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: Escambia County BOCC	
2. Site Name: Perdido Landfill	
3. Facility Identification Number: 0330246	
4. Facility Location... Street Address or Other Locator: 13009 Beulah Road City: Cantonment County: Escambia Zip Code: 32533-8831	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: Brent Schneider, P.E.
2. Application Contact Mailing Address... Organization/Firm: ESCAMBIA COUNTY DEPARTMENT OF SOLID WASTE MANAGEMENT Street Address: 13009 BEULAH ROAD City: CANTONMENT State: FL Zip Code: 32533-8831
3. Application Contact Telephone Numbers... Telephone: (850) 937-2179 ext. Fax: (850) 937- 2152
4. Application Contact E-mail Address: bdschneider@myescambia.com

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 5-21-13	3. PSD Number (if applicable):
2. Project Number(s): 0330246-008-AV	4. Siting Number (if applicable):

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MAY 20 2013
NORTHWEST FLORIDA DEP

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

The purpose of this application is the renewal of Perdido Landfill's Title V Operation Permit (current permit 0330246-006-AV). Additionally, this application requests 1) the addition a 450-horsepower diesel emergency generator as an insignificant emissions unit, and 2) the removal the Morbark Tub Grinder (EU 002) since the unit is a "nonroad engine" excluded from permitting as a stationary source.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
001	Landfill Gas Collection & Control System.		

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: PATRICK JOHNSON

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: ESCAMBIA COUNTY DEPARTMENT OF SOLID WASTE MANAGEMENT
Street Address: 13009 BEULAH ROAD
City: CANTONMENT State: FL Zip Code: 32533-8831

4. Application Responsible Official Telephone Numbers...
Telephone: (850) 937- 2164 ext. Fax: (850) 937-2152

5. Application Responsible Official E-mail Address: ptjohnson@co.escambia.fl.us

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

5/20/15
Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: John Banks, P.E. Professional Engineer Job Title: Associate
   Registration Number: 39397
2. Professional Engineer Mailing Address...
   Organization/Firm: Geosyntec Consultants
   Street Address: 13101 Telecom Dr. Suite 120
   City: Temple Terrace State: FL Zip Code: 33637
3. Professional Engineer Telephone Numbers...
   Telephone: (813)558-0990 ext.4377 Fax: (813)558-9726
4. Professional Engineer E-mail Address: JBanks@geosyntec.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 5/2014 Date

(seal)

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone 16 East (km) 462.27 North (km) 3382.82		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 30/34/44.0475 N Longitude (DD/MM/SS) 87/23/50.6151 W	
3. Governmental Facility Code: 3 - County	4. Facility Status Code: A - Active	5. Facility Major Group SIC Code: 49 – Electric, Gas and Sanitary Services	6. Facility SIC(s): 4953 - Electric, Gas and Sanitary Services Sanitary Services Refuse Systems

7. Facility Comment :
Perdido Landfill is a Class I/III MSW landfill located in Escambia County. The entire site encompasses approximately 320 acres, with the phases 1, 2, and 3 occupying approximately 110 acres. Phase 4, which opened in 2008, encompasses approximately 22 acres. A Landfill Gas Collection and Control System (LGCCS) is installed. The LGCCS consists of approximately 90 vertical gas extraction wells, a condensate collection system, a new blower/flare station and all associated piping. The most recent expansion included the construction of 38 vertical gas extraction wells, lateral gas piping, header gas piping, a new blower/flare station (BFS) using a non-assisted open utility flare, gas transmission piping from the BFS to Gulf Power Perdido landfill gas to energy (LFGTE) facility, and a condensate management system. The horizontal extraction wells and previous flare station were decommissioned upon successful startup of the new BFS (October 4, 2010). The blower for the new BFS is capable of handling up to 4400 scfm of gas flow. The application includes equipment and emissions directly related to Escambia County's Perdido Landfill. Emissions and equipment for Gulf Power's Perdido Landfill Gas to Energy Facility are covered under Permits 03300286-001-AC and 0330286-002-AV. The two facilities are considered as one for Title V and New Source Review permitting.

Facility Contact

1. Facility Contact Name: Brent Schneider, P.E.	Facility Contact Job Title: Engineering & Environmental Manager
2. Facility Contact Mailing Address... Organization/Firm: Escambia County Solid Waste Management Street Address: 13009 Beulah Rd. City: Cantonment State: FL Zip Code: 32533-8831	
3. Facility Contact Telephone Numbers: Telephone: (850) 937 - 2179 ext. Fax: (850) 937-2152 Cell: (850) 554 - 4080	
4. Facility Contact E-mail Address: bdschneider@myescambia.com	

FACILITY INFORMATION

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: PATRICK JOHNSON Facility Primary Responsible Official Job Title: Lead Division Manager – Dept. of Solid Waste
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: ESCAMBIA COUNTY DEPARTMENT OF SOLID WASTE MANAGEMENT Street Address: 13009 BEULAH ROAD City: CANTONMENT State: FL Zip Code: 32533-8831
3. Facility Primary Responsible Official Telephone Numbers... Telephone: (850) 937-2164 ext. Fax: (850) 937- 2152
4. Facility Primary Responsible Official E-mail Address: ptjohnson@co.escambia.fl.us

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: 40 CFR 60 Subpart WWW, 40 CFR 63 Subpart AAAA, 40 CFR 61.154 (Asbestos)	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
CO	(A) ACTUAL OR POTENTIAL EMISSIONS ARE ABOVE THE APPLICABLE MAJOR SOURCE THRESHOLDS.	N
H106	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
PM	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
NMOC	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
PM10/PM2.5	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
SO2	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
NOX	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
HAPS	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
VOC	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
GHG	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N

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

Not Applicable

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

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: **Tab 6** [ ] 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: **Tab 7** [ ] 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: **Tab 8** [ ] 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):
   [ ] Attached, Document ID:_____

3. Rule Applicability Analysis:
   [ ] Attached, Document ID:_____

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

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

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

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

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

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

10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):
    [ ] Attached, Document ID:_____ [X] 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: **Tab 4**
   ☐ 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: **Tab 9**
   ☐ 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: **Not applicable**
   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: **Tab 3** ☐ 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

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION
Section [1] of [1]

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)

[ ] 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).

[X] 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:

Landfill Gas Collection and 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 – Active	**NA**	**NA**	**49**

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

[ ] Acid Rain Unit

[ ] CAIR Unit

9. Package Unit:
Manufacturer: **LFG TECHNOLOGIES, INC.** Model Number: **LFG2200UFPL3**

10. Generator Nameplate Rating: **MW**

11. Emissions Unit Comment:
Landfill gas in GCCS is from Sections 2A, 2B, 3A, 3B, 3C, 4, & 5. Collected landfill gases are transferred to the onsite flare or offsite to the Gulf Power Gas to Energy Facility (GTEF), Facility ID No. 0330286.

EMISSIONS UNIT INFORMATION
Section [1] of [1]

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description: Flaring/Open Utility Flare
2. Control Device or Method Code: 23

Emissions Unit Control Equipment/Method: Control ___ of ___

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

Emissions Unit Control Equipment/Method: Control ___ of ___

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

Emissions Unit Control Equipment/Method: Control ___ of ___

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: 4400 SCFM	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: 158.4 mmBtu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: hours/day weeks/year	days/week 8760 hours/year
6. Operating Capacity/Schedule Comment: Landfill gas collection/control system designed to maintain ground surface levels of nonmethane organic compounds below 500ppm. Currently permitted for two 2,200 scfm flares; one of which has been installed.	

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 Stack	2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: A Single Emission Point Serving a Single Emissions Unit		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **Not applicable**		
5. Discharge Type Code: **V**	6. Stack Height: **31 feet**	7. Exit Diameter: **0.91 feet**
8. Exit Temperature: 1400 °F	9. Actual Volumetric Flow Rate: **Varies** 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: **Emission point is top of flare.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Open Utility Flare - landfill gas burned**		
2. Source Classification Code (SCC): **5-02-006-01**	3. SCC Units: **Million Cubic Feet Waste Gas Burned**	
4. Maximum Hourly Rate: **0.264**	5. Maximum Annual Rate: **2312.64**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.00122**	8. Maximum % Ash: **Not applicable for gaseous fuel**	9. Million Btu per SCC Unit: **521**
10. Segment Comment:		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
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
CO[1]			**NS**
H106 [2]			**NS**
HAPS	**023 - Flaring**		**NS**
NMOC	**023 - Flaring**		**NS**
NO_X			**NS**
PM			**NS**
PM10/PM2.5			**NS**
SO2[3]			**NS**
VOC	**023 - Flaring**		**NS**
GHG			**NS**

[1] CO is produced during flaring.
[2] Note H106 is produced during flaring.
[3] Note SO2 is produced during flaring.

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: 49.3 lb/hour 216.49 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 0.37 lb/MMBTU Reference: Manufacturer specifications	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: 0.37 x 506 btu/cf x mmbtu/10E06 btu x 4400 cf/min x 60 min/hr x 24 hr/day x 365 day/yr x ton/2000 lb	
11. Potential, Fugitive, and Actual Emissions Comment: See Tab 14.	

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

0. Pollutant Emitted: H106	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.44 lb/hour 1.93 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 42 PPMVD Reference: AP-42 Section 2.4.4.2	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: See Tab 14.	
11. Potential, Fugitive, and Actual Emissions Comment: Calculations based on LandGEM 2017 output.	

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: HAPS	2. Total Percent Efficiency of Control:
3. Potential Emissions: 1.06 lb/hour 4.65 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Various by pollutant Reference: : AP-42 Section 2.4.4.2	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: See Tab 14.	
11. Potential, Fugitive, and Actual Emissions Comment: Calculations based on LandGEM 2017 output, a collection efficiency of 75% and a destruction control efficiency of 98% (includes stack & fugitive emissions).	

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: NMOC - Nonmethane Organic Compounds from MSW Landfill	2. Total Percent Efficiency of Control:
3. Potential Emissions: 5.17 lb/hour 22.66 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 595 ppm as hexane Reference: AP-42 Section, Table 2.4-2	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: See Tab 14.	
11. Potential, Fugitive, and Actual Emissions Comment: Calculations based on LandGEM 2017 output, a collection efficiency of 75% and a destruction control efficiency of 98% (includes stack & fugitive emissions).	

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: NOX	2. Total Percent Efficiency of Control: 98
3. Potential Emissions: 9.35 lb/hour 40.96 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 0.07 lb/MMBTU Reference: Manufacturer specifications	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: 0.07 x 506 btu/cf x mmbtu/10E06 btu x 4400 cf/min x 60 min/hr x 24 hr/day x 365 day/yr x ton/2000 lb	
11. Potential, Fugitive, and Actual Emissions Comment: See Tab 14	

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: PM	2. Total Percent Efficiency of Control:
3. Potential Emissions: 4.49 lb/hour 19.66 tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 15 lb/10E6 dscf CH4 Reference: AP-42 Section, Table 2.4-5	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: 17 lbs/10E06 dscf CH4 x 4400 scfm x 60 min/hr = 4.49 lb/hr x 24 hr/day x 365 day/yr x ton/2000 lbs=19.66 ton/year	
11. Potential, Fugitive, and Actual Emissions Comment: See Tab 14.	

