53184-01

STATE MAJOR AIR CONSTRUCTION PERMIT APPLICATION

Green Ridge Recycling and Disposal Facility, LLC

Prepared For:
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Project Number: 562325.0001

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Acronyms

Acronym	Definition
BACT	state best available control technology
C_{NMOC}	concentration of NMOC
CO	carbon monoxide
DEQ	Virginia Department of Environmental Protection
FHAPNSR	federal hazardous air pollutants new source review
GCCS	landfill gas collection and control system
HAP	hazardous air pollutant
H_2S	hydrogen sulfide
k	methane generation rate
Landfill MACT	40 CFR Part 63 Subpart AAAA
Landfill NSPS	40 CFR Part 60 Subpart XXX
LANDGEM	USEPA's landfill gas emissions model
LFG	landfill gas
L_o	methane generation capacity
m^3	cubic meters
Mg	megagrams
MNSR	minor new source review permit
MSW	municipal solid waste
NMOC	nonmethane organic compounds
NOX	nitrogen oxides
PM	particulate matter
PM10	particles with diameters 10 micrometers and smaller
PM2.5	particles with diameters 2.5 micrometers and smaller
PSD	prevention of significant deterioration
PTE	potential to emit
SOE	state-only enforceable
SOX/SO2	sulfur dioxides
Subpart M	40 CFR Part 61 Subpart M
tpy	tons per year
UER	uncontrolled emission rate
SSM	startup, shutdown, and malfunction
VOC	volatile organic compound

1.0 INTRODUCTION

Green Ridge Recycling and Disposal Facility (Green Ridge) developed and submitted an application (Part A Permit) to develop a new solid waste landfill in Cumberland County, Virginia. Its location is shown in the area map provided in Appendix B. Green Ridge has received a Conditional Part A Permit from Virginia Department of Environmental Protection (DEQ) and is in the process of preparing a Part B application.

As a source of air emissions, Green Ridge must submit an air construction permit application to Virginia DEQ (DEQ). Green Ridge had a pre-application meeting at DEQ on April 16, 2024. This application is submitted according to guidance provided by DEQ in this meeting. The application consists of a permit write up, forms (Appendix A), figures (Appendix B), emission calculations (Appendix C), and LANDGEM spreadsheets (Appendices D, E, and F).

2.0 Permitting Classification

A facility constructed outside of nonattainment areas that has the potential to emit more than 250 tons per year of any criteria pollutant (PM, PM10, PM2.5, CO, NOX, SO2, and VOC) is required to obtain a Prevention of Significant Deterioration (PSD) Permit. If the new facility has potential emissions less than the PSD threshold, but greater than the Title V threshold of 100 tons per year, it is required to obtain a State Major permit. If the new facility has potential emissions less than the Title V threshold of 100 tons per year but exceed the exemption thresholds in 9VAC5-80-1105 C, it must obtain a Minor New Source Review permit (MNSR). State Major permits are issued through the same regulations as minor NSR permits (i.e., Article 6). The facility will be located in Cumberland County, VA which is designated as attainment for all criteria pollutants. Emission calculations for Green Ridge are detailed in Appendix C and are summarized below in Table 2-1.

Table 2-1 - Worst-Case Potential Emissions (tpy)

	Criteria Pollutants							
Permitting Level/Calculated Emissions	**PM**	**PM10**	**PM2.5**	**NOx**	**CO**	**SO2**	**NMOC**	**VOC**
PSD	> 250	> 250	> 250	> 250	> 250	> 250	> 250	> 250
State Major	100 -250	100 -250	100 -250	100 -250	100 -250	100 -250	100 - 250	100 -250
Minor NSR	25 – 100	15 – 100	10 – 100	40 – 100	100 – 100	40 – 100	–	25 – 100
Green Ridge Calculated Emissions	4.2	4.2	4.2	16.9	83.9	3.4	27.3	8.4

Even though potential emissions do not exceed the State Major thresholds of 100 tons per year, Green Ridge will be required to obtain a Title V operating permit per 40 CFR 60.762(c)(2) and as such, is required to submit a State Major application. This was confirmed by DEQ in a pre-application meeting.

3.0 Calculations

3.1 Calculations from the Landfill

MSW landfills are very different from other types of emission unit. Waste is disposed of in the landfill and under anaerobic conditions it produces landfill gas (LFG), which is a biogas. LFG is primarily composed of methane and carbon dioxide but may also include nitrogen and oxygen. LFG also contains trace amounts of Nonmethane Organic Compounds (NMOC), Hazardous Air Pollutants (HAP), and State Air Toxics.

The amount of LFG generated over time is based on numerous factors such as the total waste capacity, the amount of waste accepted each year, the type of waste accepted, the amount of organic content of the waste, and the moisture content of the waste, etc. Some time after waste is accepted, the landfill will go "aerobic" and generate LFG. Initially, the LFG will be emitted from the surface of the landfill. Prior to 1987, all surface emissions from landfills were considered fugitive. An October 21, 1994, EPA memorandum reversed the previous guidance. Because the LFG could be collected, the memo stated that the LFG should not be considered fugitive emissions and should be considered for NSR permitting applicability. Seventy five (75) percent of the total LFG generated is used to quantify what gas is "reasonably collected" and therefore, not emitted as fugitive emissions. DEQ guidance (Permit Boilerplate Procedures for MSW Landfills, Draft) also states that 75 percent should be used to determine the amount of the generated LFG that is collected.

LFG will be required to collected and controlled within 30 months of the calculated emissions of NMOC exceeding 34 Mg/yr per 40 CFR 60.762(b)(2)(ii) because Green Ridge is subject to the Landfill NSPS (see Section 4.1). To look at worst-case emissions over the life of the landfill, emissions are calculated at two points in time – the point of maximum LFG generation (including collection and control system) and the point of maximum LFG generation before the LFG control system is required under the Landfill NSPS – with the higher of the two on a pollutant-by-pollutant basis used as the calculated potential emissions.

AP-42 Section 2.4 Municipal Solid Waste Landfills provides equations to calculate emissions, but the preferred method of calculating emissions from landfills is to use USEPA's Landfill Gas Emissions Model (LANDGEM) spreadsheet. LANDGEM can be used to calculate emissions for permitting and for determining applicability to the Landfill NSPS, with the difference being the modeling parameters used.

LANDGEM has four basic parameters that need to be input. The four parameters are listed below along with the inputs that are used when calculating potential emissions for air permitting applicability.

- k – methane generation rate ($k = 0.04$ year^{-1});
- Lo – potential methane generation capacity ($Lo = 100$ m^3/Mg);
- C_{NMOC} – NMOC Concentration ($C_{NMOC} = 600$ ppmv as hexane); and
- Methane content (50%).

Without any limits, potential emissions from Green Ridge would be based on the landfill operating 7 days per week. However, Green Ridge will be limited to operating 5.5 days per week (full day Monday through Friday plus a half day on Saturday) through the Conditional Use Permit. Green Ridge requests to make 5.5 days of operation a week a federally enforceable limit. With this limit, potential emissions are based on 5.5 days per week. Other inputs into LANDGEM:

- Green Ridge begins accepting waste in 2027,
- Waste Capacity: 7,100,000 tons,
- Daily waste acceptance: 1,500 tons/day,
- Annual Waste received: 429,000 tons/yr (1,500 tons/day * 5.5 days/wk * 52 weeks/yr), and
- HAP concentrations: AP-42 Section 2.4 defaults.

The LANDGEM Calculated Emissions report for Green Ridge is provided in Appendix D, with the resulting calculated values provided in Table 2-1 above.

3.2 Dust Emissions from Traffic

Green Ridge is proactively estimating fugitive dust emissions using AP-42, Sections 13.2.1 Paved Roads (1/2011) and 13.2.2 Unpaved Roads (11/2006). Calculations and all assumptions used are provided in Appendix C. These fugitive emissions are not considered for NSR permitting applicability.

3.3 Other Potential Activities at the Green Ridge

Other miscellaneous activities may take place at MSW Landfills including:

- Tippers: Green Ridge is not planning on using tippers at the active face.
- Painting Operations: Green Ridge does not plan on doing any painting (i.e., of trucks or dumpsters).
- Tub Grinders: Green Ridge will not be taking any yard waste, so there will not be any tub grinders.
- Emergency Generators: Green Ridge does not anticipate the need for emergency generators.
- Storage Tanks: Green Ridge is expected to have storage tanks for diesel fuel. The size will be determined in the future, but any diesel tanks are assumed to be permit exempt.

