E+07	4.559E+03	1.946E+03	5.428E+05	3.647E+01
2036	1.298E+05	7.092E+07	4.765E+03	2.034E+03	5.674E+05	3.812E+01
2037	1.344E+05	7.342E+07	4.933E+03	2.105E+03	5.873E+05	3.946E+01
2038	1.381E+05	7.546E+07	5.070E+03	2.164E+03	6.037E+05	4.056E+01
2039	1.412E+05	7.715E+07	5.184E+03	2.212E+03	6.172E+05	4.147E+01
2040	1.453E+05	7.936E+07	5.332E+03	2.276E+03	6.348E+05	4.265E+01
2041	1.499E+05	8.190E+07	5.503E+03	2.348E+03	6.552E+05	4.402E+01
2042	1.544E+05	8.437E+07	5.669E+03	2.419E+03	6.749E+05	4.535E+01
2043	1.588E+05	8.677E+07	5.830E+03	2.488E+03	6.942E+05	4.664E+01
2044	1.511E+05	8.254E+07	5.546E+03	2.367E+03	6.603E+05	4.437E+01
2045	1.437E+05	7.851E+07	5.275E+03	2.251E+03	6.281E+05	4.220E+01
2046	1.367E+05	7.469E+07	5.018E+03	2.142E+03	5.975E+05	4.015E+01
2047	1.300E+05	7.104E+07	4.773E+03	2.037E+03	5.683E+05	3.819E+01
2048	1.237E+05	6.758E+07	4.541E+03	1.938E+03	5.406E+05	3.632E+01
2049	1.177E+05	6.428E+07	4.319E+03	1.843E+03	5.143E+05	3.455E+01
2050	1.119E+05	6.115E+07	4.108E+03	1.753E+03	4.892E+05	3.287E+01
2051	1.065E+05	5.817E+07	3.908E+03	1.668E+03	4.653E+05	3.126E+01
2052	1.013E+05	5.533E+07	3.718E+03	1.587E+03	4.426E+05	2.974E+01
2053	9.634E+04	5.263E+07	3.536E+03	1.509E+03	4.210E+05	2.829E+01
2054	9.164E+04	5.006E+07	3.364E+03	1.436E+03	4.005E+05	2.691E+01
2055	8.717E+04	4.762E+07	3.200E+03	1.366E+03	3.810E+05	2.560E+01
2056	8.292E+04	4.530E+07	3.044E+03	1.299E+03	3.624E+05	2.435E+01
2057	7.888E+04	4.309E+07	2.895E+03	1.236E+03	3.447E+05	2.316E+01
2058	7.503E+04	4.099E+07	2.754E+03	1.175E+03	3.279E+05	2.203E+01
2059	7.137E+04	3.899E+07	2.620E+03	1.118E+03	3.119E+05	2.096E+01
2060	6.789E+04	3.709E+07	2.492E+03	1.064E+03	2.967E+05	1.994E+01
2061	6.458E+04	3.528E+07	2.370E+03	1.012E+03	2.822E+05	1.896E+01
2062	6.143E+04	3.356E+07	2.255E+03	9.623E+02	2.685E+05	1.804E+01
2063	5.843E+04	3.192E+07	2.145E+03	9.154E+02	2.554E+05	1.716E+01
2064	5.558E+04	3.036E+07	2.040E+03	8.707E+02	2.429E+05	1.632E+01
2065	5.287E+04	2.888E+07	1.941E+03	8.283E+02	2.311E+05	1.553E+01
2066	5.029E+04	2.748E+07	1.846E+03	7.879E+02	2.198E+05	1.477E+01
2067	4.784E+04	2.614E+07	1.756E+03	7.495E+02	2.091E+05	1.405E+01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2068	4.551E+04	2.486E+07	1.670E+03	7.129E+02	1.989E+05	1.336E+01
2069	4.329E+04	2.365E+07	1.589E+03	6.781E+02	1.892E+05	1.271E+01
2070	4.118E+04	2.249E+07	1.511E+03	6.451E+02	1.800E+05	1.209E+01
2071	3.917E+04	2.140E+07	1.438E+03	6.136E+02	1.712E+05	1.150E+01
2072	3.726E+04	2.035E+07	1.368E+03	5.837E+02	1.628E+05	1.094E+01
2073	3.544E+04	1.936E+07	1.301E+03	5.552E+02	1.549E+05	1.041E+01
2074	3.371E+04	1.842E+07	1.237E+03	5.281E+02	1.473E+05	9.900E+00
2075	3.207E+04	1.752E+07	1.177E+03	5.024E+02	1.402E+05	9.417E+00
2076	3.050E+04	1.666E+07	1.120E+03	4.779E+02	1.333E+05	8.958E+00