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: PM10/PM2.5	2. Total Percent Efficiency of Control:
3. Potential Emissions: 4.49 lb/hour 19.66 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 15 lb/10E6 dscf CH4 Reference: AP-42 Section, Table 2.4-5	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: 15 lbs/10E06 dscf CH4 x 4400 scfm x 60 min/hr = 4.49 lb/hr x 24 hr/day x 365 day/yr x ton/2000 lbs=19.66 ton/year	
11. Potential, Fugitive, and Actual Emissions Comment: See Tab 14. Assume PM = PM10 = PM2.5.	

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: SO2	2. Total Percent Efficiency of Control: 98
3. Potential Emissions: 1.71 lb/hour 7.51 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 46.9 PPMVD Reference: AP-42 2.4.4.2	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: See Tab 14	
11. Potential, Fugitive, and Actual Emissions Comment:	

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: 1.67 lb/hour 7.30 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Varies by pollutant Reference: AP-42 Section, Table 2.4-2	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: Calculations based on individual VOC calculations - see Tab 14.	
11. Potential, Fugitive, and Actual Emissions Comment: Calculations based on LandGEM 2017 output, a collection efficiency of 75%, and a destruction control efficiency of 98% (includes stack & fugitive emissions).	

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: GHG	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: Varies by pollutant Reference:	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:	
11. Potential, Fugitive, and Actual Emissions Comment: See Tab 15 for applicable above-listed information.	

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):	

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):	

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): No pollutant allowable emissions information found for this EU	

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: VE00	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: 0 % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: **5** min/ **2** hour	
4. Method of Compliance:	
5. Visible Emissions Comment: Test method is EPA Method 22. Test is length 2 hours. Standard: The flare shall be operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any two consecutive hours.	

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 2

1. Parameter Code: TEMP	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information... Manufacturer: Omega Engineering Model Number: Type K thermocouples	Serial Number:
5. Installation Date: Was part of flare when originally installed/started up – 10/4/2010.	6. Performance Specification Test Date: NA
7. Continuous Monitor Comment: Under the NSPS, Subpart WWW, the flare must include a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame. There are three (3) Type K thermocouples.	

Continuous Monitoring System: Continuous Monitor 2 of 2

1. Parameter Code: FLOW	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information... Manufacturer: Thermal Instrument Company Model Number: 62-9/9500	Serial Number: 2010209/2010210
5. Installation Date: Was part of flare when originally installed/started up – 10/4/2010.	6. Performance Specification Test Date:
7. Continuous Monitor Comment: Under the NSPS, Subpart WWW, the flare must include a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes. There are two (2) flow monitors.	

EMISSIONS UNIT INFORMATION
Section [ ] of [ ]

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

Continuous Monitoring System: Continuous Monitor ___ of ___

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:	

Continuous Monitoring System: Continuous Monitor ___ of ___

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:	

EMISSIONS UNIT INFORMATION
Section [1] of [1]

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: **Tab 7** [ ] Previously Submitted, Date _____
   [ ] Not Applicable

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: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable **LFG is incinerated in the flare**

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: **Tab 12** [ ] Previously Submitted, Date _____
   [ ] Not Applicable

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: **Tab 13** [ ] Previously Submitted, Date _____
   [ ] Not Applicable (construction application)

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: **Tab 11** [ ] Previously Submitted, Date _____
   [ ] Not Applicable

EMISSIONS UNIT INFORMATION
Section [1] of [1]

6. Compliance Demonstration Reports/Records:
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☒ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: **See results of September 2012 visible emission test in Tab 10**
   ☐ 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: **Tab 9**
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

TITLE V AIR OPERATION 2013 PERMIT RENEWAL
PERDIDO LANDFILL, ESCAMBIA COUNTY, FL
FACILITY ID NO.: 0330246

Requested changes to Current Title V Air Operation Permit

Perdido Landfill requests the following changes to its Title V Operation Permit:

1. Addition of a 450-horsepower Diesel Emergency Generator to the List of Insignificant Emissions Units and/or Activities
2. Removal of the Morbark Tub Grinder from the List of Unregulated Emissions Units and/or Activities

Addition of a 450-horsepower Diesel Emergency Generator to the List of Insignificant Emissions Units and/or Activities

Emission Calculations for emergency generator
Emissions for the 450-horsepower diesel-powered emergency generator were estimated assuming EPA Tier 3 emissions factors, based on a model year of 2008, for PM, NOx and CO; and assuming AP-42 Section 3.3 for all other pollutants. See attached calculations.

Rule Applicability Analysis

Title V Insignificant Activity 62-213.430(6)(b)

Regulatory language:
(b) An emissions unit or activity shall be considered insignificant if all of the following criteria are met:

1. *Such unit or activity would be subject to no unit-specific applicable requirement.*
2. *Such unit or activity, in combination with other units and activities proposed as insignificant, would not cause the facility to exceed any major source threshold(s) as defined in subparagraph 62-213.420(3)(c)1., F.A.C., unless it is acknowledged in the permit application that such units or activities would cause the facility to exceed such threshold(s).*
3. *Such unit or activity would neither emit nor have the potential to emit:*
    a. *500 pounds per year or more of lead and lead compounds expressed as lead;*
    b. *1,000 pounds per year or more of any hazardous air pollutant;*
    c. *2,500 pounds per year or more of total hazardous air pollutants; or*
    d. *5.0 tons per year or more of any other regulated pollutant.*

Perdido Landfill requests a determination of insignificant emissions for the 450-horsepower diesel-powered emergency generator and addition of the generator to the List of Insignificant Emissions Units and/or Activities. The generator is subject to no unit-specific applicable requirement; other than general requirements under the New Source Performance Standards (NSPS). Additionally, the potential emissions from the emergency are less than: a. 500 pounds per year of lead and lead compounds expressed as lead; b.1,000 pounds per year or more of any hazardous air pollutant; c. 2,500 pounds per year or more of total hazardous air pollutants; and d. 5.0 tons per year or more of any other regulated pollutant.

40 CFR 60, Subpart IIII – NSPS for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE)
The emergency generator has a capacity of 336 kW (450 HP). Under Subpart IIII, it falls into the category of an engine that i) is used for emergency purposes, ii) has a cylinder displacement of less than

30 liters per cylinder, iii) has a maximum engine power greater than 37 kW (50 HP), and iv) is a "2007 model year and later".

Requirements are as follows:

- Emission Standard (§60.4205(b)): Engines must meet the emission standards for new nonroad CI engines in §60.4202.
    - The certified Tier 3 engine meets this requirement.
- Manufacturer's Written Instructions(§60.4206)): The engine must be operated and maintained according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.
- Fuel Requirements (§60.4207(b)): The engine must use fuel that meets the requirements of §80.510(b).
- Monitoring Requirements (§60.4209(a)): engines not able to meet the standards applicable to non-emergency engines must have a resettable hour meter.
    - The engine has a non-resettable hour meter.
- Other Compliance Requirements (§60.4211(f)): Emergency engines must limit the operation for maintenance checks, readiness testing, and other non-emergency purposes to a total of 100 hours per year.
    - The engine will not be operated for all non-emergency purposes for more than 100 hours per year.
- Notification, reporting, and recordkeeping Requirements (§60.4214(b)): Records of operation must be kept for emergency and non-emergency services through the use of the non-resettable hour meter.
    - Perdido Landfill will keep operational records with the non-resettable hour meter.

40 CFR 63, Subpart ZZZZ – MACT for Stationary Reciprocating Internal Combustion Engines

An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR 60 Subpart IIII – the NSPS for CI ICE (NSPS Subpart IIII). No further requirements apply for such engines under 40 CFR Part 63 [(§63.6590(c)]. Since the emergency generator will be a new stationary RICE at an area source per §63.6590(c)(1), meeting the NSPS Subpart IIII requirements satisfies the MACT Subpart ZZZZ requirements.

Removal of the Morbark Tub Grinder from the List of Unregulated Emissions Units and/or Activities

The engine in the Morbark Tub Grinder (Unregulated Emissions Unit 002) is considered a "nonroad engine" under 40 CFR 89 and 1068 since the grinder does not remain in the same location within the Perdido Landfill site for more than 12 months. The Clean Air Act specifically excludes emissions from nonroad engines as stationary sources.

The definition of a 'nonroad engine' from 40 CFR 89 and 1068 is summarized as follows:

Any internal combustion engine:

i) in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or

ii) in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or

iii) that, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of

transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

An internal combustion engine is not a nonroad engine if the engine otherwise included in paragraph (iii) of the definition remains or will remain at a location for more than 12 consecutive months. A location is any single site at a building, structure, facility, or installation. Any engine (or an engine) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. This paragraph does not apply to an engine after the engine is removed from the location.

On December 5, 2008, EPA Region 5 made an applicability determination (Control Number: M090038) with respect to diesel engines used and moved through a facility. The applicability determination asserts that if the engine is regularly moved through the facility and is not stationary at one location for a period of more than 12 months, it shall be classified at a nonroad engine. Therefore if process equipment is portable or transportable and moved through a facility, and is not stationary at one location for a period of 12 months, the engine shall be classified as nonroad.

The Morbark Tub Grinder does not remain in the same location at the Perdido Landfill site for more than 12 months. As such, the Morbark Tub Grinder is not considered a stationary source under the Clean Air Act. Perdido Landfill requests its removal from revised Title V Permit in the List of Unregulated Emissions Units and/or Activities as well all references elsewhere in the Title V Permit.

TITLE V AIR OPERATION 2013 PERMIT RENEWAL
PERDIDO LANDFILL, ESCAMBIA COUNTY, FL
FACILITY ID NO.: 0330246

Insignificant/Fugitive Emissions

1. **Fugitive emissions from gasoline and diesel storage and dispensing operations.**

   Landfill operates a single fueling station that provides both gasoline and diesel fuel for landfill vehicles, mobile pumps, and generators. The fuel station employs a single 20,000 gallon split tank for the dispensing of gasoline and diesel fuels. Tank capacity if 14,000 gallons of diesel and 6,000 gallons of unleaded gasoline. Other tanks present onsite include a 240 gallon diesel tank for the emergency generator, a 560 gallon diesel tank on the fuel truck, a 525 gallon diesel tank for the new generator, a 385 gallon motor oil tank in the Citizens Convenience Center, a 385 gallon waste oil tank in the Household Hazardous Waste Facility, and a 385 gallon waste oil tank located in the garage.

