JONES EDMUNDS

April 11, 2014

Jeff Koerner, PE
Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road MS 5500
Tallahassee, Florida 32399-2400

RE: Putnam County Central Landfill
Title V Air Initial Permit Application
Jones Edmunds Project No.: 16810-174-01
WACS ID: 37570

Dear Mr. Koerner:

The Putnam County Sanitation Department (PCSD) owns and operates the Putnam County Central Landfill (PCCL). On January 13, 2014, the FDEP Solid Waste Section issued a solid waste permit to vertically and laterally expand the facility's Active Class I Phase II Landfill by 21.5 acres. The expansion is expected to be constructed beginning in January 2015 and will cause the facility to exceed the 2.5-million-megagram design capacity threshold.

On behalf of the PCSD, Jones Edmunds & Associates, Inc. is providing an Initial Title V Air Permit Application in accordance with 40 CFR 60.752(c)(2), which is included as Attachment 1. The PCCL is regulated under 40 CFR 60 Subpart WWW (NSPS for Landfills) and 40 CFR 61 Subpart M (NESHAP for Asbestos). The proposed initial Air Permit Application includes following emissions unit:

- **EU-001**—Class I Landfills (Phases I and II) and Class III Landfill.

Once a Facility ID has been uploaded for this permit application Jones Edmunds will provide the Fee through FDEP's online payment center at https://www.fldepportal.com.

If you have any questions or comments, please contact me at (352) 377-5821 or hsboudreau@jonesedmunds.com.

Sincerely,

Hal Boudreau, PE
Project Manager

M:\16810-PutnamCounty\174-01 Title V Permitting Services\Consult\Permitting\2014-04-07-LTR-SArif-Title V Permitting-HBoudreau.doc

Attachment

XC: Larry Gast, Putnam County

ATTACHMENT 1

INITIAL TITLE V AIR OPERATION PERMIT APPLICATION

PUTNAM COUNTY CENTRAL LANDFILL
APPLICATION FOR TITLE V
INITIAL AIR OPERATION PERMIT

Submitted to:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR RESOURCE MANAGEMENT
OFFICE OF AIR PERMITTING AND COMPLIANCE
2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399

Prepared for:

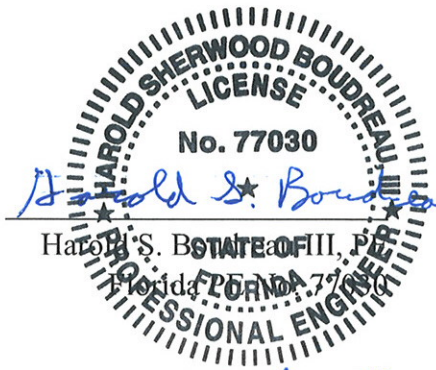
PUTNAM COUNTY SANITATION DEPARTMENT
PO Box 2499
Palatka, Florida 32178

Prepared by:

JONES EDMUNDS & ASSOCIATES, INC.
730 NE Waldo Road
Gainesville, Florida 32641

PE Certificate of Authorization #1841

April 2014



Harold S. Boudreau III, PE
Florida PE No. 77030

4/11/2014

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INTRODUCTION

INTRODUCTION

This permit application and supporting information are being submitted on behalf of the Putnam County Sanitation Department for an initial Title V Air Operation Permit for the Putnam County Central Landfill. The facility is in Section 14, Township 9 South, Range 26 East, approximately 4 miles north of Palatka on County Landfill Road in central Putnam County, with a physical address of 140 County Landfill Road, Palatka, Florida 32177. The site consists of an unlined closed Class I Phase I Landfill, a lined active Class I Phase II Landfill, and a closed Class III Landfill.

The Putnam County Central Phase II Landfill is permitted by the Florida Department of Environmental Protection (FDEP) under permit number 0018002-015-SO, Modification 0018002-019-SO. The FDEP Solid Waste Program issued Permit No. 0130719-019-SO-01 on January 13, 2014 for the 21.5-acre horizontal and vertical expansion of the Class I Landfill that will be constructed in 2015.

The facility is subject to the requirements of 40 CFR 60, Subpart WWW, *Standards of Performance for Municipal Solid Waste Landfills*. This initial Title V Air Operation Permit application is being submitted because of an increase of the design capacity to 4.0 million megagrams. This permit application includes the *Application for Air Permit – Long Form* (FDEP Form 62-210.900(1), FAC) and supporting information. The exhibits include figures, calculations, and supporting information.

APPLICATION FOR AIR PERMIT – LONG FORM
FDEP FORM 62-210.900(1)

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: **Putnam County Board of County Commissioners**	
2. Site Name: **Putnam County Central Landfill**	
3. Facility Identification Number:	
4. Facility Location: Street Address or Other Locator: **140 County Landfill Road** City: **Palatka** County: **Putnam** Zip Code: **32177**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☐ Yes ☒ No

Application Contact

1. Application Contact Name: **Harold S. Boudreau III, PE**
2. Application Contact Mailing Address... Organization/Firm: **Jones Edmunds & Associates, Inc.** Street Address: **730 NE Waldo Road** City: **Gainesville** State: **Florida** Zip Code: **32641**
3. Application Contact Telephone Numbers... Telephone: **(352) 377-5821** ext. **1347** Fax: **(352) 377-3166**
4. Application Contact E-mail Address: **hsboudreau@jonesedmunds.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 permit application is for the Initial Air Operation Permit for the Putnam County Central Landfill. On January 13, 2014, the FDEP Solid Waste Section issued a solid waste permit to vertically and laterally expand the facility's Active Class I Phase II Landfill. The expansion will cause the facility to exceed the 2.5-million-megagram design capacity threshold and is expected to be constructed beginning in January 2015. The facility includes a Class I Phase I Closed Landfill, Class I Phase II Active Landfill, and a Class III Closed Landfill. The facility has a total design capacity of approximately 4.0 million megagrams.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
001	**Class I Landfills and Class III Landfill**	**AF2C**	**$750**

Application Processing Fee

Check one: [X] Attached - Amount: $ 750 [ ] Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

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

1. Owner/Authorized Representative Name:

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

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

4. Owner/Authorized Representative E-mail Address:

5. Owner/Authorized Representative Statement:

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

   _____ _____
   Signature Date

APPLICATION INFORMATION

Application Responsible Official Certification

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

1. Application Responsible Official Name: **Larry Gast, Solid Waste Director**

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

- ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.
- ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
- ☒ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.
- ☐ The designated representative at an Acid Rain source or CAIR source.

3. Application Responsible Official Mailing Address...
Organization/Firm: **Putnam County Sanitation Department**
Street Address: **PO Box 2499**
City: **Palatka** State: **Florida** Zip Code: **32178**

4. Application Responsible Official Telephone Numbers...
Telephone: **(386) 329-1200** ext. Fax: **(386) 329-0486**

5. Application Responsible Official E-mail Address: **larry.gast@putnam-fl.com**

APPLICATION INFORMATION

6. Application Responsible Official Certification:

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

Signature

4-9-14
Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Harold S. Boudreau III, PE**
   Registration Number: **77030**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Jones Edmunds & Associates, Inc.**
   Street Address: **730 NE Waldo Road**
   City: **Gainesville** State: **Florida** Zip Code: **32641**
3. Professional Engineer Telephone Numbers...
   Telephone: **(352) 377-5821** ext. **1347** Fax: **(352) 377-3166**
4. Professional Engineer E-mail Address: **hsboudreau@jonesedmunds.com**
5. Professional Engineer Statement:

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

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

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

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

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

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

Harold S. Boudreau III — 4/11/2014

Signature Date

(seal)

HAROLD SHERWOOD BOUDREAU III LICENSE No. 77030 STATE OF FLORIDA PROFESSIONAL ENGINEER

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone East (km) North (km)		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **29/43/28** Longitude (DD/MM/SS) **81/39/59**	
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 : **The facility is a solid waste management facility consisting of Class I Landfills and a Class III Landfill that are subject to the requirements of 40 CFR 60 Subpart WWW, *Standards of Performance for Municipal Solid Waste Landfills* and 40 CFR 61, Subpart M, *National Emission Standard for Asbestos*.**			

Facility Contact

1. Facility Contact Name: **Larry Gast**
2. Facility Contact Mailing Address... Organization/Firm: **Putnam County Sanitation Department** Street Address: **PO Box 2499** City: **Palatka** State: **Florida** Zip Code: **32178**
3. Facility Contact Telephone Numbers: Telephone: **(386) 329-1200** ext. Fax: **(386) 329-0486**
4. Facility Contact E-mail Address: **larry.gast@putnam-fl.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: **Larry Gast**
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: **Putnam County Sanitation Department** Street Address: **PO Box 2499** City: **Palatka** State: **Florida** Zip Code: **32178**
3. Facility Primary Responsible Official Telephone Numbers... Telephone: **(386) 329-1200** ext. Fax: **(386) 329-0486**
4. Facility Primary Responsible Official E-mail Address: **larry.gast@putnam-fl.com**

FACILITY INFORMATION

Facility Regulatory Classifications

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

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

This facility is subject to the requirements of 40 CFR 60 Subpart WWW, *Standards of Performance for Municipal Solid Waste Landfills* and 40 CFR 61, Subpart M, *National Emission Standard for Asbestos*.

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
NMOC	**B**	**N**
VOC	**B**	**N**
HAP	**B**	**N**
GHG	**B**	**N**

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

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

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

Facility-Wide or Multi-Unit Emissions Caps are not applicable. The only regulated pollutant for this facility is Nonmethane Organic Compounds (NMOC), which are regulated by 40 CFR Part 60, Subpart WWW, *Standards of Performance for Municipal Solid Waste Landfills,* and 40 CFR 61, Subpart M, *National Emission Standard for Asbestos*.

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) [X] Attached, Document ID: **Exhibit II.C.1** [ ] Previously Submitted, Date:_____
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) [X] Attached, Document ID: **Exhibit II.C.2** [ ] Previously Submitted, Date:_____
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) [X] Attached, Document ID: **Exhibit II.C.3** [ ] Previously Submitted, Date:_____

Additional Requirements for Air Construction Permit Applications

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

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications

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

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities: (Required for initial/renewal applications only)
   ☒ Attached, Document ID: **Exhibit II.C.4** ☐ Not Applicable (revision application)

2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought)
   ☒ Attached, Document ID: **Exhibit II.C.5**
   ☐ Not Applicable (revision application with no change in applicable requirements)

3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)
   ☒ Attached, Document ID: **Exhibit II.C.6**
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.

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

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

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

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

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

1. Acid Rain Program Forms:

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

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

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

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

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

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

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

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

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

EMISSIONS UNIT INFORMATION
Section [1] of [1]

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

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

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

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

Emissions Unit Description and Status

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

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

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

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

2. Description of Emissions Unit Addressed in this Section:

   Class I Landfills and Class III Landfill

3. Emissions Unit Identification Number: **001**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
A	**January 2015**	**January 2015**	**49**

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

   [ ] Acid Rain Unit

   [ ] CAIR Unit

9. Package Unit:
   Manufacturer: Model Number:

10. Generator Nameplate Rating:

11. Emissions Unit Comment:

    Landfill gas that is continuously generated by municipal solid waste decomposition dissipates through the soil cover of the landfill as fugitive emissions.

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description: **No control equipment.**
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 Control Equipment/Method: Control ___ of ___

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

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **Not Applicable**	
2. Maximum Production Rate: **1,437 scfm landfill gas in 2044**	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year

6. Operating Capacity/Schedule Comment:

Landfill gas that is continuously generated by municipal solid waste decomposition dissipates through the soil cover of the landfill as fugitive emissions. The landfill gas generation was determined using USEPA's Landfill Gas Emissions Model (LandGEM), Version 3.02. Models for each of the landfills—Class I Phase I, Class I Phase II, and Class III—were developed using historical and projected waste acceptance rates, methane generation rate (*k=0.05*), and potential methane generation capacity (L_o= *170* m^3/Mg) as specified in 40 CFR 60, Subpart WWW (60.754(a)(1)).

The Class I Phase I Landfill began accepting waste in 1972, stopped accepting waste in 1991, and was subsequently closed. The Class I Phase II Landfill began accepting waste in 1991 and is active. The Class III Landfill began accepting waste in 1992, stopped accepting waste in 2005, and was subsequently closed.

Landfill gas generation data are provided and summarized in Exhibit III.B.1.

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:	2. Emission Point Type Code:
EU001 – Putnam Central Landfill	**4**

3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:

Fugitive emissions are from the Class I Landfills and Class III Landfill.

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:

Not Applicable.

5. Discharge Type Code:	6. Stack Height:	7. Exit Diameter:
F	feet	feet
8. Exit Temperature:	9. Actual Volumetric Flow Rate:	10. Water Vapor:
77°F	acfm	%

11. Maximum Dry Standard Flow Rate:	12. Nonstack Emission Point Height:
dscfm	**0 to150** feet
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude… Latitude (DD/MM/SS) Longitude (DD/MM/SS)

15. Emission Point Comment:

The fugitive emissions occur over the entire area of three landfills. The landfills are designed to be up to approximately 150 feet above ground.

D. SEGMENT (PROCESS/FUEL) INFORMATION

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

1. Segment Description (Process/Fuel Type): **Landfill gas that is generated by municipal solid waste decomposition dissipates through the soil cover of the landfill as fugitive emissions. Landfill gas consists of approximately 50% Methane (CH_4) and 50% Carbon Dioxide (CO_2).**		
2. Source Classification Code (SCC): **50100402**	3. SCC Units: **Million cubic feet waste gas generated (MM ft^3)**	
4. Maximum Hourly Rate: **0.0862 MM ft^3/hr**	5. Maximum Annual Rate: **755 MM ft^3/year**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0**	8. Maximum % Ash: **0**	9. Million Btu per SCC Unit: **500 MMBtu/MM ft^3**
10. Segment Comment: **The maximum rate of landfill gas generation is based on the sum of gas generation modeling performed using LandGEM for the Class I Landfills and Class III Landfill. See Exhibit III.B.1 for the landfill gas generation summary.** **4. Maximum Hourly Rate:** $1{,}437\ \frac{std.\ ft^3}{min} \times 60\ \frac{min}{hr} \times \frac{1\ MM\ ft^3}{10^6\ ft^3} = 0.0862\ \frac{MM\ ft^3}{hr}$ **5. Maximum Annual Rate:** $0.0862\ \frac{MM\ ft^3}{hr} \times 24\ \frac{hr}{day} \times \frac{365\ days}{1\ year} = 755\ \frac{MM\ ft^3}{year}$ **9. Million Btu per SCC Unit** $500\ \frac{Btu}{ft^3} \times \frac{10^6\ ft^3}{1\ MM\ ft^3} \times \frac{1\ MM\ Btu}{10^6\ Btu} = 500\ \frac{MM\ Btu}{MM\ ft^3}$		

Segment Description and Rate: Segment __ of __

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

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

Segment Description and Rate: Segment __ of __

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

Segment Description and Rate: Segment __ of __

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

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
NMOC	**Not Applicable**	**Not Applicable**	**NS**
VOC	**Not Applicable**	**Not Applicable**	**NS**
HAP	**Not Applicable**	**Not Applicable**	**NS**
GHG	**Not Applicable**	**Not Applicable**	**NS**

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

(Optional for unregulated emissions units.)

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

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **NMOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **2.6** lb/hour **11.5** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **Class I Phase I C_{NMOC} = 112 ppmv** **Class I Phase II C_{NMOC} = 137 ppmv** **Class III C_{NMOC} = 78 ppmv** Reference: ***Tier 2 Sampling and Analysis Results and NMOC Emission Rate Recalculation*, February 26, 2014, Testing by TRC Environmental**	7. Emissions Method Code: **1**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

The potential NMOC emissions for the facility were determined using USEPA's LandGEM. Models for each of the landfills—Class I Phase I, Class I Phase II, and Class III—were developed using historical and projected waste acceptance rates, methane generation rate (*k=0.05*), and potential methane generation capacity (L_o= *170 m^3/Mg*) as specified in 40 CFR 60, Subpart WWW (60.754(a)(1)) and site-specific NMOC concentrations based on sampling and analysis performed by TRC Environmental.

See Exhibit III.F.1 for calculations for the potential emissions provided above.

11. Potential, Fugitive, and Actual Emissions Comment:

The potential NMOC emissions calculated above assume that all landfill gas that is generated dissipates through the soil cover of the landfill as 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:	
3. Potential Emissions: **1.02** lb/hour **15.5** tons/year		4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year		
6. Emission Factor: **Varies** Reference: **AP-42 Table 2.4-2**		7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years	

10. Calculation of Emissions:

The potential VOC emissions for the facility were determined using USEPA's LandGEM. Models for each of the landfills were developed using historical and projected tonnage and 40 CFR 60, Subpart WWW default parameter. VOC emissions were based on emissions factors from AP-42, Chapter 2.4, Tables 2.4-1 and 2.4-2. See Exhibit III.F.1 for calculations for the potential emissions provided above.

11. Potential, Fugitive, and Actual Emissions Comment:

The potential VOC emissions calculated above assume that all landfill gas that is generated dissipates through the soil cover of the landfill as 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: **HAP**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **2.35** lb/hour **10.3** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **Varies** Reference: **Tables 2.4-1 and 2.4.-2 of Compilation of Air Pollutant Emission Factors, AP-42, Chapter 2.4**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

The potential HAP emissions for the facility were determined using USEPA's LandGEM. Models for each of the landfills were developed using historical and projected tonnage and 40 CFR 60, Subpart WWW default parameter. HAP emissions were based on emissions factors from AP-42, Chapter 2.4, Tables 2.4-1 and 2.4-2. See Exhibit. III.F.1 for calculations for the potential emissions provided above.

11. Potential, Fugitive, and Actual Emissions Comment:

The potential HAP emissions calculated above assume that all landfill gas that is generated dissipates through the soil cover of the landfill as 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: **GHG**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **44,133** lb/hour **193,303** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **Varies** Reference: **40 CFR 98, Table A-1**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

The potential GHG emissions for the facility were determined using the facility's potential to emit Methane. GHG emissions were based on Carbon Dioxide equivalents presented in 40 CFR 98, Table A-1. See Exhibit III.F.1 for calculations for the potential emissions provided above.

11. Potential, Fugitive, and Actual Emissions Comment:

The potential GHG emissions calculated above assume that all landfill gas that is generated dissipates through the soil cover of the landfill as 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: **Not Applicable**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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

Allowable Emissions Allowable Emissions __ of ___

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

G. VISIBLE EMISSIONS INFORMATION

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

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype: **Not Applicable**	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

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

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code: **Not Applicable**	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ___ of ___

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

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

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

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

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

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

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

6. Compliance Demonstration Reports/Records:
   [ ] Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [ ] Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [ ] To be Submitted, Date (if known):_____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [X] Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

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

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

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

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: ☒ Attached, Document ID: **Exhibit III.C.5**
2. Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☒ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements Comment

EXHIBIT II.C.1

FACILITY PLOT PLAN

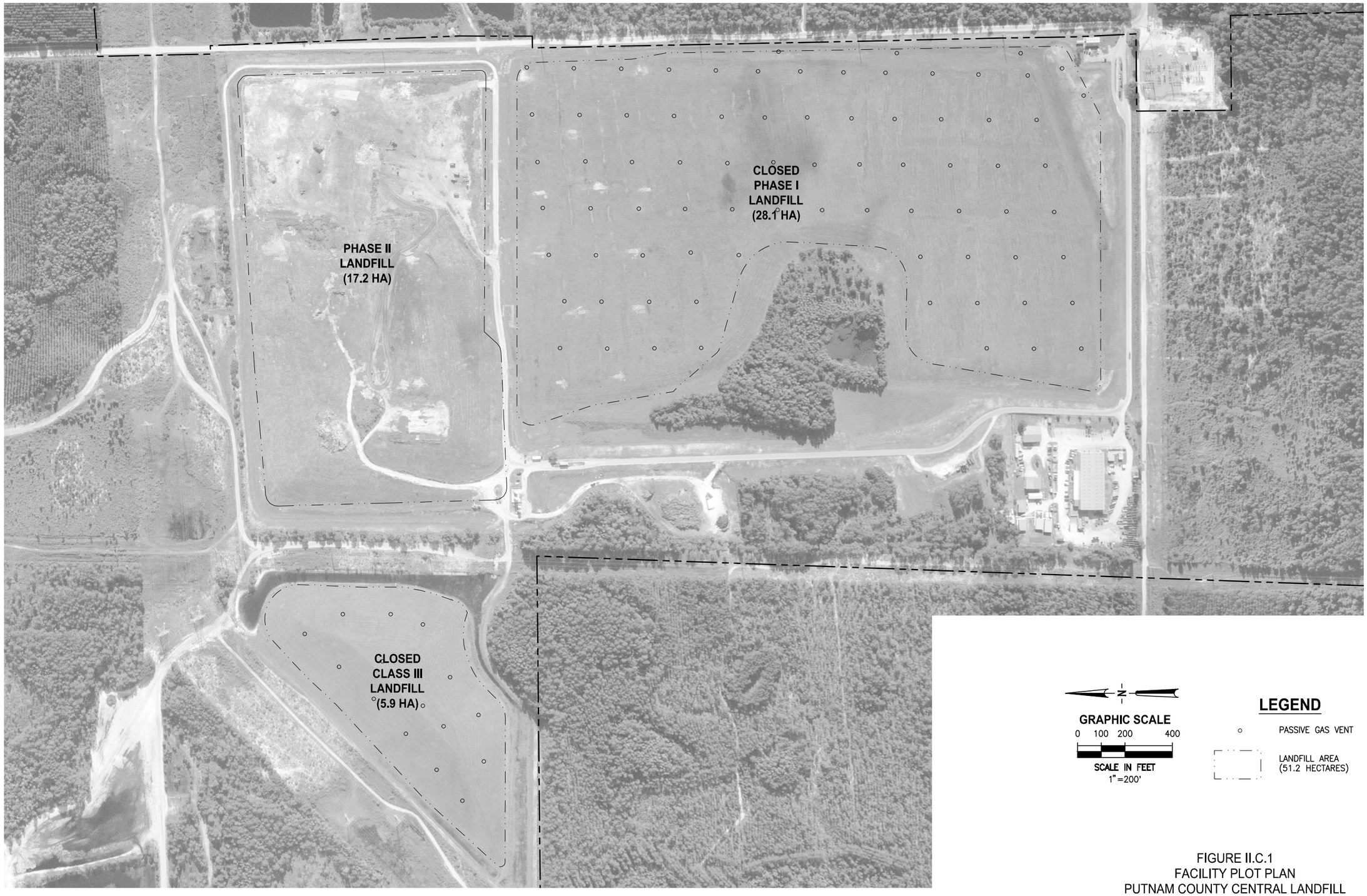
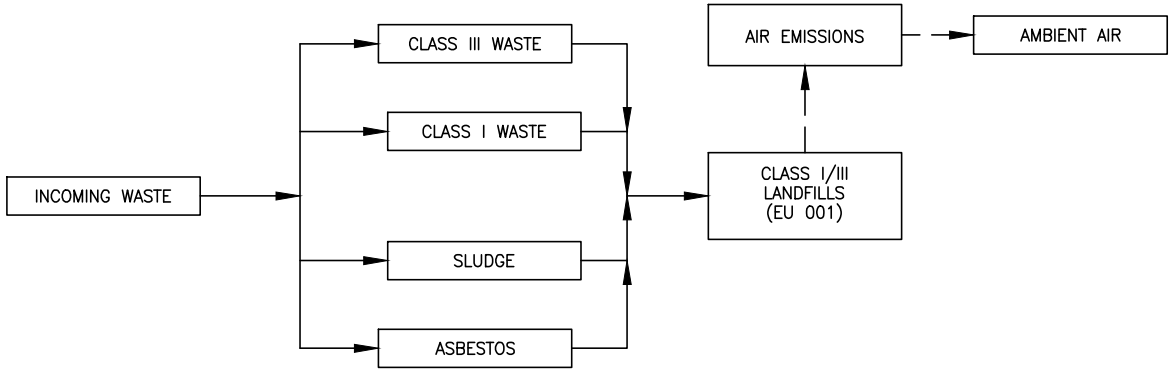


FIGURE II.C.1
FACILITY PLOT PLAN
PUTNAM COUNTY CENTRAL LANDFILL
PUTNAM COUNTY, FLORIDA

JONES EDMUNDS

EXHIBIT II.C.2

PROCESS FLOW DIAGRAM



ATTACHMENT II.C.2
PROCESS FLOW DIAGRAM
PUTNAM COUNTY CENTRAL LANDFILL
PUTNAM COUNTY, FLORIDA

JONES EDMUNDS

EXHIBIT II.C.3

PRECAUTIONS TO PREVENT EMISSIONS OF UNCONFINED PARTICULATE MATTER

EXHIBIT II.C.3
PRECAUTIONS TO PREVENT EMISSIONS OF
UNCONFINED PARTICULATE MATTER

Unconfined particulate matter emissions at the facility are the result of wind and vehicle traffic on unpaved roads at the facility. Emissions of unconfined particulate matter are prevented in the following manners:

- The facility entrance and most access roads are paved.

