



## CARLSON ENVIRONMENTAL CONSULTANTS, PC

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LANDFILL GAS AND SOLID WASTE SPECIALISTS

June 10, 2014

Mr. Syed Arif  
Office of Permitting and Compliance  
Division of Air Resource Management  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, Florida 32399

Subject: Title V Air Operating Permit Revision Application  
Gulf Coast Sanitary Landfill –Fort Myers, Florida  
Title V Permit No. 0710133-015-AV

Dear Mr. Arif:

On behalf of Waste Management, Inc. of Florida (WMIF), Carlson Environmental Consultants, PC (CEC) is submitting this electronic copy of the Title V Air Operating Permit Revision Application (Application) to the Florida Department of Environmental Protection (FDEP) for the Gulf Coast Sanitary Landfill (GCLF) located in Fort Myers, Florida. As demonstrated in the December 2013 submittal, the gas collection and control system (GCCS) may be capped and removed provided that the landfill is closed, the collection system has been operated a minimum of 15 years, and the NMOC concentration is less than 50 Mg per year for three successive test dates as stipulated in §60.752(b)(2)(v). Although the GCCS at GCLF will meet the removal criteria, WMIF intends to keep the active GCCS in place and operational, although will no longer operate and report in accordance with the parameters in Title 40 of the Code of Federal Regulations (CFR) Part 60, Subpart WWW.

This application contains the necessary permit forms, certification from the facility Responsible Official, emissions calculations, and a listing of applicable regulations. CEC and WMIF request FDEP perform a completeness review on the attached Application and provide notification that the Application is Administratively Complete.

CEC and WMIF appreciate your assistance during this process. Please feel free to contact me at (813) 220-9790 if you have any questions or desire additional information concerning this Application.

Respectfully Submitted,

Lindsey E. Kennelly, P.E.  
Project Manager  
Carlson Environmental Consultants, PC

cc: Alexander Lacsamana, WMIF  
Fred Nassar, WMIF  
Seth Nunes, PE, CEC  
Ajaya Satyal, FDEP - South District Office



**CARLSON ENVIRONMENTAL CONSULTANTS, PC**

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LANDFILL GAS AND SOLID WASTE SPECIALISTS

**TITLE V AIR OPERATING PERMIT  
REVISION APPLICATION**



For the:

**GULF COAST SANITARY LANDFILL  
FORT MYERS, FLORIDA  
TITLE V PERMIT NO. 0710133-015-AV**

Presented to:

**FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
Office of Permitting and Compliance  
Division of Air Resource Management  
2600 Blair Stone Road  
Tallahassee, Florida 32399

On Behalf of:

**WASTE MANAGEMENT INC. OF FLORIDA**  
Gulf Coast Sanitary Landfill  
11990 State Road 82 East  
Fort Myers, Florida 33913  
(239) 455-8062

Prepared by:

**CARLSON ENVIRONMENTAL CONSULTANTS, PC**  
305 South Main Street  
Monroe, North Carolina 28112  
(704) 283-9765

June 2014

# **EXECUTIVE SUMMARY**

## **TITLE V AIR OPERATING PERMIT REVISION APPLICATION GULF COAST SANITARY LANDFILL**

### **INTRODUCTION**

The Gulf Coast Sanitary Landfill (GCLF) is a closed municipal solid waste (MSW) landfill located in Fort Myers, Florida in Lee County. GCLF is owned and operated by Waste Management Inc. of Florida (WMIF). GCLF began operation in 1976 and was officially closed on February 2, 2010. GCLF operates under Title V Air Operating Permit No. 0710133-015-AV dated November 8, 2011.

As demonstrated in the December 2013 submittal to the Florida Department of Environmental Protection (FDEP), the gas collection and control system (GCCS) may be capped and removed provided that the landfill is closed, the collection system has been operated a minimum of 15 years, and the non-methane organic compound (NMOC) concentration is less than 50 Mg per year for three successive test dates as stipulated in §60.752(b)(2)(v). Although the GCCS at GCLF will meet the removal criteria, WMIF intends to keep the active GCCS in place and operational, although the GCCS will no longer be required to operate and report in accordance with the parameters in Title 40 of the Code of Federal Regulations (CFR) Part 60, Subpart WWW as well as 40 CFR Part 63, Subpart AAAA. This application addresses the removal of the 40 CFR 60 Subpart WWW and 40 CFR 63 Subpart AAAA operating and reporting requirements; however, based on potential to emit (PTE) values, the site will remain a Title V source.

### **SUMMARY OF REQUESTED ITEMS**

Removal of all operating and reporting requirements in 40 CFR 60 Subpart WWW and 40 CFR 63 Subpart AAAA based on the December 2013 submittal to FDEP that demonstrates the following compliance with §60.752(b)(2)(v):

- GCLF is a facility deemed officially closed by FDEP based on February 2, 2010 correspondence.
- The GCCS will be in place for fifteen (15) years in June 2014 as demonstrated with the initial performance test dated June 1999.
- The site-wide non-methane organic compound (NMOC) emission rate is less than 50 megagrams (Mg) per year for three (3) consecutive monitoring events.

The following table lists the emission sources present at the site, and the changes being requested for the Title V Permit modification with the new issued permit taking effect on July 1, 2014.

In addition, GCLF is incorporating a portable diesel generator used as an emergency back-up power device for the onsite flare during power outages. Since 40 CFR Part 60, Subpart IIII and 40 CFR Part 63, Subpart ZZZZ apply only to stationary sources, the emergency generator is not subject to these provisions.

## EXECUTIVE SUMMARY

Emission Unit ID No.	Description	Status/Action Requested
002	MSW Landfill	Closed site, no changes
003	GCCS and 4,300 scfm Open Flare	Removal of operational and reporting requirements of 40 CFR Part 60, Subpart WWW and 40 CFR Part 63, Subpart AAAA
Insignificant	Covered Leachate pond	No changes
Insignificant	Diesel storage tanks	No changes

The following table provides detailed information regarding the phases and cells that comprise the closed MSW Landfill.

Phase / Cell	Date Unit Began Accepting Waste	Date of Unit Closure	Comply With 40 CFR 60.759 (Y/N)	Gas Collection (Y/N)
Parcel 1	1976	02-02-2010	Y	Y
Parcel 2	1985	02-02-2010	Y	Y
Parcel 3	1995	02-02-2010	Y	Y

### OPERATING SCENARIOS

GCLF is a closed site, therefore no waste filling activities are occurring. Although GCLF is closed, waste decomposition processes continue to occur within the closed waste disposal areas. As the organic wastes decompose over time, gases termed “landfill gas” are produced. Typically, the primary constituents of landfill gas are methane (50%), carbon dioxide (50%), and slight amounts of oxygen, nitrogen, water vapor and various volatile organic compounds (VOCs) and hazardous air pollutants (HAPs). The collected landfill gases are currently sent to the 4,300 scfm open flare for combustion. The active landfill gas collection and control system continues to function to control fugitive air pollutant emissions from GCLF.

Due to the age and type of waste buried at GCLF, the projected landfill gas collection rate is projected to be approximately 990 scfm in 2014, which was used to calculate the potential emissions from EU 003, which is the LFG generation rate with a collection efficiency of 75% applied. Per AP-42, Section 2.4, approximately 75 percent of the landfill gas generated at the site is collected by the GCCS, with the remaining 25 percent as fugitive air pollutant emissions.

The primary operating scenario for the collection and control of landfill liquids is for liquids to be collected in a leachate collection system at the base of GCLF and then pumped via forcemain to a covered on-site leachate storage pond. The leachate collection system is permitted as an insignificant emission source in the current Title V Permit due to the potential for VOC and HAP emissions from the leachate.

# EXECUTIVE SUMMARY

## NEW SOURCE REVIEW (NSR) MAJOR STATIONARY SOURCE STATUS

This facility is an existing landfill facility that is a major stationary source under the New Source Review (NSR) program. Landfills are not included among the list of 28 source categories that are regulated under a 100 ton per year (TPY) threshold for “regulated New Source Review (NSR) pollutants” to determine “major stationary source” status. 40 CFR 52.21(b)(1)(i)(a). Because this existing landfill facility does not fall within the 28 listed categories, it is subject to a 250 TPY threshold for “regulated NSR pollutants,” excluding fugitive emissions, to determine NSR major stationary source status. 40 CFR 52.21(b)(1)(i)(b). This facility emits or has the potential to emit (PTE) 250 TPY or more of at least one regulated NSR pollutant, and it is therefore is an existing major stationary source for NSR purposes.

“Regulated NSR pollutants” for this facility currently include: nitrogen oxides, sulfur dioxide, particulate matter (PM), PM<sub>10</sub>, carbon monoxide, volatile organic compounds, and nonmethane organic compounds. See 40 CFR 52.21(b)(50) for definition of “regulated NSR pollutant.” This facility’s potential to emit at least one of these pollutants is more than 250 TPY, and it is therefore an NSR major stationary source.

Regardless of whether a facility has the potential to emit any other regulated NSR pollutants above 250 TPY, a facility’s emissions of greenhouse gases (GHGs) (the aggregate group of carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons emissions) are considered to be a “regulated NSR pollutant” only when the GHGs are “subject to regulation” for the facility. 40 CFR 52.21(b)(49). This facility’s GHGs are not “subject to regulation” at this time, and therefore the facility’s GHGs are not a “regulated NSR pollutant” at this time.

At an existing stationary source, such as this landfill facility, GHGs may be “subject to regulation” for NSR program purposes only when the facility proposes to undertake a physical change or a change in the method of operation. 40 CFR 52.21(b)(49)(v)(b)(“At an existing stationary source ... **when** such stationary source undertakes a physical change or change in the method of operation ...”); see also 75 Fed. Reg. 31514 (June 3, 2010). If no physical change or change in method of operation is proposed for an existing facility, then the facility’s GHGs are not “subject to regulation.” At the time an existing facility proposes a physical change or a change in the method of operation, the facility’s GHG emissions will be subject to evaluation to determine whether the GHGs would be “subject to regulation.” Each project increasing GHG emissions will be evaluated to determine if the GHGs are “subject to regulation” (and therefore a “regulated NSR pollutant”) – for purposes of only the project under evaluation.

### **Hypothetical Example of a GHG Emissions Analysis for NSR Applicability**

At an existing source such as this landfill, which is currently an NSR major stationary source, if the owner/operator were to propose a physical change or change in the method of operation, it would be appropriate at that time to evaluate the facility’s GHG emissions for purposes of NSR program applicability. While no physical change or change in the method of operation of this facility is being proposed at this time, the following

## EXECUTIVE SUMMARY

information is provided to demonstrate the type of emissions analysis that would be required to determine NSR applicability based on GHGs.

### *NSR Triggered “Anyway”*

If there is a physical change or change in the method of operation at an existing major stationary source that results in a “significant increase” and a “significant net emissions increase” in one or more criteria pollutant emissions, the project is a “major modification” which triggers NSR. 40 CFR 52.21(a)(2)(iv)(a), (b)(2)(i), (b)(2)(ii). However, to determine NSR applicability to GHG emissions, there must first be a determination as to whether the GHGs are “subject to regulation.” 40 CFR 52.21(b)(49).

At an existing major stationary source implementing a major modification which triggers NSR for criteria pollutant emissions, the GHGs are “subject to regulation” if there is an “emissions increase” and a “net emissions increase” of at least 75,000 TPY carbon dioxide equivalent (CO<sub>2</sub>e) emissions (sum of all six pollutants’ emissions, taking into account the global warming potential of each pollutant). 40 CFR 52.21(b)(49)(iii), (iv). Currently, biogenic CO<sub>2</sub> emissions are not included as part of this emissions calculation until July 21, 2014, although this exclusion could become permanent based on EPA’s final determination.<sup>1</sup> 76 Fed. Reg. 43490 (July 20, 2011). If the project results in an “emissions increase” and a “net emissions increase” of at least 75,000 TPY CO<sub>2</sub>e, the GHGs are “subject to regulation.” Because the GHGs are “subject to regulation,” they are a “regulated NSR pollutant” and NSR applicability must be determined. NSR will be triggered by the GHGs as a regulated NSR pollutant if both of two additional criteria are met: the project must result in an “emissions increase” and a “net emissions increase” in mass GHGs above zero. A calculation of the mass GHGs includes the sum of the six GHG pollutants without regard to global warming potential, and excludes biogenic CO<sub>2</sub> until July 21, 2014, or later based on EPA’s final determination. 40 CFR 52.21(b)(2)(i), (b)(2)(ii), (b)(23)(ii). If all of the above-referenced criteria are met, then the GHGs associated with the project would be subject to NSR (PSD) permitting.

If the emissions increase or net emissions increase in GHGs is less than 75,000 TPY CO<sub>2</sub>e, or if the project results in no emissions increase and no net emissions increase in mass GHGs above zero, then the GHGs are not “subject to regulation,” and therefore not a “regulated NSR pollutant.” NSR would not be triggered for GHGs for the project.

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<sup>1</sup> Depending on the outcome and timing of EPA’s determination, it is possible that EPA could undertake a new rulemaking with an earlier date that would supersede the current rule language.