4.0 Potentially Applicable Federal Requirements

4.1 New Source Performance Standards, Subpart XXX

US EPA has promulgated two NSPS for MSW Landfills. The original was NSPS, Subpart WWW promulgated on March 12, 1996. This NSPS applied to landfills that commenced construction, reconstruction, or modification on or after May 30, 1991. After review of 40 CFR Part 60 Subpart WWW, US EPA promulgated a new NSPS for MSW Landfills, 40 CFR Part 60 Subpart XXX (Landfill NSPS), on August 29, 2016. This NSPS applies to "new" MSW landfills that commenced construction, reconstruction, or modification after July 17, 2014.

Because Green Ridge will be constructed after July 17, 2014, Landfill NSPS will apply to the facility. Green Ridge has a design capacity greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m^3). Therefore, Green Ridge will have to either comply with 40 CFR 60.762(b)(2)(ii) (install a collection and control system) or calculate NMOC emission rate to defer the requirements of paragraph (b)(2)(ii)[1]. The highest fugitive emissions will come before a landfill becomes a controlled landfill.

Landfill NSPS requires the NMOC emission rate to be calculated and offers calculation options or Tiers[2]. Instead of calculating for air permitting or air inventory purposes as detailed in Section 3.1, the Landfill NSPS requires NMOC to be calculated to determine what and when various requirements of the Landfill NSPS apply to landfills (such as submitting a GCCS design, installation of the GCCS, etc.). Although LANDGEM is used for both air permitting and NSPS applicability, the LANDGEM model parameters required are different. The parameters required when calculating for the Landfill NSPS are designed to be conservative, forcing either early GCCS installation or site-specific Tier 2 testing to defer the requirement to install. Whether LANDGEM is used for air permitting or NSPS applicability, 50 percent methane is always assumed. The values used for the other three parameters are summarized below in Table 4-1[3].

Tier 1 is the first methodology that landfills use to calculate NMOC emissions under the Landfill NSPS. If they choose, they can do "Tier 2" testing to determine a site-specific C_{NMOC} and recalculate NMOC emissions to determine if a landfill's NMOC emissions exceeds 34 Mg/yr. LANDGEM models using first Tier 1 and then Tier 2 parameters were completed only to estimate when Green Ridge will exceed the 34 Mg/yr threshold, which requires installation of an LFG collection and control system. This establishes the timeline for when fugitive emissions are worst-case.

Table 4-1 - LANDGEM Model

[1] Ultimately, Green Ridge will become a "Controlled Landfill", which means the LFG will have to be collected and controlled based on the NMOC emission rate exceeding 34 Mg/yr per 40 CFR 60.762(b)(2)(ii).
2 Tier 1 (40 CFR 60.764(a)(2)), Tier 2 (40 CFR 60.764(a)(3)), Tier 3 (40 CFR 60.764(a)(4)), or Tier 4 (40 CFR 60.764(a)(6)). In this application, Tier 1 and Tier 2 are used to determine the calculation of NMOC.
3 Parameters used for inventory/air permitting applicability are the most accurate. Tier 1 parameters are all larger than inventory/air permitting applicability and therefore produce higher very conservative emissions. Tier 2 allows sites to do testing to determine a site-specific C_{NMOC} which is still conservative, but less than Tier 1.

Parameter	Inventory/ Air Permitting	Landfill NSPS Tier 1	Landfill NSPS Tier 2
k (/year)	0.04	0.05	0.05
L_o (m^3/Mg)	100	170	170
C_{NMOC}	595*	4,000	Site-specific

*LANDGEM uses a rounded off number of 600 for the inventory C_{NMOC}. DEQ's Permit Boilerplate Procedures for MSW Landfills (draft) states that using LANDGEM's 600 ppm is acceptable.

LANDGEM report for Tier 1 is included in Appendix E and the Tier 2 LANDGEM report is contained in Appendix F. A summary of when Green Ridge is estimated to exceed the 34 Mg/yr threshold with Tier 1 and Tier 2 is shown below in Table 4-2 and 4-3 below.

Table 4-2 - Tier 1 NMOC Emissions

Year	NMOC Emissions (Mg/yr)
2027	0
2028	93.0

Table 4-3 - Tier 2 NMOC Emissions

Year	NMOC Emissions (Mg/yr)
2027	0
2028	13.9
2029	27.2
2030	39.8

Based on the maximum waste acceptance and the Tier 1 parameters, Green Ridge would exceed 34 Mg/yr NMOC in 2028. Without being able to conduct Tier 2 testing to get a site-specific C_{NMOC}, the inventory default of 600 ppm was used to estimate NMOC emissions under the Tier 2 NMOC emission estimation. Tier 2 NMOC emissions exceed 34 Mg/yr in 2030. Exceeding 34 Mg/yr of NMOC emissions following the Tier 2 emission estimation will require Green Ridge to install and start up a landfill gas collection and control system (GCCS) within 30 months of exceedance. The last full year of emissions without a GCCS would be 2032, so the year prior (2031) is assumed to be the year that emissions will be the greatest before the GCCS will be installed and operational.

4.2 National Emission Standards for Hazardous Air Pollutants for MSW Landfills Subpart AAAA

Green Ridge will be subject to the NESHAP for MSW Landfills, 40 CFR Part 63 Subpart AAAA (Landfill MACT) when/if it will: 1) have the capacity to accept waste; 2) it is an area source of HAP (PTE is less than 10 tpy of an individual HAP and less than 25 tpy of all HAP); 3) has a design capacity greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m^3); and 4) has estimated uncontrolled NMOC emissions equal to or greater than 50 Mg/yr. As a new

affected source, Green Ridge would need to comply with the Landfill MACT requirements (such as developing a collection and control system design plan) at the time operation begins.

The control requirements under the Landfill MACT are the same as the Landfill NSPS. Because the threshold triggering the installation of the GCCS is lower under the Landfill NSPS (34 Mg/year for the Landfill NSPS compared to 50 Mg/year under the Landfill MACT), the Landfill NSPS will determine when the GCCS is required to be installed. Other requirements under the Landfill MACT (i.e., SSM requirements) will be triggered when NMOC exceeds 50 Mg/year.

Although the Landfill MACT does not add additional control requirements, it does add Startup, Shutdown, and Malfunction (SSM) requirements. Under the Landfill MACT, Green Ridge will have to develop an SSM plan, keep SSM records, and do reporting of SSM events.

4.3 National Emission Standards for Asbestos

National Emission Standards for Asbestos, 40 CFR 61, Subpart M (Subpart M) applies to MSW Landfills that accept asbestos. Subpart M requirements include requirements to keep records of where asbestos is placed in the landfill and reporting requirements of areas containing asbestos that are disturbed through activities such as well drilling. Green Ridge will not accept asbestos, so Subpart M is not applicable.

4.4 Federal Hazardous Air Pollutants New Source Review (FHAPNSR)

FHAPNSR is a group of pre-construction programs implemented via Article 6. Newly constructed MSW landfills that have a post-permit PTE greater than the HAP major source level of emissions – greater than 10 tpy of any individual HAP or greater than 25 tpy of all HAP combined – are subject to the preconstruction review pursuant to 40CFR63.5. Green Ridge's HAP PTE is less than 10 tpy/25 tpy. Therefore, Green Ridge is not subject to the FHAPNSR.

4.5 Visible Emissions

The assumed future open flare will be subject to the general control device and work practice requirements in 40CFR60.18. One of the requirements is to design and operate the flare with no visible emissions (except for periods not to exceed a total of 5 minutes during any 2 consecutive hours). Green Ridge will also be subject to the opacity standards of 9VAC5-50-20G.

5.0 State Requirements

5.1 State Toxics

New and modified sources are potentially subject to emission standards for toxic pollutants (State Toxics) under Rule 6-5. A stationary source that has a potential to emit a toxic pollutant with a TLV® greater than the exemption emission rate calculated using the exemption formulas set forth below for the applicable TLV® is subject to the standards.

Green Ridge will be subject to 40CFR63, Subpart AAAA NESHAP: MSW Landfills (MACT AAAA). Because Green Ridge is subject to a MACT Standard, a State Toxics review does not apply in accordance with 9VAC5-80-1105F.2 and 9VAC5-60-300C.4. Even though the State Toxics does not apply, Green Ridge has completed the review to show potential emissions are all less than the standard for all pollutants. The evaluation is shown in Appendix C.

