GOLDEN TRIANGLE
REGIONAL SOLID WASTE MANAGEMENT AUTHORITY
P. O. Box 1619 • 2525 Old West Point Road
Starkville, Mississippi 39760
(662) 324-7566 • Fax: (662) 320-9212

October 29, 2015

Billy Warden
Chief
Mississippi Department of Environmental Quality
Mining and Solid Waste Management Division
2380 Highway 80 West
Jackson, Mississippi 39204

RE: Title V Renewal Application (Permit No.: 2060-0046)
Golden Triangle Regional Solid Waste Landfill, Starkville, MS

Dear Mr. Warden:

On behalf of Golden Triangle Regional Solid Waste Management Landfill (GTRL), Golden Triangle Regional Solid Waste Management Authority (GTRSWMA) is pleased to submit this Title V Permit Renewal application (Renewal) for review and approval by the Mississippi Department of Environmental Quality (MDEQ). This report has been prepared in accordance with the requirements of Permit Conditon 1.16 of the existing Title V Permit and 11 MAC Part 2 Rule 6.2.A(1)(c).

If you should have any questions or require additional information regarding this Renewal, please feel free to call Juene Franklin with Franklin Engineers & Consultants, LLC. (FE&C) at (281) 205-8415 or me at (662) 324-7566.

Sincerely,

Jimmy Sloan
Executive Director

Enclosures: Title V Permit Renewal Application

cc: Juene Franklin, Franklin Engineers & Consultants, LLC.

GOLDEN TRIANGLE REGIONAL LANDFILL
FACILITY NO. 2060-00046

TITLE V PERMIT RENEWAL APPLICATION

Prepared for the

Golden Triangle Regional Solid Waste Management Authority

October 2015

Prepared by

Franklin Engineers & Consultants, LLC
2734 Sunrise Boulevard, Suite 308
Pearland, Texas, 77584

Project No. 3000

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1 INTRODUCTION

The Golden Triangle Regional Solid Waste Management Authority (GTRSWMA) currently owns and operates the Golden Triangle Regional Landfill (GTRL). GTRL is a Municipal Solid Waste Landfill (MSWLF) that is located in Starkville, Mississippi. GTRL has a total permitted design capacity of approximately 24.9 million megagrams (27.4 million tons). The requirements of the New Source Performance Standards (NSPS) for municipal solid waste landfills [CFR) §60.752(b)(2)] states that all landfills with a design capacity greater than 2.5 million megagrams and 2.5 million cubic meters is subject to Part 70 permitting requirements. GTRSWMA has installed a landfill Gas Collection and Control System (GCCS) at GTRL. The GCCS is not required for NSPS compliance. GTRSWMA voluntarily installed this GCCS as a benefit to the environment by reducing Greenhouse Gas (GHG) emissions and producing renewable power for sale on the power grid. This LFG Renewable Energy project is currently comprised of one (1) internal combustion (IC) engine preceded by a treatment system; however, it may be expanded in the future to as many as four (4) IC Engines in the future. Consequently, the treatment system is considered to be the primary control device and the engines are considered to be recovery devices.[1] For this reason, the existing 3,600 scfm candlestick flare serves primarily as a back-up control device when the engines and treatment system are not in operation. The candlestick flare may need to operate in conjunction with the Treatment System and engines at times. Also, note that the existing candlestick flare may need to operate in lieu of one or more of the aforementioned IC engines. If the candlestick flare needs to operate in conjunction with the IC engines, it will operate at a reduced capacity. The following six (6) operating scenarios have been analyzed in this application:

- Flare and one (1) IC Engine
- Flare and two (2) IC Engines
- Flare and three (3) IC Engines
- Flare and four (4) IC Engines
- Four (4) IC Engines Only[2]
- Flare Only
- No Flare and No Engine

We have presented emissions on the worst case operating scenario in Appendix B of this application for your review. Also note that we have included only the worst-case emissions in the MDEQ forms location in Section 2 of this document. Moreover, we have shown the emissions associated with the various operating scenarios in Appendix H.

An Administrative Amendment (AA) to the existing Title V permit was submitted to the MDEQ for review and approval. This AA was proposed to address the maintenance associated with the proposed installation of a siloxane removal technology (SRT) as part of the existing treatment system. A copy of the AA which includes the calculations are included in Appendix I of this application. We have prepared this Title V Operating Permit Renewal Application (Renewal) in accordance with 11 Miss. Admin. Code Pt.2, Ch.6.

[1] This approach to addressing the Treatment System is consistent with past EPA Determinations. Though the facility is not yet required to operate its GCCS in accordance with NSPS, this design approach has been employed. An EPA Determination Letter is included in Appendix G for your review and consideration.

[2] Please note that there is only one engine currently installed at this time; however, we have included this operating scenario to address emissions associated with engines that may be installed in the future. Please note that we have intended for the 4-Engine operating scenario to also allow for situations when only one (1) engine, two (2) engines, or three (3) engines will be in operation without the flare, as well. The emissions associated with the 1-engine only, 2-engine only, or 3-engine only operating scenarios will be less than the 4-engine only operating scenario mentioned above.

1.1 Facility Description

GTRL is a municipal solid waste landfill that serves as a collection and disposal point for municipal, commercial, C&D, and wood wastes generated in Oktibbeha, Clay, Lowndes, Choctaw, Noxubee, and Webster counties. GTRL is currently situated on approximately 667 acres. Roughly 288 acres is permitted for disposal of solid waste. The decomposing refuse contained within the landfill produces landfill gas (LFG) which is primarily composed of CH_4, CO_2, and other trace organic compounds. Additionally, there are storage tanks and paved/unpaved roads. A process diagram, plot plan, and area map are shown in Appendix A.

1.2 Emissions Sources

The emissions points located at GTRL are included in the Renewal Application displayed in Section 2 of this report. As allowed by 11 MAC 2.6.7. Some of the emissions sources meet the criteria of Insignificant Activities (IA) that are not required to be included in the Title V Permit. GTRL IA that are not required to be included in the Title V Permit are shown in Appendix E of this Renewal.

1.3 Emissions Calculations

The emission rate calculations found in Appendix B of this permit application were performed using the methodologies and factors found in Volume I, Chapter 2 (Solid Waste Disposal) of the fifth edition of the USEPA's Compilation of Air Pollutant Emission Factors (AP-42), manufacturer-supplied data, and the results of the USEPA's Landfill Gas Estimations Model (LandGEM). The peak LFG generation (3,425 scfm) rate calculated using LandGEM (See Appendix C), the peak design capacity of the candlestick flareskid (3,600 scfm), manufacturer-supplied data concerning the LFG-powered IC engines, and the AP-42 defaults were used to calculate the emissions that may be generated at GTRL. More detail concerning the emissions calculations are found in Appendix B of the permit application.

1.4 Regulatory Considerations

1.4.1 Federal and State Applicable Requirements

All applicable state federal regulations for GTRL are provided in the Renewal Application. GTRL is subject to the federal and state air quality regulations including NSPS and NESHAPs. On February 25-28, 2011, Tier 2 Retesting was performed at GTRL. The site-specific NMOC concentration was established for use in calculating the NMOC emission rate. The NMOC emission rate was found to be less than 50 Mg/yr; therefore the site is not required to install a Landfill Gas Collection and Control System (GCCS) at this time. The Tier 2 Retest report prepared and any subsequent NMOC annual reports will fulfill the requirements of NSPS until the NMOC emission rate exceeds the 50 Mg/yr threshold or until additional Tier 2 testing, scheduled to take place in 2016, is performed. An excerpt of the Tier 2 Test is included in Appendix D. Since a candlestick flare skid and LFG-powered IC engines are used at this facility, 40 CFR 60.18 and 40 CFR 60.8 will also be applicable to this facility.

1.4.2 MACT and Mississippi Air Toxics Regulations

GTRL is a minor source of air toxics; therefore, it is not subject to PSD permit requirements for a major source. It should also be noted that GTRL will not become subject to the requirements of 40 CFR 63, Subpart AAAA (Landfill MACT) until the facility equals/exceeds the 50 Mg/yr threshold and a GCCS is required to comply with the requirements of NSPS.

1.5 Alternative Operating Scenarios

GTRL is not proposing any alternatives to the existing operating scenarios. The existing operating scenario will continue as is.

1.6 Chemical Accident Prevention Regulation

The accidental release prevention program is mandated by section 112(r) of the Clean Air Act and is regulated in 40 CFR 68. It should be noted that GTRL is not required to have a risk management plan at this time.

1.7 Stratospheric Ozone Protection

Title VI of the Clean Air Act Amendment requires phase-out of ozone-depleting chemicals. The stratospheric ozone protection provisions are detailed in 40 CFR 82. GTRL does not plan to manufacture any ozone depleting substances as outlined in 40 CFR 82.

1.8 National Ambient Air Quality Standards

GTRL is located in Starkville, Mississippi, which is a non-classifiable area. GTRL is in compliance with state requirements; thus, it is in compliance with the state requirements designed to meet National Ambient Air Quality Standards.

1.9 Summary

All required Mississippi Renewal Application forms are included in Section 2 of this Renewal.

2 MDEQ RENEWAL APPLICATION FORMS

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

1. Name, Address, and Location of Facility

A. Owner/Company Name: Golden Triangle Regional Solid Waste Management Authority

B. Facility Name *(if different than A. above)*: Golden Triangle Regional Solid Waste Landfill

C. Facility Air Permit No. *(if known)*: 2060-00046

D. Agency Interest No. *(if known)*: 1987

E. Physical Address
1. Street Address: 9778 Old West Point Rd
2. City: Starkville
3. State: MS
4. County: Oktibbeha and Clay
5. Zip Code: 39759
6. Telephone No.: (662) 324-7566
7. Fax No.: (662)-320-9212

F. Mailing Address *(if different from physical address)*
1. Street Address or P.O. Box: P.O. Box 1619
2. City: Starkville
3. State: (662) 324-7566
4. Zip Code: 39760

G. Latitude/Longitude Data
1. Collection Point *(check one)*:
☒ Plant Entrance ☐ Other:
2. Method of Collection *(check one)*:
☐ GPS Specify coordinate system (NAD 83, etc.)
☐ Map Interpolation (Google Earth, etc.) ☒ Other: Collected by MDEQ inspector with hand held device.
3. Latitude *(degrees/minutes/seconds)*: 33 degrees 31 minutes 43 seconds N
4. Longitude *(degrees/minutes/seconds)*: 88 degrees 40 minutes 20 seconds W
5. Elevation: 260 feet

H. SIC/NAICS Codes *(primary code listed first)*
SIC: 4953
NAICS: 562212
(NAICS Code should correspond with the SIC Code directly above.)

2. Name and Address of Facility Contact

A. Name: Jimmy Sloan Title: Executive Director

B. Mailing Address
1. Street Address or P.O. Box: P.O. Box 1619
2. City: Starkville
3. State: MS
4. Zip Code: 39760
5. Email: jsloan@gtrswma.com
6. Telephone No.: (662) 324-7566
7. Fax No.:

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

3. Name and Address of Air Contact *(if different from Facility Contact)*

A. Name: _____ Title: _____

B. Mailing Address

1. Street Address or P.O. Box: _____
2. City: _____ 3. State: _____
4. Zip Code: _____ 5. Email: _____
6. Telephone No.: _____ 7. Fax No.: _____

4. Name and Address of the Responsible Official for the Facility

The Responsible Official is defined as one of the following:

a. For a corporation: a 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 and the facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated in accordance with corporate procedures.

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

c. For a municipality, state, federal, or other public agency: either a principal executive officer or ranking elected official. For purposes of these regulations, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of EPA). A principal executive officer of a military facility includes the facility commander, chief executive officer, or any other similar person who performs similar policy or decision-making functions for the institution.

A. Name: Jimmy Sloan Title: Executive Director

B. Mailing Address

1. Street Address or P.O. Box: P.O. Box 1619
2. City: Starkville 3. State: Mississippi
4. Zip Code: 39760 5. Email: jsloan@gtrswma.com
6. Telephone No.: (662) 324-7566 7. Fax No.: _____

C. Is the person above a duly authorized representative and not a corporate officer? ☐ Yes ☒ No

If yes, has written notification of such authorization been submitted to MDEQ?

☐ Yes ☐ No ☐ Request for authorization is attached

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

5. Type of Permit Application *(Check all that apply)*

State Permit to Construct (i.e., non-PSD or PSD avoidance)

☐ Initial Application ☐ Modification

New Source Review (NSR) Permit to Construct (includes both Prevention of Significant Deterioration (PSD) and Nonattainment)

☐ Initial Application ☐ Modification

Title V Operating Permit

☐ Initial Application

☒ Re-issuance: *Are any modifications to the permit/facility being requested?* ☐ Yes ☒ No

(If yes, provide a separate sheet identifying the modification(s) and resulting change to emissions.)

☐ Modification (*Specify type):* ☐ Significant ☐ Minor ☐ Administrative

Synthetic Minor Operating Permit *(Appendix B must be completed and attached.)*

☐ Initial Application

☐ Re-issuance: *Are any modifications to the permit/facility being requested? If yes, address such on a separate sheet.* ☐ Yes ☐ No

☐ Modification

State Permit to Operate a Significant Minor Source *(defined in 11 Miss. Admin. Code Pt. 2, R.2.1.C(25).)*

☐ Initial Application

☐ Re-issuance: *Are any modifications to the permit/facility being requested? If yes, address such on a separate sheet.* ☐ Yes ☐ No

☐ Modification

True Minor Determination

☐ Uncontrolled potential to emit air pollutants is below the Title V thresholds

6. Process/Product Details

A. List Significant Raw Materials *(if applicable)*:
Municipal Solid Waste

B. List All Products *(if applicable)*: _____

C. Brief Description of Principal Process(es):
Serves as a disposal point for non-hazardous municipal solid waste. The decomposing refuse contained within the landfill produces landfill gas (LFG) which is primarily composed of CH_4, CO_2, and other trace organic compounds. Additionally, there are storage tanks and paved/unpaved roadways.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

6. Process/Product Details (continued)

D. Maximum Throughput for Raw Material(s) *(if applicable)*:

Raw Material	Throughput	Units
Municipal Solid Waste	300,000	Short tons/yr

E. Maximum Throughput for Principal Product(s) *(if applicable)*:

Product	Throughput	Units

7. Facility Operating Information

A. Number of employees at the facility: 18

		Average Actual	Maximum Potential
B.	Hours per day the facility will operate:	9	24
C.	Days per week the facility will operate:	5	7
D.	Weeks per year the facility will operate:	52	52
E.	Months the facility will operate:	12	12

8. Maps

A. Attach a topographical map of the area extending to at least ½ mile beyond the property boundaries. The map must show the outline of the property boundaries.

B. Attach a site map/diagram showing the outline of the property, an outline of all buildings and roadways on the site, and the location of each significant air emission source.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

9. Zoning

A. Is the facility (either existing or proposed) located in accordance with any applicable city and/or county zoning ordinances? If no, please explain.
No, because there are no county zoning ordinances in Oktibbeha or Clay counties.

B. Is the facility (either existing or proposed) required to obtain any zoning variance to locate/expand the facility at this site? If yes, please explain.
No

10. Risk Management Plan

A. Is the facility required to develop and register a risk management plan pursuant to Section 112(r), regulated under 40 CFR Part 68? ☐ Yes ☒ No

B. If yes, to whom was the plan submitted? _____
Date submitted: _____

11. *Is confidential information being submitted with this application?* ☐ Yes ☒ No

If so, please follow the procedures outlined in the Mississippi Code Ann. Sections 49-17-39 and 17-17-27(6), as outlined in MCEQ-2 – "Regulation regarding the review and reproduction of public records".

12. Certification

Note: If approved by MDEQ, a duly authorized representative (DAR) may sign the air permit application. The DAR must be listed in Section 4 of this application.

I certify that to the best of my knowledge and belief formed after reasonable inquiry, the statements and information in this application are true, complete, and accurate, and that as a responsible official, my signature shall constitute an agreement that the applicant assumes the responsibility for any alteration, additions, or changes in operation that may be necessary to achieve and maintain compliance with all applicable Rules and Regulations. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature of Responsible Official/DAR	Date
	23 October 2015

Printed Name	Title
Jimmy Sloan	Executive Director

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Facility (Agency Interest) Information — Section A

13. Required Sections

For the sections below, indicate the number that have been completed for each section as part of the application.

Section A	1	Section L1		Section M5	
Section B	1	Section L2		Section M6	
Section C		Section L3		Section M7	
Section D	2	Section L4		Section M8	3
Section E		Section L5		Section M9	
Section F		Section L6		Section M10	
Section G		Section L7	2	Section N	1
Section H	1	Section M1		Appendix A	1
Section I		Section M2		Appendix B	
Section J	1	Section M3		Appendix C	
Section K		Section M4			

The following permit applications must contain the specified sections, at a minimum, to be considered administratively complete.

Permit Type	Section				Appendix		
	A	B	M	N	A	B	C
State Permit to Construct	X	X		X			
New Source Review (PSD) Permit	X	X		X			X
Title V Operating Permit	X	X	X	X	X		
Synthetic Minor Operating Permit	X	X	X	X		X	
State Permit to Operate	X	X	X	X			
True Minor Determination	X	X					

Section B.1: Maximum Uncontrolled Emissions (under normal operating conditions)

Maximum Uncontrolled Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) in Section B.3 and GHGs in Section B.4. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Emissions > 0.01 TPY must be included. Please do not change the column widths on this table.

Emission Point ID	TSP[1] (PM)		PM-10[1]		PM-2.5[1]		SO_2		NOx		CO		VOC		TRS[2]		Lead		Total HAPs	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
AA-000 Landfill Emissions													7.27	31.85	0.80908	3.54377			4.69	20.54
AA-000 Roadway Emissions	39.39	172.52	10.61	46.47	1.06	4.66														
AA-001 Propane Generator			0.00	0.00			0.0038	0.01665	0.91712	0.68784	1.83425	1.37568	0.45856	0.34392					0.45856	0.34392
560-Gallon Gasoline Tank													0.05501	0.24093					0.05501	0.24093
Totals	39.39	172.52	10.61	46.47	1.06	4.66	0.00	0.02	0.92	0.69	1.83	1.38	7.78	32.43	0.81	3.54	0.00	0.00	5.20	21.12

[1] **Condensables:** Include condensable particulate matter emissions in particulate matter calculations for PM-10 and PM-2.5, but not for TSP (PM).

[2] **TRS:** Total reduced sulfur (TRS) is the sum of the sulfur compounds hydrogen sulfide (H_2S), methyl mercaptan (CH_4S), dimethyl sulfide (C_2H_6S), and dimethyl disulfide ($C_2H_6S_2$).

[3] We have included the Emissions from the operating scenario when no flare or engines are operating. This is the worst-case operating scenario for VOCs, TRS, & Total HAPs.

Section B.1: Maximum Uncontrolled Emissions (under normal operating conditions)

Maximum Uncontrolled Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) in Section B.3 and GHGs in Section B.4. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Emissions > 0.01 TPY must be included. Please do not change the column widths on this table.

Emission Point ID	TSP[1] (PM)		PM-10[1]		PM-2.5[1]		SO_2		NOx		CO		VOC		TRS[2]		Lead		Total HAPs	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
AA-000 1 Flare			1.78	7.80			1.21	5.30	7.23	31.65	32.94	144.28	0.19	0.83	0.02009	0.08801			0.75	3.29
AA-000 Roadway Emissions	39.39	172.52	10.61	46.47	1.06	4.66														
AA-001 Propane Generator			0.00	0.00			0.0038	0.01665	0.91712	0.687842	1.834246	1.37568	0.45856	0.34392					0.45856	0.34392
560-Gallon Gasoline Tank													0.05501	0.24093					0.05501	0.24093
AA-000a 2 Eng			0.86	3.78			2.36	10.33	9.39	41.14	23.48	102.84	4.70	20.57	0.00	0.02			0.17	0.75
AA-000 Landfill Emissions													1.82	7.96	0.28347	1.24158			1.17	5.13
Totals	39.39	172.52	13.26	58.06	1.06	4.66	3.57	15.64	17.53	73.47	58.25	248.49	7.22	29.94	0.31	1.35	0.00	0.00	2.61	9.76

[1] **Condensables:** Include condensable particulate matter emissions in particulate matter calculations for PM-10 and PM-2.5, but not for TSP (PM).

[2] **TRS:** Total reduced sulfur (TRS) is the sum of the sulfur compounds hydrogen sulfide (H_2S), methyl mercaptan (CH_4S), dimethyl sulfide (C_2H_6S), and dimethyl disulfide ($C_2H_6S_2$).

[3] We have included the Emissions from the operating scenario when 1 flare and 2 engines are operating together. This is the worst-case operating scenario for CO and PM_{10}.

Section B.1: Maximum Uncontrolled Emissions (under normal operating conditions)

Maximum Uncontrolled Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) in Section B.3 and GHGs in Section B.4. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Emissions > 0.01 TPY must be included. Please do not change the column widths on this table.

Emission Point ID	TSP[1] (PM)		PM-10[1]		PM-2.5[1]		SO_2		NOx		CO		VOC		TRS[2]		Lead		Total HAPs	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
AA-000 1 Flare			0.51	2.23			0.35	1.51	2.06	9.04	9.41	41.22	0.05	0.24	0.00574	0.02515			0.21	0.94
AA-000 Roadway Emissions	39.39	172.52	10.61	46.47	1.06	4.66														
AA-001 Propane Generator			0.00	0.00			0.0038	0.01665	0.91712	0.68784	1.83425	1.37568	0.45856	0.34392					0.45856	0.34392
560-Gallon Gasoline Tank													0.05501	0.24093					0.05501	0.24093
AA-000a 4 Eng			1.73	7.57			4.72	20.66	18.78	82.27	46.96	205.68	9.39	41.14	0.01	0.04			0.34	1.51
AA-000 Landfill Emissions													1.82	7.96	0.28347	1.24158			1.17	5.13
Totals	39.39	172.52	12.85	56.27	1.06	4.66	5.07	22.19	21.76	92.00	58.20	248.28	11.78	49.92	0.30	1.31	0.00	0.00	2.24	8.17

[1] **Condensables:** Include condensable particulate matter emissions in particulate matter calculations for PM-10 and PM-2.5, but not for TSP (PM).

[2] **TRS:** Total reduced sulfur (TRS) is the sum of the sulfur compounds hydrogen sulfide (H_2S), methyl mercaptan (CH_4S), dimethyl sulfide (C_2H_6S), and dimethyl disulfide ($C_2H_6S_2$).

[3] We have included the Emissions from the operating scenario when 1 flare and 4 engines are operating together. This is the worst-case operating scenario for NOx and SOx.

Section B.2: Proposed Allowable Emissions

Proposed Allowable Emissions (Potential to Emit) are those emissions the facility is currently permitted to emit as limited by a specific permit requirement or federal/state standard (e.g., a MACT standard); or the emission rate at which the facility proposes to emit considering emissions control devices, restrictions to operating rates/hours, or other requested permit limits that reduce the maximum emission rates. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Additional columns may be added if there are regulated pollutants (other than HAPs and GHGs) emitted at the facility.

Emission Point ID	TSP[1]		PM10[1]		PM2.5[1]		SO_2		NOx		CO		VOC		TRS		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
AA-000 Landfill, Flare, and Engines	39.39	172.52	13.26	58.06	1.06	4.66	5.06	22.17	20.85	91.31	56.42	247.12	7.27	31.85	0.81	3.54		
AA-001 Propane Generator			0.0007	0.0030			0.0038	0.01665	0.917	0.68784	1.834	1.376	0.459	0.344				
560-Gallon Gasoline Tank													0.05501	0.24093				
Totals	39.39	172.52	13.26	58.06	1.06	4.66	5.07	22.19	21.76	92.00	58.25	248.49	7.78	32.43	0.81	3.54	0.00	0.00

[1] **Condensables:** Include condensable particulate matter emissions in particulate matter calculations for PM-10 and PM-2.5, but not for TSP (PM).

[2] **TRS:** Total reduced sulfur (TRS) is the sum of the sulfur compounds hydrogen sulfide (H_2S), methyl mercaptan (CH_4S), dimethyl sulfide (C_2H_6S), and dimethyl disulfide ($C_2H_6S_2$).

[3] To make certain that we produce a worst-case scenario of emissions we have included CO & PM_{10} emissions from the scenario 2 engines and 1 flare, NO_X & SO_X emissions from the scenario of 4 engines & 1 flare, and for VOCs, HAPs, & TRS we have used the scenario of no engines or flare operating.

[4] Please note that we have intended for the emisions shown for AA-000 to indicate the maximum emissions that we expect to see for each pollutant at the facility in any of the operating scenarios. For this reason, we have included the flare and engines in the Emission Point ID listed above.

Section B.3: Proposed Allowable Hazardous Air Pollutants (HAPs)

In the table below, report the Proposed Allowable Emissions (Potential to Emit) for each HAP from each regulated emission unit if the HAP > 0.0001 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources. Use the HAP nomenclature as it appears in the Instructions. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. For each HAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above. Additional columns may be added as necessary to address each HAP.

Emission Point ID	Total HAPs		1,1,1-Trichloroethane (methyl chloroform)		1,1,2,2-Tetrachloroethane		1,1-Dichloroethane (ethylidene dichloride)		1,1-Dichloroethene (vinylidene chloride)		1,2-Dichloroethane (ethylene dichloride)		1,2-Dichloropropane (propylene dichloride)		Acrylonitrile		Carbon disulfide	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
A-000 (Landfill, Flare, and Engines)	5.4510	23.8754	0.0285	0.1250	0.0830	0.3637	0.1037	0.4540	0.0086	0.0378	0.0018	0.0079	0.0091	0.0397	0.1497	0.6556	0.0197	0.0862
A-001 Propane Generator	0.4586	0.3439																
560-Gallon Gasoline Tank	0.0550	0.2409																
Totals:	5.9646	24.4603	0.0285	0.1250	0.0830	0.3637	0.1037	0.4540	0.0086	0.0378	0.0018	0.0079	0.0091	0.0397	0.1497	0.6556	0.0197	0.0862

1. Please note that the total HAPs associated with this table will be approximately 3.34 tons greater than the total HAPs shown in the "No Engine-No-Flare" Operating Scenario. The reason for this discrepancy is the fact that HCl is a product of combustion, so it is not included in the "No Engine-No Flare" scenario for that reason. To make this a worst-case scenario, we simply added the HCl emissions generated from the "2 Engine-1 Flare" operating scenario to the Total HAPs generated from the "No Engine-No-Flare" scenario. Please note that the HAP-TRS Summary included in Appendix B of this Application will display all of the HAP emissions associated with this application.

2. Please note that we have intended for the emisions shown for AA-000 to indicate the maximum emissions that we expect to see for each HAP at the facility in any of the operating scenarios. For this reason, we have included the flare and engines in the Emission Point ID listed above.

Section B.3: Proposed Allowable Hazardous Air Pollutants (HAPs)

In the table below, report the Proposed Allowable Emissions (Potential to Emit) for each HAP from each regulated emission unit if the HAP > 0.0001 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources. Use the HAP nomenclature as it appears in the Instructions. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. For each HAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above. Additional columns may be added as necessary to address each HAP.

Emission Point ID	Carbon tetrachloride		Carbonyl sulfide		Chlorobenzene		Chloroethane (ethyl chloride)		Chloroform		Dichloromethane (methylene chloride)		Ethylbenzene		Hexane		Hydrochloric Acid	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
A-000 (Landfill, Flare, and Engines)	0.0003	0.0012	0.0131	0.0575	0.0125	0.0549	0.0359	0.1574	0.0016	0.0070	0.5413	2.3709	0.2181	0.9553	0.2523	1.1052	0.7626	3.3402
Totals:	0.0003	0.0012	0.0131	0.0575	0.0125	0.0549	0.0359	0.1574	0.0016	0.0070	0.5413	2.3709	0.2181	0.9553	0.2523	1.1052	0.7626	3.3402

1. Please note that the total HAPs associated with this table will be approximately 3.34 tons greater than the total HAPs shown in the "No Engine-No-Flare" Operating Scenario. The reason for this discrepancy is the fact that HCl is a product of combustion, so it is not included in the "No Engine-No Flare" scenario for that reason. To make this a worst-case scenario, we simply added the HCl emissions generated from the "2 Engine-1 Flare" operating scenario to the Total HAPs generated from the "No Engine-No-Flare" scenario. Please note that the HAP-TRS Summary included in Appendix B of this Application will display all of the HAP emissions associated with this application.

2. Please note that we have intended for the emisions shown for AA-000 to indicate the maximum emissions that we expect to see for each HAP at the facility in any of the operating scenarios. For this reason, we have included the flare and engines in the Emission Point ID listed above.

Section B.3: Proposed Allowable Hazardous Air Pollutants (HAPs)

In the table below, report the Proposed Allowable Emissions (Potential to Emit) for each HAP from each regulated emission unit if the HAP > 0.0001 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources. Use the HAP nomenclature as it appears in the Instructions. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit. For each HAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above. Additional columns may be added as necessary to address each HAP.

Emission Point ID	Mercury (total)		Methyl ethyl ketone		Methyl isobutyl ketone		Perchloroethylene (tetrachloroethylene)		Trichloroethylene (trichloroethene)		Vinyl chloride		Xylenes		Benzene		Toluene	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
A-000 (Landfill, Flare, and Engines)	0.0000	0.0001	0.2278	0.9980	0.0835	0.3656	0.2757	1.2074	0.1651	0.7233	0.2044	0.8955	0.5725	2.5074	0.0665	0.2912	1.6136	7.0675
Totals:	0.0000	0.0001	0.2278	0.9980	0.0835	0.3656	0.2757	1.2074	0.1651	0.7233	0.2044	0.8955	0.5725	2.5074	0.0665	0.2912	1.6136	7.0675

1. Please note that the total HAPs associated with this table will be approximately 3.34 tons greater than the total HAPs shown in the "No Engine-No-Flare" Operating Scenario. The reason for this discrepancy is the fact that HCl is a product of combustion, so it is not included in the "No Engine-No Flare" scenario for that reason. To make this a worst-case scenario, we simply added the HCl emissions generated from the "2 Engine-1 Flare" operating scenario to the Total HAPs generated from the "No Engine-No-Flare" scenario. Please note that the HAP-TRS Summary included in Appendix B of this Application will display all of the HAP emissions associated with this application.

2. Please note that we have intended for the emisions shown for AA-000 to indicate the maximum emissions that we expect to see for each HAP at the facility in any of the operating scenarios. For this reason, we have included the flare and engines in the Emission Point ID listed above.

Section B.4: Greenhouse Gas Emissions

Applicants must report potential emission rates in SHORT TONS per year, as opposed to metric tons required by Part 98. Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit.

		CO_2 (non-biogenic) ton/yr	CO_2 (biogenic)[2] ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC[3] ton/yr					Total GHG Mass Basis ton/yr[5]	Total CO_2e ton/yr[6]
Emission Point ID	**GWPs [1]**	**1**	**1**	**298**	**25**	**22,800**	**footnote 4**						
AA-000 Landfill, Flare, and Engine	**mass GHG**	4,305.88	42,961.22	0.76	14,091.98							61,359.84	
	CO_2e	4,305.88	42,961.22	225.66	352,299.54								399,792.30
	mass GHG												
	CO_2e												
	mass GHG												
	CO_2e												
	mass GHG												
	CO_2e												
	mass GHG												
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	mass GHG												
	CO_2e												
	mass GHG												
	CO2e												
	mass GHG												
	CO_2e												
FACILITY TOTAL	**mass GHG**	4,305.88	42,961.22	0.76	14,091.98	0.00	0.00					61,359.84	0.00
	CO_2e	4,305.88	42,961.22	225.66	352,299.54	0.00	0.00					0.00	399,792.30

[1] **GWP** (Global Warming Potential): Applicants must use the most current GWPs codified in Table A-1 of 40 CFR part 98. GWPs are subject to change, therefore, applicants need to check 40 CFR 98 to confirm GWP values.

[2] Biogenic CO2 is defined as carbon dioxide emissions resulting from the combustion or decomposition of non-fossilized and biodegradable organic material originating from plants, animals, or micro-organisms.

[3] For **HFCs** or **PFCs** describe the specific HFC or PFC compound and use a separate column for each individual compound.

[4] For each new compound, enter the appropriate GWP for each HFC or PFC compound from Table A-1 in 40 CFR 98.

[5] Greenhouse gas emissions on a **mass basis** is the ton per year greenhouse gas emission before adjustment with its GWP. Do not include biogenic CO_2 in this total.

[6] **CO_2e** means Carbon Dioxide Equivalent and is calculated by multiplying the TPY mass emissions of the greenhouse gas by its GWP. Do not include biogenic CO_2e in this total.

[7] Please note that we have only included emissions from the "No Engine/No Flare" operating scenario because it represents the worst-case for GHG emissions. However, any emissions that occur when the flare and/or engines are operating should fall below the thresholds shown above. For this reason, we have included the flare and engines in the Emission Point ID above.

[8] For the sake of being conservative, we have included N_2O emissions in the chart above, but they will not occur in the worst-case operating scenario because there is no combustion in the "No Engine/No Flare" operating scenario. The N2O emissions are from the "2 Engine/1 Flare" scenario.

9 This data has been provided for information purpose only. On June 23, 2014, the US Supreme Court ruled that the USEPA could not expand its regulator net to capture sources that would become newly subject to PSD or Title V permitting based only on their potential to emit GHGs.