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### *NSR Not Otherwise Triggered*

If there is a physical change or change in the method of operation at an existing major stationary source that does not otherwise trigger NSR (i.e., the criteria pollutants do not result in a “major modification”), the GHGs will be “subject to regulation” only if: (1) the project would result in an “emissions increase” and a “net emissions increase” of at least 75,000 TPY of CO<sub>2</sub>e emissions and (2) either the existing facility emits or has the potential to emit at least 100,000 TPY CO<sub>2</sub>e, or the project itself has the potential to emit at least 100,000 TPY CO<sub>2</sub>e. 40 CFR 52.21(b)(49)(v), (b)(1)(i)(c). If these criteria are not met, then the GHGs are not subject to regulation and will not trigger NSR. If these criteria are met, then the facility’s GHGs are “subject to regulation” and are therefore a “regulated NSR pollutant.”

If the relevant criteria are met and GHGs are a “regulated NSR pollutant,” NSR applicability to the project must be determined. The GHGs will trigger NSR if two additional criteria are met: there must be an “emissions increase” and a “net emissions increase” in mass GHGs (without regard to global warming potential). If these criteria are met, then NSR is triggered for the project. If there is no “emissions increase” or no “net emissions increase” in mass GHGs, then NSR is not triggered for the project.

Unlike other pollutants, GHGs are not “subject to regulation” under the NSR program unless the facility is new or there is a physical change or change in method of operation at an existing facility (and other emission-based criteria are met). Because GHGs at an existing facility where the owner/operator is not currently proposing a physical change in or change in method of operation cannot be “subject to regulation” and therefore cannot be a “regulated NSR pollutant,” the facility also cannot trigger NSR or be considered a major stationary source due to its GHGs. This explanation of NSR applicability for GHGs is confirmed through the attached question and answer document developed by EPA and entitled “Triggering PSD at Non-Anyways Sources and Modifications” (available on the EPA website at <http://www.epa.gov/nsr/ghgdocs/TriggeringPSDatnonAnywaysSourcesandMods.pdf>).

### **Title V Major Source Emission Levels**

The analysis of whether a facility is an NSR major stationary source for GHGs is completely separate from an analysis of whether the facility has the potential to emit GHGs at major source levels for purposes of the Title V program. This facility is subject to the Title V air operations permit program because of the applicability of a New Source Performance Standard (NSPS), and there is no question of Title V applicability. The determination of whether the facility has the potential to emit GHGs at Title V major source emission levels should not be confused with an analysis of whether the facility is an NSR major stationary source.

The federal Title V air operation permit rules provide that the term “major source” includes stationary sources that emit or have the potential to emit at least 100 TPY of any air pollutant “subject to regulation.” Fugitive emissions are included in this amount only if the facility falls within one of 27 listed source categories. 40 CFR 70.2, “major source” (2). As a landfill, this facility does not fall within the listed source categories,

## EXECUTIVE SUMMARY

and therefore fugitive emissions are not included in calculations to determine major source emission levels under the federal Title V rules.

Under the Title V program, the air pollutants subject to regulation for this facility currently include: nitrogen oxides, sulfur dioxide, particulate matter (PM), PM<sub>10</sub>, carbon monoxide, volatile organic compounds, and nonmethane organic compounds. Excluding fugitive emissions, this facility has the potential to emit Title V major source emission levels for sulfur dioxide.

The federal Title V rules define “subject to regulation” for purposes of greenhouse gases (GHGs) to mean that a stationary source emits or has the potential to emit 100,000 TPY of carbon dioxide equivalent (CO<sub>2</sub>e) emissions (sum of all six pollutants’ emissions, taking into account the global warming potential each pollutant). 40 CFR 70.2, “subject to regulation.” As stated above, fugitive emissions are not included in this total to determine major source emission levels, nor are they subject to consideration for inclusion. In addition, currently biogenic CO<sub>2</sub> emissions are not counted as part of this total until July 21, 2014, although this exclusion could become permanent based on EPA’s final determination.<sup>2</sup> 76 Fed. Reg. 43490 (July 20, 2011).

For purposes of the federal Title V rules, this facility’s GHGs (excluding fugitive emissions and biogenic CO<sub>2</sub> emissions) are estimated at 77.7 TPY of CO<sub>2</sub>e, which is less than the 100,000 TPY CO<sub>2</sub>e threshold for Title V applicability, and therefore this facility’s GHGs are not “subject to regulation.” Even if this facility’s GHGs were “subject to regulation,” the facility’s potential to emit mass GHGs (aggregate sum of six pollutants, without regard to global warming potential) is estimated at 1.1 TPY which is below the Title V major source level of 100 TPY. Therefore this facility does not emit or have the potential to emit GHGs at Title V major source levels.

Emission Unit	Short Tons CO2 eq.		
	Anthropogenic	Biogenic	TOTAL
EU 003	77.7	30,190.5	30,268.2

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<sup>2</sup> Depending on the outcome and timing of EPA’s determination, it is possible that EPA could undertake a new rulemaking with an earlier date that would supersede the current rule language.

# **EXECUTIVE SUMMARY**

## **APPLICATION**

In accordance with FDEP requirements for Title V Air Operating Permit Renewals, CEC is submitting the following information for FDEP review:

- FDEP Title V Application Forms;
- Emissions Calculations and LandGEM Results (Appendix A);
- Regulatory Applicability Lists (Appendix B); and
- Compliance Report and Plan (Appendix C).



# Department of Environmental Protection

## Division of Air Resource Management

### APPLICATION FOR AIR PERMIT - LONG FORM

#### I. APPLICATION INFORMATION

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

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

**Air Operation Permit** – Use this form to apply for:

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

**To ensure accuracy, please see form instructions.**

#### Identification of Facility

1. Facility Owner/Company Name: Waste Management Inc. of Florida	
2. Site Name: Gulf Coast Sanitary Landfill	
3. Facility Identification Number: 0710133	
4. Facility Location... Street Address or Other Locator: 11990 State Road 82 East City: Fort Myers                      County: Lee                      Zip Code: 33913	
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Title V Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

#### Application Contact

1. Application Contact Name: Alexander Lacsamana, PE	
2. Application Contact Mailing Address... Organization/Firm: Waste Management Inc. Closed Sites Management Group Street Address: 1850 Parkway Place, Suite 600 City: Marietta                      State: Georgia                      Zip Code: 30067	
3. Application Contact Telephone Numbers... Telephone: (770) 590-2936              ext.              Fax: (866) 213-3007	
4. Application Contact E-mail Address: alacsama@wm.com	

#### Application Processing Information (DEP Use)

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

## APPLICATION INFORMATION

### Purpose of Application

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

#### **Air Construction Permit**

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

#### **Air Operation Permit**

- Initial Title V air operation permit.
- Title V air operation permit revision.
- Title V air operation permit renewal.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

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

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

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

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

### Application Comment

This application is a revision to the Title V Operating Permit (0710133-015-AV) to address removal of the operating and reporting requirements of 40 CFR Part 60, Subpart WWW and 40 CFR Part 63, Subpart AAAA for the gas collection and control system (GCCS) at the Gulf Coast Sanitary Landfill. On December 6, 2013, a summary report for the non-methane organic compound (NMOC) sampling was submitted to FDEP, which documented the site-wide NMOC concentration less than 50 megagrams (Mg) per year for three consecutive events per §60.754(b).

Since the NMOC concentrations are below 50 Mg/year and the conditions of §60.752(b)(2)(v) have been met, the GCCS will no longer be required to meet the operational and record keeping/reporting standards identified in 40 CFR Part 60, Subpart WWW and 40 CFR Part 63, Subpart AAA on the 15 year anniversary of the site's initial performance test, which is June 2014. WMIF requests that this permit be issued on July 1, 2014.



## APPLICATION INFORMATION

### Owner/Authorized Representative Statement

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

1. Owner/Authorized Representative Name : N/A
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Owner/Authorized Representative Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Owner/Authorized Representative E-mail Address:
5. Owner/Authorized Representative Statement:  <i>I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.</i>  _____ Signature  _____ Date

## APPLICATION INFORMATION

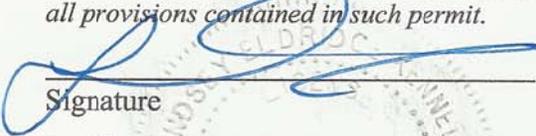
### Application Responsible Official Certification

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

1. Application Responsible Official Name: <b>Alexander Lacsamana, PE</b>
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable): <input checked="" type="checkbox"/> For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C. <input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively. <input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official. <input type="checkbox"/> The designated representative at an Acid Rain source or CAIR source.
3. Application Responsible Official Mailing Address... Organization/Firm: <b>Waste Management Inc. of Florida</b> Street Address: <b>1850 Parkway Place, Suite 600</b> City: <b>Marietta</b> State: <b>Georgia</b> Zip Code: <b>30067</b>
4. Application Responsible Official Telephone Numbers... Telephone: <b>(770) 590-2936</b> ext. Fax: <b>(866) 213-3007</b>
5. Application Responsible Official E-mail Address: <b>alacsama@wm.com</b>
6. Application Responsible Official Certification: <p>I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.</p> <p> Signature</p> <p><u>5/21/14</u> Date</p>

**APPLICATION INFORMATION**

**Professional Engineer Certification**

1. Professional Engineer Name: <b>Lindsey E. Kennelly</b> Registration Number: <b>64771</b>
2. Professional Engineer Mailing Address... Organization/Firm: <b>Carlson Environmental Consultants, PC</b> Street Address: <b>305 S. Main Street</b> City: <b>Monroe</b> State: <b>NC</b> Zip Code: <b>28112</b>
3. Professional Engineer Telephone Numbers... Telephone: <b>(813) 220-9790</b> ext. Fax: <b>(704) 283-9755</b>
4. Professional Engineer E-mail Address: <b>lkennelly@cecenv.com</b>
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i>  <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i>  <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i>  <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input checked="" type="checkbox"/>, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i>  <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input type="checkbox"/>, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i>  <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i>   Signature _____ Date <u>6/10/14</u> (seal)

\* Attach any exception to certification statement.

## II. FACILITY INFORMATION

### A. GENERAL FACILITY INFORMATION

#### Facility Location and Type

1. Facility UTM Coordinates... Zone 17 East (424.22) North (2924.82)		2. Facility Latitude/Longitude... Latitude (26/36/8.1324) Longitude (81/45/46.1736)	
3. Governmental Facility Code: 3	4. Facility Status Code: A	5. Facility Major Group SIC Code: 49	6. Facility SIC(s): 4953
7. Facility Comment : Facility is a closed MSW Landfill.			

#### Facility Contact

1. Facility Contact Name: Alexander Lacsamana, PE, District Manager
2. Facility Contact Mailing Address... Organization/Firm: Waste Management Closed Site Management Group Street Address: 1850 Parkway Place, Suite 600 <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <span>City: Marietta</span> <span>State: GA</span> <span>Zip Code: 30067</span> </div>
3. Facility Contact Telephone Numbers: Telephone: (770) 590-2936 ext. Fax: (866) 213-3007
4. Facility Contact E-mail Address: alacsama@wm.com

#### Facility Primary Responsible Official

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

1. Facility Primary Responsible Official Name: N/A
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <span>City:</span> <span>State:</span> <span>Zip Code:</span> </div>
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official E-mail Address:

## FACILITY INFORMATION

### Facility Regulatory Classifications

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

1. <input type="checkbox"/> Small Business Stationary Source	<input type="checkbox"/> Unknown
2. <input type="checkbox"/> Synthetic Non-Title V Source	
3. <input checked="" type="checkbox"/> Title V Source	
4. <input checked="" type="checkbox"/> Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. <input type="checkbox"/> Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. <input type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)	
7. <input type="checkbox"/> Synthetic Minor Source of HAPs	
8. <input type="checkbox"/> One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. <input type="checkbox"/> One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. <input type="checkbox"/> One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. <input type="checkbox"/> Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	
<p>This facility is subject to the New Source Performance Standards (NSPS) for solid waste landfills, promulgated by USEPA under 40 CFR 60 subpart WWW as well as the National Emissions Standards for Hazardous Air Pollutants (NESHAP) promulgated by USEPA under 40 CFR 63 subpart AAAA. As demonstrated in the December 6, 2013 submittal to FDEP, the NMOC concentrations for GCLF are below 50 Mg/year and the conditions of §60.752(b)(2)(v) have been met; therefore, GCCS will no be longer required to meet the operational and record keeping/reporting standards identified in 40 CFR Part 60, Subpart WWW and 40 CFR Part 63, Subpart AAA on the 15 year anniversary of the site’s initial performance test, which is June 2014.</p> <p>See the Title V Core List in Attachment B for a full list of applicable Federal and State regulations.</p>	

**FACILITY INFORMATION**

**List of Pollutants Emitted by Facility**

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
<b>CO</b>	<b>B</b>	<b>N</b>
<b>NMOC</b>	<b>B</b>	<b>N</b>
<b>NO<sub>x</sub></b>	<b>B</b>	<b>N</b>
<b>PM</b>	<b>B</b>	<b>N</b>
<b>PM<sub>10</sub></b>	<b>B</b>	<b>N</b>
<b>PM<sub>2.5</sub></b>	<b>B</b>	<b>N</b>
<b>SO<sub>2</sub></b>	<b>A</b>	<b>N</b>
<b>VOC</b>	<b>B</b>	<b>N</b>
<b>HAP</b>	<b>B</b>	<b>N</b>
<b>TRS</b>	<b>B</b>	<b>N</b>
<b>HCl</b>	<b>B</b>	<b>N</b>
<b>CO<sub>2e</sub></b>	<b>B</b>	<b>N</b>