5.2 State Best Available Control Technology

Under Article 6 a new stationary source or construction at an existing source must evaluate the applicability of the State Best Available Control Technology (BACT). In evaluating applicability, sources must calculate the Uncontrolled Emission Rate (UER), which is the emission rate of regulated pollutants from an emission unit when operating at maximum capacity without air pollution control equipment. New stationary sources with UER greater than 9VAC5-80-1105C must determine BACT. The exemption thresholds are shown below.

Table 5-1 - BACT Exemption Levels for New Stationary Sources

Pollutant	Exemption Level (tpy)
Carbon Monoxide	100
Nitrogen Oxides	40
Sulfur Dioxides	40
Particulate Matter	25

Table 5-1 - BACT Exemption Levels for New Stationary Sources

Pollutant	Exemption Level (tpy)
Particulate Matter – PM_{10}	15
Particulate Matter – $PM_{2.5}$	10
Volatile Organic Compounds	25
Lead	0.6
Fluorides	3
Sulfuric Acid Mist	6
Hydrogen Sulfide (H_2S)	9
Total Reduced Sulfur (including H_2S)	9
Reduced Sulfur Compounds (including H_2S)	9
Municipal Waste Combustor Organics	3.5×10^{-6}

Pollutant	Exemption Level (tpy)
Municipal Waste Combustor Metals	13
Municipal Waste Combustor Acid Gases	35
MSW Landfill Emissions (as NMOCs)	22

Green Ridge exceeds the exemption level for NMOC. Therefore, BACT must be evaluated. In Permit Boilerplate Procedures for MSW Landfills, Draft, DEQ established the following BACT Standards that will apply to Green Ridge:

- BACT for landfills outside of the Northern Virgina VOC Control Area is collection and control of landfill gas in compliance with NSPS, Landfill NSPS. Under Landfill NSPS, a gas collection and control system (GCCS) is required when NMOC emission rate reaches 34 Mg/year. Green Ridge is not located in the Northern Virginia VOC Control Area.
- BACT determinations for NMOC and VOC should include consideration of the resulting combustion emissions. In this case, an open flare meeting 40CFR60.18 is BACT for landfills.

5.3 Fugitive Dust

Fugitive dust can occur from areas at a landfill including from vehicle traffic. According to DEQ (Permit Boilerplate Procedures for MSW Landfills, Draft), Virgina does not consider fugitive dust a fugitive emission[1]. As a result, landfills are required to employ fugitive dust controls but are not required to estimate fugitive dust emissions. Green Ridge has proactively estimated fugitive dust from vehicle traffic on site. Calculations can be found in Appendix C.

5.4 State-Only Enforceable (SOE) Odor Requirements

It may be necessary for MSW landfills to develop an odor management plan, although proper O&M would generally be considered sufficient for new landfills. The Virginia solid waste regulations also have nuisance provisions that generally require minimizing the working face and placing daily cover. Green Ridge will develop an odor management plan upon request of DEQ (Permit Boilerplate Procedures for MSW Landfills, Draft).

[1] See definitions of each in Chapter 40 or 50 Article 1 and the definition of “source” in Chapter 10.

6.0 Environmental Justice

Virginia DEQ established the Office of Environmental Justice in 2021 to ensure the fair and meaningful involvement of all people into the development, implementation and enforcement of environmental laws, regulations and policies across all DEQ programs. Further, in the Virginia Environmental Justice Act, it states that “it is the policy of the Commonwealth to promote environmental justice and ensure that it is carried out throughout the Commonwealth, with a focus on environmental justice communities and fenceline communities.” This program was developed during the time that Green Ridge was preparing its application (Part A Permit) to develop a new solid waste landfill in Cumberland County, Virginia.

During the permit application process, in an effort to collect information about the community surrounding the proposed Green Ridge facility, activities were undertaken to identify the environmental justice aspects of the project, if any. A demographic and economic study was conducted by Mangum Economics in 2020. The study concluded that the percentage of the population which is African American living within 5 miles of the site is less than or equal to the statewide and Cumberland County population percentages. Additionally, the median household income levels in the vicinity of the project are significantly higher than the median household incomes in other rural localities in Virginia. Additional data in the report support the conclusion that the area surrounding the proposed facility does not meet the criteria for an environmental justice community or fence line community. This conclusion is supported by EPA’s EJScreen Reporting Tool.

Also, in support of collecting information about the surrounding community, and to promote fair and meaningful involvement of all people within the surrounding community, DEQ held a public outreach informational meeting on March 24, 2022 at Cumberland County High School to discuss the project and the permitting process with the public, in addition to addressing environmental justice concerns. Two groups (AMMD and CCLA) have come out in opposition to the landfill and DEQ’s EJ staff meets regularly with these groups to update them on the permitting process for the facility. Additionally, Green Ridge representatives met with these two groups on May 7 and May 9, 2024, respectively, to discuss updates to the project since DEQ’s outreach meeting and the group’s specific concerns. These meetings (by DEQ and Green Ridge) serve to promote fair and meaningful involvement of those that oppose the landfill, regardless of their community status.

7.0 Operating Permit Requirements

Green Ridge is submitting this application for the construction of the site. Operating permits under Title V of the Clean Air Act are typically based on PTE of a source. If PTE is greater than the Title V thresholds, the source is a major source for Title V. For facility in attainment areas, the major source thresholds for criteria pollutants are 100 tpy. For HAP, the major source threshold is 10 tpy of any individual HAP and 25 tpy for all HAP combined. As shown in Appendix C, Green Ridge is below all the major source thresholds. Therefore, Green Ridge is not subject to Title V air operating permit requirements based on its emissions (i.e., is Title V by rule).

Landfills that are subject to the Landfill NSPS are required to obtain a Title V operating permit. For purposes of submitting a timely Title V application, an application must be submitted within 90 days after the date of commenced construction per 40 CFR 60.762(c)(2).

Appendix A

Forms

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY - AIR PERMITS
LOCAL GOVERNING BODY CERTIFICATION FORM

Business Entity Name (same name on file with the Virginia SCC)	Registration Number:
Green Ridge Recycling and Disposal Facility, LLC SCC Entity ID Number: S7517818	N/A
Applicant's Name:	Name of Contact Person at the site:
Green Ridge Recycling and Disposal Facility, LLC	Mr. Jerry Cifor, President and CEO
Applicant's Mailing address: 12230 Deer Grove Road Midlothian, VA 23112	Contact Person Telephone Number: Mr. Jerry Cifor 802-379-1575

Facility location (also attach map):
Eastern side of Cumberland County, north of Route 60. Facility to be bounded by Route 654 (Pinegrove Road) and Route 685 (Miller Lane). Attached is the property/facility boundary map (last updated 8/3/2023)

Facility type, and list of activities to be conducted:

Landfill and Recycling Facility; disposal and recycling of nonhazardous solid waste

The applicant is in the process of completing an application for an air pollution control permit from the Virginia Department of Environmental Quality. In accordance with § 10.1-1321.1. Title 10.1, Code of Virginia (1950), as amended, before such a permit application can be considered complete, the applicant must obtain a certification from the governing body of the county, city or town in which the facility is to be located that the location and operation of the facility are consistent with all applicable ordinances adopted pursuant to Chapter 22 (§§ 15.2-2200 et seq.) of Title 15.2. The undersigned requests that an authorized representative of the local governing body sign the certification below.

Applicant's signature:	Date: 6/12/2024

The undersigned local government representative certifies to the consistency of the proposed location and operation of the facility described above with all applicable local ordinances adopted pursuant to Chapter 22 (§§15.2-2200 et seq.) of Title 15.2. of the Code of Virginia (1950) as amended, as follows:

(**Check one block**)

- [x] The proposed facility is **fully consistent** with all applicable local ordinances.
- [ ] The proposed facility is **inconsistent** with applicable local ordinances; see attached information.

Signature of authorized government representative: Stephany S Johnson	Date: 6/20/2024
Type or print name: Stephany S. Johnson	Title: Planning Director / Zoning Administrator
County, city or town: Cumberland County, Virginia	

[THE LOCAL GOVERNMENT REPRESENTATIVE SHOULD FORWARD THE SIGNED CERTIFICATION TO THE APPROPRIATE DEQ REGIONAL OFFICE AND SEND A COPY TO THE APPLICANT.]