Section B.5: Stack Parameters and Exit Conditions

Emission Point numbering must be consistent throughout the application package and, for existing emission points, should match any MDEQ ID's in the current permit.

Emission Point ID	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Base Elevation (ft)	Exit Temp. (^{o}F)	Inside Diameter or Dimensions (ft)	Velocity (ft/sec)	Moisture by Volume (%)	Geographic Position (degrees/minutes/seconds)	
									Latitude	Longitude
AA-000 (Flare)	V	N	45	235	800-1200	1.2	<60	5	N33° 31' 39.85"	W88° 40' 01.51"
AA-000a (IC Engines)	V	N	20	235	872	1.1	134	13	N33° 31' 40.56"	W88° 39' 49.97"
AA-001	V	N	6	235	800-1200	N/A	N/A	N/A	N33° 31' 40.36"	W88° 40' 01.42"
560-Gallon Gasoline Tank	H	Y	8	235	Ambient	N/A	N/A	N/A	N33° 31' 39.85"	W88° 40' 23.45"

[1] A WAAS-capable GPS receiver should be used and in the WGS84 or NAD83 coordinate system.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Fuel Burning Equipment – Internal Combustion Engines — Section D

1. Emission Point Description

A. Emission Point Designation (Ref. No.): AA-000a Four (4) LFG Recip. Engines

B. Equipment Description: LFG engines conver t treated LFG (recovery gas) into electricity

C. Manufacturer: GE Jenbacher D. Model Yr. and No.: 2005 JGC 320 GS-LL

E. Maximum Heat Input (higher heating value): 9.108 MMBtu/hr

F. Rated Power: 1,065 hp 1,067 kW

G. Use: ☒ Non-emergency ☐ Emergency

Complete H through K for Reciprocating (Piston) Internal Combustion Engines

H. Displacement per cylinder: ☒ < 10 Liters ☐ 10 to <30 Liters ☐ ≥ 30 Liters

I. Engine Ignition Type: ☒ Spark Ignition ☐ Compression Ignition

J. Engine Burn Type: ☒ 4-stroke ☐ 2-stroke ☐ Rich Burn ☒ Lean Burn
(check all that apply)

K. Design Controls (e.g., catalytic converter, diesel particulate filter, SCR, etc.) _____

Complete L through M for Stationary Gas Turbines

L. Turbine Type: ☐ Simple Cycle ☐ Regenerative Cycle ☐ Combined Cycle ☐ Combined Heat and Power (Cogeneration)

M. Controls: ☐ Water-Steam Injection ☐ Lean Premix ☐ Other Controls (SCR, oxidation catalyst, etc.): _____

N. Status: ☐ Operating ☐ Proposed ☐ Under Construction

O. Engine manufactured date: _____ N. Engine order date: _____

P. If an emergency engine, can your engine be operated for Emergency Demand Response per the NERC Reliability Standard? ☐ Yes ☐ No

Q. If an emergency engine, is it used for peak shaving or non-emergency demand response? ☐ Yes ☐ No

R. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction: _____

2. Fuel Type

Complete the following table, identifying each type of fuel and the amount used. Specify units of measurement.

FUEL TYPE	HEAT CONTENT	% SULFUR	% ASH	MAXIMUM HOURLY USAGE	MAXIMUM YEARLY USAGE
LFG	506 BTU/scf	trace	n/a	18,000 scfjs	157.68 MMscf

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Fuel Burning Equipment – Internal Combustion Engines — Section D

1. Emission Point Description

A. Emission Point Designation (Ref. No.): AA-001 - 208-HP Propane Generator

B. Equipment Description: Stand-By Generator to provide back-up power

C. Manufacturer: Generac Power Systems D. Model Yr. and No.: 2010 QT130

E. Maximum Heat Input (higher heating value): _____ MMBtu/hr

F. Rated Power: 208.26 hp 155.30 kW

G. Use: ☐ Non-emergency ☒ Emergency

Complete H through K for Reciprocating (Piston) Internal Combustion Engines

H. Displacement per cylinder: ☒ < 10 Liters ☐ 10 to <30 Liters ☐ ≥ 30 Liters

I. Engine Ignition Type: ☒ Spark Ignition ☐ Compression Ignition

J. Engine Burn Type: ☒ 4-stroke ☐ 2-stroke ☐ Rich Burn ☒ Lean Burn
(check all that apply)

K. Design Controls (e.g., catalytic converter, diesel particulate filter, SCR, etc.) _____

Complete L through M for Stationary Gas Turbines

L. Turbine Type: ☐ Simple Cycle ☐ Regenerative Cycle ☐ Combined Cycle ☐ Combined Heat and Power (Cogeneration)

M. Controls: ☐ Water-Steam Injection ☐ Lean Premix ☐ Other Controls (SCR, oxidation catalyst, etc.): _____

N. Status: ☐ Operating ☐ Proposed ☐ Under Construction

O. Engine manufactured date: _____ N. Engine order date: _____

P. If an emergency engine, can your engine be operated for Emergency Demand Response per the NERC Reliability Standard? ☐ Yes ☐ No

Q. If an emergency engine, is it used for peak shaving or non-emergency demand response? ☐ Yes ☐ No

R. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction: _____

2. Fuel Type

Complete the following table, identifying each type of fuel and the amount used. Specify units of measurement.

FUEL TYPE	HEAT CONTENT	% SULFUR	% ASH	MAXIMUM HOURLY USAGE	MAXIMUM YEARLY USAGE
LPG	91,502 BTU/gal	trace	n/a	19.8 gals/hr	30,000 gal/year

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

1. Emission Point Description

Note: Sections 3-7 below do not have to be completed if all of the required information is provided elsewhere, such as in a report generated by EPA's TANKS software, and attached to the application.

A. Emission Point Designation (Ref. No.): 560-Gallon Storage Tank

B. Product(s) Stored: Gasoline

C. Status: ☒ Operating ☐ Proposed ☐ Under Construction

D. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction: _____

2. Tank Data

A. Tank Specifications:

1.	Design capacity	560	gallons		
2.	True vapor pressure at storage temperature:	6.168	psia @	63.54	°F
3.	Maximum true vapor pressure (as defined in §60.111b)	6.825	psia @	68.96	°F
4.	Reid vapor pressure at storage temperature:	5.562	psia @	58.12	°F
5.	Density of product at storage temperature:	9.54E-3	lb/gal		
6.	Molecular weight of product vapor at storage temp.	65	lb/lbmol		

B. Tank Orientation: ☐ Vertical ☒ Horizontal

C. Type of Tank:

☒ Fixed Roof ☐ External Floating Roof ☐ Internal Floating Roof

☐ Pressure ☐ Variable Vapor Space ☐ Other: _____

D. Is the tank equipped with a Vapor Recovery System? ☐ Yes ☒ No
If yes, describe below and include the efficiency.

E. Closest City:

☐ Jackson, MS ☐ Meridian, MS ☒ Tupelo, MS ☐ Mobile, AL

☐ New Orleans, LA ☐ Memphis, TN ☐ Baton Rouge, LA

F. Is an EPA TANKS report included for this tank in the application? ☒ Yes ☐ No

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

3. Horizontal Fixed Roof Tank

A. Shell Length: 5 feet
B. Shell Diameter: 7 feet
C. Working Volume: 560 gal
D. Maximum Throughput: 30,000 gal/yr
E. Is the tank heated? ☐ Yes ☒ No
F. Is the tank underground? ☐ Yes ☒ No
G. Shell Color/Shade:

☐ ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☒ Gray/Light ☐ Gray/Medium ☐ Red/Primer

H. Shell Condition: ☒ Good ☐ Poor

4. Vertical Fixed Roof Tank

A. Dimensions:
1. Shell Height: _____ feet
2. Shell Diameter: _____ feet
3. Maximum Liquid Height: _____ feet
4. Average Liquid Height: _____ feet
5. Working Volume: _____ gal
6. Turnovers per year: _____
7. Maximum throughput: _____ gal/yr
8. Is the tank heated? ☐ Yes ☐ No

B. Shell Characteristics:
1. Shell Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

2. Shell Condition: ☐ Good ☐ Poor

C. Roof Characteristics:
1. Roof Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

2. Roof Condition: ☐ Good ☐ Poor

3. Type: ☐ Cone ☐ Dome

4. Height: _____ feet

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Tank Summary — Section H

5. Internal Floating Roof Tank

A. Tank Characteristics:

1. Diameter: _____ feet
2. Tank Volume: _____ gal
3. Turnovers per year: _____
4. Maximum Throughput: _____ gal/yr
5. Number of Columns: _____
6. Self-Supporting Roof? ☐ Yes ☐ No
7. Effective Column Diameter:
   ☐ 9"x7" Built-up Column ☐ 8" Diameter Pipe ☐ Unknown
8. Internal Shell Condition:
   ☐ Light Rust ☐ Dense Rust ☐ Gunite Lining
9. External Shell Color/Shade:
   ☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
   ☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer
10. External Shell Condition: ☐ Good ☐ Poor
11. Roof Color/Shade:
    ☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse
    ☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer
12. Roof Condition: ☐ Good ☐ Poor

B. Rim Seal System:

1. Primary Seal: ☐ Mechanical Shoe ☐ Liquid-mounted ☐ Vapor-mounted
2. Secondary Seal: ☐ Shoe-mounted ☐ Rim-mounted ☐ None

C. Deck Characteristics:

1. Deck Type: ☐ Bolted ☐ Welded
2. Deck Fitting Category: ☐ Typical ☐ Detail

6. External Floating Roof Tank

A. Tank Characteristics

1. Diameter: _____ feet
2. Tank Volume: _____ gal
3. Turnovers per year: _____
4. Maximum Throughput: _____ gal/yr
5. Internal Shell Condition:
   ☐ Light Rust ☐ Dense Rust ☐ Gunite Lining

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Tank Summary — Section H

6. External Floating Roof Tank (continued)

A. Tank Characteristics (continued):

6. Paint Color/Shade:

☐ White/White ☐ Aluminum/Specular ☐ Aluminum/Diffuse

☐ Gray/Light ☐ Gray/Medium ☐ Red/Primer

7. Paint Condition: ☐ Good ☐ Poor

B. Roof Characteristics

1. Roof Type: ☐ Pontoon ☐ Double Deck

2. Roof Fitting Category: ☐ Typical ☐ Detail

C. Tank Construction and Rim-Seal System:

1. Tank Construction: ☐ Welded ☐ Riveted

2. Primary Seal:

☐ Mechanical Shoe ☐ Liquid-mounted ☐ Vapor-mounted

3. Secondary Seal

☐ None ☐ Shoe-mounted ☐ Rim-mounted ☐ Weather shield

7. Pollutant Emissions

A. Fixed Roof Emissions:

Pollutant[1]	Working Loss (tons/yr)	Breathing Loss (tons/yr)	Total Emissions (tons/yr)
VOC	0.104	0.137	0.241
HAP	0.104	0.137	0.241

B. Floating Roof Emissions:

Pollutant[1]	Rim Seal Loss (tons/yr)	Withdrawal Loss (tons/yr)	Deck Fitting Loss (tons/yr)	Deck Seam Loss (tons/yr)	Landing Loss[2] (tons/yr)	Total Emissions (tons/yr)

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with the Permit Application Instructions. A list of regulated air pollutants and hazardous air pollutants is provided in the Application Instructions.

2. Landing losses should be determined according to the procedures in *Organic Liquid Storage Tanks* chapter of EPA's AP-42 emission factors. If the roof is not landed at least once/yr, enter "NA".

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Solid Waste Disposal/Landfills — Section J

1. Emission Point Description

A. Emission Point Designation (Ref. No.): AA-000

B. Type of Waste Facility: MSW Facility

C. Process Description: Disposal point for non-hazardous MSW. The decomposing refuse contained within the landfill produces landfill gas (LFG) which is primarily composed of CH4, CO2, and other trace organic compounds. Additionally, there are storage tanks and paved/unpaved roadways.

D. Design Capacity: 38,636,000 yd^3 29,539,342 m^3

27,431,560 short tons 24,885,492 megagrams

E. Type of Waste: Non-Hazardous Municipal Solid Waste

F. Status: ☒ Operating ☐ Proposed ☐ Under Construction

G. Operating Schedule (Actual): 9 hr/day 5 days/week 52 weeks/yr

H. Date of construction, reconstruction, or most recent modification (for existing sources) or date of anticipated construction: N/A

2. Solid Waste Disposal Data

A. Date of First Waste Acceptance: 1996

B. Amount of Waste Currently in Place: 4,103,988 yd^3

C. Estimated Waste Acceptance Rate: 300,000 tons/year

D. Disposal of Asbestos? ☒ Yes ☐ No

E. Are there internal combustion engines on site? ☒ Yes ☐ No
If yes, complete Section D.

F. Is there a system for capturing and controlling air emissions? ☒ Yes ☐ No
If yes, complete the applicable Air Pollution Control data sheet in Section L.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Other Control Device — Section L7

1. Description

A. Emission Point Designation (Ref. No.): AA-000

B. Equipment Description (include the process(es) that the equipment controls emissions from):
3,600 scfm Candlestick Flare design to combust Landfill Gas (LFG).

C. Manufacturer: LFG Specialties D. Model: _____

E. Status: ☒ Operating ☐ Proposed ☐ Under Construction

2. Relevant Data

A. Efficiency: 98 % Controlling the following pollutant(s): LFG

B. Inlet air flow rate: 3,600 acfm

C. Pressure Drop: 5 in. of H_2O

D. Inlet Temperature: 80-110 ^oF E. Outlet Temperature: 800-1200 ^oF

F. How is any generated waste (e.g., dust, wastewater, etc.) collected, stored, handled, and disposed of?
n/a

G. Provide any additional details regarding important design and operating parameters below:
At this time, Golden Triangle Regional SWMA (GTRSWMA) has satisfied the requirements of NSPS via Tier 2 Testing, however GTRSWMA voluntarily installed a GCCS early as part of a GHG reducation project. GTRSWMA currently has an LFG Beneficial-Use Project and uses the Candlestick Flare as a back-up combustion device. Until the NSPS and NESHAP regulations are applicable, this flare is only subject to the requirements of 40 CFR 60.18 at this time. The Flare skid is designed in accordance with the requirements of AP-42 Chapter 13.5 and AP-42 Chapter 2.4.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Other Control Device — Section L7

1. Description

A. Emission Point Designation (Ref. No.): AA-000

B. Equipment Description (include the process(es) that the equipment controls emissions from):
800-scfm LFG Treatment System for the LFG Beneficial-Use Project.

C. Manufacturer: LFG Specialties D. Model: _____

E. Status: ☒ Operating ☐ Proposed ☐ Under Construction

2. Relevant Data

A. Efficiency: 100 % Controlling the following pollutant(s): LFG

B. Inlet air flow rate: N/A acfm

C. Pressure Drop: 180 in. of H_2O

D. Inlet Temperature: 70 ^oF E. Outlet Temperature: 32-104 ^oF

F. How is any generated waste (e.g., dust, wastewater, etc.) collected, stored, handled, and disposed of?
n/a

G. Provide any additional details regarding important design and operating parameters below:
At this time, Golden Triangle Regional SWMA (GTRSWMA) has satisfied the requirements of NSPS via Tier 2 Testing, however GTRSWMA voluntarily installed a GCCS early as part of a GHG reducation project. GTRSWMA currently has an LFG Beneficial-Use Project and uses the Candlestick Flare as a back-up combustion device. Until the NSPS and NESHAP regulations are applicable. The Treatment System is the primary control device for this facility. Once the LFG has been treated, it is sent to the LFG-Fired IC Engines for use in generating electrical power as part of a purchase agreement with the TVA.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Recordkeeping — Section M8

1. Applicable Emission Point Description

A. Emission Point Designation (Ref. No.): AA-000

B. Emission Point Description: Landfill Waste Mass and Roadways

C. For what emission limit or standard does the recordkeeping demonstrate compliance?
50 Mg/y is the standard used to establish the appropriate steps that must be taken to demonstrate compliance.

D. Is there an applicable underlying requirement for the recordkeeping?
☒ Yes ☐ No

If yes, what is that requirement (e.g., NSPS Subpart QQ, Permit to Construct issued…, etc.)?
NSPS Subpart WWW/NESHAP Subpart M

2. Recordkeeping Information

A. Data/information recorded:

Parameter/Material	Units	Recordkeeping Frequency	Sampling and analysis method (e.g., EPA Method 24)
NMOC	Mg/yr	Annually/5-years	EPA Method 25C/3C
Asbestos	N/A	As-Required	N/A

B. Compliance is determined…:

☐ Daily ☐ Weekly ☐ Monthly

☒ Other: Annually/5-years/As-Required

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Recordkeeping — Section M8

1. Applicable Emission Point Description

A. Emission Point Designation (Ref. No.): AA-000

B. Emission Point Description: Candlestick Flare

C. For what emission limit or standard does the recordkeeping demonstrate compliance?
<60 ft/s and 98% Destruction Efficiency

D. Is there an applicable underlying requirement for the recordkeeping?
☒ Yes ☐ No

If yes, what is that requirement (e.g., NSPS Subpart QQ, Permit to Construct issued…, etc.)?
40 CFR 60.18

2. Recordkeeping Information

A. Data/information recorded:

Parameter/Material	Units	Recordkeeping Frequency	Sampling and analysis method (e.g., EPA Method 24)
LFG	ft/s	As required	40 CFR 60.18
LFG	%	As required	40 CFR 60.18

B. Compliance is determined…:

☐ Daily ☐ Weekly ☐ Monthly

☒ Other: As Required

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Recordkeeping — Section M8

1. Applicable Emission Point Description

A. Emission Point Designation (Ref. No.): AA-001

B. Emission Point Description: 208-HP Propane Generator

C. For what emission limit or standard does the recordkeeping demonstrate compliance?
CO<=4.0 grams/bhp-hr, NOx<=2.0 grams/bhp-hr, and VOC<=1.0 g/bhp-hr; Engine Certification

D. Is there an applicable underlying requirement for the recordkeeping?
☒ Yes ☐ No

If yes, what is that requirement (e.g., NSPS Subpart QQ, Permit to Construct issued…, etc.)?
40 CFR 60, Subpart JJJJ

2. Recordkeeping Information

A. Data/information recorded:

Parameter/Material	Units	Recordkeeping Frequency	Sampling and analysis method (e.g., EPA Method 24)
LPG	g/bhp-hr	As required	40 CFR 1048

B. Compliance is determined…:

☐ Daily ☐ Weekly ☐ Monthly

☒ Other: Certification of Emissions

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Applicable Requirements and Status — Section N

1. Summary of Applicable Requirements

Provide a list of all applicable federal standards for which your facility is or will be subject to, as well as a list of all Construction Permits establishing limits or restrictions issued to your facility. The specific emission standards and limitations applicable to each emission point shall be provided on the following pages (Parts 2 and 3).

Federal Regulations:

40 CFR Part	Subpart
60	WWW
61	M
63	ZZZZ
60	JJJJ

State Construction Permits[1]:

	MM/DD/YY[2]	PSD	PSD Avoidance[3]	Other
Permit to Construct issued:		☐	☐	☐
		☒	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐

[1] Any Construction Permits containing requirements that are currently applicable to the facility should be addressed in this section.
[2] If the permit has been modified, give the most recent modification date.
[3] Because permits are issued on a pollutant-by-pollutant basis, a PSD permit may be significant for one pollutant while also containing PSD avoidance limits for another pollutant. Therefore, you may check multiple boxes for each permit.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Applicable Requirements and Status — Section N

2. Current Applicable Requirements

List all applicable state and federal requirements, including emission limits, operating restrictions, etc., and the applicable test methods or monitoring used to demonstrate compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

EMISSION POINT NO.	APPLICABLE REQUIREMENT (Regulatory citation)	POLLUTANT	LIMITS/ REQUIREMENTS	TEST METHOD/ COMPLIANCE MONITORING	COMPLIANCE STATUS (In/Out)[1,2]
AA-000	40 CFR 60, Subpart WWW	NMOC	N/A	Reporting/Record-Keeping/Operational Procedures/Testing	In
AA-000	40 CFR 61, Subpart M	Asbestos	N/A	Reporting/Record-Keeping/Operational Procedures	In
AA-000a	40 CFR 63, Subpart ZZZZ	HAP	10 tpy single/25 tpy aggregate	Reporting/Record-Keeping/Operational Procedures/Testing	In
AA-000a	40 CFR 60, Subpart JJJJ	CO, NOx, VOC	CO = 5 g/bhp-hr NOx= 2 g/bhp-hr VOC= 1 g/bhp-hr	Reporting/Record-Keeping/Operational Procedures/Testing	In
AA-001	40 CFR 60, Subpart JJJJ	CO, NOx, VOC	CO = 4 g/bhp-hr NOx= 2 g/bhp-hr VOC= 1 g/bhp-hr	Reporting/Record-Keeping/Operational Procedures/Testing	In

[1] Per APC-S-6, Section II.C.8.b(1) for Title V sources, by specifying that the source is in compliance with the applicable requirement(s), I (the applicant) am certifying that I will continue to operate and maintain this source to assure compliance for the duration of the permit term.

[2] Per APC-S-6, Section II.C.8.b(3) for Title V sources, by specifying that the source is out of compliance with the applicable requirement(s), I (the applicant) am submitting a schedule, attached herein, which includes a description of the problems and proposed solutions in accordance with APC-S-6, Section II.C.8.c.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Applicable Requirements and Status — Section N

2. Current Applicable Requirements

List all applicable state and federal requirements, including emission limits, operating restrictions, etc., and the applicable test methods or monitoring used to demonstrate compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

EMISSION POINT NO.	APPLICABLE REQUIREMENT (Regulatory citation)	POLLUTANT	LIMITS/ REQUIREMENTS	TEST METHOD/ COMPLIANCE MONITORING	COMPLIANCE STATUS (In/Out)[1,2]

[1] Per APC-S-6, Section II.C.8.b(1) for Title V sources, by specifying that the source is in compliance with the applicable requirement(s), I (the applicant) am certifying that I will continue to operate and maintain this source to assure compliance for the duration of the permit term.

[2] Per APC-S-6, Section II.C.8.b(3) for Title V sources, by specifying that the source is out of compliance with the applicable requirement(s), I (the applicant) am submitting a schedule, attached herein, which includes a description of the problems and proposed solutions in accordance with APC-S-6, Section II.C.8.c.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Applicable Requirements and Status — Section N

3. Future Applicable Requirements

List all future applicable state and federal requirements, including emission limits, operating restrictions, etc., and the applicable test methods or monitoring used to demonstrate compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

EMISSION POINT NO.	FUTURE APPLICABLE REQUIREMENT (Regulation citation)	POLLUTANT	LIMITS/ REQUIREMENTS	TEST METHOD/ COMPLIANCE MONITORING	COMPLIANCE DATE[1]

[1] Per 11 Miss. Admin. Code Pt. 2, R. 6.2.C(8)(b)(2)., for Title V sources, for future applicable requirements which will become effective during the permit term, I (the applicant) will meet such requirements on a timely basis.

FORM 5	MDEQ	MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY APPLICATION FOR AIR POLLUTION CONTROL PERMIT

Insignificant Activities *(for Title V facilities only)* — Appendix A

1. List of Insignificant Activities

List all insignificant activities identified in 11 Miss. Admin. Code Pt. 2, R. 6.7., with the exception of those in 11 Miss. Admin. Code Pt. 2, R.6.7.A.

Tank 1 - 10,000-Gallon Diesel Tank
Tank 2 - 20,000 Gallon Leachate Tank
Tank 3 - 20,000 Gallon Leachate Tank
Tank 4 - 20,000 Gallon Leachate Tank
Tank 5 - 100,000 Gallon Leachate Tank
Tank 6 - 100,000 Gallon Leachate Tank
Tank 7 - 100,000 Gallon Leachate Tank
Tank 8 - 1,000 Gallon Waste Oil Tank
Used Oil Space Heater
Siloxane Removal Technology

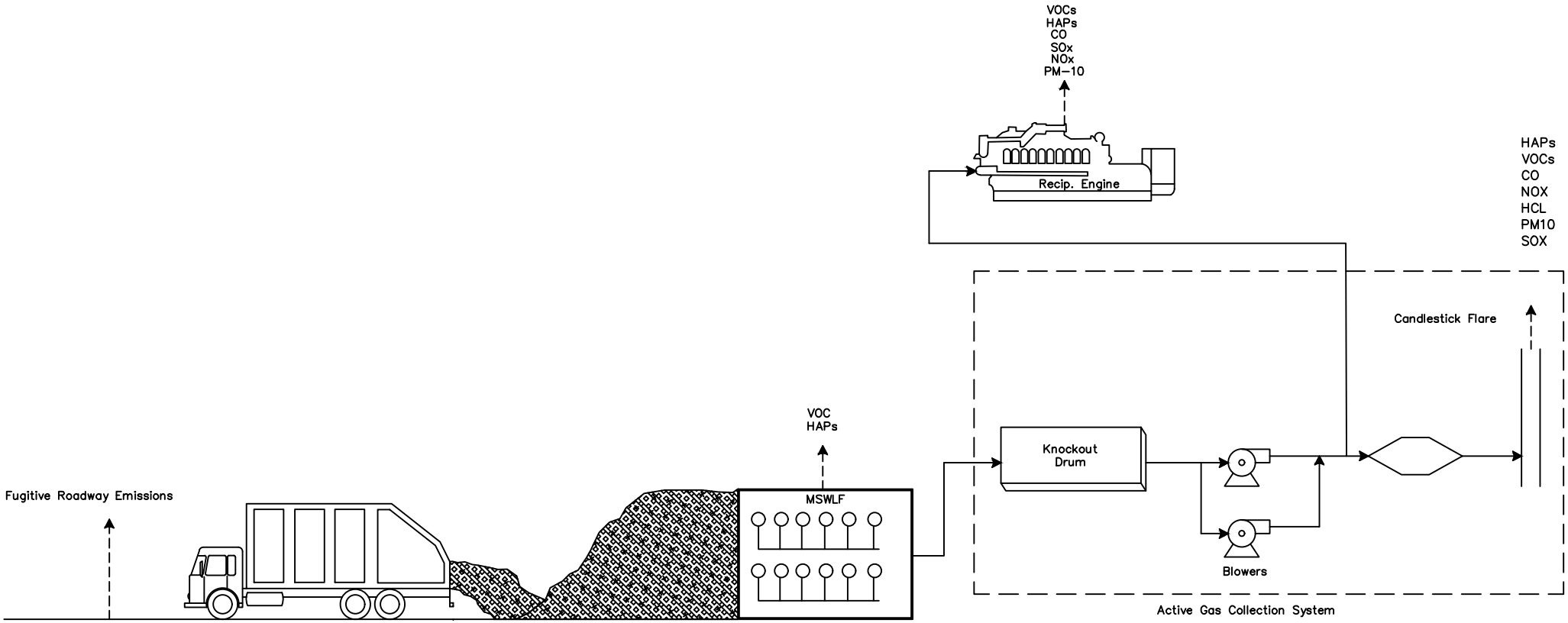
2. Emissions Information

List the total emissions for each regulated pollutant from the combined insignificant activities listed above in accordance with the Permit Application Instructions *(calculations not needed unless requested by DEQ).*

POLLUTANT	POTENTIAL TO EMIT	
	lb/hr	tons/yr
VOC	0.0072	0.0315
HAP	0.0061	0.0265

APPENDIX A

PROCESS FLOW DIAGRAM, SITE PLAN, AND AREA MAP



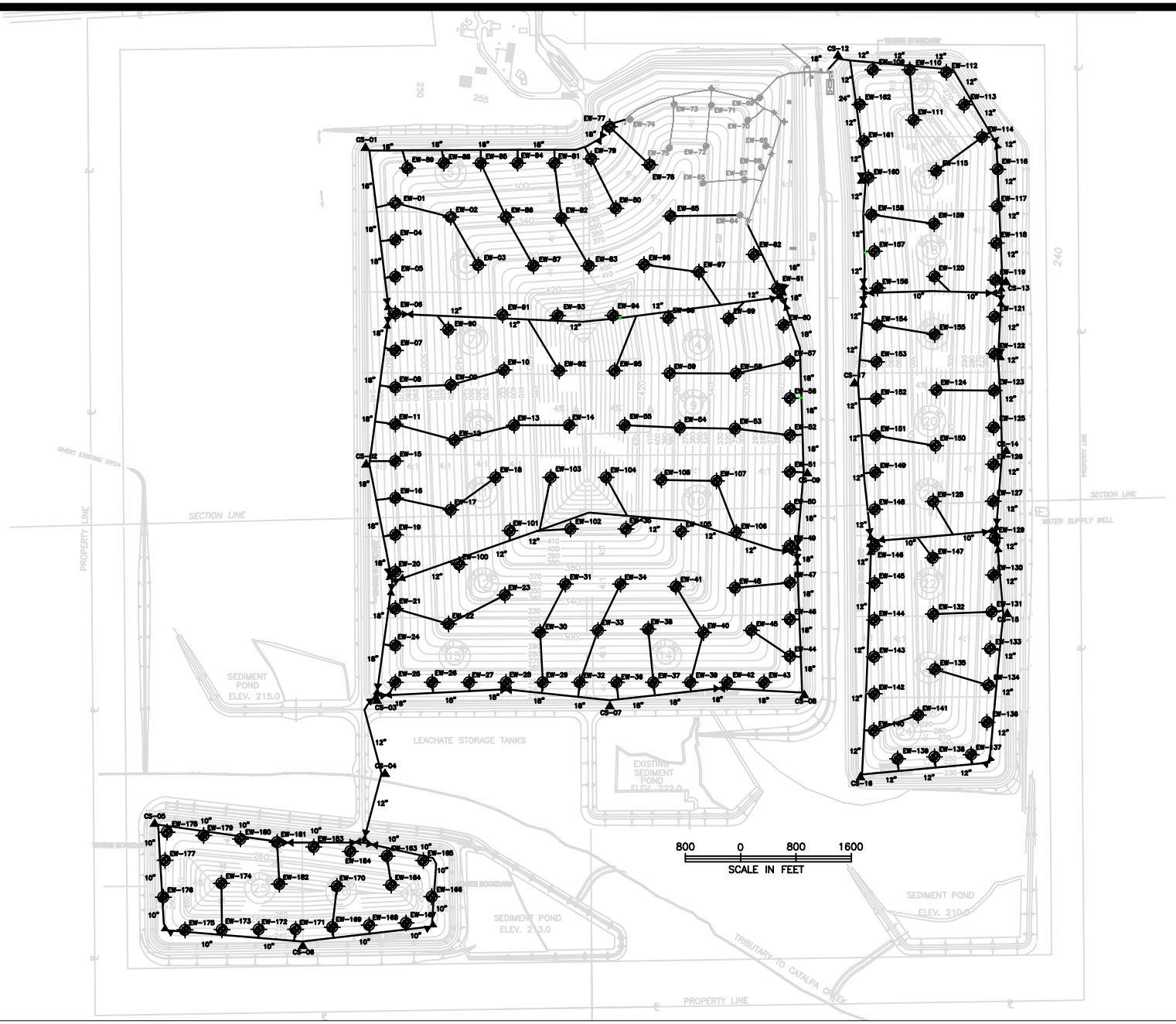
Note:
Small engines and tanks not listed due to small emissions.

GOLDEN TRIANGLE REGIONAL
SOLID WASTE MANAGEMENT AUTHORITY
GOLDEN TRIANGLE LANDFILL
STARKVILLE, MS

Process Flow Diagram

DATE:	SCALE:	JOB NO: 3000
SEP 2015	NTS	

FRANKLIN ENGINEERS & CONSULTANTS, LLC
2734 SUNRISE BOULEVARD, SUITE 308, PEARLAND, TEXAS 77584
PHONE: (281) 205-8410



Golden Triangle Regional Solid Waste Management Authority
Golden Triangle Landfill
Starkville, MS

Site Plan

DATE:	SCALE:	JOB NO: 3000
Sep 2015	1:800	

FRANKLIN ENGINEERS & CONSULTANTS, LLC
2734 SUNRISE BOULEVARD, SUITE 308, PEARLAND, TEXAS 77584
PHONE: (281) 205-8410

Golden Triangle Regional Solid Waste Management Authority
Golden Triangle Landfill
Starkville, MS

Area Map

DATE:	SCALE:	JOB NO: 3019
Oct 2015	NTS	

FRANKLIN ENGINEERS & CONSULTANTS, LLC
2734 SUNRISE BOULEVARD, SUITE 308, PEARLAND, TEXAS 77584
PHONE: (281) 205-8410

APPENDIX B

EMISSIONS CALCULATIONS

HAP EMISSIONS SUMMARY

No Flare/No Engines Operating

Hazardous Air Pollutant	CAS No.	Molecular Weight	Default Concentration (ppmv)	Potential To Emit (lbs/hr)	Potential To Emit (tons/yr)
1,1,1-Trichloroethane (methyl chloroform)	71556	133.41	0.480	0.0285	0.1250
1,1,2,2-Tetrachloroethane	79345	167.85	1.110	0.0830	0.3637
1,1-Dichloroethane (ethylidene dichloride)	75343	98.97	2.350	0.1037	0.4540
1,1-Dichloroethene (vinylidene chloride)	75354	96.94	0.200	0.0086	0.0378
1,2-Dichloroethane (ethylene dichloride)	107062	98.96	0.041	0.0018	0.0079
1,2-Dichloropropane (propylene dichloride)	78875	112.99	0.180	0.0091	0.0397
Acrylonitrile	107131	53.06	6.330	0.1497	0.6556
Carbon disulfide	75150	76.13	0.580	0.0197	0.0862
Carbon tetrachloride	56235	153.84	0.004	0.0003	0.0012
Carbonyl sulfide	463581	60.07	0.490	0.0131	0.0575
Chlorobenzene	108907	112.56	0.250	0.0125	0.0549
Chloroethane (ethyl chloride)	75003	64.52	1.250	0.0359	0.1574
Chloroform	67663	119.39	0.030	0.0016	0.0070
Dichloromethane (methylene chloride)	75092	84.94	14.300	0.5413	2.3709
Ethylbenzene	100414	106.16	4.610	0.2181	0.9553
Hexane	110543	86.18	6.570	0.2523	1.1052
Hydrochloric Acid	7647010	36.46	42.000	0.7626	3.3402
Mercury (total)	7647010	200.61	2.92E-04	0.0000	0.0001
Methyl ethyl ketone	78933	72.11	7.090	0.2278	0.9980
Methyl isobutyl ketone	108101	100.16	1.870	0.0835	0.3656
Perchloroethylene (tetrachloroethylene)	127184	165.83	3.730	0.2757	1.2074
Trichloroethylene (trichloroethene)	79016	131.40	2.820	0.1651	0.7233
Vinyl chloride	75014	62.50	7.340	0.2044	0.8955
Xylenes	1330207	106.16	12.100	0.5725	2.5074
Benzene	71432	78.11	1.910	0.0665	0.2912
Toluene	108883	92.13	39.300	1.6136	7.0675
GRAND TOTAL				**5.4510**	**23.8754**

HCL is a product of combustion; therefore, the emissions associated with that HAP is based on the operating scenario of two (2) engines and one (1) flare because that represents the worst-case scenario.