2. **Fugitive emissions from small portable gasoline and diesel engines.**

   Landfill utilizes portable gas and diesel fueled pumps, generators, and compressors on a short-term basis to:

   - Operate temporary pumps for the transfer of stormwater.
   - Operate temporary leachate pumps.
   - Operate dedicated groundwater monitoring pumps.
   - Provide electrical power to portable tools and equipment.

3. **Household Hazardous Waste Collection Facility.**

   Perdido Landfill Household Hazardous Waste (HHW) Facility collects, identifies, and consolidates hazardous waste generated by residents and Conditional Exempt Small Quantity Generators (CESQG) of Escambia County Florida. This waste is sorted and bulked for acceptance by a licensed Hazardous Waste Transportation, Storage and Disposal Facility (TSDF) in accordance with federal and state rules and regulations.

   Material accepted for disposal include:

Waste Oil	Automotive Products
Oil And Latex Paints and Paint Products	Lead Acid Batteries
Rechargeable Batteries	Flares

Ammunition (<50 Cal.)	Gasoline and Diesel Fuels
Propane Bottles (All Sizes)	Pool Chemicals
Household Cleaners	Mercury Containing Devices
Fire Extinguishers	Pesticides
Insecticides	Fertilizers
Tar and Roofing Products	Miscellaneous Chemicals

Management Practices to Prevent/Reduce Fugitive Emissions

1. Collection methods include the use of self-closing funnels and drum lids on collection containers, polyethylene dust caps to seal bulk drums during use and drum gauges to prevent overfilling and spills.

2. Material received without lids, damaged or leaking containers and paper or cardboard containers are placed in plastic bags and sealed to prevent spillage and reduce emissions.

3. Ammunition is stored in an explosion proof locker and periodically destroyed by the State Fire Marshall in a DEP approved container.

4. 450 HP Diesel Emergency Generator

A 450-horsepower emergency generator was installed at Perdido Landfill in 2008. More information related to this generator is provided in "Requested Changes to Current Title V Air Operation Permit" document.

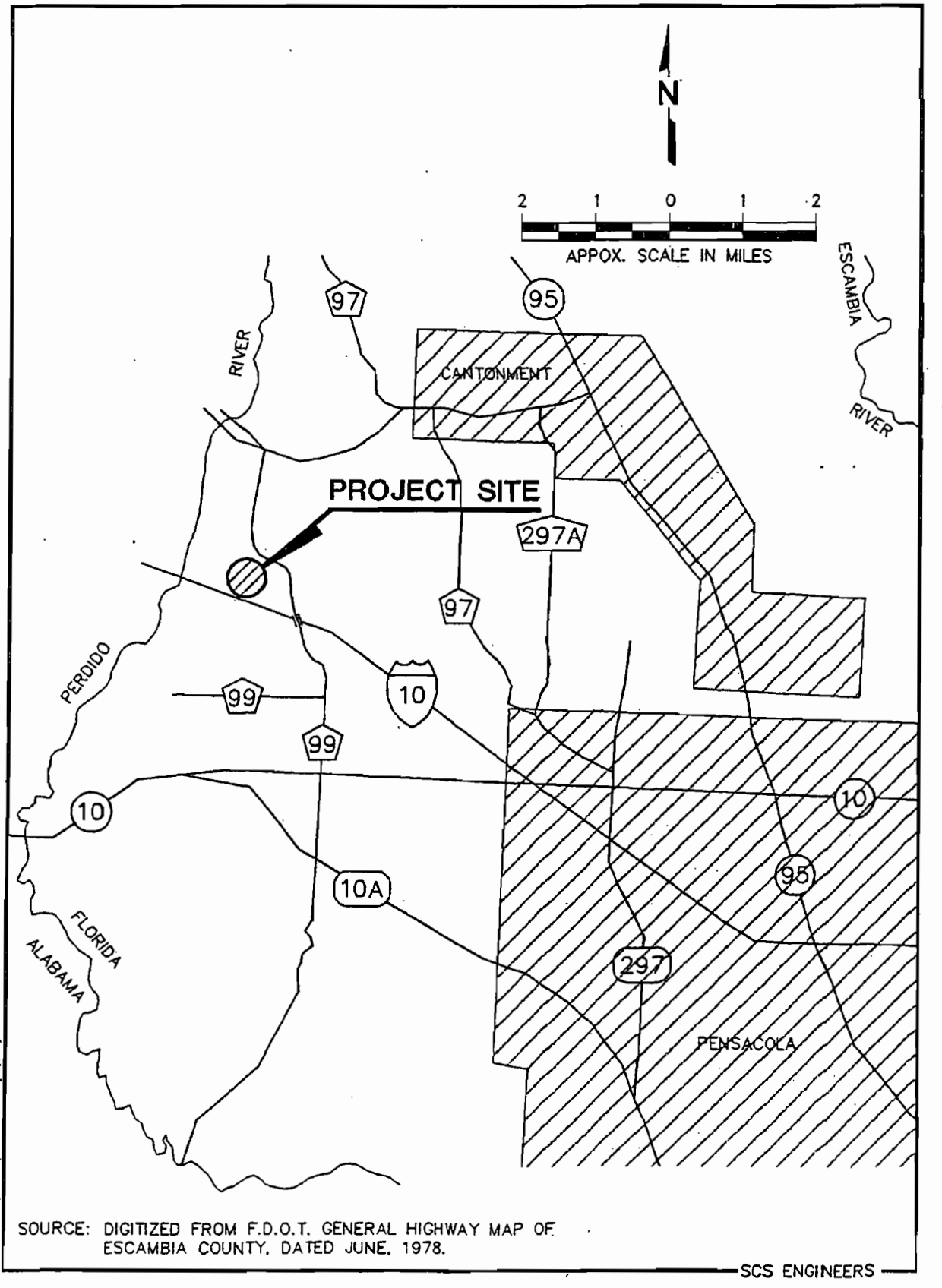
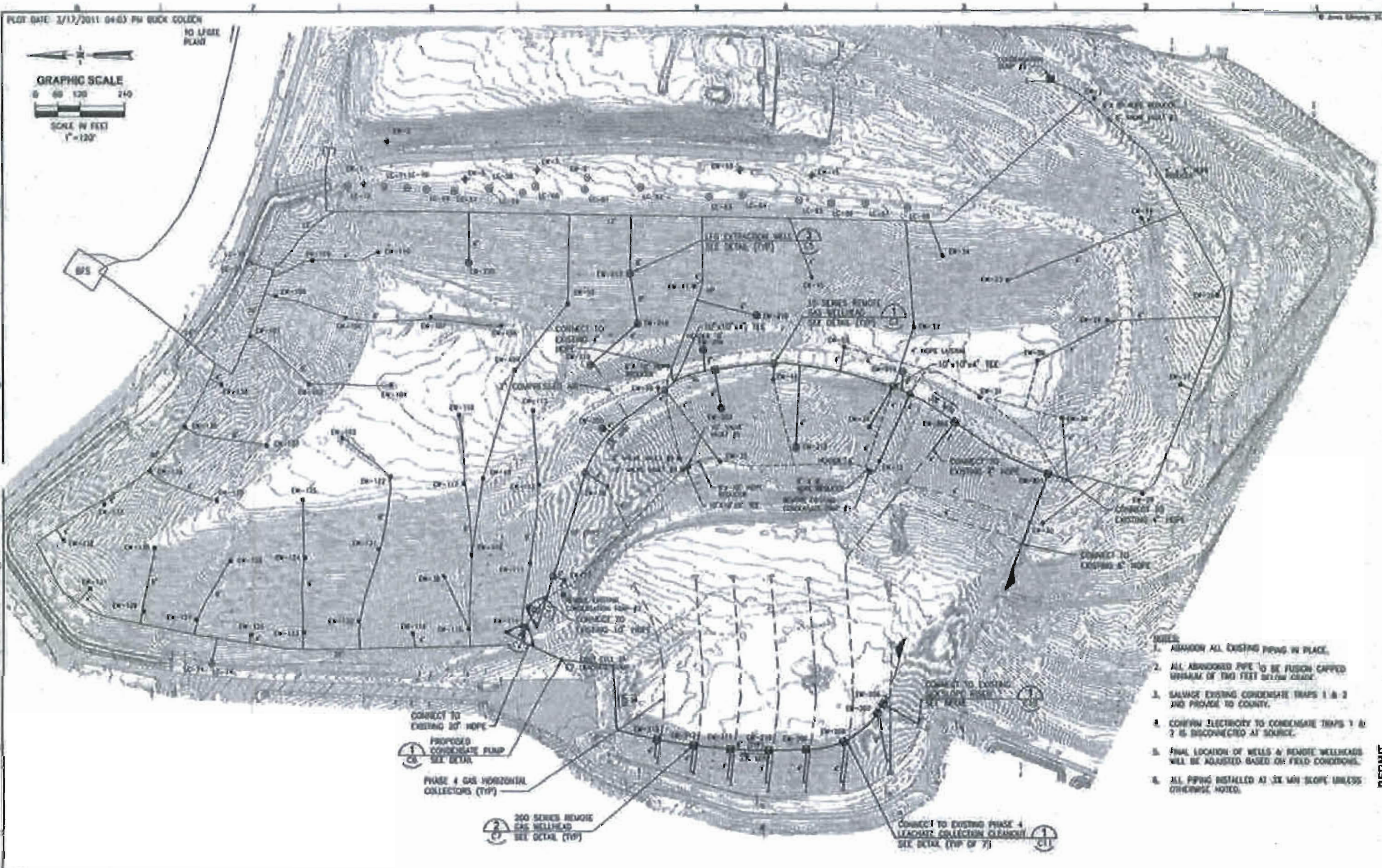


Figure 1. Site Location Plan, Perdido Landfill Facility, Escambia County, Florida.



NOTES:

1. ABANDON ALL EXISTING PIPING IN PLACE.
2. ALL ABANDONED PIPE TO BE FUSION CAPPED MINIMUM OF TWO FEET BELOW GRADE.
3. SALVAGE EXISTING CONDENSATE TRAPS 1 & 2 AND PROVIDE TO COUNTY.
4. CONFIRM ELECTRICITY TO CONDENSATE TRAPS 1 & 2 IS DISCONNECTED AT SOURCE.
5. FINAL LOCATION OF WELLS & REMOTE WELLHEADS WILL BE ADJUSTED BASED ON FIELD CONDITIONS.
6. ALL PIPING INSTALLED AT 3% MIN SLOPE UNLESS OTHERWISE NOTED.