NOTES:
1.) SOURCE OF MERIDIAN: VIRGINIA STATE PLANE GRID NORTH NAD 83 SOUTH BASED UPON A BOUNDARY SURVEY PERFORMED BY HIGHMARK ENGINEERING ON APRIL 17, 2019.
2.) THIS EXHIBIT DRAWING WAS PREPARED WITHOUT THE BENEFIT OF A TITLE COMMITMENT OR TITLE REPORT AND ALL EASEMENTS AND ENCUMBRANCES THAT MIGHT BE DISCLOSED IN A TITLE SEARCH MAY NOT BE SHOWN.
3.) THE PROPERTY LINES AND PLANIMETRIC FEATURES SHOWN HEREON ARE TAKEN FROM A PLAT PREPARED AND PROVIDED BY HIGHMARK ENGINEERING, ENTITLED EXTERIOR BOUNDARY SURVEY OF FIFTEEN PARCELS OF LAND CONTAINING ±1177.63 ACRES, DATED APRIL 17, 2019.
4.) STATE PLANE COORDINATES ADDED TO MONUMENTS.

LINE TABLE

LINE	LENGTH	BEARING	LINE	LENGTH	BEARING	LINE	LENGTH	BEARING	LINE	LENGTH	BEARING	LINE	LENGTH	BEARING
L1	383.35	N19°35'50"E	L27	0.42	S16°47'11"W	L53	906.73±	N19°36'48"W	L79	648.19	S12°53'55"W	L105	59.87	S03°32'09"E
L2	1937.45	S56°25'26"E	L28	454.32	S76°41'11"W	L54	1876.11	N20°10'30"W	L80	695.61	S23°56'00"W	L106	285.18	N35°51'08"W
L3	598.36	S58°25'29"E	L29	285.93	S31°04'56"W	L55	10.35±	N20°10'30"W	L81	135.93	S27°31'32"W	L107	278.81	N38°54'23"W
L4	309.67	S41°32'28"E	L30	118.36	N44°20'36"W	L56	3589.70	S68°54'56"E	L82	814.25	S28°12'54"W	L108	2110.67	S85°25'43"W
L5	763.34	S00°37'00"W	L31	44.69	S51°36'34"W	L57	514.15±	S62°08'21"E	L83	92.45	S24°08'33"W	L109	462.84	S55°13'38"W
L6	764.88	S26°44'27"W	L32	33.57	S32°45'24"W	L58	2216.24	N13°18'24"E	L84	840.56	S27°28'44"W	L110	128.67	N58°00'15"W
L7	218.55	S74°30'25"W	L33	28.60	S18°40'58"E	L59	1635.78	S77°51'06"E	L85	369.46	S25°58'56"W	L111	984.98	N00°14'00"E
L8	630.87	S34°27'47"W	L34	184.33	S60°07'44"W	L60	75.82	N15°53'40"E	L86	516.01	S26°14'11"W	L112	1033.00	N00°14'00"E
L9	1468.41	S13°30'33"E	L35	125.08	S83°35'14"W	L61	316.13	S63°46'10"E	L87	33.78	S23°09'57"E	L113	833.96	N46°20'56"E
L10	1795.34	S78°29'07"W	L36	90.36	S68°42'28"W	L62	270.64	S65°33'38"E	L88	37.80	S31°57'29"W	L114	1512.28±	N85°26'16"W
L11	1015.98	N05°27'07"E	L37	393.10	N00°42'13"W	L63	620.40	S82°38'36"E	L89	70.18	S26°14'11"W	L115	634.22	N18°26'57"E
L12	626.60	N84°01'07"E	L38	109.87	N69°04'52"W	L64	36.53	S44°35'16"W	L90	2331.37	S27°31'10"W	L116	1870.00±	N86°49'28"E
L13	600.50	N31°25'07"E	L39	345.57	N47°08'43"W	L65	128.14	S23°56'23"W	L91	339.67	S31°16'59"W	L117	410.56	N06°48'16"E
L14	562.36	N11°16'07"E	L40	612.99	S55°56'36"W	L66	58.71	S03°39'37"E	L92	546.44	N33°43'30"W	L118	10.48	N86°27'16"E
L15	35.97	N00°23'36"W	L41	261.08	N39°28'21"W	L67	68.38	S34°04'11"W	L93	315.65	N03°52'09"W	L119	284.71	S39°29'21"E
L16	268.49	N13°31'26"E	L42	0.04	N79°37'24"E	L68	113.65	S16°13'26"W	L94	211.29	N20°02'45"E	L120	612.99	S55°56'36"E
L17	237.47	N27°01'16"W	L43	601.09	N01°39'33"E	L69	120.70	S26°59'33"W	L95	148.08	N13°05'16"E	L121	345.57	S47°08'43"E
L18	252.39	N05°16'38"E	L44	339.97	N28°33'05"E	L70	135.59	S34°08'02"W	L96	147.34	N85°42'28"E	L122	109.87	S69°04'52"E
L19	2529.31	N53°49'23"W	L45	732.15	N-51°12'46"E	L71	116.17	S25°43'40"W	L97	126.62	N53°25'14"E	L123	363.10	S00°42'13"E
L20	224.60	N31°13'28"E	L46	328.56	N58°46'03"W	L72	149.28	S18°09'37"W	L98	195.21	N89°07'14"E	L124	5.00	S86°38'34"E
L21	59.56	N33°55'11"E	L47	123.75	N69°48'05"W	L73	81.80	S16°03'34"W	L99	28.80	N18°40'58"W	L125	146.05	S12°05'16"W
L22	341.07	S55°31'56"E	L48	262.88	N82°48'09"W	L74	281.89	S16°07'28"E	L100	33.57	N32°46'24"E	L126	211.29	S20°02'45"W
L23	39.60	N54°45'21"W	L49	61.98	N84°53'33"W	L75	117.17	S02°46'31"W	L101	44.69	N31°36'14"E	L127	148.00	S03°52'09"E
L24	65.57	S23°55'08"W	L50	319.99±	N07°56'08"W	L76	1099.43	S19°57'56"W	L102	118.38	S44°23'16"E			
L25	253.02	S31°15'20"W	L51	1032.15	N52°42'23"E	L77	88.55	S78°33'50"E	L103	172.36	N17°37'16"W			
L26	40.29	N53°49'23"W	L52	350.00	N09°49'05"W	L78	263.11	S12°47'38"W	L104	100.00	N20°51'08"W			

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	CHD DIRECTION	CHORD	CURVE	LENGTH	RADIUS	DELTA	CHD DIRECTION	CHORD
C1	201.65	1574.41	7°20'18"	N27°35'20"E	201.51	C22	339.48	573.74	33°54'54"	S08°05'18"W	334.57
C2	197.60	1544.41	7°20'17"	N27°35'20"E	197.46	C23	356.84	2562.00	7°58'28"	N16°04'01"E	356.56
C3	7.53	86.00	4°58'40"	N28°38'24"E	7.53	C24	43.81	1612.00	1°33'25"	N11°18'24"E	43.80
C4	139.32	76.37	104°31'27"	N83°20'40"E	120.79	C25	24.51	25.00	56°10'37"	S38°37'09"W	23.54
C5	152.09	201.98	43°08'08"	N85°38'08"W	148.54	C26	388.62	310.00	71°49'43"	N20°51'23"E	364.43
C6	292.37	830.00	13°58'41"	S86°11'02"W	291.87	C27	157.16	175.00	51°27'22"	S07°02'43"W	151.94
C7	204.13	480.00	27°25'21"	S65°24'13"W	236.91	C28	54.24	165.00	18°50'19"	S42°11'23"W	54.00
C8	84.11	165.00	18°30'10"	S42°11'29"W	83.82	C29	216.05	450.00	27°30'23"	S65°24'15"W	214.00
C9	184.11	265.00	51°27'22"	S07°02'43"W	177.98	C30	195.05	800.00	13°58'41"	S86°11'02"W	194.57
C10	247.39	180.00	78°44'43"	N20°41'23"E	228.37	C31	129.78	175.01	42°29'08"	N69°38'18"W	126.82
C11	22.54	25.00	20°42'43"	S53°05'11"E	43.38	C32	178.99	106.37	96°26'34"	N82°07'56"E	159.27
C12	320.92	1617.00	7°49'28"	N53°12'27"E	320.45	C33	283.99	1020.60	16°36'15"	S47°44'28"E	282.97
C13	250.21	1125.00	12°44'36"	N07°04'35"W	249.70	C34	181.79	1179.40	8°49'53"	N51°34'38"W	181.61
C14	342.87	332.81	59°02'06"	N41°55'52"W	328.38	C35	492.32	1286.60	21°55'10"	S58°07'17"E	489.30
C15	45.18	1236.60	2°05'35"	S68°07'05"E	45.18	C36	254.12	302.01	53°47'54"	N41°10'52"W	247.00
C16	428.01	1236.60	19°49'35"	S57°04'30"E	425.88	C37	239.09	1075.00	12°44'36"	N07°04'35"W	238.60
C17	189.50	1228.40	8°50'53"	N51°34'38"W	189.31	C38	275.19	1567.00	10°03'41"	N04°16'34"E	274.83
C18	276.58	970.60	16°30'14"	S47°44'28"E	278.62	C39	71.92	1572.00	2°43'50"	N10°43'21"E	71.91
C19	65.62	182.20	20°38'50"	S34°55'51"W	65.24	C40	350.29	2522.00	7°57'28"	N16°04'01"E	350.01
C20	171.72	356.90	27°33'41"	S01°15'46"W	169.98	C41	256.17	613.74	23°54'54"	S08°05'18"W	254.29
C21	381.35	1450.00	15°04'08"	N20°26'03"E	380.25						