## FACILITY INFORMATION

### C. FACILITY ADDITIONAL INFORMATION

#### **Additional Requirements for All Applications, Except as Otherwise Stated**

1.	Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July 18, 2011</u>
2.	Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July 18, 2011</u>
3.	Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July 18, 2011</u>

#### **Additional Requirements for Air Construction Permit Applications**

1.	Area Map Showing Facility Location: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (existing permitted facility)
2.	Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL): <input type="checkbox"/> Attached, Document ID: <u>N/A</u>
3.	Rule Applicability Analysis: <input type="checkbox"/> Attached, Document ID: <u>N/A</u>
4.	List of Exempt Emissions Units: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (no exempt units at facility)
5.	Fugitive Emissions Identification: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
6.	Air Quality Analysis (Rule 62-212.400(7), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
7.	Source Impact Analysis (Rule 62-212.400(5), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
8.	Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
9.	Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10.	Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**FACILITY INFORMATION**

**C. FACILITY ADDITIONAL INFORMATION (CONTINUED)**

**Additional Requirements for FESOP Applications**

1. List of Exempt Emissions Units: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (no exempt units at facility)
--

**Additional Requirements for Title V Air Operation Permit Applications**

1. List of Insignificant Activities: (Required for initial/renewal applications only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (revision application)
--

2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought) <input checked="" type="checkbox"/> Attached, Document ID: <u>Appendix B</u> <input type="checkbox"/> Not Applicable (revision application with no change in applicable requirements)
--

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

4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Equipment/Activities Onsite but Not Required to be Individually Listed <input checked="" type="checkbox"/> Not Applicable
---

5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
--

6. Requested Changes to Current Title V Air Operation Permit: <input checked="" type="checkbox"/> Attached, Document ID: <u>Executive Summary</u> <input type="checkbox"/> Not Applicable
--

**FACILITY INFORMATION**

**C. FACILITY ADDITIONAL INFORMATION (CONTINUED)**

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

<p>1. Acid Rain Program Forms:</p> <p>Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____</p> <p><input checked="" type="checkbox"/> Not Applicable (not an Acid Rain source)</p> <p>Phase II NO<sub>x</sub> Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____</p> <p><input checked="" type="checkbox"/> Not Applicable</p> <p>New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____</p> <p><input checked="" type="checkbox"/> Not Applicable</p>
<p>2. CAIR Part (DEP Form No. 62-210.900(1)(b)):</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____</p> <p><input checked="" type="checkbox"/> Not Applicable (not a CAIR source)</p>

**Additional Requirements Comment**

<p>N/A</p>
------------



**EMISSIONS UNIT INFORMATION**  
**Section [1] of [2] – MSW Landfill (002)**

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

- |  |
|--|
| 1. Control Equipment/Method Description:<br>A gas collection and control system (GCCS) is installed in applicable sections of the landfill. According to AP-42, Section 2.4, the GCCS is estimated to capture approximately 75% of emissions from the landfill. Therefore, approximately 25% of the total landfill emissions generated in the landfill escape as fugitive emissions. |
| 2. Control Device or Method Code: EU 003   |

**Emissions Unit Control Equipment/Method:** Control \_\_\_ of \_\_\_

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

**Emissions Unit Control Equipment/Method:** Control \_\_\_ of \_\_\_

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

**Emissions Unit Control Equipment/Method:** Control \_\_\_ of \_\_\_

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

**EMISSIONS UNIT INFORMATION**  
**Section [1] of [2] – MSW Landfill (002)**

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

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Process or Throughput Rate: 160 acres	
2. Maximum Production Rate: Maximum waste capacity is approx. 5,743,209 MM Mg.	
3. Maximum Heat Input Rate: N/A	
4. Maximum Incineration Rate: N/A	
5. Requested Maximum Operating Schedule:	
24 hours/day	7 days/week
52 weeks/year	8,760 hours/year
6. Operating Capacity/Schedule Comment: The GCCS and control device (EU 003) are continuously operating to control LFG emissions, however the Landfill (EU 002) itself is closed and no longer accepts waste.  Since the NMOC concentrations are below 50 Mg/year and the conditions of §60.752(b)(2)(v) have been met, the GCCS will no be longer required to meet the operational and record keeping/reporting standards identified in 40 CFR Part 60, Subpart WWW and 40 CFR Part 63, Subpart AAAA on the 15 year anniversary of the site’s initial performance test, which is June 2014. However, GCLF will continue to operate the GCCS for odor control purposes.	

**EMISSIONS UNIT INFORMATION**  
**Section [1] of [2] – MSW Landfill (002)**

**C. EMISSION POINT (STACK/VENT) INFORMATION**  
**(Optional for unregulated emissions units.)**

**Emission Point Description and Type**

1. Identification of Point on Plot Plan or Flow Diagram: N/A		2. Emission Point Type Code: 4	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Fugitive surface emissions			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: N/A			
5. Discharge Type Code: F	6. Stack Height: N/A		7. Exit Diameter: N/A
8. Exit Temperature: Varies	9. Actual Volumetric Flow Rate: Varies		10. Water Vapor: Varies
11. Maximum Dry Standard Flow Rate: Varies		12. Nonstack Emission Point Height: N/A	
13. Emission Point UTM Coordinates... N/A		14. Emission Point Latitude/Longitude...	
15. Emission Point Comment: Area source fugitive emissions			

**EMISSIONS UNIT INFORMATION**  
**Section [1] of [2] – MSW Landfill (002)**

**D. SEGMENT (PROCESS/FUEL) INFORMATION**

**Segment Description and Rate:** Segment \_\_ of \_\_

1. Segment Description (Process/Fuel Type): N/A		
2. Source Classification Code (SCC): N/A		3. SCC Units: N/A
4. Maximum Hourly Rate: N/A	5. Maximum Annual Rate: N/A	6. Estimated Annual Activity Factor: N/A
7. Maximum % Sulfur: N/A	8. Maximum % Ash: N/A	9. Million Btu per SCC Unit: N/A
10. Segment Comment: N/A		

**Segment Description and Rate:** Segment \_\_ of \_\_

1. Segment Description (Process/Fuel Type): N/A		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

**EMISSIONS UNIT INFORMATION**  
**Section [1] of [2] – MSW Landfill (002)**

**D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)**

**Segment Description and Rate:** Segment \_\_ of \_\_

1. Segment Description (Process/Fuel Type): N/A		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

**Segment Description and Rate:** Segment \_\_ of \_\_

1. Segment Description (Process/Fuel Type): N/A		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		



**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**  
 (Optional for unregulated emissions units.)

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: NMOC		2. Total Percent Efficiency of Control: 75%	
3. Potential Emissions: 1.4 lb/hour                      6.3 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year			
6. Emission Factor: 25% fugitive emissions  Reference: EPA LandGEM		7. Emissions Method Code: 3	
8.a. Baseline Actual Emissions (if required): N/A                      tons/year		8.b. Baseline 24-month Period: N/A From:                      To:	
9.a. Projected Actual Emissions (if required): N/A                      tons/year		9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  See Appendix A-1 and A-2 for the LandGEM output and fugitive NMOC emission calculations based on the average NMOC concentration obtained during the 2013 sampling per 60.754(b).			
11. Potential, Fugitive, and Actual Emissions Comment:  Assume 75% collection efficiency per EPA AP-42 Section 2.4. Thus, 25% of LFG generation is fugitive emissions.			

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS  
 (Optional for unregulated emissions units.)**

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control: 75%
3. Potential Emissions: 0.6 lb/hour                      2.4 tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year	
6. Emission Factor: 25% fugitive emissions  Reference: EPA LandGEM	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): N/A                      tons/year	8.b. Baseline 24-month Period: N/A From:                      To:
9.a. Projected Actual Emissions (if required): N/A                      tons/year	9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years
10. Calculation of Emissions:  See Appendix A-1 and A-2 for the LandGEM output and fugitive VOC emission calculations.  Per Note C of AP-42, Table 2.4-2, VOC emissions are assumed to be 39% of the fugitive NMOC emissions using the average NMOC concentration obtained during the 2013 sampling per 60.754(b).	
11. Potential, Fugitive, and Actual Emissions Comment:  Assume 75% collection efficiency per EPA AP-42 Section 2.4. Thus, 25% of LFG generation is fugitive emissions. Per Note C of AP-42, Table 2.4-2, VOC emissions are assumed to be 39% of the fugitive NMOC emissions.	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**  
 (Optional for unregulated emissions units.)

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: HAP		2. Total Percent Efficiency of Control: 75%	
3. Potential Emissions: 0.5 lb/hour                      2.2 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year			
6. Emission Factor: 25% fugitive emissions  Reference: EPA LandGEM		7. Emissions Method Code: 3	
8.a. Baseline Actual Emissions (if required): N/A                      tons/year		8.b. Baseline 24-month Period: N/A From:                      To:	
9.a. Projected Actual Emissions (if required): N/A                      tons/year		9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  See Appendix A-1 and A-2 for the LandGEM output and fugitive HAPs emission calculations.			
11. Potential, Fugitive, and Actual Emissions Comment:  Assume 75% collection efficiency per EPA AP-42 Section 2.4. Thus, 25% of LFG generation is fugitive emissions. AP-42 Table 2.4-1 default concentrations used for HAPs only.			

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**  
 (Optional for unregulated emissions units.)

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: TRS	2. Total Percent Efficiency of Control: 75%
3. Potential Emissions: 7.0 lb/hour                      30.6 tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year	
6. Emission Factor: 4,534 ppmv  Reference: Average H <sub>2</sub> S concentration of 4,534 ppmv, from 2012-2014 quarterly site-specific H <sub>2</sub> S sampling. See Appendix A-3.	7. Emissions Method Code: 1
8.a. Baseline Actual Emissions (if required): N/A                      tons/year	8.b. Baseline 24-month Period: N/A From:                      To:
9.a. Projected Actual Emissions (if required): N/A                      tons/year	9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years
10. Calculation of Emissions:  See Appendix A-1 and A-2 for the LandGEM output and fugitive TRS emission calculations. Site specific TRS concentration obtained from quarterly monitoring, see Appendix A-3.	
11. Potential, Fugitive, and Actual Emissions Comment:  Assume 75% collection efficiency per EPA AP-42 Section 2.4. Thus, 25% of LFG generation is fugitive emissions.	

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -  
 ALLOWABLE EMISSIONS**

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

**Allowable Emissions** Allowable Emissions \_\_ of \_\_

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

**Allowable Emissions** Allowable Emissions \_\_ of \_\_

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

**Allowable Emissions** Allowable Emissions \_\_ of \_\_

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



**EMISSIONS UNIT INFORMATION**  
**Section [1] of [2] – MSW Landfill (002)**

**H. CONTINUOUS MONITOR INFORMATION**

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

**Continuous Monitoring System:** Continuous Monitor \_\_\_ of \_\_\_

1. Parameter Code: N/A	2. Pollutant(s): N/A
3. CMS Requirement: N/A	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: N/A Model Number: Serial Number:	
5. Installation Date: N/A	6. Performance Specification Test Date: N/A
7. Continuous Monitor Comment: N/A	

**Continuous Monitoring System:** Continuous Monitor \_\_\_ of \_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

**EMISSIONS UNIT INFORMATION**  
**Section [1] of [2] – MSW Landfill (002)**

**I. EMISSIONS UNIT ADDITIONAL INFORMATION**

**Additional Requirements for All Applications, Except as Otherwise Stated**

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>July 18, 2011</u>
2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>July 18, 2011</u>
3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: : _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>July 18, 2011</u>
4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>2006</u> <input type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>2006</u> <input type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**EMISSIONS UNIT INFORMATION**  
**Section [1] of [2] – MSW Landfill (002)**

**I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)**

**Additional Requirements for Air Construction Permit Applications**

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

**Additional Requirements for Title V Air Operation Permit Applications**

1. Identification of Applicable Requirements: <input checked="" type="checkbox"/> Attached, Document ID: Appendix C_
2. Compliance Assurance Monitoring: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
3. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**Additional Requirements Comment**

N/A
-----



**EMISSIONS UNIT INFORMATION**

**Section [2] of [2] – 4,300 scfm open flare (003)**

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

- |  |
|--|
| 1. Control Equipment/Method Description:<br>A gas collection and control system (GCCS) is installed in applicable sections of the landfill. According to AP-42, Section 2.4, the GCCS is estimated to capture approximately 75% of emissions from the landfill. Therefore, approximately 25% of the total landfill emissions generated in the landfill escape as fugitive emissions. |
| 2. Control Device or Method Code: EU 003   |

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

- |  |
|--|
| 1. Control Equipment/Method Description:<br>Open flare with a maximum flow of 4,300 scfm |
| 2. Control Device or Method Code: 23   |

**Emissions Unit Control Equipment/Method: Control \_\_ of \_\_**

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

**Emissions Unit Control Equipment/Method: Control \_\_ of \_\_**

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

**EMISSIONS UNIT INFORMATION**

**Section [2] of [2] – 4,300 scfm open flare (003)**

**B. EMISSIONS UNIT CAPACITY INFORMATION**

**(Optional for unregulated emissions units.)**

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Process or Throughput Rate: 4,300 scfm
2. Maximum Production Rate: N/A
3. Maximum Heat Input Rate: 130.6 MMBtu/hr
4. Maximum Incineration Rate: N/A
5. Requested Maximum Operating Schedule: 24 hours/day 7 days/week 52 weeks/year 8,760 hours/year
6. Operating Capacity/Schedule Comment:  Since the facility is closed to new wastes, the flow rate of LFG to the flare has decreased over time as shown in Attachment A-1. The 2014 LFG Collection Rate was used to calculate PTE.  2014 LFG Generation Rate = 1,316 scfm 2014 LFG Collection Rate = 990 scfm (Generation x 75% collection efficiency) 2014 Heat Input Rate = 30.1 MMBtu/hr (assuming 50% methane)

**EMISSIONS UNIT INFORMATION**

**Section [2] of [2] – 4,300 scfm open flare (003)**

**C. EMISSION POINT (STACK/VENT) INFORMATION**

**(Optional for unregulated emissions units.)**

**Emission Point Description and Type**

1. Identification of Point on Plot Plan or Flow Diagram: Utility flare station		2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:  4,300 scfm open flare.			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: N/A			
5. Discharge Type Code: P	6. Stack Height:42'		7. Exit Diameter: 1 foot
8. Exit Temperature: 1,400 °F *see comment below	9. Actual Volumetric Flow Rate: 4,300 scfm	10. Water Vapor: Varies	
11. Maximum Dry Standard Flow Rate: 4,300 scfm		12. Nonstack Emission Point Height: N/A	
13. Emission Point UTM Coordinates... N/A		14. Emission Point Latitude/Longitude... N/A	
15. Emission Point Comment:  *The landfill gas combustion temperature occurring after the tip of the flare tip is approximately 1,400 °F.			