DESIGNED: BSCHNEIDER
DRAWN: ACOLDEN
CHECKED: MMADLOCK

JONES EDMUNDS

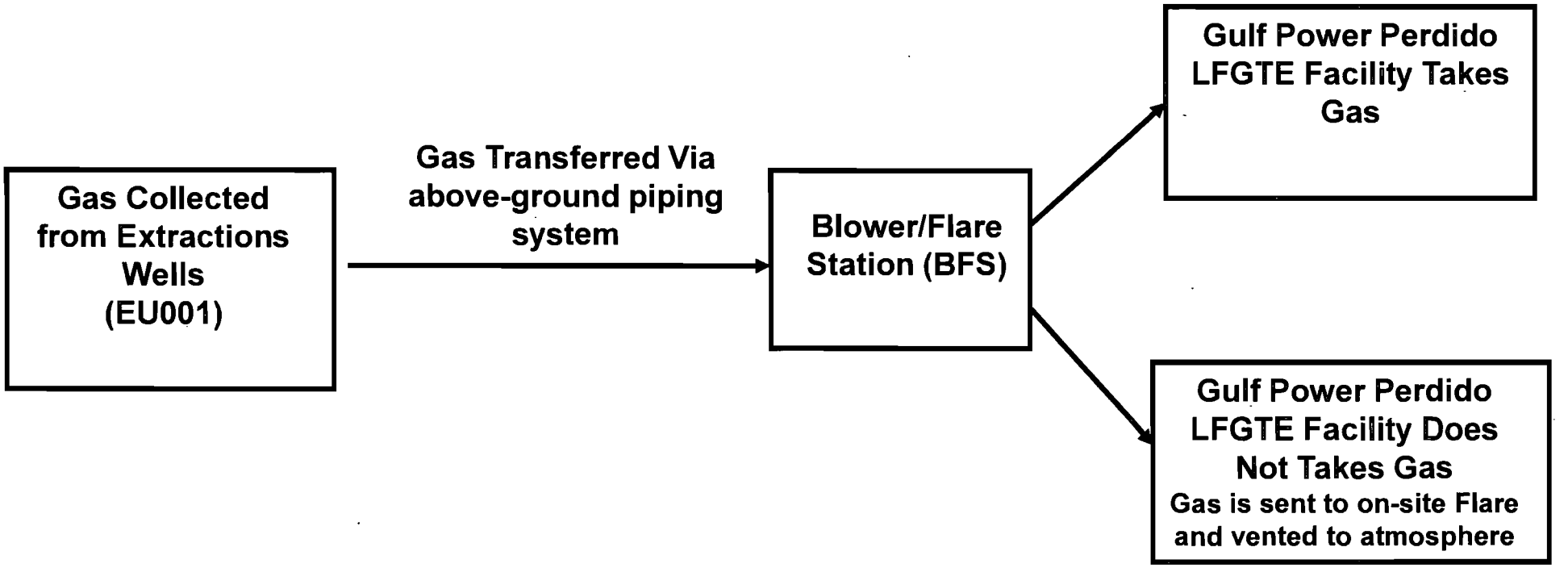
PERDIDO LANDFILL PHASE 2
GAS COLLECTION SYSTEM EXPANSION
ESCAMBIA COUNTY, FLORIDA

GAS COLLECTION PLAN

MARK D. MADLOCK

DATE: MAR 2011
SCALE: 1"=120'
DWG NO.: C3

TITLE V AIR OPERATION 2013 PERMIT RENEWAL
PERDIDO LANDFILL, ESCAMBIA COUNTY, FL
FACILITY ID NO.: 0330246



PROCESS FLOW DIAGRAM
LANDFILL GAS COLLECTION AND CONTROL SYSTEM

TITLE V AIR OPERATION 2013 PERMIT RENEWAL
PERDIDO LANDFILL, ESCAMBIA COUNTY, FL
FACILITY ID NO.: 0330246

PRECAUTIONS TO PREVENT EMISSIONS OF UNCONFINED PARTICULATE MATTER

Particulate matter produced at this facility is primary the result of road dust generated from construction activities, soil stockpile areas and heavy equipment and waste disposal trucks which travel the site.

Management Practices to Prevent / Reduce Particulate Matter

I. Construction Activities

a. Restrict construction activities and land disturbance to the minimum area needed to accomplish objectives.
b. Provide water wet-down of construction areas during dry periods to minimize soil transport and erosion.
c. Minimize soil exposed to the atmosphere by seeding or mulching.

II. Roads, Parking Lots and Miscellaneous Areas

a. Provide water wet-down of roadways during dry periods to reduce soil built-up and transport.
b. Pave or stabilize major roadways to reduce soil disturbance and transport.
c. Maintain soil cover (vegetation, mulch etc.) to prevent erosion, disturbance and transport.

Identification of Applicable Requirements

Chapter 62-4, Permits
Chapter 62-204, Air Pollution Control – General Provisions
Chapter 62-210, Stationary Sources – General
Chapter 62-213, Operation Permits for Major Sources of Air Pollution
Chapter 62-296, Stationary Sources – Emissions Standards
Chapter 62-297, Stationary Sources – Emission Monitoring
40 CFR 60, Subpart A - General Provisions
40 CFR 60, Subpart WWW (MSW Landfills)
40 CFR 60, Subpart IIII (Stationary Compression Ignition (CI) Internal Combustion Engines (ICE))
40 CFR 63, NESHAP
40 CFR 63.10, Record Keeping and Reporting Requirements
40 CFR 63, Subpart A - General Provisions
40 CFR 63, Subpart AAAA (MSW Landfills)
40 CFR 63, Subpart ZZZZ (Stationary Reciprocating Internal Combustion Engines)
40 CFR 61, Subpart A - General Provisions
40 CFR 61, Subpart M (Asbestos)

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.
An Environmental Engineering Firm Specializing In Air Emissions Measurement and Permitting
www.sandersengineering.com EMAIL: sanders@sandersengineering.com

PHONE 251-633-4120
FAX 251-633-2285

2255 SCHILLINGER RD. N.
SEMMES, AL 36575-7463

October 4, 2012

Ms. Devon Kenney
Department of Solid Waste Management
13009 Beulah Road
Cantonment, FL. 32533-8831

Dear Ms. Kenney:

Sanders Engineering & Analytical Services, Inc. (SEAS) performed Method 22 visible emissions testing on September 25, 2012, for the Department of Solid Waste Management on the flare located at the Perdido Landfill. There were no visible emissions observed during the performance of the testing. The field data for the testing is attached.

If you have any questions, or if we may be of further assistance, please do not hesitate to call.

Sincerely,

Wayne Lively Jr./mg

Wayne Lively
Environmental Specialist

BH/gm

Enclosure

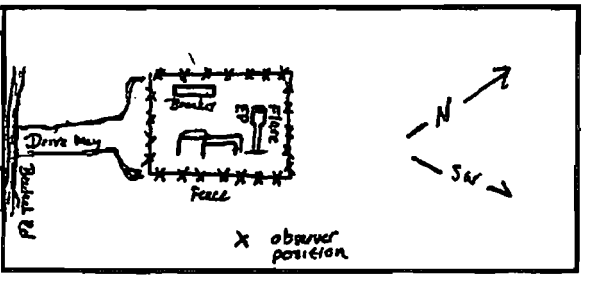
SANDERS ENGINEERING
Method 22 Visible Emissions

Company	Escambia Cty Solid Waste	Date	9-25-12
Location	Perdido Landfill	Wind direction	SE
Sky conditions	Clear	Wind speed	~0-5 mph
Precipitation	None		
Source	Flare	Reader	Wayne Lively
Possible fugitive sources	None	Co. Rep.	Sanders Engineering

OBSERVATION

Sketch process unit:

Indicate observer position relative to source; indicate emission points and/or actual emission points.



Start time	End time	Total opacity time
8:42	9:02	0 sec
9:07	9:27	0 sec
9:32	9:52	0 sec
9:57	10:17	0 sec
10:22	10:42	0 sec
10:47	11:07	0 sec

Signature: _____

Whitlow Enterprises, LLC
www.smokeschool.net
Certifies that
G. Wayne Lively Jr. of Sanders Engineering
Has passed the certification test required by EPA Method 9
40 CFR 60 Appendix A and is qualified as a visible emissions evaluator.
Certification Date: 9/17/2012 Location: Pass Christian, MS

George Whitlow
President

PCMS091712-27

INTRODUCTION

Thank you for purchasing an LFG Technologies utility flare. This flare represents the state-of-the art in simplicity and control for a modern NSPS utility flare. The purpose of this manual is to provide guidance in the safe and efficient operation of this flare system. While the flare is a simple device, the operations and maintenance should only be attempted by a trained technician.

NOTE: Use of this manual requires an Adobe PDF reader. A copy of the necessary software is provided on the CD or may be downloaded from the Internet at www.adobe.com. Once the manual is loaded you may use the links option or bookmark to navigate through the manual.

The flare consists of the following sub-systems:

1. Control valve and actuator
2. National Turbine blower assembly
3. Flare burner – includes windscreen with main flame monitored by three Type K thermocouples.
4. Pilot ignition system – The flare includes an automatic pilot ignition system to ignite landfill gas. Pilot gas is mixed with air at an inspiriting venture to the proper air/gas ratio, resulting in a stoichiometric non-smoking pilot flame. This flame is monitored by a thermocouple and automatic non-attended re-ignition is provided should the pilot flame fail. (Note: automatic re-ignition will not occur due to the flare shutting down due to a power failure).

   The inspiriting venture assembly consists of the combustion chamber, spark plug, venturi, pilot thermocouple, valve and regulator package, spark generator and piping.

5. Control panel – The brains of the flare are in the control panel and due to the complexity of the control panel any maintenance or troubleshooting in this area should only be attempted by a trained technician. This unit consists of Programmable Logic Controller, timing relays, terminal blocks, Sensor pulse units, buss system, batteries, battery charger, all housed in NEMA 4 housing.
6. Motor control center – Add-a-phase unit for single phase inlet voltage, 480 volt motor starter for blower motor and step down transformer for 110 volt.

ALL QUESTIONS RELATED TO THIS FLARE SYSTEM SHOULD BE DIRECTED TO LFG TECHNOLOGIES AT THE FOLLOWING CONTACT INFORMATION:

LFG Technologies, Inc.
2 Southcross Trail
Fairport, New York 14450
Phone: 585-425-3436
Fax: 585-598-6761
Email: Customer Support at customer@lfgtech.com

MAINTENANCE

Daily

1. Drive by and observe flare for operations
2. Check for strong propane or landfill gas odors around flare. If odor is noticeable determine source before continued operation of flare.
3. Check sound of blower for normal operation
4. Check panel for any alarms

Weekly

1. Complete daily checks.
2. Check flame arrestor and flare base for liquids build-up...normal or abnormal amounts?
3. Document temp settings, flow, alarms
4. Record propane pressure in main tank...check usage and compare historical data...is flare using normal or abnormal amounts of propane?
5. Observe propane pressure on fuel train...normal setting at 10 PSI.

Monthly:

1. Complete weekly checks.
2. Grease bearings of blower with proper grease for season. Do not over grease by forcing grease through bearing seals.