Draper Aden Associates
Engineering • Surveying • Environmental Services
110 Avon Street
Charlottesville, VA 22902
434-295-0700 Fax: 434-295-2105
www.daa.com
• Richmond, VA • Blacksburg, VA • Hampton Roads, VA • Raleigh, NC • Fayetteville, NC • Northern Virginia • Virginia Beach, VA

NEAR VICINITY MAP - PROPERTY/FACILITY BOUNDARY
SURVEYED METES AND BOUNDS
OVERALL BOUNDARY
GREEN RIDGE RECYCLING AND DISPOSAL FACILITY
HAMILTON DISTRICT - CUMBERLAND COUNTY, VIRGINIA

DRAWN BY	DAJ
CHECKED BY	CAS
SCALE	1" = 500'
DATE	08/03/2023

REVISIONS
NOVEMBER 6, 2019 OWNER INFORMATION
NOVEMBER 18, 2019 CLIENT DEED INFO
APRIL 21, 2021 PARCEL LABELS UPDATED
NOVEMBER 18, 2022 SURVEY TIE LINE

REVISIONS CON'T
TR-Z RESPONSE, May 12, 2023, minor updates to original Part A application Final Part A, updated date, 8/03/2023

PROJECT NUMBER 18020117-090102

PTA ATTACHMENT IX
FIGURE 2B

COMMONWEALTH OF VIRGINIA
MICHAEL DAVID LANIZERS
No. 832
August 03, 2023
LICENSED PROFESSIONAL ENGINEER

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY – 2024 AIR PERMIT APPLICATION FEES

VALID JANUARY 1, 2024 TO DECEMBER 31, 2024

Air permit applications are subject to a fee and fee are adjusted January 1 of each calendar year. **The fee does not apply to administrative amendments or** true minor sources. Applications will be considered incomplete if the proper fee is not paid and will not be processed until full payment is received. **Air permit application fees are not refundable. Please contact the Regional Air Permit Manager if you are unsure of your fee amount.**

Step 1: Send this **ORIGINAL** form and a check (or money order) payable to "Treasurer of Virginia" to:

Department of Environmental Quality
Receipts Control
P.O. Box 1104
Richmond, VA 23218

OR
FOR OVERNIGHT DELIVERY

Department of Environmental Quality
Receipts Control
1111 East Main Street, Suite 1400
Richmond, VA 23219

Step 2: Send a **COPY** of this form with the permit application to the appropriate **DEQ Regional Office**

Step 3: Retain a copy for your records. Questions should be directed to the DEQ regional office where the application will be submitted

COMPANY NAME:	Green Ridge Recycling and Disposal Facility, LLC	**FIN:**	
COMPANY REPRESENTATIVE:	Jerry Cifor, President and CEO	**EMAIL ADDRESS:**	jerry.cifor@myfairpoint.net
MAILING ADDRESS:	12230 Deer Grove Road, Midlothian, VA 23112		
BUSINESS PHONE:	(802) 379-1575	**FAX:**	
FACILITY NAME:	Green Ridge Recycling and Disposal Facility	**REGISTRATION NUMBER:**	
PHYSICAL LOCATION:	Eastern side of Cumberland County, north of Route 60. Facility to be bounded by Route 654 (Pinegrove Road) and Route 685 (Miller Lane).		

PERMIT ACTIVITY **AIR PERMIT APPLICATION FEES ARE NOT REFUNDABLE** **Please contact the Regional Air Permit Manager if you are unsure of your fee amount**	**APPLICATION FEE AMOUNT**	**CHECK ONE**
Sources subject to Title V permitting requirements:		
• Major NSR permit (Articles 7, 8, 9)	$84,383	
• Major NSR permit amendment (Articles 7, 8, 9) **(except administrative)***	$13,394	
• State major permit (Article 6)	$33,485	x
• Title V permit (Articles 1, 3)	$46,879	
• Title V permit renewal (Articles 1, 3)	$20,091	
• Title V permit modification (Articles 1, 3)	$5,357	
• Minor NSR permit (Article 6)	$6,697	
• Minor NSR amendment (Article 6) **(except administrative)***	$3,348	
• State operating permit (Article 5)	$13,394	
• State operating permit amendment (Article 5) **(except administrative)***	$5,357	
Sources subject to Synthetic Minor permitting requirements:		
• Minor NSR permit (Article 6)	$4,018	
• Minor NSR amendment (Article 6)* **(except administrative)***	$1,339	
• State operating permit (Article 5)	$6,697	
• State operating permit amendment (Article 5)* **(except administrative)***	$3,348	

***AIR PERMIT APPLICATION FEES DO NOT APPLY TO ADMINISTRATIVE AMENDMENTS**

DEQ OFFICE TO WHICH PERMIT APPLICATION WILL BE SUBMITTED (check one)

☐ SWRO/Abingdon ☐ NRO/Woodbridge ☒ PRO/Richmond

☐ VRO/Harrisonburg ☐ BRRO/Roanoke ☐ TRO/Virginia Beach

FOR DEQ USE ONLY
Date: _____
DC #: _____
Reg. No.: _____

Return to "What Pages Do I Fill Out For My Facility?"

AIR PERMIT APPLICATION CHECKLIST

APPLICATION FORM PAGES AND NUMBER OF COPIES

Place a "√"In Boxes Below to Indicate Pages Included with Application Submittal	Page Title and Page Number	Indicate Number of Copies Included with Application Submittal
	Local Governing Body Certification Form, Page 5	
x	Application Fee Form, Page 6	1
x	Application and Attachments Checklist, Page 9	1
x	Document Certification Form, Page 10	1
x	General Information, Pages 11-12	1
	Fuel Burning Equipment, Page 13	
	Stationary Internal Combustion Engines, Page 14	
	Incinerators, Page 15	
x	Processing, Page 16	1
	Inks, Coatings, Stains, and Adhesives, Page 17	
	VOC/Petroleum Storage Tanks, Pages 18-19	
	Loading Rack and Oil-Water Separators, Page 20	
	Fumigation Operations, Page 21	
	Air Pollution Control and Monitoring Equipment, Page 22	
	Air Pollution Control/Supplemental Information, Page 23	
	Stack Parameters and Fuel Data, Page 24	
	Proposed Permit Limits for Criteria Pollutants, Page 25	
	Proposed Permit Limits for Toxic Pollutants/HAPs, Page 26	
	Proposed Permit Limits for Other Reg. Pollutants, Page 27	
	Proposed Permit Limits for GHGs on Mass Basis, Page 28	
	Proposed Permit Limits for GHGs on CO_2e Basis, Page 29	
	BAE for Criteria Pollutants, Page 30	
	BAE for GHGs on Mass Basis, Page 31	
	BAE for GHGs on CO_2e Basis, Page 32	
	Operating Periods, Page 33	

ATTACHMENTS AND NUMBER OF COPIES

Place a "√"In Boxes Below to Indicate Attachments Included with Application Submittal	Attached Document Names (Use Blank Spaces to Write In Names of any Attachments Not Listed Below)	Indicate Number of Copies Included with Application Submittal
x	Map of Site Location	1
	Facility Site Plan	
	Process Flow Diagram/Schematic	
	MSDS or CPDS Sheets	
x	Estimated Emission Calculations	1
	Stack Tests	
	Air Modeling Data	
	Confidential Information (see Instructions)	
	BACT Analysis	

Return to "What Pages Do I Fill Out For My Facility?"