2077	2.902E+04	1.585E+07	1.065E+03	4.546E+02	1.268E+05	8.521E+00
2078	2.760E+04	1.508E+07	1.013E+03	4.324E+02	1.206E+05	8.105E+00
2079	2.626E+04	1.434E+07	9.637E+02	4.113E+02	1.147E+05	7.710E+00
2080	2.498E+04	1.364E+07	9.167E+02	3.912E+02	1.092E+05	7.334E+00
2081	2.376E+04	1.298E+07	8.720E+02	3.722E+02	1.038E+05	6.976E+00
2082	2.260E+04	1.235E+07	8.295E+02	3.540E+02	9.876E+04	6.636E+00
2083	2.150E+04	1.174E+07	7.890E+02	3.368E+02	9.395E+04	6.312E+00
2084	2.045E+04	1.117E+07	7.506E+02	3.203E+02	8.937E+04	6.004E+00
2085	1.945E+04	1.063E+07	7.139E+02	3.047E+02	8.501E+04	5.712E+00
2086	1.850E+04	1.011E+07	6.791E+02	2.898E+02	8.086E+04	5.433E+00
2087	1.760E+04	9.615E+06	6.460E+02	2.757E+02	7.692E+04	5.168E+00
2088	1.674E+04	9.146E+06	6.145E+02	2.623E+02	7.317E+04	4.916E+00
2089	1.592E+04	8.700E+06	5.845E+02	2.495E+02	6.960E+04	4.676E+00
2090	1.515E+04	8.275E+06	5.560E+02	2.373E+02	6.620E+04	4.448E+00
2091	1.441E+04	7.872E+06	5.289E+02	2.257E+02	6.297E+04	4.231E+00
2092	1.371E+04	7.488E+06	5.031E+02	2.147E+02	5.990E+04	4.025E+00
2093	1.304E+04	7.123E+06	4.786E+02	2.042E+02	5.698E+04	3.829E+00
2094	1.240E+04	6.775E+06	4.552E+02	1.943E+02	5.420E+04	3.642E+00
2095	1.180E+04	6.445E+06	4.330E+02	1.848E+02	5.156E+04	3.464E+00
2096	1.122E+04	6.131E+06	4.119E+02	1.758E+02	4.904E+04	3.295E+00
2097	1.067E+04	5.832E+06	3.918E+02	1.672E+02	4.665E+04	3.135E+00
2098	1.015E+04	5.547E+06	3.727E+02	1.591E+02	4.438E+04	2.982E+00
2099	9.659E+03	5.277E+06	3.545E+02	1.513E+02	4.221E+04	2.836E+00
2100	9.188E+03	5.019E+06	3.372E+02	1.439E+02	4.015E+04	2.698E+00
2101	8.740E+03	4.775E+06	3.208E+02	1.369E+02	3.820E+04	2.566E+00
2102	8.313E+03	4.542E+06	3.052E+02	1.302E+02	3.633E+04	2.441E+00
2103	7.908E+03	4.320E+06	2.903E+02	1.239E+02	3.456E+04	2.322E+00
2104	7.522E+03	4.109E+06	2.761E+02	1.178E+02	3.288E+04	2.209E+00
2105	7.155E+03	3.909E+06	2.626E+02	1.121E+02	3.127E+04	2.101E+00
2106	6.807E+03	3.718E+06	2.498E+02	1.066E+02	2.975E+04	1.999E+00
2107	6.475E+03	3.537E+06	2.377E+02	1.014E+02	2.830E+04	1.901E+00
2108	6.159E+03	3.365E+06	2.261E+02	9.648E+01	2.692E+04	1.809E+00
2109	5.858E+03	3.200E+06	2.150E+02	9.178E+01	2.560E+04	1.720E+00
2110	5.573E+03	3.044E+06	2.045E+02	8.730E+01	2.435E+04	1.636E+00
2111	5.301E+03	2.896E+06	1.946E+02	8.304E+01	2.317E+04	1.557E+00
2112	5.042E+03	2.755E+06	1.851E+02	7.899E+01	2.204E+04	1.481E+00
2113	4.796E+03	2.620E+06	1.761E+02	7.514E+01	2.096E+04	1.408E+00
2114	4.563E+03	2.493E+06	1.675E+02	7.147E+01	1.994E+04	1.340E+00
2115	4.340E+03	2.371E+06	1.593E+02	6.799E+01	1.897E+04	1.274E+00
2116	4.128E+03	2.255E+06	1.515E+02	6.467E+01	1.804E+04	1.212E+00
2117	3.927E+03	2.145E+06	1.441E+02	6.152E+01	1.716E+04	1.153E+00
2118	3.735E+03	2.041E+06	1.371E+02	5.852E+01	1.633E+04	1.097E+00