Annual

1. Remove and clean baffles in flame arrestor. Use jack screws to push flame arrestor apart after removing all connecting bolts.
2. Check and record age of main flame thermocouples. Replacement age is approximately one year. Recommend replacement in warm weather.
3. Check battery charge and amps with charger disconnected. Replace batteries if voltage is low.
4. After shutting down flare and isolating knock out pot to limit gas flow through knockout pot, remove top knockout pot cover, allow landfill gas in knockout pot to vent and remove stainless steel mesh pad. Use water only to flush debris from pad and knock out pot tank.
5. Change spark plug in pilot assembly.

NOTIFICATIONS:

1. **WARNING: Do not use manual control wheel to open or close actuator/control valve with out turning off power to the actuator before use. Control valve stroke is calibrated.**
2. The controller on this system is maintenance free.
3. The actuator and control valve are maintenance free.

TITLE V AIR OPERATION PERMIT REVISION
PERDIDO LANDFILL, ESCAMBIA COUNTY, FL
FACILITY ID NO.: 0330246

Detailed Description of Control Equipment

The Perdido Landfill gas collection and control system (GCCS) has been expanded per the construction authorized under Title V Air Construction Permit No. 1050298-005-AC. The expansion consisted of constructing a new landfill gas flare system manufactured by LFG Technologies, Inc. of Fairport, New York. The flare model number is LFG2200UFPL3 and includes a National Turbine Model number NT88304 blower capable of providing up to 4400 scfm of flow.

Details of the flare system (control system) are as follows:

The control system is fully automated to provide for the start-up, continuous monitoring, re-light, and reporting of flare operational problems and component failures. The major control system components are mounted on a common main panel designed to protect them from radiant heat. The main panel components are as follows:

- Combination Motor Starter, 480V, 3 Phase, NEMA Size 3, in NEMA 4 Enclosure, with Current Transducer for monitoring motor amperage;
- Control Panel, NEMA 4, containing a G.E. "VersaMax Micro" Programmable Logic Controller (PLC), with Touch Screen Operator Interface for local control, and telephone line Modem for remote monitoring and automatic call-out capabilities;
- Control Power Transformer, 480-120/240V, 1.5 KVA, NEMA 3R;
- Weatherproof GFCI Receptacle, 120V AC, 15A, duplex;
- Panel Light with Weatherproof Switch;
- HID Area Light.

The following sensing devices are mounted on the flare skid and connected to the PLC to provide analog input information for system control and monitoring:

- One (1) Pressure Transmitter, 0-100" W.C. Vacuum Range, mounted at the Blower Inlet;
- Three (3) Thermocouples, Type K, mounted at the Flare Burner Tip for main flame sensing;
- One (1) Thermocouple, Type K, mounted at the Pilot Gas Burner Tip for pilot flame sensing.
- One (1) Thermocouple, Type K, mounted at the Pilot Gas Burner Tip for LFG pilot flame sensing.

The control system is equipped with two flow meters to measure landfill gas flow going to the flare stack as well as flow delivered offsite to the third-party landfill gas to energy facility. Both flow meters are Thermal Instrument Company Model No. 62-9/9500 that measure instantaneous flow and record totalized flow.

The following control devices are mounted at the base of the flare and controlled by the PLC to allow automated operations:

- Ignition Transformer (electrical portion of pilot gas ignition system);
- Pilot Gas Solenoid Valve;
- Blower Inlet Control Valve Operator (controlled by 4-20mA signal from PLC).

The control panel contains the following operator interface components for the local control and monitoring of the flare system:

- Key Lockable Control Power Switch (lockable both On and Off);
- Power On Indicating Light, Push-to-Test;
- Emergency Shutdown Mushroom Head Pushbutton;
- Monochrome Touch Screen Operator Interface.

LFG Technologies

Flare Start and Stop Procedure Escambia County Florida, Perdido LFG Flare

Prestart Checks:

1. Check Propane tank- Make sure there is enough to start Propane pilot at least 10% in tank.
2. Check both Flare Inlet and Plant Nitrogen cylinders – If must be at least 200 psi in cylinders.
3. Check main power panel
    a) Switch under run light must be in auto.
    b) Main circuit breaker is in On/I
4. Make sure control panel is on and screen is visible. Screen is activated by touching.

Starting:

1. Press the control button at bottom of screen- It should be in Flow. Gas flow set point can be adjusted to desired flow in SCFM. The control panel allows the operator to change settings. This is done by pressing the desired parameter and that parameters set point can be adjusted.

LFG Pilot should be on.

The set point screen allows the operator to change set points for example the thermo couple flare proved temperature.

The Alarms should be check and cleared if possible making note of any alarm showing.

2. Go to Main screen by touching screen if it is not already on Main screen
    a) Main screen should have "Escambia County Florida Perdido LFG Flare" across the top of the screen. The next line should have Today's Date- Check that it is correct, Time and Run Hours.
    b) On the Left side of the screen a box should have Auto, Off and Manual, it should be in "Auto"
    c) Across the middle should be a Reset button yellow in color, a Start button green in color and Stop button red in color.
    d) Pressing the Start button should put the flare into its start up sequence. It the Pilot does not begin to light, Press reset and then Start again. If this does not work check the Alarms and reset those.
3. Control panel should be placed in Operating mode – this screen displays Thermocouple temperatures, Propane pressure, Propane Pilot temperature, LFG Pilot Temperature, Inlet Vacuum, Flow to Flare, Flow to Plant, Total Flow and Interstage Pressure (Pressure of gas being delivered to plant).

Shutting Down:

1. Put panel into main screen. Press Stop button (make note of Date and time). This should stop the operation of the Flare and the actuator valves should close.
2. If the flare is going to be shut off for more than 30 minutes, the valves on the Nitrogen cylinders and the propane tank should be closed then reopened for starting.
3. The emergency stop can also be pressed.

Uncontrolled and Controlled Emission Calculations

Methane Generation Rate*

Lo= 100 m^3/Mg

k= 0.00 /yr

Time	Time	Annual Waste Accept. Rate		CH_4* Generation Rate	
yr	yr	tons/yr	Mg/yr	m^3/yr	million m^3/yr
0	1980	128,714	117,012	0	0.00
1	1981	308,891	280,810	459,730	0.46
2	1982	308,780	280,709	1,544,978	1.54
3	1983	308,891	280,810	2,587,279	2.59
4	1984	309,001	280,910	3,589,104	3.59
5	1985	308,560	280,509	4,552,041	4.55
6	1986	308,560	280,509	5,475,646	5.48
7	1987	309,662	281,511	6,363,036	6.36
8	1988	377,986	343,624	7,219,567	7.22
9	1989	230,318	209,380	8,286,548	8.29
10	1990	234,726	213,387	8,784,261	8.78
11	1991	240,236	218,396	9,278,203	9.28
12	1992	244,644	222,404	9,772,458	9.77
13	1993	249,052	226,411	10,263,077	10.26
14	1994	254,562	231,420	10,750,203	10.75
15	1995	258,970	235,427	11,237,908	11.24
16	1996	264,480	240,436	11,722,234	11.72
17	1997	269,990	245,445	12,207,250	12.21
18	1998	275,500	250,455	12,692,929	12.69
19	1999	281,010	255,464	13,179,243	13.18
20	2000	243,779	221,617	13,666,170	13.67
21	2001	298,777	271,615	14,001,024	14.00
22	2002	308,322	280,293	14,519,187	14.52
23	2003	298,522	271,384	15,051,125	15.05
24	2004	417,378	379,435	15,527,202	15.53
25	2005	359,544	326,858	16,409,133	16.41
26	2006	347,669	316,063	17,049,916	17.05
27	2007	349,791	317,992	17,623,159	17.62
28	2008	367,336	333,942	18,181,505	18.18
29	2009	286,140	260,127	18,780,623	18.78
30	2010	269,976	245,433	19,066,239	19.07
31	2011	235,764	214,331	19,282,923	19.28
32	2012	265,227	241,115	19,368,913	19.37
33	2013	270,557	245,961	19,556,766	19.56
34	2014	273,263	248,421	19,756,291	19.76
35	2015	275,995	250,905	19,957,656	19.96
36	2016	278,755	253,414	20,160,886	20.16
37	2017	281,543	255,948	20,366,005	20.37
38	2018	284,358	258,507	20,573,037	20.57
39	2019	287,202	261,093	20,782,007	20.78
40	2020	290,074	263,703	20,992,940	20.99
41	2021	292,975	266,340	21,205,861	21.21
42	2022	295,904	269,004	21,420,793	21.42

43	2023	298,863	271,694	21,637,762	21.64
44	2024	301,852	274,411	21,856,792	21.86
45	2025	304,870	277,155	22,077,909	22.08
46	2026	307,919	279,927	22,301,137	22.30
47	2027	310,998	282,726	22,526,501	22.53
48	2028	314,108	285,553	22,754,026	22.75
49	2029	317,249	288,409	22,983,738	22.98
50	2030	320,422	291,293	23,215,662	23.22
51	2031	323,626	294,206	23,449,824	23.45
52	2032	326,862	297,148	23,686,249	23.69
53	2033	330,131	300,119	23,924,962	23.92
54	2034	333,432	303,120	24,165,990	24.17
55	2035	336,767	306,151	24,409,358	24.41
56	2036	340,134	309,213	24,655,093	24.66
57	2037	343,536	312,305	24,903,221	24.90
58	2038	346,971	315,428	25,153,768	25.15
59	2039	350,441	318,582	25,406,762	25.41
60	2040	353,945	321,768	25,662,228	25.66
61	2041	357,485	324,986	25,920,194	25.92
62	2042	40,802	37,093	26,180,688	26.18
63	2043	0		25,299,861	25.30

*Values from LandGEM 3.02 Model Output (assuming 50% methane content in landfill gas by volume)

Flare Data			Reference
LHV	300-600	506 BTU/ft^3	EPA heat value of methane is 1,012 Btu/scf, assuming 50% methane, 506 Btu/scf.
CO byproduct	(max E.F.)	0.37 lb/MMBTU CO	Maximum emission factor specified for the flare
NO_X byproduct	(max E.F.)	0.07 lb/MMBTU NO_X	Maximum emission factor specified for the flare
PM	AP-42	17 lb/10^6 dscf CH_4	AP-42 Table 2.4-5 Emission Factors for secondary compounds exiting control devices
Max LFG flow rate	55 - 4400 scf	4400 scfm	Maximum design flare capacity

Potential Controlled Emissions from Flare

Pollutant	CO	NO_x	PM
EF	0.37 lb/MMBTU CO	0.07 lb/MMBTU NO_x	17 lb/10^6 dscf CH_4
	tons/year		
2013-2017	216.49	40.96	19.66
	lbs/hr		
2013-2017	49.43	9.35	4.49

AP-42 Equation 3

$$Q_P = 1.82 \times Q_{CH_4} \times \frac{C_P}{(1 \times 10^6)}$$

Emission Rate (Q_P)