DOCUMENT CERTIFICATION FORM

I certify under penalty of law that this document and all attachments [as noted above] were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering and evaluating the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I certify that I understand that the existence of a permit under [Article 6 of the Regulations] does not shield the source from potential enforcement of any regulation of the board governing the major NSR program and does not relieve the source of the responsibility to comply with any applicable provision of the major NSR regulations.

DATE:	06/24/2024
SIGNATURE:	
NAME:	Jerry Cifor
TITLE:	President and CEO
PHONE:	(802) 379-1575
EMAIL:	jerry.cifor@myfairpoint.net
REGISTRATION NO:	N/A
COMPANY NAME:	Green Ridge Recycling and Disposal Facility, LLC
ADDRESS:	12230 Deer Grove Road
	Midlothian, VA 23112

References: Virginia Regulations for the Control and Abatement of Air Pollution (Regulations), 9VAC5-20-230B and 9VAC5-80-1140E.

Return to "What Pages Do I Fill Out For My Facility?"

GENERAL INFORMATION

Person Completing Form: TRC Engineers, Inc.	Date: 6/24/2024	Registration Number:
Company and Division Name: Green Ridge Recycling and Disposal Facility, LLC		FIN:
Mailing Address: 12230 Deer Grove Road, Midlothian VA 23112		
Exact Source Location – Include Name of City (County) and Full Street Address or Directions: Eastern side of Cumberland County, north of Route 60, bounded by Route 654 (Pinegrove Road) and Route 685 (Miller Lane).		
Facility Phone Number: 802-379-1575	No. of Employees: TBD	Property Area at Site: 104 acres
Person to Contact on Air Pollution Matters – Name and Title: Name: Jerry Cifor Title: President and CEO	Contact Phone Number: (802) 379-1575 Contact Email: jerry.cifor@myfairpoint.net Contact Fax:	
Latitude and Longitude Coordinates **OR** UTM Coordinates of Facility: 37°33'45.44" N, 78°7'34.98" W		

Reason(s) for Submission (Check all that apply):

☐ State Operating Permit

This permit is applied for pursuant to provisions of the Virginia Administrative Code, 9 VAC 5 Chapter 80, Article 5 (SOP)

☒ New Source

☐ Modification of a Source

☐ Relocation of a Source

This permit is applied for pursuant to the following provisions of the Virginia Administrative Code:

- ☒ 9 VAC 5 Chapter 80, Article 6 (Minor Sources)
- ☐ 9 VAC 5 Chapter 80, Article 8 (PSD Major Sources)
- ☐ 9 VAC 5 Chapter 80, Article 9 (Non-Attainment Major Sources)

☐ Amendment to a Permit Dated: _____ Permit Type: ☐ SOP (Art. 5) ☐ NSR (Art. 6, 8, 9)

Amendment Type:

- ☐ Administrative Amendment
- ☐ Minor Amendment
- ☐ Significant Amendment

This amendment is requested pursuant to the provisions of:

- ☐ 9 VAC 5-80-970 (Art. 5 Adm.)
- ☐ 9 VAC 5-80-980 (Art. 5 Minor)
- ☐ 9 VAC 5-80-990 (Art. 5 Sig.)
- ☐ 9 VAC 5-80-1270 (Art. 6 Adm.)
- ☐ 9 VAC 5-80-1280 (Art. 6 Minor)
- ☐ 9 VAC 5-80-1290 (Art. 6 Sig.)
- ☐ 9 VAC 5-80-1935 (Art. 8 Adm.)
- ☐ 9 VAC 5-80-1945 (Art. 8 Minor)
- ☐ 9 VAC 5-80-1955 (Art. 8 Sig.)
- ☐ 9 VAC 5-80-2210 (Art. 9 Adm.)
- ☐ 9 VAC 5-80-2220 (Art. 9 Minor)
- ☐ 9 VAC 5-80-2230 (Art. 9 Sig.)

☐ Other (specify): _____

Explanation of Permit Request (attach documents if needed):

Permit requested in accordance with the provisions of the Virginia State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution to construct the Green Ridge Landfill; a non-hazardous solid waste landfill with a waste design capacity of 7.1 million tons.

Return to "What Pages Do I Fill Out For My Facility?"

GENERAL INFORMATION (CONTINUED)

For Portable Plants:

Is this facility designed to be portable? ☐ Yes ☒ No

- If yes, is this facility already permitted as a portable plant? ☐ Yes ☐ No Permit Date: _____

If not permitted, is this an application to be permitted as a portable plant? ☐ Yes ☒ No

If permitted as a portable facility, is this a notification of relocation? ☐ Yes ☐ No

- Describe the new location or address (include a site map): _____
- Will the portable facility be co-located with another source? ☐ Yes ☐ No Reg. No. _____
- Will the portable facility be modified or reconstructed as a result of the relocation? ☐ Yes ☐ No
- Will there be any new emissions other than those associated with the relocation? ☐ Yes ☐ No
- Is the facility suitable for the area to which it will be located? (attach documentation) ☐ Yes ☐ No

Describe the products manufactured and/or services performed at this facility:

Landfill will accept non-hazardous municipal solid waste and approved industrial waste.

List the Standard Industrial Classification (SIC) Code(s) for the facility:

4	9	5	3																

List the North American Industry Classification System (NAICS) Code(s) for the facility:

5	6	2	2	1	2																		

List all the facilities in Virginia under common ownership or control by the owner of this facility:

Milestones: This section is to be completed if the permit application includes a new emissions unit or modification to existing operations.

Milestones*:	Starting Date:	Estimated Completion Date:
New Equipment Installation	2027	2027
Modification of Existing Process or Equipment		
Start-up Dates	TBD	TBD

*For new or modified installations to be constructed in phased schedule, give construction/installation starting and completion date for each phase.

Return to "What Pages Do I Fill Out For My Facility?"

PROCESSING, MANUFACTURING, SURFACE COATING AND DEGREASING OPERATIONS:

Company Name: Green Ridge Recycling and Disposal Facility, LLC	**Date:** June 28, 2024	**Registration Number:**

Unit Ref. No.	Process or Operation Name	Equipment Manufacturer, Type, and Model Number	Date of Manuf.	Date of Const.	Max. Rated Capacity (ton)*	Requested Throughput*			Federal Regulations that Apply
						(_____/hr)	(_____/day)	(_____/yr)	
ES-1	Landfill	N/A			7,100,000		1,500 ton/day	429,000 tons/yr	NSPS, Subpart XXX; MACT, Subpart AAAA
ES-2	Landfill Surface and Haul Roads	N/A							

[x] Estimated Emission Calculations Attached (include references of emission factors) and/or Stack Test Results if Available

*** Specify units for each operation in tons, pounds, gallons, etc., as applicable. For coating operations, the maximum rated capacity is the spray gun capacity.**

Return to "What Pages Do I Fill Out For My Facility?"

AIR POLLUTION CONTROL AND MONITORING EQUIPMENT:

Company Name: Green Ridge Recycling and Disposal Facility, LLC	**Date:** June 24, 2024	**Registration Number:**

Unit Ref. No.	Vent/ Stack No.	Device Ref. No.	Pollutant/Parameter	Air Pollution Control Equipment			Monitoring Instrumentation
				Manufacturer and Model No.	Type (use Code N)	Percent Efficiency (%)	Specify Type, Measured Pollutant, and Recorder Used
			VOC, NMOC, HAP	TBD	21	98	Temperature, Flow

☐ Manufacturer Specifications Included

Code N – Type of Air Pollution Control Equipment

1. Settling Chamber
2. Cyclone
3. Multicyclone
4. Cyclone scrubber
5. Orifice scrubber
6. Mechanical scrubber
7. Venturi scrubber
   a. Fixed throat
   b. Variable throat
8. Mist eliminator
9. Filter
   a. Baghouse
   b. Other:_____
10. Electrostatic Precipitator
    a. Hot side
    b. Cold side
    c. High voltage
    d. Low voltage
    e. Single stage
    f. Two stage
    g. Other:_____
11. Catalytic Afterburner
12. Direct Flame Afterburner
13. Diesel Oxidation Catalyst (DOC)
14. Thermal Oxidizer
15. Regenerative Thermal Oxidizer (RTO)
16. Selective Catalytic Reduction (SCR)
17. Selective Non-Catalytic Reduction (SNCR)
18. Absorber
    a. Packed tower
    b. Spray tower
    c. Tray tower
    d. Venturi
    e. Other:_____
19. Adsorber
    a. Activated carbon
    b. Molecular sieve
    c. Activated alumina
    d. Silica gel
    e. Other:_____
20. Condenser (specify)
21. Other: Flare

Return to "What Pages Do I Fill Out For My Facility?"