TRS EMISSIONS SUMMARY

No Flare/No Engines Operating

Hazardous Air Pollutant	CAS No.	Molecular Weight	Default Concentration (ppmv)	Potential To Emit (lbs/hr)	Potential To Emit (tons/yr)
Hydrogen Sulfide	7783064	34.08	35.500	0.5392	2.3616
Methyl Mercaptan	74931	48.11	2.49	0.0534	0.2338
Dimethyl Sulfide	75183	62.13	7.82	0.2165	0.9484
GRAND TOTAL				**0.8091**	**3.5438**

AA-001	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS FUGITIVE LFG EMISSIONS (No Flare/Engines in Operation)			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
1,1,1-Trichloroethane (methyl chloroform)[1,4]	133.41	0.480	0.0285	0.1250
1,1,2,2-Tetrachloroethane[1]	167.85	1.110	0.0830	0.3637
1,1-Dichloroethane (ethylidene dichloride)[1]	98.97	2.350	0.1037	0.4540
1,1-Dichloroethene (vinylidene chloride)[1]	96.94	0.200	0.0086	0.0378
1,2-Dichloroethane (ethylene dichloride)[1]	98.96	0.041	0.0018	0.0079
1,2-Dichloropropane (propylene dichloride)[1]	112.99	0.180	0.0091	0.0397
2-Propanol (isopropyl alcohol)	60.11	50.100	1.3421	5.8784
Acetone[4]	58.08	7.010	0.1814	0.7947
Acrylonitrile[1]	53.06	6.330	0.1497	0.6556
Bromodichloromethane	163.83	3.130	0.2285	1.0009
Butane	58.12	5.030	0.1303	0.5706
Carbon disulfide[1]	76.13	0.580	0.0197	0.0862
Carbon tetrachloride[1]	153.84	0.004	0.0003	0.0012
Carbonyl sulfide[1]	60.07	0.490	0.0131	0.0575
Chlorobenzene[1]	112.56	0.250	0.0125	0.0549
Chlorodifluoromethane[4]	86.47	1.300	0.0501	0.2194
Chloroethane (ethyl chloride)[1]	64.52	1.250	0.0359	0.1574
Chloroform[1]	119.39	0.030	0.0016	0.0070
Chloromethane	50.49	1.210	0.0272	0.1193
Dichlorobenzene[2]	147.00	0.210	0.0138	0.0603
Dichlorodifluoromethane[4]	120.91	15.700	0.8460	3.7054
Dichlorofluoromethane	102.92	2.620	0.1202	0.5263
Dichloromethane (methylene chloride)[1,4]	84.94	14.300	0.5413	2.3709
Dimethyl sulfide (methyl sulfide)	62.13	7.820	0.2165	0.9484

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5] 0% collection efficiency is assumed.

Compound	Molecular Weight	Default Concentration (ppmv)	Emissions (lbs/hr)	Emissions (tons/yr)
Ethane[4]	30.07	889.000	11.9133	52.1804
Ethanol	46.08	27.200	0.5586	2.4465
Ethyl mercaptan (ethanethiol)	62.13	2.280	0.0631	0.2765
Ethylbenzene[1]	106.16	4.610	0.2181	0.9553
Ethylene dibromide	187.88	0.001	0.0001	0.0004
Fluorotrichloromethane	137.38	0.760	0.0465	0.2038
Hexane[1]	86.18	6.570	0.2523	1.1052
Hydrogen sulfide	34.08	35.500	0.5392	2.3616
Mercury (total)[1,3]	200.61	0.000	0.0000	0.0001
Methyl ethyl ketone[1]	72.11	7.090	0.2278	0.9980
Methyl isobutyl ketone[1]	100.16	1.870	0.0835	0.3656
Methyl mercaptan	48.11	2.490	0.0534	0.2338
Pentane	72.15	3.290	0.1058	0.4633
Perchloroethylene (tetrachloroethylene)[1,4]	165.83	3.730	0.2757	1.2074
Propane	44.09	11.100	0.2181	0.9553
t-1,2-dichloroethene	96.94	2.840	0.1227	0.5374
Trichloroethylene (trichloroethene)[1]	131.40	2.820	0.1651	0.7233
Vinyl chloride[1]	62.50	7.340	0.2044	0.8955
Xylenes[1]	106.16	12.100	0.5725	2.5074
Benzene[1]	78.11	1.910	0.0665	0.2912
Toluene[1]	92.13	39.300	1.6136	7.0675

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.

The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5] 0 % collection efficiency is assumed.

Peak LFG Generation Rate (LandGEM Ver 3.02)	**2,819**	scfm
Molar Flow rate	**445.65**	lbmole LFG/hr

GCCS Collection Efficiency = **0.00%**

Total VOCs	**7.27**	lbs/hour
Total VOCs	**31.85**	tons/yr

Total HAPs	**4.69**	lbs/hour
Total HAPs	**20.54**	tons/yr
Fugitive Methane	740,739,286	ft^3/yr
Fugitive Methane Generated	14,204.48	Metric Tons of CH_4
Fugitive Methane Emitted Through Cover	12,784.03	Metric Tons of CH_4
Fugitive Methane as CO_2E Emitted Through Cover	319,601	Metric Tons of CO_2E
CH_4 Oxidized Through Cover	1,420.45	Metric Tons of CH_4
CO_2 Emitted Through Cover from Oxidized Methane	3,906.23	Metric Tons of CO_2
Fugitive CO_2 Emissions	740,739,286	ft^3/yr
Fugitive CO_2 Emitted	38,973.76	Metric Tons/year
Total Fugitive CO_2 Emissions from the Landfill	362,480.76	Metric Tons of CO_2E
Total Fugitive CO_2E Emissions from the Landfill	**399,566.64**	**Short Tons of CO_2E/yr**
Total Fugitive CO_2E Emissions from the Landfill	**91,225.26**	**lbs of CO_2E/hr**
Total Anthropogenic CO_2E Emissions from Landfill	323,507.00	Metric Tons of CO_2E
Total Anthropogenic CO_2E Emissions from Landfill	**356,605.43**	**Short Tons of CO_2E/yr**

AA-001	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS FUGITIVE LFG EMISSIONS (Flare/Engines in Operation)			
Compound	Molecular Weight	Default Concentration (ppmv)	Emissions (lbs/hr)	Emissions (tons/yr)
1,1,1-Trichloroethane (methyl chloroform)[1,4]	133.41	0.480	0.0071	0.0312
1,1,2,2-Tetrachloroethane[1]	167.85	1.110	0.0208	0.0909
1,1-Dichloroethane (ethylidene dichloride)[1]	98.97	2.350	0.0259	0.1135
1,1-Dichloroethene (vinylidene chloride)[1]	96.94	0.200	0.0022	0.0095
1,2-Dichloroethane (ethylene dichloride)[1]	98.96	0.041	0.0005	0.0020
1,2-Dichloropropane (propylene dichloride)[1]	112.99	0.180	0.0023	0.0099
2-Propanol (isopropyl alcohol)	60.11	50.100	0.3355	1.4696
Acetone[4]	58.08	7.010	0.0454	0.1987
Acrylonitrile[1]	53.06	6.330	0.0374	0.1639
Bromodichloromethane	163.83	3.130	0.0571	0.2502
Butane	58.12	5.030	0.0326	0.1427
Carbon disulfide[1]	76.13	0.580	0.0049	0.0215
Carbon tetrachloride[1]	153.84	0.004	0.0001	0.0003
Carbonyl sulfide[1]	60.07	0.490	0.0033	0.0144
Chlorobenzene[1]	112.56	0.250	0.0031	0.0137
Chlorodifluoromethane[4]	86.47	1.300	0.0125	0.0549
Chloroethane (ethyl chloride)[1]	64.52	1.250	0.0090	0.0394
Chloroform[1]	119.39	0.030	0.0004	0.0017
Chloromethane	50.49	1.210	0.0068	0.0298
Dichlorobenzene[2]	147.00	0.210	0.0034	0.0151
Dichlorodifluoromethane[4]	120.91	15.700	0.2115	0.9263
Dichlorofluoromethane	102.92	2.620	0.0300	0.1316
Dichloromethane (methylene chloride)[1,4]	84.94	14.300	0.1353	0.5927
Dimethyl sulfide (methyl sulfide)	62.13	7.820	0.0541	0.2371

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5] 0% collection efficiency is assumed.

Compound	Molecular Weight	Default Concentration (ppmv)	Emissions (lbs/hr)	Emissions (tons/yr)
Ethane[4]	30.07	889.000	2.9783	13.0451
Ethanol	46.08	27.200	0.1396	0.6116
Ethyl mercaptan (ethanethiol)	62.13	2.280	0.0158	0.0691
Ethylbenzene[1]	106.16	4.610	0.0545	0.2388
Ethylene dibromide	187.88	0.001	0.0000	0.0001
Fluorotrichloromethane	137.38	0.760	0.0116	0.0510
Hexane[1]	86.18	6.570	0.0631	0.2763
Hydrogen sulfide	34.08	35.500	0.1348	0.5904
Mercury (total)[1,3]	200.61	0.000	0.0000	0.0000
Methyl ethyl ketone[1]	72.11	7.090	0.0570	0.2495
Methyl isobutyl ketone[1]	100.16	1.870	0.0209	0.0914
Methyl mercaptan	48.11	2.490	0.0133	0.0585
Pentane	72.15	3.290	0.0264	0.1158
Perchloroethylene (tetrachloroethylene)[1,4]	165.83	3.730	0.0689	0.3018
Propane	44.09	11.100	0.0545	0.2388
t-1,2-dichloroethene	96.94	2.840	0.0307	0.1343
Trichloroethylene (trichloroethene)[1]	131.40	2.820	0.0413	0.1808
Vinyl chloride[1]	62.50	7.340	0.0511	0.2239
Xylenes[1]	106.16	12.100	0.1431	0.6268
Benzene[1]	78.11	1.910	0.0166	0.0728
Toluene[1]	92.13	39.300	0.4034	1.7669

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.

The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5] 0 % collection efficiency is assumed.

Peak LFG Generation Rate (LandGEM Ver 3.02)	**2,819**	scfm
Molar Flow rate	**445.65**	lbmole LFG/hr

GCCS Collection Efficiency = **75.00%**

Total VOCs	**1.82**	lbs/hour
Total VOCs	**7.96**	tons/yr
Total HAPs	**1.17**	lbs/hour
Total HAPs	**5.13**	tons/yr

Fugitive Methane	185,184,821	ft^3/yr
Fugitive Methane Generated	3,551.12	Metric Tons of CH_4
Fugitive Methane Emitted Through Cover	3,196.01	Metric Tons of CH_4
Fugitive Methane as CO_2E Emitted Through Cover	79,900	Metric Tons of CO_2E
CH_4 Oxidized Through Cover	355.11	Metric Tons of CH_4
CO_2 Emitted Through Cover from Oxidized Methane	976.56	Metric Tons of CO_2
Fugitive CO_2 Emissions	185,184,821	ft^3/yr
Fugitive CO_2 Emitted	9,743.44	Metric Tons/year
Total Fugitive CO_2 Emissions from the Landfill	90,620.19	Metric Tons of CO_2E
Total Fugitive CO_2E Emissions from the Landfill	**99,891.66**	**Short Tons of CO_2E/yr**
Total Fugitive CO_2E Emissions from the Landfill	**22,806.32**	**lbs of CO_2E/hr**
Total Anthropogenic CO_2E Emissions from Landfill	80,876.75	Metric Tons of CO_2E
Total Anthropogenic CO_2E Emissions from Landfill	**89,151.36**	**Short Tons of CO_2E/yr**

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 1 ENGINE			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
1,1,1-Trichloroethane (methyl chloroform)[1,4]	133.41	0.480	0.0007	0.0032
1,1,2,2-Tetrachloroethane[1]	167.85	1.110	0.0021	0.0093
1,1-Dichloroethane (ethylidene dichloride)[1]	98.97	2.350	0.0026	0.0116
1,1-Dichloroethene (vinylidene chloride)[1]	96.94	0.200	0.0002	0.0010
1,2-Dichloroethane (ethylene dichloride)[1]	98.96	0.041	0.0000	0.0002
1,2-Dichloropropane (propylene dichloride)[1]	112.99	0.180	0.0002	0.0010
2-Propanol (isopropyl alcohol)	60.11	50.100	0.0343	0.1502
Acetone[4]	58.08	7.010	0.0046	0.0203
Acrylonitrile[1]	53.06	6.330	0.0038	0.0167
Bromodichloromethane	163.83	3.130	0.0058	0.0256
Butane	58.12	5.030	0.0033	0.0146
Carbon disulfide[1]	76.13	0.580	0.0005	0.0022
Carbon tetrachloride[1]	153.84	0.004	0.0000	0.0000
Carbonyl sulfide[1]	60.07	0.490	0.0003	0.0015
Chlorobenzene[1]	112.56	0.250	0.0003	0.0014
Chlorodifluoromethane[4]	86.47	1.300	0.0013	0.0056
Chloroethane (ethyl chloride)[1]	64.52	1.250	0.0009	0.0040
Chloroform[1]	119.39	0.030	0.0000	0.0002
Chloromethane	50.49	1.210	0.0007	0.0030
Dichlorobenzene[2]	147.00	0.210	0.0004	0.0015
Dichlorodifluoromethane[4]	120.91	15.700	0.0216	0.0947
Dichlorofluoromethane	102.92	2.620	0.0031	0.0134
Dichloromethane (methylene chloride)[1,4]	84.94	14.300	0.0138	0.0606
Dimethyl sulfide (methyl sulfide)	62.13	7.820	0.0055	0.0242
Ethane[4]	30.07	889.000	0.3043	1.3329
Ethanol	46.08	27.200	0.0143	0.0625

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5]In accordance with the assumption found in AP-42 - 13.5.2, a 98% destruction efficiency is assumed.

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 1 ENGINE			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
Ethyl mercaptan (ethanethiol)	62.13	2.280	0.0016	0.0071
Ethylbenzene[1]	106.16	4.610	0.0056	0.0244
Ethylene dibromide	187.88	0.001	0.0000	0.0000
Fluorotrichloromethane	137.38	0.760	0.0012	0.0052
Hexane[1]	86.18	6.570	0.0064	0.0282
Hydrochloric Acid	36.46	42.000	0.6394	2.8007
Hydrogen sulfide	34.08	35.500	0.0138	0.0603
Mercury (total)[1,3]	200.61	0.000	0.0000	0.0000
Methyl ethyl ketone[1]	72.11	7.090	0.0058	0.0255
Methyl isobutyl ketone[1]	100.16	1.870	0.0021	0.0093
Methyl mercaptan	48.11	2.490	0.0014	0.0060
Pentane	72.15	3.290	0.0027	0.0118
Perchloroethylene (tetrachloroethylene)[1,4]	165.83	3.730	0.0070	0.0308
Propane	44.09	11.100	0.0056	0.0244
t-1,2-dichloroethene	96.94	2.840	0.0031	0.0137
(trichloroethene)[1]	131.40	2.820	0.0042	0.0185
Vinyl chloride[1]	62.50	7.340	0.0052	0.0229
Xylenes[1]	106.16	12.100	0.0146	0.0640
Benzene[1]	78.11	1.910	0.0017	0.0074
Toluene[1]	92.13	39.300	0.0412	0.1805

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.

The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5]In accordance with the assumption found in AP-42 - 13.5.2, a 98% destruction efficiency is assumed.

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 1 ENGINE

Peak LFG Combustion Rate (Manufacture Specifications)	**3,600**	scfm
Molar Flow rate	**569.19**	lbmole LFG/hr
Total VOCs	**0.19**	lbs/hour
Total VOCs	**0.85**	tons/yr
Total HAPs	**0.77**	lbs/hr
Total HAPs	**3.39**	tons/yr
PM_{10} Emissions	**1.83**	lbs/hr
PM_{10} Emissions	**8.03**	tons/yr
CO Factor (Manufacturer Specifications)	**0.31**	lbs/MMBTU
CO Emissions	**33.88**	lbs/hr
CO Emissions	**148.40**	ton/yr
NO_x Factor (Manufacturer Specifications)	**0.068**	lbs/MMBTU
NO_x Emissions	**7.43**	lbs/hr
NO_x Emissions	**32.55**	tons/yr

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 1 ENGINE

Sulfur Molecular Weight =	**32.066**	g/gmole
Sulfur Concentration = (AP-42-2.4.4.2)	**46.9**	ppmv
CH_4 generation rate =	**26,789,958**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Sulfur Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**2,515**	m^3/year
Total Uncontrolled Mass Emissions of $SO_{2=}$ (AP-42 - 2.4.4.1 Eq. 4)	**3,297**	kg/year
Total Controlled Mass Emissions of SO_2 = (AP-42-42 - 2.4.4.1 Eq.7)	**4,945**	kg/year
Total Controlled SO2 Emissions =	**1.24**	lbs/hr
Total Controlled SO_2 Emissions =	**5.45**	tons/year

HCl Molecular Weight =	**36.461**	g/gmole
HCl Concentration = (AP-42-2.4.4.2)	**42.0**	ppmv
CH_4 generation rate =	**26,789,958**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Chlorine Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**2,253**	m^3/year
Uncontrolled Mass Emissions of Chlorine = (AP-42 - 2.4.4.1 Eq. 4)	**3,357**	kg/year
Total Chlorine Controlled Emissions = (AP-42 - 2.4.4.1 Eq. 10)	**2,541.44**	kg/year
Total Chlorine Controlled Emissions =	**0.64**	lbs/hr
Total Chlorine Controlled Emissions =	**2.80**	tons/year

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 1 ENGINE

Total Methane Generation:	946,080,000	scf
Total Carbon Dioxide Generation:	946,080,000	scf
LFG Flare Heat Rate:	109.30	MMBTU/hr
Anthroprogenic CH_4 GHG Emissions:	3.06	metric tons of CH_4
Anthroprogenic CH_4 GHG Emissions:	3.38	short tons of CH_4
Anthroprogenic CH_4 GHG Emissions:	76.59	metric tons of CO_2E
Anthroprogenic CH_4 GHG Emissions:	84.43	short tons of CO_2E
Anthroprogenic N_2O GHG Emissions:	0.60	metric tons of N_2O
Anthroprogenic N_2O GHG Emissions:	0.66	short tons of N_2O
Anthroprogenic N_2O GHG Emissions:	179.75	metric tons of CO_2E
Anthroprogenic CH_4 GHG Emissions:	198.14	short tons of CO_2E
CO_2 Emitted as a Product of CH_4 Combustion:	49,853.53	metric tons
CO_2 Emitted as a Product of CH_4 Combustion:	54,954.11	short tons
Flare Pass-Through CO_2 GHG emitted:	49,777.70	metric tons
Total CO_2E Emissions from the Flare:	99,887.57	metric tons
Total CO_2 Emissions from the Flare:	**110,107.20**	**short tons/year**
Total CO_2 Emissions from the Flare:	25,138.63	lb/hr
Total Anthroprogenic CO_2 Emissions from the Flare:	256.34	metric tons
Total Anthroprogenic CO_2 Emissions from the Flare:	**282.57**	**short tons/year**
Total Anthroprogenic CO_2 Emissions from the Flare:	**64.51**	**lb/hr**

AA-000a	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG ENGINE EMISSIONS - 1 ENGINE			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
1,1,1-Trichloroethane (methyl chloroform)[1,4]	133.41	0.480	8.50E-05	3.73E-04
1,1,2,2-Tetrachloroethane[1]	167.85	1.110	2.47E-04	1.08E-03
1,1-Dichloroethane (ethylidene dichloride)[1]	98.97	2.350	3.09E-04	1.35E-03
1,1-Dichloroethene (vinylidene chloride)[1]	96.94	0.200	2.57E-05	1.13E-04
1,2-Dichloroethane (ethylene dichloride)[1]	98.96	0.041	5.39E-06	2.36E-05
1,2-Dichloropropane (propylene dichloride)[1]	112.99	0.180	2.70E-05	1.18E-04
2-Propanol (isopropyl alcohol)	60.11	50.100	4.00E-03	1.75E-02
Acetone[4]	58.08	7.010	5.41E-04	2.37E-03
Acrylonitrile[1]	53.06	6.330	4.46E-04	1.95E-03
Bromodichloromethane	163.83	3.130	6.81E-04	2.98E-03
Butane	58.12	5.030	3.88E-04	1.70E-03
Carbon disulfide[1]	76.13	0.580	5.86E-05	2.57E-04
Carbon tetrachloride[1]	153.84	0.004	8.17E-07	3.58E-06
Carbonyl sulfide[1]	60.07	0.490	3.91E-05	1.71E-04
Chlorobenzene[1]	112.56	0.250	3.74E-05	1.64E-04
Chlorodifluoromethane[4]	86.47	1.300	1.49E-04	6.54E-04
Chloroethane (ethyl chloride)[1]	64.52	1.250	1.07E-04	4.69E-04
Chloroform[1]	119.39	0.030	4.76E-06	2.08E-05
Chloromethane	50.49	1.210	8.11E-05	3.55E-04
Dichlorobenzene[2]	147.00	0.210	4.10E-05	1.80E-04
Dichlorodifluoromethane[4]	120.91	15.700	2.52E-03	1.10E-02
Dichlorofluoromethane	102.92	2.620	3.58E-04	1.57E-03
Dichloromethane (methylene chloride)[1,4]	84.94	14.300	1.61E-03	7.07E-03
Dimethyl sulfide (methyl sulfide)	62.13	7.820	6.45E-04	2.83E-03
Ethane[4]	30.07	889.000	3.55E-02	1.56E-01
Ethanol	46.08	27.200	1.66E-03	7.29E-03

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments
[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.
[3]No data were available to speciate total Hg into the elemental and organic forms.
[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100
A collection efficiency of 97.2% is assumed in accordance with AP-42 Table 2.4-3
LFG Density is based on Table 4-1 of the LANDGEM User's Manual
Emissions have been estimated based on 100% Plant Operations (8,760 hours/year)

Compound	Molecular Weight	Default Concentration (ppmv)	Emissions (lbs/hr)	Emissions (tons/yr)
Ethyl mercaptan (ethanethiol)	62.13	2.280	1.88E-04	8.24E-04
Ethylbenzene[1]	106.16	4.610	6.50E-04	2.85E-03
Ethylene dibromide	187.88	0.001	2.50E-07	1.09E-06
Fluorotrichloromethane	137.38	0.760	1.39E-04	6.07E-04
Hexane[1]	86.18	6.570	7.52E-04	3.29E-03
Hydrochloric Acid[1]	36.46	0.000	7.05E-02	3.09E-01
Hydrogen sulfide	34.08	35.500	1.61E-03	7.04E-03
Mercury (total)[1,3]	200.61	0.000	0.00E+00	0.00E+00
Methyl ethyl ketone[1]	72.11	7.090	6.79E-04	2.97E-03
Methyl isobutyl ketone[1]	100.16	1.870	2.49E-04	1.09E-03
Methyl mercaptan	48.11	2.490	1.59E-04	6.97E-04
Pentane	72.15	3.290	3.15E-04	1.38E-03
Perchloroethylene (tetrachloroethylene)[1,4]	165.83	3.730	8.22E-04	3.60E-03
Propane	44.09	11.100	6.50E-04	2.85E-03
t-1,2-dichloroethene	96.94	2.840	3.66E-04	1.60E-03
Trichloroethylene (trichloroethene)[1]	131.40	2.820	4.92E-04	2.16E-03
Vinyl chloride[1]	62.50	7.340	6.09E-04	2.67E-03
Xylenes[1]	106.16	12.100	1.71E-03	7.47E-03
Benzene[1]	78.11	1.910	1.98E-04	8.68E-04
Toluene[1]	92.13	39.300	4.81E-03	2.11E-02

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments
[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.
[3]No data were available to speciate total Hg into the elemental and organic forms.
[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100
A collection efficiency of 97.2% is assumed in accordance with AP-42 Table 2.4-3
LFG Density is based on Table 4-1 of the LANDGEM User's Manual
Emissions have been estimated based on 100% Plant Operations 8760 hours /yr

Emission Factors			
Mfr. Engine Rating (1 Engine)	**1,065**	bhp	
Mfr. Engine Rating (1 Engine)	**1.05**	MWH	
Total Number of IC Engines	**1**		
Max. Rated LFG Flow Rate (1 Engine)	**300**	scfm	
Max. Rated LFG Flow Rate (1 Engine)	**18,000**	scfh	
Molar Flow rate (1 Engine)	**47.43**	lbmole LFG/hr	
LFG Methane Content	**50%**		
LFG Density	**0.078**	lb/scf	
PM_{10}	**48.00**	lbs/MMdscf CH_4	AP-42
NO_X	**2.00**	g/bhp-hr	NSPS Subpart JJJJ
CO	**5.00**	g/bhp-hr	NSPS Subpart JJJJ
VOC	**1.00**	g/bhp-hr	NSPS Subpart JJJJ
Combustion Efficiency	**97.2%**		AP-42
Grams-Pounds Conversion Factor	**453.5924**	grams/lb	
Minute-Hour Conversion Factor	**60**	min/hour	
Annual Operting Hours	**8,760**	hours/year	

VOC/HAP Emission		
Total VOCs	**2.3479**	lbs/hr
Total VOCs	**10.28**	tons/yr
Total HAPs	**0.0860**	lbs/hr
Total HAPs	**0.3769**	tons/yr

5. VOC concentation is assumed to be equal to the maximum allowable NMOC concentration as hexane at 3% oxygen allowed by the NSPS.
6. VOC molecular weight is assumed to be the same as NMOC as hexane.

PM_{10} Emissions		
PM_{10} Emissions	**0.43**	lbs/hr
PM_{10} Emissions	**1.89**	tons/yr

NOx Emissions		
NO_X Emissions	**4.70**	lbs/hr
NO_X Emissions	**20.57**	tons/yr

CO Emissions		
CO Emissions	**11.74**	lbs/hr
CO Emissions	**51.42**	tons/yr

Sulfur Molecular Weight =	**32.066**	g/gmole
Sulfur Concentration = (AP-42-2.4.4.2)	**400.0**	ppmv
CH_4 generation rate =	**2,232,497**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Sulfur Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**1,788**	m^3/year
Total Uncontrolled Mass Emissions of $SO_{2=}$ (AP-42 - 2.4.4.1 Eq. 4)	**2,343**	kg/year
Total Controlled Mass Emissions of SO_2 = (AP-42-42 - 2.4.4.1 Eq.7)	**4,686**	kg/year
Total Controlled SO2 Emissions =	**1.18**	lbs/hr
Total Controlled SO_2 Emissions =	**5.16**	tons/year

HCl Molecular Weight =	**36.46**	g/gmole
HCl Concentration = (AP-42-2.4.4.2)	**42.0**	ppmv
CH_4 generation rate =	**2,232,497**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless
Chlorine Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**188**	m^3/year
Uncontrolled Mass Emissions of Chlorine = (AP-42 - 2.4.4.1 Eq. 4)	**280**	kg/year
Total Chlorine Controlled Emissions = (AP-42 - 2.4.4.1 Eq. 10)	**280.08**	kg/year
Total Chlorine Controlled Emissions =	**0.07**	lbs/hr

Total Chlorine Controlled Emissions =	**0.31**	tons/year

Total Methane Generation:	78,840,000	scf
Total Carbon Dioxide Generation:	78,840,000	scf
LFG Flare Heat Rate:	9.11	MMBTU/hr
Anthroprogenic CH_4 GHG Emissions:	0.26	metric tons of CH_4
Anthroprogenic CH_4 GHG Emissions:	0.28	short tons of CH_4
Anthroprogenic CH_4 GHG Emissions:	6.38	metric tons of CO_2E
Anthroprogenic CH_4 GHG Emissions:	7.04	short tons of CO_2E
Anthroprogenic N_2O GHG Emissions:	5.03E-02	metric tons of N_2O
Anthroprogenic N_2O GHG Emissions:	0.06	short tons of N_2O
Anthroprogenic N_2O GHG Emissions:	14.98	metric tons of CO_2E
Anthroprogenic CH_4 GHG Emissions:	16.51	short tons of CO_2E
CO_2 Emitted as a Product of CH_4 Combustion:	4,154.46	metric tons
CO_2 Emitted as a Product of CH_4 Combustion:	4,579.51	short tons
Flare Pass-Through CO_2 GHG emitted:	8,296.28	metric tons
Total CO_2E Emissions from the Flare:	12,472.11	metric tons
Total CO_2 Emissions from the Flare:	**13,748.14**	**short tons/year**
Total CO_2 Emissions from the Flare:	3,138.85	lb/hr
Total Anthroprogenic CO_2 Emissions from the Flare:	21.36	metric tons
Total Anthroprogenic CO_2 Emissions from the Flare:	**23.55**	**short tons/year**

Total Anthroprogenic CO_2 Emissions from the Flare: **5.38** **lb/hr**

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 2 ENGINES			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
1,1,1-Trichloroethane (methyl chloroform)[1,4]	133.41	0.480	0.0007	0.0031
1,1,2,2-Tetrachloroethane[1]	167.85	1.110	0.0021	0.0090
1,1-Dichloroethane (ethylidene dichloride)[1]	98.97	2.350	0.0026	0.0113
1,1-Dichloroethene (vinylidene chloride)[1]	96.94	0.200	0.0002	0.0009
1,2-Dichloroethane (ethylene dichloride)[1]	98.96	0.041	0.0000	0.0002
1,2-Dichloropropane (propylene dichloride)[1]	112.99	0.180	0.0002	0.0010
2-Propanol (isopropyl alcohol)	60.11	50.100	0.0333	0.1460
Acetone[4]	58.08	7.010	0.0045	0.0197
Acrylonitrile[1]	53.06	6.330	0.0037	0.0163
Bromodichloromethane	163.83	3.130	0.0057	0.0249
Butane	58.12	5.030	0.0032	0.0142
Carbon disulfide[1]	76.13	0.580	0.0005	0.0021
Carbon tetrachloride[1]	153.84	0.004	0.0000	0.0000
Carbonyl sulfide[1]	60.07	0.490	0.0003	0.0014
Chlorobenzene[1]	112.56	0.250	0.0003	0.0014
Chlorodifluoromethane[4]	86.47	1.300	0.0012	0.0054
Chloroethane (ethyl chloride)[1]	64.52	1.250	0.0009	0.0039
Chloroform[1]	119.39	0.030	0.0000	0.0002
Chloromethane	50.49	1.210	0.0007	0.0030
Dichlorobenzene[2]	147.00	0.210	0.0003	0.0015
Dichlorodifluoromethane[4]	120.91	15.700	0.0210	0.0920
Dichlorofluoromethane	102.92	2.620	0.0030	0.0131
Dichloromethane (methylene chloride)[1,4]	84.94	14.300	0.0134	0.0589
Dimethyl sulfide (methyl sulfide)	62.13	7.820	0.0054	0.0236
Ethane[4]	30.07	889.000	0.2959	1.2959
Ethanol	46.08	27.200	0.0139	0.0608

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5]In accordance with the assumption found in AP-42 - 13.5.2, a 98% destruction efficiency is assumed.