Pollutant	S	NMOC	Cl	HAPs	VOCs
Cp (ppmv)	46.9	595	42	–	–
Year	Q_P (m^3/yr)				
2013	1669.33	21178.02	1494.92	4087.37	7688.69
2014	1686.36	21394.09	1510.17	4129.07	7767.13
2015	1703.55	21612.15	1525.56	4171.15	7846.30
2016	1720.89	21832.22	1541.10	4213.63	7926.20
2017	1738.40	22054.35	1556.78	4256.50	7966.07
AP-42 Reference	Section 2.4.4.2 pg 2.4-8	Table 2.4-2 pg 2.4-4	2.4.4.2 pg 2.4-9	See HAPs Tab	See VOCs Tab

AP-42 Equation 4

$$UM_P = Q_P \times \left[\frac{MW_P \times 1}{(8.205 \times 10^{-5})(1000 \ / 1)(273 + T)} \right]$$

Uncontrolled Mass Emissions (UM_P)

Pollutant	S	NMOC	Cl	HAPs	VOCs
Mol. Wt. (MW)	64	86.18	36.46	–	–
Year	UM_P (kg/yr)				
2013	4369.45	74644.37	2229.15	15318.98	23116.03
2014	4414.02	75405.91	2251.89	15475.27	23351.87
2015	4459.01	76174.49	2274.85	15633.00	23589.88
2016	4504.42	76950.17	2298.01	15792.19	23830.10
2017	4550.25	77733.07	2321.39	15952.86	31392.30

AP-42 Equation 5

$$CM_P = \left[UM_P \times \left(1 - \frac{\eta_{col}}{100} \right) \right] + \left[UM_P \times \frac{\eta_{col}}{100} \times \left(1 - \frac{\eta_{cnt}}{100} \right) \right]$$

AP-42,Equation 7 (SO_2)

$$CM_{SO2} = UM_S \times \frac{\eta_{col}}{100} \times 2.0$$

AP-42 Equation 10 (Cl)

$$CM_{HCl} = UM_{Cl} \times \frac{\eta_{col}}{100} \times 1.03 \times \frac{\eta_{cnt}}{100}$$

***Controlled Mass Emissions (Emissions from Flare Exhaust plus Fugitive Emissions from Landfill)**

Pollutant (Reference)	SO_2 (AP-42: EQN 7)	NMOC (AP-42: EQN 5)	H106 (AP-42 EQN: 10)	HAPs (Individual HAPs AP-42: EQN 5)	VOCs (Individual VOCs AP-42: EQN 5)
Year	CM_p (kg/yr)				
2013	6554.17	19780.76	1687.58	4059.53	4806.81
2014	6621.04	19982.57	1704.80	4100.95	4855.85
2015	6688.52	20186.24	1722.17	4142.75	4905.34
2016	6756.63	20391.80	1739.71	4100.95	4955.29
2017	6825.37	20599.26	1757.41	4227.51	6638.11

Assumes a collection efficiency of 75% and a control efficiency of 98%

Controlled Mass Emissions [tons per year]

Pollutant	SO_2	NMOC	H106	HAPs	VOCs
Year	CM_p (tons/yr)				
2013	7.21	21.76	1.86	4.47	5.29
2014	7.28	21.98	1.88	4.51	5.34
2015	7.36	22.20	1.89	4.56	5.40
2016	7.43	22.43	1.91	4.51	5.45
2017	7.51	22.66	1.93	4.65	7.30

*Emissions from Flare Exhaust plus Fugitive Emissions from Landfill

Controlled Mass Emissions [pounds per hour]

Pollutant	SO_2	NMOC	H106	HAPs	VOCs
Year	CM_p (lb/hr)				
2013	1.65	4.97	0.42	1.02	1.21
2014	1.66	5.02	0.43	1.03	1.22
2015	1.68	5.07	0.43	1.04	1.23
2016	1.70	5.12	0.44	1.03	1.24
2017	1.71	5.17	0.44	1.06	1.67

*Emissions from Flare Exhaust plus Fugitive Emissions from Landfill

* There are no SO2 or HCL (H106) fugitive emissions. Calculations assume all sulfur is converted to SO2 and all chloride is converted to HCL per AP-42.

Total HAPs [Qp = Emission Rate]	Year	2013	2014	2015	2016	2017
	Qp (m^3/yr)	4087.37	4129.07	4171.15	4213.63	4256.50
Pollutant	C_p (ppm_v)					
1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	17.08	17.26	17.44	17.61	17.79
1,1,2,2-Tetrachloroethane - HAP/VOC	1.10	39.15	39.55	39.96	40.36	40.77
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.40	85.42	86.30	87.18	88.06	88.96
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	7.12	7.19	7.26	7.34	7.41
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	14.59	14.74	14.89	15.04	15.20
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	6.41	6.47	6.54	6.60	6.67
Acrylonitrile - HAP/VOC	6.30	224.24	226.53	228.83	231.16	233.52
Benzene - No or Unknown Co-disposal - HAP/VOC	1.90	67.63	68.32	69.01	69.72	70.43
Carbon disulfide - HAP/VOC	0.58	20.64	20.85	21.07	21.28	21.50
Carbon tetrachloride - HAP/VOC	0.00	0.14	0.14	0.15	0.15	0.15
Carbonyl sulfide - HAP/VOC	0.49	17.44	17.62	17.80	17.98	18.16
Chlorobenzene - HAP/VOC	0.25	8.90	8.99	9.08	9.17	9.27
Chloroethane (ethyl chloride) - HAP/VOC	1.30	46.27	46.74	47.22	47.70	48.19
Chloroform - HAP/VOC	0.03	1.07	1.08	1.09	1.10	1.11
Dichlorobenzene - (HAP for para isomer/VOC)	0.21	7.47	7.55	7.63	7.71	7.78
Dichloromethane (methylene chloride) - HAP	14.00	498.31	503.39	508.52	513.70	518.93
Ethylbenzene - HAP/VOC	4.60	163.73	165.40	167.09	168.79	170.50
Ethylene dibromide - HAP/VOC	0.00	0.04	0.04	0.04	0.04	0.04
Hexane - HAP/VOC	6.60	234.92	237.31	239.73	242.17	244.64
Mercury (total) - HAP	0.00	0.01	0.01	0.01	0.01	0.01
Methyl ethyl ketone - HAP/VOC	7.10	252.71	255.29	257.89	260.52	263.17
Methyl isobutyl ketone - HAP/VOC	1.90	67.63	68.32	69.01	69.72	70.43
Perchloroethylene (tetrachloroethylene) - HAP	3.70	131.70	133.04	134.39	135.76	137.14
Toluene - No or Unknown Co-disposal - HAP/VOC	39.00	1388.14	1402.30	1416.59	1431.02	1445.58
Trichloroethylene (trichloroethene) - HAP/VOC	2.80	99.66	100.68	101.70	102.74	103.79
Vinyl chloride - HAP/VOC	7.30	259.83	262.48	265.16	267.86	270.58
Xylenes - HAP/VOC	12.00	427.12	431.48	435.88	440.31	444.79

Total HAPs [UMp = Uncontrolled Mass Emissions]	Year	2013	2014	2015	2016	2017
	*UMp (kg/yr)	15318.98	15475.27	15633.00	15792.19	15952.86
Pollutant	MW (g/gmol)					
1,1,1-Trichloroethane (methyl chloroform) - HAP	133.41	93.22	94.17	95.13	96.10	97.08
1,1,2,2-Tetrachloroethane - HAP/VOC	167.85	268.77	271.52	274.28	277.08	279.90
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	98.97	345.77	349.30	352.86	356.45	360.08
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	96.94	28.22	28.51	28.80	29.10	29.39
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	98.96	59.06	59.67	60.27	60.89	61.51
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	112.99	29.61	29.91	30.21	30.52	30.83
Acrylonitrile - HAP/VOC	53.06	486.61	491.57	496.59	501.64	506.75
Benzene - No or Unknown Co-disposal - HAP/VOC	78.11	216.04	218.24	220.47	222.71	224.98
Carbon disulfide - HAP/VOC	76.13	64.28	64.93	65.59	66.26	66.94
Carbon tetrachloride - HAP/VOC	153.84	0.90	0.90	0.91	0.92	0.93
Carbonyl sulfide - HAP/VOC	60.07	42.85	43.28	43.73	44.17	44.62
Chlorobenzene - HAP/VOC	112.56	40.96	41.38	41.80	42.23	42.66
Chloroethane (ethyl chloride) - HAP/VOC	64.52	122.10	123.34	124.60	125.87	127.15
Chloroform - HAP/VOC	119.39	5.21	5.27	5.32	5.37	5.43
Dichlorobenzene - (HAP for para isomer/VOC)	147.00	44.94	45.40	45.86	46.33	46.80
Dichloromethane (methylene chloride) - HAP	84.94	1731.07	1748.73	1766.55	1784.54	1802.70
Ethylbenzene - HAP/VOC	106.16	710.87	718.13	725.45	732.83	740.29
Ethylene dibromide - HAP/VOC	187.88	0.27	0.28	0.28	0.28	0.28
Hexane - HAP/VOC	86.18	827.99	836.44	844.96	853.56	862.25
Mercury (total) - HAP	200.61	0.08	0.09	0.09	0.09	0.09
Methyl ethyl ketone - HAP/VOC	72.11	745.29	752.90	760.57	768.32	776.13
Methyl isobutyl ketone - HAP/VOC	100.16	277.03	279.85	282.71	285.58	288.49
Perchloroethylene (tetrachloroethylene) - HAP	165.83	893.18	902.29	911.49	920.77	930.14
Toluene - No or Unknown Co-disposal - HAP/VOC	92.13	5230.45	5283.82	5337.67	5392.02	5446.88
Trichloroethylene (trichloroethene) - HAP/VOC	131.40	535.58	541.05	546.56	552.13	557.75
Vinyl chloride - HAP/VOC	62.50	664.17	670.94	677.78	684.68	691.65
Xylenes - HAP/VOC	106.16	1854.45	1873.37	1892.47	1911.74	1931.19