AIR POLLUTION CONTROL EQUIPMENT - SUPPLEMENTAL INFORMATION:

Company Name: Green Ridge Recycling and Disposal Facility, LLC	**Date:** June 24, 2024	**Registration Number:**

Device Ref. No.	Type (use Code N)	Liquid Flow Rate (gpm) (4, 5, 6, 7, 17 ,19)	Liquid Medium (4, 5, 6, 7, 17, 19)	Cleaning Method (9, 10, 17, 18)	Number of Fields (10)	Number of Sections (9, 10)	Air to Cloth Ratio (fpm) (9)	Filter Material (9)	Inlet Temp. (ºF)	Regeneration Method & Cycle Time (sec) (18)	Chamber Temp. (ºF) (11, 12, 14, 15)	Retention Time (sec) (11, 12, 14, 15)	Pressure Drop (inch H_2O) (3, 4, 5, 6, 7, 9, 17)
	21								Ambient	N/A			

NOTE: Numbers listed in parenthesis in the columns above represent the Control Equipment in Code N below.

Code N – Type of Air Pollution Control Equipment

1. Settling Chamber
2. Cyclone
3. Multicyclone
4. Cyclone scrubber
5. Orifice scrubber
6. Mechanical scrubber
7. Venturi scrubber
   a. Fixed throat
   b. Variable throat
8. Mist eliminator
9. Filter
   a. Baghouse
   b. Other:_____
10. Electrostatic Precipitator
    a. Hot side
    b. Cold side
    c. High voltage
    d. Low voltage
    e. Single stage
    f. Two stage
    g. Other:_____
11. Catalytic Afterburner
12. Direct Flame Afterburner
13. Diesel Oxidation Catalyst (DOC)
14. Thermal Oxidizer
15. Regenerative Thermal Oxidizer (RTO)
16. Selective Catalytic Reduction (SCR)
17. Selective Non-Catalytic Reduction (SNCR)
18. Absorber
    a. Packed tower
    b. Spray tower
    c. Tray tower
    d. Venturi
    e. Other:_____
19. Adsorber
    a. Activated carbon
    b. Molecular sieve
    c. Activated alumina
    d. Silica gel
    e. Other:_____
20. Condenser (specify)
21. Other: Flare

Return to "What Pages Do I Fill Out For My Facility?"

STACK PARAMETERS AND FUEL DATA:

Company Name: Green Ridge Recycling and Disposal Facility, LLC	Date: June 24, 2024	Registration Number:

Unit Ref. No.	Vent/ Stack No.	Vent/Stack or Exhaust Data						Fuel(s) Data				
		Vent/Stack Config. (use Code O)	Vent/Stack Height (feet)	Exit Diameter (feet)	Exit Gas Velocity (ft/sec)	Exit Gas Flow Rate (acfm)	Exit Gas Temp. (°F)	Type of Fuel	Heating Value* (Btu/____)	Max. Rated Burned/hr (specify units)	Max. Sulfur %	Max. Ash %
		5		TBD				N/A				

Code O – Vent/Stack Configuration

1. Stack discharging downward, or nearly downward
2. Equivalent stack representing a combination of multiple actual stacks
3. Gooseneck stack
4. Stack discharging in a horizontal direction
5. Stack with an unobstructed opening discharge in a vertical direction
6. Vertical stack with a weather cap or similar obstruction in exhaust system

*** Specify units for each heating value in Btus per unit of fuel.**

Return to "What Pages Do I Fill Out For My Facility?"

OPERATING PERIODS:

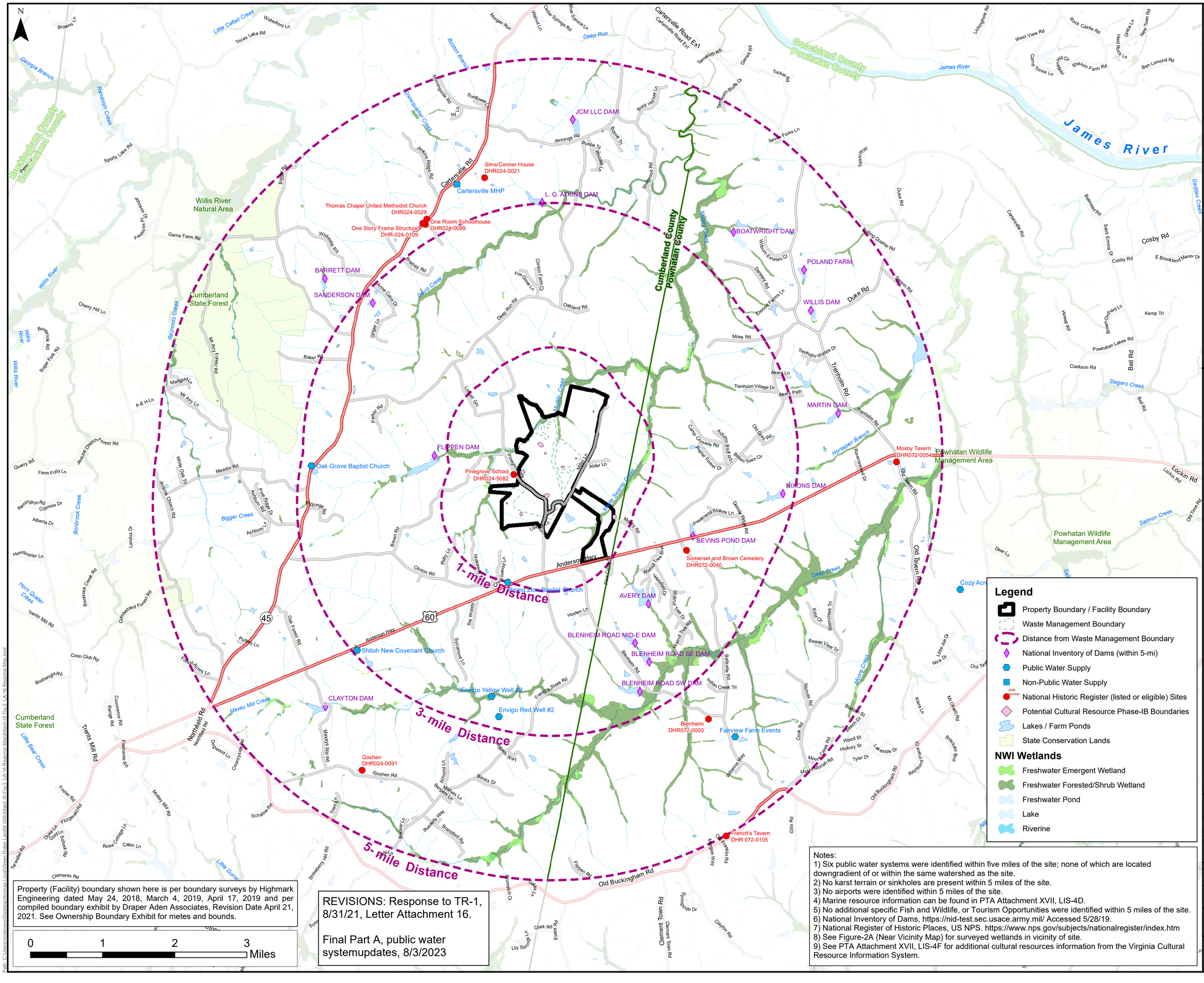
Company Name: Green Ridge Recycling and Disposal Facility, LLC	Date: June 24, 2024	Registration Number:

Unit Ref. No.	Percent Annual Use/Throughput by Season				Normal Process/Equipment Operating Schedule			Maximum Process/Equipment Operating Schedule		
	December / February	March / May	June / August	September / November	Hours per Day	Days per Week	Weeks per Year	Hours per Day	Days per Week	Weeks per Year
ES-1	1.78M Tons Waste	1.78M Tons Waste	1.78M Tons Waste	1.78M Tons Waste	8	5.5	52 weeks max			
ES-2	25% of total VMT	25% of total VMT	25% of total VMT	25% of total VMT						

Maximum Facility Operating Schedule		
Hours per Day	Days per Week	Weeks per Year
8	5.5	52

Appendix B

Figures



Property (Facility) boundary shown here is per boundary surveys by Highmark Engineering dated May 24, 2018, March 4, 2019, April 17, 2019 and per compiled boundary exhibit by Draper Aden Associates, Revision Date April 21, 2021. See Ownership Boundary Exhibit for metes and bounds.