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 2 ENGINES			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
Ethyl mercaptan (ethanethiol)	62.13	2.280	0.0016	0.0069
Ethylbenzene[1]	106.16	4.610	0.0054	0.0237
Ethylene dibromide	187.88	0.001	0.0000	0.0000
Fluorotrichloromethane	137.38	0.760	0.0012	0.0051
Hexane[1]	86.18	6.570	0.0063	0.0274
Hydrochloric Acid	36.46	42.000	0.6217	2.7229
Hydrogen sulfide	34.08	35.500	0.0134	0.0586
Mercury (total)[1,3]	200.61	0.000	0.0000	0.0000
Methyl ethyl ketone[1]	72.11	7.090	0.0057	0.0248
Methyl isobutyl ketone[1]	100.16	1.870	0.0021	0.0091
Methyl mercaptan	48.11	2.490	0.0013	0.0058
Pentane	72.15	3.290	0.0026	0.0115
Perchloroethylene (tetrachloroethylene)[1,4]	165.83	3.730	0.0068	0.0300
Propane	44.09	11.100	0.0054	0.0237
t-1,2-dichloroethene	96.94	2.840	0.0030	0.0133
(trichloroethene)[1]	131.40	2.820	0.0041	0.0180
Vinyl chloride[1]	62.50	7.340	0.0051	0.0222
Xylenes[1]	106.16	12.100	0.0142	0.0623
Benzene[1]	78.11	1.910	0.0017	0.0072
Toluene[1]	92.13	39.300	0.0401	0.1755

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.

The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5]In accordance with the assumption found in AP-42 - 13.5.2, a 98% destruction efficiency is assumed.

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 2 ENGINES

Peak LFG Combustion Rate (Manufacture Specifications)	**3,500**	scfm
Molar Flow rate	**553.38**	lbmole LFG/hr
Total VOCs	**0.19**	lbs/hour
Total VOCs	**0.83**	tons/yr
Total HAPs	**0.75**	tons/yr
Total HAPs	**3.29**	tons/yr
PM_{10} Emissions	**1.78**	lbs/hr
PM_{10} Emissions	**7.80**	tons/yr
CO Factor (Manufacturer Specifications)	**0.31**	lbs/MMBTU
CO Emissions	**32.94**	lbs/hr
CO Emissions	**144.28**	ton/yr
NO_x Factor (Manufacturer Specifications)	**0.068**	lbs/MMBTU
NO_x Emissions	**7.23**	lbs/hr
NO_x Emissions	**31.65**	tons/yr

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 2 ENGINES

Sulfur Molecular Weight =	**32.066**	g/gmole
Sulfur Concentration = (AP-42-2.4.4.2)	**46.9**	ppmv
CH_4 generation rate =	**26,045,793**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Sulfur Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**2,446**	m^3/year
Total Uncontrolled Mass Emissions of $SO_{2=}$ (AP-42 - 2.4.4.1 Eq. 4)	**3,205**	kg/year
Total Controlled Mass Emissions of SO_2 = (AP-42-42 - 2.4.4.1 Eq.7)	**4,808**	kg/year
Total Controlled SO2 Emissions =	**1.21**	lbs/hr
Total Controlled SO_2 Emissions =	**5.30**	tons/year

HCl Molecular Weight =	**36.461**	g/gmole
HCl Concentration = (AP-42-2.4.4.2)	**42.0**	ppmv
CH_4 generation rate =	**26,045,793**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Chlorine Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**2,190**	m^3/year
Uncontrolled Mass Emissions of Chlorine = (AP-42 - 2.4.4.1 Eq. 4)	**3,264**	kg/year
Total Chlorine Controlled Emissions = (AP-42 - 2.4.4.1 Eq. 10)	**2,470.84**	kg/year
Total Chlorine Controlled Emissions =	**0.62**	lbs/hr
Total Chlorine Controlled Emissions =	**2.72**	tons/year

AA-000a	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG ENGINE EMISSIONS - 2 ENGINES			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
1,1,1-Trichloroethane (methyl chloroform)[1,4]	133.41	0.480	1.70E-04	7.45E-04
1,1,2,2-Tetrachloroethane[1]	167.85	1.110	4.95E-04	2.17E-03
1,1-Dichloroethane (ethylidene dichloride)[1]	98.97	2.350	6.18E-04	2.71E-03
1,1-Dichloroethene (vinylidene chloride)[1]	96.94	0.200	5.15E-05	2.26E-04
1,2-Dichloroethane (ethylene dichloride)[1]	98.96	0.041	1.08E-05	4.72E-05
1,2-Dichloropropane (propylene dichloride)[1]	112.99	0.180	5.40E-05	2.37E-04
2-Propanol (isopropyl alcohol)	60.11	50.100	8.00E-03	3.50E-02
Acetone[4]	58.08	7.010	1.08E-03	4.74E-03
Acrylonitrile[1]	53.06	6.330	8.92E-04	3.91E-03
Bromodichloromethane	163.83	3.130	1.36E-03	5.97E-03
Butane	58.12	5.030	7.77E-04	3.40E-03
Carbon disulfide[1]	76.13	0.580	1.17E-04	5.14E-04
Carbon tetrachloride[1]	153.84	0.004	1.63E-06	7.16E-06
Carbonyl sulfide[1]	60.07	0.490	7.82E-05	3.42E-04
Chlorobenzene[1]	112.56	0.250	7.47E-05	3.27E-04
Chlorodifluoromethane[4]	86.47	1.300	2.99E-04	1.31E-03
Chloroethane (ethyl chloride)[1]	64.52	1.250	2.14E-04	9.38E-04
Chloroform[1]	119.39	0.030	9.51E-06	4.17E-05
Chloromethane	50.49	1.210	1.62E-04	7.11E-04
Dichlorobenzene[2]	147.00	0.210	8.20E-05	3.59E-04
Dichlorodifluoromethane[4]	120.91	15.700	5.04E-03	2.21E-02
Dichlorofluoromethane	102.92	2.620	7.16E-04	3.14E-03
Dichloromethane (methylene chloride)[1,4]	84.94	14.300	3.23E-03	1.41E-02
Dimethyl sulfide (methyl sulfide)	62.13	7.820	1.29E-03	5.65E-03
Ethane[4]	30.07	889.000	7.10E-02	3.11E-01
Ethanol	46.08	27.200	3.33E-03	1.46E-02

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments
[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.
[3]No data were available to speciate total Hg into the elemental and organic forms.
[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100
A collection efficiency of 97.2% is assumed in accordance with AP-42 Table 2.4-3
LFG Density is based on Table 4-1 of the LANDGEM User's Manual
Emissions have been estimated based on 100% Plant Operations (8,760 hours/year)

Compound	Molecular Weight	Default Concentration (ppmv)	Emissions (lbs/hr)	Emissions (tons/yr)
Ethyl mercaptan (ethanethiol)	62.13	2.280	3.76E-04	1.65E-03
Ethylbenzene[1]	106.16	4.610	1.30E-03	5.69E-03
Ethylene dibromide	187.88	0.001	4.99E-07	2.19E-06
Fluorotrichloromethane	137.38	0.760	2.77E-04	1.21E-03
Hexane[1]	86.18	6.570	1.50E-03	6.59E-03
Hydrochloric Acid[1]	36.46	0.000	1.41E-01	6.17E-01
Hydrogen sulfide	34.08	35.500	3.21E-03	1.41E-02
Mercury (total)[1,3]	200.61	0.000	0.00E+00	0.00E+00
Methyl ethyl ketone[1]	72.11	7.090	1.36E-03	5.95E-03
Methyl isobutyl ketone[1]	100.16	1.870	4.98E-04	2.18E-03
Methyl mercaptan	48.11	2.490	3.18E-04	1.39E-03
Pentane	72.15	3.290	6.31E-04	2.76E-03
Perchloroethylene (tetrachloroethylene)[1,4]	165.83	3.730	1.64E-03	7.20E-03
Propane	44.09	11.100	1.30E-03	5.69E-03
t-1,2-dichloroethene	96.94	2.840	7.31E-04	3.20E-03
Trichloroethylene (trichloroethene)[1]	131.40	2.820	9.84E-04	4.31E-03
Vinyl chloride[1]	62.50	7.340	1.22E-03	5.34E-03
Xylenes[1]	106.16	12.100	3.41E-03	1.49E-02
Benzene[1]	78.11	1.910	3.96E-04	1.74E-03
Toluene[1]	92.13	39.300	9.62E-03	4.21E-02

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments
[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.
[3]No data were available to speciate total Hg into the elemental and organic forms.
[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100
A collection efficiency of 97.2% is assumed in accordance with AP-42 Table 2.4-3
LFG Density is based on Table 4-1 of the LANDGEM User's Manual
Emissions have been estimated based on 100% Plant Operations 8760 hours /yr

Emission Factors			
Mfr. Engine Rating (1 Engine)	**1,065**	bhp	
Mfr. Engine Rating (1 Engine)	**1.05**	MWH	
Total Number of IC Engines	**2**		
Max. Rated LFG Flow Rate (1 Engine)	**300**	scfm	
Max. Rated LFG Flow Rate (1 Engine)	**18,000**	scfh	
Molar Flow rate (1 Engine)	**47.43**	lbmole LFG/hr	
LFG Methane Content	**50%**		
LFG Density	**0.078**	lb/scf	
PM_{10}	**48.00**	lbs/MMdscf CH_4	AP-42
NO_X	**2.00**	g/bhp-hr	NSPS Subpart JJJJ
CO	**5.00**	g/bhp-hr	NSPS Subpart JJJJ
VOC	**1.00**	g/bhp-hr	NSPS Subpart JJJJ
Combustion Efficiency	**97.2%**		AP-42
Grams-Pounds Conversion Factor	**453.5924**	grams/lb	
Minute-Hour Conversion Factor	**60**	min/hour	
Annual Operting Hours	**8,760**	hours/year	

VOC/HAP Emission		
Total VOCs	**4.6958**	lbs/hr
Total VOCs	**20.57**	tons/yr
Total HAPs	**0.1721**	lbs/hr
Total HAPs	**0.7538**	tons/yr

5. VOC concentation is assumed to be equal to the maximum allowable NMOC concentration as hexane at 3% oxygen allowed by the NSPS.
6. VOC molecular weight is assumed to be the same as NMOC as hexane.

PM_{10} Emissions		
PM_{10} Emissions	**0.86**	lbs/hr
PM_{10} Emissions	**3.78**	tons/yr

NOx Emissions		
NO_X Emissions	**9.39**	lbs/hr
NO_X Emissions	**41.14**	tons/yr

CO Emissions		
CO Emissions	**23.48**	lbs/hr
CO Emissions	**102.84**	tons/yr

Sulfur Molecular Weight =	**32.066**	g/gmole
Sulfur Concentration = (AP-42-2.4.4.2)	**400.0**	ppmv
CH_4 generation rate =	**4,464,993**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Sulfur Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**3,576**	m^3/year
Total Uncontrolled Mass Emissions of $SO_{2=}$ (AP-42 - 2.4.4.1 Eq. 4)	**4,686**	kg/year
Total Controlled Mass Emissions of SO_2 = (AP-42-42 - 2.4.4.1 Eq.7)	**9,373**	kg/year
Total Controlled SO2 Emissions =	**2.36**	lbs/hr
Total Controlled SO_2 Emissions =	**10.33**	tons/year

HCl Molecular Weight =	**36.46**	g/gmole
HCl Concentration = (AP-42-2.4.4.2)	**42.0**	ppmv
CH_4 generation rate =	**4,464,993**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless
Chlorine Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**375**	m^3/year
Uncontrolled Mass Emissions of Chlorine = (AP-42 - 2.4.4.1 Eq. 4)	**560**	kg/year
Total Chlorine Controlled Emissions = (AP-42 - 2.4.4.1 Eq. 10)	**560.15**	kg/year
Total Chlorine Controlled Emissions =	**0.14**	lbs/hr

Total Chlorine Controlled Emissions =	**0.62**	tons/year

Total Methane Generation:	157,680,000	scf
Total Carbon Dioxide Generation:	157,680,000	scf
LFG Flare Heat Rate:	18.22	MMBTU/hr
Anthroprogenic CH_4 GHG Emissions:	0.51	metric tons of CH_4
Anthroprogenic CH_4 GHG Emissions:	0.56	short tons of CH_4
Anthroprogenic CH_4 GHG Emissions:	12.77	metric tons of CO_2E
Anthroprogenic CH_4 GHG Emissions:	14.07	short tons of CO_2E
Anthroprogenic N_2O GHG Emissions:	1.01E-01	metric tons of N_2O
Anthroprogenic N_2O GHG Emissions:	0.11	short tons of N_2O
Anthroprogenic N_2O GHG Emissions:	29.96	metric tons of CO_2E
Anthroprogenic CH_4 GHG Emissions:	33.02	short tons of CO_2E
CO_2 Emitted as a Product of CH_4 Combustion:	8,308.92	metric tons
CO_2 Emitted as a Product of CH_4 Combustion:	9,159.02	short tons
Flare Pass-Through CO_2 GHG emitted:	16,592.57	metric tons
Total CO_2E Emissions from the Flare:	24,944.21	metric tons
Total CO_2 Emissions from the Flare:	**27,496.29**	**short tons/year**
Total CO_2 Emissions from the Flare:	6,277.69	lb/hr
Total Anthroprogenic CO_2 Emissions from the Flare:	42.72	metric tons
Total Anthroprogenic CO_2 Emissions from the Flare:	**47.09**	**short tons/year**

Total Anthroprogenic CO_2
Emissions from the Flare: **10.75** **lb/hr**

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 3 ENGINES			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
1,1,1-Trichloroethane (methyl chloroform)[1,4]	133.41	0.480	0.0004	0.0020
1,1,2,2-Tetrachloroethane[1]	167.85	1.110	0.0013	0.0057
1,1-Dichloroethane (ethylidene dichloride)[1]	98.97	2.350	0.0016	0.0071
1,1-Dichloroethene (vinylidene chloride)[1]	96.94	0.200	0.0001	0.0006
1,2-Dichloroethane (ethylene dichloride)[1]	98.96	0.041	0.0000	0.0001
1,2-Dichloropropane (propylene dichloride)[1]	112.99	0.180	0.0001	0.0006
2-Propanol (isopropyl alcohol)	60.11	50.100	0.0210	0.0918
Acetone[4]	58.08	7.010	0.0028	0.0124
Acrylonitrile[1]	53.06	6.330	0.0023	0.0102
Bromodichloromethane	163.83	3.130	0.0036	0.0156
Butane	58.12	5.030	0.0020	0.0089
Carbon disulfide[1]	76.13	0.580	0.0003	0.0013
Carbon tetrachloride[1]	153.84	0.004	0.0000	0.0000
Carbonyl sulfide[1]	60.07	0.490	0.0002	0.0009
Chlorobenzene[1]	112.56	0.250	0.0002	0.0009
Chlorodifluoromethane[4]	86.47	1.300	0.0008	0.0034
Chloroethane (ethyl chloride)[1]	64.52	1.250	0.0006	0.0025
Chloroform[1]	119.39	0.030	0.0000	0.0001
Chloromethane	50.49	1.210	0.0004	0.0019
Dichlorobenzene[2]	147.00	0.210	0.0002	0.0009
Dichlorodifluoromethane[4]	120.91	15.700	0.0132	0.0578
Dichlorofluoromethane	102.92	2.620	0.0019	0.0082
Dichloromethane (methylene chloride)[1,4]	84.94	14.300	0.0085	0.0370
Dimethyl sulfide (methyl sulfide)	62.13	7.820	0.0034	0.0148
Ethane[4]	30.07	889.000	0.1860	0.8146
Ethanol	46.08	27.200	0.0087	0.0382

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5]In accordance with the assumption found in AP-42 - 13.5.2, a 98% destruction efficiency is assumed.

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 3 ENGINES			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
Ethyl mercaptan (ethanethiol)	62.13	2.280	0.0010	0.0043
Ethylbenzene[1]	106.16	4.610	0.0034	0.0149
Ethylene dibromide	187.88	0.001	0.0000	0.0000
Fluorotrichloromethane	137.38	0.760	0.0007	0.0032
Hexane[1]	86.18	6.570	0.0039	0.0173
Hydrochloric Acid	36.46	42.000	0.3908	1.7115
Hydrogen sulfide	34.08	35.500	0.0084	0.0369
Mercury (total)[1,3]	200.61	0.000	0.0000	0.0000
Methyl ethyl ketone[1]	72.11	7.090	0.0036	0.0156
Methyl isobutyl ketone[1]	100.16	1.870	0.0013	0.0057
Methyl mercaptan	48.11	2.490	0.0008	0.0037
Pentane	72.15	3.290	0.0017	0.0072
Perchloroethylene (tetrachloroethylene)[1,4]	165.83	3.730	0.0043	0.0188
Propane	44.09	11.100	0.0034	0.0149
t-1,2-dichloroethene	96.94	2.840	0.0019	0.0084
(trichloroethene)[1]	131.40	2.820	0.0026	0.0113
Vinyl chloride[1]	62.50	7.340	0.0032	0.0140
Xylenes[1]	106.16	12.100	0.0089	0.0391
Benzene[1]	78.11	1.910	0.0010	0.0045
Toluene[1]	92.13	39.300	0.0252	0.1103

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.

The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5]In accordance with the assumption found in AP-42 - 13.5.2, a 98% destruction efficiency is assumed.

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 3 ENGINES

Peak LFG Combustion Rate (Manufacture Specifications)	**2,200**	scfm
Molar Flow rate	**347.84**	lbmole LFG/hr
Total VOCs	**0.12**	lbs/hour
Total VOCs	**0.52**	tons/yr
Total HAPs	**0.47**	lbs/hr
Total HAPs	**2.07**	tons/yr
PM_{10} Emissions	**1.12**	lbs/hr
PM_{10} Emissions	**4.90**	tons/yr
CO Factor (Manufacturer Specifications)	**0.31**	lbs/MMBTU
CO Emissions	**20.71**	lbs/hr
CO Emissions	**90.69**	ton/yr
NO_x Factor (Manufacturer Specifications)	**0.068**	lbs/MMBTU
NO_x Emissions	**4.54**	lbs/hr
NO_x Emissions	**19.89**	tons/yr

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 3 ENGINES

Sulfur Molecular Weight =	**32.066**	g/gmole
Sulfur Concentration = (AP-42-2.4.4.2)	**46.9**	ppmv
CH_4 generation rate =	**16,371,641**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Sulfur Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**1,537**	m^3/year
Total Uncontrolled Mass Emissions of $SO_{2=}$ (AP-42 - 2.4.4.1 Eq. 4)	**2,015**	kg/year
Total Controlled Mass Emissions of SO_2 = (AP-42-42 - 2.4.4.1 Eq.7)	**3,022**	kg/year
Total Controlled SO2 Emissions =	**0.76**	lbs/hr
Total Controlled SO_2 Emissions =	**3.33**	tons/year

HCl Molecular Weight =	**36.461**	g/gmole
HCl Concentration = (AP-42-2.4.4.2)	**42.0**	ppmv
CH_4 generation rate =	**16,371,641**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Chlorine Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**1,377**	m^3/year
Uncontrolled Mass Emissions of Chlorine = (AP-42 - 2.4.4.1 Eq. 4)	**2,052**	kg/year
Total Chlorine Controlled Emissions = (AP-42 - 2.4.4.1 Eq. 10)	**1,553.10**	kg/year
Total Chlorine Controlled Emissions =	**1.71**	tons/year

AA-000a	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG ENGINE EMISSIONS - 3 ENGINES			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
1,1,1-Trichloroethane (methyl chloroform)[1,4]	133.41	0.480	2.55E-04	1.12E-03
1,1,2,2-Tetrachloroethane[1]	167.85	1.110	7.42E-04	3.25E-03
1,1-Dichloroethane (ethylidene dichloride)[1]	98.97	2.350	9.27E-04	4.06E-03
1,1-Dichloroethene (vinylidene chloride)[1]	96.94	0.200	7.72E-05	3.38E-04
1,2-Dichloroethane (ethylene dichloride)[1]	98.96	0.041	1.62E-05	7.08E-05
1,2-Dichloropropane (propylene dichloride)[1]	112.99	0.180	8.10E-05	3.55E-04
2-Propanol (isopropyl alcohol)	60.11	50.100	1.20E-02	5.26E-02
Acetone[4]	58.08	7.010	1.62E-03	7.11E-03
Acrylonitrile[1]	53.06	6.330	1.34E-03	5.86E-03
Bromodichloromethane	163.83	3.130	2.04E-03	8.95E-03
Butane	58.12	5.030	1.16E-03	5.10E-03
Carbon disulfide[1]	76.13	0.580	1.76E-04	7.71E-04
Carbon tetrachloride[1]	153.84	0.004	2.45E-06	1.07E-05
Carbonyl sulfide[1]	60.07	0.490	1.17E-04	5.14E-04
Chlorobenzene[1]	112.56	0.250	1.12E-04	4.91E-04
Chlorodifluoromethane[4]	86.47	1.300	4.48E-04	1.96E-03
Chloroethane (ethyl chloride)[1]	64.52	1.250	3.21E-04	1.41E-03
Chloroform[1]	119.39	0.030	1.43E-05	6.25E-05
Chloromethane	50.49	1.210	2.43E-04	1.07E-03
Dichlorobenzene[2]	147.00	0.210	1.23E-04	5.39E-04
Dichlorodifluoromethane[4]	120.91	15.700	7.56E-03	3.31E-02
Dichlorofluoromethane	102.92	2.620	1.07E-03	4.71E-03
Dichloromethane (methylene chloride)[1,4]	84.94	14.300	4.84E-03	2.12E-02
Dimethyl sulfide (methyl sulfide)	62.13	7.820	1.94E-03	8.48E-03
Ethane[4]	30.07	889.000	1.07E-01	4.67E-01
Ethanol	46.08	27.200	4.99E-03	2.19E-02

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments
[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.
[3]No data were available to speciate total Hg into the elemental and organic forms.
[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100
A collection efficiency of 97.2% is assumed in accordance with AP-42 Table 2.4-3
LFG Density is based on Table 4-1 of the LANDGEM User's Manual
Emissions have been estimated based on 100% Plant Operations (8,760 hours/year)

Compound	Molecular Weight	Default Concentration (ppmv)	Emissions (lbs/hr)	Emissions (tons/yr)
Ethyl mercaptan (ethanethiol)	62.13	2.280	5.64E-04	2.47E-03
Ethylbenzene[1]	106.16	4.610	1.95E-03	8.54E-03
Ethylene dibromide	187.88	0.001	7.49E-07	3.28E-06
Fluorotrichloromethane	137.38	0.760	4.16E-04	1.82E-03
Hexane[1]	86.18	6.570	2.26E-03	9.88E-03
Hydrochloric Acid[1]	36.46	0.000	2.11E-01	9.26E-01
Hydrogen sulfide	34.08	35.500	4.82E-03	2.11E-02
Mercury (total)[1,3]	200.61	0.000	0.00E+00	0.00E+00
Methyl ethyl ketone[1]	72.11	7.090	2.04E-03	8.92E-03
Methyl isobutyl ketone[1]	100.16	1.870	7.46E-04	3.27E-03
Methyl mercaptan	48.11	2.490	4.77E-04	2.09E-03
Pentane	72.15	3.290	9.46E-04	4.14E-03
Perchloroethylene (tetrachloroethylene)[1,4]	165.83	3.730	2.46E-03	1.08E-02
Propane	44.09	11.100	1.95E-03	8.54E-03
t-1,2-dichloroethene	96.94	2.840	1.10E-03	4.80E-03
Trichloroethylene (trichloroethene)[1]	131.40	2.820	1.48E-03	6.47E-03
Vinyl chloride[1]	62.50	7.340	1.83E-03	8.01E-03
Xylenes[1]	106.16	12.100	5.12E-03	2.24E-02
Benzene[1]	78.11	1.910	5.94E-04	2.60E-03
Toluene[1]	92.13	39.300	1.44E-02	6.32E-02

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments
[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.
[3]No data were available to speciate total Hg into the elemental and organic forms.
[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100
A collection efficiency of 97.2% is assumed in accordance with AP-42 Table 2.4-3
LFG Density is based on Table 4-1 of the LANDGEM User's Manual
Emissions have been estimated based on 100% Plant Operations 8760 hours /yr

Emission Factors			
Mfr. Engine Rating (1 Engine)	**1,065**	bhp	
Mfr. Engine Rating (1 Engine)	**1.05**	MWH	
Total Number of IC Engines	**3**		
Max. Rated LFG Flow Rate (1 Engine)	**300**	scfm	
Max. Rated LFG Flow Rate (1 Engine)	**18,000**	scfh	
Molar Flow rate (1 Engine)	**47.43**	lbmole LFG/hr	
LFG Methane Content	**50%**		
LFG Density	**0.078**	lb/scf	
PM_{10}	**48.00**	lbs/MMdscf CH_4	AP-42
NO_X	**2.00**	g/bhp-hr	NSPS Subpart JJJJ
CO	**5.00**	g/bhp-hr	NSPS Subpart JJJJ
VOC	**1.00**	g/bhp-hr	NSPS Subpart JJJJ
Combustion Efficiency	**97.2%**		AP-42
Grams-Pounds Conversion Factor	**453.5924**	grams/lb	
Minute-Hour Conversion Factor	**60**	min/hour	
Annual Operting Hours	**8,760**	hours/year	

VOC/HAP Emission		
Total VOCs	**7.0438**	lbs/hr
Total VOCs	**30.85**	tons/yr
Total HAPs	**0.2581**	lbs/hr
Total HAPs	**1.1306**	tons/yr

5. VOC concentation is assumed to be equal to the maximum allowable NMOC concentration as hexane at 3% oxygen allowed by the NSPS.
6. VOC molecular weight is assumed to be the same as NMOC as hexane.

PM_{10} Emissions		
PM_{10} Emissions	**1.30**	lbs/hr
PM_{10} Emissions	**5.68**	tons/yr

NOx Emissions		
NO_X Emissions	**14.09**	lbs/hr
NO_X Emissions	**61.70**	tons/yr

CO Emissions		
CO Emissions	**35.22**	lbs/hr
CO Emissions	**154.26**	tons/yr

Sulfur Molecular Weight =	**32.066**	g/gmole
Sulfur Concentration = (AP-42-2.4.4.2)	**400.0**	ppmv
CH_4 generation rate =	**6,697,490**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Sulfur Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**5,363**	m^3/year
Total Uncontrolled Mass Emissions of $SO_{2=}$ (AP-42 - 2.4.4.1 Eq. 4)	**7,029**	kg/year
Total Controlled Mass Emissions of SO_2 = (AP-42-42 - 2.4.4.1 Eq.7)	**14,059**	kg/year
Total Controlled SO2 Emissions =	**3.54**	lbs/hr
Total Controlled SO_2 Emissions =	**15.49**	tons/year

HCl Molecular Weight =	**36.46**	g/gmole
HCl Concentration = (AP-42-2.4.4.2)	**42.0**	ppmv
CH_4 generation rate =	**6,697,490**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless
Chlorine Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**563**	m^3/year
Uncontrolled Mass Emissions of Chlorine = (AP-42 - 2.4.4.1 Eq. 4)	**839**	kg/year
Total Chlorine Controlled Emissions = (AP-42 - 2.4.4.1 Eq. 10)	**840.23**	kg/year
Total Chlorine Controlled Emissions =	**0.21**	lbs/hr

Total Chlorine Controlled Emissions =	**0.93**	tons/year

Total Methane Generation:	236,520,000	scf
Total Carbon Dioxide Generation:	236,520,000	scf
LFG Flare Heat Rate:	27.32	MMBTU/hr
Anthroprogenic CH_4 GHG Emissions:	0.77	metric tons of CH_4
Anthroprogenic CH_4 GHG Emissions:	0.84	short tons of CH_4
Anthroprogenic CH_4 GHG Emissions:	19.15	metric tons of CO_2E
Anthroprogenic CH_4 GHG Emissions:	21.11	short tons of CO_2E
Anthroprogenic N_2O GHG Emissions:	1.51E-01	metric tons of N_2O
Anthroprogenic N_2O GHG Emissions:	0.17	short tons of N_2O
Anthroprogenic N_2O GHG Emissions:	44.94	metric tons of CO_2E
Anthroprogenic CH_4 GHG Emissions:	49.53	short tons of CO_2E
CO_2 Emitted as a Product of CH_4 Combustion:	12,463.38	metric tons
CO_2 Emitted as a Product of CH_4 Combustion:	13,738.53	short tons
Flare Pass-Through CO_2 GHG emitted:	24,888.85	metric tons
Total CO_2E Emissions from the Flare:	37,416.32	metric tons
Total CO_2 Emissions from the Flare:	**41,244.43**	**short tons/year**
Total CO_2 Emissions from the Flare:	9,416.54	lb/hr
Total Anthroprogenic CO_2 Emissions from the Flare:	64.09	metric tons
Total Anthroprogenic CO_2 Emissions from the Flare:	**70.64**	**short tons/year**

Total Anthroprogenic CO_2
Emissions from the Flare: **16.13** **lb/hr**

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 4 ENGINES			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
1,1,1-Trichloroethane (methyl chloroform)[1,4]	133.41	0.480	0.0002	0.0009
1,1,2,2-Tetrachloroethane[1]	167.85	1.110	0.0006	0.0026
1,1-Dichloroethane (ethylidene dichloride)[1]	98.97	2.350	0.0007	0.0032
1,1-Dichloroethene (vinylidene chloride)[1]	96.94	0.200	0.0001	0.0003
1,2-Dichloroethane (ethylene dichloride)[1]	98.96	0.041	0.0000	0.0001
1,2-Dichloropropane (propylene dichloride)[1]	112.99	0.180	0.0001	0.0003
2-Propanol (isopropyl alcohol)	60.11	50.100	0.0095	0.0417
Acetone[4]	58.08	7.010	0.0013	0.0056
Acrylonitrile[1]	53.06	6.330	0.0011	0.0047
Bromodichloromethane	163.83	3.130	0.0016	0.0071
Butane	58.12	5.030	0.0009	0.0040
Carbon disulfide[1]	76.13	0.580	0.0001	0.0006
Carbon tetrachloride[1]	153.84	0.004	0.0000	0.0000
Carbonyl sulfide[1]	60.07	0.490	0.0001	0.0004
Chlorobenzene[1]	112.56	0.250	0.0001	0.0004
Chlorodifluoromethane[4]	86.47	1.300	0.0004	0.0016
Chloroethane (ethyl chloride)[1]	64.52	1.250	0.0003	0.0011
Chloroform[1]	119.39	0.030	0.0000	0.0000
Chloromethane	50.49	1.210	0.0002	0.0008
Dichlorobenzene[2]	147.00	0.210	0.0001	0.0004
Dichlorodifluoromethane[4]	120.91	15.700	0.0060	0.0263
Dichlorofluoromethane	102.92	2.620	0.0009	0.0037
Dichloromethane (methylene chloride)[1,4]	84.94	14.300	0.0038	0.0168
Dimethyl sulfide (methyl sulfide)	62.13	7.820	0.0015	0.0067
Ethane[4]	30.07	889.000	0.0845	0.3703
Ethanol	46.08	27.200	0.0040	0.0174

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5]In accordance with the assumption found in AP-42 - 13.5.2, a 98% destruction efficiency is assumed.

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 4 ENGINES			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
Ethyl mercaptan (ethanethiol)	62.13	2.280	0.0004	0.0020
Ethylbenzene[1]	106.16	4.610	0.0015	0.0068
Ethylene dibromide	187.88	0.001	0.0000	0.0000
Fluorotrichloromethane	137.38	0.760	0.0003	0.0014
Hexane[1]	86.18	6.570	0.0018	0.0078
Hydrochloric Acid	36.46	42.000	0.1776	0.7780
Hydrogen sulfide	34.08	35.500	0.0038	0.0168
Mercury (total)[1,3]	200.61	0.000	0.0000	0.0000
Methyl ethyl ketone[1]	72.11	7.090	0.0016	0.0071
Methyl isobutyl ketone[1]	100.16	1.870	0.0006	0.0026
Methyl mercaptan	48.11	2.490	0.0004	0.0017
Pentane	72.15	3.290	0.0008	0.0033
Perchloroethylene (tetrachloroethylene)[1,4]	165.83	3.730	0.0020	0.0086
Propane	44.09	11.100	0.0015	0.0068
t-1,2-dichloroethene	96.94	2.840	0.0009	0.0038
(trichloroethene)[1]	131.40	2.820	0.0012	0.0051
Vinyl chloride[1]	62.50	7.340	0.0015	0.0064
Xylenes[1]	106.16	12.100	0.0041	0.0178
Benzene[1]	78.11	1.910	0.0005	0.0021
Toluene[1]	92.13	39.300	0.0114	0.0501

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.

The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100.

[5]In accordance with the assumption found in AP-42 - 13.5.2, a 98% destruction efficiency is assumed.