Total HAPs [CMp = Controlled Mass Emissions]	Year	2013	2014	2015	2016	2017
	CMp (kg/yr)	4059.53	4100.95	4142.75	4184.93	4227.51
Pollutant						
1,1,1-Trichloroethane (methyl chloroform) - HAP		24.70	24.95	25.21	25.47	25.73
1,1,2,2-Tetrachloroethane - HAP/VOC		71.23	71.95	72.69	73.43	74.17
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC		91.63	92.56	93.51	94.46	95.42
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC		7.48	7.56	7.63	7.71	7.79
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC		15.65	15.81	15.97	16.14	16.30
1,2-Dichloropropane (propylene dichloride) - HAP/VOC		7.85	7.93	8.01	8.09	8.17
Acrylonitrile - HAP/VOC		128.95	130.27	131.60	132.94	134.29
Benzene - No or Unknown Co-disposal - HAP/VOC		57.25	57.83	58.42	59.02	59.62
Carbon disulfide - HAP/VOC		17.03	17.21	17.38	17.56	17.74
Carbon tetrachloride - HAP/VOC		0.24	0.24	0.24	0.24	0.25
Carbonyl sulfide - HAP/VOC		11.35	11.47	11.59	11.71	11.82
Chlorobenzene - HAP/VOC		10.86	10.97	11.08	11.19	11.30
Chloroethane (ethyl chloride) - HAP/VOC		32.36	32.69	33.02	33.36	33.70
Chloroform - HAP/VOC		1.38	1.40	1.41	1.42	1.44
Dichlorobenzene - (HAP for para isomer/VOC)		11.91	12.03	12.15	12.28	12.40
Dichloromethane (methylene chloride) - HAP		458.73	463.41	468.14	472.90	477.71
Ethylbenzene - HAP/VOC		188.38	190.30	192.24	194.20	196.18
Ethylene dibromide - HAP/VOC		0.07	0.07	0.07	0.07	0.08
Hexane - HAP/VOC		219.42	221.66	223.91	226.19	228.50
Mercury (total) - HAP		0.02	0.02	0.02	0.02	0.02
Methyl ethyl ketone - HAP/VOC		197.50	199.52	201.55	203.60	205.68
Methyl isobutyl ketone - HAP/VOC		73.41	74.16	74.92	75.68	76.45
Perchloroethylene (tetrachloroethylene) - HAP		236.69	239.11	241.54	244.00	246.49
Toluene - No or Unknown Co-disposal - HAP/VOC		1386.07	1400.21	1414.48	1428.89	1443.42
Trichloroethylene (trichloroethene) - HAP/VOC		141.93	143.38	144.84	146.31	147.80
Vinyl chloride - HAP/VOC		176.00	177.80	179.61	181.44	183.29
Xylenes - HAP/VOC		491.43	496.44	501.50	506.61	511.76

*Note: Assumes collection efficiency of 75% and a control efficiency of 98%

Total VOCs [Qp = Emission Rate]	Year	2013	2014	2015	2016	2017
	Qp (m^3/yr)	7688.69	7767.13	7846.30	7926.20	7966.07
Pollutant	C_p (ppm_v)					
1,1,2,2-Tetrachloroethane - HAP/VOC	1.10	39.15	39.55	39.96	40.36	88.96
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.40	85.42	86.30	87.18	88.06	7.41
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	7.12	7.19	7.26	7.34	15.20
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	14.59	14.74	14.89	15.04	6.67
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	6.41	6.47	6.54	6.60	233.52
Acrylonitrile - HAP/VOC	6.30	224.24	226.53	228.83	231.16	70.43
Benzene - No or Unknown Co-disposal - HAP/VOC	1.90	67.63	68.32	69.01	69.72	21.50
Carbon disulfide - HAP/VOC	0.58	20.64	20.85	21.07	21.28	0.15
Carbon tetrachloride - HAP/VOC	0.00	0.14	0.14	0.15	0.15	18.16
Carbonyl sulfide - HAP/VOC	0.49	17.44	17.62	17.80	17.98	9.27
Chlorobenzene - HAP/VOC	0.25	8.90	8.99	9.08	9.17	48.19
Chloroethane (ethyl chloride) - HAP/VOC	1.30	46.27	46.74	47.22	47.70	1.11
Chloroform - HAP/VOC	0.03	1.07	1.08	1.09	1.10	7.78
Dichlorobenzene - (HAP for para isomer/VOC)	0.21	7.47	7.55	7.63	7.71	170.50
Ethylbenzene - HAP/VOC	4.60	163.73	165.40	167.09	168.79	0.04
Ethylene dibromide - HAP/VOC	0.00	0.04	0.04	0.04	0.04	244.64
Hexane - HAP/VOC	6.60	234.92	237.31	239.73	242.17	263.17
Methyl ethyl ketone - HAP/VOC	7.10	252.71	255.29	257.89	260.52	70.43
Methyl isobutyl ketone - HAP/VOC	1.90	67.63	68.32	69.01	69.72	1445.58
Toluene - No or Unknown Co-disposal - HAP/VOC	39.00	1388.14	1402.30	1416.59	1431.02	103.79
Trichloroethylene (trichloroethene) - HAP/VOC	2.80	99.66	100.68	101.70	102.74	270.58
Vinyl chloride - HAP/VOC	7.30	259.83	262.48	265.16	267.86	444.79
Xylenes - HAP/VOC	12.00	427.12	431.48	435.88	440.31	1853.31
2-Propanol (isopropyl alcohol) - VOC	50.00	1779.67	1797.82	1816.15	1834.64	114.90
Bromodichloromethane - VOC	3.10	110.34	111.46	112.60	113.75	185.33
Butane - VOC	5.00	177.97	179.78	181.61	183.46	44.48
Chloromethane - VOC	1.20	42.71	43.15	43.59	44.03	96.37
Dichlorofluoromethane - VOC	2.60	92.54	93.49	94.44	95.40	289.12
Dimethyl sulfide (methyl sulfide) - VOC	7.80	277.63	280.46	283.32	286.20	1000.79
Ethanol - VOC	27.00	961.02	970.82	980.72	990.71	85.25
Ethyl mercaptan (ethanethiol) - VOC	2.30	81.86	82.70	83.54	84.39	28.17
Fluorotrichloromethane - VOC	0.76	27.05	27.33	27.61	27.89	92.67
Methyl mercaptan - VOC	2.50	88.98	89.89	90.81	91.73	122.32
Pentane - VOC	3.30	117.46	118.66	119.87	121.09	407.73
Propane - VOC	11.00	391.53	395.52	399.55	403.62	103.79
t-1,2-Dichloroethene - VOC	2.80	99.66	100.68	101.70	102.74	0.00

Total VOCs [UMp = Uncontrolled Mass Emissions]	Year	2013	2014	2015	2016	2017
	*UMp (kg/yr)	23116.03	23351.87	23589.88	23830.10	31392.30
Pollutant	MW (g/gmol)					
1,1,2,2-Tetrachloroethane - HAP/VOC	167.85	268.77	271.52	274.28	277.08	610.68
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	98.97	345.77	349.30	352.86	356.45	30.01
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	96.94	28.22	28.51	28.80	29.10	60.25
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	98.96	59.06	59.67	60.27	60.89	27.00
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	112.99	29.61	29.91	30.21	30.52	1079.10
Acrylonitrile - HAP/VOC	53.06	486.61	491.57	496.59	501.64	152.83
Benzene - No or Unknown Co-disposal - HAP/VOC	78.11	216.04	218.24	220.47	222.71	68.68
Carbon disulfide - HAP/VOC	76.13	64.28	64.93	65.59	66.26	0.46
Carbon tetrachloride - HAP/VOC	153.84	0.90	0.90	0.91	0.92	114.27
Carbonyl sulfide - HAP/VOC	60.07	42.85	43.28	43.73	44.17	22.77
Chlorobenzene - HAP/VOC	112.56	40.96	41.38	41.80	42.23	221.82
Chloroethane (ethyl chloride) - HAP/VOC	64.52	122.10	123.34	124.60	125.87	2.93
Chloroform - HAP/VOC	119.39	5.21	5.27	5.32	5.37	38.01
Dichlorobenzene - (HAP for para isomer/VOC)	147.00	44.94	45.40	45.86	46.33	1025.08
Ethylbenzene - HAP/VOC	106.16	710.87	718.13	725.45	732.83	0.16
Ethylene dibromide - HAP/VOC	187.88	0.27	0.28	0.28	0.28	1879.78
Hexane - HAP/VOC	86.18	827.99	836.44	844.96	853.56	927.57
Methyl ethyl ketone - HAP/VOC	72.11	745.29	752.90	760.57	768.32	207.70
Methyl isobutyl ketone - HAP/VOC	100.16	277.03	279.85	282.71	285.58	5921.63
Toluene - No or Unknown Co-disposal - HAP/VOC	92.13	5230.45	5283.82	5337.67	5392.02	391.06
Trichloroethylene (trichloroethene) - HAP/VOC	131.40	535.58	541.05	546.56	552.13	1454.12
Vinyl chloride - HAP/VOC	62.50	664.17	670.94	677.78	684.68	1136.96
Xylenes - HAP/VOC	106.16	1854.45	1873.37	1892.47	1911.74	8046.62
2-Propanol (isopropyl alcohol) - VOC	60.11	4375.12	4419.76	4464.81	4510.27	282.48
Bromodichloromethane - VOC	163.83	739.31	746.86	754.47	762.15	1241.78
Butane - VOC	58.12	423.03	427.34	431.70	436.10	105.73
Chloromethane - VOC	50.49	88.20	89.10	90.01	90.92	199.00
Dichlorofluoromethane - VOC	102.92	389.54	393.51	397.52	401.57	1216.96
Dimethyl sulfide (methyl sulfide) - VOC	62.13	705.46	712.65	719.92	727.25	2543.01
Ethanol - VOC	46.08	1811.13	1829.61	1848.26	1867.08	160.67
Ethyl mercaptan (ethanethiol) - VOC	62.13	208.02	210.14	212.28	214.44	71.58
Fluorotrichloromethane - VOC	137.38	151.99	153.54	155.10	156.68	520.65
Methyl mercaptan - VOC	48.11	175.09	176.87	178.67	180.49	240.68
Pentane - VOC	72.15	346.60	350.13	353.70	357.30	1203.13
Propane - VOC	44.09	706.00	713.21	720.47	727.81	187.15
t-1,2-Dichloroethene - VOC	96.94	395.13	399.16	403.22	407.33	0.00