- Dust and particulate matter emissions will be controlled on the landfills by covering with vegetation or seeding landfill slopes that have reached final grade, have intermediate cover, or will not receive additional waste for some period.

- Dust and particulate matter emissions will be controlled on unpaved access roads with watering application from a water truck as necessary.

EXHIBIT II.C.4

LIST OF INSIGNIFICANT ACTIVITIES

EXHIBIT II.C.4
LIST OF INSIGNIFICANT ACTIVITIES

EXEMPT EMISSIONS UNITS

Not applicable.

INSIGNIFICANT EMISSIONS UNITS

The following are insignificant emissions units or pollutant-emitting activities at the Putnam County Central Landfill:

- Leachate tanks operation and maintenance.
- Vehicle refueling.
- Used oil recovery.
- Yard waste.
- White goods.
- Tire processing operations.

Each of these activities should fall within the limits of Rule 62-213.300(2)(a)1, FAC.

EXHIBIT II.C.5

IDENTIFICATION OF APPLICABLE REQUIREMENTS

EXHIBIT II.C.5
IDENTIFICATION OF APPLICABLE REQUIREMENTS

The following table provides each federal, state, and state-enforceable local air pollution regulation applicable to the facility as a whole:

40 CFR 60, Subpart A	NSPS General Provisions
40 CFR 60, Subpart WWW	Standards of Performance for Municipal Solid Waste Landfills
40 CFR 61, Subpart A	General Provisions
40 CFR 61, Subpart M	National Emission Standard for Asbestos
62-4, FAC	Permits
62-204, FAC	Air Pollution Control – General Provisions
62-210, FAC	Stationary Sources – General Requirements
62-213, FAC	Operation Permits for Major Sources of Air Pollution

EXHIBIT II.C.6

COMPLIANCE REPORT AND PLAN

EXHIBIT II.C.6
COMPLIANCE REPORT AND PLAN

EU001 – Putnam County Central Landfill is in compliance with all applicable requirements; therefore, it does not require a compliance plan.

EXHIBIT III.B.1

LANDFILL GAS GENERATION SUMMARY

JONES EDMUNDS

PROJECT NUMBER: 16810-174-01 SHEET: 1 OF 1
PROJECT NAME: PCCL TITLE V INITIAL APPLICATION
SUBJECT: ATTACHMENT III.B.1 - LANDFILL GAS GENERATION
BY: HBOUDREAU DATE: 4/7/2014
CHECKED BY: SROQUE DATE: 4/11/2014

Objective: Calculate facility's total landfill gas generation including the landfill expansion.

Data and Calculation: *Appendix A Amended Design Capacity Report and NMOC Emissions Rate Report Dated 4/11/2014*

LandGEM Waste Acceptance and Total Landfill Gas Generation

Estimate Source	Year	Waste Accepted (Mg/year)				Total Landfill Gas (scfm)			
		Phase I	Phase II	Class III	Total	Phase I	Phase II	Class III	Total
Population Estimates (1972-2000)	1972	15,101	0	0	15,101	0	0	0	0
	1973	15,875	0	0	15,875	15	0	0	15
	1974	16,433	0	0	16,433	31	0	0	31
	1975	17,230	0	0	17,230	46	0	0	46
	1976	18,043	0	0	18,043	61	0	0	61
	1977	18,617	0	0	18,617	76	0	0	76
	1978	19,454	0	0	19,454	92	0	0	92
	1979	20,306	0	0	20,306	107	0	0	107
	1980	20,895	0	0	20,895	122	0	0	122
	1981	21,782	0	0	21,782	138	0	0	138
	1982	22,685	0	0	22,685	153	0	0	153
	1983	23,301	0	0	23,301	169	0	0	169
	1984	24,228	0	0	24,228	184	0	0	184
	1985	25,171	0	0	25,171	200	0	0	200
	1986	25,803	0	0	25,803	215	0	0	215
	1987	26,770	0	0	26,770	231	0	0	231
	1988	27,410	0	0	27,410	247	0	0	247
	1989	25,035	0	0	25,035	263	0	0	263
	1990	23,197	0	0	23,197	275	0	0	275
	1991	0	47,157	0	47,157	286	0	0	286
	1992	0	26,700	7,811	34,511	272	44	0	315
	1993	0	27,241	7,969	35,210	258	66	8	332
	1994	0	25,580	7,483	33,064	246	88	16	349
	1995	0	22,670	6,632	29,303	234	107	22	364
	1996	0	22,174	12,974	35,149	222	123	28	374
	1997	0	22,298	13,046	35,344	212	137	40	389
	1998	0	24,344	14,243	38,587	201	151	51	404
	1999	0	24,129	14,118	38,247	191	166	63	421
	2000	0	26,621	15,576	42,197	182	181	74	437
Actual Scale Records (2001-2013)	2001	0	39,316	16,126	55,441	173	196	87	456
	2002	0	42,846	12,792	55,639	165	223	99	487
	2003	0	63,867	45,491	109,358	157	252	107	515
	2004	0	83,402	62,780	146,182	149	298	148	595
	2005	0	62,821	33,808	96,629	142	361	204	707
	2006	0	109,091	0	109,091	135	401	229	765
	2007	0	106,980	0	106,980	128	482	218	828
	2008	0	95,578	0	95,578	122	558	207	887
	2009	0	84,857	0	84,857	116	619	197	932
	2010	0	79,676	0	79,676	110	667	187	965
	2011	0	81,976	0	81,976	105	708	178	991
	2012	0	77,836	0	77,836	100	749	170	1,018
	2013	0	73,337	0	73,337	95	784	161	1,041
Projected Waste Acceptance (2014-2044)	*2014*	*0*	*77,142*	*0*	*77,142*	*90*	*814*	*153*	*1,058*
	2015	*0*	*77,284*	*0*	*77,284*	*86*	*845*	*146*	*1,077*
	2016	*0*	*77,531*	*0*	*77,531*	*82*	*875*	*139*	*1,096*
	2017	*0*	*77,779*	*0*	*77,779*	*78*	*904*	*132*	*1,114*
	2018	*0*	*78,028*	*0*	*78,028*	*74*	*932*	*126*	*1,132*
	2019	*0*	*78,277*	*0*	*78,277*	*70*	*959*	*119*	*1,148*
	2020	*0*	*78,528*	*0*	*78,528*	*67*	*984*	*114*	*1,165*
	2021	*0*	*78,779*	*0*	*78,779*	*64*	*1,009*	*108*	*1,180*
	2022	*0*	*79,030*	*0*	*79,030*	*61*	*1,032*	*103*	*1,195*
	2023	*0*	*79,283*	*0*	*79,283*	*58*	*1,055*	*98*	*1,210*
	2024	*0*	*79,536*	*0*	*79,536*	*55*	*1,076*	*93*	*1,224*
	2025	*0*	*79,791*	*0*	*79,791*	*52*	*1,097*	*88*	*1,238*
	2026	*0*	*80,046*	*0*	*80,046*	*50*	*1,117*	*84*	*1,251*
	2027	*0*	*80,302*	*0*	*80,302*	*47*	*1,137*	*80*	*1,264*
	2028	*0*	*80,558*	*0*	*80,558*	*45*	*1,156*	*76*	*1,277*
	2029	*0*	*80,816*	*0*	*80,816*	*43*	*1,174*	*72*	*1,289*
	2030	*0*	*81,074*	*0*	*81,074*	*41*	*1,191*	*69*	*1,300*
	2031	*0*	*81,333*	*0*	*81,333*	*39*	*1,208*	*66*	*1,312*
	2032	*0*	*81,593*	*0*	*81,593*	*37*	*1,224*	*62*	*1,323*
	2033	*0*	*81,854*	*0*	*81,854*	*35*	*1,239*	*59*	*1,334*
	2034	*0*	*82,116*	*0*	*82,116*	*33*	*1,255*	*56*	*1,344*
	2035	*0*	*82,378*	*0*	*82,378*	*32*	*1,269*	*54*	*1,355*
	2036	*0*	*82,642*	*0*	*82,642*	*30*	*1,283*	*51*	*1,364*
	2037	*0*	*82,906*	*0*	*82,906*	*29*	*1,297*	*49*	*1,374*
	2038	*0*	*83,171*	*0*	*83,171*	*27*	*1,310*	*46*	*1,384*
	2039	*0*	*83,437*	*0*	*83,437*	*26*	*1,323*	*44*	*1,393*
	2040	*0*	*83,704*	*0*	*83,704*	*25*	*1,336*	*42*	*1,402*
	2041	*0*	*83,971*	*0*	*83,971*	*23*	*1,348*	*40*	*1,411*
	2042	*0*	*84,240*	*0*	*84,240*	*22*	*1,360*	*38*	*1,420*
	2043	*0*	*84,509*	*0*	*84,509*	*21*	*1,371*	*36*	*1,428*
	2044	*0*	*34,000*	*0*	*34,000*	*20*	*1,382*	*34*	*1,437*

Conclusion:

Year	Total Landfill Gas [SCFM]
2044	1,437

The maximum projected landfill gas generation for the facility occurs in 2044 and is 1437 scfm.

EXHIBIT III.F.1

POTENTIAL-TO-EMIT CALCULATIONS

EXHIBIT III.F.1
POTENTIAL-TO EMIT-CALCULATIONS

The potential-to-emit (PTE) calculations were performed for pollutants from landfill gas fugitive emissions including Nonmethane Organic Compounds (NMOC), Volatile Organic Compounds (VOC), Hazardous Air Pollutants (HAP), and Greenhouse Gases (GHG). Based on current waste acceptance projections, landfill gas generation is expected to peak in 2044 at 1,437 standard cubic feet per minute. Therefore, PTE calculations were performed for the projected gas production in 2044.

GREENHOUSE GAS EMISSIONS

Beginning on January 2, 2011, GHG became a regulated New Source Review (NSR) pollutant under the Prevention of Significant Deterioration (PSD) Major Source permitting program subject to the thresholds in 40 CFR 52.21(b)(49)(v). This regulation stipulates that for permits issued on or after July 1, 2011, GHG emissions are subject to regulation at existing stationary sources that have the PTE 100,000 tons per year (tpy) Carbon Dioxide equivalents (CO_2e) when the stationary source undertakes a modification that will result in an emissions increase of 75,000 tpy or more CO_2e. The calculations provided demonstrate that the existing PTE is approximately 148,000 tpy CO_2e in 2044 and the landfill expansion results in an increase of approximately 45,000 tpy CO_2e; therefore, the facility is not subject to PSD Major Source permitting requirements because the expansion increased the CO_2e emissions less than 75,000 tpy.

GHG emission calculations consist of uncontrolled CH_4 emissions from the landfill. Biogenic CO_2 emissions are deferred (excluded from these calculations) in accordance with US Environmental Protection Agency's July 20, 2011 *Deferral for CO_2 Emissions from Bioenergy and Other Biogenic Sources under the Prevention of Significant Deterioration (PSD) and Title V Programs*.

JONES EDMUNDS

PROJECT NUMBER: 16810-174-01 SHEET: 1 OF 7
PROJECT NAME: PCCL TITLE V INITIAL APPLICATION
SUBJECT: ATTACHMENT III.F.1 - POTENTIAL TO EMIT CALCULATIONS
BY: HBOUDREAU DATE: 4/7/2014
CHECKED BY: SROQUE DATE: 4/11/2014

Objective: Calculate facility's the potential to emit (PTE) for the following pollutants:
NMOC
VOC
HAP
GHG

Data:

LandGEM Results for Landfill Gas Emissions Rate				
Year	Landfill Gas Emissions Rate [scfm]			
	Phase I	Phase II	Class III	Total
2044	20	1,382	34	1,437

(Maximum projected landfill gas production)

LandGEM Results for NMOC Emissions Rate				
Year	NMOC Emissions Rate [Mg/year]			
	Phase I	Phase II	Class III	Total
2044	0.1	10.1	0.1	10.4

(Maximum projected landfill gas production)

Landfill Gas Composition		
50%	Methane by volume	16.04 g/mol
50%	Carbon Dioxide by volume	44.01 g/mol

Pollutant Emissions Factors			
Pollutant	Emission Factor	Unit	Reference
NMOC			*Site-specific Sampling and Analysis, TRC Environmental, Feb 2014*
Phase I	112	ppmv as hexane	
Phase II	137	ppmv as hexane	
Class III	78	ppmv as hexane	
VOC	39%	of NMOC emissions	*AP-42, Table 2.4-2*
	Varies	ppmv	*(see HAP)*
HAP	Varies	ppmv	*Source: Tables 2.4-1 and 2.4-2 of Compilation of Air Pollutant Emission Factors, AP-42, Volume 1: Stationary Point and Area Sources, 5th ed., Chapter 2.4 Municipal Solid Waste Landfills. U.S. EPA, Office of Air Quality Planning and Standards. Research Triangle Park, NC. November 1998. http://www.epa.gov/ttn/chief/ap42/ch02/final/c02s04.pdf*
GHG			*40 CFR 98, Table A-1*
CO_2	1	CO_2e	
CH_4	25	CO_2e	

Conversions			
1	short ton (tn) =	0.907	Mg
1	short ton =	2,000	lbs
1	foot =	0.3048	meter

Calculations (Based on Maximum Landfill Gas Emission Rate in 2044):

NMOC Potential to Emit

Calculate the potential NMOC emissions from the facility based on LandGEM results.

1. Convert the total annual NMOC emissions from megagrams to short tons:

10.4 Mg/yr × 1 tn/0.907 Mg = 11.5 tons/year

2. Convert the annual NMOC emissions to pounds per hour:

11.5 tn/yr × 2000 lbs/tn × 1 yr/365 dy x 1 dy/24 hr = 2.6 lb/hr

VOC Potential to Emit

Calculate the potential VOC emissions from the facility based on AP-42 emissions factor.

2.6 lb/hr × 39% = 1.02 lb/hr
11.5 tn/yr × 39% = 4.5 tons/year

Calculate the potential VOC emissions from the facility based on LandGEM Inventory

LandGEM Results for VOC Potential to Emit for 2044

Gas / Pollutant	Emission Rate (short tons/year)			
	Phase I	Phase II	Class III	Total
1,1,2,2-Tetrachloroethane - HAP/VOC	2.537E-03	1.738E-01	4.303E-03	1.806E-01
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.263E-03	2.236E-01	5.535E-03	2.324E-01
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.664E-04	1.825E-02	4.518E-04	1.897E-02
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	5.574E-04	3.819E-02	9.455E-04	3.969E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	2.794E-04	1.914E-02	4.739E-04	1.990E-02
2-Propanol (isopropyl alcohol) - VOC	4.129E-02	2.829E+00	7.004E-02	2.940E+00
Acrylonitrile - HAP/VOC	4.592E-03	3.146E-01	7.790E-03	3.270E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	2.039E-03	1.397E-01	3.458E-03	1.452E-01
Bromodichloromethane - VOC	6.977E-03	4.780E-01	1.183E-02	4.968E-01
Butane - VOC	3.992E-03	2.735E-01	6.772E-03	2.843E-01
Carbon disulfide - HAP/VOC	6.066E-04	4.156E-02	1.029E-03	4.319E-02
Carbon tetrachloride - HAP/VOC	8.454E-06	5.792E-04	1.434E-05	6.020E-04
Carbonyl sulfide - HAP/VOC	4.044E-04	2.770E-02	6.859E-04	2.879E-02
Chlorobenzene - HAP/VOC	3.866E-04	2.648E-02	6.557E-04	2.753E-02
Chloroethane (ethyl chloride) - HAP/VOC	1.152E-03	7.894E-02	1.955E-03	8.205E-02
Chloroform - HAP/VOC	4.921E-05	3.371E-03	8.346E-05	3.504E-03
Chloromethane - VOC	8.324E-04	5.702E-02	1.412E-03	5.927E-02
Dichlorobenzene - (HAP for para isomer/VOC)	4.241E-04	2.905E-02	7.194E-04	3.020E-02
Dichlorofluoromethane - VOC	3.676E-03	2.518E-01	6.236E-03	2.618E-01
Dimethyl sulfide (methyl sulfide) - VOC	6.658E-03	4.561E-01	1.129E-02	4.741E-01
Ethanol - VOC	1.709E-02	1.171E+00	2.899E-02	1.217E+00
Ethyl mercaptan (ethanethiol) - VOC	1.963E-03	1.345E-01	3.330E-03	1.398E-01
Ethylbenzene - HAP/VOC	6.709E-03	4.596E-01	1.138E-02	4.777E-01
Ethylene dibromide - HAP/VOC	2.581E-06	1.768E-04	4.378E-06	1.838E-04
Fluorotrichloromethane - VOC	1.434E-03	9.827E-02	2.433E-03	1.021E-01
Hexane - HAP/VOC	7.814E-03	5.353E-01	1.325E-02	5.564E-01
Methyl ethyl ketone - HAP/VOC	7.034E-03	4.819E-01	1.193E-02	5.008E-01
Methyl isobutyl ketone - HAP/VOC	2.614E-03	1.791E-01	4.435E-03	1.862E-01
Methyl mercaptan - VOC	1.652E-03	1.132E-01	2.803E-03	1.177E-01
Pentane - VOC	3.271E-03	2.241E-01	5.548E-03	2.329E-01
Propane - VOC	6.663E-03	4.565E-01	1.130E-02	4.744E-01
t-1,2-Dichloroethene - VOC	3.729E-03	2.555E-01	6.325E-03	2.655E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	4.936E-02	3.382E+00	8.373E-02	3.515E+00
Trichloroethylene (trichloroethene) - HAP/VOC	5.055E-03	3.463E-01	8.574E-03	3.599E-01
Vinyl chloride - HAP/VOC	6.268E-03	4.294E-01	1.063E-02	4.463E-01
Xylenes - HAP/VOC	1.750E-02	1.199E+00	2.969E-02	1.246E+00
Total VOC	0.2	14.9	0.4	15.5
Maximum VOC	0.0	3.4	0.1	3.5

JONES EDMUNDS

PROJECT NUMBER: 16810-174-01 SHEET: 3 OF 7
PROJECT NAME: PCCL TITLE V INITIAL APPLICATION
SUBJECT: ATTACHMENT III.F.1 - POTENTIAL TO EMIT CALCULATIONS
BY: HBOUDREAU DATE: 4/7/2014
CHECKED BY: SROQUE DATE: 4/11/2014

HAP Potential to Emit

Calculate the potential HAP emissions from the facility based on LandGEM Inventory

LandGEM Results for HAP Potential to Emit for 2044

Gas / Pollutant	Emission Rate (short tons/year)			
	Phase I	Phase II	Class III	Total
1,1,1-Trichloroethane (methyl chloroform) - HAP	8.798E-04	6.027E-02	1.492E-03	6.264E-02
1,1,2,2-Tetrachloroethane - HAP/VOC	2.537E-03	1.738E-01	4.303E-03	1.806E-01
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.263E-03	2.236E-01	5.535E-03	2.324E-01
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.664E-04	1.825E-02	4.518E-04	1.897E-02
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	5.574E-04	3.819E-02	9.455E-04	3.969E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	2.794E-04	1.914E-02	4.739E-04	1.990E-02
Acrylonitrile - HAP/VOC	4.592E-03	3.146E-01	7.790E-03	3.270E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	2.039E-03	1.397E-01	3.458E-03	1.452E-01
Carbon disulfide - HAP/VOC	6.066E-04	4.156E-02	1.029E-03	4.319E-02
Carbon tetrachloride - HAP/VOC	8.454E-06	5.792E-04	1.434E-05	6.020E-04
Carbonyl sulfide - HAP/VOC	4.044E-04	2.770E-02	6.859E-04	2.879E-02
Chlorobenzene - HAP/VOC	3.866E-04	2.648E-02	6.557E-04	2.753E-02
Chloroethane (ethyl chloride) - HAP/VOC	1.152E-03	7.894E-02	1.955E-03	8.205E-02
Chloroform - HAP/VOC	4.921E-05	3.371E-03	8.346E-05	3.504E-03
Dichlorobenzene - (HAP for para isomer/VOC)	4.241E-04	2.905E-02	7.194E-04	3.020E-02
Dichloromethane (methylene chloride) - HAP	1.634E-02	1.119E+00	2.771E-02	1.163E+00
Ethylbenzene - HAP/VOC	6.709E-03	4.596E-01	1.138E-02	4.777E-01
Ethylene dibromide - HAP/VOC	2.581E-06	1.768E-04	4.378E-06	1.838E-04
Hexane - HAP/VOC	7.814E-03	5.353E-01	1.325E-02	5.564E-01
Mercury (total) - HAP	7.993E-07	5.475E-05	1.356E-06	5.691E-05
Methyl ethyl ketone - HAP/VOC	7.034E-03	4.819E-01	1.193E-02	5.008E-01
Methyl isobutyl ketone - HAP/VOC	2.614E-03	1.791E-01	4.435E-03	1.862E-01
Perchloroethylene (tetrachloroethylene) - HAP	8.429E-03	5.775E-01	1.430E-02	6.002E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	4.936E-02	3.382E+00	8.373E-02	3.515E+00
Trichloroethylene (trichloroethene) - HAP/VOC	5.055E-03	3.463E-01	8.574E-03	3.599E-01
Vinyl chloride - HAP/VOC	6.268E-03	4.294E-01	1.063E-02	4.463E-01
Xylenes - HAP/VOC	1.750E-02	1.199E+00	2.969E-02	1.246E+00
Total HAP	0.1	9.9	0.2	10.3
Maximum HAP	0.0	3.4	0.1	3.5

10.3 tn/yr × 2000 lbs/tn × 1 yr/365 dy x 1dy/24 hr = 2.35 lb/hr

GHG Potential to Emit

Calculate the potential GHG emissions from the facility based on LandGEM results and 40 CFR 98 emissions factors.
Calculate the potential GHG emissions from the facility before the Expansion.
Calculate the potential GHG emissions from the facility as a result of the Expansion.

Sample Calculation:

1.Calculate the Methane generation rate based on LandGEM landfill gas generation rate:

$$Q_{CH_4} = Q_{LFG} C_{CH_4} \left(0.3048 \frac{ft}{m}\right)^3 \frac{60 \min 24 hr 365 day}{year}$$

Q_{LFG} = Landfill gas emission rate, scfm
C_{CH4} = Concentration of Methane, %

1437 SCFM × 50% × (0.3048 m/ft)^3 × 60 min × 24 hr × 365 dy/yr = 1.07E+07 m^3 CH_4/yr

2. Calculate the mass Methane generation rate based on LandGEM landfill gas generation rate:

$$M_{CH_4} = Q_{CH_4} \left[\frac{MW_{CH_4} \times 1 atm}{\left(8.205 \times 10^{-5} \frac{m^3 - atm}{gmol - K}\right)\left(\frac{1{,}000\, g}{kg}\right)(273 + T)} \right]$$

M_{CH4} = Mass emission rate of Methane, kg^3/yr
Q_{CH4} = Emission rate of Methane, m^3/yr
MW_{CH4} = Molecular weight of Methane, g/gmol
T = temperature of landfill gas, C 25 C

10693676 m3CH4/yr [(16.04 g/mol × 1 atm)/(8.205 × 10-5 m3-atm/gmolK × 1,000 g/kg × (273+25C)] / 1000 kg/Mg =

M_{CH4} = 7.02E+03 Mg CH_4/yr
7.73E+03 tons CH_4/yr
1.77E+03 lb CH_4/hr
CO_2e = 1.93E+05 tons CO_2e/yr
4.41E+04 lb CO_2e/hr

3. Sum total greenhouse gas emissions in CO_2e:

	[lb/hr]	[ton/yr]
Methane	44,146	193,361
Total	44,146	193,361

Note: Biogenic CO2 Emissions are deferred and not included in these calculations.

Before the Expansion the Landfill was projected to reach capacity in November 2016 according to County Annual Remaining Capacity Site Life Calculations submitted to FDEP on June 2014.