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 4 ENGINES

Peak LFG Combustion Rate (Manufacture Specifications)	**1,000**	scfm
Molar Flow rate	**158.11**	lbmole LFG/hr
Total VOCs	**0.05**	lbs/hour
Total VOCs	**0.24**	tons/yr
Total HAPs	**0.21**	lbs/hour
Total HAPs	**0.94**	tons/yr
PM_{10} Emissions	**0.51**	lbs/hr
PM_{10} Emissions	**2.23**	tons/yr
CO Factor (Manufacturer Specifications)	**0.31**	lbs/MMBTU
CO Emissions	**9.41**	lbs/hr
CO Emissions	**41.22**	ton/yr
NO_x Factor (Manufacturer Specifications)	**0.068**	lbs/MMBTU
NO_x Emissions	**2.06**	lbs/hr
NO_x Emissions	**9.04**	tons/yr

A-002	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG CANDLESTICK FLARE WITH 4 ENGINES

Sulfur Molecular Weight =	**32.066**	g/gmole
Sulfur Concentration = (AP-42-2.4.4.2)	**46.9**	ppmv
CH_4 generation rate =	**7,441,655**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Sulfur Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**699**	m^3/year
Total Uncontrolled Mass Emissions of $SO_{2=}$ (AP-42 - 2.4.4.1 Eq. 4)	**916**	kg/year
Total Controlled Mass Emissions of SO_2 = (AP-42-42 - 2.4.4.1 Eq.7)	**1,374**	kg/year
Total Controlled SO2 Emissions =	**0.35**	lbs/hr
Total Controlled SO_2 Emissions =	**1.51**	tons/year

HCl Molecular Weight =	**36.461**	g/gmole
HCl Concentration = (AP-42-2.4.4.2)	**42.0**	ppmv
CH_4 generation rate =	**7,441,655**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Chlorine Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**626**	m^3/year
Uncontrolled Mass Emissions of Chlorine = (AP-42 - 2.4.4.1 Eq. 4)	**933**	kg/year
Total Chlorine Controlled Emissions = (AP-42 - 2.4.4.1 Eq. 10)	**705.95**	kg/year
Total Chlorine Controlled Emissions =	**0.78**	tons/year

AA-000a	AP-42 CONCENTRATIONS FOR LFG CONSTITUENTS LFG ENGINE EMISSIONS - 4 ENGINES			
Compound	**Molecular Weight**	**Default Concentration (ppmv)**	**Emissions (lbs/hr)**	**Emissions (tons/yr)**
1,1,1-Trichloroethane (methyl chloroform)[1,4]	133.41	0.480	3.40E-04	1.49E-03
1,1,2,2-Tetrachloroethane[1]	167.85	1.110	9.90E-04	4.34E-03
1,1-Dichloroethane (ethylidene dichloride)[1]	98.97	2.350	1.24E-03	5.41E-03
1,1-Dichloroethene (vinylidene chloride)[1]	96.94	0.200	1.03E-04	4.51E-04
1,2-Dichloroethane (ethylene dichloride)[1]	98.96	0.041	2.16E-05	9.44E-05
1,2-Dichloropropane (propylene dichloride)[1]	112.99	0.180	1.08E-04	4.73E-04
2-Propanol (isopropyl alcohol)	60.11	50.100	1.60E-02	7.01E-02
Acetone[4]	58.08	7.010	2.16E-03	9.47E-03
Acrylonitrile[1]	53.06	6.330	1.78E-03	7.82E-03
Bromodichloromethane	163.83	3.130	2.72E-03	1.19E-02
Butane	58.12	5.030	1.55E-03	6.80E-03
Carbon disulfide[1]	76.13	0.580	2.35E-04	1.03E-03
Carbon tetrachloride[1]	153.84	0.004	3.27E-06	1.43E-05
Carbonyl sulfide[1]	60.07	0.490	1.56E-04	6.85E-04
Chlorobenzene[1]	112.56	0.250	1.49E-04	6.55E-04
Chlorodifluoromethane[4]	86.47	1.300	5.97E-04	2.62E-03
Chloroethane (ethyl chloride)[1]	64.52	1.250	4.28E-04	1.88E-03
Chloroform[1]	119.39	0.030	1.90E-05	8.33E-05
Chloromethane	50.49	1.210	3.25E-04	1.42E-03
Dichlorobenzene[2]	147.00	0.210	1.64E-04	7.18E-04
Dichlorodifluoromethane[4]	120.91	15.700	1.01E-02	4.42E-02
Dichlorofluoromethane	102.92	2.620	1.43E-03	6.27E-03
Dichloromethane (methylene chloride)[1,4]	84.94	14.300	6.45E-03	2.83E-02
Dimethyl sulfide (methyl sulfide)	62.13	7.820	2.58E-03	1.13E-02
Ethane[4]	30.07	889.000	1.42E-01	6.22E-01
Ethanol	46.08	27.200	6.66E-03	2.92E-02

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments
[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.
[3]No data were available to speciate total Hg into the elemental and organic forms.
[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100
A collection efficiency of 97.2% is assumed in accordance with AP-42 Table 2.4-3
LFG Density is based on Table 4-1 of the LANDGEM User's Manual
Emissions have been estimated based on 100% Plant Operations (8,760 hours/year)

Compound	Molecular Weight	Default Concentration (ppmv)	Emissions (lbs/hr)	Emissions (tons/yr)
Ethyl mercaptan (ethanethiol)	62.13	2.280	7.53E-04	3.30E-03
Ethylbenzene[1]	106.16	4.610	2.60E-03	1.14E-02
Ethylene dibromide	187.88	0.001	9.98E-07	4.37E-06
Fluorotrichloromethane	137.38	0.760	5.55E-04	2.43E-03
Hexane[1]	86.18	6.570	3.01E-03	1.32E-02
Hydrochloric Acid[1]	36.46	0.000	2.82E-01	1.23E+00
Hydrogen sulfide	34.08	35.500	6.43E-03	2.82E-02
Mercury (total)[1,3]	200.61	0.000	0.00E+00	0.00E+00
Methyl ethyl ketone[1]	72.11	7.090	2.72E-03	1.19E-02
Methyl isobutyl ketone[1]	100.16	1.870	9.95E-04	4.36E-03
Methyl mercaptan	48.11	2.490	6.36E-04	2.79E-03
Pentane	72.15	3.290	1.26E-03	5.52E-03
Perchloroethylene (tetrachloroethylene)[1,4]	165.83	3.730	3.29E-03	1.44E-02
Propane	44.09	11.100	2.60E-03	1.14E-02
t-1,2-dichloroethene	96.94	2.840	1.46E-03	6.41E-03
Trichloroethylene (trichloroethene)[1]	131.40	2.820	1.97E-03	8.62E-03
Vinyl chloride[1]	62.50	7.340	2.44E-03	1.07E-02
Xylenes[1]	106.16	12.100	6.82E-03	2.99E-02
Benzene[1]	78.11	1.910	7.93E-04	3.47E-03
Toluene[1]	92.13	39.300	1.92E-02	8.42E-02

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments
[2]Source tests did not indicate whether this compound was the para- or ortho- isomer.
The para isomer is a Title III-listed HAP.
[3]No data were available to speciate total Hg into the elemental and organic forms.
[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100
A collection efficiency of 97.2% is assumed in accordance with AP-42 Table 2.4-3
LFG Density is based on Table 4-1 of the LANDGEM User's Manual
Emissions have been estimated based on 100% Plant Operations 8760 hours /yr

Emission Factors			
Mfr. Engine Rating (1 Engine)	**1,065**	bhp	
Mfr. Engine Rating (1 Engine)	**1.05**	MWH	
Total Number of IC Engines	**4**		
Max. Rated LFG Flow Rate (1 Engine)	**300**	scfm	
Max. Rated LFG Flow Rate (1 Engine)	**18,000**	scfh	
Molar Flow rate (1 Engine)	**47.43**	lbmole LFG/hr	
LFG Methane Content	**50%**		
LFG Density	**0.078**	lb/scf	
PM_{10}	**48.00**	lbs/MMdscf CH_4	AP-42
NO_X	**2.00**	g/bhp-hr	NSPS Subpart JJJJ
CO	**5.00**	g/bhp-hr	NSPS Subpart JJJJ
VOC	**1.00**	g/bhp-hr	NSPS Subpart JJJJ
Combustion Efficiency	**97.2%**		AP-42
Grams-Pounds Conversion Factor	**453.5924**	grams/lb	
Minute-Hour Conversion Factor	**60**	min/hour	
Annual Operting Hours	**8,760**	hours/year	

VOC/HAP Emission		
Total VOCs	**9.3917**	lbs/hr
Total VOCs	**41.14**	tons/yr
Total HAPs	**0.3442**	lbs/hr
Total HAPs	**1.5075**	tons/yr

5. VOC concentation is assumed to be equal to the maximum allowable NMOC concentration as hexane at 3% oxygen allowed by the NSPS.
6. VOC molecular weight is assumed to be the same as NMOC as hexane.

PM_{10} Emissions		
PM_{10} Emissions	**1.73**	lbs/hr
PM_{10} Emissions	**7.57**	tons/yr

NOx Emissions		
NO_X Emissions	**18.78**	lbs/hr
NO_X Emissions	**82.27**	tons/yr

CO Emissions		
CO Emissions	**46.96**	lbs/hr
CO Emissions	**205.68**	tons/yr

Sulfur Molecular Weight =	**32.066**	g/gmole
Sulfur Concentration = (AP-42-2.4.4.2)	**400.0**	ppmv
CH_4 generation rate =	**8,929,986**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless

Sulfur Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**7,151**	m^3/year
Total Uncontrolled Mass Emissions of $SO_{2=}$ (AP-42 - 2.4.4.1 Eq. 4)	**9,373**	kg/year
Total Controlled Mass Emissions of SO_2 = (AP-42-42 - 2.4.4.1 Eq.7)	**18,745**	kg/year
Total Controlled SO2 Emissions =	**4.72**	lbs/hr
Total Controlled SO_2 Emissions =	**20.66**	tons/year

HCl Molecular Weight =	**36.46**	g/gmole
HCl Concentration = (AP-42-2.4.4.2)	**42.0**	ppmv
CH_4 generation rate =	**8,929,986**	m^3/year
Standard Pressure =	**1**	atm
Universal Gas Constant =	**8.21E-05**	m^3-atm/gmol-°K
Standard Temperature =	**298.00**	°K
Multiplication Factor = (50% CH_4)	**2.0020**	unitless
Chlorine Emission Rate = (AP-42 - 2.4.4.1 Eq. 3)	**751**	m^3/year
Uncontrolled Mass Emissions of Chlorine = (AP-42 - 2.4.4.1 Eq. 4)	**1,119**	kg/year
Total Chlorine Controlled Emissions = (AP-42 - 2.4.4.1 Eq. 10)	**1,120.31**	kg/year
Total Chlorine Controlled Emissions =	**0.28**	lbs/hr

Total Chlorine Controlled Emissions =	**1.23**	tons/year

Total Methane Generation:	315,360,000	scf
Total Carbon Dioxide Generation:	315,360,000	scf
LFG Flare Heat Rate:	36.43	MMBTU/hr
Anthroprogenic CH_4 GHG Emissions:	1.02	metric tons of CH_4
Anthroprogenic CH_4 GHG Emissions:	1.13	short tons of CH_4
Anthroprogenic CH_4 GHG Emissions:	25.53	metric tons of CO_2E
Anthroprogenic CH_4 GHG Emissions:	28.14	short tons of CO_2E
Anthroprogenic N_2O GHG Emissions:	2.01E-01	metric tons of N_2O
Anthroprogenic N_2O GHG Emissions:	0.22	short tons of N_2O
Anthroprogenic N_2O GHG Emissions:	59.92	metric tons of CO_2E
Anthroprogenic CH_4 GHG Emissions:	66.05	short tons of CO_2E
CO_2 Emitted as a Product of CH_4 Combustion:	16,617.84	metric tons
CO_2 Emitted as a Product of CH_4 Combustion:	18,318.04	short tons
Flare Pass-Through CO_2 GHG emitted:	33,185.13	metric tons
Total CO_2E Emissions from the Flare:	49,888.42	metric tons
Total CO_2 Emissions from the Flare:	**54,992.57**	**short tons/year**
Total CO_2 Emissions from the Flare:	12,555.38	lb/hr
Total Anthroprogenic CO_2 Emissions from the Flare:	85.45	metric tons
Total Anthroprogenic CO_2 Emissions from the Flare:	**94.19**	**short tons/year**

Total Anthroprogenic CO_2
Emissions from the Flare: **21.50** **lb/hr**

A-002	GTRL UNPAVED ROADWAY EMISSIONS CONSTRUCTION VEHICLES

The following information details the calculations used to estimate fugitive dust emissions from unpaved roads. These emission rates were estimated using AP-42 Default Factors

CONSTRUCTION VEHICLE TRAVEL MILEAGE CALCULATION

Number of Construction Vehicles	Type of Construction Vehicles	Vehicle Traffic / Heavy Equipment (trips/day)	Annual Vehicle/Heavy Equipment Traffic	Length of Road (Roundtrip) (miles)	Actual Vehicle Miles Traveled (VMT)
1	Dozer (Cat D8R)	12	4380	5.60	24,528
1	Compactor (Cat 826H)	14	5110	5.60	28,616
1	Compactor (Cat 826G)	4	1460	5.60	8,176
3	Articulated Truck (Cat 730)	14	5110	5.60	28,616
1	Motor Grader (Cat 12H)	2	730	5.60	4,088
1	Dozer (Cat D4H)	4	1460	5.60	8,176
1	Excavator (Cat 330L)	8	2920	5.60	16,352
1	Loader (IT18)	4	1460	5.60	8,176
1	D6	6	2190	5.60	12,264
1	7740 New Holland	2	730	5.60	4,088
1	Sterling Water Truck[2]	2	730	5.60	4,088
1	Service Truck	4	1460	5.60	8,176
				GRAND TOTAL VMT	**155,344**

Number of Operating Days/Year = 365
Total Annual Operating Hours= 8,760

Mean Vehicle Weight Calculations (W)

Type of Vehicle	Est. Vehicle Weight (tons)	Number of Construction Vehilces	Total Vehicle Weight (tons)
Dozer (Cat D8R)	41.43	1	41.425
Compactor (Cat 826H)	40.75	1	40.749
Compactor (Cat 826G)	40.75	1	40.749
Articulated Truck (Cat 730)	24.81	3	74.418
Motor Grader (Cat 12H)	15.71	1	15.705
Dozer (Cat D4H)	11.90	1	11.895
Excavator (Cat 330L)	36.18	1	36.1775
Loader (IT18)	9.55	1	9.546
D6	20.00	1	20
7740 New Holland	3.67	1	3.67
Sterling Water Truck	20.00	1	20
Service Truck	5.00	1	5
		MEAN VEHICLE WEIGHT	**22.81**

Assumptions:

1. AP-42 Section 13.2.2 emissions factors were used to determine all applicable emissions factors.
2. A water truck is used regularly to suppress dust emissions that could provide a control efficiency of 90% for PM_{10}.

A-002	GTRL UNPAVED ROADWAY EMISSIONS CONSTRUCTION VEHICLES

$$URF = \frac{k*(s/12)^a*(W/3)^b*(365-P)}{365}$$ (AP-42 13.2.2 (1a) & (2))

where:

URF=	Unpaved Road Emission Factor of trucks in, lb $PM_{10/2.5}$/VMT			
k=	particle size multiplier (lb/VMT)	k_{PM10} =	1.5	(AP-42 13.2.2-2)
		$k_{PM2.5}$=	0.15	(AP-42 13.2.2-2)
		k_{PM}=	4.9	(AP-42 13.2.2-2)
s=	silt content of road surface material (%)		6.4	(AP-42 13.2.1)
W=	Mean vehicle weight (tons) =		22.81	
P=	number of days with > .01 inches of rain/year =		110	(13.2.2-1)
a=	constant based on particle size $PM_{10/2.5}$=		0.9	(AP-42 13.2.2-2)
b=	constant based on particle size $PM_{10/2.5}$=		0.45	(AP-42 13.2.2-2)
a=	constant based on particle size PM=		0.7	(AP-42 13.2.2-2)

Unpaved Road Emissions (lbs PM/yr) =
VMT*URF*(1-CF/100)

VMT=	Vehicle Miles Traveled (Round-Trip)=	155,344
URF_{PM10}=	Unpaved Road Emissions Factor=	1.48
$URF_{PM2.5}$=	Unpaved Road Emissions Factor=	0.15
URF_{PM}=	Unpaved Road Emissions Factor=	5.49
CF=	Collection Efficiency =	75%

TABLE 1- CONSTRUCTION VEHICLE DUST EMISSIONS

Source	(lb/hr)	(tpy)
PM_{10} Emissions	**6.57**	**28.79**
$PM_{2.5}$ Emissions	**0.66**	**2.88**
PM Emissions	**24.35**	**106.66**

A-002	GTRL UNPAVED ROADWAY EMISSIONS REFUSE VEHICLE TRAFFIC

The following information details the calculations used to estimate fugitive dust emissions from unpaved roads. These emission rates were estimated using AP-42 default factors.

REFUSE VEHICLE MILEAGE CALCULATION

Type of Refuse Vehicles	Annual Truck Volume	Length of Road (Roundtrip) (miles)	Actual Vehicle Miles Traveled (VMT)
Lightweight Selfhaul Trucks	2,248	5.6	12,588.8
Cars (4 wheels)	0	5.6	0.0
Flatbed and Other 6-wheel vehicles	0	5.6	0.0
Front/Side Loaders and Packers (10 wheels)	9,570	5.6	53,592.0
Dump Trucks	957	5.6	5,359.2
Roll-offs (10 wheels)	10,526	5.6	58,945.6
Transfer Trailers (18 wheels)	402	5.6	2,251.2
TOTALS	**23,703**		**132,736.8**

Number of Operating Days/Year =	365	
Total Annual Operating Hours=	8,760	
Length of Unpaved Road (One-way)=	14,784	ft.
Length of Unpaved Road (Round-Trip)=	29,568	ft.

Mean Vehicle Weight Calculations (W)

Type of Vehicle	Est. Vehicle Weight (tons)	Number of Vehicles	Total Vehicle Weight (tons)
Lightweight Selfhaul Trucks	1.65	3,600	5,940.00
Cars	0.5	45	22.50
Flatbed and Other 6-wheel vehicles	2.45	15	36.75
Front/Side Loaders and Packers (10 wheels)	23.35	4,000	93,400.00
Dump Trucks	24.50	400	9,800.00
Roll-offs	27.85	4,800	133,680.00
Transfer Trailers	39.35	200	7,870.00
		MEAN VEHICLE WEIGHT	**10.58**

A-002	GTRL UNPAVED ROADWAY EMISSIONS REFUSE VEHICLE TRAFFIC

Assumptions:

1. AP-42 Section 13.2.2 emissions factors were used to determine all applicable emissions factors.
2. A water truck is used regularly to suppress dust emissions that could provide a control efficiency of 90% for PM_{10}.
3. Gross weight and tare weight are assumed to be equal.
4. The maximum speed is assumed to be 20 mph.
5. The maximum number of round-trips is equivalent to the the annual truck volume.

$$URF = \frac{k*(s/12)^{a}*(W/3)^{b}*(365-P)}{365}$$ (AP-42 13.2.2 (1a) & (2))

where:

URF=	Unpaved Road Emission Factor of trucks in, lb $PM_{10/2.5}$/VMT			
k=	particle size multiplier (lb/VMT)	k_{PM10} =	1.5	(AP-42 13.2.2-2)
		$k_{PM2.5}$=	0.15	(AP-42 13.2.2-2)
		k_{PM}=	4.9	(AP-42 13.2.2-2)
s=	silt content of road surface material (%)		6.4	(AP-42 13.2.1)
W=	Mean vehicle weight (tons) =		10.58	
P=	number of days with > .01 inches of rain/year =		110	(13.2.2-1)
a=	constant based on particle size $PM_{10/2.5}$=		0.9	(AP-42 13.2.2-2)
b=	constant based on particle size $PM_{10/2.5}$=		0.45	(AP-42 13.2.2-2)
a=	constant based on particle size PM=		0.7	(AP-42 13.2.2-2)

Unpaved Road Emissions (lbs PM/yr) =
VMT*URF*(1-CF/100)

VMT=	Vehicle Miles Traveled (Round-Trip)=	132,737
URF_{PM10}=	Unpaved Road Emissions Factor=	1.05
$URF_{PM2.5}$=	Unpaved Road Emissions Factor=	0.10
URF_{PM}=	Unpaved Road Emissions Factor=	3.89
CF=	Collection Efficiency =	75%

TABLE 2- REFUSE VEHICLE DUST EMISSIONS

Source	(lb/hr)	(tpy)
PM_{10} Emissions	**3.98**	**17.41**
$PM_{2.5}$ Emissions	**0.40**	**1.74**
PM Emissions	**14.73**	**64.50**

A-002

GTRL PAVED ROADWAY EMISSIONS
REFUSE VEHICLE TRAFFIC

The following information details the calculations used to estimate fugitive dust emissions from unpaved roads. These emission rates were estimated using AP-42 default factors.

REFUSE VEHICLE MILEAGE CALCULATION

Type of Refuse Vehicles	Annual Truck Volume	Length of Road (Roundtrip) (miles)	Actual Vehicle Miles Traveled (VMT)
Lightweight Selfhaul Trucks (4 wheels)	2,248	0.4	899.2
Cars (4 wheels)	0	0.4	0.0
Flatbed and Other 6-wheel vehicles	957	0.4	382.8
Front/Side Loaders and Packers (10 wheels)	9,570	0.4	3,828.0
Dump Trucks	957	0.4	382.8
Roll-offs (10 wheels)	10,526	0.4	4,210.4
Transfer Trailers (18 wheels)	402	0.4	160.8
TOTALS	**24,660**		**9,864.0**

Number of Operating Days/Year =	365	days
Total Annual Operating Hours=	8,760	hrs.
Length of Paved Road (One-Way)=	1,056	ft.
Length of Paved Road (Round-Trip)=	2,112	ft.

Mean Vehicle Weight Calculations (W)

Type of Vehicle	Est. Vehicle Weight (tons)	Number of Vehicles	Total Vehicle Weight (tons)
Lightweight Selfhaul Trucks	1.65	3,600	5,940.00
Cars	2.45	0	0.00
Flatbed and Other 6-wheel vehicles	2.45	15	36.75
Front/Side Loaders and Packers (10 wheels)	23.35	4,000	93,400.00
Dump Trucks	24.5	400	9,800.00
Roll-offs	27.85	4,800	133,680.00
Transfer Trailers	39.35	200	7,870.00
		MEAN VEHICLE WEIGHT	**10.17**

A-002	GTRL PAVED ROADWAY EMISSIONS REFUSE VEHICLE TRAFFIC

Assumptions:
1. AP-42 Section 13.2.2 emissions factors were used to determine all applicable emissions factors.
2. A water truck is used regularly to suppress dust emissions that could provide a control efficiency of 90% for PM_{10}.

PRF= $(k*(sL/2)^{.65}*(W/3)^{1.5}-C)*(1-P/4N)$ AP-42 13.2.1.3(2)

where:

PRF= Paved Road Emission Factor of trucks in, lb $PM_{10/2.5}$/VMT

k= particle size multiplier (PM_{10}=.016 lb/VMT and $PM_{2.5}$=.0024)

k_{PM10} (lb/VMT)=	0.016	AP-42 13.2-1.1
$k_{PM2.5}$ (lb/VMT)=	0.0024	AP-42 13.2-1.1
k_{PM} (lb/VMT)=	0.082	AP-42 13.2-1.1

sL= Road surface silt loading (g/m^2) 7.4 AP-42 Table 13.2-1.4

W= Mean vehicle weight (tons) = 10.17

C= Emission factor for 1980's vehicle fleet exhaust, brake wear, and tire wear (PM_{10}=.00047 lb/VMT and $PM_{2.5}$=.00036)

$C_{PM10/PM}$=	0.00047	(AP-42 13.2.1-2)
$C_{PM2.5}$=	0.00036	(AP-42 13.2.1-2)

P= number of days with > .01 inches of rain/year= 110 (AP-42 13.2.2-1)

N= Number of days in the averaging period= 365

Paved Road Emissions (lbs PM/yr) = VMT*PRF*(1-CF/100)

VMT= Vehicle Miles Traveled= 9,864

PRF= Paved Road Emission Factor of trucks in, lb PM/VMT

PRF_{PM10}=	0.22
$PRF_{PM2.5}$=	0.03
PRF_{PM}=	1.11

CF= Collection Efficiency= 75%

TABLE 4 - REFUSE VEHICLE DUST EMISSIONS

Source	(lb/hr)	(tpy)
PM_{10} Emissions	**0.06**	**0.27**
$PM_{2.5}$ Emissions	**0.01**	**0.04**
PM Emissions	**0.31**	**1.36**

AA-001	GTL Liquefied Propane Gas Generator

The factors shown below represent AP-42 Default factors.

LPG Emissions Factors (AP-42 Default Factors)			
Pollutant	**Emission Factor (lb/1000 gal)**	**Actual Emissions (lb/hr)**	**Actual Emissions (tpy)**
PM_{10} [2]	0.2	0.0007	0.00300
SOx	0.10S	0.0038	0.01665

LPG Emissions Factors (Manufacturer Emission Factors)			
Pollutant	**Emission Factor (grams/BHP-hr)**	**Actual Emissions (lb/hr)**	**Actual Emissions (tpy)**
NOx	2.00	0.9171	0.68784
VOCs	1.00	0.4586	0.34392
CO	4.00	1.8342	1.37568
TOTALS		**3.2E+00**	**2.4E+00**

1. TOCs are assumed to be VOCs for the sake of conservancy.
2. Filterable particulate matter (PM) is that PM collected on or prior to the filter of an EPA Method 5 (or equivalent) sampling train. For natural gas, a fuel with similar combustion characteristics, all PM is less that 10 μm in aerodynamic equivalent diameter (PM-10) [AP-42 Table 1.5-1]
3. S=11.1gr/100ft³ [GPA Standard 2140-97]
4. It is assumed that the generator consumes **30,000** gallons/year of propane
5. It is assumed that the generator operates **1,500** hours/year
6. Generator Horsepower is **208** HP

Example Calculations:

$$Actual Emisions (PM_{10}) = 0.2 \frac{lb}{1{,}000 gal} x 10{,}000 \frac{gal}{year} x \frac{1 ton}{2{,}000 lb} = 0.00100 tpy$$

$$Actual Emis\ sions\ (CO) =$$

$$1.36 \frac{g}{BHP - hr} x 208 HP x\ 2{,}000 hrs \frac{1 lb}{453.6 gram} x \frac{1 ton}{2{,}000 lb} = 0.00100\ tpy$$

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	GTRL 560-Gallon Gasoline Tank
City:	Starkville
State:	Mississippi
Company:	GTRSWMA
Type of Tank:	Horizontal Tank
Description:	Gasoline Tank at the Golden Triangle Regional Landfill

Tank Dimensions

Shell Length (ft):	5.00
Diameter (ft):	7.00
Volume (gallons):	560.00
Turnovers:	53.57
Net Throughput(gal/yr):	30,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Tupelo, Mississippi (Avg Atmospheric Pressure = 14.62 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

GTRL 560-Gallon Gasoline Tank - Horizontal Tank
Starkville, Mississippi

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 11)	All	63.54	58.12	68.96	61.71	6.1679	5.5624	6.8249	65.0000			92.00	Option 4: RVP=11, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

GTRL 560-Gallon Gasoline Tank - Horizontal Tank
Starkville, Mississippi

Annual Emission Calcaulations	
Standing Losses (lb):	273.7541
Vapor Space Volume (cu ft):	122.5621
Vapor Density (lb/cu ft):	0.0714
Vapor Space Expansion Factor:	0.1838
Vented Vapor Saturation Factor:	0.4664
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	122.5621
Tank Diameter (ft):	7.0000
Effective Diameter (ft):	6.6773
Vapor Space Outage (ft):	3.5000
Tank Shell Length (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0714
Vapor Molecular Weight (lb/lb-mole):	65.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.1679
Daily Avg. Liquid Surface Temp. (deg. R):	523.2075
Daily Average Ambient Temp. (deg. F):	61.6917
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	521.3817
Tank Paint Solar Absorptance (Shell):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,366.0833
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1838
Daily Vapor Temperature Range (deg. R):	21.6706
Daily Vapor Pressure Range (psia):	1.2624
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.1679
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	5.5624
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	6.8249
Daily Avg. Liquid Surface Temp. (deg R):	523.2075
Daily Min. Liquid Surface Temp. (deg R):	517.7899
Daily Max. Liquid Surface Temp. (deg R):	528.6252
Daily Ambient Temp. Range (deg. R):	21.0667
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.4664
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	6.1679
Vapor Space Outage (ft):	3.5000
Working Losses (lb):	208.0944
Vapor Molecular Weight (lb/lb-mole):	65.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.1679
Annual Net Throughput (gal/yr.):	30,000.0000
Annual Turnovers:	53.5714
Turnover Factor:	0.7267
Tank Diameter (ft):	7.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	481.8486

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

GTRL 560-Gallon Gasoline Tank - Horizontal Tank
Starkville, Mississippi

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 11)	208.09	273.75	481.85

APPENDIX C

LANDGEM RESULTS

Summary Report

Landfill Name or Identifier: Golden Triangle Landfill

Date: Wednesday, September 30, 2015

Description/Comments:
The LFG Generation indicated in this Report extends out to 2045.

About LandGEM:

First-Order Decomposition Rate Equation:

Where,
Q_{CH_4} = annual methane generation in the year of the calculation ($m^3/year$)
i = 1-year time increment
n = (year of the calculation) - (initial year of waste acceptance)
j = 0.1-year time increment
k = methane generation rate ($year^{-1}$)
L_0 = potential methane generation capacity (m^3/Mg)
M_i = mass of waste accepted in the i^{th} year (Mg)
t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years)

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

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

Summary Report

Landfill Name or Identifier: Golden Triangle Landfill

Date: Wednesday, September 30, 2015

Description/Comments:
The LFG Generation indicated in this Report extends out to 2045.

Input Review

LANDFILL CHARACTERISTICS		
Landfill Open Year	**1996**	
Landfill Closure Year (with 80-year limit)	**2075**	
Actual Closure Year (without limit)	***2098***	
Have Model Calculate Closure Year?	**Yes**	
Waste Design Capacity	**27,431,560**	*short tons*
MODEL PARAMETERS		
Methane Generation Rate, k	**0.040**	*year^{-1}*
Potential Methane Generation Capacity, L_o	**100**	*m^3/Mg*
NMOC Concentration	**115**	*ppmv as hexane*
Methane Content	**50**	*% by volume*

GASES / POLLUTANTS SELECTED

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

Year	Waste Accepted (short tons/yr)	Waste-In-Place (short tons)	Total LFG (avg. scfm)
1996	23,629	0	0
1997	101,995	23,629	11
1998	102,672	125,624	60
1999	118,991	228,296	107
2000	127,626	347,287	160
2001	130,931	474,913	215
2002	135,220	605,844	269
2003	135,085	741,064	323
2004	135,832	876,149	376
2005	130,276	1,011,981	426
2006	135,063	1,142,257	472
2007	147,229	1,277,320	518
2008	165,378	1,424,549	569
2009	134,117	1,589,927	626
2010	144,020	1,724,044	666
2011	124,561	1,868,064	709
2012	123,527	1,992,625	741
2013	123,558	2,116,152	771
2014	145,212	2,239,710	800
2015	300,000	2,384,922	838
2016	300,000	2,684,922	949
2017	300,000	2,984,922	1,056
2018	300,000	3,284,922	1,159
2019	300,000	3,584,922	1,257
2020	300,000	3,884,922	1,352
2021	300,000	4,184,922	1,443
2022	300,000	4,484,922	1,530
2023	300,000	4,784,922	1,614
2024	300,000	5,084,922	1,695
2025	300,000	5,384,922	1,773
2026	300,000	5,684,922	1,847
2027	300,000	5,984,922	1,919
2028	300,000	6,284,922	1,987
2029	300,000	6,584,922	2,053
2030	300,000	6,884,922	2,117
2031	300,000	7,184,922	2,178
2032	300,000	7,484,922	2,236
2033	300,000	7,784,922	2,293
2034	300,000	8,084,922	2,347
2035	300,000	8,384,922	2,399
2036	300,000	8,684,922	2,449
2037	300,000	8,984,922	2,497
2038	300,000	9,284,922	2,543
2039	300,000	9,584,922	2,587
2040	300,000	9,884,922	2,630
2041	300,000	10,184,922	2,671
2042	300,000	10,484,922	2,710
2043	300,000	10,784,922	2,748
2044	300,000	11,084,922	2,784
2045	300,000	11,384,922	2,819

APPENDIX D

GOLDEN TRIANGLE RSWMA TIER 2 TEST REPORT EXCERPT

2. NMOC EMISSION RATE RESULTS AND DISCUSSION

1.1 NMOC Emission Rate

The Tier 2 NMOC emission rate calculation has been completed to provide an estimate of the NMOC emissions using site-specific NMOC concentration as hexane for GTRL. LandGEM Version 3.02 calculated an estimated Tier 2 NMOC emission rate from waste received from 1996 through 2015. The calculated site specific NMOC concentration is **115 ppmv** as hexane as determined by GTRL's site specific Tier 2 test conducted in February 2011. The calculated 2016 NMOC emission rate for GTRL is **11.75 Mg/yr**. The LandGEM output prepared for GTRL is included in Appendix C; however, we have summarized the results for period of 2016 through 2020 in Table 2 below:

Table 2
NMOC Emission Rate Summary

Year	Waste Acceptance Rate (Tons/yr)	NMOC Emission Rate (Mg/yr)
2016	300,000	11.75
2017	300,000	13.07
2018	300,000	14.34
2019	300,000	15.56
2020	300,000	16.73

1.2 NMOC Emission Rate Discussion

In accordance with the NSPS requirements specified in 40 CFR 60.757 (b)(1)(ii), the emissions estimate included in this report indicates emissions will remain below 50 Mg/yr through the next 5 years; thus, this report will serve as a 5-year report. Should the predicted annual waste acceptance rates used in the 5-year estimate for 2011 through 2015 be exceeded, a revised 5-year estimate shall be prepared that covers the 5 - year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate. The next required Tier 2 sampling and NMOC emission rate report will be completed in 2016.