Total VOCs [CMp = Controlled Mass Emissions]	Year	2013	2014	2015	2016	2017
	CMp (kg/yr)	4806.81	4855.85	4905.34	4955.29	6638.11
Pollutant						
1,1,2,2-Tetrachloroethane - HAP/VOC		71.23	71.95	72.69	73.43	161.83
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC		91.63	92.56	93.51	94.46	7.95
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC		7.48	7.56	7.63	7.71	15.97
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC		15.65	15.81	15.97	16.14	7.16
1,2-Dichloropropane (propylene dichloride) - HAP/VOC		7.85	7.93	8.01	8.09	285.96
Acrylonitrile - HAP/VOC		128.95	130.27	131.60	132.94	40.50
Benzene - No or Unknown Co-disposal - HAP/VOC		57.25	57.83	58.42	59.02	18.20
Carbon disulfide - HAP/VOC		17.03	17.21	17.38	17.56	0.12
Carbon tetrachloride - HAP/VOC		0.24	0.24	0.24	0.24	30.28
Carbonyl sulfide - HAP/VOC		11.35	11.47	11.59	11.71	6.03
Chlorobenzene - HAP/VOC		10.86	10.97	11.08	11.19	58.78
Chloroethane (ethyl chloride) - HAP/VOC		32.36	32.69	33.02	33.36	0.78
Chloroform - HAP/VOC		1.38	1.40	1.41	1.42	10.07
Dichlorobenzene - (HAP for para isomer/VOC)		11.91	12.03	12.15	12.28	271.65
Ethylbenzene - HAP/VOC		188.38	190.30	192.24	194.20	0.04
Ethylene dibromide - HAP/VOC		0.07	0.07	0.07	0.07	498.14
Hexane - HAP/VOC		219.42	221.66	223.91	226.19	245.81
Methyl ethyl ketone - HAP/VOC		197.50	199.52	201.55	203.60	55.04
Methyl isobutyl ketone - HAP/VOC		73.41	74.16	74.92	75.68	1569.23
Toluene - No or Unknown Co-disposal - HAP/VOC		1386.07	1400.21	1414.48	1428.89	103.63
Trichloroethylene (trichloroethene) - HAP/VOC		141.93	143.38	144.84	146.31	385.34
Vinyl chloride - HAP/VOC		176.00	177.80	179.61	181.44	301.29
Xylenes - HAP/VOC		491.43	496.44	501.50	506.61	2132.35
2-Propanol (isopropyl alcohol) - VOC		1159.41	1171.24	1183.17	1195.22	74.86
Bromodichloromethane - VOC		195.92	197.92	199.93	201.97	329.07
Butane - VOC		112.10	113.25	114.40	115.57	28.02
Chloromethane - VOC		23.37	23.61	23.85	24.09	52.74
Dichlorofluoromethane - VOC		103.23	104.28	105.34	106.42	322.49
Dimethyl sulfide (methyl sulfide) - VOC		186.95	188.85	190.78	192.72	673.90
Ethanol - VOC		479.95	484.85	489.79	494.78	42.58
Ethyl mercaptan (ethanethiol) - VOC		55.13	55.69	56.26	56.83	18.97
Fluorotrichloromethane - VOC		40.28	40.69	41.10	41.52	137.97
Methyl mercaptan - VOC		46.40	46.87	47.35	47.83	63.78
Pentane - VOC		91.85	92.79	93.73	94.69	318.83
Propane - VOC		187.09	189.00	190.93	192.87	49.59
t-1,2-Dichloroethene - VOC		104.71	105.78	106.85	107.94	0.00

*Note: Assumes collection efficiency of 75% and a control efficiency of 98%

GHG Tailoring Rule Calculator

Instructions: Find your Flare or Engine's Maximum Throughput (in scfm) using the same documentation you used to determine throughput for non-GHG emissions calculations. Some examples of common capacities are included on the second tab (GHG PTE). On that tab, the Total Potential Emissions columns have calculated the annual potential tons of greenhouse gases generated for the sample type and size of destruction device. Please note that this table does not include all sizes of devices, but can be used for all devices by simply inserting the maximum throughput for your device in space B8 of tab 2 (GHG PPTE). Again, please check your permit conditions, manufacturer's specifications and any permit modificiations to ensure that proper maximum throughput is used in the GHG PTE calculation

Assumptions: LFG = 50% CH4 and 50% CO2
*when calculating potential to emit for criteria pollutants, 50 % CH4 and 50 % CO2 are typically used, therefore use these numbers when calculating GHG emissions unless criteria pollutants were calculated on a different basis

Heating value of LFG = 506 BTU/scf
*Pure methane has a heating value of 1012 BTU/scf and the model assumes that Landfill gas is 50% methane, therefore a heating value of 506 BTU/scf for landfill gas. This will need to be adjusted if use a different percent methane content than 50%.

Devices are run for 8760 hours/year
*One year contains 8760 hours, therefore assume the device will run full time. If you are taking a voluntary limit on operating hours, limiting yourself too less than full time operation, enter the number of hours you will limit operations to for one year. This is a rare occurance and must be Air Director approved.
Global Warming Potential CH4 = 21
Global Warming Potential N2O = 310
*Global Warming Potential Taken from TABLE A–1 to Subpart A of Part 98-Global Warming Potentials
40 CFR Parts 86, 87, 89 et al. Mandatory Reporting of Greenhouse Gases; Final Rule

Emission factors: CO2 = 52.07 kg /MMBTU
*Taken from TABLE C–1 to Subpart C of Part 98 -Default CO2 Emission Factors and High Heat Values for Various Types of Fuel,
40 CFR Parts 86, 87, 89 et al. Mandatory Reporting of Greenhouse Gases; Final Rule

CH4 = 3.20E-03 kg/MMBTU
N2O = 6.30E-04 kg/MMBTU
*Taken from TABLE C–2 to Subpart C of Part 98 - Default CH4 and N2O Emission Factors for Various Types of Fuel,
40 CFR Parts 86, 87, 89 et al. Mandatory Reporting of Greenhouse Gases; Final Rule

Calculations: **Annual throughput (mmscf) =** Unit rated throughput (scfm) X 60 min./hour X 24 hr./day X 365 days/year X 0.000001

Annual Methane and CO2 generation (mmscf) = annual throughput (mmscf) x 0.50 (50 %)

Heat Rate (MMBTU/hr) = Unit rated throughput (scfm) X 60 min/hr. X 506 BTU/scf (heating value of LFG) X 0.000001

Total CO2 = metric tons of CO2 generated by combustion of LFG plus passthrough metric tons of CO2
metric tons of CO2 due to combustion = heat rate (MMBTU/hr) X 8760 hr/year X emission factor CO2 (52.07) x 0.001

passthrough metric tons = CO2 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 44.01 gm/1 mole CO2 X 1.00 E-6 metric tons/ 1gm.

Total N2O (metric tons CO2 eq.) = heat rate (MMBTU/hr) X 8760 hr/year X emission factor N2O (6.30E-04 kg/MMBTU) x 0.001 X 310 GWP

Total CH4 (metric tons CO2 eq.) = heat rate (MMBTU/hr) X 8760 hr/year X emission factor CH4 (3.20E-03 kg/MMBTU) x 0.001 X 21 GWP

Total metric tons (CO2 and CO2 eq.) = Total CO2 + N2O metric tons CO2 eq. + CH4 metric tons CO2 eq. X 1.1023

Converstion Factors:

1 gram	=	1.000E-06 metric tons
1 mmscf	=	1000000 scf
1 mol CO2	=	44.01 g
1 m3	=	35.31 scf
1 m3	=	1000 L
1 mol gas	=	23.69 L

* 23.689 is molar volume of gas at standard pressure of 1 atmosphere at 60 degrees Farenheit

pressure = 1 atmosphere as published in the Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air and the Compendium of Method for the Determination of Toxic Organic Compounds in Ambient Air.

temperature = 60 degrees Farenheit as cited in 40 CFR Parts 86, 87, 89 et al. Mandatory Reporting of Greenhouse Gases; Final Rule

General Information

Combustion Source	Unit Rated Throughput (scfm)	Annual Potential Throughput (mmscf)	Annual Potential Methane Generation (mmscf)	Annual Potential CO2 Generation (mmscf)
Flare(s) (4400 scfm)	4400	2,312.64	1,156.32	1,156.32
Total	4400	2,312.64	**1,156.32**	**1,156.32**

Potential Emissions

Combustion Source	Heat Rate (MMBTU/Hr)	Total CO2 (metric tons)	N2O (metric tons CO2 eq.)	CH4 (metric tons CO2 eq.)	**Total Potential Emissions CO2 eq. metric tons (CO2+CO2 eq.)**	**Total Potential Emissions CO2 eq. short tons (U.S tons)**
Flare(s) (4400 scfm)	133.584	121,771.50	228.54	78.64	**122,078.68**	134,567.33
Total	133.584	121,771.50	228.54	78.64	**122,078.68**	134,567.33

General Information

Unit Type	Unit Rated Throughput (scfm)	Annual Potential Throughput (mmscf)	Annual Potential Methane Generation (mmscf)	Annual Potential CO2 Generation (mmscf)
Flare(s) (4400 scfm)	4400	2312.64	1156.32	1156.32
Total	4400	2312.64	1156.32	1156.32

Potential Biogenic Generation

Unit Type	Heat Rate (MMBTU/Hr)	Combustion CO2 (metric tons)	Passthrough CO2 (metric tons)	**Total Biogenic CO2 (metric tons)**	**Total Biogenic CO2 (US tons)**
Flare(s) (4400 scfm)	133.584	60,932.10	60,839.41	**121,771.50**	134,228.73
Total	133.584	60,932.10	60,839.41	**121,771.50**	134,228.73

Potential Anthropogenic Generation

Unit Type	N2O (metric tons)	CH4 (metric tons)	N2O (metric tons CO2 eq.)	CH4 (metric tons CO2 eq.)	**Total Anthropogenic (metric tons CO2 eq.)**	**Total Anthropogenic (US tons CO2 eq.)**
Flare(s) (4400 scfm)	0.74	3.74	228.54	78.64	**307.18**	338.60
Total	0.74	3.74	228.54	78.64	**307.18**	338.60

Combined Biogenic and Anthropogenic Totals

Unit Type	**Total CO2 eq. metric tons**	**Total CO2 eq. US tons**
Flare(s) (4400 scfm)	122,078.68	134,567.33
Total	122,078.68	134,567.33

Uncollected Methane Emissions

Amount of CH_4 collected during Reporting Period (from D21 on ghg pte tab)	1,156.32	mmscf	
LFG System Collection Efficiency	75.00%		
Amount of Uncollected CH_4	385.44	mmscf	
Amount of Uncollected CH_4	7,391.23	metric tons/year	8,147.35 US tons per year
CH_4 Oxidation Factor	10.00%		
Uncollected CH_4 Emitted through cover	346.896	mmscf	
Uncollected CH_4 Emitted through cover	6,652.11	metric tons/year	7,332.62 US tons per year

Uncollected CO2 Emissions

Amount of CO_2 collected during Reporting Period (from E21 on ghg pte tab)	1,156.32	mmscf	
LFG System Collection Efficiency	75.00%		
Uncollected CO_2 Emitted through Cover	385.44	mmscf	
Uncollected CO_2 Emitted through Cover	20,279.80	metric tons/year	22,354.43 US tons per year
CH_4 oxidized in cover	739.12	metric tons/year	814.74 US tons per year
CO_2 emitted through cover from oxidixed methane	2,032.59	metric tons/year	2,240.52 US tons per year

Methane Emmissions

Uncollected Emissions of CH_4	6,652.11	metric ton/yr	7,332.62	US tons per year

Total Uncollected Methane Emissions from Landfill	139,694.24	**Metric tons CO2 E/year**	153,984.96	**US tons per year**

Carbon Dioxide Emissions

Uncollected CO_2 Emissions emitted through landfill cover	20,279.80	metric ton/yr	22,354.43	US tons per year
CO_2 emitted through landfill cover from oxidized methane	2,032.59	metric ton/yr	2,240.52	US tons per year

Total Uncollected Carbon Dioxide Emissions from Landfill	22,312.39	**Metric tons CO2/year**	24,594.95	**US tons per year**