Pre Expansion LandGEM Waste Acceptance, Landfill Gas Generation, and Greenhouse Gas Potential to Emit

Year	Waste Accepted (short tons/year)				Total Landfill Gas (scfm)				GHG (tpy CO_2e)
	Phase I	Phase II	Class III	Total	Phase I	Phase II	Class III	Total	Total
1972	15,101	0	0	15,101	0	0	0	0	0
1973	15,875	0	0	15,875	15	0	0	15	2,063
1974	16,433	0	0	16,433	31	0	0	31	4,132
1975	17,230	0	0	17,230	46	0	0	46	6,175
1976	18,043	0	0	18,043	61	0	0	61	8,228
1977	18,617	0	0	18,617	76	0	0	76	10,292
1978	19,454	0	0	19,454	92	0	0	92	12,334
1979	20,306	0	0	20,306	107	0	0	107	14,390
1980	20,895	0	0	20,895	122	0	0	122	16,463
1981	21,782	0	0	21,782	138	0	0	138	18,515
1982	22,685	0	0	22,685	153	0	0	153	20,588
1983	23,301	0	0	23,301	169	0	0	169	22,683
1984	24,228	0	0	24,228	184	0	0	184	24,761
1985	25,171	0	0	25,171	200	0	0	200	26,863
1986	25,803	0	0	25,803	215	0	0	215	28,992
1987	26,770	0	0	26,770	231	0	0	231	31,104
1988	27,410	0	0	27,410	247	0	0	247	33,245
1989	25,035	0	0	25,035	263	0	0	263	35,368
1990	23,197	0	0	23,197	275	0	0	275	37,064
1991	0	47,157	0	47,157	286	0	0	286	38,426
1992	0	26,700	7,811	34,511	272	44	0	315	42,409
1993	0	27,241	7,969	35,210	258	66	8	332	44,724
1994	0	25,580	7,483	33,064	246	88	16	349	47,015
1995	0	22,670	6,632	29,303	234	107	22	364	48,922
1996	0	22,174	12,974	35,149	222	123	28	374	50,258
1997	0	22,298	13,046	35,344	212	137	40	389	52,334
1998	0	24,344	14,243	38,587	201	151	51	404	54,334
1999	0	24,129	14,118	38,247	191	166	63	421	56,654
2000	0	26,621	15,576	42,197	182	181	74	437	58,817
2001	0	39,316	16,126	55,441	173	196	87	456	61,383
2002	0	42,846	12,792	55,639	165	223	99	487	65,476
2003	0	63,867	45,491	109,358	157	252	107	515	69,352
2004	0	83,402	62,780	146,182	149	298	148	595	80,118
2005	0	62,821	33,808	96,629	142	361	204	707	95,148
2006	0	109,091	0	109,091	135	401	229	765	102,929
2007	0	106,980	0	106,980	128	482	218	828	111,459
2008	0	95,578	0	95,578	122	558	207	887	119,311
2009	0	84,857	0	84,857	116	619	197	932	125,364
2010	0	79,676	0	79,676	110	667	187	965	129,790
2011	0	81,976	0	81,976	105	708	178	991	133,357
2012	0	77,836	0	77,836	100	749	170	1,018	137,035
2013	0	73,337	0	73,337	95	784	161	1,041	140,020
2014	*0*	***77,142***	*0*	*77,142*	*90*	*814*	*153*	*1,058*	*142,300*
2015	*0*	***77,284***	*0*	*77,284*	*86*	*845*	*146*	*1,077*	*144,942*
2016	*0*	***63,318***	*0*	*63,318*	*82*	*875*	*139*	*1,096*	*147,472*
2017	*0*	*0*	*0*	*0*	*78*	*891*	*132*	*1,101*	*148,144*
2018	*0*	*0*	*0*	*0*	*74*	*848*	*126*	*1,047*	*140,919*
2019	*0*	*0*	*0*	*0*	*70*	*806*	*119*	*996*	*134,047*
2020	*0*	*0*	*0*	*0*	*67*	*767*	*114*	*948*	*127,509*
2021	*0*	*0*	*0*	*0*	*64*	*730*	*108*	*901*	*121,290*
2022	*0*	*0*	*0*	*0*	*61*	*694*	*103*	*857*	*115,375*
2023	*0*	*0*	*0*	*0*	*58*	*660*	*98*	*816*	*109,748*
2024	*0*	*0*	*0*	*0*	*55*	*628*	*93*	*776*	*104,396*
2025	*0*	*0*	*0*	*0*	*52*	*597*	*88*	*738*	*99,304*
2026	*0*	*0*	*0*	*0*	*50*	*568*	*84*	*702*	*94,461*
2027	*0*	*0*	*0*	*0*	*47*	*540*	*80*	*668*	*89,854*
2028	*0*	*0*	*0*	*0*	*45*	*514*	*76*	*635*	*85,472*
2029	*0*	*0*	*0*	*0*	*43*	*489*	*72*	*604*	*81,303*
2030	*0*	*0*	*0*	*0*	*41*	*465*	*69*	*575*	*77,338*
2031	*0*	*0*	*0*	*0*	*39*	*443*	*66*	*547*	*73,566*
2032	*0*	*0*	*0*	*0*	*37*	*421*	*62*	*520*	*69,979*
2033	*0*	*0*	*0*	*0*	*35*	*400*	*59*	*495*	*66,566*
2034	*0*	*0*	*0*	*0*	*33*	*381*	*56*	*471*	*63,319*
2035	*0*	*0*	*0*	*0*	*32*	*362*	*54*	*448*	*60,231*
2036	*0*	*0*	*0*	*0*	*30*	*345*	*51*	*426*	*57,294*
2037	*0*	*0*	*0*	*0*	*29*	*328*	*49*	*405*	*54,499*
2038	*0*	*0*	*0*	*0*	*27*	*312*	*46*	*385*	*51,841*
2039	*0*	*0*	*0*	*0*	*26*	*297*	*44*	*366*	*49,313*
2040	*0*	*0*	*0*	*0*	*25*	*282*	*42*	*349*	*46,908*
2041	*0*	*0*	*0*	*0*	*23*	*268*	*40*	*332*	*44,620*
2042	*0*	*0*	*0*	*0*	*22*	*255*	*38*	*315*	*42,444*
2043	*0*	*0*	*0*	*0*	*21*	*243*	*36*	*300*	*40,374*
2044	*0*	*0*	*0*	*0*	*20*	*231*	*34*	*285*	*38,405*

Prior to the Expansion, the facility had a maximum GHG potential to emit of 148144 tons per year of CO2 equivalent.

After the Expansion the Landfill is projected to reach capacity in May 2043.

Post Expansion LandGEM Waste Acceptance, Landfill Gas Generation, and Greenhouse Gas Potential to Emit

Year	Waste Accepted (short tons/year)				Total Landfill Gas (scfm)				GHG ($tpy\ CO_2e$)
	Phase I	Phase II	Class III	Total	Phase I	Phase II	Class III	Total	Total
1972	15,101	0	0	15,101	0	0	0	0	0
1973	15,875	0	0	15,875	15	0	0	15	2,063
1974	16,433	0	0	16,433	31	0	0	31	4,132
1975	17,230	0	0	17,230	46	0	0	46	6,175
1976	18,043	0	0	18,043	61	0	0	61	8,228
1977	18,617	0	0	18,617	76	0	0	76	10,292
1978	19,454	0	0	19,454	92	0	0	92	12,334
1979	20,306	0	0	20,306	107	0	0	107	14,390
1980	20,895	0	0	20,895	122	0	0	122	16,463
1981	21,782	0	0	21,782	138	0	0	138	18,515
1982	22,685	0	0	22,685	153	0	0	153	20,588
1983	23,301	0	0	23,301	169	0	0	169	22,683
1984	24,228	0	0	24,228	184	0	0	184	24,761
1985	25,171	0	0	25,171	200	0	0	200	26,863
1986	25,803	0	0	25,803	215	0	0	215	28,992
1987	26,770	0	0	26,770	231	0	0	231	31,104
1988	27,410	0	0	27,410	247	0	0	247	33,245
1989	25,035	0	0	25,035	263	0	0	263	35,368
1990	23,197	0	0	23,197	275	0	0	275	37,064
1991	0	47,157	0	47,157	286	0	0	286	38,426
1992	0	26,700	7,811	34,511	272	44	0	315	42,409
1993	0	27,241	7,969	35,210	258	66	8	332	44,724
1994	0	25,580	7,483	33,064	246	88	16	349	47,015
1995	0	22,670	6,632	29,303	234	107	22	364	48,922
1996	0	22,174	12,974	35,149	222	123	28	374	50,258
1997	0	22,298	13,046	35,344	212	137	40	389	52,334
1998	0	24,344	14,243	38,587	201	151	51	404	54,334
1999	0	24,129	14,118	38,247	191	166	63	421	56,654
2000	0	26,621	15,576	42,197	182	181	74	437	58,817
2001	0	39,316	16,126	55,441	173	196	87	456	61,383
2002	0	42,846	12,792	55,639	165	223	99	487	65,476
2003	0	63,867	45,491	109,358	157	252	107	515	69,352
2004	0	83,402	62,780	146,182	149	298	148	595	80,118
2005	0	62,821	33,808	96,629	142	361	204	707	95,148
2006	0	109,091	0	109,091	135	401	229	765	102,929
2007	0	106,980	0	106,980	128	482	218	828	111,459
2008	0	95,578	0	95,578	122	558	207	887	119,311
2009	0	84,857	0	84,857	116	619	197	932	125,364
2010	0	79,676	0	79,676	110	667	187	965	129,790
2011	0	81,976	0	81,976	105	708	178	991	133,357
2012	0	77,836	0	77,836	100	749	170	1,018	137,035
2013	0	73,337	0	73,337	95	784	161	1,041	140,020
2014	*0*	***77,142***	*0*	*77,142*	*90*	*814*	*153*	*1,058*	*142,300*
2015	*0*	***77,284***	*0*	*77,284*	*86*	*845*	*146*	*1,077*	*144,942*
2016	*0*	***77,531***	*0*	*77,531*	*82*	*875*	*139*	*1,096*	*147,472*
2017	*0*	***77,779***	*0*	*77,779*	*78*	*904*	*132*	*1,114*	*149,910*
2018	*0*	***78,028***	*0*	*78,028*	*74*	*932*	*126*	*1,132*	*152,260*
2019	*0*	***78,277***	*0*	*78,277*	*70*	*959*	*119*	*1,148*	*154,526*
2020	*0*	***78,528***	*0*	*78,528*	*67*	*984*	*114*	*1,165*	*156,712*
2021	*0*	***78,779***	*0*	*78,779*	*64*	*1,009*	*108*	*1,180*	*158,823*
2022	*0*	***79,030***	*0*	*79,030*	*61*	*1,032*	*103*	*1,195*	*160,862*
2023	*0*	***79,283***	*0*	*79,283*	*58*	*1,055*	*98*	*1,210*	*162,833*
2024	*0*	***79,536***	*0*	*79,536*	*55*	*1,076*	*93*	*1,224*	*164,739*
2025	*0*	***79,791***	*0*	*79,791*	*52*	*1,097*	*88*	*1,238*	*166,584*
2026	*0*	***80,046***	*0*	*80,046*	*50*	*1,117*	*84*	*1,251*	*168,370*
2027	*0*	***80,302***	*0*	*80,302*	*47*	*1,137*	*80*	*1,264*	*170,101*
2028	*0*	***80,558***	*0*	*80,558*	*45*	*1,156*	*76*	*1,277*	*171,779*
2029	*0*	***80,816***	*0*	*80,816*	*43*	*1,174*	*72*	*1,289*	*173,408*
2030	*0*	***81,074***	*0*	*81,074*	*41*	*1,191*	*69*	*1,300*	*174,989*
2031	*0*	***81,333***	*0*	*81,333*	*39*	*1,208*	*66*	*1,312*	*176,524*
2032	*0*	***81,593***	*0*	*81,593*	*37*	*1,224*	*62*	*1,323*	*178,018*
2033	*0*	***81,854***	*0*	*81,854*	*35*	*1,239*	*59*	*1,334*	*179,470*
2034	*0*	***82,116***	*0*	*82,116*	*33*	*1,255*	*56*	*1,344*	*180,884*
2035	*0*	***82,378***	*0*	*82,378*	*32*	*1,269*	*54*	*1,355*	*182,262*
2036	*0*	***82,642***	*0*	*82,642*	*30*	*1,283*	*51*	*1,364*	*183,605*
2037	*0*	***82,906***	*0*	*82,906*	*29*	*1,297*	*49*	*1,374*	*184,916*
2038	*0*	***83,171***	*0*	*83,171*	*27*	*1,310*	*46*	*1,384*	*186,195*
2039	*0*	***83,437***	*0*	*83,437*	*26*	*1,323*	*44*	*1,393*	*187,444*
2040	*0*	***83,704***	*0*	*83,704*	*25*	*1,336*	*42*	*1,402*	*188,666*
2041	*0*	***83,971***	*0*	*83,971*	*23*	*1,348*	*40*	*1,411*	*189,862*
2042	*0*	***84,240***	*0*	*84,240*	*22*	*1,360*	*38*	*1,420*	*191,032*
2043	*0*	***84,509***	*0*	*84,509*	*21*	*1,371*	*36*	*1,428*	*192,179*
2044	*0*	***34,000***	*0*	*34,000*	*20*	*1,382*	*34*	*1,437*	*193,303*

After the Expansion, the facility had a maximum GHG potential to emit of 193303 tons per year of CO2 equivalent.
The net increase as a result of the Expansion is 45158 tons per year of CO2 equivalent, which is less than 75,000 tons per year. Therefore, the facility is not subject to PSD requirements for GHG emissions.

Conclusion:

The following table summarizes the potential to emit for NMOC, VOC, HAP, and GHG:

Pollutant	Potential Emissions (2044) [lb/hr]	[ton/yr]
NMOC	2.6	11.5
VOC	1.02	15.5
HAP	2.35	10.3

*greater of the two calculation methods

Pollutant	Potential Emissions [lb/hr]	[ton/yr]
Existing GHG PTE (tpy CO_2e)	33,823	148,144
Modification GHG PTE (tpy CO_2e)	10,310	45,158
Total GHG PTE (tpy CO_2e)	44,133	193,303

EXHIBIT III.I.2

FUEL ANALYSIS OR SPECIFICATION

EXHIBIT III.I.2
FUEL ANALYSIS OR SPECIFICATION

The Fuel Analysis or Specification is not applicable for a municipal solid waste landfill with no landfill gas collection system.

EXHIBIT III.I.3

DETAILED DESCRIPTION OF CONTROL EQUIPMENT

EXHIBIT III.I.3
DETAILED DESCRIPTION OF CONTROL EQUIPMENT

The Detailed Description of Control Equipment is not applicable for a municipal solid waste landfill with no landfill gas collection system.

EXHIBIT III.I.4

PROCEDURES FOR STARTUP AND SHUTDOWN

EXHIBIT III.I.4
PROCEDURES FOR STARTUP AND SHUTDOWN

The Procedures for Startup and Shutdown are not applicable for a municipal solid waste landfill with no landfill gas collection system.

EXHIBIT III.I.5

OPERATION AND MAINTENANCE PLAN

EXHIBIT III.I.5
OPERATION AND MAINTENANCE PLAN

The Operation and Maintenance Plan is not applicable for a municipal solid waste landfill with no landfill gas collection system.

APPENDIX A

AMENDED DESIGN CAPACITY REPORT AND NMOC EMISSIONS RATE REPORT DATED 4/11/2014: WASTE ACCEPTANCE AND LANDGEM EMISSION CALACULATIONS

JONES EDMUNDS

PROJECT NUMBER: 16810-174-01 SHEET: 1 OF 3
PROJECT NAME: PCCL TITLE V INITIAL APPLICATION
SUBJECT: WASTE ACCEPTANCE RATE CALCS
BY: HBOUDREAU DATE: 4/7/2014
CHECKED BY: SROQUE DATE: 4/11/2014

Table 1: Historic Disposal Tonnages

Year	WGR	%SWDS	Population (Pop)	Total Waste Accepted (metric ton)	Total Waste Accepted (short ton)	Putnam Central Landfill (short ton)			Huntington & Interlachen Landfill (short ton)	Source
						Phase I	Phase II	Class III		
1972	0.70	100	39,142	27,399	30,202	15,101	0	0	15,101	Based on Population Data
1973	0.71	100	40,568	28,803	31,750	15,875	0	0	15,875	Based on Population Data
1974	0.71	100	41,994	29,815	32,866	16,433	0	0	16,433	Based on Population Data
1975	0.72	100	43,420	31,262	34,460	17,230	0	0	17,230	Based on Population Data
1976	0.73	100	44,845	32,737	36,086	18,043	0	0	18,043	Based on Population Data
1977	0.73	100	46,271	33,778	37,234	18,617	0	0	18,617	Based on Population Data
1978	0.74	100	47,697	35,296	38,907	19,454	0	0	19,454	Based on Population Data
1979	0.75	100	49,123	36,842	40,612	20,306	0	0	20,306	Based on Population Data
1980	0.75	100	50,549	37,912	41,791	20,895	0	0	20,895	Based on Population Data
1981	0.76	100	52,001	39,521	43,564	21,782	0	0	21,782	Based on Population Data
1982	0.77	100	53,453	41,159	45,370	22,685	0	0	22,685	Based on Population Data
1983	0.77	100	54,905	42,277	46,602	23,301	0	0	23,301	Based on Population Data
1984	0.78	100	56,357	43,959	48,456	24,228	0	0	24,228	Based on Population Data
1985	0.79	100	57,810	45,670	50,342	25,171	0	0	25,171	Based on Population Data
1986	0.79	100	59,262	46,817	51,606	25,803	0	0	25,803	Based on Population Data
1987	0.80	100	60,714	48,571	53,540	26,770	0	0	26,770	Based on Population Data
1988	0.80	100	62,166	49,733	54,821	27,410	0	0	27,410	Based on Population Data
1989	0.85	84	63,618	45,423	50,070	25,035	0	0	25,035	Based on Population Data
1990	0.84	77	65,070	42,087	46,393	23,197	0	0	23,197	Based on Population Data
1991	0.78	76	65,605	38,891	42,870	0	42,870	0	0	Based on Population Data
1992	0.76	72	66,141	36,192	39,895	0	32,084	7811	0	Based on Population Data
1993	0.78	71	66,676	36,925	40,703	0	32,734	7969	0	Based on Population Data
1994	0.77	67	67,211	34,674	38,222	0	30,739	7483	0	Based on Population Data
1995	0.72	63	67,747	30,730	33,874	0	27,242	6632	0	Based on Population Data
1996	0.71	62	68,282	30,058	33,133	0	20,159	12974	0	Based on Population Data
1997	0.72	61	68,817	30,224	33,317	0	20,271	13046	0	Based on Population Data
1998	0.78	61	69,352	32,998	36,374	0	22,131	14243	0	Based on Population Data
1999	0.78	60	69,888	32,707	36,054	0	21,936	14118	0	Based on Population Data
2000	0.84	61	70,423	36,085	39,777	0	24,202	15575	0	Based on Population Data
2001	-	-	70,808	47,053	51,867	0	35,741	16,126	0	Based on Scale Records
2002	-	-	71,194	46,941	51,744	0	38,951	12,792	0	Based on Scale Records
2003	-	-	71,583	93,941	103,552	0	58,061	45,491	0	Based on Scale Records
2004	-	-	71,974	125,736	138,600	0	75,820	62,780	0	Based on Scale Records
2005	-	-	72,367	82,480	90,918	0	57,110	33,808	0	Based on Scale Records
2006	-	-	72,762	89,969	99,174	0	99,174	0	0	Based on Scale Records
2007	-	-	73,159	88,228	97,254	0	97,254	0	0	Based on Scale Records
2008	-	-	73,559	78,825	86,890	0	86,890	0	0	Based on Scale Records
2009	-	-	73,960	69,983	77,143	0	77,143	0	0	Based on Scale Records
2010	-	-	74,364	65,710	72,433	0	72,433	0	0	Based on Scale Records
2011	-	-	74,629	67,607	74,524	0	74,524	0	0	Based on Scale Records
2012	-	-	74,896	64,192	70,760	0	70,760	0	0	Based on Scale Records
2013	-	-	75,163	60,482	66,670	0	66,670	0	0	Based on Scale Records

Table 2: Average Apparent Density

Filling Period	Total Landfilled Density [lbs/CY]
1/01/1991 to 1/27/1995	889
1/27/1995 to 3/17/1998	1,023
3/17/1998 to 3/19/1999	1,419
3/20/1999 to 5/16/2000	1,385
5/16/2000 to 2/21/2001	1,418
2/21/2001 to 5/14/2002	1,361
5/14/2002 to 4/3/2003	1,259
4/3/2003 to 3/24/2004	1,340
3/24/2004 to 3/30/2005	1,244
3/30/2005 to 9/23/2006	915
9/23/2006 to 8/5/2007	949
8/5/2007 to 6/12/2008	1,325
9/10/2010 to 7/24/2011	937
6/3/2012 to 6/13/2013	1,117
Avg Annual Density (1/1/9	**1,184**

JONES EDMUNDS

PROJECT NUMBER: 16810-174-01 SHEET: 3 OF 3
PROJECT NAME: PCCL TITLE V INITIAL APPLICATION
SUBJECT: WASTE ACCEPTANCE RATE CALCS
BY: HBOUDREAU DATE: 4/7/2014
CHECKED BY: SROQUE DATE: 4/10/2014

Proposed Expansion Capacity Projections

Objective: Calculate the tonnage projections and the anticipated lifespan for the Phase II landfill operations and the Phase I landfill mining cells.

Data:

Average Apparent Density = γ =	0.55	Tons/CY =	*1,100* *lbs/CY*	*(Ref 1)*
BEBR Population Projections =	Medium			
2012 Incomming County Waste Acceptance Rate =	70,000	Tons/Year (Rounded to nearest 1,000)		*(Ref 2)*
2013 Remaining Disposal Volume (June 2013) =	4,848,544	CY		*(Ref 3)*
Landfill Mining "Overs" Percentage by Volume =	*30%*	Phase II Landfill Waste Acceptance Rate/Phase I Landfill Excavation Rate		*(Ref 4)*

Putnam County BEBR Population Projections

Year	BEBR Population Projections *(Reference 5)*					
	Low	Percent Increase	Medium	Percent Increase	High	Percent Increase
2011	74,052		74,052		74,052	
2012	73,070	-1.3%	74,189	0.2%	75,307	1.7%
2013	72,100	-1.3%	74,325	0.2%	76,583	1.7%
2014	71,144	-1.3%	74,463	0.2%	77,880	1.7%
2015	70,200	-1.3%	74,600	0.2%	79,200	1.7%
2016	69,958	-0.3%	74,838	0.3%	79,888	0.9%
2017	69,718	-0.3%	75,078	0.3%	80,582	0.9%
2018	69,478	-0.3%	75,318	0.3%	81,282	0.9%
2019	69,238	-0.3%	75,558	0.3%	81,988	0.9%
2020	69,000	-0.3%	75,800	0.3%	82,700	0.9%

Note: 2011, 2015, and 2020 population data based on data from BEBR, all other years are interpolated.

Putnam County Central Phase II Landfill Operations Lifespan

Calendar Year	Projected Growth Rate (%/yr)	Waste-Acceptance Incomming County Rate (Tons/year)	(CY/year)	Landfill Mining "Overs" Rate (Tons/year)	(CY/year)	Total Rate (CY/year)	Remaining Disposal Volume (CY)
Jan - Jun 2013		35,000	63,636	0	0	63,636	4,848,544
Aug - Dec 2013		35,000	63,636	0	0	63,636	4,784,908
2014	0.2%	**70,129**	127,508	66,000	120,000	247,508	4,537,400
2015	0.2%	**70,259**	127,743	46,750	85,000	212,743	4,324,657
2016	0.3%	**70,483**	128,151	38,500	70,000	198,151	4,126,506
2017	0.3%	**70,708**	128,561	38,500	70,000	198,561	3,927,945
2018	0.3%	**70,934**	128,972	38,500	70,000	198,972	3,728,974
2019	0.3%	**71,161**	129,384	38,500	70,000	199,384	3,529,590
2020	0.3%	**71,389**	129,798	38,500	70,000	199,798	3,329,792
2021	0.3%	**71,617**	130,213	38,500	70,000	200,213	3,129,579
2022	0.3%	**71,846**	130,629	38,500	70,000	200,629	2,928,951
2023	0.3%	**72,075**	131,046	17,050	31,000	162,046	2,766,904
2024	0.3%	**72,306**	131,465	0	0	131,465	2,635,439
2025	0.3%	**72,537**	131,886	0	0	131,886	2,503,554
2026	0.3%	**72,769**	132,307	0	0	132,307	2,371,246
2027	0.3%	**73,002**	132,730	0	0	132,730	2,238,516
2028	0.3%	**73,235**	133,154	0	0	133,154	2,105,362
2029	0.3%	**73,469**	133,580	0	0	133,580	1,971,782
2030	0.3%	**73,704**	134,007	0	0	134,007	1,837,775
2031	0.3%	**73,939**	134,435	0	0	134,435	1,703,340
2032	0.3%	**74,176**	134,865	0	0	134,865	1,568,474
2033	0.3%	**74,413**	135,296	0	0	135,296	1,433,178
2034	0.3%	**74,651**	135,729	0	0	135,729	1,297,450
2035	0.3%	**74,889**	136,163	0	0	136,163	1,161,287
2036	0.3%	**75,129**	136,598	0	0	136,598	1,024,689
2037	0.3%	**75,369**	137,035	0	0	137,035	887,654
2038	0.3%	**75,610**	137,473	0	0	137,473	750,182
2039	0.3%	**75,852**	137,912	0	0	137,912	612,270
2040	0.3%	**76,094**	138,353	0	0	138,353	473,917
2041	0.3%	**76,337**	138,795	0	0	138,795	335,122
2042	0.3%	**76,581**	139,239	0	0	139,239	195,883
2043	0.3%	**76,826**	139,684	0	0	139,684	56,199
2044	0.3%	**77,072**	140,130	0	0	140,130	-83,931
Total Lifespan from June 2013 (in years)							**30.0**
Anticipated Closure (Rounded up to nearest month)							**May 2043**

References:

1. Historic average waste density in place for 2011, 2012, and 2013 capacity analysis reports.
2. *2012 Waste Quantity Tracking Annual Report* by Putnam County Dated 7/2/2013 (Residential, Commercial, Industrial, Sludge).
3. *2013 Putnam County Central Landfill Capacity Analysis* by Jones Edmunds Dated 7/10/2013 (June 2013).
4. Estimated based on engineering judgement
5. *Projections of Florida Population by County, 2011-2040* by Bureau of Economic and Business Research (BEBR), Bulletin 162 (Revised), March 2012.