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2119	3.553E+03	1.941E+06	1.304E+02	5.566E+01	1.553E+04	1.043E+00
2120	3.380E+03	1.846E+06	1.241E+02	5.295E+01	1.477E+04	9.925E-01
2121	3.215E+03	1.756E+06	1.180E+02	5.037E+01	1.405E+04	9.441E-01
2122	3.058E+03	1.671E+06	1.123E+02	4.791E+01	1.337E+04	8.981E-01
2123	2.909E+03	1.589E+06	1.068E+02	4.557E+01	1.271E+04	8.543E-01
2124	2.767E+03	1.512E+06	1.016E+02	4.335E+01	1.209E+04	8.126E-01
2125	2.632E+03	1.438E+06	9.662E+01	4.124E+01	1.150E+04	7.730E-01
2126	2.504E+03	1.368E+06	9.191E+01	3.923E+01	1.094E+04	7.353E-01
2127	2.382E+03	1.301E+06	8.743E+01	3.731E+01	1.041E+04	6.994E-01
2128	2.266E+03	1.238E+06	8.316E+01	3.549E+01	9.902E+03	6.653E-01
2129	2.155E+03	1.177E+06	7.911E+01	3.376E+01	9.419E+03	6.329E-01
2130	2.050E+03	1.120E+06	7.525E+01	3.212E+01	8.960E+03	6.020E-01
2131	1.950E+03	1.065E+06	7.158E+01	3.055E+01	8.523E+03	5.726E-01
2132	1.855E+03	1.013E+06	6.809E+01	2.906E+01	8.107E+03	5.447E-01
2133	1.765E+03	9.640E+05	6.477E+01	2.764E+01	7.712E+03	5.181E-01
2134	1.678E+03	9.169E+05	6.161E+01	2.629E+01	7.336E+03	4.929E-01
2135	1.597E+03	8.722E+05	5.860E+01	2.501E+01	6.978E+03	4.688E-01
2136	1.519E+03	8.297E+05	5.575E+01	2.379E+01	6.637E+03	4.460E-01
2137	1.445E+03	7.892E+05	5.303E+01	2.263E+01	6.314E+03	4.242E-01
2138	1.374E+03	7.507E+05	5.044E+01	2.153E+01	6.006E+03	4.035E-01
2139	1.307E+03	7.141E+05	4.798E+01	2.048E+01	5.713E+03	3.839E-01
2140	1.243E+03	6.793E+05	4.564E+01	1.948E+01	5.434E+03	3.651E-01
2141	1.183E+03	6.462E+05	4.342E+01	1.853E+01	5.169E+03	3.473E-01
2142	1.125E+03	6.146E+05	4.130E+01	1.763E+01	4.917E+03	3.304E-01
2143	1.070E+03	5.847E+05	3.928E+01	1.677E+01	4.677E+03	3.143E-01
2144	1.018E+03	5.562E+05	3.737E+01	1.595E+01	4.449E+03	2.989E-01
2145	9.684E+02	5.290E+05	3.555E+01	1.517E+01	4.232E+03	2.844E-01
2146	9.212E+02	5.032E+05	3.381E+01	1.443E+01	4.026E+03	2.705E-01
2147	8.762E+02	4.787E+05	3.216E+01	1.373E+01	3.829E+03	2.573E-01
2148	8.335E+02	4.553E+05	3.059E+01	1.306E+01	3.643E+03	2.448E-01
2149	7.928E+02	4.331E+05	2.910E+01	1.242E+01	3.465E+03	2.328E-01
2150	7.542E+02	4.120E+05	2.768E+01	1.181E+01	3.296E+03	2.215E-01
2151	7.174E+02	3.919E+05	2.633E+01	1.124E+01	3.135E+03	2.107E-01
2152	6.824E+02	3.728E+05	2.505E+01	1.069E+01	2.982E+03	2.004E-01
2153	6.491E+02	3.546E+05	2.383E+01	1.017E+01	2.837E+03	1.906E-01
2154	6.175E+02	3.373E+05	2.266E+01	9.673E+00	2.699E+03	1.813E-01
2155	5.874E+02	3.209E+05	2.156E+01	9.201E+00	2.567E+03	1.725E-01
2156	5.587E+02	3.052E+05	2.051E+01	8.753E+00	2.442E+03	1.641E-01
2157	5.315E+02	2.903E+05	1.951E+01	8.326E+00	2.323E+03	1.561E-01
2158	5.055E+02	2.762E+05	1.856E+01	7.920E+00	2.209E+03	1.485E-01