APPENDIX E

INSIGNIFICANT ACTIVITIES CALCULATIONS

Mobile Sources

In accordance with the requirements of 11 MAC.2.6.7.A, the following items are not required to be included in the Title V application because they satisfy the EPA definition of mobile sources:

No. of Items	Description	Rating (hp, size, etc.)	EPA Definition Statement
2	Honda GX390 trash Pumps	8.0	Nonroad Vehicle, Engines, and Equipment/ Commercial Equipment
1	Honda Commercial Lawnmower	5.0	Nonroad Vehicle, Engines, and Equipment/ Lawn and garden equipment
1	Honda GX390 Air Compressor	13.0	Nonroad Vehicle, Engines, and Equipment/ Commercial Equipment
1	Stihl 0.25 Chain Saw	N/A	Nonroad Vehicle, Engines, and Equipment/ Lawn and garden equipment
1	Stihl HS 80 Clipper	N/A	Nonroad Vehicle, Engines, and Equipment/ Lawn and garden equipment
1	Stihl FS130 Weedeater	N/A	Nonroad Vehicle, Engines, and Equipment/ Lawn and garden equipment
1	Stihl FS250R Weedeater	N/A	Nonroad Vehicle, Engines, and Equipment/ Lawn and garden equipment
1	Stihl Proseriel Polesaw	N/A	Nonroad Vehicle, Engines, and Equipment/ Lawn and garden equipment
1	Stihl BR400 Blower	N/A	Nonroad Vehicle, Engines, and Equipment/ Lawn and garden equipment
1	Reinco Hey Spreader Wisconsin Engine	24.0	Nonroad Vehicle, Engines, and Equipment/ Lawn and garden equipment
1	Comp Air Compressor 185 John Deere Engine	4.5 Liter	Nonroad Vehicle, Engines, and Equipment/ Commercial Equipment
1	Briggs 2 Stratton Fuel Pump	3.5	Nonroad Vehicle, Engines, and Equipment/ Commercial Equipment
1	Kubota D905-E	20.9	Nonroad Vehicle, Engines, and Equipment/ Commercial Equipment
1	Thompson Pump, John Deere	6.5 Liter	Nonroad Vehicle, Engines, and Equipment/ Commercial Equipment
1	Briggs & Stratton Weedeater	6.0	Nonroad Vehicle, Engines, and Equipment/ Lawn and garden equipment
1	Grasshopper Mower, Kubota Engine	20.9	Nonroad Vehicle, Engines, and Equipment/ Lawn and garden equipment
1	Briggs & Stratton Generator	10.0	Nonroad Vehicle, Engines, and Equipment/ Commercial Equipment
1	Lincoln Welder, Ranger 10,000 Kohler	18.0	Nonroad Vehicle, Engines, and Equipment/ Commercial Equipment
1	1977 Ford F800 Water Truck	N/A	On-Road Vehicles / Heavy-duty vehicles
1	7740 New Holland Tractor	86.0	On-Road Vehicles / Heavy-duty vehicles
1	Lincoln Welder Ranger 8,000 Kohler	18.0	Nonroad Vehicle, Engines, and Equipment/ Commercial Equipment

GTRL - SUMMARY OF INSIGNIFICANT ACTIVITIES

Emission Source Name	Emission Source Number	NO_X (lbs/hr)	NO_X (tpy)	SO_X (lbs/hr)	SO_X (tpy)	CO (lbs/hr)	CO (tpy)	PM (lbs/hr)	PM (tpy)	PM_{10} (lbs/hr)	PM_{10} (tpy)	$PM_{2.5}$ (lbs/hr)	$PM_{2.5}$ (tpy)	VOCs (lbs/hr)	VOCs (tpy)	HAPs (lbs/hr)	HAPs (tpy)
SMALL GASOLINE INTERNAL	N/A	0.6655	1.0940	0.0358	0.0588	0.4211	0.6922			0.0436	0.0717			0.9075	1.4918		
DIESEL INTERNAL	N/A	1.5500	0.6045	0.1025	0.0400	0.3340	0.1303			0.1100	0.0429			0.1235	0.0482	0.0013	0.0005
USED OIL SPACE HEATER	N/A	0.0126	0.0550	0.2283	1.0000	0.0019	0.0085	0.0010	0.0042	0.0010	0.0042			0.0011	0.0050		
ABOVE GROUND STORAGE TANKS	N/A													0.0061	0.0265	0.0061	0.0265
Siloxane Removal Technology (SVT)														2.0697	1.0100		
TOTAL INSIGNIFICANT		**2.23**	**1.75**	**0.37**	**1.10**	**0.76**	**0.83**	**0.00**	**0.00**	**0.15**	**0.12**	**0.00**	**0.00**	**3.11**	**2.58**	**0.01**	**0.03**

Note: AP-42 Table 3.3-1 Does not identify any HAPs for gasoline engines

0.0072 0.0315

GTRL DIESEL INTERNAL COMBUSTION ENGINE

Based on AP-42 emissions factors, estimated operating hours, and the horsepower the emissions from Table 3.3-1 - "Emission factors for Uncontrolled Gasoline and Diesel Industrial Engines"

Diesel Water Pump

Pollutant	(lb/hp-hr)	(lb/hr)	(tons/yr)
NO_X	0.031	1.5500	0.6045
CO	6.68E-03	0.3340	0.1303
PM_{10}	2.20E-03	0.1100	0.0429
SO_X	2.05E-03	0.1025	0.0400
VOC	2.47E-03	0.1235	0.0482
Benzene	6.53E-06	0.0003	0.0001
Toluene	2.86E-06	0.0001	0.0001
Xylenes	2.00E-06	0.0001	0.0000
1,3-Butadiene	2.74E-07	0.0000	0.0000
Formaldehyde	8.26E-06	0.0004	0.0002
Acetaldehyde	5.37E-06	0.0003	0.0001
Acrolein	6.48E-07	0.0000	0.0000
Napthalene	5.94E-07	0.0000	0.0000
Total HAPs			**0.0005**

1. NO_X, CO, PM_{10}, SO_X, VOC, and HAP emissions were obtained from Table 3.3.1 and 3.3.2 of AP-42.
2. TOC emissions are recorded as VOC emissions for the sake of conservancy.

Engine Horsepower Rating:	50
Landfill Operatng Days/Year	260
Landfill Operating Days/Week	5
Engine Hours/Day Operation	3

GTRL DIESEL INTERNAL COMBUSTION ENGINE

TOTAL SMALL DIESEL ENGINE EMISSIONS		
Pollutant	(lbs/hr)	(tons/yr)
NO_X	1.5500	0.6045
CO	0.3340	0.1303
PM_{10}	0.1100	0.0429
SO_X	0.1025	0.0400
VOC	0.1235	0.0482
Benzene	3.27E-04	1.27E-04
Toluene	1.43E-04	5.58E-05
Xylenes	9.98E-05	3.89E-05
1,3-Butadiene	1.37E-05	5.34E-06
Formaldehyde	4.13E-04	1.61E-04
Acetaldehyde	2.68E-04	1.05E-04
Acrolein	3.24E-05	1.26E-05
Napthalene	2.97E-05	1.16E-05
Total HAPs	1.33E-03	5.17E-04

GTRL SMALL GASOLINE INTERNAL COMBUSTION ENGINE

Based on AP-42 emissions factors, estimated operating hours, and the horsepower the emissions from Table 3.3-1 - "Emission factors for Uncontrolled Gasoline and Diesel Industrial Engines"

Two (2) 8-hp Honda GX390 Trash Pumps

Pollutant	(lb/hp-hr)	(lb/hr)	(tons/yr)
NO_X	0.011	0.1760	0.4576
CO	6.96E-03	0.1114	0.2895
PM_{10}	7.21E-04	0.0115	0.0300
SO_X	5.91E-04	0.0095	0.0246
VOC	0.015	0.2400	0.6240

Engine Horsepower Rating:	16
Landfill Operatng Days/Year	260
Landfill Operating Days/Week	5
Engine Hours/Day Operation	10

Honda Commercial Lawnmower

Pollutant	(lb/hp-hr)	(lb/hr)	(tons/yr)
NO_X	0.011	0.0550	0.0715
CO	6.96E-03	0.0348	0.0452
PM_{10}	7.21E-04	0.0036	0.0047
SO_X	5.91E-04	0.0030	0.0038
VOC	0.015	0.0750	0.0975

Engine Horsepower Rating:	5
Landfill Operatng Days/Year	260
Landfill Operating Days/Week	5
Engine Hours/Day Operation	10

Briggs & Stratton Fuel Pump

Pollutant	(lb/hp-hr)	(lb/hr)	(tons/yr)
NO_X	0.011	0.0385	0.0501
CO	6.96E-03	0.0244	0.0317
PM_{10}	7.21E-04	0.0025	0.0033
SO_X	5.91E-04	0.0021	0.0027
VOC	0.015	0.0525	0.0683

Engine Horsepower Rating:	3.5
Landfill Operatng Days/Year	260
Landfill Operating Days/Week	5
Engine Hours/Day Operation	10

GTRL SMALL GASOLINE INTERNAL COMBUSTION ENGINE

18-HP Lincoln Welder, Ranger 10,000 Kohler

Pollutant	(lb/hp-hr)	(lb/hr)	(tons/yr)
NO_X	0.011	0.1980	0.2574
CO	6.96E-03	0.1253	0.1629
PM_{10}	7.21E-04	0.0130	0.0169
SO_X	5.91E-04	0.0106	0.0138
VOC	0.015	0.2700	0.3510

Engine Horsepower Rating:	18
Landfill Operatng Days/Year	260
Landfill Operating Days/Week	5
Engine Hours/Day Operation	10

18-HP Lincoln Welder, Ranger 8,000 Kohler

Pollutant	(lb/hp-hr)	(lb/hr)	(tons/yr)
NO_X	0.011	0.1980	0.2574
CO	6.96E-03	0.1253	0.1629
PM_{10}	7.21E-04	0.0130	0.0169
SO_X	5.91E-04	0.0106	0.0138
VOC	0.015	0.2700	0.3510

Engine Horsepower Rating:	18
Landfill Operatng Days/Year	260
Landfill Operating Days/Week	5
Engine Hours/Day Operation	10

GTRL SMALL GASOLINE INTERNAL COMBUSTION ENGINE

GTL TOTAL EMISSIONS FROM GASOLINE ENGINES		
Pollutant	(lbs/hr)	(tons/yr)
NO_X	0.6655	1.0940
CO	0.4211	0.6922
PM_{10}	0.0436	0.0717
SO_X	0.0358	0.0588
VOC	0.9075	1.4918

	GTRL SMALL GASOLINE INTERNAL COMBUSTION ENGINE

GTRL USED OIL SPACE HEATER

The factors shown below represent AP-42 Default factors.

Used Oil Emissions Factors			
Pollutant	**Emission Factor (lb/1000 gal)**	**Actual Emissions (lb/hr)**	**Actual Emissions (tpy)**
Pb	.41L	0.0002	0.00103
PM	2.8A	0.0010	0.00420
PM_{10} [2]	2.8A	0.0010	0.00420
NOx	11	0.0126	0.05500
SOx	100S	0.2283	1.00000
CO	1.7	0.0019	0.00850
VOCs	1	0.0011	0.00500
TOTALS		**2.5E-01**	**1.1E+00**

1. TOCs are assumed to be VOCs for the sake of conservancy.
2. PM_{10} is assumed to have the same emissions as PM for the sake of conservancy.

Note: Ash, Lead, and Sulfur Weight % taken from Indiana Department of Environmental Management Process Information: Combustion Instructions: Form PI-02F 10/2006

Lead % = 0.5
Ash % = 0.3
Sulfur % = 2.0
The Space Heater consumes a 10,000 gallons/year

GTRL ABOVEGROUND STORAGE TANK EMISSIONS

Description of Tank Emission Point as Referenced in Title V Application	Tank Product	VOC/HAP Emissions (lbs/hr)	VOC/HAP Emissions (tons/year)
10,000 Gallon AST[1]	Diesel	1.1667E-03	5.1100E-03
560 Gallon AST[1]	Gasoline	5.5006E-02	2.4093E-01
20,000 Gallon AST[2]	Leachate	4.3563E-04	1.9081E-03
20,000 Gallon AST[2]	Leachate	4.3563E-04	1.9081E-03
20,000 Gallon AST[2]	Leachate	4.3563E-04	1.9081E-03
100,000 Gallon AST[2]	Leachate	1.1617E-03	5.0882E-03
100,000 Gallon AST[2]	Leachate	1.1617E-03	5.0882E-03
100,000 Gallon AST[2]	Leachate	1.1617E-03	5.0882E-03
1,000 Gallon AST[1]	Waste Oil	9.5890E-05	4.2000E-04
Total VOC/HAPs		6.1060E-02	2.6744E-01

Note: 1. VOC/HAP emissions calculated using EPAs Tank 4.01d Program
2. Leachate tank emissions were calculated with the assumption of 100% volatility. Therefore, the emissions associated with these tanks are more conservative than the output that would be produced by Tanks 4.01d

LEACHATE TANK EMISSION SUMMARY

20,000 Gallon

Emissions from the leachate tanks were estimated based on comparison of National Priority Drinking Water (MCL) concentrations of each pollutant. It has been assumed that all VOCs and TAPs in the leachate tank influent evaporate. The average emissions (lbs/hr) were calculated by multiplying the concentration of each pollutant by the estimated influent rate of leachate.

The estimated influent rate used of

8,219.18	gpd	3,000,000	gpy

Summary of Emissions are below:

Emission assumptions				
Estimated total tank throughput	**gal/min**	**5.71**	Units	**µg/L**
Estimated total tank throughput	**gal/day**	**8,219.18**		
Tank Operation	**days/year**	**365**		

Compound	**Sample Concentration[5]**	**Units**	**Annual Emissions (lbs/hr)**	**Annual Emissions (tons/yr)**
1,1,1-Trichloroethane (methyl chloroform)[1,4,6]	0.200	µg/L	5.7158E-07	2.5035E-06
1,1,1,2-Tetrachloroethane[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1,2,2-Tetrachloroethane[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1-Dichloroethane (ethylidene dichloride)[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1,2 Trichloroethane[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,2 Dichlorobenzene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1-Dichloroethene (vinylidene chloride)[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,2-Dichloroethane (ethylene dichloride)[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,2-Dichloropropane (propylene dichloride)[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,2-Dibromo-3-chloropropane[6]	0.000	µg/L	5.7158E-10	2.5035E-09
1,2 Dibromoethane[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,4 Dichlorobenzene[1,6]	0.600	µg/L	1.7147E-06	7.5105E-06
Acetone[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Acrylonitrile[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromochloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromodichloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromoform[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromomethane[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Carbon disulfide[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Carbon tetrachloride[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Chlorobenzene[1,6]	0.100	µg/L	2.8579E-07	1.2517E-06
Chloroethane (ethyl chloride)[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Chloroform[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04

Chloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Dibromochloromethane5	10.000	µg/L	2.8579E-05	1.2517E-04
Dibromomethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
cis-1,2-Dichloroethene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
cis-1,3 Dichloropropene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
trans-1,3 Dichloropropene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
trans-1,4-Dichloro-2-butene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Dichloromethane (methylene chloride)[1,4,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Ethylbenzene[1,6]	0.700	µg/L	2.0005E-06	8.7622E-06
Iodomethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
MEK[5]	10.000	µg/L	2.8579E-05	1.2517E-04
MBK[5]	10.000	µg/L	2.8579E-05	1.2517E-04
MIK[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Perchloroethylene (tetrachloroethylene)[1,4,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Styrene[1,6]	0.100	µg/L	2.8579E-07	1.2517E-06
t-1,2-dichloroethene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Fluorotrichloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Trichloroethylene (trichloroethene)[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Vinyl acetate[6]	0.000	µg/L	0.0000E+00	0.0000E+00
Vinyl chloride[1,6]	0.002	µg/L	5.7158E-09	2.5035E-08
Xylenes[1,6]	10.000	µg/L	2.8579E-05	1.2517E-04
Benzene[1,6]	0.001	µg/L	1.4289E-09	6.2587E-09
Toluene[1,6]	1.000	µg/L	2.8579E-06	1.2517E-05

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer. The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100

[5] Compounds that are not in the National Priority Drinking Water Regulations MCL list. Because leachate is a liquid, conservative assumption concentrations of 10 µg/L have been utilized.

[6] Compounds are listed as both a HAP and are on the National Priority Drinking Water Regulations MCL list. A conservative leachate sample concentration estimate of 1000 times the MCL (µg/L)has been used to estimate emissions through volitization and evaporation.

Total VOCs HAPs	0.002	tons/yr
Total VOCs Non-Haps	0.002	tons/yr
Total Non-VOCs HAPs	0.000	tons/yr
Total Non-VOCs Non-Haps	0.000	tons/yr

LEACHATE TANK EMISSION SUMMARY

20,000 Gallon

Emissions from the leachate tanks were estimated based on comparison of National Priority Drinking Water (MCL) concentrations of each pollutant. It has been assumed that all VOCs and TAPs in the leachate tank influent evaporate. The average emissions (lbs/hr) were calculated by multiplying the concentration of each pollutant by the estimated influent rate of leachate.

The estimated influent rate used of

8,219.18	gpd	3,000,000	gpy

Summary of Emissions are below:

Emission assumptions				
Estimated total tank throughput	**gal/min**	**5.71**	Units	**µg/L**
Estimated total tank throughput	**gal/day**	**8,219.18**		
Tank Operation	**days/year**	**365**		

Compound	**Sample Concentration[5]**	**Units**	**Annual Emissions (lbs/hr)**	**Annual Emissions (tons/yr)**
1,1,1-Trichloroethane (methyl chloroform)[1,4,6]	0.200	µg/L	5.7158E-07	2.5035E-06
1,1,1,2-Tetrachloroethane[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1,2,2-Tetrachloroethane[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1-Dichloroethane (ethylidene dichloride)[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1,2 Trichloroethane[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,2 Dichlorobenzene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1-Dichloroethene (vinylidene chloride)[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,2-Dichloroethane (ethylene dichloride)[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,2-Dichloropropane (propylene dichloride)[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,2-Dibromo-3-chloropropane[6]	0.000	µg/L	5.7158E-10	2.5035E-09
1,2 Dibromoethane[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,4 Dichlorobenzene[1,6]	0.600	µg/L	1.7147E-06	7.5105E-06
Acetone[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Acrylonitrile[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromochloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromodichloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromoform[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromomethane[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Carbon disulfide[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Carbon tetrachloride[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Chlorobenzene[1,6]	0.100	µg/L	2.8579E-07	1.2517E-06
Chloroethane (ethyl chloride)[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Chloroform[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04

Chloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Dibromochloromethane5	10.000	µg/L	2.8579E-05	1.2517E-04
Dibromomethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
cis-1,2-Dichloroethene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
cis-1,3 Dichloropropene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
trans-1,3 Dichloropropene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
trans-1,4-Dichloro-2-butene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Dichloromethane (methylene chloride)[1,4,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Ethylbenzene[1,6]	0.700	µg/L	2.0005E-06	8.7622E-06
Iodomethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
MEK[5]	10.000	µg/L	2.8579E-05	1.2517E-04
MBK[5]	10.000	µg/L	2.8579E-05	1.2517E-04
MIK[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Perchloroethylene (tetrachloroethylene)[1,4,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Styrene[1,6]	0.100	µg/L	2.8579E-07	1.2517E-06
t-1,2-dichloroethene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Fluorotrichloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Trichloroethylene (trichloroethene)[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Vinyl acetate[6]	0.000	µg/L	0.0000E+00	0.0000E+00
Vinyl chloride[1,6]	0.002	µg/L	5.7158E-09	2.5035E-08
Xylenes[1,6]	10.000	µg/L	2.8579E-05	1.2517E-04
Benzene[1,6]	0.001	µg/L	1.4289E-09	6.2587E-09
Toluene[1,6]	1.000	µg/L	2.8579E-06	1.2517E-05

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer. The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100

[5] Compounds that are not in the National Priority Drinking Water Regulations MCL list. Because leachate is a liquid, conservative assumption concentrations of 10 µg/L have been utilized.

[6] Compounds are listed as both a HAP and are on the National Priority Drinking Water Regulations MCL list. A conservative leachate sample concentration estimate of 1000 times the MCL (µg/L)has been used to estimate emissions through volitization and evaporation.

Total VOCs HAPs	0.002	tons/yr
Total VOCs Non-Haps	0.002	tons/yr
Total Non-VOCs HAPs	0.000	tons/yr
Total Non-VOCs Non-Haps	0.000	tons/yr

LEACHATE TANK EMISSION SUMMARY

20,000 Gallon

Emissions from the leachate tanks were estimated based on comparison of National Priority Drinking Water (MCL) concentrations of each pollutant. It has been assumed that all VOCs and TAPs in the leachate tank influent evaporate. The average emissions (lbs/hr) were calculated by multiplying the concentration of each pollutant by the estimated influent rate of leachate.

The estimated influent rate used of

8,219.18	gpd	3,000,000	gpy

Summary of Emissions are below:

Emission assumptions

Estimated total tank throughput	**gal/min**	**5.71**	Units	**µg/L**
Estimated total tank throughput	**gal/day**	**8,219.18**		
Tank Operation	**days/year**	**365**		

Compound	Sample Concentration[5]	Units	Annual Emissions (lbs/hr)	Annual Emissions (tons/yr)
1,1,1-Trichloroethane (methyl chloroform)[1,4,6]	0.200	µg/L	5.7158E-07	2.5035E-06
1,1,1,2-Tetrachloroethane[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1,2,2-Tetrachloroethane[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1-Dichloroethane (ethylidene dichloride)[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1,2 Trichloroethane[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,2 Dichlorobenzene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,1-Dichloroethene (vinylidene chloride)[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
1,2-Dichloroethane (ethylene dichloride)[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,2-Dichloropropane (propylene dichloride)[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,2-Dibromo-3-chloropropane[6]	0.000	µg/L	5.7158E-10	2.5035E-09
1,2 Dibromoethane[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
1,4 Dichlorobenzene[1,6]	0.600	µg/L	1.7147E-06	7.5105E-06
Acetone[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Acrylonitrile[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromochloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromodichloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromoform[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Bromomethane[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Carbon disulfide[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Carbon tetrachloride[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Chlorobenzene[1,6]	0.100	µg/L	2.8579E-07	1.2517E-06
Chloroethane (ethyl chloride)[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04
Chloroform[1,5]	10.000	µg/L	2.8579E-05	1.2517E-04

Chloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Dibromochloromethane5	10.000	µg/L	2.8579E-05	1.2517E-04
Dibromomethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
cis-1,2-Dichloroethene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
cis-1,3 Dichloropropene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
trans-1,3 Dichloropropene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
trans-1,4-Dichloro-2-butene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Dichloromethane (methylene chloride)[1,4,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Ethylbenzene[1,6]	0.700	µg/L	2.0005E-06	8.7622E-06
Iodomethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
MEK[5]	10.000	µg/L	2.8579E-05	1.2517E-04
MBK[5]	10.000	µg/L	2.8579E-05	1.2517E-04
MIK[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Perchloroethylene (tetrachloroethylene)[1,4,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Styrene[1,6]	0.100	µg/L	2.8579E-07	1.2517E-06
t-1,2-dichloroethene[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Fluorotrichloromethane[5]	10.000	µg/L	2.8579E-05	1.2517E-04
Trichloroethylene (trichloroethene)[1,6]	0.005	µg/L	1.4289E-08	6.2587E-08
Vinyl acetate[6]	0.000	µg/L	0.0000E+00	0.0000E+00
Vinyl chloride[1,6]	0.002	µg/L	5.7158E-09	2.5035E-08
Xylenes[1,6]	10.000	µg/L	2.8579E-05	1.2517E-04
Benzene[1,6]	0.001	µg/L	1.4289E-09	6.2587E-09
Toluene[1,6]	1.000	µg/L	2.8579E-06	1.2517E-05

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer. The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100

[5] Compounds that are not in the National Priority Drinking Water Regulations MCL list. Because leachate is a liquid, conservative assumption concentrations of 10 µg/L have been utilized.

[6] Compounds are listed as both a HAP and are on the National Priority Drinking Water Regulations MCL list. A conservative leachate sample concentration estimate of 1000 times the MCL (µg/L)has been used to estimate emissions through volitization and evaporation.

Total VOCs HAPs	0.002	tons/yr
Total VOCs Non-Haps	0.002	tons/yr
Total Non-VOCs HAPs	0.000	tons/yr
Total Non-VOCs Non-Haps	0.000	tons/yr

LEACHATE TANK EMISSION SUMMARY

100,000 Gallon

Emissions from the leachate tanks were estimated based on comparison of National Priority Drinking Water (MCL) concentrations of each pollutant. It has been assumed that all VOCs and TAPs in the leachate tank influent evaporate. The average emissions (lbs/hr) were calculated by multiplying the concentration of each pollutant by the estimated influent rate of leachate.

The estimated influent rate used of

21,917.81	gpd	8,000,000	gpy

Summary of Emissions are below:

Emission assumptions

Estimated total tank throughput	**gal/min**	**15.22**	Units	**µg/L**
Estimated total tank throughput	**gal/day**	**21,917.81**		
Tank Operation	**days/year**	**365**		

Compound	Sample Concentration[5]	Units	Annual Emissions (lbs/hr)	Annual Emissions (tons/yr)
1,1,1-Trichloroethane (methyl chloroform)[1,4,6]	0.200	µg/L	1.5242E-06	6.6760E-06
1,1,1,2-Tetrachloroethane[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1,2,2-Tetrachloroethane[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1-Dichloroethane (ethylidene dichloride)[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1,2 Trichloroethane[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,2 Dichlorobenzene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1-Dichloroethene (vinylidene chloride)[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,2-Dichloroethane (ethylene dichloride)[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,2-Dichloropropane (propylene dichloride)[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,2-Dibromo-3-chloropropane[6]	0.000	µg/L	1.5242E-09	6.6760E-09
1,2 Dibromoethane[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,4 Dichlorobenzene[1,6]	0.600	µg/L	4.5726E-06	2.0028E-05
Acetone[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Acrylonitrile[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromochloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromodichloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromoform[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromomethane[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Carbon disulfide[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Carbon tetrachloride[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Chlorobenzene[1,6]	0.100	µg/L	7.6210E-07	3.3380E-06
Chloroethane (ethyl chloride)[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Chloroform[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04

Chloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Dibromochloromethane5	10.000	µg/L	7.6210E-05	3.3380E-04
Dibromomethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
cis-1,2-Dichloroethene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
cis-1,3 Dichloropropene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
trans-1,3 Dichloropropene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
trans-1,4-Dichloro-2-butene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Dichloromethane (methylene chloride)[1,4,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Ethylbenzene[1,6]	0.700	µg/L	5.3347E-06	2.3366E-05
Iodomethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
MEK[5]	10.000	µg/L	7.6210E-05	3.3380E-04
MBK[5]	10.000	µg/L	7.6210E-05	3.3380E-04
MIK[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Perchloroethylene (tetrachloroethylene)[1,4,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Styrene[1,6]	0.100	µg/L	7.6210E-07	3.3380E-06
t-1,2-dichloroethene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Fluorotrichloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Trichloroethylene (trichloroethene)[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Vinyl acetate[6]	0.000	µg/L	0.0000E+00	0.0000E+00
Vinyl chloride[1,6]	0.002	µg/L	1.5242E-08	6.6760E-08
Xylenes[1,6]	10.000	µg/L	7.6210E-05	3.3380E-04
Benzene[1,6]	0.001	µg/L	3.8105E-09	1.6690E-08
Toluene[1,6]	1.000	µg/L	7.6210E-06	3.3380E-05

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer. The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100

[5] Compounds that are not in the National Priority Drinking Water Regulations MCL list. Because leachate is a liquid, conservative assumption concentrations of 10 µg/L have been utilized.

[6] Compounds are listed as both a HAP and are on the National Priority Drinking Water Regulations MCL list. A conservative leachate sample concentration estimate of 1000 times the MCL (µg/L)has been used to estimate emissions through volitization and evaporation.

Total VOCs HAPs	0.005	tons/yr
Total VOCs Non-Haps	0.004	tons/yr
Total Non-VOCs HAPs	0.000	tons/yr
Total Non-VOCs Non-Haps	0.000	tons/yr

LEACHATE TANK EMISSION SUMMARY

100,000 Gallon

Emissions from the leachate tanks were estimated based on comparison of National Priority Drinking Water (MCL) concentrations of each pollutant. It has been assumed that all VOCs and TAPs in the leachate tank influent evaporate. The average emissions (lbs/hr) were calculated by multiplying the concentration of each pollutant by the estimated influent rate of leachate.

The estimated influent rate used of

21,917.81	gpd	8,000,000	gpy

Summary of Emissions are below:

Emission assumptions

Estimated total tank throughput	**gal/min**	**15.22**	Units	**µg/L**
Estimated total tank throughput	**gal/day**	**21,917.81**		
Tank Operation	**days/year**	**365**		

Compound	Sample Concentration[5]	Units	Annual Emissions (lbs/hr)	Annual Emissions (tons/yr)
1,1,1-Trichloroethane (methyl chloroform)[1,4,6]	0.200	µg/L	1.5242E-06	6.6760E-06
1,1,1,2-Tetrachloroethane[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1,2,2-Tetrachloroethane[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1-Dichloroethane (ethylidene dichloride)[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1,2 Trichloroethane[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,2 Dichlorobenzene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1-Dichloroethene (vinylidene chloride)[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,2-Dichloroethane (ethylene dichloride)[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,2-Dichloropropane (propylene dichloride)[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,2-Dibromo-3-chloropropane[6]	0.000	µg/L	1.5242E-09	6.6760E-09
1,2 Dibromoethane[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,4 Dichlorobenzene[1,6]	0.600	µg/L	4.5726E-06	2.0028E-05
Acetone[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Acrylonitrile[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromochloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromodichloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromoform[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromomethane[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Carbon disulfide[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Carbon tetrachloride[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Chlorobenzene[1,6]	0.100	µg/L	7.6210E-07	3.3380E-06
Chloroethane (ethyl chloride)[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Chloroform[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04

Chloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Dibromochloromethane5	10.000	µg/L	7.6210E-05	3.3380E-04
Dibromomethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
cis-1,2-Dichloroethene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
cis-1,3 Dichloropropene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
trans-1,3 Dichloropropene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
trans-1,4-Dichloro-2-butene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Dichloromethane (methylene chloride)[1,4,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Ethylbenzene[1,6]	0.700	µg/L	5.3347E-06	2.3366E-05
Iodomethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
MEK[5]	10.000	µg/L	7.6210E-05	3.3380E-04
MBK[5]	10.000	µg/L	7.6210E-05	3.3380E-04
MIK[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Perchloroethylene (tetrachloroethylene)[1,4,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Styrene[1,6]	0.100	µg/L	7.6210E-07	3.3380E-06
t-1,2-dichloroethene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Fluorotrichloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Trichloroethylene (trichloroethene)[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Vinyl acetate[6]	0.000	µg/L	0.0000E+00	0.0000E+00
Vinyl chloride[1,6]	0.002	µg/L	1.5242E-08	6.6760E-08
Xylenes[1,6]	10.000	µg/L	7.6210E-05	3.3380E-04
Benzene[1,6]	0.001	µg/L	3.8105E-09	1.6690E-08
Toluene[1,6]	1.000	µg/L	7.6210E-06	3.3380E-05

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer. The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100

[5] Compounds that are not in the National Priority Drinking Water Regulations MCL list. Because leachate is a liquid, conservative assumption concentrations of 10 µg/L have been utilized.

[6] Compounds are listed as both a HAP and are on the National Priority Drinking Water Regulations MCL list. A conservative leachate sample concentration estimate of 1000 times the MCL (µg/L)has been used to estimate emissions through volitization and evaporation.

Total VOCs HAPs	0.005	tons/yr
Total VOCs Non-Haps	0.004	tons/yr
Total Non-VOCs HAPs	0.000	tons/yr
Total Non-VOCs Non-Haps	0.000	tons/yr

LEACHATE TANK EMISSION SUMMARY

100,000 Gallon

Emissions from the leachate tanks were estimated based on comparison of National Priority Drinking Water (MCL) concentrations of each pollutant. It has been assumed that all VOCs and TAPs in the leachate tank influent evaporate. The average emissions (lbs/hr) were calculated by multiplying the concentration of each pollutant by the estimated influent rate of leachate.