Summary Report

Landfill Name or Identifier: Tier II: PCCL Class I Phase I Landfill

Date: Wednesday, April 09, 2014

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

Where,

Q_{CH4} = annual methane generation in the year of the calculation ($m^3/year$)

i = 1-year time increment

n = (year of the calculation) - (initial year of waste acceptance)

j = 0.1-year time increment

k = methane generation rate ($year^{-1}$)

L_o = potential methane generation capacity (m^3/Mg)

M_i = mass of waste accepted in the i^{th} year (Mg)

t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years)

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

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

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	**1972**	
Landfill Closure Year (with 80-year limit)	**1990**	
Actual Closure Year (without limit)	***1990***	
Have Model Calculate Closure Year?	**No**	
Waste Design Capacity		*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	**0.050**	*year $^{-1}$*
Potential Methane Generation Capacity, L_o	**170**	*m^3/Mg*
NMOC Concentration	**112**	*ppmv as hexane*
Methane Content	**50**	*% by volume*

GASES / POLLUTANTS SELECTED

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

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
1972	13,728	15,101	0	0
1973	14,432	15,875	13,728	15,101
1974	14,939	16,433	28,160	30,976
1975	15,664	17,230	43,099	47,409
1976	16,403	18,043	58,763	64,639
1977	16,924	18,617	75,166	82,683
1978	17,685	19,454	92,090	101,300
1979	18,460	20,306	109,776	120,753
1980	18,996	20,895	128,235	141,059
1981	19,802	21,782	147,231	161,954
1982	20,623	22,685	167,033	183,736
1983	21,183	23,301	187,656	206,421
1984	22,026	24,228	208,839	229,722
1985	22,883	25,171	230,864	253,951
1986	23,457	25,803	253,747	279,122
1987	24,336	26,770	277,204	304,925
1988	24,919	27,410	301,541	331,695
1989	22,759	25,035	326,459	359,105
1990	21,088	23,197	349,219	384,140
1991	0	0	370,306	407,337
1992	0	0	370,306	407,337
1993	0	0	370,306	407,337
1994	0	0	370,306	407,337
1995	0	0	370,306	407,337
1996	0	0	370,306	407,337
1997	0	0	370,306	407,337
1998	0	0	370,306	407,337
1999	0	0	370,306	407,337
2000	0	0	370,306	407,337
2001	0	0	370,306	407,337
2002	0	0	370,306	407,337
2003	0	0	370,306	407,337
2004	0	0	370,306	407,337
2005	0	0	370,306	407,337
2006	0	0	370,306	407,337
2007	0	0	370,306	407,337
2008	0	0	370,306	407,337
2009	0	0	370,306	407,337
2010	0	0	370,306	407,337
2011	0	0	370,306	407,337

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2012	0	0	370,306	407,337
2013	0	0	370,306	407,337
2014	0	0	370,306	407,337
2015	0	0	370,306	407,337
2016	0	0	370,306	407,337
2017	0	0	370,306	407,337
2018	0	0	370,306	407,337
2019	0	0	370,306	407,337
2020	0	0	370,306	407,337
2021	0	0	370,306	407,337
2022	0	0	370,306	407,337
2023	0	0	370,306	407,337
2024	0	0	370,306	407,337
2025	0	0	370,306	407,337
2026	0	0	370,306	407,337
2027	0	0	370,306	407,337
2028	0	0	370,306	407,337
2029	0	0	370,306	407,337
2030	0	0	370,306	407,337
2031	0	0	370,306	407,337
2032	0	0	370,306	407,337
2033	0	0	370,306	407,337
2034	0	0	370,306	407,337
2035	0	0	370,306	407,337
2036	0	0	370,306	407,337
2037	0	0	370,306	407,337
2038	0	0	370,306	407,337
2039	0	0	370,306	407,337
2040	0	0	370,306	407,337
2041	0	0	370,306	407,337
2042	0	0	370,306	407,337
2043	0	0	370,306	407,337
2044	0	0	370,306	407,337
2045	0	0	370,306	407,337
2046	0	0	370,306	407,337
2047	0	0	370,306	407,337
2048	0	0	370,306	407,337
2049	0	0	370,306	407,337
2050	0	0	370,306	407,337
2051	0	0	370,306	407,337

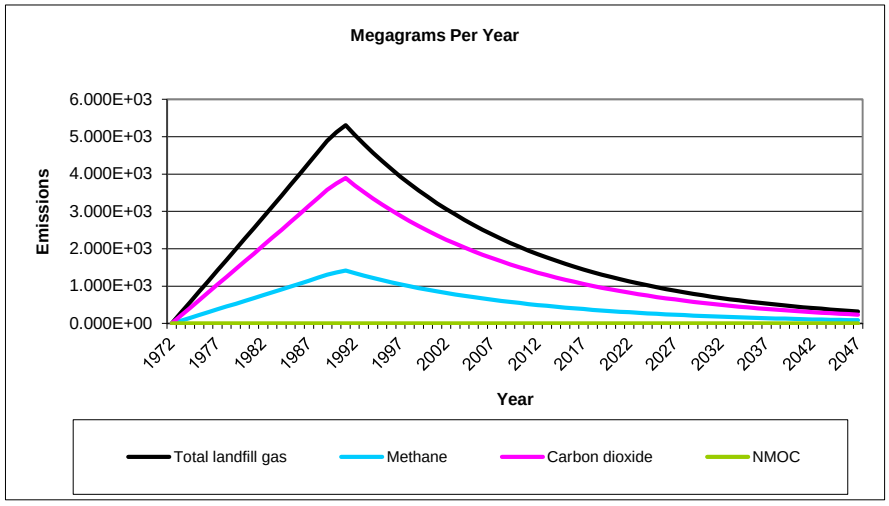
Pollutant Parameters

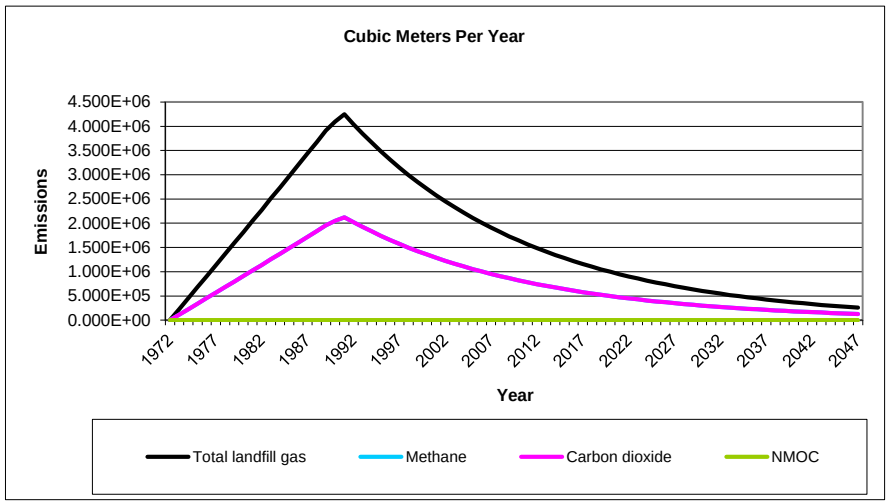
		Gas / Pollutant Default Parameters:		*User-specified Pollutant Parameters:*	
	Compound	Concentration (*ppmv*)	Molecular Weight	Concentration (*ppmv*)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl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

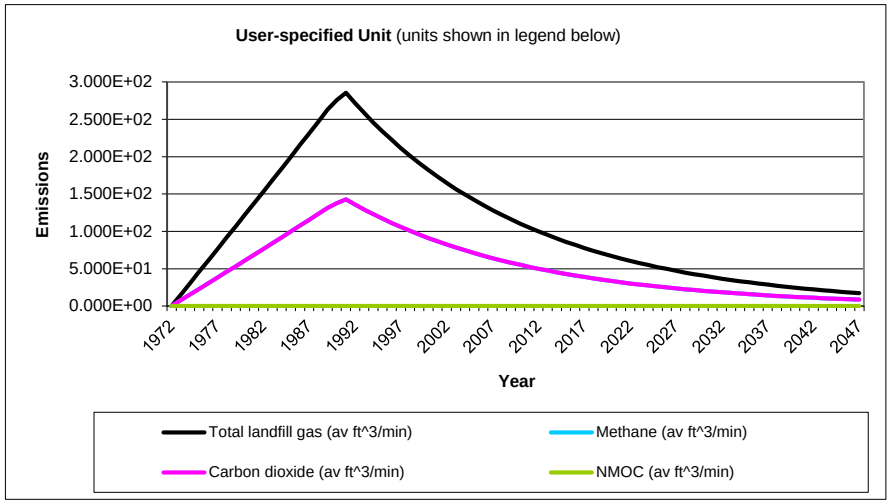
Pollutant Parameters (Continued)

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

Graphs


Megagrams Per Year
Emissions
6.000E+03
5.000E+03
4.000E+03
3.000E+03
2.000E+03
1.000E+03
0.000E+00
1972
1977
1982
1987
1992
1997
2002
2007
2012
2017
2022
2027
2032
2037
2042
2047
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


Cubic Meters Per Year
Emissions
4.500E+06
4.000E+06
3.500E+06
3.000E+06
2.500E+06
2.000E+06
1.500E+06
1.000E+06
5.000E+05
0.000E+00
1972
1977
1982
1987
1992
1997
2002
2007
2012
2017
2022
2027
2032
2037
2042
2047
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
Emissions
3.000E+02
2.500E+02
2.000E+02
1.500E+02
1.000E+02
5.000E+01
0.000E+00
1972
1977
1982
1987
1992
1997
2002
2007
2012
2017
2022
2027
2032
2037
2042
2047
Year
Total landfill gas (av ft^3/min)
Methane (av ft^3/min)
Carbon dioxide (av ft^3/min)
NMOC (av ft^3/min)

Results

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1972	0	0	0	0	0	0
1973	2.850E+02	2.282E+05	1.533E+01	7.613E+01	1.141E+05	7.667E+00
1974	5.707E+02	4.570E+05	3.071E+01	1.524E+02	2.285E+05	1.535E+01
1975	8.530E+02	6.830E+05	4.589E+01	2.278E+02	3.415E+05	2.295E+01
1976	1.137E+03	9.101E+05	6.115E+01	3.036E+02	4.551E+05	3.058E+01
1977	1.422E+03	1.138E+06	7.649E+01	3.797E+02	5.692E+05	3.824E+01
1978	1.704E+03	1.364E+06	9.166E+01	4.551E+02	6.821E+05	4.583E+01
1979	1.988E+03	1.592E+06	1.069E+02	5.309E+02	7.958E+05	5.347E+01
1980	2.274E+03	1.821E+06	1.223E+02	6.074E+02	9.105E+05	6.117E+01
1981	2.557E+03	2.048E+06	1.376E+02	6.831E+02	1.024E+06	6.880E+01
1982	2.844E+03	2.277E+06	1.530E+02	7.596E+02	1.139E+06	7.650E+01
1983	3.133E+03	2.509E+06	1.686E+02	8.369E+02	1.254E+06	8.429E+01
1984	3.420E+03	2.739E+06	1.840E+02	9.136E+02	1.369E+06	9.201E+01
1985	3.711E+03	2.971E+06	1.996E+02	9.911E+02	1.486E+06	9.982E+01
1986	4.005E+03	3.207E+06	2.155E+02	1.070E+03	1.603E+06	1.077E+02
1987	4.296E+03	3.440E+06	2.312E+02	1.148E+03	1.720E+06	1.156E+02
1988	4.592E+03	3.677E+06	2.471E+02	1.227E+03	1.839E+06	1.235E+02
1989	4.885E+03	3.912E+06	2.628E+02	1.305E+03	1.956E+06	1.314E+02
1990	5.120E+03	4.100E+06	2.754E+02	1.368E+03	2.050E+06	1.377E+02
1991	5.308E+03	4.250E+06	2.856E+02	1.418E+03	2.125E+06	1.428E+02
1992	5.049E+03	4.043E+06	2.716E+02	1.349E+03	2.021E+06	1.358E+02
1993	4.803E+03	3.846E+06	2.584E+02	1.283E+03	1.923E+06	1.292E+02
1994	4.568E+03	3.658E+06	2.458E+02	1.220E+03	1.829E+06	1.229E+02
1995	4.346E+03	3.480E+06	2.338E+02	1.161E+03	1.740E+06	1.169E+02
1996	4.134E+03	3.310E+06	2.224E+02	1.104E+03	1.655E+06	1.112E+02
1997	3.932E+03	3.149E+06	2.116E+02	1.050E+03	1.574E+06	1.058E+02
1998	3.740E+03	2.995E+06	2.012E+02	9.991E+02	1.498E+06	1.006E+02
1999	3.558E+03	2.849E+06	1.914E+02	9.503E+02	1.424E+06	9.571E+01
2000	3.384E+03	2.710E+06	1.821E+02	9.040E+02	1.355E+06	9.104E+01
2001	3.219E+03	2.578E+06	1.732E+02	8.599E+02	1.289E+06	8.660E+01
2002	3.062E+03	2.452E+06	1.648E+02	8.180E+02	1.226E+06	8.238E+01
2003	2.913E+03	2.333E+06	1.567E+02	7.781E+02	1.166E+06	7.836E+01
2004	2.771E+03	2.219E+06	1.491E+02	7.401E+02	1.109E+06	7.454E+01
2005	2.636E+03	2.111E+06	1.418E+02	7.040E+02	1.055E+06	7.090E+01
2006	2.507E+03	2.008E+06	1.349E+02	6.697E+02	1.004E+06	6.745E+01
2007	2.385E+03	1.910E+06	1.283E+02	6.370E+02	9.549E+05	6.416E+01
2008	2.269E+03	1.817E+06	1.221E+02	6.060E+02	9.083E+05	6.103E+01
2009	2.158E+03	1.728E+06	1.161E+02	5.764E+02	8.640E+05	5.805E+01
2010	2.053E+03	1.644E+06	1.104E+02	5.483E+02	8.219E+05	5.522E+01
2011	1.953E+03	1.564E+06	1.051E+02	5.216E+02	7.818E+05	5.253E+01
2012	1.857E+03	1.487E+06	9.993E+01	4.961E+02	7.436E+05	4.997E+01
2013	1.767E+03	1.415E+06	9.506E+01	4.719E+02	7.074E+05	4.753E+01
2014	1.681E+03	1.346E+06	9.042E+01	4.489E+02	6.729E+05	4.521E+01
2015	1.599E+03	1.280E+06	8.601E+01	4.270E+02	6.401E+05	4.301E+01
2016	1.521E+03	1.218E+06	8.182E+01	4.062E+02	6.088E+05	4.091E+01
2017	1.447E+03	1.158E+06	7.783E+01	3.864E+02	5.792E+05	3.891E+01
2018	1.376E+03	1.102E+06	7.403E+01	3.675E+02	5.509E+05	3.702E+01
2019	1.309E+03	1.048E+06	7.042E+01	3.496E+02	5.240E+05	3.521E+01
2020	1.245E+03	9.970E+05	6.699E+01	3.326E+02	4.985E+05	3.349E+01
2021	1.184E+03	9.483E+05	6.372E+01	3.163E+02	4.742E+05	3.186E+01

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2022	1.127E+03	9.021E+05	6.061E+01	3.009E+02	4.510E+05	3.031E+01
2023	1.072E+03	8.581E+05	5.766E+01	2.862E+02	4.290E+05	2.883E+01
2024	1.019E+03	8.162E+05	5.484E+01	2.723E+02	4.081E+05	2.742E+01
2025	9.696E+02	7.764E+05	5.217E+01	2.590E+02	3.882E+05	2.608E+01
2026	9.223E+02	7.386E+05	4.962E+01	2.464E+02	3.693E+05	2.481E+01
2027	8.774E+02	7.025E+05	4.720E+01	2.344E+02	3.513E+05	2.360E+01
2028	8.346E+02	6.683E+05	4.490E+01	2.229E+02	3.341E+05	2.245E+01
2029	7.939E+02	6.357E+05	4.271E+01	2.120E+02	3.178E+05	2.136E+01
2030	7.551E+02	6.047E+05	4.063E+01	2.017E+02	3.023E+05	2.031E+01
2031	7.183E+02	5.752E+05	3.865E+01	1.919E+02	2.876E+05	1.932E+01
2032	6.833E+02	5.471E+05	3.676E+01	1.825E+02	2.736E+05	1.838E+01
2033	6.500E+02	5.205E+05	3.497E+01	1.736E+02	2.602E+05	1.748E+01
2034	6.183E+02	4.951E+05	3.326E+01	1.651E+02	2.475E+05	1.663E+01
2035	5.881E+02	4.709E+05	3.164E+01	1.571E+02	2.355E+05	1.582E+01
2036	5.594E+02	4.480E+05	3.010E+01	1.494E+02	2.240E+05	1.505E+01
2037	5.321E+02	4.261E+05	2.863E+01	1.421E+02	2.131E+05	1.432E+01
2038	5.062E+02	4.053E+05	2.723E+01	1.352E+02	2.027E+05	1.362E+01
2039	4.815E+02	3.856E+05	2.591E+01	1.286E+02	1.928E+05	1.295E+01
2040	4.580E+02	3.668E+05	2.464E+01	1.223E+02	1.834E+05	1.232E+01
2041	4.357E+02	3.489E+05	2.344E+01	1.164E+02	1.744E+05	1.172E+01
2042	4.144E+02	3.319E+05	2.230E+01	1.107E+02	1.659E+05	1.115E+01
2043	3.942E+02	3.157E+05	2.121E+01	1.053E+02	1.578E+05	1.061E+01
2044	3.750E+02	3.003E+05	2.018E+01	1.002E+02	1.501E+05	1.009E+01
2045	3.567E+02	2.856E+05	1.919E+01	9.528E+01	1.428E+05	9.596E+00
2046	3.393E+02	2.717E+05	1.826E+01	9.063E+01	1.359E+05	9.128E+00
2047	3.228E+02	2.585E+05	1.737E+01	8.621E+01	1.292E+05	8.683E+00
2048	3.070E+02	2.458E+05	1.652E+01	8.201E+01	1.229E+05	8.259E+00
2049	2.920E+02	2.339E+05	1.571E+01	7.801E+01	1.169E+05	7.856E+00
2050	2.778E+02	2.225E+05	1.495E+01	7.420E+01	1.112E+05	7.473E+00
2051	2.643E+02	2.116E+05	1.422E+01	7.059E+01	1.058E+05	7.109E+00
2052	2.514E+02	2.013E+05	1.352E+01	6.714E+01	1.006E+05	6.762E+00
2053	2.391E+02	1.915E+05	1.286E+01	6.387E+01	9.573E+04	6.432E+00
2054	2.274E+02	1.821E+05	1.224E+01	6.075E+01	9.106E+04	6.119E+00
2055	2.164E+02	1.732E+05	1.164E+01	5.779E+01	8.662E+04	5.820E+00
2056	2.058E+02	1.648E+05	1.107E+01	5.497E+01	8.240E+04	5.536E+00
2057	1.958E+02	1.568E+05	1.053E+01	5.229E+01	7.838E+04	5.266E+00
2058	1.862E+02	1.491E+05	1.002E+01	4.974E+01	7.456E+04	5.009E+00
2059	1.771E+02	1.418E+05	9.530E+00	4.731E+01	7.092E+04	4.765E+00
2060	1.685E+02	1.349E+05	9.066E+00	4.501E+01	6.746E+04	4.533E+00
2061	1.603E+02	1.283E+05	8.623E+00	4.281E+01	6.417E+04	4.312E+00
2062	1.525E+02	1.221E+05	8.203E+00	4.072E+01	6.104E+04	4.101E+00
2063	1.450E+02	1.161E+05	7.803E+00	3.874E+01	5.807E+04	3.901E+00
2064	1.380E+02	1.105E+05	7.422E+00	3.685E+01	5.523E+04	3.711E+00
2065	1.312E+02	1.051E+05	7.060E+00	3.505E+01	5.254E+04	3.530E+00
2066	1.248E+02	9.995E+04	6.716E+00	3.334E+01	4.998E+04	3.358E+00
2067	1.187E+02	9.508E+04	6.388E+00	3.172E+01	4.754E+04	3.194E+00
2068	1.129E+02	9.044E+04	6.077E+00	3.017E+01	4.522E+04	3.038E+00
2069	1.074E+02	8.603E+04	5.780E+00	2.870E+01	4.302E+04	2.890E+00
2070	1.022E+02	8.184E+04	5.499E+00	2.730E+01	4.092E+04	2.749E+00
2071	9.721E+01	7.784E+04	5.230E+00	2.597E+01	3.892E+04	2.615E+00
2072	9.247E+01	7.405E+04	4.975E+00	2.470E+01	3.702E+04	2.488E+00