APPENDIX VAR.

Trail Ridge Landfill
Facility ID: 0310358
Request for Variances

Appendix VAR

The following are variances to NSPS WWW, arranged by general topic, that are incorporated into this Title V operating permit.

1.1 Collection Device Monitoring

The following variances to the NSPS relate to collection system monitoring requirements.

1.1.1 Monthly Collection Monitoring Device

The requirements of 40 CFR §60.755(a)(5) allow for the monitoring of temperature and either nitrogen or oxygen to establish whether excess air infiltration is occurring. Unless an alternative test method is approved, 40 CFR §60.753(c)(1) and (2) allow for the use of EPA Method 3C to measure the nitrogen levels and the use of either EPA Method 3A or EPA Method 3C to establish the oxygen content. In accordance with the general state-of-the-practice procedures, Trail Ridge Landfill proposes to use a portable monitoring instrument such as a Landtec GEM 500, Landtec GEM 2000, LMS, or equivalent make/model. The monitoring equipment will be verified and calibrated in accordance with manufacturer's recommendations to ensure accurate measurement of all parameters for which it is used to monitor.

1.1.2 Early Installation of Collection Devices

40 CFR §60.755(b) states 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 5 years or more in active areas or 2 years or more if closed or at final grade. However, there may be occasions when the Trail Ridge landfill will decide to install collection devices prior to the onset of NSPS requirements. Based on the foregoing regulatory citation, any collection device installed prior to the requirements of NSPS WWW will not be subject to the operational and/or record-keeping requirements of NSPS WWW until the age of the initial waste placed reaches 5 years old if in an active area or 2 years old if closed or at final grade. The site will maintain a drawing showing the location of all such collection devices and will provide a list of exempt wells in the Semiannual NSPS WWW report.

1.1.3 Monitoring of Collection Device during Well Raising

During the process of refuse filling operations, periodically, vertical collection devices (vertical wells) have to be "raised" so the new refuse is not placed over the top of an existing vertical well in a manner that would cover the collection device with refuse and therefore preventing access to it. If the collection device cannot be accessed, then it also would not be able to be monitored on a monthly basis. Collection devices are raised in advance of the refuse being added to the area in order to keep people safe and out of the soon to be dangerous area. In order to perform the collection device raising while maintaining employee safety, it would be required to have the collection device raised before refuse can be placed around the well. Therefore, the Trail Ridge landfill may have a collection device extending upwards in or near a dangerous area, which

cannot have monthly monitoring performed on it. Furthermore, as refuse is placed around the well in the working face, this tends to be a very dangerous area for all persons, due to all the heavy equipment being operated in a small area (trucks, compactors, dozers, etc).

Due to the dangers associated with well raising, raised collection devices will be exempt from the monthly NSPS WWW monitoring for a period not greater than 60 days so that the collection device can be safely raised and have refuse placed around it without creating a dangerous work environment for staff. Anytime that a collection device is not monitored due to raising activities will be duly noted in the Semi-Annual NSPS WWW reports.

1.1.4 Operational Changes to Accommodate Declining Flows

The primary objective of the NSPS WWW regulations is to minimize surface emissions into the atmosphere, while mitigating conditions within the Trail Ridge landfill that could foster subsurface oxidation. Trail Ridge landfill requests the following alternative to standard operating procedures for LFG extraction collection devices where gas flow rates are so low that applying even minimal vacuum results in an exceedance of the applicable oxygen concentration limit. Shutting such collection devices down is likely to cause positive pressure in the wellhead as Trail Ridge landfill gas builds up. Therefore, simultaneously complying with both the negative pressure and oxygen concentration limits in 40 CFR §60.753 can be difficult for the collection devices where gas flow rates have declined to these levels.