**EMISSIONS UNIT INFORMATION**

Section [2] of [2] – 4,300 scfm open flare (003)

**D. SEGMENT (PROCESS/FUEL) INFORMATION****Segment Description and Rate:** Segment 1 of 1

1. Segment Description (Process/Fuel Type): Landfill gas combusted in the open flare		
2. Source Classification Code (SCC): 5-03-006-01		3. SCC Units: Million cubic feet landfill gas burned
4. Maximum Hourly Rate: 0.26	5. Maximum Annual Rate: 2,260	6. Estimated Annual Activity Factor: N/A
7. Maximum % Sulfur: N/A	8. Maximum % Ash: N/A	9. Million Btu per SCC Unit: 550
10. Segment Comment: N/A		

**Segment Description and Rate:** Segment    of   

1. Segment Description (Process/Fuel Type): N/A		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

**EMISSIONS UNIT INFORMATION**

**Section [2] of [2] – 4,300 scfm open flare (003)**

**E. EMISSIONS UNIT POLLUTANTS**

**List of Pollutants Emitted by Emissions Unit**

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
NO <sub>x</sub>	023	N/A	N/A
VOC	023	N/A	N/A
HAP	023	N/A	N/A
NMOC	023	N/A	N/A
CO	023	N/A	N/A
SO <sub>x</sub>	023	N/A	N/A
PM/PM-10/PM-2.5	023	N/A	N/A
HCl	023	N/A	N/A
CO <sub>2</sub> e (Anth.)	023	N/A	N/A

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

**(Optional for unregulated emissions units.)**

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: NOx		2. Total Percent Efficiency of Control: N/A	
3. Potential Emissions: 2.0 lb/hour                      9.0 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year			
6. Emission Factor: 0.068 lb/MMBtu  Reference: Parnel Biogas (flare manufacturer)		7. Emissions Method Code: 3	
8.a. Baseline Actual Emissions (if required): N/A                      tons/year		8.b. Baseline 24-month Period: N/A From:                      To:	
9.a. Projected Actual Emissions (if required): N/A                      tons/year		9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  See Appendix A-4 for the flare combustion calculations. The 2014 LFG Collection Rate was used to calculate PTE.  2014 LFG Generation Rate = 1,316 scfm 2014 LFG Collection Rate = 990 scfm (Generation x 75% collection efficiency) 2014 Heat Input Rate = 30.1 MMBtu/hr (assuming 50% methane)			
11. Potential, Fugitive, and Actual Emissions Comment:			

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

**(Optional for unregulated emissions units.)**

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: VOC		2. Total Percent Efficiency of Control: N/A	
3. Potential Emissions: 0.01 lb/hour                      0.1 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year			
6. Emission Factor: 98% destruction efficiency  Reference: AP-42, Section 2.4		7. Emissions Method Code: 3	
8.a. Baseline Actual Emissions (if required): N/A                      tons/year		8.b. Baseline 24-month Period: N/A From:                      To:	
9.a. Projected Actual Emissions (if required): N/A                      tons/year		9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  See Appendix A-4 for the flare combustion calculations. The 2014 LFG Collection Rate was used to calculate PTE.  2014 LFG Generation Rate = 1,316 scfm 2014 LFG Collection Rate = 990 scfm (Generation x 75% collection efficiency) 2014 Heat Input Rate = 30.1 MMBtu/hr (assuming 50% methane)  Per Note C of AP-42, Table 2.4-2, VOC emissions are assumed to be 39% of the fugitive NMOC emissions using the average NMOC concentration obtained during the 2013 sampling per 60.754(b).			
11. Potential, Fugitive, and Actual Emissions Comment:			

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

**(Optional for unregulated emissions units.)**

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: HAPs		2. Total Percent Efficiency of Control: N/A	
3. Potential Emissions: 0.03 lb/hour                      0.1 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year			
6. Emission Factor: 98 % destruction efficiency Reference: AP-42, Section 2.4		7. Emissions Method Code: 3	
8.a. Baseline Actual Emissions (if required): N/A                      tons/year		8.b. Baseline 24-month Period: N/A From:                      To:	
9.a. Projected Actual Emissions (if required): N/A                      tons/year		9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  See Appendix A-4 for the flare combustion calculations. The 2014 LFG Collection Rate was used to calculate PTE.  2014 LFG Generation Rate = 1,316 scfm 2014 LFG Collection Rate = 990 scfm (Generation x 75% collection efficiency) 2014 Heat Input Rate = 30.1 MMBtu/hr (assuming 50% methane)			
11. Potential, Fugitive, and Actual Emissions Comment:			

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

**(Optional for unregulated emissions units.)**

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: NMOC		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.03 lb/hour                      0.2 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year			
6. Emission Factor: 99.2 % destruction efficiency  Reference: AP-42, Section 2.4		7. Emissions Method Code: 3	
8.a. Baseline Actual Emissions (if required): N/A                      tons/year		8.b. Baseline 24-month Period: N/A From:                      To:	
9.a. Projected Actual Emissions (if required): N/A                      tons/year		9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  See Appendix A-4 for the flare combustion calculations. The 2014 LFG Collection Rate was used to calculate PTE.  2014 LFG Generation Rate = 1,316 scfm 2014 LFG Collection Rate = 990 scfm (Generation x 75% collection efficiency) 2014 Heat Input Rate = 30.1 MMBtu/hr (assuming 50% methane)  The NMOC emissions were calculated using the average NMOC concentration obtained during the 2013 sampling per 60.754(b).			
11. Potential, Fugitive, and Actual Emissions Comment:			

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS  
(Optional for unregulated emissions units.)**

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: CO	2. Total Percent Efficiency of Control: N/A
3. Potential Emissions: 11.1 lb/hour                      48.7 tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year	
6. Emission Factor: 0.37 lb/MMBtu  Reference: Parnel Biogas	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): N/A                      tons/year	8.b. Baseline 24-month Period: N/A From:                      To:
9.a. Projected Actual Emissions (if required): N/A                      tons/year	9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years
10. Calculation of Emissions:  See Appendix A-4 for the flare combustion calculations. The 2014 LFG Collection Rate was used to calculate PTE.  2014 LFG Generation Rate = 1,316 scfm 2014 LFG Collection Rate = 990 scfm (Generation x 75% collection efficiency) 2014 Heat Input Rate = 30.1 MMBtu/hr (assuming 50% methane)	
11. Potential, Fugitive, and Actual Emissions Comment:	

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

(Optional for unregulated emissions units.)

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: SOx		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 41.2 lb/hour                      180.6 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year			
6. Emission Factor: 4,534 ppmv TRS  Reference: Average H <sub>2</sub> S concentration of 4,534ppmv, from 2012-2014 quarterly site-specific H <sub>2</sub> S sampling. See Appendix A-3.		7. Emissions Method Code: 1	
8.a. Baseline Actual Emissions (if required): N/A                      tons/year		8.b. Baseline 24-month Period: N/A From:                      To:	
9.a. Projected Actual Emissions (if required): N/A                      tons/year		9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  See Appendix A-4 for the flare combustion calculations. The 2014 LFG Collection Rate was used to calculate PTE.  2014 LFG Generation Rate = 1,316 scfm 2014 LFG Collection Rate = 990 scfm (Generation x 75% collection efficiency) 2014 Heat Input Rate = 30.1 MMBtu/hr (assuming 50% methane)  Site specific TRS concentration obtained from quarterly monitoring from 2012 through the first quarter of 2014 is located in Appendix A-3.			
11. Potential, Fugitive, and Actual Emissions Comment:			

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

**(Optional for unregulated emissions units.)**

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: PM / PM-10 / PM-2.5	2. Total Percent Efficiency of Control: N/A
3. Potential Emissions: 0.5 lb/hour (each)      2.2 tons/year (each)	4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year	
6. Emission Factor: 17 lb/10 <sup>6</sup> ft <sup>3</sup> CH <sub>4</sub> Reference: AP-42, Section 2.4	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): N/A tons/year	8.b. Baseline 24-month Period: N/A From:                      To:
9.a. Projected Actual Emissions (if required): N/A tons/year	9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years
10. Calculation of Emissions:  See Appendix A-4 for the flare combustion calculations. The 2014 LFG Collection Rate was used to calculate PTE.  2014 LFG Generation Rate = 1,316 scfm 2014 LFG Collection Rate = 990 scfm (Generation x 75% collection efficiency) 2014 Heat Input Rate = 30.1 MMBtu/hr (assuming 50% methane)	
11. Potential, Fugitive, and Actual Emissions Comment:	

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

**(Optional for unregulated emissions units.)**

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: HCl		2. Total Percent Efficiency of Control: N/A	
3. Potential Emissions: 0.2 lb/hour                      1.0 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year			
6. Emission Factor: 42.0 ppmv Cl  Reference: AP-42, Section 2.4		7. Emissions Method Code: 3	
8.a. Baseline Actual Emissions (if required): N/A                      tons/year		8.b. Baseline 24-month Period: N/A From:                      To:	
9.a. Projected Actual Emissions (if required): N/A                      tons/year		9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  See Appendix A-4 for the flare combustion calculations. The 2014 LFG Collection Rate was used to calculate PTE.  2014 LFG Generation Rate = 1,316 scfm 2014 LFG Collection Rate = 990 scfm (Generation x 75% collection efficiency) 2014 Heat Input Rate = 30.1 MMBtu/hr (assuming 50% methane)			
11. Potential, Fugitive, and Actual Emissions Comment:			

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**  
 (Optional for unregulated emissions units.)

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: CO <sub>2</sub> e	2. Total Percent Efficiency of Control: N/A
3. Potential Emissions: 6,910.5 lb/hour    30,268.2 tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): N/A to tons/year	
6. Emission Factor:  Reference: 40 CFR Part 98 Tables C-1 and C-2	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): N/A tons/year	8.b. Baseline 24-month Period: N/A From:                      To:
9.a. Projected Actual Emissions (if required): N/A tons/year	9.b. Projected Monitoring Period: N/A <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years
10. Calculation of Emissions:  See Appendix A-4 for the flare combustion calculations. The 2014 LFG Collection Rate was used to calculate PTE.  2014 LFG Generation Rate = 1,316 scfm 2014 LFG Collection Rate = 990 scfm (Generation x 75% collection efficiency) 2014 Heat Input Rate = 30.1 MMBtu/hr (assuming 50% methane)  Anthropogenic CO <sub>2</sub> e = 77.7 tons/yr Biogenic CO <sub>2</sub> e = 30,190.5 tons/yr	
11. Potential, Fugitive, and Actual Emissions Comment:	

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -  
ALLOWABLE EMISSIONS**

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

**Allowable Emissions** Allowable Emissions \_\_ of \_\_

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

**Allowable Emissions** Allowable Emissions \_\_ of \_\_

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

**Allowable Emissions** Allowable Emissions \_\_ of \_\_

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

**EMISSIONS UNIT INFORMATION**  
**Section [2] of [2] – 4,300 scfm open flare (003)**

**G. VISIBLE EMISSIONS INFORMATION**

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

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

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: N <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: 5 minutes of visible emissions within 2 hour EPA Method 22 test Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: 5 minutes in 2-hour test	
4. Method of Compliance: 40 CFR 60.18	
5. Visible Emissions Comment:  Per 40 CFR 60.18, the open flare is allowed to have no visible emissions lasting more than 5 minutes during the 2 hour EPA Method 22 Visual Emissions Test.	