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2073	8.796E+01	7.044E+04	4.733E+00	2.350E+01	3.522E+04	2.366E+00
2074	8.367E+01	6.700E+04	4.502E+00	2.235E+01	3.350E+04	2.251E+00
2075	7.959E+01	6.373E+04	4.282E+00	2.126E+01	3.187E+04	2.141E+00
2076	7.571E+01	6.063E+04	4.073E+00	2.022E+01	3.031E+04	2.037E+00
2077	7.202E+01	5.767E+04	3.875E+00	1.924E+01	2.883E+04	1.937E+00
2078	6.851E+01	5.486E+04	3.686E+00	1.830E+01	2.743E+04	1.843E+00
2079	6.516E+01	5.218E+04	3.506E+00	1.741E+01	2.609E+04	1.753E+00
2080	6.199E+01	4.964E+04	3.335E+00	1.656E+01	2.482E+04	1.668E+00
2081	5.896E+01	4.721E+04	3.172E+00	1.575E+01	2.361E+04	1.586E+00
2082	5.609E+01	4.491E+04	3.018E+00	1.498E+01	2.246E+04	1.509E+00
2083	5.335E+01	4.272E+04	2.870E+00	1.425E+01	2.136E+04	1.435E+00
2084	5.075E+01	4.064E+04	2.730E+00	1.356E+01	2.032E+04	1.365E+00
2085	4.827E+01	3.866E+04	2.597E+00	1.289E+01	1.933E+04	1.299E+00
2086	4.592E+01	3.677E+04	2.471E+00	1.227E+01	1.839E+04	1.235E+00
2087	4.368E+01	3.498E+04	2.350E+00	1.167E+01	1.749E+04	1.175E+00
2088	4.155E+01	3.327E+04	2.236E+00	1.110E+01	1.664E+04	1.118E+00
2089	3.952E+01	3.165E+04	2.127E+00	1.056E+01	1.582E+04	1.063E+00
2090	3.760E+01	3.011E+04	2.023E+00	1.004E+01	1.505E+04	1.011E+00
2091	3.576E+01	2.864E+04	1.924E+00	9.553E+00	1.432E+04	9.621E-01
2092	3.402E+01	2.724E+04	1.830E+00	9.087E+00	1.362E+04	9.151E-01
2093	3.236E+01	2.591E+04	1.741E+00	8.644E+00	1.296E+04	8.705E-01
2094	3.078E+01	2.465E+04	1.656E+00	8.222E+00	1.232E+04	8.281E-01
2095	2.928E+01	2.345E+04	1.575E+00	7.821E+00	1.172E+04	7.877E-01
2096	2.785E+01	2.230E+04	1.499E+00	7.440E+00	1.115E+04	7.493E-01
2097	2.649E+01	2.122E+04	1.425E+00	7.077E+00	1.061E+04	7.127E-01
2098	2.520E+01	2.018E+04	1.356E+00	6.732E+00	1.009E+04	6.780E-01
2099	2.397E+01	1.920E+04	1.290E+00	6.403E+00	9.598E+03	6.449E-01
2100	2.280E+01	1.826E+04	1.227E+00	6.091E+00	9.130E+03	6.134E-01
2101	2.169E+01	1.737E+04	1.167E+00	5.794E+00	8.685E+03	5.835E-01
2102	2.063E+01	1.652E+04	1.110E+00	5.511E+00	8.261E+03	5.551E-01
2103	1.963E+01	1.572E+04	1.056E+00	5.243E+00	7.858E+03	5.280E-01
2104	1.867E+01	1.495E+04	1.004E+00	4.987E+00	7.475E+03	5.022E-01
2105	1.776E+01	1.422E+04	9.555E-01	4.744E+00	7.110E+03	4.777E-01
2106	1.689E+01	1.353E+04	9.089E-01	4.512E+00	6.764E+03	4.544E-01
2107	1.607E+01	1.287E+04	8.646E-01	4.292E+00	6.434E+03	4.323E-01
2108	1.529E+01	1.224E+04	8.224E-01	4.083E+00	6.120E+03	4.112E-01
2109	1.454E+01	1.164E+04	7.823E-01	3.884E+00	5.822E+03	3.911E-01
2110	1.383E+01	1.108E+04	7.441E-01	3.694E+00	5.538E+03	3.721E-01
2111	1.316E+01	1.054E+04	7.079E-01	3.514E+00	5.268E+03	3.539E-01
2112	1.251E+01	1.002E+04	6.733E-01	3.343E+00	5.011E+03	3.367E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1972	0	0	0	0	0	0
1973	2.089E+02	1.141E+05	7.667E+00	9.162E-02	2.556E+01	1.717E-03
1974	4.183E+02	2.285E+05	1.535E+01	1.835E-01	5.118E+01	3.439E-03
1975	6.252E+02	3.415E+05	2.295E+01	2.742E-01	7.650E+01	5.140E-03
1976	8.330E+02	4.551E+05	3.058E+01	3.654E-01	1.019E+02	6.849E-03
1977	1.042E+03	5.692E+05	3.824E+01	4.570E-01	1.275E+02	8.567E-03
1978	1.249E+03	6.821E+05	4.583E+01	5.477E-01	1.528E+02	1.027E-02
1979	1.457E+03	7.958E+05	5.347E+01	6.390E-01	1.783E+02	1.198E-02
1980	1.667E+03	9.105E+05	6.117E+01	7.310E-01	2.039E+02	1.370E-02
1981	1.874E+03	1.024E+06	6.880E+01	8.221E-01	2.294E+02	1.541E-02
1982	2.084E+03	1.139E+06	7.650E+01	9.142E-01	2.550E+02	1.714E-02
1983	2.296E+03	1.254E+06	8.429E+01	1.007E+00	2.810E+02	1.888E-02
1984	2.507E+03	1.369E+06	9.201E+01	1.099E+00	3.067E+02	2.061E-02
1985	2.719E+03	1.486E+06	9.982E+01	1.193E+00	3.328E+02	2.236E-02
1986	2.935E+03	1.603E+06	1.077E+02	1.287E+00	3.592E+02	2.413E-02
1987	3.149E+03	1.720E+06	1.156E+02	1.381E+00	3.853E+02	2.589E-02
1988	3.365E+03	1.839E+06	1.235E+02	1.476E+00	4.118E+02	2.767E-02
1989	3.580E+03	1.956E+06	1.314E+02	1.571E+00	4.381E+02	2.944E-02
1990	3.752E+03	2.050E+06	1.377E+02	1.646E+00	4.591E+02	3.085E-02
1991	3.890E+03	2.125E+06	1.428E+02	1.706E+00	4.760E+02	3.198E-02
1992	3.700E+03	2.021E+06	1.358E+02	1.623E+00	4.528E+02	3.042E-02
1993	3.520E+03	1.923E+06	1.292E+02	1.544E+00	4.307E+02	2.894E-02
1994	3.348E+03	1.829E+06	1.229E+02	1.469E+00	4.097E+02	2.753E-02
1995	3.185E+03	1.740E+06	1.169E+02	1.397E+00	3.897E+02	2.619E-02
1996	3.029E+03	1.655E+06	1.112E+02	1.329E+00	3.707E+02	2.491E-02
1997	2.882E+03	1.574E+06	1.058E+02	1.264E+00	3.526E+02	2.369E-02
1998	2.741E+03	1.498E+06	1.006E+02	1.202E+00	3.354E+02	2.254E-02
1999	2.608E+03	1.424E+06	9.571E+01	1.144E+00	3.191E+02	2.144E-02
2000	2.480E+03	1.355E+06	9.104E+01	1.088E+00	3.035E+02	2.039E-02
2001	2.359E+03	1.289E+06	8.660E+01	1.035E+00	2.887E+02	1.940E-02
2002	2.244E+03	1.226E+06	8.238E+01	9.844E-01	2.746E+02	1.845E-02
2003	2.135E+03	1.166E+06	7.836E+01	9.364E-01	2.612E+02	1.755E-02
2004	2.031E+03	1.109E+06	7.454E+01	8.908E-01	2.485E+02	1.670E-02
2005	1.932E+03	1.055E+06	7.090E+01	8.473E-01	2.364E+02	1.588E-02
2006	1.837E+03	1.004E+06	6.745E+01	8.060E-01	2.249E+02	1.511E-02
2007	1.748E+03	9.549E+05	6.416E+01	7.667E-01	2.139E+02	1.437E-02
2008	1.663E+03	9.083E+05	6.103E+01	7.293E-01	2.035E+02	1.367E-02
2009	1.582E+03	8.640E+05	5.805E+01	6.937E-01	1.935E+02	1.300E-02
2010	1.504E+03	8.219E+05	5.522E+01	6.599E-01	1.841E+02	1.237E-02
2011	1.431E+03	7.818E+05	5.253E+01	6.277E-01	1.751E+02	1.177E-02
2012	1.361E+03	7.436E+05	4.997E+01	5.971E-01	1.666E+02	1.119E-02
2013	1.295E+03	7.074E+05	4.753E+01	5.680E-01	1.585E+02	1.065E-02
2014	1.232E+03	6.729E+05	4.521E+01	5.403E-01	1.507E+02	1.013E-02
2015	1.172E+03	6.401E+05	4.301E+01	5.139E-01	1.434E+02	9.633E-03
2016	1.114E+03	6.088E+05	4.091E+01	4.889E-01	1.364E+02	9.163E-03
2017	1.060E+03	5.792E+05	3.891E+01	4.650E-01	1.297E+02	8.717E-03
2018	1.008E+03	5.509E+05	3.702E+01	4.423E-01	1.234E+02	8.291E-03
2019	9.593E+02	5.240E+05	3.521E+01	4.208E-01	1.174E+02	7.887E-03
2020	9.125E+02	4.985E+05	3.349E+01	4.002E-01	1.117E+02	7.502E-03
2021	8.680E+02	4.742E+05	3.186E+01	3.807E-01	1.062E+02	7.136E-03

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2022	8.256E+02	4.510E+05	3.031E+01	3.622E-01	1.010E+02	6.788E-03
2023	7.854E+02	4.290E+05	2.883E+01	3.445E-01	9.611E+01	6.457E-03
2024	7.471E+02	4.081E+05	2.742E+01	3.277E-01	9.142E+01	6.142E-03
2025	7.106E+02	3.882E+05	2.608E+01	3.117E-01	8.696E+01	5.843E-03
2026	6.760E+02	3.693E+05	2.481E+01	2.965E-01	8.272E+01	5.558E-03
2027	6.430E+02	3.513E+05	2.360E+01	2.820E-01	7.869E+01	5.287E-03
2028	6.116E+02	3.341E+05	2.245E+01	2.683E-01	7.485E+01	5.029E-03
2029	5.818E+02	3.178E+05	2.136E+01	2.552E-01	7.120E+01	4.784E-03
2030	5.534E+02	3.023E+05	2.031E+01	2.428E-01	6.772E+01	4.550E-03
2031	5.264E+02	2.876E+05	1.932E+01	2.309E-01	6.442E+01	4.329E-03
2032	5.008E+02	2.736E+05	1.838E+01	2.197E-01	6.128E+01	4.117E-03
2033	4.763E+02	2.602E+05	1.748E+01	2.089E-01	5.829E+01	3.917E-03
2034	4.531E+02	2.475E+05	1.663E+01	1.988E-01	5.545E+01	3.726E-03
2035	4.310E+02	2.355E+05	1.582E+01	1.891E-01	5.274E+01	3.544E-03
2036	4.100E+02	2.240E+05	1.505E+01	1.798E-01	5.017E+01	3.371E-03
2037	3.900E+02	2.131E+05	1.432E+01	1.711E-01	4.772E+01	3.207E-03
2038	3.710E+02	2.027E+05	1.362E+01	1.627E-01	4.540E+01	3.050E-03
2039	3.529E+02	1.928E+05	1.295E+01	1.548E-01	4.318E+01	2.901E-03
2040	3.357E+02	1.834E+05	1.232E+01	1.472E-01	4.108E+01	2.760E-03
2041	3.193E+02	1.744E+05	1.172E+01	1.401E-01	3.907E+01	2.625E-03
2042	3.037E+02	1.659E+05	1.115E+01	1.332E-01	3.717E+01	2.497E-03
2043	2.889E+02	1.578E+05	1.061E+01	1.267E-01	3.536E+01	2.376E-03
2044	2.748E+02	1.501E+05	1.009E+01	1.205E-01	3.363E+01	2.260E-03
2045	2.614E+02	1.428E+05	9.596E+00	1.147E-01	3.199E+01	2.149E-03
2046	2.487E+02	1.359E+05	9.128E+00	1.091E-01	3.043E+01	2.045E-03
2047	2.365E+02	1.292E+05	8.683E+00	1.038E-01	2.895E+01	1.945E-03
2048	2.250E+02	1.229E+05	8.259E+00	9.870E-02	2.753E+01	1.850E-03
2049	2.140E+02	1.169E+05	7.856E+00	9.388E-02	2.619E+01	1.760E-03
2050	2.036E+02	1.112E+05	7.473E+00	8.931E-02	2.491E+01	1.674E-03
2051	1.937E+02	1.058E+05	7.109E+00	8.495E-02	2.370E+01	1.592E-03
2052	1.842E+02	1.006E+05	6.762E+00	8.081E-02	2.254E+01	1.515E-03
2053	1.752E+02	9.573E+04	6.432E+00	7.687E-02	2.144E+01	1.441E-03
2054	1.667E+02	9.106E+04	6.119E+00	7.312E-02	2.040E+01	1.371E-03
2055	1.586E+02	8.662E+04	5.820E+00	6.955E-02	1.940E+01	1.304E-03
2056	1.508E+02	8.240E+04	5.536E+00	6.616E-02	1.846E+01	1.240E-03
2057	1.435E+02	7.838E+04	5.266E+00	6.293E-02	1.756E+01	1.180E-03
2058	1.365E+02	7.456E+04	5.009E+00	5.986E-02	1.670E+01	1.122E-03
2059	1.298E+02	7.092E+04	4.765E+00	5.694E-02	1.589E+01	1.067E-03
2060	1.235E+02	6.746E+04	4.533E+00	5.417E-02	1.511E+01	1.015E-03
2061	1.175E+02	6.417E+04	4.312E+00	5.152E-02	1.437E+01	9.658E-04
2062	1.117E+02	6.104E+04	4.101E+00	4.901E-02	1.367E+01	9.187E-04
2063	1.063E+02	5.807E+04	3.901E+00	4.662E-02	1.301E+01	8.739E-04
2064	1.011E+02	5.523E+04	3.711E+00	4.435E-02	1.237E+01	8.313E-04
2065	9.617E+01	5.254E+04	3.530E+00	4.218E-02	1.177E+01	7.907E-04
2066	9.148E+01	4.998E+04	3.358E+00	4.013E-02	1.119E+01	7.522E-04
2067	8.702E+01	4.754E+04	3.194E+00	3.817E-02	1.065E+01	7.155E-04
2068	8.278E+01	4.522E+04	3.038E+00	3.631E-02	1.013E+01	6.806E-04
2069	7.874E+01	4.302E+04	2.890E+00	3.454E-02	9.636E+00	6.474E-04
2070	7.490E+01	4.092E+04	2.749E+00	3.285E-02	9.166E+00	6.158E-04
2071	7.125E+01	3.892E+04	2.615E+00	3.125E-02	8.719E+00	5.858E-04
2072	6.777E+01	3.702E+04	2.488E+00	2.973E-02	8.293E+00	5.572E-04

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2073	6.447E+01	3.522E+04	2.366E+00	2.828E-02	7.889E+00	5.301E-04
2074	6.132E+01	3.350E+04	2.251E+00	2.690E-02	7.504E+00	5.042E-04
2075	5.833E+01	3.187E+04	2.141E+00	2.559E-02	7.138E+00	4.796E-04
2076	5.549E+01	3.031E+04	2.037E+00	2.434E-02	6.790E+00	4.562E-04
2077	5.278E+01	2.883E+04	1.937E+00	2.315E-02	6.459E+00	4.340E-04
2078	5.021E+01	2.743E+04	1.843E+00	2.202E-02	6.144E+00	4.128E-04
2079	4.776E+01	2.609E+04	1.753E+00	2.095E-02	5.844E+00	3.927E-04
2080	4.543E+01	2.482E+04	1.668E+00	1.993E-02	5.559E+00	3.735E-04
2081	4.321E+01	2.361E+04	1.586E+00	1.895E-02	5.288E+00	3.553E-04
2082	4.111E+01	2.246E+04	1.509E+00	1.803E-02	5.030E+00	3.380E-04
2083	3.910E+01	2.136E+04	1.435E+00	1.715E-02	4.785E+00	3.215E-04
2084	3.719E+01	2.032E+04	1.365E+00	1.631E-02	4.551E+00	3.058E-04
2085	3.538E+01	1.933E+04	1.299E+00	1.552E-02	4.330E+00	2.909E-04
2086	3.365E+01	1.839E+04	1.235E+00	1.476E-02	4.118E+00	2.767E-04
2087	3.201E+01	1.749E+04	1.175E+00	1.404E-02	3.918E+00	2.632E-04
2088	3.045E+01	1.664E+04	1.118E+00	1.336E-02	3.726E+00	2.504E-04
2089	2.897E+01	1.582E+04	1.063E+00	1.271E-02	3.545E+00	2.382E-04
2090	2.755E+01	1.505E+04	1.011E+00	1.209E-02	3.372E+00	2.266E-04
2091	2.621E+01	1.432E+04	9.621E-01	1.150E-02	3.207E+00	2.155E-04
2092	2.493E+01	1.362E+04	9.151E-01	1.094E-02	3.051E+00	2.050E-04
2093	2.372E+01	1.296E+04	8.705E-01	1.040E-02	2.902E+00	1.950E-04
2094	2.256E+01	1.232E+04	8.281E-01	9.895E-03	2.761E+00	1.855E-04
2095	2.146E+01	1.172E+04	7.877E-01	9.413E-03	2.626E+00	1.764E-04
2096	2.041E+01	1.115E+04	7.493E-01	8.954E-03	2.498E+00	1.678E-04
2097	1.942E+01	1.061E+04	7.127E-01	8.517E-03	2.376E+00	1.596E-04
2098	1.847E+01	1.009E+04	6.780E-01	8.102E-03	2.260E+00	1.519E-04
2099	1.757E+01	9.598E+03	6.449E-01	7.706E-03	2.150E+00	1.445E-04
2100	1.671E+01	9.130E+03	6.134E-01	7.331E-03	2.045E+00	1.374E-04
2101	1.590E+01	8.685E+03	5.835E-01	6.973E-03	1.945E+00	1.307E-04
2102	1.512E+01	8.261E+03	5.551E-01	6.633E-03	1.850E+00	1.243E-04
2103	1.438E+01	7.858E+03	5.280E-01	6.310E-03	1.760E+00	1.183E-04
2104	1.368E+01	7.475E+03	5.022E-01	6.002E-03	1.674E+00	1.125E-04
2105	1.302E+01	7.110E+03	4.777E-01	5.709E-03	1.593E+00	1.070E-04
2106	1.238E+01	6.764E+03	4.544E-01	5.431E-03	1.515E+00	1.018E-04
2107	1.178E+01	6.434E+03	4.323E-01	5.166E-03	1.441E+00	9.683E-05
2108	1.120E+01	6.120E+03	4.112E-01	4.914E-03	1.371E+00	9.211E-05
2109	1.066E+01	5.822E+03	3.911E-01	4.674E-03	1.304E+00	8.762E-05
2110	1.014E+01	5.538E+03	3.721E-01	4.446E-03	1.240E+00	8.334E-05
2111	9.642E+00	5.268E+03	3.539E-01	4.229E-03	1.180E+00	7.928E-05
2112	9.172E+00	5.011E+03	3.367E-01	4.023E-03	1.122E+00	7.541E-05

Summary Report

Landfill Name or Identifier: Tier II: PCCL Class I Phase II Landfill

Date: Wednesday, April 09, 2014

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

Where,

Q_{CH4} = annual methane generation in the year of the calculation ($m^3/year$)

i = 1-year time increment

n = (year of the calculation) - (initial year of waste acceptance)

j = 0.1-year time increment

k = methane generation rate ($year^{-1}$)

L_o = potential methane generation capacity (m^3/Mg)

M_i = mass of waste accepted in the i^{th} year (Mg)

t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years)

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

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

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	**1991**	
Landfill Closure Year (with 80-year limit)	**2044**	
Actual Closure Year (without limit)	***2044***	
Have Model Calculate Closure Year?	**No**	
Waste Design Capacity		*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	**0.050**	*year^{-1}*
Potential Methane Generation Capacity, L_o	**170**	*m^3/Mg*
NMOC Concentration	**137**	*ppmv as hexane*
Methane Content	**50**	*% by volume*

GASES / POLLUTANTS SELECTED

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

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
1991	38,972	42,870	0	0
1992	22,066	24,273	38,972	42,870
1993	22,513	24,764	61,039	67,143
1994	21,141	23,255	83,552	91,907
1995	18,736	20,609	104,692	115,162
1996	18,326	20,159	123,428	135,771
1997	18,428	20,270	141,754	155,930
1998	20,119	22,131	160,182	176,200
1999	19,942	21,936	180,301	198,331
2000	22,001	24,201	200,242	220,266
2001	32,492	35,741	222,243	244,467
2002	35,410	38,951	254,735	280,209
2003	52,783	58,061	290,145	319,160
2004	68,927	75,820	342,928	377,221
2005	51,918	57,110	411,855	453,041
2006	90,158	99,174	463,774	510,151
2007	88,413	97,254	553,932	609,325
2008	78,990	86,890	642,345	706,579
2009	70,130	77,143	721,335	793,469
2010	65,848	72,433	791,465	870,612
2011	67,749	74,524	857,313	943,045
2012	64,327	70,760	925,063	1,017,569
2013	60,609	66,670	989,389	1,088,328
2014	63,754	70,129	1,049,999	1,154,999
2015	63,871	70,259	1,113,753	1,225,128
2016	64,076	70,483	1,177,624	1,295,386
2017	64,280	70,708	1,241,700	1,365,870
2018	64,486	70,934	1,305,980	1,436,578
2019	64,692	71,161	1,370,466	1,507,512
2020	64,899	71,389	1,435,158	1,578,674
2021	65,106	71,617	1,500,057	1,650,062
2022	65,314	71,846	1,565,163	1,721,679
2023	65,523	72,075	1,630,477	1,793,525
2024	65,733	72,306	1,696,001	1,865,601
2025	65,943	72,537	1,761,733	1,937,907
2026	66,154	72,769	1,827,676	2,010,444
2027	66,365	73,002	1,893,830	2,083,212
2028	66,577	73,235	1,960,195	2,156,214
2029	66,790	73,469	2,026,772	2,229,449
2030	67,004	73,704	2,093,562	2,302,918

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2031	67,218	73,939	2,160,565	2,376,622
2032	67,433	74,176	2,227,783	2,450,561
2033	67,648	74,413	2,295,215	2,524,737
2034	67,864	74,651	2,362,864	2,599,150
2035	68,081	74,889	2,430,728	2,673,801
2036	68,299	75,129	2,498,809	2,748,690
2037	68,517	75,369	2,567,108	2,823,819
2038	68,736	75,610	2,635,625	2,899,188
2039	68,956	75,852	2,704,362	2,974,798
2040	69,176	76,094	2,773,318	3,050,650
2041	69,398	76,337	2,842,494	3,126,744
2042	69,619	76,581	2,911,892	3,203,081
2043	69,842	76,826	2,981,511	3,279,662
2044	28,099	30,909	3,051,353	3,356,489
2045	0	0	3,079,453	3,387,398
2046	0	0	3,079,453	3,387,398
2047	0	0	3,079,453	3,387,398
2048	0	0	3,079,453	3,387,398
2049	0	0	3,079,453	3,387,398
2050	0	0	3,079,453	3,387,398
2051	0	0	3,079,453	3,387,398
2052	0	0	3,079,453	3,387,398
2053	0	0	3,079,453	3,387,398
2054	0	0	3,079,453	3,387,398
2055	0	0	3,079,453	3,387,398
2056	0	0	3,079,453	3,387,398
2057	0	0	3,079,453	3,387,398
2058	0	0	3,079,453	3,387,398
2059	0	0	3,079,453	3,387,398
2060	0	0	3,079,453	3,387,398
2061	0	0	3,079,453	3,387,398
2062	0	0	3,079,453	3,387,398
2063	0	0	3,079,453	3,387,398
2064	0	0	3,079,453	3,387,398
2065	0	0	3,079,453	3,387,398
2066	0	0	3,079,453	3,387,398
2067	0	0	3,079,453	3,387,398
2068	0	0	3,079,453	3,387,398
2069	0	0	3,079,453	3,387,398
2070	0	0	3,079,453	3,387,398

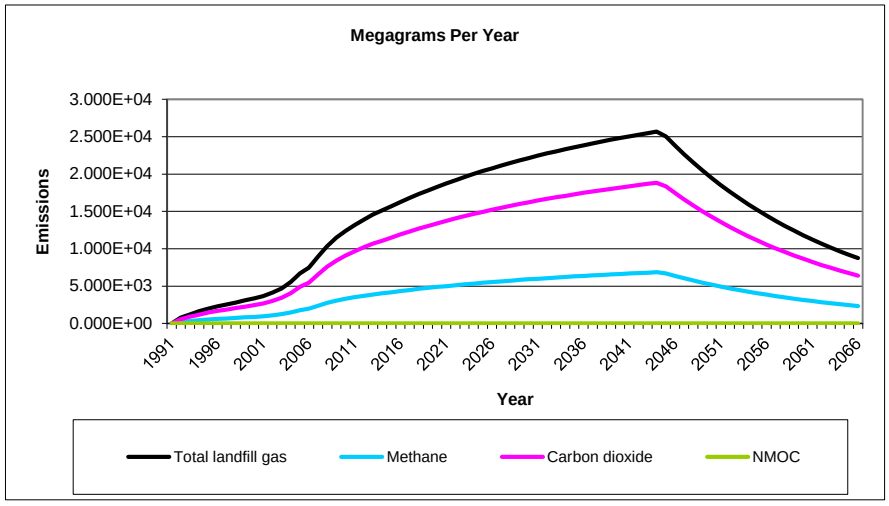
Pollutant Parameters

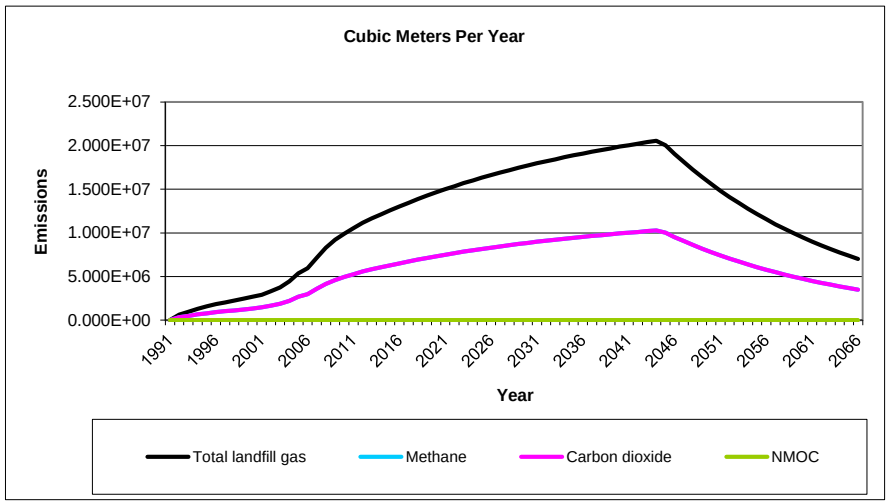
		Gas / Pollutant Default Parameters:		*User-specified Pollutant Parameters:*	
	Compound	Concentration (*ppmv*)	Molecular Weight	Concentration (*ppmv*)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl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