Under provisions in 40 CFR §60.753(b)(3), collection devices that experience positive pressure after being shut down to accommodate declining LFG flow rates can be decommissioned. All design changes shall be approved by the Administrator. As an alternative to decommissioning collection devices under the provisions, Trail Ridge landfill proposes to make the following changes to its standard operating procedure for collection devices where persistent oxygen exceedances are not the result of operations and/or maintenance issues:

a. To ensure a representative sample is obtained, LFG should be flowing. The control valve for the collection device should be purged of stagnant gas prior to sampling.

b. Collection devices where oxygen concentrations do not decline to acceptable levels after more than one hour of reduced vacuum will be shut off until the gas quality recovers.

c. The monthly monitoring required by 40 CFR §60.755 will continue to be conducted for collection devices that have been shut down, but positive pressure or elevated oxygen concentrations will not be considered exceedances or deviations of the operating limits in 40 CFR §60.753.

d. If monthly monitoring indicates that pressure has built up in the collection device and the oxygen concentration still exceeds five percent, the collection device will be opened to relieve the pressure and will be shut down until it is monitored the following month.

e. If monthly monitoring indicates that the gas quality has improved (i.e. the oxygen concentration has dropped below five percent), the collection device will be brought back on line until the gas quality declines again.

f. The quarterly surface emissions monitoring (SEM) required under 40 CFR 60.755 will be conducted for collection devices that have been shut down. Standard remediation steps, including evaluating the need to return wells to full-time service, will be followed if exceedances of the 500 ppm methane surface concentration limit are detected.

The aforementioned procedures are consistent with the alternative operating scenario detailed in an EPA clarification letter dated February 9, 2005. [1] Trail Ridge landfill will document these operational changes in the Semi-Annual Monitoring Reports required under NSPS WWW and Title V for the extraction wells that are currently active as part of NSPS WWW.

1.1.5 Procedure for Requesting an Alternative Operating Temperature

Section 40 CFR 60.753(c) states that the Trail Ridge landfill owner/operator may establish a higher operating value for temperature at a collection device. Trail Ridge landfill will only seek to establish a higher operating value at a collection device if operational modifications fail to correct the exceedance.

The application for an alternative temperature standard will provide 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 131 °F, a higher operating temperature threshold will be established for the collection device. Trail Ridge landfill will provide at least three (3) months of operational data to support the establishment of a higher operating temperature range for any particular Trail Ridge landfill gas collection device. At a minimum, the following information will be included in the application:

a. The monthly and average oxygen content of the LFG;

b. The monthly and average carbon dioxide of the LFG;

c. The monthly and average methane content of the LFG;

d. An initial carbon monoxide reading from each collection device;

e. The monthly and average temperature of the LFG; and

f. A discussion of any conditions that might suggest subsurface oxidation (e.g., smoke, excessive settlement, etc.).

[1] **Control Number: 0600062.** http://www.epa.gov/oecaadix/pdf/adi-nsps-0600062.pdf

1.1.6 Positive Pressure under a Synthetic Cover

In areas of a Trail Ridge landfill where a geomembrane or synthetic cover is being used, Section 40 CFR §60.753(b)(2) allows the owner or operator to develop acceptable pressure limits in the design plan. 10“ Water Column (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 10” W.C. in areas where a geomembrane or synthetic cover is installed will not be recorded as exceedances.

1.1.7 Collection Device Abandonment

If a collection device has been decommissioned, implemented the operational change procedures detailed in **Operational Changes to Accommodate Declining Flows** (See Footnote 1) or by other approval methods, Trail Ridge landfill may elect to abandon the device. Trail Ridge landfill will submit a letter, certified by a professional engineer, to the Administrator stating that the landfill will still maintain sufficient well field density in compliance with the NSPS WWW. In addition, Trail Ridge landfill will provide documentation that no exceedances were detected during Surface Emission Monitoring in the vicinity of the affected device for four consecutive quarters.

If a collection device is replaced, the existing well may be abandoned/removed by the Trail Ridge landfill without notification or prior approval to the Administrator. The replacement well will be renamed for ease of data evaluation.

1.2 Surface Emission Monitoring

The following variances are related to Surface Emission Monitoring (SEM) events.

1.2.1 Exclusion of Dangerous Areas from SEM Requirements

Section 60.753(d) Operational Standards for Collection and Control Systems: “...A surface monitoring design plan shall be developed...Areas with steep slopes or other dangerous areas may be excluded from surface testing.

The following dangerous areas may be excluded from the requirements for SEM:

a. Roads;
b. Working areas or working face;
c. Truck traffic areas;
d. Slopes steeper than 3(horizontal):1(vertical); and
e. Areas where the Trail Ridge 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.