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

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

**EMISSIONS UNIT INFORMATION**  
**Section [2] of [2] – 4,300 scfm open flare (003)**

**H. CONTINUOUS MONITOR INFORMATION**

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

**Continuous Monitoring System:** Continuous Monitor \_\_\_ of \_\_\_

1. Parameter Code: N/A	2. Pollutant(s): N/A
3. CMS Requirement: N/A <input type="checkbox"/> Rule <input type="checkbox"/> Other	
4. Monitor Information... N/A Manufacturer: Model Number: <span style="float: right;">Serial Number:</span>	
5. Installation Date: N/A	6. Performance Specification Test Date: N/A
7. Continuous Monitor Comment: N/A	

**Continuous Monitoring System:** Continuous Monitor \_\_\_ of \_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement: <input type="checkbox"/> Rule <input type="checkbox"/> Other	
4. Monitor Information... Manufacturer: Model Number: <span style="float: right;">Serial Number:</span>	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

**EMISSIONS UNIT INFORMATION**

**Section [2] of [2] – 4,300 scfm open flare (003)**

**I. EMISSIONS UNIT ADDITIONAL INFORMATION**

**Additional Requirements for All Applications, Except as Otherwise Stated**

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>July 18, 2011</u>
2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>July 18, 2011</u>
3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: : _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>July 18, 2011</u>
4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>2006</u> <input type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>2006</u> <input type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable  Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**EMISSIONS UNIT INFORMATION**  
**Section [2] of [2] – 4,300 scfm open flare (003)**

**I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)**

**Additional Requirements for Air Construction Permit Applications**

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

**Additional Requirements for Title V Air Operation Permit Applications**

1. Identification of Applicable Requirements: <input checked="" type="checkbox"/> Attached, Document ID: _____
2. Compliance Assurance Monitoring: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
3. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**Additional Requirements Comment**

N/A
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**APPENDIX A**  
**EMISSION CALCULATIONS AND LANDGEM RESULTS**

## ATTACHMENT A-1. LANDFILL GAS GENERATION RATE

<b>CARLSON ENVIRONMENTAL CONSULTANTS, PC</b>			
CLIENT Waste Management Inc. of Florida	PROJECT Gulf Coast Sanitary Landfill	JOB NO. 101.05.62	
SUBJECT TITLE V OPERATING PERMIT MODIFICATION LANDFILL GAS GENERATION RATE CALCULATIONS		BY Lindsey Kennelly	DATE 2/12/2014

Year	Waste Disposal Rate (tons/yr)	Waste In-Place (tons)	Waste Disposal Rate (Mg/yr)	Waste In-Place (Mg)	Methane Generation Rate (m <sup>3</sup> /yr)	LFG Generation Rate (cfm)	LFG Collection Rate (cfm)	LFG Fugitive Rate (cfm)
1976	94,000	0	85,275	0	0.000E+00	0	0	0
1977	136,000	94,000	123,377	85,275	3.411E+05	46	34	11
1978	151,000	230,000	136,985	208,652	8.212E+05	110	83	28
1979	168,000	381,000	152,407	345,637	1.337E+06	180	135	45
1980	185,000	549,000	167,829	498,044	1.894E+06	255	191	64
1981	235,000	734,000	213,188	665,874	2.491E+06	335	251	84
1982	245,000	969,000	222,260	879,062	3.246E+06	436	327	109
1983	259,000	1,214,000	234,961	1,101,322	4.008E+06	539	404	135
1984	258,825	1,473,000	234,802	1,336,283	4.791E+06	644	483	161
1985	263,039	1,731,825	238,625	1,571,085	5.542E+06	745	559	186
1986	288,079	1,994,864	261,341	1,809,710	6.279E+06	844	633	211
1987	323,027	2,282,943	293,045	2,071,051	7.078E+06	951	713	238
1988	257,888	2,605,970	233,952	2,364,096	7.973E+06	1,071	804	268
1989	391,899	2,863,858	355,525	2,598,048	8.596E+06	1,155	866	289
1990	413,191	3,255,757	374,841	2,953,573	9.681E+06	1,301	976	325
1991	390,305	3,668,948	354,079	3,328,414	1.080E+07	1,451	1,089	363
1992	321,278	4,059,253	291,459	3,682,492	1.179E+07	1,585	1,189	396
1993	366,252	4,380,531	332,258	3,973,951	1.250E+07	1,679	1,260	420
1994	244,158	4,746,783	221,496	4,306,209	1.334E+07	1,792	1,344	448
1995	0	4,990,941	0	4,527,706	1.370E+07	1,841	1,381	460
1996	0	4,990,941	0	4,527,706	1.316E+07	1,769	1,327	442
1997	0	4,990,941	0	4,527,706	1.265E+07	1,699	1,275	425
1998	0	4,990,941	0	4,527,706	1.215E+07	1,633	1,225	408
1999	76,148	4,990,941	69,080	4,527,706	1.167E+07	1,569	1,177	392
2000	90,231	5,067,089	81,856	4,596,785	1.149E+07	1,544	1,158	386
2001	93,045	5,157,319	84,409	4,678,642	1.137E+07	1,528	1,146	382
2002	88,252	5,250,365	80,061	4,763,051	1.126E+07	1,513	1,135	378
2003	122,193	5,338,616	110,852	4,843,111	1.114E+07	1,497	1,123	374
2004	232,884	5,460,809	211,269	4,953,963	1.115E+07	1,498	1,123	374
2005	284,918	5,693,694	258,474	5,165,232	1.155E+07	1,553	1,164	388
2006	260,012	5,978,612	235,879	5,423,706	1.214E+07	1,631	1,223	408
2007	68,590	6,238,624	62,223	5,659,584	1.260E+07	1,694	1,270	423
2008	23,591	6,307,213	21,401	5,721,808	1.236E+07	1,661	1,245	415
2009	0	6,330,804	0	5,743,209	1.196E+07	1,607	1,205	402
2010	0	6,330,804	0	5,743,209	1.149E+07	1,544	1,158	386
2011	0	6,330,804	0	5,743,209	1.104E+07	1,483	1,113	371
2012	0	6,330,804	0	5,743,209	1.061E+07	1,425	1,069	356
2013	0	6,330,804	0	5,743,209	1.019E+07	1,369	1,027	342
2014	0	6,330,804	0	5,743,209	9.791E+06	1,316	987	329
2015	0	6,330,804	0	5,743,209	9.407E+06	1,264	948	316
2016	0	6,330,804	0	5,743,209	9.038E+06	1,215	911	304
2017	0	6,330,804	0	5,743,209	8.684E+06	1,167	875	292
2018	0	6,330,804	0	5,743,209	8.343E+06	1,121	841	280
2019	0	6,330,804	0	5,743,209	8.016E+06	1,077	808	269
2020	0	6,330,804	0	5,743,209	7.702E+06	1,035	776	259
2021	0	6,330,804	0	5,743,209	7.400E+06	994	746	249
2022	0	6,330,804	0	5,743,209	7.110E+06	955	717	239
2023	0	6,330,804	0	5,743,209	6.831E+06	918	688	229
2024	0	6,330,804	0	5,743,209	6.563E+06	882	661	220
2025	0	6,330,804	0	5,743,209	6.306E+06	847	636	212

2014 LFG Generation Rate = 1,316 scfm  
2014 LFG Collection Rate = 990 scfm (Generation x 75% collection efficiency)

**MODEL INPUTS:**

AP-42 DEFAULT NMOC CONCENTRATION IN LFG:	595 ppmv
ESTIMATED METHANE CONTENT OF LFG:	50%
AP-42 COLLECTION EFFICIENCY OF LFG SYSTEM:	75%
AP-42 DECAY RATE CONSTANT (k):	0.04
AP-42 ULTIMATE METHANE RECOVERY RATE (Lo):	3,203.7 ft <sup>3</sup> /ton
AP-42 METRIC EQUIVALENT (Lo):	100 cu m/Mg

**CONVERSIONS:**

35.314667 cu ft per cu m
1.1023113 ton per Mg
32.037 cu ft/ton per cu m/Mg

## ATTACHMENT A-2. FUGITIVE EMISSIONS

CARLSON ENVIRONMENTAL CONSULTANTS, PC			
CLIENT Waste Management Inc. of Florida	PROJECT Gulf Coast Sanitary Landfill	JOB NO. 101.05.62	
SUBJECT TITLE V OPERATING PERMIT MODIFICATION FUGITIVE EMISSIONS	BY Lindsey Kennelly	DATE 2/12/2014	

OBJECTIVE: Calculate NMOC, VOC, and HAPs emissions based on the site life flow rate.

Fugitive Flow Rate (Q) = 329 scfm (Source: LandGEM)  
 4,895,468 m<sup>3</sup>/yr  
 % CH4 (M) 50.0% (Typical for LFG)  
 Temperature (T) 37.8 C 100.0 F (Typical for LFG)  
 Operating Time (D) 365 day/year  
 8760 hr/year

### (1) NMOC Emissions

Calculate the NMOC Emissions using the site life flow rate calculated with LandGEM.

- Use the NMOC content from AP-42, 2.4.4

$$MW_{NMOC} = 86.18 \text{ g/gmol}$$

$$C_{NMOC} = 345 \text{ ppmv as hexane. Based on 2013 NMOC Sampling per §60.754(b).}$$

- Use Equations (3) and (4) of AP-42, Section 2.4 to determine NMOC emissions.

$$Eqn (3) Q_{NMOC} = (Q \text{ m}^3/\text{yr}) * (C_{NMOC} \text{ ppmv} / 1E+06) = 1,688.9 \text{ m}^3/\text{yr}$$

$$Eqn (4) UM_{NMOC} = (Q_{NMOC} \text{ m}^3/\text{yr}) * [(MW_{NMOC} \text{ g/gmol} * 1 \text{ atm}) / (8.205E-5 \text{ m}^3 \text{ atm/gmol K} * 1,000 \text{ g/kg} * (273 + T) \text{ K})] = 5,708.1 \text{ kg/yr}$$

$$CM_{NMOC} = (UM_{NMOC} \text{ kg/yr}) * (2.2 \text{ lb/kg}) * (\text{yr}/N \text{ days}) * (\text{day}/24 \text{ hrs}) = 1.4 \text{ lb/hr NMOC}$$

$$CM_{NMOC} = (C_{NMOC} \text{ lb/day}) * (\text{ton}/2000 \text{ lb}) * (N \text{ days/yr}) * (24 \text{ hr/day}) = 6.3 \text{ tons/yr NMOC}$$

<b>1.4</b>	<b>lb/hr NMOC</b>
<b>6.3</b>	<b>tons/yr NMOC</b>

### (2) VOC Emissions

- Per Note c of AP-42, Table 2.4-2, VOC emissions are 39% of NMOC emissions.

$$CM_{VOC} = CM_{NMOC} \text{ lbs/day} * \%NMOCs = 0.6 \text{ lb/hr VOC}$$

$$CM_{VOC} = (C_{NMOC} \text{ tons/yr}) * \%NMOCs = 2.4 \text{ tons/yr VOC}$$

### (3) HAPs Emissions

- Use Equations (3) and (4) from AP-42 Section 2.4 to determine HAP emissions.

$$Eqn (3) Q_p = (Q) * (10^{-6} C_p)$$

Q<sub>p</sub> = Volumetric emission rate of pollutant

C<sub>p</sub> = Concentration of HAP pollutants ONLY (Source: AP-42, Table 2.4-1)

$$M_p = \text{Mass generation of pollutant} = MP = \frac{(QP * MWP * 1 \text{ atm})}{[(8.205 \times 10^{-5} \text{ m}^3 \text{-atm/gmol-K}) (1000 \text{ g/kg}) (273 + (T)K)]}$$

(Source: AP-42, Table 2.4-1)

Pollutant	AP-42 Table 2.4-1		Fugitive HAPs		
	Molecular Weight (g/gmol)	Conc. (C <sub>p</sub> ) (ppmv)	Q <sub>p</sub> (m <sup>3</sup> /yr)	Mass Flow of Pollutant (M <sub>p</sub> )	
				(kg/yr)	(tpy)
methyl chloroform	133.41	0.48	2.35	12.29	0.01
1,1,2,2-tetrachloroethane	167.85	1.11	5.43	35.77	0.04
ethylidene dichloride	98.97	2.35	11.50	44.65	0.05
vinylidene chloride	96.94	0.20	0.98	3.72	0.00
ethylene dichloride	98.96	0.41	2.01	7.79	0.01
propylene dichloride	112.99	0.18	0.88	3.90	0.00
acrylonitrile	53.06	6.33	30.99	64.48	0.07
carbon disulfide	76.13	0.58	2.84	8.48	0.01
carbon tetrachloride	153.84	0.004	0.02	0.12	0.00
carbonyl sulfide	60.07	0.49	2.40	5.65	0.01
chlorobenzene	112.56	0.25	1.22	5.40	0.01
ethyl chloride	64.52	1.25	6.12	15.48	0.02
chloroform	119.39	0.03	0.15	0.69	0.00
1,4-dichlorobenzene	147.00	0.21	1.03	5.93	0.01
methylene chloride	84.94	14.30	70.01	233.19	0.26
ethylbenzene	106.16	4.61	22.57	93.96	0.10
ethylene dibromide	187.88	0.001	0.00	0.04	0.00
hexane	86.18	6.57	32.16	108.70	0.12
methyl ethyl ketone	72.11	7.09	34.71	98.15	0.11
methyl isobutyl ketone	100.16	1.87	9.15	35.96	0.04
perchloroethylene	165.83	3.73	18.26	118.75	0.13
trichloroethylene	131.40	2.82	13.81	71.14	0.08
mercury	200.61	0.0003	0.00	0.01	0.00
benzene	78.11	1.91	9.35	28.64	0.03
toluene	92.13	39.30	192.39	695.12	0.77
vinyl chloride	62.50	7.34	35.93	88.07	0.10
xylenes	106.16	12.10	59.24	246.61	0.27
				<b>TOTAL HAPs</b>	<b>2.24</b>
					<b>0.51</b>

tons/yr  
lb/hr

## ATTACHMENT A-2. FUGITIVE EMISSIONS

CARLSON ENVIRONMENTAL CONSULTANTS, PC			
CLIENT Waste Management Inc. of Florida	PROJECT Gulf Coast Sanitary Landfill	JOB NO. 101.05.62	
SUBJECT TITLE V OPERATING PERMIT MODIFICATION FUGITIVE EMISSIONS	BY Lindsey Kennelly	DATE 2/12/2014	

**(4) Total Reduced Sulfur Emissions**

- Use Equations (8), (3), (4) from AP-42 Section 2.4 to determine HCl emissions.