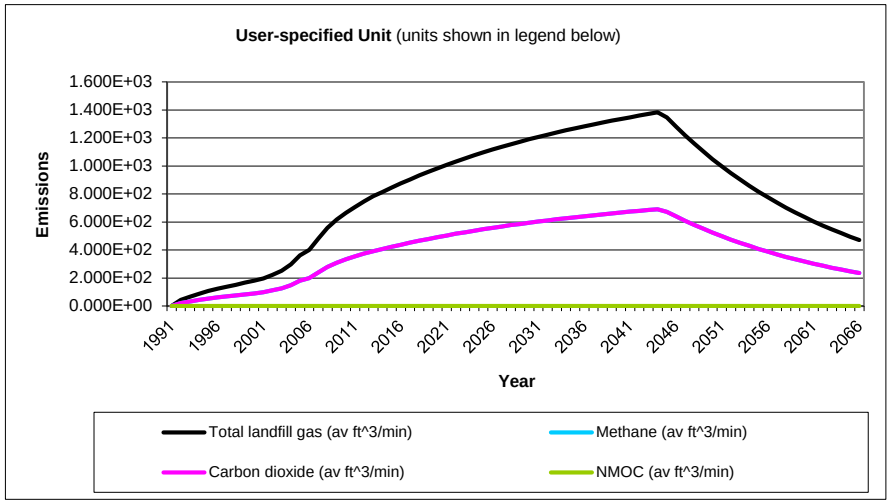
Pollutant Parameters (Continued)

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

Graphs


Megagrams Per Year
Emissions
3.000E+04
2.500E+04
2.000E+04
1.500E+04
1.000E+04
5.000E+03
0.000E+00
1991
1996
2001
2006
2011
2016
2021
2026
2031
2036
2041
2046
2051
2056
2061
2066
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


Cubic Meters Per Year
Emissions
2.500E+07
2.000E+07
1.500E+07
1.000E+07
5.000E+06
0.000E+00
1991
1996
2001
2006
2011
2016
2021
2026
2031
2036
2041
2046
2051
2056
2061
2066
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
Emissions
1.600E+03
1.400E+03
1.200E+03
1.000E+03
8.000E+02
6.000E+02
4.000E+02
2.000E+02
0.000E+00
1991
1996
2001
2006
2011
2016
2021
2026
2031
2036
2041
2046
2051
2056
2061
2066
Year
Total landfill gas (av ft^3/min)
Methane (av ft^3/min)
Carbon dioxide (av ft^3/min)
NMOC (av ft^3/min)

Results

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1991	0	0	0	0	0	0
1992	8.091E+02	6.479E+05	4.353E+01	2.161E+02	3.239E+05	2.176E+01
1993	1.228E+03	9.831E+05	6.605E+01	3.279E+02	4.915E+05	3.303E+01
1994	1.635E+03	1.309E+06	8.798E+01	4.368E+02	6.547E+05	4.399E+01
1995	1.994E+03	1.597E+06	1.073E+02	5.327E+02	7.985E+05	5.365E+01
1996	2.286E+03	1.831E+06	1.230E+02	6.106E+02	9.153E+05	6.150E+01
1997	2.555E+03	2.046E+06	1.375E+02	6.825E+02	1.023E+06	6.873E+01
1998	2.813E+03	2.252E+06	1.513E+02	7.514E+02	1.126E+06	7.567E+01
1999	3.093E+03	2.477E+06	1.664E+02	8.263E+02	1.239E+06	8.322E+01
2000	3.356E+03	2.688E+06	1.806E+02	8.966E+02	1.344E+06	9.029E+01
2001	3.650E+03	2.922E+06	1.964E+02	9.748E+02	1.461E+06	9.818E+01
2002	4.146E+03	3.320E+06	2.231E+02	1.107E+03	1.660E+06	1.115E+02
2003	4.679E+03	3.747E+06	2.517E+02	1.250E+03	1.873E+06	1.259E+02
2004	5.547E+03	4.441E+06	2.984E+02	1.482E+03	2.221E+06	1.492E+02
2005	6.707E+03	5.371E+06	3.609E+02	1.791E+03	2.685E+06	1.804E+02
2006	7.458E+03	5.972E+06	4.012E+02	1.992E+03	2.986E+06	2.006E+02
2007	8.966E+03	7.179E+06	4.824E+02	2.395E+03	3.590E+06	2.412E+02
2008	1.036E+04	8.299E+06	5.576E+02	2.768E+03	4.149E+06	2.788E+02
2009	1.150E+04	9.207E+06	6.186E+02	3.071E+03	4.604E+06	3.093E+02
2010	1.239E+04	9.924E+06	6.668E+02	3.310E+03	4.962E+06	3.334E+02
2011	1.316E+04	1.053E+07	7.078E+02	3.514E+03	5.267E+06	3.539E+02
2012	1.392E+04	1.115E+07	7.490E+02	3.718E+03	5.574E+06	3.745E+02
2013	1.458E+04	1.167E+07	7.843E+02	3.894E+03	5.836E+06	3.921E+02
2014	1.512E+04	1.211E+07	8.137E+02	4.040E+03	6.055E+06	4.069E+02
2015	1.571E+04	1.258E+07	8.453E+02	4.196E+03	6.290E+06	4.226E+02
2016	1.627E+04	1.303E+07	8.754E+02	4.346E+03	6.514E+06	4.377E+02
2017	1.681E+04	1.346E+07	9.042E+02	4.489E+03	6.729E+06	4.521E+02
2018	1.732E+04	1.387E+07	9.319E+02	4.627E+03	6.935E+06	4.660E+02
2019	1.782E+04	1.427E+07	9.585E+02	4.759E+03	7.133E+06	4.793E+02
2020	1.829E+04	1.465E+07	9.840E+02	4.885E+03	7.323E+06	4.920E+02
2021	1.874E+04	1.501E+07	1.009E+03	5.007E+03	7.505E+06	5.043E+02
2022	1.918E+04	1.536E+07	1.032E+03	5.124E+03	7.680E+06	5.160E+02
2023	1.960E+04	1.570E+07	1.055E+03	5.236E+03	7.848E+06	5.273E+02
2024	2.001E+04	1.602E+07	1.076E+03	5.344E+03	8.010E+06	5.382E+02
2025	2.040E+04	1.633E+07	1.097E+03	5.448E+03	8.166E+06	5.487E+02
2026	2.077E+04	1.663E+07	1.117E+03	5.548E+03	8.316E+06	5.587E+02
2027	2.113E+04	1.692E+07	1.137E+03	5.644E+03	8.460E+06	5.684E+02
2028	2.148E+04	1.720E+07	1.156E+03	5.737E+03	8.599E+06	5.778E+02
2029	2.181E+04	1.747E+07	1.174E+03	5.826E+03	8.733E+06	5.868E+02
2030	2.213E+04	1.772E+07	1.191E+03	5.912E+03	8.862E+06	5.955E+02
2031	2.245E+04	1.797E+07	1.208E+03	5.996E+03	8.987E+06	6.038E+02
2032	2.275E+04	1.821E+07	1.224E+03	6.076E+03	9.107E+06	6.119E+02
2033	2.304E+04	1.845E+07	1.239E+03	6.154E+03	9.224E+06	6.197E+02
2034	2.332E+04	1.867E+07	1.255E+03	6.229E+03	9.336E+06	6.273E+02
2035	2.359E+04	1.889E+07	1.269E+03	6.301E+03	9.445E+06	6.346E+02
2036	2.385E+04	1.910E+07	1.283E+03	6.371E+03	9.550E+06	6.417E+02
2037	2.411E+04	1.930E+07	1.297E+03	6.439E+03	9.652E+06	6.485E+02
2038	2.435E+04	1.950E+07	1.310E+03	6.505E+03	9.751E+06	6.552E+02
2039	2.459E+04	1.969E+07	1.323E+03	6.569E+03	9.847E+06	6.616E+02
2040	2.483E+04	1.988E+07	1.336E+03	6.631E+03	9.940E+06	6.678E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2041	2.505E+04	2.006E+07	1.348E+03	6.691E+03	1.003E+07	6.739E+02
2042	2.527E+04	2.023E+07	1.360E+03	6.750E+03	1.012E+07	6.798E+02
2043	2.548E+04	2.041E+07	1.371E+03	6.807E+03	1.020E+07	6.855E+02
2044	2.569E+04	2.057E+07	1.382E+03	6.862E+03	1.029E+07	6.911E+02
2045	2.502E+04	2.003E+07	1.346E+03	6.683E+03	1.002E+07	6.731E+02
2046	2.380E+04	1.906E+07	1.280E+03	6.357E+03	9.529E+06	6.402E+02
2047	2.264E+04	1.813E+07	1.218E+03	6.047E+03	9.064E+06	6.090E+02
2048	2.153E+04	1.724E+07	1.159E+03	5.752E+03	8.622E+06	5.793E+02
2049	2.048E+04	1.640E+07	1.102E+03	5.472E+03	8.202E+06	5.511E+02
2050	1.949E+04	1.560E+07	1.048E+03	5.205E+03	7.802E+06	5.242E+02
2051	1.854E+04	1.484E+07	9.972E+02	4.951E+03	7.421E+06	4.986E+02
2052	1.763E+04	1.412E+07	9.486E+02	4.710E+03	7.059E+06	4.743E+02
2053	1.677E+04	1.343E+07	9.023E+02	4.480E+03	6.715E+06	4.512E+02
2054	1.595E+04	1.277E+07	8.583E+02	4.261E+03	6.387E+06	4.292E+02
2055	1.518E+04	1.215E+07	8.165E+02	4.054E+03	6.076E+06	4.082E+02
2056	1.444E+04	1.156E+07	7.767E+02	3.856E+03	5.780E+06	3.883E+02
2057	1.373E+04	1.100E+07	7.388E+02	3.668E+03	5.498E+06	3.694E+02
2058	1.306E+04	1.046E+07	7.027E+02	3.489E+03	5.230E+06	3.514E+02
2059	1.242E+04	9.949E+06	6.685E+02	3.319E+03	4.975E+06	3.342E+02
2060	1.182E+04	9.464E+06	6.359E+02	3.157E+03	4.732E+06	3.179E+02
2061	1.124E+04	9.002E+06	6.049E+02	3.003E+03	4.501E+06	3.024E+02
2062	1.069E+04	8.563E+06	5.754E+02	2.856E+03	4.282E+06	2.877E+02
2063	1.017E+04	8.146E+06	5.473E+02	2.717E+03	4.073E+06	2.737E+02
2064	9.676E+03	7.748E+06	5.206E+02	2.585E+03	3.874E+06	2.603E+02
2065	9.204E+03	7.370E+06	4.952E+02	2.459E+03	3.685E+06	2.476E+02
2066	8.755E+03	7.011E+06	4.711E+02	2.339E+03	3.505E+06	2.355E+02
2067	8.328E+03	6.669E+06	4.481E+02	2.225E+03	3.335E+06	2.240E+02
2068	7.922E+03	6.344E+06	4.262E+02	2.116E+03	3.172E+06	2.131E+02
2069	7.536E+03	6.034E+06	4.055E+02	2.013E+03	3.017E+06	2.027E+02
2070	7.168E+03	5.740E+06	3.857E+02	1.915E+03	2.870E+06	1.928E+02
2071	6.819E+03	5.460E+06	3.669E+02	1.821E+03	2.730E+06	1.834E+02
2072	6.486E+03	5.194E+06	3.490E+02	1.733E+03	2.597E+06	1.745E+02
2073	6.170E+03	4.941E+06	3.320E+02	1.648E+03	2.470E+06	1.660E+02
2074	5.869E+03	4.700E+06	3.158E+02	1.568E+03	2.350E+06	1.579E+02
2075	5.583E+03	4.470E+06	3.004E+02	1.491E+03	2.235E+06	1.502E+02
2076	5.310E+03	4.252E+06	2.857E+02	1.418E+03	2.126E+06	1.429E+02
2077	5.051E+03	4.045E+06	2.718E+02	1.349E+03	2.022E+06	1.359E+02
2078	4.805E+03	3.848E+06	2.585E+02	1.283E+03	1.924E+06	1.293E+02
2079	4.571E+03	3.660E+06	2.459E+02	1.221E+03	1.830E+06	1.230E+02
2080	4.348E+03	3.482E+06	2.339E+02	1.161E+03	1.741E+06	1.170E+02
2081	4.136E+03	3.312E+06	2.225E+02	1.105E+03	1.656E+06	1.113E+02
2082	3.934E+03	3.150E+06	2.117E+02	1.051E+03	1.575E+06	1.058E+02
2083	3.742E+03	2.997E+06	2.013E+02	9.996E+02	1.498E+06	1.007E+02
2084	3.560E+03	2.850E+06	1.915E+02	9.508E+02	1.425E+06	9.576E+01
2085	3.386E+03	2.711E+06	1.822E+02	9.045E+02	1.356E+06	9.109E+01
2086	3.221E+03	2.579E+06	1.733E+02	8.604E+02	1.290E+06	8.665E+01
2087	3.064E+03	2.453E+06	1.648E+02	8.184E+02	1.227E+06	8.242E+01
2088	2.914E+03	2.334E+06	1.568E+02	7.785E+02	1.167E+06	7.840E+01
2089	2.772E+03	2.220E+06	1.492E+02	7.405E+02	1.110E+06	7.458E+01
2090	2.637E+03	2.112E+06	1.419E+02	7.044E+02	1.056E+06	7.094E+01
2091	2.508E+03	2.009E+06	1.350E+02	6.700E+02	1.004E+06	6.748E+01

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2092	2.386E+03	1.911E+06	1.284E+02	6.374E+02	9.554E+05	6.419E+01
2093	2.270E+03	1.818E+06	1.221E+02	6.063E+02	9.088E+05	6.106E+01
2094	2.159E+03	1.729E+06	1.162E+02	5.767E+02	8.644E+05	5.808E+01
2095	2.054E+03	1.645E+06	1.105E+02	5.486E+02	8.223E+05	5.525E+01
2096	1.954E+03	1.564E+06	1.051E+02	5.218E+02	7.822E+05	5.255E+01
2097	1.858E+03	1.488E+06	9.998E+01	4.964E+02	7.440E+05	4.999E+01
2098	1.768E+03	1.415E+06	9.511E+01	4.722E+02	7.077E+05	4.755E+01
2099	1.681E+03	1.346E+06	9.047E+01	4.491E+02	6.732E+05	4.523E+01
2100	1.599E+03	1.281E+06	8.606E+01	4.272E+02	6.404E+05	4.303E+01
2101	1.521E+03	1.218E+06	8.186E+01	4.064E+02	6.092E+05	4.093E+01
2102	1.447E+03	1.159E+06	7.787E+01	3.866E+02	5.795E+05	3.893E+01
2103	1.377E+03	1.102E+06	7.407E+01	3.677E+02	5.512E+05	3.703E+01
2104	1.310E+03	1.049E+06	7.046E+01	3.498E+02	5.243E+05	3.523E+01
2105	1.246E+03	9.975E+05	6.702E+01	3.327E+02	4.987E+05	3.351E+01
2106	1.185E+03	9.488E+05	6.375E+01	3.165E+02	4.744E+05	3.188E+01
2107	1.127E+03	9.026E+05	6.064E+01	3.011E+02	4.513E+05	3.032E+01
2108	1.072E+03	8.585E+05	5.769E+01	2.864E+02	4.293E+05	2.884E+01
2109	1.020E+03	8.167E+05	5.487E+01	2.724E+02	4.083E+05	2.744E+01
2110	9.701E+02	7.768E+05	5.220E+01	2.591E+02	3.884E+05	2.610E+01
2111	9.228E+02	7.390E+05	4.965E+01	2.465E+02	3.695E+05	2.483E+01
2112	8.778E+02	7.029E+05	4.723E+01	2.345E+02	3.515E+05	2.361E+01
2113	8.350E+02	6.686E+05	4.493E+01	2.230E+02	3.343E+05	2.246E+01
2114	7.943E+02	6.360E+05	4.273E+01	2.122E+02	3.180E+05	2.137E+01
2115	7.555E+02	6.050E+05	4.065E+01	2.018E+02	3.025E+05	2.033E+01
2116	7.187E+02	5.755E+05	3.867E+01	1.920E+02	2.877E+05	1.933E+01
2117	6.836E+02	5.474E+05	3.678E+01	1.826E+02	2.737E+05	1.839E+01
2118	6.503E+02	5.207E+05	3.499E+01	1.737E+02	2.604E+05	1.749E+01
2119	6.186E+02	4.953E+05	3.328E+01	1.652E+02	2.477E+05	1.664E+01
2120	5.884E+02	4.712E+05	3.166E+01	1.572E+02	2.356E+05	1.583E+01
2121	5.597E+02	4.482E+05	3.011E+01	1.495E+02	2.241E+05	1.506E+01
2122	5.324E+02	4.263E+05	2.865E+01	1.422E+02	2.132E+05	1.432E+01
2123	5.065E+02	4.055E+05	2.725E+01	1.353E+02	2.028E+05	1.362E+01
2124	4.818E+02	3.858E+05	2.592E+01	1.287E+02	1.929E+05	1.296E+01
2125	4.583E+02	3.670E+05	2.466E+01	1.224E+02	1.835E+05	1.233E+01
2126	4.359E+02	3.491E+05	2.345E+01	1.164E+02	1.745E+05	1.173E+01
2127	4.146E+02	3.320E+05	2.231E+01	1.108E+02	1.660E+05	1.115E+01
2128	3.944E+02	3.158E+05	2.122E+01	1.054E+02	1.579E+05	1.061E+01
2129	3.752E+02	3.004E+05	2.019E+01	1.002E+02	1.502E+05	1.009E+01
2130	3.569E+02	2.858E+05	1.920E+01	9.533E+01	1.429E+05	9.601E+00
2131	3.395E+02	2.718E+05	1.827E+01	9.068E+01	1.359E+05	9.133E+00