1.2.2 Alternative Remedy for SEM Events

Section 40 CFR §60.755(a)(4) requires the Trail Ridge landfill owner or operator to take corrective action to remedy any methane surface emissions of greater than or equal to 500 ppm. The Trail Ridge landfill will perform the initial SEM events and 10-day/30-day remonitoring events in accordance with the NSPS WWW. For SEM exceedances corrective measures may include corrective actions to the GCCS other than the installation of additional LFG collection devices. These alternative remedies will be implemented to correct SEM concentrations 500 ppm above background three times in a quarterly event. These corrective actions contained could include one or more of the following measures:

a. Installation/upgrades to the blower/flare skid equipment (bigger blowers, 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 (larger air compressor, additional air and condensate force main lines, etc.)

d. Redrilling or installation of additional/replacement LFG collection devices.

e. Repair of Trail Ridge landfill cap to lessen the chance of encountering ambient air.

f. Repair/replace header valves.

Please note that the foregoing list is not intended to be exhaustive. Other actions that result in the remediation of an exceedance would also be covered under this alternative. Any enhancements made to the existing GCCS will be documented in the Semi-Annual Reports prepared for compliance with NSPS/Title V requirements. In the event that, the GCCS cannot be brought back into compliance during the 120-day assessment period, the Trail Ridge landfill will prepare an alternative compliance schedule for review and approval by the Administrator.

1.2.3 SEM for Closed Portions of the Trail Ridge Landfill

Any portions of the Trail Ridge landfill that have been certified closed or have been closed and capped in accordance with the cover conditions contained in the Design Plan may be treated as a closed Trail Ridge landfill for SEM events. These closed portions of the Trail Ridge landfill would be monitored in accordance with 40 CFR §60.756(f), which states the following:

"…Any closed Trail Ridge landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for the Trail Ridge landfill to quarterly monitoring."

1.3 Control Device

The following variances have to do with Control Devices.

1.3.1 1-hour and 5-day Standards

Section 40 CFR §60.755(e) states that the compliance provisions apply at all times, except during periods of startup, shutdown or malfunction provided that the duration of the start-up, shutdown or malfunction shall not exceed 5 days for collection systems and shall not exceed 1 hour for treatment or control devices. The collection and control systems are designed so that when the control system is off-line the gas moving equipment is shutdown as well preventing gas from being vented to the atmosphere. Therefore, the entire collection system is off-line when the control system is shutdown. It is the understanding of the Trail Ridge landfill that the 1-hour and 5-day downtime provisions mean that the collection system cannot be down for more than 5 days at a time. Further, the treatment and/or control system (i.e., flare) cannot be down for more than 1 hour at a time while the collection system is running, in a manner that allows uncontrolled LFG to vent to the atmosphere. For this reason the Trail Ridge landfill will operate the GCCS such that control system downtime in excess of 5 days, assuming no uncontrolled LFG emissions into the atmosphere in excess of 1 hour, is not considered an exceedance of the standard. This type of operational procedure is understood to meet the intent of the regulation. .

1.3.2 Flow Meters When No Bypass is Present

The "Municipal Solid Waste Landfill NSPS/EG-- Questions and Answers" (Q&A) document from the EPA indicates that LFG flow measurement or lock and key requirements would not apply to a GCCS that is designed such that there is no physical means to bypass the LFG flow before it reaches the control device.[2] In the event that a malfunction occurs with the GCCS equipment, an electric or pneumatically operated valve has been designed to close to prevent the direct venting of raw LFG into the atmosphere. The existing GCCS design satisfies the foregoing LFG flow measurement/lock-and-key waiver criteria; therefore, the Trail Ridge landfill is not be required to install and operate flow-measuring device in accordance with the requirements of the NSPS. If the Trail Ridge landfill decides to install a flow measuring device, it will not be required to monitor or record flow in accordance with NSPS WWW.

1.3.3 Passive Flares

The Trail Ridge landfill currently has an active GCCS in place that controls the NMOC emissions; however, in the event that there is a malfunction of one of the existing flares currently in operation at the facility, the landfill would like to have the flexibility to install passive flares in strategic locations throughout the waste mass to make certain that LFG control is maintained until the existing flare is repaired or replaced. Should this situation occur, the number and location of the passive vent flares will be included in the Semi-Annual Report required by Title V/NSPS WWW.

[2] http://www.epa.gov/ttn/atw/landfill/landfq&a.pdf. Published Nov. 1998. See page 37. Section VII C.9, Q&A