- The molecular weight of Sulfur (MW<sub>S</sub>) =

**32** g/gmol

**Eqn (8)** C<sub>S</sub> = C (1 mol S/1 mol H<sub>2</sub>S) =

**4,534** ppmv S 2013 Site-specific TRS Concentration (See Attach A-3)

**Eqn (3)** Q<sub>S</sub> = (Q m<sup>3</sup>/yr) \* (C<sub>S</sub>/ 1E+06) =

**22,195.2** m<sup>3</sup>/yr S

Q<sub>S</sub> = (Q) \* (D days/yr \* 24 hr/day \* 60 min/hr) \* (m<sup>3</sup>/35.31472 ft<sup>3</sup>) \* (C<sub>S</sub>/ 1E+06) =

**Eqn (4)** UM<sub>S</sub> = (Q<sub>HCl</sub>) \* [(MW<sub>S</sub> g/gmol \* 1 atm) / (8.205E-5 m<sup>3</sup>-atm/gmol-K \* 1,000 g/kg \* (273 + (T) K))] = **27,853.6** kg S/yr

CM<sub>S</sub> = ( CM<sub>S</sub> kg/yr) \* (2.2 lb/kg) / (D day/yr) =

**167.9** lb/day S

CM<sub>S</sub> = ( CM<sub>S</sub> lb/day) / (1 day/24 hr) =

**7.0** lb/hr S

CM<sub>S</sub> = (CM<sub>S</sub> lb/day) \* (ton/2000 lb) \* (D days/yr) =

**30.6** tons/yr S

## ATTACHMENT A-3. TOTAL REDUCED SULFUR CONTENT CALCULATIONS

CARLSON ENVIRONMENTAL CONSULTANTS, PC			
CLIENT Waste Management Inc. of Florida	PROJECT Gulf Coast Sanitary Landfill	JOB NO. 101.05.62	
SUBJECT TITLE V OPERATING PERMIT MODIFICATION 2013 Total Reduced Sulfur Content		BY Lindsey Kennelly	DATE 2/12/2014

**OBJECTIVE:**

Calculate the total reduced sulfur (TRS) content of the landfill gas at GCLF using the following:

- Results from the quarterly sulfur monitoring at the control device.
- Methods outlined in AP-42 Section 2.4-7, Equation (8).

**FIRST QUARTER 2012 DATA**

Analyte	Reporting Limit (ppmv)	(X) No. of Moles of Sulfur	(S) Lab Result (ppmv)	(Y) = (X)(S) TRS Concentration (ppmv)
Hydrogen Sulfide	2,000	1	5,800	5800
Methyl Mercaptan	2	1	10	10
Ethyl Mercaptan	1	1	1.6	1.6
Carbonyl Sulfide	0.5	1	1.7	1.7
Carbonyl Disulfide	0.5	2	ND	0.5
Dimethyl Sulfide	0.5	1	1.4	1.4
Dimethyl Disulfide	0.5	2	ND	0.5
<i>Calculated TRS (excluding Hydrogen Sulfide) =</i>				15.7

ND: Conservative estimate, use half of reporting limit concentration to calculate TRS Concentration.

**SECOND QUARTER 2012 DATA**

Analyte	Reporting Limit (ppmv)	(X) No. of Moles of Sulfur	(S) Lab Result (ppmv)	(Y) = (X)(S) TRS Concentration (ppmv)
Hydrogen Sulfide	1,000	1	4,000	4000
Methyl Mercaptan	2	1	7.5	7.5
Ethyl Mercaptan	1	1	1.5	1.5
Carbonyl Sulfide	0.5	1	1.4	1.4
Carbonyl Disulfide	0.5	2	ND	0.5
Dimethyl Sulfide	0.5	1	1.1	1.1
Dimethyl Disulfide	0.5	2	ND	0.5
<i>Calculated TRS (excluding Hydrogen Sulfide) =</i>				12.5

**THIRD QUARTER 2012 DATA**

Analyte	Reporting Limit (ppmv)	(X) No. of Moles of Sulfur	(S) Lab Result (ppmv)	(Y) = (X)(S) TRS Concentration (ppmv)
Hydrogen Sulfide	2,000	1	4,900	4900
Methyl Mercaptan	3	1	8.3	8.3
Ethyl Mercaptan	4	1	ND	2
Carbonyl Sulfide	1	1	1.7	1.7
Carbonyl Disulfide	2	2	ND	2
Dimethyl Sulfide	1	1	1.6	1.6
Dimethyl Disulfide	2	2	ND	2
<i>Calculated TRS (excluding Hydrogen Sulfide) =</i>				17.6

*Analytical report references ethanethiol*

## ATTACHMENT A-3. TOTAL REDUCED SULFUR CONTENT CALCULATIONS

CARLSON ENVIRONMENTAL CONSULTANTS, PC				
CLIENT Waste Management Inc. of Florida	PROJECT Gulf Coast Sanitary Landfill		JOB NO. 101.05.62	
SUBJECT TITLE V OPERATING PERMIT MODIFICATION 2013 Total Reduced Sulfur Content			BY Lindsey Kennelly	DATE 2/12/2014

### FOURTH QUARTER 2012 DATA

Analyte	Reporting Limit (ppmv)	(X) No. of Moles of Sulfur	(S) Lab Result (ppmv)	(Y) = (X)(S) TRS Concentration (ppmv)
Hydrogen Sulfide	4,000	1	5,600	5600
Methyl Mercaptan	3	1	9.2	9.2
Ethyl Mercaptan	4	1	ND	2
Carbonyl Sulfide	1	1	1.6	1.6
Carbonyl Disulfide	2	2	ND	2
Dimethyl Sulfide	1	1	1	1
Dimethyl Disulfide	2	2	ND	2
<i>Calculated TRS (excluding Hydrogen Sulfide) =</i>				17.8

### FIRST QUARTER 2013 DATA

Analyte	Reporting Limit (ppmv)	(X) No. of Moles of Sulfur	(S) Lab Result (ppmv)	(Y) = (X)(S) TRS Concentration (ppmv)
Hydrogen Sulfide	2,000	1	4,100	4100
Methyl Mercaptan	3	1	9.9	9.9
Ethyl Mercaptan	4	1	ND	2
Carbonyl Sulfide	1	1	1.2	1.2
Carbonyl Disulfide	2	2	ND	2
Dimethyl Sulfide	1	1	ND	0.5
Dimethyl Disulfide	2	2	ND	2
<i>Calculated TRS (excluding Hydrogen Sulfide) =</i>				17.6

ND: Conservative estimate, use half of reporting limit concentration to calculate TRS Concentration.

### SECOND QUARTER 2013 DATA

Analyte	Reporting Limit (ppmv)	(X) No. of Moles of Sulfur	(S) Lab Result (ppmv)	(Y) = (X)(S) TRS Concentration (ppmv)
Hydrogen Sulfide	2,000	1	2,500	2500
Methyl Mercaptan	3	1	4.7	4.7
Ethyl Mercaptan	4	1	ND	2
Carbonyl Sulfide	1	1	ND	0.5
Carbonyl Disulfide	2	2	ND	2
Dimethyl Sulfide	1	1	ND	0.5
Dimethyl Disulfide	2	2	ND	2
<i>Calculated TRS (excluding Hydrogen Sulfide) =</i>				11.7

### THIRD QUARTER 2013 DATA

Analyte	Reporting Limit (ppmv)	(X) No. of Moles of Sulfur	(S) Lab Result (ppmv)	(Y) = (X)(S) TRS Concentration (ppmv)
Hydrogen Sulfide	600	1	2,900	2900
Methyl Mercaptan	15	1	ND	7.5
Ethyl Mercaptan	20	1	ND	10
Carbonyl Sulfide	5	1	ND	2.5
Carbonyl Disulfide	10	2	ND	10
Dimethyl Sulfide	5	1	ND	2.5
Dimethyl Disulfide	10	2	ND	10
<i>Calculated TRS (excluding Hydrogen Sulfide) =</i>				42.5

Analytical report references ethanethiol

## ATTACHMENT A-3. TOTAL REDUCED SULFUR CONTENT CALCULATIONS

CARLSON ENVIRONMENTAL CONSULTANTS, PC			
CLIENT Waste Management Inc. of Florida	PROJECT Gulf Coast Sanitary Landfill	JOB NO. 101.05.62	
SUBJECT TITLE V OPERATING PERMIT MODIFICATION 2013 Total Reduced Sulfur Content		BY Lindsey Kennelly	DATE 2/12/2014

### FOURTH QUARTER 2013 DATA

Analyte	Reporting Limit (ppmv)	(X) No. of Moles of Sulfur	(S) Lab Result (ppmv)	(Y) = (X)(S) TRS Concentration (ppmv)
Hydrogen Sulfide	200	1	4,800	4800
Methyl Mercaptan	0.2	1	6.8	6.8
Ethyl Mercaptan	0.2	1	1.1	1.1
Carbonyl Sulfide	0.2	1	ND	0.1
Carbonyl Disulfide	0.2	2	4.9	9.8
Dimethyl Sulfide	0.2	1	1.1	1.1
Dimethyl Disulfide	0.2	2	ND	0.2
<i>Calculated TRS (excluding Hydrogen Sulfide) =</i>				19.1

### FIRST QUARTER 2014 Data

Analyte	Reporting Limit (ppmv)	(X) No. of Moles of Sulfur	(S) Lab Result (ppmv)	(Y) = (X)(S) TRS Concentration (ppmv)
Hydrogen Sulfide	200	1	5,200	5200
Methyl Mercaptan	300	1	ND	150
Ethyl Mercaptan	400	1	ND	200
Carbonyl Sulfide	100	1	ND	50
Carbonyl Disulfide	200	2	ND	200
Dimethyl Sulfide	100	1	ND	50
Dimethyl Disulfide	200	2	ND	200
<i>Calculated TRS (excluding Hydrogen Sulfide) =</i>				850

*Analytical report references ethanethiol*

Average TRS Concentration from Hydrogen Sulfide = 4,422 ppmv  
Average TRS Concentration from Other Sulfur Compounds = 111.6 ppmv  
TRS Content = 4,534 ppmv  
0.45 %

## ATTACHMENT A-4. CONTROL DEVICE EMISSIONS

CARLSON ENVIRONMENTAL CONSULTANTS, PC			
CLIENT Waste Management Inc. of Florida	PROJECT Gulf Coast Sanitary Landfill	JOB NO. 101.05.62	
SUBJECT TITLE V OPERATING PERMIT MODIFICATION CONTROL DEVICE EMISSIONS	BY Lindsey Kennelly	DATE 2/12/2014	

**OBJECTIVE:** Calculate emissions from control device EU 003.

**APPROACH:** Use typical manufacturer guaranteed emission factors and equations and factors from AP-42.

**EMISSION FACTORS:**

	Emission Factors	Units	Source
<b>NOx (R)</b>	0.068	lb/MMBtu	Parnel Biogas - Open Flare
<b>CO (S)</b>	0.37	lb/MMBtu	Parnel Biogas - Open Flare
<b>H2S (H)</b>	4,534	ppmv	Quarterly Site-specific TRS Concentration (See Attach A-3)
<b>PM10</b>	17	lb/10 <sup>6</sup> ft <sup>3</sup> CH <sub>4</sub>	AP-42, Table 2.4-5
<b>VOC</b>	134.55	ppmv as hexane	Per Note C of AP-42, Table 2.4-2, VOC = 39%NMOC
<b>NMOC (C<sub>NMOC</sub>)</b>	345	ppmv as hexane	Based on 2013 NMOC Sampling per §60.754(b).
<b>HCl (C)</b>	42	ppmv	AP-42, Page 2.4-9
<b>CH<sub>4</sub> (Z)</b>	0.0032	kg/MMBtu	40 CFR 98, Table C-2
<b>N<sub>2</sub>O (N)</b>	0.00063	kg/MMBtu	40 CFR 98, Table C-2
<b>CO2 (P)</b>	52.07	kg/MMBtu	40 CFR 98, Table C-1

**PARAMETERS:**

<b>Flow Rate (Q)</b>	990	scfm	2014 LFG COLLECTION RATE = 2014 LFG Generation Rate x 75% collection rate. See Attachment A-1 (Typical for LFG)
<b>% CH4 (M)</b>	50.0%		
<b>Temperature (T)</b>	37.8	C	100.0 F (Typical for LFG)
<b>Heat Content of CH4 (Y)</b>	1012	Btu/ft <sup>3</sup>	
<b>Flare Operating Hours (D)</b>	365	day/year	
	8760	hr/year	