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1991	0	0	0	0	0	0
1992	5.930E+02	3.239E+05	2.176E+01	3.181E-01	8.876E+01	5.964E-03
1993	8.998E+02	4.915E+05	3.303E+01	4.828E-01	1.347E+02	9.049E-03
1994	1.198E+03	6.547E+05	4.399E+01	6.430E-01	1.794E+02	1.205E-02
1995	1.462E+03	7.985E+05	5.365E+01	7.842E-01	2.188E+02	1.470E-02
1996	1.675E+03	9.153E+05	6.150E+01	8.989E-01	2.508E+02	1.685E-02
1997	1.872E+03	1.023E+06	6.873E+01	1.005E+00	2.803E+02	1.883E-02
1998	2.062E+03	1.126E+06	7.567E+01	1.106E+00	3.086E+02	2.073E-02
1999	2.267E+03	1.239E+06	8.322E+01	1.216E+00	3.394E+02	2.280E-02
2000	2.460E+03	1.344E+06	9.029E+01	1.320E+00	3.682E+02	2.474E-02
2001	2.675E+03	1.461E+06	9.818E+01	1.435E+00	4.004E+02	2.690E-02
2002	3.039E+03	1.660E+06	1.115E+02	1.630E+00	4.548E+02	3.056E-02
2003	3.429E+03	1.873E+06	1.259E+02	1.840E+00	5.133E+02	3.449E-02
2004	4.065E+03	2.221E+06	1.492E+02	2.181E+00	6.085E+02	4.088E-02
2005	4.915E+03	2.685E+06	1.804E+02	2.637E+00	7.358E+02	4.944E-02
2006	5.466E+03	2.986E+06	2.006E+02	2.933E+00	8.181E+02	5.497E-02
2007	6.571E+03	3.590E+06	2.412E+02	3.526E+00	9.836E+02	6.609E-02
2008	7.596E+03	4.149E+06	2.788E+02	4.075E+00	1.137E+03	7.639E-02
2009	8.427E+03	4.604E+06	3.093E+02	4.521E+00	1.261E+03	8.475E-02
2010	9.083E+03	4.962E+06	3.334E+02	4.873E+00	1.360E+03	9.135E-02
2011	9.642E+03	5.267E+06	3.539E+02	5.173E+00	1.443E+03	9.697E-02
2012	1.020E+04	5.574E+06	3.745E+02	5.474E+00	1.527E+03	1.026E-01
2013	1.068E+04	5.836E+06	3.921E+02	5.732E+00	1.599E+03	1.074E-01
2014	1.108E+04	6.055E+06	4.069E+02	5.947E+00	1.659E+03	1.115E-01
2015	1.151E+04	6.290E+06	4.226E+02	6.178E+00	1.723E+03	1.158E-01
2016	1.192E+04	6.514E+06	4.377E+02	6.398E+00	1.785E+03	1.199E-01
2017	1.232E+04	6.729E+06	4.521E+02	6.609E+00	1.844E+03	1.239E-01
2018	1.269E+04	6.935E+06	4.660E+02	6.811E+00	1.900E+03	1.277E-01
2019	1.306E+04	7.133E+06	4.793E+02	7.006E+00	1.954E+03	1.313E-01
2020	1.340E+04	7.323E+06	4.920E+02	7.192E+00	2.006E+03	1.348E-01
2021	1.374E+04	7.505E+06	5.043E+02	7.371E+00	2.056E+03	1.382E-01
2022	1.406E+04	7.680E+06	5.160E+02	7.543E+00	2.104E+03	1.414E-01
2023	1.437E+04	7.848E+06	5.273E+02	7.708E+00	2.150E+03	1.445E-01
2024	1.466E+04	8.010E+06	5.382E+02	7.867E+00	2.195E+03	1.475E-01
2025	1.495E+04	8.166E+06	5.487E+02	8.020E+00	2.237E+03	1.503E-01
2026	1.522E+04	8.316E+06	5.587E+02	8.167E+00	2.279E+03	1.531E-01
2027	1.549E+04	8.460E+06	5.684E+02	8.309E+00	2.318E+03	1.558E-01
2028	1.574E+04	8.599E+06	5.778E+02	8.446E+00	2.356E+03	1.583E-01
2029	1.599E+04	8.733E+06	5.868E+02	8.577E+00	2.393E+03	1.608E-01
2030	1.622E+04	8.862E+06	5.955E+02	8.704E+00	2.428E+03	1.632E-01
2031	1.645E+04	8.987E+06	6.038E+02	8.827E+00	2.462E+03	1.655E-01
2032	1.667E+04	9.107E+06	6.119E+02	8.945E+00	2.495E+03	1.677E-01
2033	1.688E+04	9.224E+06	6.197E+02	9.059E+00	2.527E+03	1.698E-01
2034	1.709E+04	9.336E+06	6.273E+02	9.169E+00	2.558E+03	1.719E-01
2035	1.729E+04	9.445E+06	6.346E+02	9.276E+00	2.588E+03	1.739E-01
2036	1.748E+04	9.550E+06	6.417E+02	9.380E+00	2.617E+03	1.758E-01
2037	1.767E+04	9.652E+06	6.485E+02	9.480E+00	2.645E+03	1.777E-01
2038	1.785E+04	9.751E+06	6.552E+02	9.577E+00	2.672E+03	1.795E-01
2039	1.802E+04	9.847E+06	6.616E+02	9.671E+00	2.698E+03	1.813E-01
2040	1.819E+04	9.940E+06	6.678E+02	9.762E+00	2.723E+03	1.830E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2041	1.836E+04	1.003E+07	6.739E+02	9.851E+00	2.748E+03	1.846E-01
2042	1.852E+04	1.012E+07	6.798E+02	9.937E+00	2.772E+03	1.863E-01
2043	1.868E+04	1.020E+07	6.855E+02	1.002E+01	2.796E+03	1.878E-01
2044	1.883E+04	1.029E+07	6.911E+02	1.010E+01	2.818E+03	1.894E-01
2045	1.834E+04	1.002E+07	6.731E+02	9.839E+00	2.745E+03	1.844E-01
2046	1.744E+04	9.529E+06	6.402E+02	9.359E+00	2.611E+03	1.754E-01
2047	1.659E+04	9.064E+06	6.090E+02	8.902E+00	2.484E+03	1.669E-01
2048	1.578E+04	8.622E+06	5.793E+02	8.468E+00	2.362E+03	1.587E-01
2049	1.501E+04	8.202E+06	5.511E+02	8.055E+00	2.247E+03	1.510E-01
2050	1.428E+04	7.802E+06	5.242E+02	7.662E+00	2.138E+03	1.436E-01
2051	1.358E+04	7.421E+06	4.986E+02	7.289E+00	2.033E+03	1.366E-01
2052	1.292E+04	7.059E+06	4.743E+02	6.933E+00	1.934E+03	1.300E-01
2053	1.229E+04	6.715E+06	4.512E+02	6.595E+00	1.840E+03	1.236E-01
2054	1.169E+04	6.387E+06	4.292E+02	6.273E+00	1.750E+03	1.176E-01
2055	1.112E+04	6.076E+06	4.082E+02	5.967E+00	1.665E+03	1.119E-01
2056	1.058E+04	5.780E+06	3.883E+02	5.676E+00	1.584E+03	1.064E-01
2057	1.006E+04	5.498E+06	3.694E+02	5.400E+00	1.506E+03	1.012E-01
2058	9.573E+03	5.230E+06	3.514E+02	5.136E+00	1.433E+03	9.628E-02
2059	9.106E+03	4.975E+06	3.342E+02	4.886E+00	1.363E+03	9.158E-02
2060	8.662E+03	4.732E+06	3.179E+02	4.647E+00	1.297E+03	8.711E-02
2061	8.239E+03	4.501E+06	3.024E+02	4.421E+00	1.233E+03	8.287E-02
2062	7.837E+03	4.282E+06	2.877E+02	4.205E+00	1.173E+03	7.882E-02
2063	7.455E+03	4.073E+06	2.737E+02	4.000E+00	1.116E+03	7.498E-02
2064	7.092E+03	3.874E+06	2.603E+02	3.805E+00	1.062E+03	7.132E-02
2065	6.746E+03	3.685E+06	2.476E+02	3.619E+00	1.010E+03	6.784E-02
2066	6.417E+03	3.505E+06	2.355E+02	3.443E+00	9.605E+02	6.454E-02
2067	6.104E+03	3.335E+06	2.240E+02	3.275E+00	9.137E+02	6.139E-02
2068	5.806E+03	3.172E+06	2.131E+02	3.115E+00	8.691E+02	5.839E-02
2069	5.523E+03	3.017E+06	2.027E+02	2.963E+00	8.267E+02	5.555E-02
2070	5.254E+03	2.870E+06	1.928E+02	2.819E+00	7.864E+02	5.284E-02
2071	4.997E+03	2.730E+06	1.834E+02	2.681E+00	7.480E+02	5.026E-02
2072	4.754E+03	2.597E+06	1.745E+02	2.551E+00	7.116E+02	4.781E-02
2073	4.522E+03	2.470E+06	1.660E+02	2.426E+00	6.769E+02	4.548E-02
2074	4.301E+03	2.350E+06	1.579E+02	2.308E+00	6.438E+02	4.326E-02
2075	4.092E+03	2.235E+06	1.502E+02	2.195E+00	6.124E+02	4.115E-02
2076	3.892E+03	2.126E+06	1.429E+02	2.088E+00	5.826E+02	3.914E-02
2077	3.702E+03	2.022E+06	1.359E+02	1.986E+00	5.542E+02	3.723E-02
2078	3.522E+03	1.924E+06	1.293E+02	1.889E+00	5.271E+02	3.542E-02
2079	3.350E+03	1.830E+06	1.230E+02	1.797E+00	5.014E+02	3.369E-02
2080	3.186E+03	1.741E+06	1.170E+02	1.710E+00	4.770E+02	3.205E-02
2081	3.031E+03	1.656E+06	1.113E+02	1.626E+00	4.537E+02	3.048E-02
2082	2.883E+03	1.575E+06	1.058E+02	1.547E+00	4.316E+02	2.900E-02
2083	2.743E+03	1.498E+06	1.007E+02	1.472E+00	4.105E+02	2.758E-02
2084	2.609E+03	1.425E+06	9.576E+01	1.400E+00	3.905E+02	2.624E-02
2085	2.482E+03	1.356E+06	9.109E+01	1.332E+00	3.715E+02	2.496E-02
2086	2.361E+03	1.290E+06	8.665E+01	1.267E+00	3.533E+02	2.374E-02
2087	2.245E+03	1.227E+06	8.242E+01	1.205E+00	3.361E+02	2.258E-02
2088	2.136E+03	1.167E+06	7.840E+01	1.146E+00	3.197E+02	2.148E-02
2089	2.032E+03	1.110E+06	7.458E+01	1.090E+00	3.041E+02	2.043E-02
2090	1.933E+03	1.056E+06	7.094E+01	1.037E+00	2.893E+02	1.944E-02
2091	1.838E+03	1.004E+06	6.748E+01	9.864E-01	2.752E+02	1.849E-02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2092	1.749E+03	9.554E+05	6.419E+01	9.383E-01	2.618E+02	1.759E-02
2093	1.663E+03	9.088E+05	6.106E+01	8.925E-01	2.490E+02	1.673E-02
2094	1.582E+03	8.644E+05	5.808E+01	8.490E-01	2.369E+02	1.591E-02
2095	1.505E+03	8.223E+05	5.525E+01	8.076E-01	2.253E+02	1.514E-02
2096	1.432E+03	7.822E+05	5.255E+01	7.682E-01	2.143E+02	1.440E-02
2097	1.362E+03	7.440E+05	4.999E+01	7.307E-01	2.039E+02	1.370E-02
2098	1.296E+03	7.077E+05	4.755E+01	6.951E-01	1.939E+02	1.303E-02
2099	1.232E+03	6.732E+05	4.523E+01	6.612E-01	1.845E+02	1.239E-02
2100	1.172E+03	6.404E+05	4.303E+01	6.290E-01	1.755E+02	1.179E-02
2101	1.115E+03	6.092E+05	4.093E+01	5.983E-01	1.669E+02	1.121E-02
2102	1.061E+03	5.795E+05	3.893E+01	5.691E-01	1.588E+02	1.067E-02
2103	1.009E+03	5.512E+05	3.703E+01	5.414E-01	1.510E+02	1.015E-02
2104	9.598E+02	5.243E+05	3.523E+01	5.149E-01	1.437E+02	9.653E-03
2105	9.129E+02	4.987E+05	3.351E+01	4.898E-01	1.367E+02	9.182E-03
2106	8.684E+02	4.744E+05	3.188E+01	4.659E-01	1.300E+02	8.734E-03
2107	8.261E+02	4.513E+05	3.032E+01	4.432E-01	1.237E+02	8.308E-03
2108	7.858E+02	4.293E+05	2.884E+01	4.216E-01	1.176E+02	7.903E-03
2109	7.475E+02	4.083E+05	2.744E+01	4.010E-01	1.119E+02	7.517E-03
2110	7.110E+02	3.884E+05	2.610E+01	3.815E-01	1.064E+02	7.151E-03
2111	6.763E+02	3.695E+05	2.483E+01	3.629E-01	1.012E+02	6.802E-03
2112	6.433E+02	3.515E+05	2.361E+01	3.452E-01	9.630E+01	6.470E-03
2113	6.120E+02	3.343E+05	2.246E+01	3.283E-01	9.160E+01	6.155E-03
2114	5.821E+02	3.180E+05	2.137E+01	3.123E-01	8.713E+01	5.855E-03
2115	5.537E+02	3.025E+05	2.033E+01	2.971E-01	8.289E+01	5.569E-03
2116	5.267E+02	2.877E+05	1.933E+01	2.826E-01	7.884E+01	5.297E-03
2117	5.010E+02	2.737E+05	1.839E+01	2.688E-01	7.500E+01	5.039E-03
2118	4.766E+02	2.604E+05	1.749E+01	2.557E-01	7.134E+01	4.793E-03
2119	4.534E+02	2.477E+05	1.664E+01	2.432E-01	6.786E+01	4.560E-03
2120	4.312E+02	2.356E+05	1.583E+01	2.314E-01	6.455E+01	4.337E-03
2121	4.102E+02	2.241E+05	1.506E+01	2.201E-01	6.140E+01	4.126E-03
2122	3.902E+02	2.132E+05	1.432E+01	2.094E-01	5.841E+01	3.924E-03
2123	3.712E+02	2.028E+05	1.362E+01	1.992E-01	5.556E+01	3.733E-03
2124	3.531E+02	1.929E+05	1.296E+01	1.894E-01	5.285E+01	3.551E-03
2125	3.359E+02	1.835E+05	1.233E+01	1.802E-01	5.027E+01	3.378E-03
2126	3.195E+02	1.745E+05	1.173E+01	1.714E-01	4.782E+01	3.213E-03
2127	3.039E+02	1.660E+05	1.115E+01	1.631E-01	4.549E+01	3.056E-03
2128	2.891E+02	1.579E+05	1.061E+01	1.551E-01	4.327E+01	2.907E-03
2129	2.750E+02	1.502E+05	1.009E+01	1.475E-01	4.116E+01	2.766E-03
2130	2.616E+02	1.429E+05	9.601E+00	1.403E-01	3.915E+01	2.631E-03
2131	2.488E+02	1.359E+05	9.133E+00	1.335E-01	3.724E+01	2.502E-03

Summary Report

Landfill Name or Identifier: Tier II: PCCL Class III Landfill

Date: Wednesday, April 09, 2014

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

Where,

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

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

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

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	**1992**	
Landfill Closure Year (with 80-year limit)	**2005**	
Actual Closure Year (without limit)	***2005***	
Have Model Calculate Closure Year?	**No**	
Waste Design Capacity		*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	**0.050**	*year $^{-1}$*
Potential Methane Generation Capacity, L_o	**170**	*m^3/Mg*
NMOC Concentration	**78**	*ppmv as hexane*
Methane Content	**50**	*% by volume*

GASES / POLLUTANTS SELECTED

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

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
1992	7,101	7,811	0	0
1993	7,245	7,969	7,101	7,811
1994	6,803	7,483	14,346	15,780
1995	6,029	6,632	21,149	23,264
1996	11,795	12,974	27,178	29,896
1997	11,860	13,046	38,973	42,870
1998	12,949	14,243	50,833	55,917
1999	12,835	14,118	63,782	70,160
2000	14,160	15,576	76,616	84,278
2001	14,660	16,126	90,776	99,854
2002	11,630	12,792	105,436	115,980
2003	41,355	45,491	117,066	128,772
2004	57,072	62,780	158,421	174,263
2005	30,734	33,808	215,493	237,043
2006	0	0	246,228	270,850
2007	0	0	246,228	270,850
2008	0	0	246,228	270,850
2009	0	0	246,228	270,850
2010	0	0	246,228	270,850
2011	0	0	246,228	270,850
2012	0	0	246,228	270,850
2013	0	0	246,228	270,850
2014	0	0	246,228	270,850
2015	0	0	246,228	270,850
2016	0	0	246,228	270,850
2017	0	0	246,228	270,850
2018	0	0	246,228	270,850
2019	0	0	246,228	270,850
2020	0	0	246,228	270,850
2021	0	0	246,228	270,850
2022	0	0	246,228	270,850
2023	0	0	246,228	270,850
2024	0	0	246,228	270,850
2025	0	0	246,228	270,850
2026	0	0	246,228	270,850
2027	0	0	246,228	270,850
2028	0	0	246,228	270,850
2029	0	0	246,228	270,850
2030	0	0	246,228	270,850
2031	0	0	246,228	270,850

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2032	0	0	246,228	270,850
2033	0	0	246,228	270,850
2034	0	0	246,228	270,850
2035	0	0	246,228	270,850
2036	0	0	246,228	270,850
2037	0	0	246,228	270,850
2038	0	0	246,228	270,850
2039	0	0	246,228	270,850
2040	0	0	246,228	270,850
2041	0	0	246,228	270,850
2042	0	0	246,228	270,850
2043	0	0	246,228	270,850
2044	0	0	246,228	270,850
2045	0	0	246,228	270,850
2046	0	0	246,228	270,850
2047	0	0	246,228	270,850
2048	0	0	246,228	270,850
2049	0	0	246,228	270,850
2050	0	0	246,228	270,850
2051	0	0	246,228	270,850
2052	0	0	246,228	270,850
2053	0	0	246,228	270,850
2054	0	0	246,228	270,850
2055	0	0	246,228	270,850
2056	0	0	246,228	270,850
2057	0	0	246,228	270,850
2058	0	0	246,228	270,850
2059	0	0	246,228	270,850
2060	0	0	246,228	270,850
2061	0	0	246,228	270,850
2062	0	0	246,228	270,850
2063	0	0	246,228	270,850
2064	0	0	246,228	270,850
2065	0	0	246,228	270,850
2066	0	0	246,228	270,850
2067	0	0	246,228	270,850
2068	0	0	246,228	270,850
2069	0	0	246,228	270,850
2070	0	0	246,228	270,850
2071	0	0	246,228	270,850

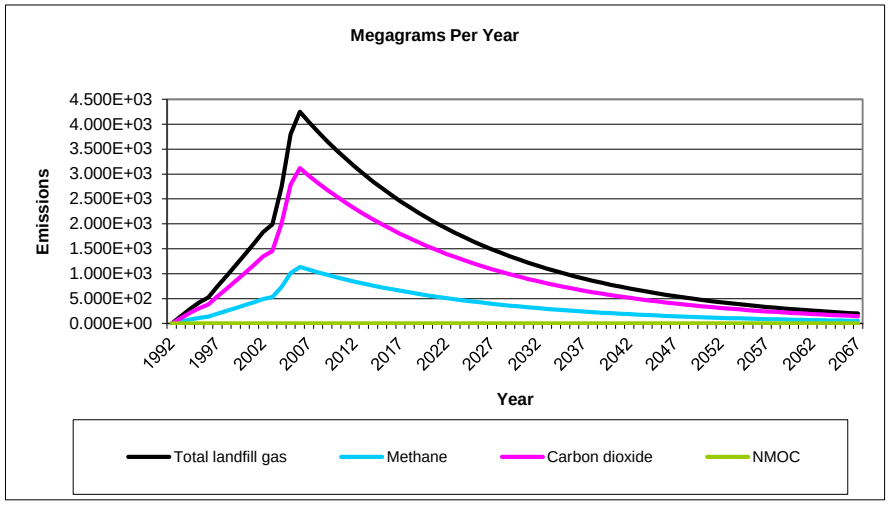
Pollutant Parameters

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

Pollutant Parameters (Continued)

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

Graphs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3.500E+03
3.000E+03
2.500E+03
2.000E+03
1.500E+03
1.000E+03
5.000E+02
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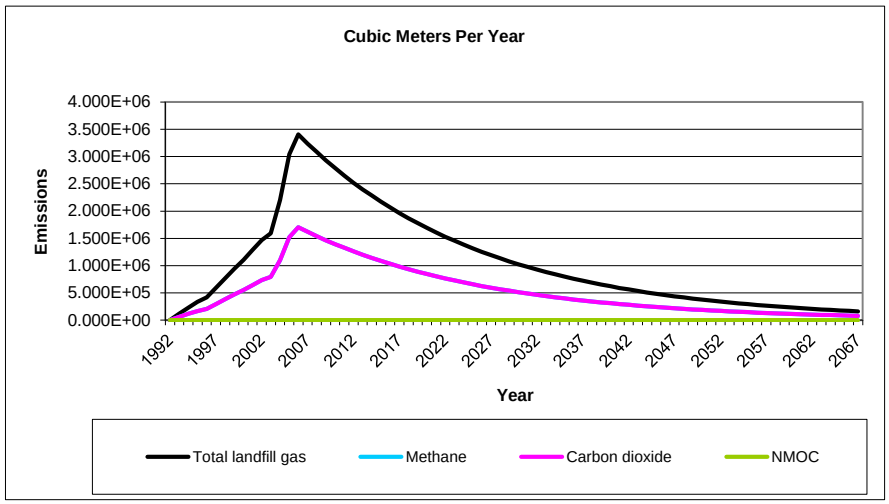
1992 1997 2002 2007 2012 2017 2022 2027 2032 2037 2042 2047 2052 2057 2062 2067
Year
Total landfill gas
Methane
Carbon dioxide
NMOC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2.500E+06
2.000E+06
1.500E+06
1.000E+06
5.000E+05
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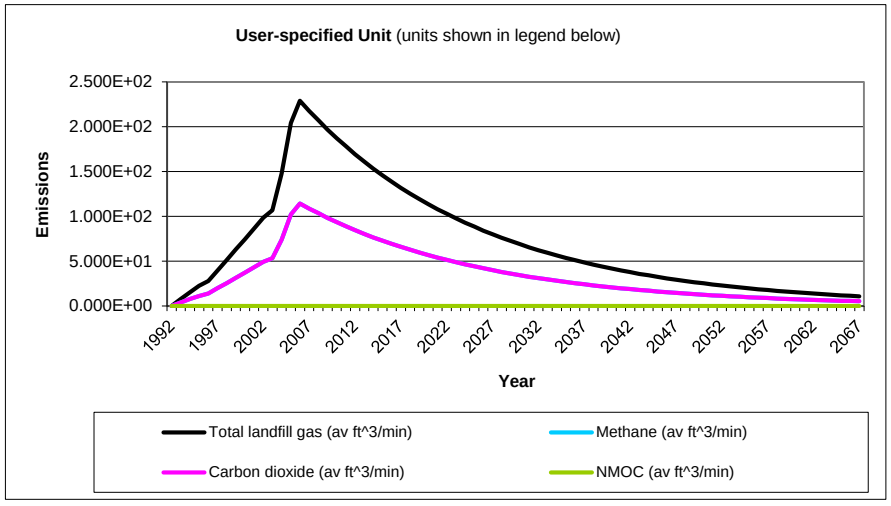
1992 1997 2002 2007 2012 2017 2022 2027 2032 2037 2042 2047 2052 2057 2062 2067
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
Emissions
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2.000E+02
1.500E+02
1.000E+02
5.000E+01
0.000E+00
1992 1997 2002 2007 2012 2017 2022 2027 2032 2037 2042 2047 2052 2057 2062 2067
Year
Total landfill gas (av ft^3/min)
Methane (av ft^3/min)
Carbon dioxide (av ft^3/min)
NMOC (av ft^3/min)

Results

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1992	0	0	0	0	0	0
1993	1.474E+02	1.180E+05	7.931E+00	3.938E+01	5.902E+04	3.966E+00
1994	2.906E+02	2.327E+05	1.564E+01	7.763E+01	1.164E+05	7.818E+00
1995	4.177E+02	3.345E+05	2.247E+01	1.116E+02	1.672E+05	1.124E+01
1996	5.225E+02	4.184E+05	2.811E+01	1.396E+02	2.092E+05	1.406E+01
1997	7.419E+02	5.940E+05	3.991E+01	1.982E+02	2.970E+05	1.996E+01
1998	9.519E+02	7.622E+05	5.121E+01	2.543E+02	3.811E+05	2.561E+01
1999	1.174E+03	9.403E+05	6.318E+01	3.137E+02	4.702E+05	3.159E+01
2000	1.383E+03	1.108E+06	7.443E+01	3.695E+02	5.539E+05	3.722E+01
2001	1.610E+03	1.289E+06	8.662E+01	4.300E+02	6.446E+05	4.331E+01
2002	1.836E+03	1.470E+06	9.877E+01	4.903E+02	7.350E+05	4.938E+01
2003	1.988E+03	1.592E+06	1.069E+02	5.309E+02	7.958E+05	5.347E+01
2004	2.749E+03	2.201E+06	1.479E+02	7.344E+02	1.101E+06	7.396E+01
2005	3.800E+03	3.043E+06	2.044E+02	1.015E+03	1.521E+06	1.022E+02
2006	4.253E+03	3.405E+06	2.288E+02	1.136E+03	1.703E+06	1.144E+02
2007	4.045E+03	3.239E+06	2.176E+02	1.081E+03	1.620E+06	1.088E+02
2008	3.848E+03	3.081E+06	2.070E+02	1.028E+03	1.541E+06	1.035E+02
2009	3.660E+03	2.931E+06	1.969E+02	9.777E+02	1.466E+06	9.847E+01
2010	3.482E+03	2.788E+06	1.873E+02	9.300E+02	1.394E+06	9.366E+01
2011	3.312E+03	2.652E+06	1.782E+02	8.847E+02	1.326E+06	8.910E+01
2012	3.150E+03	2.523E+06	1.695E+02	8.415E+02	1.261E+06	8.475E+01
2013	2.997E+03	2.400E+06	1.612E+02	8.005E+02	1.200E+06	8.062E+01
2014	2.851E+03	2.283E+06	1.534E+02	7.614E+02	1.141E+06	7.669E+01
2015	2.712E+03	2.171E+06	1.459E+02	7.243E+02	1.086E+06	7.295E+01
2016	2.579E+03	2.065E+06	1.388E+02	6.890E+02	1.033E+06	6.939E+01
2017	2.454E+03	1.965E+06	1.320E+02	6.554E+02	9.824E+05	6.600E+01
2018	2.334E+03	1.869E+06	1.256E+02	6.234E+02	9.344E+05	6.279E+01
2019	2.220E+03	1.778E+06	1.194E+02	5.930E+02	8.889E+05	5.972E+01
2020	2.112E+03	1.691E+06	1.136E+02	5.641E+02	8.455E+05	5.681E+01
2021	2.009E+03	1.609E+06	1.081E+02	5.366E+02	8.043E+05	5.404E+01
2022	1.911E+03	1.530E+06	1.028E+02	5.104E+02	7.651E+05	5.140E+01
2023	1.818E+03	1.455E+06	9.779E+01	4.855E+02	7.277E+05	4.890E+01
2024	1.729E+03	1.385E+06	9.303E+01	4.618E+02	6.923E+05	4.651E+01
2025	1.645E+03	1.317E+06	8.849E+01	4.393E+02	6.585E+05	4.424E+01
2026	1.564E+03	1.253E+06	8.417E+01	4.179E+02	6.264E+05	4.209E+01
2027	1.488E+03	1.192E+06	8.007E+01	3.975E+02	5.958E+05	4.003E+01
2028	1.416E+03	1.134E+06	7.616E+01	3.781E+02	5.668E+05	3.808E+01
2029	1.347E+03	1.078E+06	7.245E+01	3.597E+02	5.391E+05	3.622E+01
2030	1.281E+03	1.026E+06	6.891E+01	3.421E+02	5.128E+05	3.446E+01
2031	1.218E+03	9.756E+05	6.555E+01	3.255E+02	4.878E+05	3.278E+01
2032	1.159E+03	9.281E+05	6.236E+01	3.096E+02	4.640E+05	3.118E+01
2033	1.102E+03	8.828E+05	5.932E+01	2.945E+02	4.414E+05	2.966E+01
2034	1.049E+03	8.397E+05	5.642E+01	2.801E+02	4.199E+05	2.821E+01
2035	9.976E+02	7.988E+05	5.367E+01	2.665E+02	3.994E+05	2.684E+01
2036	9.489E+02	7.598E+05	5.105E+01	2.535E+02	3.799E+05	2.553E+01
2037	9.026E+02	7.228E+05	4.856E+01	2.411E+02	3.614E+05	2.428E+01
2038	8.586E+02	6.875E+05	4.619E+01	2.293E+02	3.438E+05	2.310E+01
2039	8.167E+02	6.540E+05	4.394E+01	2.182E+02	3.270E+05	2.197E+01
2040	7.769E+02	6.221E+05	4.180E+01	2.075E+02	3.111E+05	2.090E+01
2041	7.390E+02	5.918E+05	3.976E+01	1.974E+02	2.959E+05	1.988E+01