The estimated influent rate used of

21,917.81	gpd	8,000,000	gpy

Summary of Emissions are below:

Emission assumptions

Estimated total tank throughput	**gal/min**	**15.22**	Units	**µg/L**
Estimated total tank throughput	**gal/day**	**21,917.81**		
Tank Operation	**days/year**	**365**		

Compound	Sample Concentration[5]	Units	Annual Emissions (lbs/hr)	Annual Emissions (tons/yr)
1,1,1-Trichloroethane (methyl chloroform)[1,4,6]	0.200	µg/L	1.5242E-06	6.6760E-06
1,1,1,2-Tetrachloroethane[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1,2,2-Tetrachloroethane[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1-Dichloroethane (ethylidene dichloride)[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1,2 Trichloroethane[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,2 Dichlorobenzene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,1-Dichloroethene (vinylidene chloride)[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
1,2-Dichloroethane (ethylene dichloride)[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,2-Dichloropropane (propylene dichloride)[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,2-Dibromo-3-chloropropane[6]	0.000	µg/L	1.5242E-09	6.6760E-09
1,2 Dibromoethane[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
1,4 Dichlorobenzene[1,6]	0.600	µg/L	4.5726E-06	2.0028E-05
Acetone[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Acrylonitrile[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromochloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromodichloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromoform[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Bromomethane[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Carbon disulfide[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Carbon tetrachloride[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Chlorobenzene[1,6]	0.100	µg/L	7.6210E-07	3.3380E-06
Chloroethane (ethyl chloride)[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04
Chloroform[1,5]	10.000	µg/L	7.6210E-05	3.3380E-04

Chloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Dibromochloromethane5	10.000	µg/L	7.6210E-05	3.3380E-04
Dibromomethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
cis-1,2-Dichloroethene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
cis-1,3 Dichloropropene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
trans-1,3 Dichloropropene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
trans-1,4-Dichloro-2-butene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Dichloromethane (methylene chloride)[1,4,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Ethylbenzene[1,6]	0.700	µg/L	5.3347E-06	2.3366E-05
Iodomethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
MEK[5]	10.000	µg/L	7.6210E-05	3.3380E-04
MBK[5]	10.000	µg/L	7.6210E-05	3.3380E-04
MIK[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Perchloroethylene (tetrachloroethylene)[1,4,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Styrene[1,6]	0.100	µg/L	7.6210E-07	3.3380E-06
t-1,2-dichloroethene[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Fluorotrichloromethane[5]	10.000	µg/L	7.6210E-05	3.3380E-04
Trichloroethylene (trichloroethene)[1,6]	0.005	µg/L	3.8105E-08	1.6690E-07
Vinyl acetate[6]	0.000	µg/L	0.0000E+00	0.0000E+00
Vinyl chloride[1,6]	0.002	µg/L	1.5242E-08	6.6760E-08
Xylenes[1,6]	10.000	µg/L	7.6210E-05	3.3380E-04
Benzene[1,6]	0.001	µg/L	3.8105E-09	1.6690E-08
Toluene[1,6]	1.000	µg/L	7.6210E-06	3.3380E-05

[1] Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments

[2]Source tests did not indicate whether this compound was the para- or ortho- isomer. The para isomer is a Title III-listed HAP.

[3]No data were available to speciate total Hg into the elemental and organic forms.

[4]Non-Volatile Organic Compounds (Non-VOCs) as indicated in 40 CFR 51.100

[5] Compounds that are not in the National Priority Drinking Water Regulations MCL list. Because leachate is a liquid, conservative assumption concentrations of 10 µg/L have been utilized.

[6] Compounds are listed as both a HAP and are on the National Priority Drinking Water Regulations MCL list. A conservative leachate sample concentration estimate of 1000 times the MCL (µg/L)has been used to estimate emissions through volitization and evaporation.

Total VOCs HAPs	0.005	tons/yr
Total VOCs Non-Haps	0.004	tons/yr
Total Non-VOCs HAPs	0.000	tons/yr
Total Non-VOCs Non-Haps	0.000	tons/yr

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The following information represents the regulatory citations that are useful in assessing the calculations associated with this analysis of the applicable of 40 CFR 60, Subpart Kb:

40 CFR 60.110b(b) - Applicability and designation of affected facility
This subpart does not apply to storage vessels with a capacity greater than or equal to 151 m^3 (Approx. 39,890 gallons) storing a liquid with a maximum true vapor pressure less than 3.5 kPa (approx. 0.51 psia) or with a capacity greater than or equal to 75 m^3 (19,813 gallons) but less than 151 m^3 (Approx. 39,890 gallons) storing a liquid with a maximum true vapor pressure less than 15.0 kPa (2.18 psia).

40 CFR 60.111b - Definitions
Maximum true vapor pressure means the **equilibrium partial pressure** exerted by the **volatile organic compounds** (as defined in 40 CFR 51.100) in the stored VOL at the temperature equal to the highest calendar-month average of the VOL storage temperature for the VOL's stored above or below the ambient temperature or at the local maximum monthly average temperature as reported by the National Weather Service for VOL's stored at ambient temperature, as determined:

(1) In accordance with the methods described in the American Petroleum Institute Bulletin 2517, Evaporation Loss from External Floating Roof Tanks, (incorporated by reference - see §60.17); or

(2) As obtained from standard reference texts; or

(3) As determined by ASTM D2879-83, 96, or 97 (incorporated by reference - see §60.17)

(4) Any other method approved by the Administrator

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LIQUID BULK TEMPERATURE CALCULATION

$T_B = T_{AA} + 6\alpha - 1$

T_B = Liquid bulk temperature, °R
T_{AA} = Daily average ambient temperature, °R
α = tank paint solar absorptance, dimensionless

T_{AA}	=	61.691667	Daily average ambient temperature, °F (TANKS 4.0 Program Met. Data for Tupelo, MS.)
T_{AA}	=	521.691667	Daily average ambient temperature, °R
α	=	0.97	tank paint solar absorptance, dimensionless; (AP- 42 Table 7.1-6)
T_B	**=**	**526.511667**	**°R**

DAILY AVERAGE LIQUID SURFACE TEMPERATURE CALCULATON

$T_{LA} = .44T_{AA} + .56T_B + .0079\alpha I$

T_{LA} = Daily Average Liquid Surface Temperature, °R
T_{AA} = Daily average ambient temperature, °R
T_B = Liquid Bulk Temperature, °R
α = Tank point solar absorptance, dimensionless; see Table 7.1-6 of AP-42 Section 7
I = Daily total solar insolation factor, BTU/ft^2 day; see Table 7.1-7 of AP-42 Section 7

T_{AA}	=	521.691667	°R
T_B	=	526.511667	°R
α	=	0.97	
I	=	1366.0833	BTU/ft^2 day (TANKS 4.0 Program Met. Data for Tupelo, MS.)
T_{LA}	**=**	**534.8591633**	**°R**
T_{LA}	**=**	**23.81064629**	**°C**

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Antoine's Equation

$$\text{Log } P_{VA} = A - \frac{B}{T_{LA}+C}$$

where:

P_{VA} = Vapor Pressure at average liquid surface temperature, mm Hg
T_{LA} = Daily average liquid surface temperature, °C
A = Constant in vapor pressure equation obtained from AP-42 Section 7 (Table 7.1-5)
B = Constant in vapor pressure equation obtained from AP-42 Section 7 (Table 7.1-5)
C = Constant in vapor pressure equation obtained from AP-42 Section 7 (Table 7.1-5)

True Vapor Pressure Calculation for Leachate VOCs Using Antoine's Equation

VOC	A	B (°C)	C (°C)	T_{LA} (°C)	Log P_{VA}	P_{VA} (mm Hg)	P_{VA} (psia)
1,1,1,2-Tetrachloroethane	6.898	1,365.880	209.740	23.811	1.050	11.2	0.217
1,1,2,2-Tetrachloroethane	6.631	1,228.100	179.900	23.811	0.602	4.0	0.077
1,1-Dichloroethane (ethylidene dichloride)*	6.9853	1171.42	228.13	23.811	2.336	216.6	4.189
1,1,2 Trichloroethane	6.951	1314.41	209.2	23.811	1.310	20.4	0.395
1,2 Dichlorobenzene*	7.3037	1782.4	230.01	23.811	0.281	1.9	0.037
1,1-Dichloroethene (vinylidene chloride)	6.972	1099.4	237.2	23.811	2.760	575.3	11.125
1,2-Dichloroethane (ethylene dichloride)	7.025	1272.3	222.9	23.811	1.868	73.8	1.427
1,2-Dichloropropane (propylene dichloride)*	6.9654	1296.4	221	23.811	1.670	46.8	0.904
1,2,4-Trichlorobenzene**	6.9781	1431.05	217.56	23.811	1.049	11.2	0.217
1,2 Dibromoethane*	6.72148	1280.82	201.75	23.811	1.043	11.0	0.214
1,4 Dichlorobenzene*	7.0703	1649.55	213.32	23.811	0.114	1.3	0.025
Acrylonitrile	7.038	1232.53	222.47	23.811	2.033	108.0	2.088
Bromochloromethane**	6.9944	902.45	243.61	23.811	3.620	4,166.3	80.563
Bromodichloromethane**	7.0803	1138.91	231.46	23.811	2.619	415.6	8.037
Bromoform**	6.493	929.44	196.03	23.811	2.265	184.2	3.561
Bromomethane*	6.9597	986.59	238.33	23.811	3.196	1,570.8	30.373
Carbon disulfide	6.942	1169.11	241.59	23.811	2.537	344.3	6.657
Carbon tetrachloride	6.934	1242.43	230	23.811	2.039	109.4	2.115
Chlorobenzene	6.978	1431.05	217.55	23.811	1.049	11.2	0.216
Chloroethane (ethyl chloride)	6.986	1030.01	238.61	23.811	3.061	1,150.7	22.251
Chloroform	6.493	929.44	196.03	23.811	2.265	184.2	3.561
Chloromethane*	6.9944	902.45	243.61	23.811	3.620	4,166.3	80.563
Dibromochloromethane**	6.9944	902.45	243.61	23.811	3.620	4,166.3	80.563
Dibromomethane**	6.9597	986.59	238.33	23.811	3.196	1,570.8	30.373
cis-1,2-Dichloroethene**	6.9722	1099.4	237.2	23.811	2.760	575.6	11.130
cis-1,3 Dichloropropene**	6.97186	1376.2	216	23.811	1.233	17.1	0.331
trans-1,3 Dichloropropene**	6.97186	1376.2	216	23.811	1.233	17.1	0.331
trans-1,4-Dichloro-2-butene**	6.86952	960.8	240	23.811	3.228	1,688.5	32.651
Ethylbenzene	6.975	1424.255	213.21	23.811	0.966	9.2	0.179
Isophorone**	8.1177	1580.92	219.61	23.811	1.623	42.0	0.812
MEK	6.8645	1150.207	209.246	23.811	1.929	85.0	1.643
MBK**	6.672	1168.4	191.9	23.811	1.255	18.0	0.348
MIK	6.672	1168.4	191.9	23.811	1.255	18.0	0.348
Styrene	7.14	1574.51	224.09	23.811	0.789	6.1	0.119
t-1,2-dichloroethene*	6.965	1,141.900	231.900	23.811	2.500	315.9	6.108
Fluorotrichloromethane*	6.884	1,043.010	236.860	23.811	2.883	763.9	14.772
Trichloroethylene (trichloroethene)	6.518	1,018.600	192.700	23.811	1.813	65.1	1.258
Vinyl acetate	7.210	1,296.130	226.660	23.811	2.035	108.4	2.097
Vinyl chloride	6.972	1,099.400	237.200	23.811	2.760	575.3	11.125
Xylenes	7.020	1,474.400	217.770	23.811	0.917	8.3	0.160
Benzene	6.905	1,211.033	220.790	23.811	1.954	89.9	1.739
Toluene	6.954	1,344.800	219.480	23.811	1.426	26.7	0.516

*Indicates Constants for Antoine's Equation were obtained from www.eng.auburn.edu data table

** Indicates Surrogate Values were used

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Leachate Mole Fraction Calculation, x_i						
Leachate Constituents	**Concentration (ppm)**	**Concentration (lbs/gal)**	**Quantity (lbs)**	**MW**	**Moles**	**x_i**
1,1,1,2-Tetrachloroethane	**10**	8.34541E-05	8.345	167.85	0.050	1.0742E-06
1,1,2,2-Tetrachloroethane	**10**	8.34541E-05	8.345	167.48	0.050	1.0766E-06
1,1-Dichloroethane (ethylidene dichloride)*	**10**	8.34541E-05	8.345	**98.96**	0.084	1.8220E-06
1,1,2 Trichloroethane	**0.005**	4.17270E-08	0.004	**133.4**	0.000	6.7582E-10
1,2 Dichlorobenzene*	**10**	8.34541E-05	8.345	**147.01**	0.057	1.2265E-06
1,1-Dichloroethene (vinylidene chloride)	**10**	8.34541E-05	8.345	**96.94**	0.086	1.8600E-06
1,2-Dichloroethane (ethylene dichloride)	**0.005**	4.17270E-08	0.004	**98.96**	0.000	9.1102E-10
1,2-Dichloropropane (propylene dichloride)*	**0.005**	4.17270E-08	0.004	**112.99**	0.000	7.9790E-10
1,2,4-Trichlorobenzene**	**0.0002**	1.66908E-09	0.000	**181.45**	0.000	1.9874E-11
1,2 Dibromoethane*	**0.005**	4.17270E-08	0.004	**187.86**	0.000	4.7990E-10
1,4 Dichlorobenzene*	**0.6**	5.00724E-06	0.501	**147.02**	0.003	7.3585E-08
Acrylonitrile	**10**	8.34541E-05	8.345	**53.1**	0.157	3.3956E-06
Bromochloromethane**	**10**	8.34541E-05	8.345	**129.38**	0.065	1.3936E-06
Bromodichloromethane**	**10**	8.34541E-05	8.345	**163.8**	0.051	1.1008E-06
Bromoform**	**10**	8.34541E-05	8.345	**252.73**	0.033	7.1344E-07
Bromomethane*	**10**	8.34541E-05	8.345	**94.94**	0.088	1.8992E-06
Carbon disulfide	**10**	8.34541E-05	8.345	**76.139**	0.110	2.3681E-06
Carbon tetrachloride	**0.005**	4.17270E-08	0.004	**153.82**	0.000	5.8610E-10
Chlorobenzene	**0.1**	8.34541E-07	0.083	**112.56**	0.001	1.6019E-08
Chloroethane (ethyl chloride)	**10**	8.34541E-05	8.345	**64.51**	0.129	2.7950E-06
Chloroform	**10**	8.34541E-05	8.345	**119.38**	0.070	1.5104E-06
Chloromethane*	**10**	8.34541E-05	8.345	**50.49**	0.165	3.5712E-06
Dibromochloromethane**	**10**	8.34541E-05	8.345	**208.28**	0.040	8.6570E-07
Dibromomethane**	**10**	8.34541E-05	8.345	**173.83**	0.048	1.0373E-06
cis-1,2-Dichloroethene**	**10**	8.34541E-05	8.345	**96.95**	0.086	1.8598E-06
cis-1,3 Dichloropropene**	**10**	8.34541E-05	8.345	**110.97**	0.075	1.6248E-06
trans-1,3 Dichloropropene**	**10**	8.34541E-05	8.345	**110.97**	0.075	1.6248E-06
trans-1,4-Dichloro-2-butene**	**10**	8.34541E-05	8.345	**125**	0.067	1.4425E-06
Ethylbenzene	**0.7**	5.84178E-06	0.584	**106.17**	0.006	1.1888E-07
Isophorone**	**10**	8.34541E-05	8.345	**222.3**	0.038	8.1110E-07
MEK	**10**	8.34541E-05	8.345	**72.11**	0.116	2.5005E-06
MBK**	**10**	8.34541E-05	8.345	**100.16**	0.083	1.8002E-06
MIK	**10**	8.34541E-05	8.345	**100.16**	0.083	1.8002E-06
Styrene	**0.1**	8.34541E-07	0.083	**104.15**	0.0008	1.7312E-08
t-1,2-dichloroethene*	**10**	8.34541E-05	8.345	**96.95**	0.086	1.8598E-06
Fluorotrichloromethane*	**10**	8.34541E-05	8.345	**137.37**	0.061	1.3126E-06
Trichloroethylene (trichloroethene)	**0.005**	4.17270E-08	0.004	**131.4**	0.000	6.8611E-10
Vinyl acetate	**0**	0.00000E+00	0.000	**86.09**	0.000	0.0000E+00
Vinyl chloride	**0.002**	1.66908E-08	0.002	**62.498**	0.000	5.7701E-10
Xylenes	**10**	8.34541E-05	8.345	**106.16**	0.079	1.6985E-06
Benzene	**0.0005**	4.17270E-09	0.000	**78.11**	0.000	1.1542E-10
Toluene	**1**	8.34541E-06	0.835	**92.14**	0.009	1.9569E-07
Water		8.34	834,000	18.02	46,281.909	9.9995E-01

x_i= Liquid mole fraction
MW= Molecular Weight
1 mg = 2.204623E-06 lbs
1 gallon = 3.785412 Liters

Leachate Tank Volume = 100,000 gallons
Total Moles of Leachate = 46,284.060

$$\text{Moles} = \frac{\text{Quantity}}{\text{MW}}$$

Franklin
Engineers & Consultants, LLC.

Leachate VOC Partial Pressure Calculation Using Raoult's Law			
Leachate Constituents	**P_{VA} (psia)**	**x_i**	**$P_{Partial}$ (psia)**
1,1,1,2-Tetrachloroethane	**0.217**	**1.0742E-06**	2.329E-07
1,1,2,2-Tetrachloroethane	**0.077**	**1.0766E-06**	8.333E-08
1,1-Dichloroethane (ethylidene dichloride)*	**4.189**	**1.8220E-06**	7.632E-06
1,1,2 Trichloroethane	**0.395**	**6.7582E-10**	2.668E-10
1,2 Dichlorobenzene*	**0.037**	**1.2265E-06**	4.534E-08
1,1-Dichloroethene (vinylidene chloride)	**11.125**	**1.8600E-06**	2.069E-05
1,2-Dichloroethane (ethylene dichloride)	**1.427**	**9.1102E-10**	1.300E-09
1,2-Dichloropropane (propylene dichloride)*	**0.904**	**7.9790E-10**	7.215E-10
1,2,4-Trichlorobenzene**	**0.217**	**1.9874E-11**	4.305E-12
1,2 Dibromoethane*	**0.214**	**4.7990E-10**	1.025E-10
1,4 Dichlorobenzene*	**0.025**	**7.3585E-08**	1.850E-09
Acrylonitrile	**2.088**	**3.3956E-06**	7.091E-06
Bromochloromethane**	**80.563**	**1.3936E-06**	1.123E-04
Bromodichloromethane**	**8.037**	**1.1008E-06**	8.847E-06
Bromoform**	**3.561**	**7.1344E-07**	2.541E-06
Bromomethane*	**30.373**	**1.8992E-06**	5.768E-05
Carbon disulfide	**6.657**	**2.3681E-06**	1.577E-05
Carbon tetrachloride	**2.115**	**5.8610E-10**	1.240E-09
Chlorobenzene	**0.216**	**1.6019E-08**	3.467E-09
Chloroethane (ethyl chloride)	**22.251**	**2.7950E-06**	6.219E-05
Chloroform	**3.561**	**1.5104E-06**	5.379E-06
Chloromethane*	**80.563**	**3.5712E-06**	2.877E-04
Dibromochloromethane**	**80.563**	**8.6570E-07**	6.974E-05
Dibromomethane**	**30.373**	**1.0373E-06**	3.151E-05
cis-1,2-Dichloroethene**	**11.130**	**1.8598E-06**	2.070E-05
cis-1,3 Dichloropropene**	**0.331**	**1.6248E-06**	5.375E-07
trans-1,3 Dichloropropene**	**0.331**	**1.6248E-06**	5.375E-07
trans-1,4-Dichloro-2-butene**	**32.651**	**1.4425E-06**	4.710E-05
Ethylbenzene	**0.179**	**1.1888E-07**	2.126E-08
Isophorone**	**0.812**	**8.1110E-07**	6.585E-07
MEK	**1.643**	**2.5005E-06**	4.108E-06
MBK**	**0.348**	**1.8002E-06**	6.269E-07
MIK	**0.348**	**1.8002E-06**	6.269E-07
Styrene	**0.119**	**1.7312E-08**	2.058E-09
t-1,2-dichloroethene*	**6.108**	**1.8598E-06**	1.136E-05
Fluorotrichloromethane*	**14.772**	**1.3126E-06**	1.939E-05
Trichloroethylene (trichloroethene)	**1.258**	**6.8611E-10**	8.633E-10
Vinyl acetate	**2.097**	**0.0000E+00**	0.000E+00
Vinyl chloride	**11.125**	**5.7701E-10**	6.419E-09
Xylenes	**0.160**	**1.6985E-06**	2.712E-07
Benzene	**1.739**	**1.1542E-10**	2.007E-10
Toluene	**0.516**	**1.9569E-07**	1.010E-07
TOTAL LEACHATE VOC PARTIAL PRESSURE			**7.955E-04**

Raoult's Law

$P_{Partial} = \Sigma P_{VA} x_i$

1. The partial pressure of the VOCs (8.029E-04 psia) is less than 3.5 kPa (approximately .51 psia).

Based on the results of the calculations above, the leachate tanks are not subject to 40 CFR 60 Subpart Kb.

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	GTRL 10000-Gal Diesel Tank
City:	Starkville
State:	Mississippi
Company:	GTRSWMA
Type of Tank:	Horizontal Tank
Description:	10000 Gallon Diesel Tank

Tank Dimensions

Shell Length (ft):	8.00
Diameter (ft):	27.00
Volume (gallons):	10,000.00
Turnovers:	15.00
Net Throughput(gal/yr):	150,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Tupelo, Mississippi (Avg Atmospheric Pressure = 14.62 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

GTRL 10000-Gal Diesel Tank - Horizontal Tank
Starkville, Mississippi

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	63.54	58.12	68.96	61.71	0.0074	0.0061	0.0087	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

GTRL 10000-Gal Diesel Tank - Horizontal Tank

Starkville, Mississippi

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	3.43	6.79	10.22

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	GTRL 1000-Gal Waste Oil Tank
City:	Starkville
State:	Mississippi
Company:	GTRSWMA
Type of Tank:	Horizontal Tank
Description:	1000 Gallon Waste Oil Tank

Tank Dimensions

Shell Length (ft):	5.00
Diameter (ft):	7.00
Volume (gallons):	1,000.00
Turnovers:	10.00
Net Throughput(gal/yr):	10,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Tupelo, Mississippi (Avg Atmospheric Pressure = 14.62 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

GTRL 1000-Gal Waste Oil Tank - Horizontal Tank
Starkville, Mississippi

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	68.77	59.82	77.73	63.93	0.0087	0.0065	0.0113	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

GTRL 1000-Gal Waste Oil Tank - Horizontal Tank

Starkville, Mississippi

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.27	0.57	0.84

APPENDIX F

SAMPLE CALCULATIONS

A-001	LFG CONTROLLED EMISSION EXAMPLE CALCULATIONS

Molar Flow Rate= 2,819 $\frac{ft^3}{min}$ X 60 $\frac{min}{hr}$ X 1 ATM .73024 $atmft^3/1bmole\ ^oR$ X 519.67 ^oR = **445.65** $\frac{lbmole}{hr}$

VOC / HAPs Emissions = $\frac{0.48\ ppmv}{1.00E+06}$ X 133.41 MW X 445.65 $\frac{lbmoleLFG}{hr}$ X 0.25 Destruct Efficiency = **0.0071** $\frac{lbs}{hr}$

A-002	LFG CANDLESTICK FLARE EMISSION EXAMPLE CALCULATIONS

Molar Flow Rate= 1000 $\frac{ft^3}{min}$ X 60 $\frac{min}{hr}$ X 1 ATM ÷ .73024 $atmft^3/lbmole\ ^oR$ X 519.67 ^oR = **158.11** $\frac{lbmole}{hr}$

CH4 Generation Rate= 1,000 $\frac{ft^3}{min}$ X 0.028316847 $\frac{m^3}{ft^3}$ 525,600 $\frac{min}{yr}$ X 0.5 % CH_4 = **7,441,667** $\frac{m^3}{yr}$

VOC / HAPs Emissions = $\frac{1.25}{1.00E+06}$ ppmv X 64.52 MW X 158.11 $\frac{lbmoleLFG}{hr}$ X 0.02 Destruct Efficiency = **0.0003** $\frac{lbs}{hr}$

PM_{10} Emissions = 1000 $\frac{ft^3}{min}$ X $\frac{17}{1,000,000}$ $\frac{lbs}{dscf}$ 16,700 $\frac{lb/hr}{dscfm}$ X 0.5 % CH_4 = **0.51** $\frac{lbs}{hr}$

AP-42 Table 2.4-5[a]

CO Emissions = 1000 $\frac{ft^3}{min}$ X 1012 $\frac{BTU\ CH_4}{ft^3}$ X 60 $\frac{min}{hr}$ X 0.31 $\frac{lbs}{mmbtu}$ X 0.5 CH_4 ÷ 1,000,000 = **9.41** $\frac{lbs}{hr}$

NO_x Emissions = 1000 $\frac{ft^3}{min}$ X 1012 $\frac{BTU\ CH_4}{ft^3}$ X 60 $\frac{min}{hr}$ X 0.068 $\frac{lbs}{mmbtu}$ X 0.5 CH_4 ÷ 1,000,000 = **2.06** $\frac{lbs}{hr}$

SO_2 Emissions Rate = (AP-42 - 2.4.4.1 Eq. 3) 2.002 Multi Factor X 26,789,958 $\frac{m^3}{yr}$ X 46.9 ppmv ÷ 1,000,000 = **2,515.41** $\frac{m^3}{yr}$

Uncontrolled Mass Emission Rate = (AP-42 - 2.4.4.1 Eq. 4) 2,515 $\frac{m^3}{yr}$ X 32.066 $\frac{g}{mole}$ X 1 ATM ÷ 8.21E-05 $\frac{M^3\text{-atm}}{g/mole\text{-}^oK}$ X 1000 $\frac{g}{kg}$ X 298.00 = **3,296.81** $\frac{kg}{yr}$

Controlled Mass Emission Rate = (AP-42-42 - 2.4.4.1 Eq.7) 3296.81 $\frac{kg}{yr}$ X 0.75 X 2 MW Ratio SO_2 = **4,945.22** $\frac{kg}{yr}$

Cl_2 Emissions Rate = (AP-42 - 2.4.4.1 Eq. 3) 2.002 Multi Factor X 26,789,958 $\frac{m^3}{yr}$ X 42 ppmv ÷ 1,000,000 = **2,252.61** $\frac{m^3}{yr}$

Cl_2 Uncontrolled Mass Emission Rate = (AP-42 - 2.4.4.1 Eq. 4) 2253 $\frac{m^3}{yr}$ X 36.461 $\frac{g}{mole}$ X 1 ATM ÷ 8.21E-05 $\frac{M^3\text{-atm}}{g/mole\text{-}^oK}$ X 1000 $\frac{g}{kg}$ X 298.00 = **3,357.02** $\frac{kg}{yr}$

Total Cl_2 Emissions = (AP-42 - 2.4.4.1 Eq. 10) 3357.02 $\frac{kg}{yr}$ X 0.75 X 1.03 MW Ratio CL_2 X 0.98 Control Device Efficiency = **2,541.44** $\frac{kg}{yr}$

A-001	LPG GENERATOR EMISSION EXAMPLE CALCULATIONS

Actual Emissions	1.00	$\frac{\text{lb}}{\text{1000 gal}}$	X	10	$\frac{\text{1,000 gal}}{\text{yr}}$	X	$\frac{\text{1 ton}}{\text{2,000 lb}}$	=	**0.005**	$\frac{\text{tons}}{\text{yr}}$

APPENDIX G

EPA DETERMINATION LETTER

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

SEP 17 2007

Mr. Tim Champagne
Environmental Compliance Manager
Waste Management of Texas, L.L.C.
Austin Community Landfill
9900 Giles Road
Austin, Texas 78754

Re: Request for Applicability Determination
40 Code of Federal Regulations Part 60, Subpart WWW
40 Code of Federal Regulations, Part 63, Subpart AAAA
Definition of Treatment

Dear Mr. Champagne:

This letter is in response to your May 8, 2006, letter received on January 19, 2007, requesting that the Environmental Protection Agency (EPA) determine whether the proposed landfill gas processing at the Austin Community Recycling and Disposal Facility (ACRDF) is considered treatment under 40 C.F.R. § 60.752 (b)(2)(ii)(C). Further, you request that EPA determine whether or not internal combustion engines which will combust the treated gas are subject to the control requirements of 40 C.F.R. § 60.752 (b)(2)(iii)(B) or the regulations under 40 C.F.R. Part 63, Subpart AAAA. Additional information was submitted in June 20, 2007, and August 2, 2007, e-mails from you to Kathleen Aisling, of my staff.

According to your letter, the ACRDF, located in Austin, Texas, is subject to the New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills, 40 C.F.R., Subpart WWW. It is also subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Municipal Solid Waste Landfills, 40 C.F.R. Part 63, Subpart AAAA. As an alternative to flaring the landfill gas, Waste Management Renewable Energy, LLC will construct and operate an energy recovery plant at the ACRDF where the gas will be combusted in reciprocating internal combustion (IC) engines to generate electricity for off-site sale and use.

The May 2006 letter and enclosed figure indicate that the landfill gas would go through a mesh pad scrubber, a compressor, a gas cooler to de-water the gas, a discharge filter/separator that has openings of no more than 10 microns, and a heat exchanger. According to the August 2, 2007, e-mail from you to Kathleen Aisling, of my staff, calculations show that the treatment system at this facility will reduce the dew point by at least 20 degrees Fahrenheit. In addition, the June 20, 2007, e-mail states that the IC engines will destroy the methane gas in the process of generating electricity, while exhaust gases such as CO_2 and water vapor will be sent to the exhaust stack. In the event one or more of the IC engines are shut down for maintenance or

other reasons, a backup flare permitted for this site will be used as the secondary control device to burn landfill gas and prevent emissions to the atmosphere.

Currently, NSPS does not contain a definition for the term "treatment system." EPA's May 23, 2002, Federal Register Notice contains a proposed definition of the term, which constitutes EPA's interpretation of the term. The preamble to EPA's May 23, 2002, proposed rulemaking also includes the following statements about the proposed definition of treatment system:

"At a minimum, the system must filter landfill gas using a dry filter or similar device (e.g., impaction, interception or diffusion device). The filter should reduce particulate matter in the gas stream. This will prolong the life of the combustion device and decrease the buildup of material on combustion device internals, which will support good combustion. Good combustion is essential to ensuring the proper destruction of NMOC. In addition, the system must de-water landfill gas using chillers or other dehydration equipment. The de-watering equipment should reduce moisture content of the gas, which will maintain low water content in the gas and will prevent degradation of combustion efficiencies. Finally, the system must compress landfill gas using gas blowers or similar devices. Compression should further reduce the moisture content of the gas and raise gas pressure to the level required by the end use combustion device."

EPA further clarified what constitutes "treated landfill gas" and "treatment system" regarding landfills under NSPS in a September 8, 2006, Federal Register Notice. Under this proposal, for particulate matter filtration, a filter system would be required to have an absolute rating no greater than 10 microns. For de-watering, the system would be required to reduce the dew point by at least 20 degrees Fahrenheit. Specific monitoring, recordkeeping, and reporting requirements for treatment systems to ensure compliance with these requirements are also proposed. Owners and operators must comply with the requirements no later than one year after the date the final amendments are promulgated.

Based on the information you submitted, EPA's technical judgement, and the guidance given in the proposed rules discussed above, the gas processing system which will be used for the ACRDF landfill gas constitutes treatment under 40 C.F.R. § 60.752 (b)(2)(iii)(C). The IC engines combusting the treated gas, which are considered energy recovery devices, are not subject to 40 C.F.R. § 60.752 (b)(2)(iii)(B). When the facility utilizes the treatment system it is not required to comply with 40 C.F.R. § 60.752 (b)(2)(iii)(A) or (B); however when the flare is used, it must comply with 40 C.F.R. § 60.752 (b)(2)(iii)(A).

Because ACRDF's IC engines are exempt from monitoring, they do not have to be included in the Startup, Shutdown, and Malfunction Plan (SSM Plan) required by Part 63, Subpart AAAA. This is described in EPA's "How to Prepare a Startup, Shutdown, Malfunction Plan for Collection and Control Systems at Municipal Solid Waste Landfills." (EPA-456/ R-03-006, December 2003.) However, the treatment system supplying gas to the turbine must be included in the SSM Plan.

This determination is based on the information submitted to EPA Region 6 in a letter dated May 8, 2006, and in the e-mails sent on June 20, 2007, and August 2, 2007. It is site-specific to the ACRDF and its proposed energy recovery plant. Note that ACRDF will be required to comply with EPA's final rulemaking which may include a different definition than the proposed definition of "treatment system" and which will likely include specific monitoring, recordkeeping, and reporting requirements for treatment systems to ensure compliance with these requirements. If any information is found that would reverse this determination, the determination would become invalid and a new determination request would be needed. This determination was coordinated with the Texas Commission on Environmental Quality (TCEQ), EPA's Office of Compliance in Washington, D.C., and EPA's Sector Policies and Programs Division, in Research Triangle Park, North Carolina.

If you have any questions concerning this determination, please contact Kathleen Aisling at (214) 665-6406.