- Since 1 ft<sup>3</sup> of CH<sub>4</sub> produces (Y) Btu,

LFG with (M) ft<sup>3</sup> CH<sub>4</sub>/ft<sup>3</sup> LFG produces (X)=

506	Btu/ft <sup>3</sup> LFG
30.1	MMBtu/hr

$$Q_{\text{flare}} = 520,344,000 \text{ ft}^3/\text{yr} = 520.3 \text{ million ft}^3/\text{yr}$$

$$Q_{\text{flare}} = 14,725,735 \text{ m}^3/\text{yr}$$

**EMISSION RATE SUMMARY:**

	lbs/Hour	lbs/Day	tons/Year
<b>NOx</b>	2.0	49.1	9.0
<b>CO</b>	11.1	266.9	48.7
<b>PM/PM<sub>10</sub>/PM<sub>2.5</sub></b>	0.5	12.1	2.2
<b>SOx</b>	41.2	989.8	180.6
<b>NMOC</b>	0.03	0.8	0.2
<b>VOC</b>	0.01	0.3	0.1
<b>HAPs</b>	0.03	0.7	0.1
<b>HCl</b>	0.2	5.2	1.0
<b>CO<sub>2E</sub> - Biogenic</b>	6,892.8	165,427.4	30,190.5
<b>CO<sub>2E</sub> - Anthropogenic</b>	17.7	425.8	77.7
<b>TOTAL CO<sub>2E</sub></b>	6,910.5	165,853.1	30,268.2

**Calculations**

**(1) NOx Emissions**

$$CM_{\text{NOx}} = (R/1E+06 \text{ Btu}) * (Q \text{ ft}^3 \text{ LFG}/\text{min}) * (X \text{ Btu}/\text{ft}^3 \text{ LFG}) * (D \text{ day}/\text{yr}) * (1440 \text{ min}/\text{day}) * (\text{ton}/2,000 \text{ lb})$$

$$CM_{\text{NOx}} (CM) = 9.0 \text{ tons}/\text{yr NOx}$$

$$CM_{\text{NOx}} (CM') = (CM) * (2,000 \text{ lb}/\text{ton}) / (D \text{ day}/\text{yr}) = 49.1 \text{ lbs}/\text{day NOx}$$

$$CM_{\text{NOx}} = (CM') * (\text{day}/24 \text{ hrs}) = 2.0 \text{ lbs}/\text{hr NOx}$$

**(2) CO Emissions**

$$CM_{\text{CO}} = (S/1E+06 \text{ Btu}) * (Q \text{ LFG}/\text{min}) * (X \text{ Btu}/\text{ft}^3 \text{ LFG}) * (D \text{ day}/\text{yr}) * (1440 \text{ min}/\text{day}) * (\text{ton}/2,000 \text{ lb})$$

$$CM_{\text{CO}} (C) = 48.7 \text{ tons}/\text{yr CO}$$

$$CM_{\text{CO}} (C') = (C) * (2,000 \text{ lb}/\text{ton}) / (D \text{ day}/\text{yr}) = 266.9 \text{ lbs}/\text{day CO}$$

$$CM_{\text{CO}} = (C') * (\text{day}/24 \text{ hrs}) = 11.1 \text{ lbs}/\text{hr CO}$$

## ATTACHMENT A-4. CONTROL DEVICE EMISSIONS

CARLSON ENVIRONMENTAL CONSULTANTS, PC			
CLIENT Waste Management Inc. of Florida	PROJECT Gulf Coast Sanitary Landfill	JOB NO. 101.05.62	
SUBJECT TITLE V OPERATING PERMIT MODIFICATION CONTROL DEVICE EMISSIONS	BY Lindsey Kennelly	DATE 2/12/2014	

### (3) SO<sub>2</sub> Emissions

- Use Equations (8), (3), (4), & (7) from AP-42 Section 2.4 to determine SO<sub>2</sub> emissions.

- The molecular weight of sulfur (MWs) = **32** g/gmol

$$\text{Eqn (8)} \quad C_s = C \text{ (1 mol S/1 mol H}_2\text{S)} = \mathbf{4,534} \text{ ppmv S 2013 Site-specific TRS Concentration (See Attach A-3)}$$

$$\text{Eqn (3)} \quad Q_s = (Q \text{ m}^3/\text{yr}) * (C_s / 1\text{E}+06) = \mathbf{66,764.0} \text{ m}^3/\text{yr S}$$

$$\text{Eqn (4)} \quad UM_s = (Q_s) * [(MW_s \text{ g/gmol} * 1 \text{ atm}) / (8.205\text{E-}5 \text{ m}^3\text{-atm/gmol-K} * 1,000 \text{ g/kg} * (273 + (T) \text{ K}))] = \mathbf{83,784.6} \text{ kg S/yr}$$

$$\text{Eqn (7)} \quad CMSO_2 = UMS * (N_{COL}/100) * 2.0$$

$$N_{COL} = 100\% \quad \text{Calculation is based on actual flow rate to the flare and not an assumed collection rate.}$$

$$CMSO_2 a = UMS * (N_{CO}/100) * 2.0 * (0.98 \text{ destruction efficiency}) = \mathbf{164,217.7} \text{ kg/yr}$$

$$CMSO_2 b = (CMSO_2 a) * (2.2 \text{ lb/kg}) / (\text{D day/yr}) = \mathbf{989.8} \text{ lb/day SO}_2$$

$$CMSO_2 c = (CMSO_2 b) * (\text{ton}/2000 \text{ lb}) * (\text{D days/yr}) = \mathbf{180.6} \text{ tons/yr SO}_2$$

### (4) PM/PM<sub>10</sub>/PM<sub>2.5</sub> Emissions

- From Note a, AP-42, Section 2.4, Table 2.4-5,

$$(17 \text{ lb}/10^6 \text{ ft}^3) / (16,700) = 1.0\text{E-}03 \text{ lb/hr - dft}^3/\text{min}$$

$$CM_{PM a} = (1.0\text{E-}03 \text{ lb/hr-dft}^3/\text{min CH}_4) * [(M) * (Q)] = \mathbf{0.5} \text{ lbs/hr PM}$$

$$CM_{PM b} = (CMPM a) * (24 \text{ hrs/day}) = \mathbf{12.1} \text{ lbs/day PM}$$

$$CM_{PM} = (CMPM b) * (\text{ton}/2,000 \text{ lb}) * (\text{D days/yr}) = \mathbf{2.2} \text{ tons/yr PM}$$

### (5) NMOC Emissions

- Use Equations (3), (4), & (5) of AP-42, Section 2.4 to determine NMOC emissions.

$$MW_{NMOC} = 86.18 \text{ g/gmol}$$

$$\text{Eqn (3)} \quad Q_{NMOC} = (Q_{flare} \text{ m}^3/\text{yr}) * (C_{NMOC} \text{ ppmv}/ 1\text{E}+06) = \mathbf{5,080.38} \text{ m}^3/\text{yr}$$

$$\text{Eqn (4)} \quad UM_{NMOC} = (Q_{NMOC} \text{ m}^3/\text{yr}) * [(86.18 \text{ g/gmol} * 1 \text{ atm}) / (8.205\text{E-}5 \text{ m}^3 \text{ atm/gmol K} * 1,000 \text{ g/kg} * (273 + T) \text{ K})] = \mathbf{17,170.1} \text{ kg/yr}$$

$$\text{Eqn (5)} \quad CM_{NMOC} = [UM_{NMOC} \text{ kg/yr} * (1 - N_{col}/100)] + [UM_{NMOC} \text{ kg/yr} * (N_{col}/100) * (1 - N_{cnt}/100)] = \mathbf{137.4} \text{ kg/yr}$$

N<sub>col</sub> = 100% Since the calculation is based on actual flow rate to the flare and not an assumed collection rate.

N<sub>cnt</sub> = 99.2% Source: AP-42, Table 2.4-3

$$CM_{NMOC} = CM_{NMOC} \text{ kg/yr} * (2.2 \text{ lb/kg}) * (\text{yr}/\text{N days}) = \mathbf{0.8} \text{ lb/day NMOC}$$

$$CM_{NMOC} = (CM_{NMOC} \text{ lb/day}) * (\text{ton}/2000 \text{ lb}) * (\text{N days/yr}) = \mathbf{0.2} \text{ tons/yr NMOC}$$

### (6) VOC Emissions

- Per Note c of AP-42, Table 2.4-2, VOC emissions are 39% of NMOC emissions.

$$CM_{VOC} = (CM_{NMOC} \text{ tons/yr}) * \%VOCs = \mathbf{0.1} \text{ tons/yr VOC}$$

### (7) HAPs Emissions

- Use Equations (3), (4), & (5) of AP-42, Section 2.4 to determine NMOC emissions.

$$\text{Eqn (3)} \quad Q_p = (Q_{flare}) * (10^{-6} C_p)$$

Q<sub>p</sub> = Volumetric emission rate of pollutant

Q<sub>flare</sub> = LFG process rate at flare (m<sup>3</sup>/yr)

C<sub>p</sub> = Concentration of pollutant

$$\text{Eqn (4)} \quad M_p = \frac{(Q_p * MW_p * 1 \text{ atm})}{[(8.205 * 10^{-5} \text{ m}^3\text{-atm/gmol-K}) (1000 \text{ g/kg}) (273 + (T) \text{ K})]}$$

M<sub>p</sub> = Mass generation of pollutant

MW<sub>p</sub> = Molecular weight of pollutant

HAPs destruction efficiency = 98%

## ATTACHMENT A-4. CONTROL DEVICE EMISSIONS

CARLSON ENVIRONMENTAL CONSULTANTS, PC						
CLIENT Waste Management Inc. of Florida		PROJECT Gulf Coast Sanitary Landfill			JOB NO. 101.05.62	
SUBJECT TITLE V OPERATING PERMIT MODIFICATION CONTROL DEVICE EMISSIONS				BY Lindsey Kennelly		DATE 2/12/2014
Pollutant	Molecular		HAPS to Flare		HAPs emitted from Flare (tpy)	
	Weight (g/gmol)	Conc. (C <sub>p</sub> ) (ppmv)	Q <sub>p</sub> (m <sup>3</sup> /yr)	Mass Flow of Pollutant (M <sub>p</sub> ) (kg/yr) (tpy)		
methyl chloroform	133.41	0.48	7.1	37.0	0.0	0.0008
1,1,2,2-tetrachloroethan	167.85	1.11	16.3	107.6	0.1	0.0024
ethylidene dichloride	98.97	2.35	34.6	134.3	0.1	0.0030
vinylidene chloride	96.94	0.20	2.9	11.2	0.0	0.0002
ethylene dichloride	98.96	0.41	6.0	23.4	0.0	0.0005
propylene dichloride	112.99	0.18	2.7	11.7	0.0	0.0003
acrylonitrile	53.06	6.33	93.2	194.0	0.2	0.0043
carbon disulfide	76.13	0.58	8.5	25.5	0.0	0.0006
carbon tetrachloride	153.84	0.004	0.1	0.4	0.0	0.0000
carbonyl sulfide	60.07	0.49	7.2	17.0	0.0	0.0004
chlorobenzene	112.56	0.25	3.7	16.3	0.0	0.0004
ethyl chloride	64.52	1.25	18.4	46.6	0.1	0.0010
chloroform	119.39	0.03	0.4	2.1	0.0	0.0000
1,4-dichlorobenzene	147.00	0.21	3.1	17.8	0.0	0.0004
methylene chloride	84.94	14.30	210.6	701.5	0.8	0.0155
ethylbenzene	106.16	4.61	67.9	282.6	0.3	0.0062
ethylene dibromide	187.88	0.001	0.0	0.1	0.000	0.00000
hexane	86.18	6.57	96.7	327.0	0.4	0.0072
methyl ethyl ketone	72.11	7.09	104.4	295.3	0.3	0.0065
methyl isobutyl ketone	100.16	1.87	27.5	108.2	0.1	0.0024
perchloroethylene	165.83	3.73	54.9	357.2	0.4	0.0079
trichloroethylene	131.40	2.82	41.5	214.0	0.2	0.0047
mercury	200.61	0.0003	0.0	0.0	0.0	0.0000
benzene	78.11	1.91	28.1	86.2	0.1	0.0019
toluene	92.13	39.30	578.7	2090.9	2.3	0.0461
vinyl chloride	62.50	7.34	108.1	264.9	0.3	0.0058
xylenes	106.16	12.10	178.2	741.8	0.8	0.0164
<b>TOTAL HAPs</b>					<b>0.13</b>	<b>tons/yr</b>

### (8) HCl Emissions

- Use Equations (8), (3), (4), & (10) from AP-42 Section 2.4 to determine HCl emissions.