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2042	7.030E+02	5.629E+05	3.782E+01	1.878E+02	2.815E+05	1.891E+01
2043	6.687E+02	5.354E+05	3.598E+01	1.786E+02	2.677E+05	1.799E+01
2044	6.361E+02	5.093E+05	3.422E+01	1.699E+02	2.547E+05	1.711E+01
2045	6.050E+02	4.845E+05	3.255E+01	1.616E+02	2.422E+05	1.628E+01
2046	5.755E+02	4.609E+05	3.097E+01	1.537E+02	2.304E+05	1.548E+01
2047	5.475E+02	4.384E+05	2.946E+01	1.462E+02	2.192E+05	1.473E+01
2048	5.208E+02	4.170E+05	2.802E+01	1.391E+02	2.085E+05	1.401E+01
2049	4.954E+02	3.967E+05	2.665E+01	1.323E+02	1.983E+05	1.333E+01
2050	4.712E+02	3.773E+05	2.535E+01	1.259E+02	1.887E+05	1.268E+01
2051	4.482E+02	3.589E+05	2.412E+01	1.197E+02	1.795E+05	1.206E+01
2052	4.264E+02	3.414E+05	2.294E+01	1.139E+02	1.707E+05	1.147E+01
2053	4.056E+02	3.248E+05	2.182E+01	1.083E+02	1.624E+05	1.091E+01
2054	3.858E+02	3.089E+05	2.076E+01	1.030E+02	1.545E+05	1.038E+01
2055	3.670E+02	2.939E+05	1.974E+01	9.802E+01	1.469E+05	9.872E+00
2056	3.491E+02	2.795E+05	1.878E+01	9.324E+01	1.398E+05	9.391E+00
2057	3.321E+02	2.659E+05	1.787E+01	8.870E+01	1.329E+05	8.933E+00
2058	3.159E+02	2.529E+05	1.699E+01	8.437E+01	1.265E+05	8.497E+00
2059	3.005E+02	2.406E+05	1.617E+01	8.026E+01	1.203E+05	8.083E+00
2060	2.858E+02	2.289E+05	1.538E+01	7.634E+01	1.144E+05	7.688E+00
2061	2.719E+02	2.177E+05	1.463E+01	7.262E+01	1.088E+05	7.314E+00
2062	2.586E+02	2.071E+05	1.391E+01	6.908E+01	1.035E+05	6.957E+00
2063	2.460E+02	1.970E+05	1.324E+01	6.571E+01	9.849E+04	6.618E+00
2064	2.340E+02	1.874E+05	1.259E+01	6.250E+01	9.369E+04	6.295E+00
2065	2.226E+02	1.782E+05	1.198E+01	5.945E+01	8.912E+04	5.988E+00
2066	2.117E+02	1.695E+05	1.139E+01	5.655E+01	8.477E+04	5.696E+00
2067	2.014E+02	1.613E+05	1.084E+01	5.380E+01	8.064E+04	5.418E+00
2068	1.916E+02	1.534E+05	1.031E+01	5.117E+01	7.670E+04	5.154E+00
2069	1.822E+02	1.459E+05	9.805E+00	4.868E+01	7.296E+04	4.902E+00
2070	1.733E+02	1.388E+05	9.327E+00	4.630E+01	6.940E+04	4.663E+00
2071	1.649E+02	1.320E+05	8.872E+00	4.405E+01	6.602E+04	4.436E+00
2072	1.569E+02	1.256E+05	8.439E+00	4.190E+01	6.280E+04	4.220E+00
2073	1.492E+02	1.195E+05	8.027E+00	3.985E+01	5.974E+04	4.014E+00
2074	1.419E+02	1.136E+05	7.636E+00	3.791E+01	5.682E+04	3.818E+00
2075	1.350E+02	1.081E+05	7.264E+00	3.606E+01	5.405E+04	3.632E+00
2076	1.284E+02	1.028E+05	6.909E+00	3.430E+01	5.142E+04	3.455E+00
2077	1.222E+02	9.782E+04	6.572E+00	3.263E+01	4.891E+04	3.286E+00
2078	1.162E+02	9.305E+04	6.252E+00	3.104E+01	4.652E+04	3.126E+00
2079	1.105E+02	8.851E+04	5.947E+00	2.952E+01	4.425E+04	2.973E+00
2080	1.051E+02	8.419E+04	5.657E+00	2.808E+01	4.210E+04	2.828E+00
2081	1.000E+02	8.009E+04	5.381E+00	2.671E+01	4.004E+04	2.690E+00
2082	9.514E+01	7.618E+04	5.119E+00	2.541E+01	3.809E+04	2.559E+00
2083	9.050E+01	7.246E+04	4.869E+00	2.417E+01	3.623E+04	2.434E+00
2084	8.608E+01	6.893E+04	4.631E+00	2.299E+01	3.447E+04	2.316E+00
2085	8.188E+01	6.557E+04	4.406E+00	2.187E+01	3.278E+04	2.203E+00
2086	7.789E+01	6.237E+04	4.191E+00	2.081E+01	3.119E+04	2.095E+00
2087	7.409E+01	5.933E+04	3.986E+00	1.979E+01	2.966E+04	1.993E+00
2088	7.048E+01	5.644E+04	3.792E+00	1.883E+01	2.822E+04	1.896E+00
2089	6.704E+01	5.368E+04	3.607E+00	1.791E+01	2.684E+04	1.803E+00
2090	6.377E+01	5.107E+04	3.431E+00	1.703E+01	2.553E+04	1.716E+00
2091	6.066E+01	4.857E+04	3.264E+00	1.620E+01	2.429E+04	1.632E+00
2092	5.770E+01	4.621E+04	3.105E+00	1.541E+01	2.310E+04	1.552E+00

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2093	5.489E+01	4.395E+04	2.953E+00	1.466E+01	2.198E+04	1.477E+00
2094	5.221E+01	4.181E+04	2.809E+00	1.395E+01	2.090E+04	1.405E+00
2095	4.967E+01	3.977E+04	2.672E+00	1.327E+01	1.988E+04	1.336E+00
2096	4.724E+01	3.783E+04	2.542E+00	1.262E+01	1.891E+04	1.271E+00
2097	4.494E+01	3.599E+04	2.418E+00	1.200E+01	1.799E+04	1.209E+00
2098	4.275E+01	3.423E+04	2.300E+00	1.142E+01	1.711E+04	1.150E+00
2099	4.066E+01	3.256E+04	2.188E+00	1.086E+01	1.628E+04	1.094E+00
2100	3.868E+01	3.097E+04	2.081E+00	1.033E+01	1.549E+04	1.041E+00
2101	3.679E+01	2.946E+04	1.980E+00	9.828E+00	1.473E+04	9.898E-01
2102	3.500E+01	2.803E+04	1.883E+00	9.348E+00	1.401E+04	9.415E-01
2103	3.329E+01	2.666E+04	1.791E+00	8.893E+00	1.333E+04	8.956E-01
2104	3.167E+01	2.536E+04	1.704E+00	8.459E+00	1.268E+04	8.519E-01
2105	3.012E+01	2.412E+04	1.621E+00	8.046E+00	1.206E+04	8.104E-01
2106	2.865E+01	2.295E+04	1.542E+00	7.654E+00	1.147E+04	7.708E-01
2107	2.726E+01	2.183E+04	1.466E+00	7.281E+00	1.091E+04	7.332E-01
2108	2.593E+01	2.076E+04	1.395E+00	6.926E+00	1.038E+04	6.975E-01
2109	2.466E+01	1.975E+04	1.327E+00	6.588E+00	9.874E+03	6.635E-01
2110	2.346E+01	1.879E+04	1.262E+00	6.266E+00	9.393E+03	6.311E-01
2111	2.232E+01	1.787E+04	1.201E+00	5.961E+00	8.935E+03	6.003E-01
2112	2.123E+01	1.700E+04	1.142E+00	5.670E+00	8.499E+03	5.711E-01
2113	2.019E+01	1.617E+04	1.086E+00	5.394E+00	8.085E+03	5.432E-01
2114	1.921E+01	1.538E+04	1.033E+00	5.131E+00	7.690E+03	5.167E-01
2115	1.827E+01	1.463E+04	9.830E-01	4.880E+00	7.315E+03	4.915E-01
2116	1.738E+01	1.392E+04	9.351E-01	4.642E+00	6.958E+03	4.675E-01
2117	1.653E+01	1.324E+04	8.895E-01	4.416E+00	6.619E+03	4.447E-01
2118	1.573E+01	1.259E+04	8.461E-01	4.201E+00	6.296E+03	4.230E-01
2119	1.496E+01	1.198E+04	8.048E-01	3.996E+00	5.989E+03	4.024E-01
2120	1.423E+01	1.139E+04	7.656E-01	3.801E+00	5.697E+03	3.828E-01
2121	1.354E+01	1.084E+04	7.282E-01	3.615E+00	5.419E+03	3.641E-01
2122	1.288E+01	1.031E+04	6.927E-01	3.439E+00	5.155E+03	3.464E-01
2123	1.225E+01	9.807E+03	6.589E-01	3.271E+00	4.904E+03	3.295E-01
2124	1.165E+01	9.329E+03	6.268E-01	3.112E+00	4.664E+03	3.134E-01
2125	1.108E+01	8.874E+03	5.962E-01	2.960E+00	4.437E+03	2.981E-01
2126	1.054E+01	8.441E+03	5.672E-01	2.816E+00	4.221E+03	2.836E-01
2127	1.003E+01	8.029E+03	5.395E-01	2.678E+00	4.015E+03	2.697E-01
2128	9.538E+00	7.638E+03	5.132E-01	2.548E+00	3.819E+03	2.566E-01
2129	9.073E+00	7.265E+03	4.882E-01	2.423E+00	3.633E+03	2.441E-01
2130	8.631E+00	6.911E+03	4.643E-01	2.305E+00	3.455E+03	2.322E-01
2131	8.210E+00	6.574E+03	4.417E-01	2.193E+00	3.287E+03	2.208E-01
2132	7.809E+00	6.253E+03	4.202E-01	2.086E+00	3.127E+03	2.101E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1992	0	0	0	0	0	0
1993	1.080E+02	5.902E+04	3.966E+00	3.300E-02	9.207E+00	6.186E-04
1994	2.130E+02	1.164E+05	7.818E+00	6.507E-02	1.815E+01	1.220E-03
1995	3.061E+02	1.672E+05	1.124E+01	9.351E-02	2.609E+01	1.753E-03
1996	3.829E+02	2.092E+05	1.406E+01	1.170E-01	3.263E+01	2.193E-03
1997	5.437E+02	2.970E+05	1.996E+01	1.661E-01	4.634E+01	3.113E-03
1998	6.976E+02	3.811E+05	2.561E+01	2.131E-01	5.945E+01	3.995E-03
1999	8.606E+02	4.702E+05	3.159E+01	2.629E-01	7.334E+01	4.928E-03
2000	1.014E+03	5.539E+05	3.722E+01	3.097E-01	8.641E+01	5.806E-03
2001	1.180E+03	6.446E+05	4.331E+01	3.604E-01	1.006E+02	6.756E-03
2002	1.345E+03	7.350E+05	4.938E+01	4.110E-01	1.147E+02	7.704E-03
2003	1.457E+03	7.958E+05	5.347E+01	4.450E-01	1.241E+02	8.341E-03
2004	2.015E+03	1.101E+06	7.396E+01	6.155E-01	1.717E+02	1.154E-02
2005	2.785E+03	1.521E+06	1.022E+02	8.507E-01	2.373E+02	1.595E-02
2006	3.117E+03	1.703E+06	1.144E+02	9.521E-01	2.656E+02	1.785E-02
2007	2.965E+03	1.620E+06	1.088E+02	9.057E-01	2.527E+02	1.698E-02
2008	2.820E+03	1.541E+06	1.035E+02	8.615E-01	2.403E+02	1.615E-02
2009	2.683E+03	1.466E+06	9.847E+01	8.195E-01	2.286E+02	1.536E-02
2010	2.552E+03	1.394E+06	9.366E+01	7.795E-01	2.175E+02	1.461E-02
2011	2.427E+03	1.326E+06	8.910E+01	7.415E-01	2.069E+02	1.390E-02
2012	2.309E+03	1.261E+06	8.475E+01	7.053E-01	1.968E+02	1.322E-02
2013	2.196E+03	1.200E+06	8.062E+01	6.709E-01	1.872E+02	1.258E-02
2014	2.089E+03	1.141E+06	7.669E+01	6.382E-01	1.780E+02	1.196E-02
2015	1.987E+03	1.086E+06	7.295E+01	6.071E-01	1.694E+02	1.138E-02
2016	1.890E+03	1.033E+06	6.939E+01	5.775E-01	1.611E+02	1.082E-02
2017	1.798E+03	9.824E+05	6.600E+01	5.493E-01	1.532E+02	1.030E-02
2018	1.711E+03	9.344E+05	6.279E+01	5.225E-01	1.458E+02	9.795E-03
2019	1.627E+03	8.889E+05	5.972E+01	4.970E-01	1.387E+02	9.317E-03
2020	1.548E+03	8.455E+05	5.681E+01	4.728E-01	1.319E+02	8.862E-03
2021	1.472E+03	8.043E+05	5.404E+01	4.497E-01	1.255E+02	8.430E-03
2022	1.400E+03	7.651E+05	5.140E+01	4.278E-01	1.193E+02	8.019E-03
2023	1.332E+03	7.277E+05	4.890E+01	4.069E-01	1.135E+02	7.628E-03
2024	1.267E+03	6.923E+05	4.651E+01	3.871E-01	1.080E+02	7.256E-03
2025	1.205E+03	6.585E+05	4.424E+01	3.682E-01	1.027E+02	6.902E-03
2026	1.147E+03	6.264E+05	4.209E+01	3.503E-01	9.772E+01	6.565E-03
2027	1.091E+03	5.958E+05	4.003E+01	3.332E-01	9.295E+01	6.245E-03
2028	1.037E+03	5.668E+05	3.808E+01	3.169E-01	8.842E+01	5.941E-03
2029	9.869E+02	5.391E+05	3.622E+01	3.015E-01	8.410E+01	5.651E-03
2030	9.387E+02	5.128E+05	3.446E+01	2.868E-01	8.000E+01	5.375E-03
2031	8.930E+02	4.878E+05	3.278E+01	2.728E-01	7.610E+01	5.113E-03
2032	8.494E+02	4.640E+05	3.118E+01	2.595E-01	7.239E+01	4.864E-03
2033	8.080E+02	4.414E+05	2.966E+01	2.468E-01	6.886E+01	4.627E-03
2034	7.686E+02	4.199E+05	2.821E+01	2.348E-01	6.550E+01	4.401E-03
2035	7.311E+02	3.994E+05	2.684E+01	2.233E-01	6.231E+01	4.186E-03
2036	6.954E+02	3.799E+05	2.553E+01	2.124E-01	5.927E+01	3.982E-03
2037	6.615E+02	3.614E+05	2.428E+01	2.021E-01	5.638E+01	3.788E-03
2038	6.293E+02	3.438E+05	2.310E+01	1.922E-01	5.363E+01	3.603E-03
2039	5.986E+02	3.270E+05	2.197E+01	1.828E-01	5.101E+01	3.427E-03
2040	5.694E+02	3.111E+05	2.090E+01	1.739E-01	4.852E+01	3.260E-03
2041	5.416E+02	2.959E+05	1.988E+01	1.654E-01	4.616E+01	3.101E-03

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2042	5.152E+02	2.815E+05	1.891E+01	1.574E-01	4.391E+01	2.950E-03
2043	4.901E+02	2.677E+05	1.799E+01	1.497E-01	4.176E+01	2.806E-03
2044	4.662E+02	2.547E+05	1.711E+01	1.424E-01	3.973E+01	2.669E-03
2045	4.434E+02	2.422E+05	1.628E+01	1.355E-01	3.779E+01	2.539E-03
2046	4.218E+02	2.304E+05	1.548E+01	1.289E-01	3.595E+01	2.415E-03
2047	4.012E+02	2.192E+05	1.473E+01	1.226E-01	3.419E+01	2.298E-03
2048	3.817E+02	2.085E+05	1.401E+01	1.166E-01	3.253E+01	2.185E-03
2049	3.631E+02	1.983E+05	1.333E+01	1.109E-01	3.094E+01	2.079E-03
2050	3.453E+02	1.887E+05	1.268E+01	1.055E-01	2.943E+01	1.977E-03
2051	3.285E+02	1.795E+05	1.206E+01	1.004E-01	2.800E+01	1.881E-03
2052	3.125E+02	1.707E+05	1.147E+01	9.546E-02	2.663E+01	1.789E-03
2053	2.972E+02	1.624E+05	1.091E+01	9.080E-02	2.533E+01	1.702E-03
2054	2.827E+02	1.545E+05	1.038E+01	8.637E-02	2.410E+01	1.619E-03
2055	2.690E+02	1.469E+05	9.872E+00	8.216E-02	2.292E+01	1.540E-03
2056	2.558E+02	1.398E+05	9.391E+00	7.815E-02	2.180E+01	1.465E-03
2057	2.434E+02	1.329E+05	8.933E+00	7.434E-02	2.074E+01	1.394E-03
2058	2.315E+02	1.265E+05	8.497E+00	7.072E-02	1.973E+01	1.326E-03
2059	2.202E+02	1.203E+05	8.083E+00	6.727E-02	1.877E+01	1.261E-03
2060	2.095E+02	1.144E+05	7.688E+00	6.399E-02	1.785E+01	1.199E-03
2061	1.992E+02	1.088E+05	7.314E+00	6.087E-02	1.698E+01	1.141E-03
2062	1.895E+02	1.035E+05	6.957E+00	5.790E-02	1.615E+01	1.085E-03
2063	1.803E+02	9.849E+04	6.618E+00	5.507E-02	1.536E+01	1.032E-03
2064	1.715E+02	9.369E+04	6.295E+00	5.239E-02	1.462E+01	9.820E-04
2065	1.631E+02	8.912E+04	5.988E+00	4.983E-02	1.390E+01	9.341E-04
2066	1.552E+02	8.477E+04	5.696E+00	4.740E-02	1.322E+01	8.885E-04
2067	1.476E+02	8.064E+04	5.418E+00	4.509E-02	1.258E+01	8.452E-04
2068	1.404E+02	7.670E+04	5.154E+00	4.289E-02	1.197E+01	8.040E-04
2069	1.336E+02	7.296E+04	4.902E+00	4.080E-02	1.138E+01	7.648E-04
2070	1.270E+02	6.940E+04	4.663E+00	3.881E-02	1.083E+01	7.275E-04
2071	1.208E+02	6.602E+04	4.436E+00	3.692E-02	1.030E+01	6.920E-04
2072	1.150E+02	6.280E+04	4.220E+00	3.512E-02	9.797E+00	6.582E-04
2073	1.093E+02	5.974E+04	4.014E+00	3.340E-02	9.319E+00	6.261E-04
2074	1.040E+02	5.682E+04	3.818E+00	3.177E-02	8.865E+00	5.956E-04
2075	9.894E+01	5.405E+04	3.632E+00	3.022E-02	8.432E+00	5.666E-04
2076	9.412E+01	5.142E+04	3.455E+00	2.875E-02	8.021E+00	5.389E-04
2077	8.953E+01	4.891E+04	3.286E+00	2.735E-02	7.630E+00	5.126E-04
2078	8.516E+01	4.652E+04	3.126E+00	2.601E-02	7.258E+00	4.876E-04
2079	8.101E+01	4.425E+04	2.973E+00	2.475E-02	6.904E+00	4.639E-04
2080	7.706E+01	4.210E+04	2.828E+00	2.354E-02	6.567E+00	4.412E-04
2081	7.330E+01	4.004E+04	2.690E+00	2.239E-02	6.247E+00	4.197E-04
2082	6.972E+01	3.809E+04	2.559E+00	2.130E-02	5.942E+00	3.992E-04
2083	6.632E+01	3.623E+04	2.434E+00	2.026E-02	5.652E+00	3.798E-04
2084	6.309E+01	3.447E+04	2.316E+00	1.927E-02	5.377E+00	3.613E-04
2085	6.001E+01	3.278E+04	2.203E+00	1.833E-02	5.114E+00	3.436E-04
2086	5.709E+01	3.119E+04	2.095E+00	1.744E-02	4.865E+00	3.269E-04
2087	5.430E+01	2.966E+04	1.993E+00	1.659E-02	4.628E+00	3.109E-04
2088	5.165E+01	2.822E+04	1.896E+00	1.578E-02	4.402E+00	2.958E-04
2089	4.913E+01	2.684E+04	1.803E+00	1.501E-02	4.187E+00	2.813E-04
2090	4.674E+01	2.553E+04	1.716E+00	1.428E-02	3.983E+00	2.676E-04
2091	4.446E+01	2.429E+04	1.632E+00	1.358E-02	3.789E+00	2.546E-04
2092	4.229E+01	2.310E+04	1.552E+00	1.292E-02	3.604E+00	2.422E-04

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2093	4.023E+01	2.198E+04	1.477E+00	1.229E-02	3.428E+00	2.303E-04
2094	3.827E+01	2.090E+04	1.405E+00	1.169E-02	3.261E+00	2.191E-04
2095	3.640E+01	1.988E+04	1.336E+00	1.112E-02	3.102E+00	2.084E-04
2096	3.462E+01	1.891E+04	1.271E+00	1.058E-02	2.951E+00	1.983E-04
2097	3.294E+01	1.799E+04	1.209E+00	1.006E-02	2.807E+00	1.886E-04
2098	3.133E+01	1.711E+04	1.150E+00	9.570E-03	2.670E+00	1.794E-04
2099	2.980E+01	1.628E+04	1.094E+00	9.104E-03	2.540E+00	1.706E-04
2100	2.835E+01	1.549E+04	1.041E+00	8.660E-03	2.416E+00	1.623E-04
2101	2.697E+01	1.473E+04	9.898E-01	8.237E-03	2.298E+00	1.544E-04
2102	2.565E+01	1.401E+04	9.415E-01	7.836E-03	2.186E+00	1.469E-04
2103	2.440E+01	1.333E+04	8.956E-01	7.453E-03	2.079E+00	1.397E-04
2104	2.321E+01	1.268E+04	8.519E-01	7.090E-03	1.978E+00	1.329E-04
2105	2.208E+01	1.206E+04	8.104E-01	6.744E-03	1.881E+00	1.264E-04
2106	2.100E+01	1.147E+04	7.708E-01	6.415E-03	1.790E+00	1.203E-04
2107	1.998E+01	1.091E+04	7.332E-01	6.102E-03	1.702E+00	1.144E-04
2108	1.900E+01	1.038E+04	6.975E-01	5.805E-03	1.619E+00	1.088E-04
2109	1.808E+01	9.874E+03	6.635E-01	5.522E-03	1.540E+00	1.035E-04
2110	1.719E+01	9.393E+03	6.311E-01	5.252E-03	1.465E+00	9.845E-05
2111	1.636E+01	8.935E+03	6.003E-01	4.996E-03	1.394E+00	9.365E-05
2112	1.556E+01	8.499E+03	5.711E-01	4.752E-03	1.326E+00	8.908E-05
2113	1.480E+01	8.085E+03	5.432E-01	4.521E-03	1.261E+00	8.474E-05
2114	1.408E+01	7.690E+03	5.167E-01	4.300E-03	1.200E+00	8.061E-05
2115	1.339E+01	7.315E+03	4.915E-01	4.090E-03	1.141E+00	7.668E-05
2116	1.274E+01	6.958E+03	4.675E-01	3.891E-03	1.086E+00	7.294E-05
2117	1.212E+01	6.619E+03	4.447E-01	3.701E-03	1.033E+00	6.938E-05
2118	1.153E+01	6.296E+03	4.230E-01	3.521E-03	9.822E-01	6.599E-05
2119	1.096E+01	5.989E+03	4.024E-01	3.349E-03	9.343E-01	6.278E-05
2120	1.043E+01	5.697E+03	3.828E-01	3.186E-03	8.887E-01	5.971E-05
2121	9.920E+00	5.419E+03	3.641E-01	3.030E-03	8.454E-01	5.680E-05
2122	9.436E+00	5.155E+03	3.464E-01	2.883E-03	8.042E-01	5.403E-05
2123	8.976E+00	4.904E+03	3.295E-01	2.742E-03	7.650E-01	5.140E-05
2124	8.538E+00	4.664E+03	3.134E-01	2.608E-03	7.276E-01	4.889E-05
2125	8.122E+00	4.437E+03	2.981E-01	2.481E-03	6.922E-01	4.651E-05
2126	7.726E+00	4.221E+03	2.836E-01	2.360E-03	6.584E-01	4.424E-05
2127	7.349E+00	4.015E+03	2.697E-01	2.245E-03	6.263E-01	4.208E-05
2128	6.990E+00	3.819E+03	2.566E-01	2.135E-03	5.957E-01	4.003E-05
2129	6.650E+00	3.633E+03	2.441E-01	2.031E-03	5.667E-01	3.808E-05
2130	6.325E+00	3.455E+03	2.322E-01	1.932E-03	5.391E-01	3.622E-05
2131	6.017E+00	3.287E+03	2.208E-01	1.838E-03	5.128E-01	3.445E-05
2132	5.723E+00	3.127E+03	2.101E-01	1.748E-03	4.878E-01	3.277E-05