Sincerely yours,

David F. Garcia
Associate Director
Air/Toxics & Inspection
Coordination Branch

Enclosure

cc: Mr. Robert Mann
TCEQ - Austin Headquarters

Mr. Jeff Greif
TCEQ - Austin Headquarters

Mr. Barry Kalda
TCEQ - Austin Regional Office

APPENDIX H

VARIOUS OPERATING SCENARIOS EMISSIONS

GOLDEN TRIANGLE REGIONAL LANDFILL POTENTIAL TO EMIT EMISSIONS SUMMARY
1 Engine and Flare at 3,600 scfm

Emission Source Name	Emission Source Number	NO_X (lbs/hr)	NO_X (tpy)	SO_X (lbs/hr)	SO_X (tpy)	CO (lbs/hr)	CO (tpy)	PM (lbs/hr)	PM (tpy)	PM_{10} (lbs/hr)	PM_{10} (tpy)	$PM_{2.5}$ (lbs/hr)	$PM_{2.5}$ (tpy)	VOCs (lbs/hr)	VOCs (tpy)	HAPs (lbs/hr)	HAPs (tpy)	Biogenic CO_2E (tpy)	Anthropogenic CO_2E (tpy)	Total CO_2E (lbs/hr)	Total CO_2E (tpy)
Permitted Sources																					
LFG Candlestick Flare	**AA-000**	7.43	32.55	1.24	5.45	33.88	148.40			1.83	8.03			0.19	0.85	0.77	3.39	109,824.63	282.57	25,138.63	110,107.20
Landfill Fugitive Emissions	**AA-000**													1.82	7.96	1.17	5.13	10,740.30	89,151.36	22,806.32	99,891.66
Construction - Unpaved	**AA-000**							24.35	106.66	6.57	28.79	0.66	2.88								
Refuse Trucks - Unpaved	**AA-000**							14.73	64.50	3.98	17.41	0.40	1.74								
Refuse Trucks - Paved	**AA-000**							0.31	1.36	0.06	0.27	0.01	0.04								
Total Dust Emissions	***AA-000***							*39.39*	*172.52*	*10.61*	*46.47*	*1.06*	*4.66*								
LFG Recip. Engines	**AA-000a**	4.70	20.57	1.18	5.16	11.74	51.42			0.43	1.89			2.35	10.28	0.09	0.38	13,724.60	23.55	3,138.85	13,748.14
GTL Liquified Propane Generator	**AA-001**	0.917	0.688	0.004	0.017	1.834	1.376			0.001	0.003			0.459	0.344	0.459	0.344				
560-Gallon Gasoline Tank														0.055	0.241	0.055	0.241				
Total Emissions from Permitted Sources		13.05	53.81	2.43	10.63	47.46	201.20	39.39	172.52	12.87	56.39	1.06	4.66	4.87	19.68	2.54	9.48	134,289.53	89,457.47	51,083.79	223,747.00
Insignificant Activities																					
Gasoline Internal Combustion Engines		0.67	1.09	0.04	0.06	0.42	0.69			0.04	0.07			0.91	1.49						
Diesel Internal Combustion Engines		1.55	0.60	0.10	0.04	0.33	0.13			0.11	0.04			0.12	0.05	1.33E-03	5.17E-04				
Used Oil Space Heater		0.01	0.06	0.23	1.00	1.94E-03	8.50E-03	9.59E-04	4.20E-03	9.59E-04	4.20E-03			0.00	0.01						
Insignificant ASTs														0.006	0.027	0.006	0.027				
Total Emissions from Insignificant Activities		2.23	1.75	0.37	1.10	0.76	0.83	0.00	0.00	0.15	0.12	0.00	0.00	1.04	1.57	0.01	0.03				
GRAND TOTAL EMISSIONS (Including Insignificant Activities)		**15.27**	**55.56**	**2.79**	**11.73**	**48.21**	**202.03**	**39.39**	**172.52**	**13.03**	**56.51**	**1.06**	**4.66**	**5.91**	**21.26**	**2.55**	**9.51**	**134,289.53**	**89,457.47**	**51,083.79**	**223,747.00**

GOLDEN TRIANGLE LANDFILL POTENTIAL TO EMIT EMISSIONS SUMMARY
2 Engines and Flare at 3,500 scfm

Emission Source Name	Emission Source Number	NO_X (lbs/hr)	NO_X (tpy)	SO_X (lbs/hr)	SO_X (tpy)	CO (lbs/hr)	CO (tpy)	PM (lbs/hr)	PM (tpy)	PM_{10} (lbs/hr)	PM_{10} (tpy)	$PM_{2.5}$ (lbs/hr)	$PM_{2.5}$ (tpy)	VOCs (lbs/hr)	VOCs (tpy)	HAPs (lbs/hr)	HAPs (tpy)	Biogenic CO_2E (tpy)	Anthropogenic CO_2E (tpy)	Total CO_2E (lbs/hr)	Total CO_2E (tpy)
Permitted Sources																					
LFG Candlestick Flare	**AA-000**	7.23	31.65	1.21	5.30	32.94	144.28			1.78	7.80			0.19	0.83	0.75	3.29	106,773.95	274.72	24,440.34	107,048.67
Landfill Fugitive Emissions	**AA-000**													1.82	7.96	1.17	5.13	10,740.30	89,151.36	22,806.32	99,891.66
Construction - Unpaved	**AA-000**							24.35	106.66	6.57	28.79	0.66	2.88								
Refuse Trucks - Unpaved	**AA-000**							14.73	64.50	3.98	17.41	0.40	1.74								
Refuse Trucks - Paved	**AA-000**							0.31	1.36	0.06	0.27	0.01	0.04								
Total Dust Emissions	***AA-000***							*39.39*	*172.52*	*10.61*	*46.47*	*1.06*	*4.66*								
LFG Recip. Engines	**AA-000a**	9.39	41.14	2.36	10.33	23.48	102.84			0.86	3.78			4.70	20.57	0.17	0.75	27,449.19	47.09	6,277.69	27,496.29
GTL Liquified Propane Generator	**AA-001**	0.917	0.688	0.004	0.017	1.834	1.376			0.001	0.003			0.459	0.344	0.459	0.344				
560-Gallon Gasoline Tank														0.055	0.241	0.055	0.241				
Total Emissions from Permitted Sources		17.53	73.47	3.57	15.64	58.25	248.49	39.39	172.52	13.26	58.06	1.06	4.66	7.22	29.94	2.61	9.76	144,963.44	89,473.17	53,524.34	234,436.61
Insignificant Activities																					
Gasoline Internal Combustion Engines		0.67	1.09	0.04	0.06	0.42	0.69			0.04	0.07			0.91	1.49						
Diesel Internal Combustion Engines		1.55	0.60	0.10	0.04	0.33	0.13			0.11	0.04			0.12	0.05	1.33E-03	5.17E-04				
Used Oil Space Heater		0.01	0.06	0.23	1.00	1.94E-03	8.50E-03	9.59E-04	4.20E-03	9.59E-04	4.20E-03			0.00	0.01						
Insignificant ASTs														0.006	0.027	0.006	0.027				
Total Emissions from Insignificant Activities		2.23	1.75	0.37	1.10	0.76	0.83	0.00	0.00	0.15	0.12	0.00	0.00	1.04	1.57	0.01	0.03				
GRAND TOTAL EMISSIONS (Including Insignificant Activities)		**19.76**	**75.23**	**3.94**	**16.74**	**59.01**	**249.33**	**39.39**	**172.52**	**13.41**	**58.18**	**1.06**	**4.66**	**8.25**	**31.52**	**2.62**	**9.79**	**144,963.44**	**89,473.17**	**53,524.34**	**234,436.61**

GOLDEN TRIANGLE LANDFILL POTENTIAL TO EMIT EMISSIONS SUMMARY
3 Engines and Flare at 2,200 scfm

Emission Source Name	Emission Source Number	NO_X (lbs/hr)	NO_X (tpy)	SO_X (lbs/hr)	SO_X (tpy)	CO (lbs/hr)	CO (tpy)	PM (lbs/hr)	PM (tpy)	PM_{10} (lbs/hr)	PM_{10} (tpy)	$PM_{2.5}$ (lbs/hr)	$PM_{2.5}$ (tpy)	VOCs (lbs/hr)	VOCs (tpy)	HAPs (lbs/hr)	HAPs (tpy)	Biogenic CO_2E (tpy)	Anthropogenic CO_2E (tpy)	Total CO_2E (lbs/hr)	Total CO_2E (tpy)
Permitted Sources																					
LFG Candlestick Flare	**AA-000**	4.54	19.89	0.76	3.33	20.71	90.69			1.12	4.90			0.12	0.52	0.47	2.07	67,115.05	172.68	15,362.50	67,287.73
Landfill Fugitive Emissions	**AA-000**													1.82	7.96	1.17	5.13	10,740.30	89,151.36	22,806.32	99,891.66
Construction - Unpaved	**AA-000**							24.35	106.66	6.57	28.79	0.66	2.88								
Refuse Trucks - Unpaved	**AA-000**							14.73	64.50	3.98	17.41	0.40	1.74								
Refuse Trucks - Paved	**AA-000**							0.31	1.36	0.06	0.27	0.01	0.04								
Total Dust Emissions	***AA-000***							*39.39*	*172.52*	*10.61*	*46.47*	*1.06*	*4.66*								
LFG Recip. Engines	**AA-000a**	14.09	61.70	3.54	15.49	35.22	154.26			1.30	5.68			7.04	30.85	0.26	1.13	41,173.79	70.64	9,416.54	41,244.43
GTL Liquified Propane Generator	**AA-001**	0.917	0.688	0.004	0.017	1.834	1.376			0.001	0.003			0.459	0.344	0.459	0.344				
560-Gallon Gasoline Tank														0.055	0.241	0.055	0.241				
Total Emissions from Permitted Sources		19.55	82.28	4.30	18.84	57.76	246.32	39.39	172.52	13.03	57.05	1.06	4.66	9.49	39.92	2.42	8.92	119,029.14	89,394.68	47,585.35	208,423.82
Insignificant Activities																					
Gasoline Internal Combustion Engines		0.67	1.09	0.04	0.06	0.42	0.69			0.04	0.07			0.91	1.49						
Diesel Internal Combustion Engines		1.55	0.60	0.10	0.04	0.33	0.13			0.11	0.04			0.12	0.05	1.33E-03	5.17E-04				
Used Oil Space Heater		0.01	0.06	0.23	1.00	1.94E-03	8.50E-03	9.59E-04	4.20E-03	9.59E-04	4.20E-03			0.00	0.01						
Insignificant ASTs														0.006	0.027	0.006	0.027				
Total Emissions from Insignificant Activities		2.23	1.75	0.37	1.10	0.76	0.83	0.00	0.00	0.15	0.12	0.00	0.00	1.04	1.57	0.01	0.03				
GRAND TOTAL EMISSIONS (Including Insignificant Activities)		**21.77**	**84.04**	**4.67**	**19.94**	**58.52**	**247.16**	**39.39**	**172.52**	**13.18**	**57.17**	**1.06**	**4.66**	**10.53**	**41.49**	**2.42**	**8.95**	**119,029.14**	**89,394.68**	**47,585.35**	**208,423.82**

GOLDEN TRIANGLE LANDFILL POTENTIAL TO EMIT EMISSIONS SUMMARY
4 Engines and Flare at 1,000 scfm

Emission Source Name	Emission Source Number	NO_X (lbs/hr)	NO_X (tpy)	SO_X (lbs/hr)	SO_X (tpy)	CO (lbs/hr)	CO (tpy)	PM (lbs/hr)	PM (tpy)	PM_{10} (lbs/hr)	PM_{10} (tpy)	$PM_{2.5}$ (lbs/hr)	$PM_{2.5}$ (tpy)	VOCs (lbs/hr)	VOCs (tpy)	HAPs (lbs/hr)	HAPs (tpy)	Biogenic CO_2E (tpy)	Anthropogenic CO_2E (tpy)	Total CO_2E (lbs/hr)	Total CO_2E (tpy)
Permitted Sources																					
LFG Candlestick Flare	**AA-000**	2.06	9.04	0.35	1.51	9.41	41.22			0.51	2.23			0.05	0.24	0.21	0.94	30,506.84	78.49	6,982.95	30,585.33
Landfill Fugitive Emissions	**AA-000**													1.82	7.96	1.17	5.13	10,740.30	89,151.36	22,806.32	99,891.66
Construction - Unpaved	**AA-000**							24.35	106.66	6.57	28.79	0.66	2.88								
Refuse Trucks - Unpaved	**AA-000**							14.73	64.50	3.98	17.41	0.40	1.74								
Refuse Trucks - Paved	**AA-000**							0.31	1.36	0.06	0.27	0.01	0.04								
Total Dust Emissions	***AA-000***							*39.39*	*172.52*	*10.61*	*46.47*	*1.06*	*4.66*								
LFG Recip. Engines	**AA-000a**	18.78	82.27	4.72	20.66	46.96	205.68			1.73	7.57			9.39	41.14	0.34	1.51	54,898.38	94.19	12,555.38	54,992.57
GTL Liquified Propane Generator	**AA-001**	0.917	0.688	0.004	0.017	1.834	1.376			0.001	0.003			0.459	0.344	0.459	0.344				
560-Gallon Gasoline Tank														0.055	0.241	0.055	0.241				
Total Emissions from Permitted Sources		21.76	92.00	5.07	22.19	58.20	248.28	39.39	172.52	12.85	56.27	1.06	4.66	11.78	49.92	2.24	8.17	96,145.53	89,324.04	42,344.65	185,469.57
Insignificant Activities																					
Gasoline Internal Combustion Engines		0.67	1.09	0.04	0.06	0.42	0.69			0.04	0.07			0.91	1.49						
Diesel Internal Combustion Engines		1.55	0.60	0.10	0.04	0.33	0.13			0.11	0.04			0.12	0.05	1.33E-03	5.17E-04				
Used Oil Space Heater		0.01	0.06	0.23	1.00	1.94E-03	8.50E-03	9.59E-04	4.20E-03	9.59E-04	4.20E-03			0.00	0.01						
Insignificant ASTs														0.006	0.027	0.006	0.027				
Total Emissions from Insignificant Activities		2.23	1.75	0.37	1.10	0.76	0.83	0.00	0.00	0.15	0.12	0.00	0.00	1.04	1.57	0.01	0.03				
GRAND TOTAL EMISSIONS (Including Insignificant Activities)		**23.99**	**93.75**	**5.43**	**23.29**	**58.96**	**249.11**	**39.39**	**172.52**	**13.00**	**56.39**	**1.06**	**4.66**	**12.82**	**51.49**	**2.25**	**8.19**	**96,145.53**	**89,324.04**	**42,344.65**	**185,469.57**

GOLDEN TRIANGLE LANDFILL POTENTIAL TO EMIT EMISSIONS SUMMARY
4 Engines Only*

Emission Source Name	Emission Source Number	NO_X (lbs/hr)	NO_X (tpy)	SO_X (lbs/hr)	SO_X (tpy)	CO (lbs/hr)	CO (tpy)	PM (lbs/hr)	PM (tpy)	PM_{10} (lbs/hr)	PM_{10} (tpy)	$PM_{2.5}$ (lbs/hr)	$PM_{2.5}$ (tpy)	VOCs (lbs/hr)	VOCs (tpy)	HAPs (lbs/hr)	HAPs (tpy)	Biogenic CO_2E (tpy)	Anthropogenic CO_2E (tpy)	Total CO_2E (lbs/hr)	Total CO_2E (tpy)
Permitted Sources																					
LFG Candlestick Flare	**AA-000**																	0.00			
Landfill Fugitive Emissions	**AA-000**													1.82	7.96	1.17	5.13	10,740.30	89,151.36	22,806.32	99,891.66
Construction - Unpaved	**AA-000**							24.35	106.66	6.57	28.79	0.66	2.88								
Refuse Trucks - Unpaved	**AA-000**							14.73	64.50	3.98	17.41	0.40	1.74								
Refuse Trucks - Paved	**AA-000**							0.31	1.36	0.06	0.27	0.01	0.04								
Total Dust Emissions	***AA-000***							*39.39*	*172.52*	*10.61*	*46.47*	*1.06*	*4.66*								
LFG Recip. Engines	**AA-000a**	18.78	82.27	4.72	20.66	46.96	205.68			1.73	7.57			9.39	41.14	0.34	1.51	54,898.38	94.19	12,555.38	54,992.57
GTL Liquified Propane Generator	**AA-001**	0.917	0.688	0.004	0.017	1.834	1.376			0.001	0.003			0.459	0.344	0.459	0.344				
560-Gallon Gasoline Tank														0.055	0.241	0.055	0.241				
Total Emissions from Permitted Sources		19.70	82.96	4.72	20.67	48.79	207.05	39.39	172.52	12.34	54.04	1.06	4.66	11.72	49.68	2.03	7.23	65,638.69	89,245.55	35,361.70	154,884.23
Insignificant Activities																					
Gasoline Internal Combustion Engines		0.67	1.09	0.04	0.06	0.42	0.69			0.04	0.07			0.91	1.49						
Diesel Internal Combustion Engines		1.55	0.60	0.10	0.04	0.33	0.13			0.11	0.04			0.12	0.05	1.33E-03	5.17E-04				
Used Oil Space Heater		0.01	0.06	0.23	1.00	1.94E-03	8.50E-03	9.59E-04	4.20E-03	9.59E-04	4.20E-03			0.00	0.01						
Insignificant ASTs														0.006	0.027	0.006	0.027				
Total Emissions from Insignificant Activities		2.23	1.75	0.37	1.10	0.76	0.83	0.00	0.00	0.15	0.12	0.00	0.00	1.04	1.57	0.01	0.03				
GRAND TOTAL EMISSIONS (Including Insignificant Activities)		**21.93**	**84.71**	**5.09**	**21.77**	**49.55**	**207.88**	**39.39**	**172.52**	**12.49**	**54.16**	**1.06**	**4.66**	**12.76**	**51.25**	**2.04**	**7.25**	**65,638.69**	**89,245.55**	**35,361.70**	**154,884.23**

***Pleaase note that this operating scenario also allows for the 1-engine only, 2-engine only, and 3-engine only operating scenarios, as well.**

GOLDEN TRIANGLE LANDFILL POTENTIAL TO EMIT EMISSIONS SUMMARY
Flare Only (3,600 scfm)

Emission Source Name	Emission Source Number	NO_X (lbs/hr)	NO_X (tpy)	SO_X (lbs/hr)	SO_X (tpy)	CO (lbs/hr)	CO (tpy)	PM (lbs/hr)	PM (tpy)	PM_{10} (lbs/hr)	PM_{10} (tpy)	$PM_{2.5}$ (lbs/hr)	$PM_{2.5}$ (tpy)	VOCs (lbs/hr)	VOCs (tpy)	HAPs (lbs/hr)	HAPs (tpy)	Biogenic CO_2E (tpy)	Anthropogenic CO_2E (tpy)	Total CO_2E (lbs/hr)	Total CO_2E (tpy)
Permitted Sources																					
LFG Candlestick Flare	**AA-000**	7.43	32.55	1.24	5.45	33.88	148.40			1.83	8.03			0.19	0.85	0.77	3.39	109,824.63	282.57	25,138.63	110,107.20
Landfill Fugitive Emissions	**AA-000**													1.82	7.96	1.17	5.13	10,740.30	89,151.36	22,806.32	99,891.66
Construction - Unpaved	**AA-000**							24.35	106.66	6.57	28.79	0.66	2.88								
Refuse Trucks - Unpaved	**AA-000**							14.73	64.50	3.98	17.41	0.40	1.74								
Refuse Trucks - Paved	**AA-000**							0.31	1.36	0.06	0.27	0.01	0.04								
Total Dust Emissions	***AA-000***							*39.39*	*172.52*	*10.61*	*46.47*	*1.06*	*4.66*								
LFG Recip. Engines	**AA-000a**																	0.00			
GTL Liquified Propane Generator	**AA-001**	0.917	0.688	0.004	0.017	1.834	1.376			0.001	0.003			0.459	0.344	0.459	0.344				
560-Gallon Gasoline Tank														0.055	0.241	0.055	0.241				
Total Emissions from Permitted Sources		8.35	33.24	1.25	5.47	35.72	149.78	39.39	172.52	12.44	54.50	1.06	4.66	2.53	9.40	2.46	9.10	120,564.94	89,433.93	47,944.95	209,998.86
Insignificant Activities																					
Gasoline Internal Combustion Engines		0.67	1.09	0.04	0.06	0.42	0.69			0.04	0.07			0.91	1.49						
Diesel Internal Combustion Engines		1.55	0.60	0.10	0.04	0.33	0.13			0.11	0.04			0.12	0.05	1.33E-03	5.17E-04				
Used Oil Space Heater		0.01	0.06	0.23	1.00	1.94E-03	8.50E-03	9.59E-04	4.20E-03	9.59E-04	4.20E-03			0.00	0.01						
Insignificant ASTs														0.006	0.027	0.006	0.027				
Total Emissions from Insignificant Activities		2.23	1.75	0.37	1.10	0.76	0.83	0.00	0.00	0.15	0.12	0.00	0.00	1.04	1.57	0.01	0.03				
GRAND TOTAL EMISSIONS (Including Insignificant Activities)		**10.58**	**34.99**	**1.61**	**6.57**	**36.47**	**150.61**	**39.39**	**172.52**	**12.60**	**54.62**	**1.06**	**4.66**	**3.56**	**10.97**	**2.47**	**9.13**	**120,564.94**	**89,433.93**	**47,944.95**	**209,998.86**

GOLDEN TRIANGLE LANDFILL POTENTIAL TO EMIT EMISSIONS SUMMARY
No Flare and No Engine

Emission Source Name	Emission Source Number	NO_X (lbs/hr)	NO_X (tpy)	SO_X (lbs/hr)	SO_X (tpy)	CO (lbs/hr)	CO (tpy)	PM (lbs/hr)	PM (tpy)	PM_{10} (lbs/hr)	PM_{10} (tpy)	$PM_{2.5}$ (lbs/hr)	$PM_{2.5}$ (tpy)	VOCs (lbs/hr)	VOCs (tpy)	HAPs (lbs/hr)	HAPs (tpy)	Biogenic CO_2E (tpy)	Anthropogenic CO_2E (tpy)	Total CO_2E (lbs/hr)	Total CO_2E (tpy)
Permitted Sources																					
LFG Candlestick Flare	**AA-000**																	0.00			
Landfill Fugitive Emissions	**AA-000**													7.27	31.85	4.69	20.54	42,961.22	356,605.43	91,225.26	399,566.64
Construction - Unpaved	**AA-000**							24.35	106.66	6.57	28.79	0.66	2.88								
Refuse Trucks - Unpaved	**AA-000**							14.73	64.50	3.98	17.41	0.40	1.74								
Refuse Trucks - Paved	**AA-000**							0.31	1.36	0.06	0.27	0.01	0.04								
Total Dust Emissions	***AA-000***							*39.39*	*172.52*	*10.61*	*46.47*	*1.06*	*4.66*								
LFG Recip. Engines	**AA-000a**																	0.00			
GTL Liquified Propane Generator	**AA-001**	0.917	0.688	0.004	0.017	1.834	1.376			0.001	0.003			0.459	0.344	0.459	0.344				
560-Gallon Gasoline Tank														0.055	0.241	0.055	0.241				
Total Emissions from Permitted Sources		0.92	0.69	0.00	0.02	1.83	1.38	39.39	172.52	10.61	46.47	1.06	4.66	7.78	32.43	5.20	21.12	42,961.22	356,605.43	91,225.26	399,566.64
Insignificant Activities																					
Gasoline Internal Combustion Engines		0.67	1.09	0.04	0.06	0.42	0.69			0.04	0.07			0.91	1.49						
Diesel Internal Combustion Engines		1.55	0.60	0.10	0.04	0.33	0.13			0.11	0.04			0.12	0.05	1.33E-03	5.17E-04				
Used Oil Space Heater		0.01	0.06	0.23	1.00	1.94E-03	8.50E-03	9.59E-04	4.20E-03	9.59E-04	4.20E-03			0.00	0.01						
Insignificant ASTs														0.006	0.027	0.006	0.027				
Total Emissions from Insignificant Activities		2.23	1.75	0.37	1.10	0.76	0.83	0.00	0.00	0.15	0.12	0.00	0.00	1.04	1.57	0.01	0.03				
GRAND TOTAL EMISSIONS (Including Insignificant Activities)		**3.15**	**2.44**	**0.37**	**1.12**	**2.59**	**2.21**	**39.39**	**172.52**	**10.76**	**46.59**	**1.06**	**4.66**	**8.82**	**34.00**	**5.21**	**21.15**	**42,961.22**	**356,605.43**	**91,225.26**	**399,566.64**

APPENDIX I

ADMINISTRATIVE AMENDMENT

GOLDEN TRIANGLE REGIONAL SOLID WASTE MANAGEMENT AUTHORITY
2505 Old West Point Road
Starkville, MS 39759
Office (662) 324-7566
Fax (662) 320-9212

September 18, 2015

Billy Warden
Chief
Mississippi Department of Environmental Quality
Mining and Solid Waste Management Division
2380 Highway 80 West
Jackson, Mississippi 39204

RE: Title V Administrative Amendment Letter (Permit No.: 2060-0046)
Golden Triangle Regional Solid Waste Landfill, Starkville, MS

Dear Mr. Warden:

On behalf of Golden Triangle Regional Solid Waste Management Landfill (GTRL), Golden Triangle Regional Solid Waste Management Authority (GTRSWMA) is pleased to submit this letter and the attached performance test data provided by the manufacturer of a new Siloxane Remove Technology (SRT) to serve as an administrative amendment (AA) to the existing Title V Air Operating Permit. This report has been prepared in accordance with the requirements of APC-S-6.IV.D.3 of the Air Emissions Permit Regulations.

GTRSMA would like to install the SRT as an addition to its existing Treatment System skid to inhibit excessive wear-and-tear on the engines associated with its LFG Beneficial-Use Project. The SRT that is proposed for installation at the facility is comprised of two (2) media compartments. One of the media compartments is in use; while, the other is undergoing regeneration. The maintenance associated with the SRT requires the use of air for regeneration of the media. It is important to note that this system typically utilizes approximately 240 scfm of regeneration air for 8 hours every 72 hours; however, there may be occasions when SRT maintenance will need to take place for 12 hours every 48 hours. For your review and consideration, we have included the emissions calculations for the worst-case scenario (8 hours every 72 hours) as Attachment A of this letter.[1] The VOC emissions are based on actual performance test data provided by the manufacturer. Please note that both the 8-hour/72 hour and 12-hour/48 hour events yield the same annual VOC emissions in tons/year.

Also note that we have included a schematic diagram of the SRT as Attachment B. This diagram displays the SRT as it will be configured when it is in use as part of the Treatment System.

[1] **The maintenance scenario of 8 hours/72 hours is considered worst-case because the VOC concentrations are higher. As indicated above both the 8-hour/72 hour and 12-hour/48 hour events yield the same annual emissions.**

If you should have any questions or require additional information regarding this AA letter, please feel free to call Juene Franklin with Franklin Engineers & Consultants, LLC. (FE&C) at (281) 205-8415 or me at (662) 324-7566.

Sincerely,
Golden Triangle Regional Solid Waste Management Authority

Jimmy Sloan
Executive Director

Enclosures: Attachment A – SRT Emissions Calculations/Vendor Data
Attachment B – SRT Diagram

cc: Juene Franklin, Franklin Engineers & Consultants, LLC.

ATTACHMENT A
SRT EMISSIONS CALCULATIONS

DCL International Inc.
Head office address: 241 Bradwick Drive, Concord, Ontario, Canada L4K 1K5
Mailing address: P.O. Box 90, Concord, Ontario, Canada L4K 1B2
Tel: (905) 660-6450 Toll free: 1-800-872-1968 Fax: (905) 660-6435 E-mail: info@dcl-inc.com Website: www.dcl-inc.com

VOC Analysis Report: VOC Emissions during SRT Regeneration

DCL Confidential – for customer reference only

Client : Golden Triangle Regional Solid Waste Landfill, Starkville, MS
Report date : September 8, 2015

SRT product information

Model #	SRT 400
Gas flow	400 scfm
Air regeneration flow	240 scfm
Regeneration time	8 hours every 72 hours

VOC emissions during SRT regeneration

The calculations of VOC, including siloxanes, emission during the SRT regeneration are based on analysis results as per attached analysis, as well as our system regeneration strategy (see table above).

Analysis by: Centek Laboratories, LLC. Lab Order #C13064040

Emissions and condensation levels during regeneration will depend on local ambient temperatures, as well as the landfill gas quality, which may vary. A worst case scenario with no condensation is shown below, along with DCL's estimated realistic average levels, both based on the above referenced analysis.

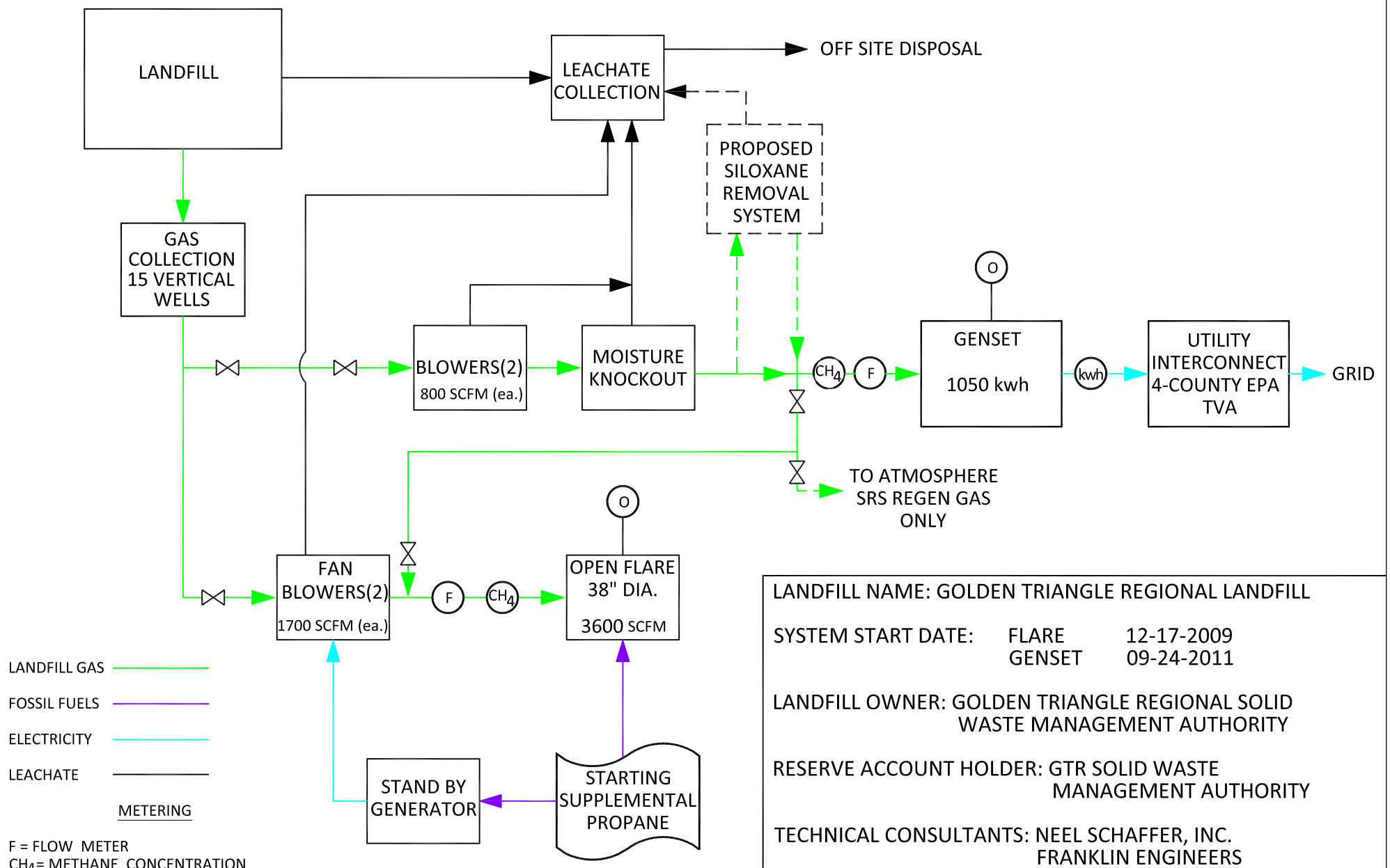
The VOC emissions during regeneration are calculated and shown below:

Description	**Unit**	**No condensation**	**25% condensation**
VOC emission with regeneration air	US tons/year	1.01	0.76
VOC emission with regeneration air, siloxane excluded	US tons/year	0.98	0.73
Siloxane emission with regeneration air	US tons/year	0.03	0.02
VOC liquid to condensate tank	US tons/year	0.00	0.25
VOC concentration in regeneration air*	mg/Nm3	2314	1735
VOC concentration in regeneration air, siloxane excluded*	mg/Nm3	2238	1679

Note: * The average VOC concentrations in regeneration air during 8 hours of regeneration process.

ATTACHMENT B
SRT DIAGRAM

GTR LANDFILL PROJECT SYSTEM DIAGRAM



LANDFILL NAME: GOLDEN TRIANGLE REGIONAL LANDFILL

SYSTEM START DATE: FLARE 12-17-2009
GENSET 09-24-2011

LANDFILL OWNER: GOLDEN TRIANGLE REGIONAL SOLID WASTE MANAGEMENT AUTHORITY

RESERVE ACCOUNT HOLDER: GTR SOLID WASTE MANAGEMENT AUTHORITY

TECHNICAL CONSULTANTS: NEEL SCHAFFER, INC.
FRANKLIN ENGINEERS & CONSULTANTS, LLC

DIAGRAM LAST UPDATE: 08-21-2015

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