- The molecular weight of HCl (MW<sub>HCl</sub>) = **35.45** g/gmol

$$\text{Eqn (8)} \quad C_{\text{HCl}} = C \text{ (1 mol Cl/1 mol HCl)} = \boxed{42} \text{ ppmv Cl}$$

$$\text{Eqn (3)} \quad Q_{\text{HCl}} = (Q_{\text{m}^3/\text{yr}}) * (C_{\text{HCl}} / 1\text{E}+06) = \boxed{618.5} \text{ m}^3/\text{yr Cl}$$

$$\text{Eqn (4)} \quad U_{\text{HCl}} = (Q_{\text{HCl}}) * [(MW_{\text{HCl}} \text{ g/gmol} * 1 \text{ atm}) / (8.205\text{E-}5 \text{ m}^3\text{-atm/gmol-K} * 1,000 \text{ g/kg} * (273 + (T) \text{ K}))] = \boxed{859.8} \text{ kg Cl/yr}$$

$$\text{Eqn (10)} \quad CM_{\text{HCl}} = U_{\text{HCl}} * (N_{\text{COL}}/100) * 1.03 * (N_{\text{CNT}}/100)$$

N<sub>COL</sub> = 100%      Collection Efficiency, since actual flow rate to flare, assume 100%

1.03 = Ratio of the molecular weight of HC to the molecular weight of Cl

N<sub>CNT</sub> = 98%      Control Efficiency of the control device

$$CM_{\text{HCl}} = U_{\text{HCl}} * (N_{\text{COL}}/100) * 1.03 * (N_{\text{CNT}}/100) = 867.92 \text{ kg/yr}$$

$$CM_{\text{HCl}} = (CM_{\text{HCl}} \text{ kg/yr}) * (2.2 \text{ lb/kg}) / (\text{D} \text{ day/yr}) = \boxed{5.2} \text{ lb/day HCl}$$

$$CM_{\text{HCl}} = (CM_{\text{HCl}} \text{ lb/day}) * (\text{ton}/2000 \text{ lb}) * (\text{D} \text{ days/yr}) = \boxed{1.0} \text{ tons/yr HCl}$$

$$CM_{\text{HCl}} = (CM_{\text{HCl}} \text{ lb/day}) * (\text{day}/24 \text{ hrs}) = \boxed{0.2} \text{ lb/hr HCl}$$

## ATTACHMENT A-4. CONTROL DEVICE EMISSIONS

CARLSON ENVIRONMENTAL CONSULTANTS, PC			
CLIENT Waste Management Inc. of Florida	PROJECT Gulf Coast Sanitary Landfill	JOB NO. 101.05.62	
SUBJECT TITLE V OPERATING PERMIT MODIFICATION CONTROL DEVICE EMISSIONS	BY Lindsey Kennelly	DATE 2/12/2014	

**(9) CO<sub>2e</sub> Emissions**

**- CH<sub>4</sub> Emissions**

$$CM_{CH_4} = (X \text{ MMBtu/hr}) * (D \text{ day/yr}) * (24 \text{ hr/day}) * (Z \text{ kg/MMBtu}) (0.0011023 \text{ ton/kg})$$

$$CM_{CH_4} (Y) = \mathbf{0.93} \text{ tons/yr CH}_4$$

Global Warming Potential of CH<sub>4</sub> (G) = 25 Source: 40 CFR 98, Table A-1

$$CH_4 \text{ Emission Rate } (CM_{CH_4}) = (Y) * (G) = \mathbf{23.2} \text{ tons/yr CO}_{2E} \text{ (CH}_4\text{)} \text{ ANTHROPOGENIC}$$

**- N<sub>2</sub>O Emissions**

$$CM_{N_2O} = (X \text{ MMBtu/hr}) * (D \text{ day/yr}) * (24 \text{ hr/day}) * (N \text{ kg/MMBtu}) (0.0011023 \text{ ton/kg})$$

$$CM_{N_2O} (W) = \mathbf{0.18} \text{ tons/yr N}_2\text{O}$$

Global Warming Potential of N<sub>2</sub>O (P) = 298 Source: 40 CFR 98, Table A-1

$$N_2O \text{ Emission Rate } (CM_{N_2O}) = (W) * (P) = \mathbf{54.5} \text{ tons/yr CO}_{2E} \text{ (N}_2\text{O)} \text{ ANTHROPOGENIC}$$

$$CO_2e \text{ Emissions} = (CM_{CH_4}) + (CM_{N_2O}) = \mathbf{77.7} \text{ tons/yr CO}_{2E} \text{ ANTHROPOGENIC}$$

**- CO<sub>2</sub> Emissions**

$$CM_{CO_2\text{-combustion}} = (X \text{ MMBtu/hr}) * (D \text{ day/yr}) * (24 \text{ hr/day}) * (P \text{ kg/MMBtu}) (0.001 \text{ mton/kg}) (1.1023 \text{ ton/mton}) = \mathbf{15,112.2} \text{ tons/yr CO}_2 \text{ BIOGENIC}$$

$$Q_{CO_2} = (Q \text{ scfm}) (1-M\%) = 495 \text{ scfm} \text{ Assumes LFG is composed of CH}_4 \text{ and CO}_2 \text{ only.}$$

$$CM_{CO_2\text{-passthrough}} = (Q_{CO_2} \text{ scf}) (0.0283 \text{ m}^3/\text{scf}) (1000 \text{ L/m}^3) (1 \text{ mole gas}/23.689 \text{ L}) (44.01 \text{ g/mol CO}_2) (10^{-6} \text{ tonne/g}) (1.1023 \text{ ton/tonne}) = \mathbf{15,078.3} \text{ tons/yr CO}_2 \text{ BIOGENIC}$$

CO <sub>2e</sub> Emissions Anthropogenic =	<b>77.71 tons/yr CO<sub>2E</sub></b>
CO <sub>2e</sub> Emissions Biogenic =	<b>30,190.5 tons/yr CO<sub>2E</sub></b>

At the time of the submission of this application, there are no additional federal regulatory requirements applicable to GHG emissions from the Landfill nor are GHG emissions covered under Title V Permit Program authority. Federal GHG Mandatory Reporting Rule requirements published at 40 CFR 98 were enacted under sections 114(a)(1) and 208 of the Clean Air Act and, as such, are not "applicable requirements" for inclusion in a Title V permit pursuant to 40 CFR 70.2 and 71.2 (see also, 74 FR 209, page 56,288).

Note that the Greenhouse Gas Reporting Rule does not belong in the Title V permit. This issue was discussed in the Preamble of the Rule in the October 30, 2009 Federal Register and is included in Appendix H. According to the Q&A in the Preamble, the EPA received several comments about whether or not the requirements imposed by the GHG Reporting Rule are applicable under the Title V operating permit program. According to the EPA, the definition of "applicable requirement" in 40 CFR 70.2 and 71.2 as currently written does not include the GHG reporting rule. Therefore, the GHG Reporting Rule does not belong in the Title V permit.

**APPENDIX B**  
**REGULATORY APPLICABILITY LIST**

## APPENDIX B. Regulatory Applicability List

(Effective: 03/01/02)

[**Note:** The Title V Core List is meant to simplify the completion of the "List of Applicable Regulations" for DEP Form No. 62-210.900(1), Application for Air Permit - Long Form. The Title V Core List is a list of rules to which all Title V Sources are presumptively subject. The Title V Core List may be referenced in its entirety, or with specific exceptions. The Department may periodically update the Title V Core List.]

**Federal:** (description)

40 CFR 61, Subpart M: NESHAP for Asbestos.

*The facility was permitted to accept asbestos material, therefore this regulation is applicable. The facility is closed now to any new asbestos material.*

40 CFR 82: Protection of Stratospheric Ozone.

*The facility has the potential to emit air pollutants which may contribute to Stratospheric Ozone, therefore this regulation is applicable.*

40 CFR 82, Subpart B: Servicing of Motor Vehicle Air Conditioners (MVAC).

*The facility no longer services vehicles on-site since the facility is closed to new wastes.*

40 CFR 82, Subpart F: Recycling and Emissions Reduction.

*GCLF will comply with these requirements as applicable.*

**State:** (description)

**CHAPTER 62-4, F.A.C.: PERMITS**, effective 06-01-01

62-4.030, F.A.C.: General Prohibition.

*The facility has the potential to produce air pollutant emissions and is therefore subject to this regulation.*

62-4.040, F.A.C.: Exemptions.

*The facility is not exempted from the permit requirements of this chapter, therefore this regulation is applicable.*

62-4.050, F.A.C.: Procedure to Obtain Permits; Application.

*The facility intends to comply with appropriate permitting procedure(s).*

62-4.060, F.A.C.: Consultation.

*Facility representatives have, and intend to continue to consult with FDEP personnel during the permit application process, as applicable.*

62-4.070, F.A.C.: Standards for Issuing or Denying Permits; Issuance; Denial.

*This is an informational regulation which is potentially applicable to the facility.*

62-4.080, F.A.C.: Modification of Permit Conditions.

*This is an informational regulation which is potentially applicable to the facility.*

## **APPENDIX B. Regulatory Applicability List**

(Effective: 03/01/02)

- 62-4.090, F.A.C.: Renewals.
- 62-4.100, F.A.C.: Suspension and Revocation.
- 62-4.110, F.A.C.: Financial Responsibility.
- 62-4.120, F.A.C.: Transfer of Permits.
- 62-4.130, F.A.C.: Plant Operation - Problems.
- 62-4.150, F.A.C.: Review.
- 62-4.160, F.A.C.: Permit Conditions.
- 62-4.210, F.A.C.: Construction Permits.
- 62-4.220, F.A.C.: Operation Permit for New Sources.

### **CHAPTER 62-210, F.A.C.: STATIONARY SOURCES – GENERAL REQUIREMENTS**, effective 06-21-01

- 62-210.300, F.A.C.: Permits Required.
- 62-210.300(1), F.A.C.: Air Construction Permits.
- 62-210.300(2), F.A.C.: Air Operation Permits.
- 62-210.300(3), F.A.C.: Exemptions.
- 62-210.300(5), F.A.C.: Notification of Startup.
- 62-210.300(6), F.A.C.: Emissions Unit Reclassification.
- 62-210.300(7), F.A.C.: Transfer of Air Permits.
- 62-210.350, F.A.C.: Public Notice and Comment.
- 62-210.350(1), F.A.C.: Public Notice of Proposed Agency Action.
- 62-210.350(2), F.A.C.: Additional Public Notice Requirements for Emissions Units  
Subject to Prevention of Significant Deterioration or Nonattainment-Area  
Preconstruction Review.
- 62-210.350(3), F.A.C.: Additional Public Notice Requirements for Sources Subject to  
Operation Permits for Title V Sources.
- 62-210.360, F.A.C.: Administrative Permit Corrections.
- 62-210.370(3), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility.
- 62-210.400, F.A.C.: Emission Estimates.
- 62-210.650, F.A.C.: Circumvention.
- 62-210.700, F.A.C.: Excess Emissions.
- 62-210.900, F.A.C.: Forms and Instructions.
- 62-210.900(1), F.A.C.: Application for Air Permit – Title V Source, Form and  
Instructions.
- 62-210.900(5), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility,  
Form and Instructions.
- 62-210.900(7), F.A.C.: Application for Transfer of Air Permit – Title V and Non-Title V  
Source.

### **CHAPTER 62-212, F.A.C.: STATIONARY SOURCES - PRECONSTRUCTION REVIEW**, effective 08-17-00

## **APPENDIX B. Regulatory Applicability List**

(Effective: 03/01/02)

### **CHAPTER 62-213, F.A.C.: OPERATION PERMITS FOR MAJOR SOURCES OF AIR POLLUTION, effective 04-16-01**

- 62-213.205, F.A.C.: Annual Emissions Fee.
- 62-213.400, F.A.C.: Permits and Permit Revisions Required.
- 62-213.410, F.A.C.: Changes Without Permit Revision.
- 62-213.412, F.A.C.: Immediate Implementation Pending Revision Process.
- 62-213.415, F.A.C.: Trading of Emissions Within a Source.
- 62-213.420, F.A.C.: Permit Applications.
- 62-213.430, F.A.C.: Permit Issuance, Renewal, and Revision.
- 62-213.440, F.A.C.: Permit Content.
- 62-213.450, F.A.C.: Permit Review by EPA and Affected States.
- 62-213.460, F.A.C.: Permit Shield.
- 62-213.900, F.A.C.: Forms and Instructions.
- 62-213.900(1), F.A.C.: Major Air Pollution Source Annual Emissions Fee Form.
- 62-213.900(7), F.A.C.: Statement of Compliance Form.

### **CHAPTER 62-296, F.A.C.: STATIONARY SOURCES - EMISSION STANDARDS, effective 03-02-99**

- 62-296.320(4)(c), F.A.C.: Unconfined Emissions of Particulate Matter.
- 62-296.320(2), F.A.C.: Objectionable Odor Prohibited.

### **CHAPTER 62-297, F.A.C.: STATIONARY SOURCES - EMISSIONS MONITORING, effective 03-02-99**

- 62-297.310, F.A.C.: General Test Requirements.
- 62-297.330, F.A.C.: Applicable Test Procedures.
- 62-297.340, F.A.C.: Frequency of Compliance Tests.
- 62-297.345, F.A.C.: Stack Sampling Facilities Provided by the Owner of an Emissions

Unit.

- 62-297.350, F.A.C.: Determination of Process Variables.
- 62-297.570, F.A.C.: Test Report.
- 62-297.620, F.A.C.: Exceptions and Approval of Alternate Procedures and Requirements.

#### **Miscellaneous:**

**CHAPTER 28-106, F.A.C.:** Decisions Determining Substantial Interests

**CHAPTER 62-110, F.A.C.:** Exception to the Uniform Rules of Procedure, effective 07-01-98

**CHAPTER 62-256, F.A.C.:** **Open Burning and Frost Protection Fires, effective 11-30-94**

*CHAPTER 62-257, F.A.C.: Asbestos Notification and Fee, effective 02-09-99*

**CHAPTER 62-281, F.A.C.:** Motor Vehicle Air Conditioning Refrigerant Recovery and Recycling, effective 09-10-96

**APPENDIX C**  
**COMPLIANCE REPORT AND PLAN**

## **APPENDIX C. Compliance Report and Plan**

(Effective: 03/01/02)

Gulf Coast Sanitary Landfill – Fort Myers, Florida  
Title V Permit No. 0710133-015-AV

Based on information provided by WMIF, there are no air emission units out of compliance. Therefore, a Compliance Plan is not required.