0 1 2 3 Miles

REVISIONS: Response to TR-1, 8/31/21, Letter Attachment 16.

Final Part A, public water systemupdates, 8/3/2023

Legend

- Property Boundary / Facility Boundary
- Waste Management Boundary
- Distance from Waste Management Boundary
- National Inventory of Dams (within 5-mi)
- Public Water Supply
- Non-Public Water Supply
- National Historic Register (listed or eligible) Sites (dot number)
- Potential Cultural Resource Phase-IB Boundaries
- Lakes / Farm Ponds
- State Conservation Lands

NWI Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

Notes:
1) Six public water systems were identified within five miles of the site; none of which are located downgradient of or within the same watershed as the site.
2) No karst terrain or sinkholes are present within 5 miles of the site.
3) No airports were identified within 5 miles of the site.
4) Marine resource information can be found in PTA Attachment XVII, LIS-4D.
5) No additional specific Fish and Wildlife, or Tourism Opportunities were identified within 5 miles of the site.
6) National Inventory of Dams, https://nid-test.sec.usace.army.mil/ Accessed 5/28/19.
7) National Register of Historic Places, US NPS. https://www.nps.gov/subjects/nationalregister/index.htm
8) See Figure-2A (Near Vicinity Map) for surveyed wetlands in vicinity of site.
9) See PTA Attachment XVII, LIS-4F for additional cultural resources information from the Virginia Cultural Resource Information System.

COMMONWEALTH OF VIRGINIA
MICHAEL DAVID LAWLESS
No. 832
August 3, 2023
CERTIFIED PROFESSIONAL GEOLOGIST

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GREEN RIDGE
RECYCLING AND DISPOSAL FACILITY

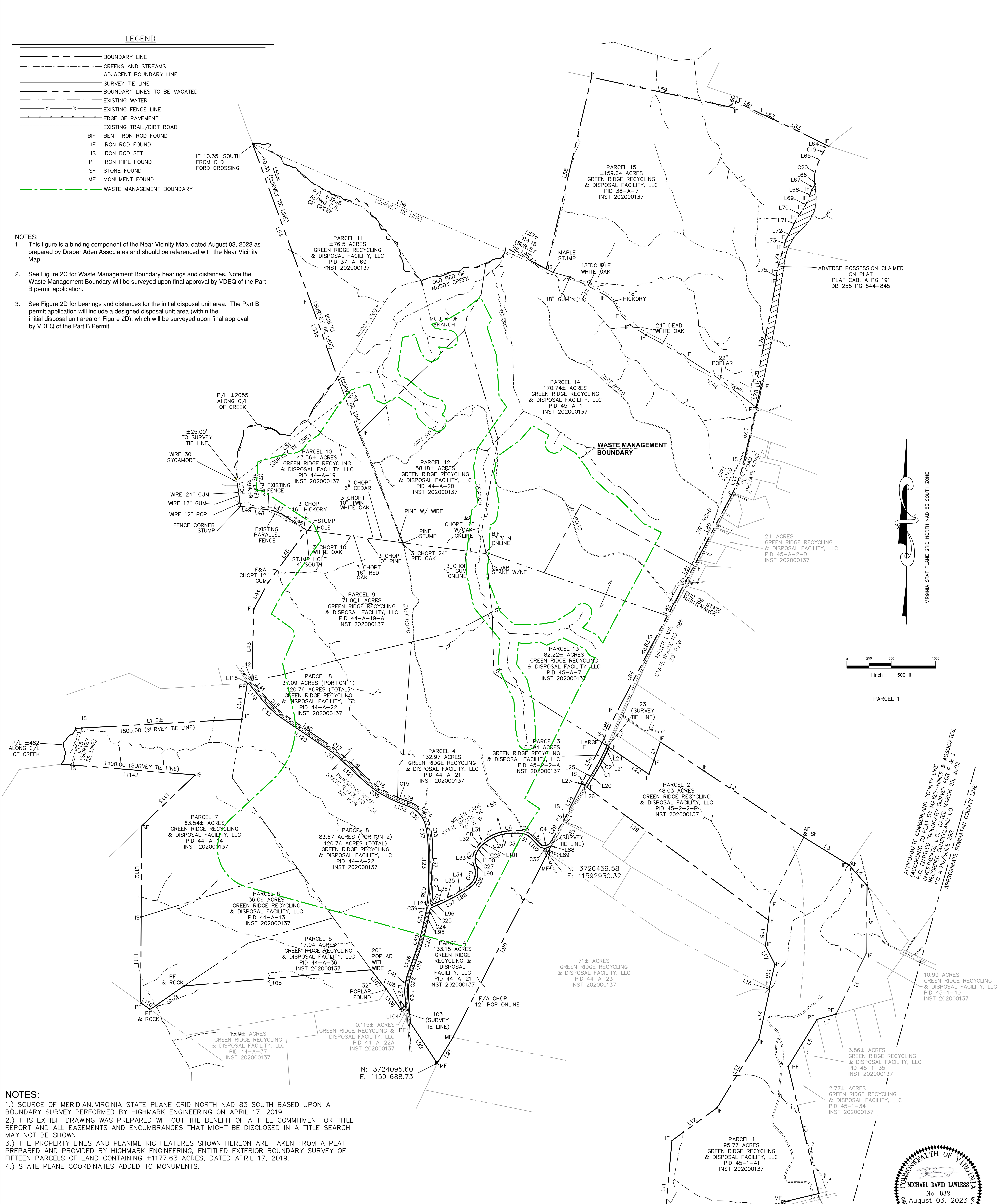
Regional Map

Green Ridge Recycling and Disposal Facility
Cumberland Co., Virginia

DESIGNED BY:	LPK
DRAWN BY:	SMF
CHECKED BY:	WDK
SCALE:	1:50,000
DATE:	08-03-23
PROJECT NUMBER:	**18020117-090102**

PTA ATTACHMENT IX
FIGURE: 3

Path: C:\Users\ntaveras\Desktop\Acrmap Local\Green Ridge Landfill GIS\Attach IX-Fig-3_LA-16 Regional Map\Attach IX-Fig-3_LA-16 Regional Map.mxd



NOTES:
1. This figure is a binding component of the Near Vicinity Map, dated August 03, 2023 as prepared by Draper Aden Associates and should be referenced with the Near Vicinity Map.
2. See Figure 2C for Waste Management Boundary bearings and distances. Note the Waste Management Boundary will be surveyed upon final approval by VDEQ of the Part B permit application.
3. See Figure 2D for bearings and distances for the initial disposal unit area. The Part B permit application will include a designed disposal unit area (within the initial disposal unit area on Figure 2D), which will be surveyed upon final approval by VDEQ of the Part B Permit.

NOTES:
1.) SOURCE OF MERIDIAN: VIRGINIA STATE PLANE GRID NORTH NAD 83 SOUTH BASED UPON A BOUNDARY SURVEY PERFORMED BY HIGHMARK ENGINEERING ON APRIL 17, 2019.
2.) THIS EXHIBIT DRAWING WAS PREPARED WITHOUT THE BENEFIT OF A TITLE COMMITMENT OR TITLE REPORT AND ALL EASEMENTS AND ENCUMBRANCES THAT MIGHT BE DISCLOSED IN A TITLE SEARCH MAY NOT BE SHOWN.
3.) THE PROPERTY LINES AND PLANIMETRIC FEATURES SHOWN HEREON ARE TAKEN FROM A PLAT PREPARED AND PROVIDED BY HIGHMARK ENGINEERING, ENTITLED EXTERIOR BOUNDARY SURVEY OF FIFTEEN PARCELS OF LAND CONTAINING ±1177.63 ACRES, DATED APRIL 17, 2019.
4.) STATE PLANE COORDINATES ADDED TO MONUMENTS.

LINE TABLE

LINE	LENGTH	BEARING	LINE	LENGTH	BEARING	LINE	LENGTH	BEARING	LINE	LENGTH	BEARING	LINE	LENGTH	BEARING
L1	385.35	N19°35'50"E	L27	0.42	S26°14'11"W	L53	908.73±	N19°36'48"W	L79	648.19	S12°53'59"W	L105	99.87	S03°52'09"E
L2	1937.45	S56°25'26"E	L28	454.32	S26°14'11"W	L54	1876.11	N20°10'30"W	L80	898.91	S27°58'06"W	L106	285.18	N35°51'08"W
L3	595.36	S58°25'22"E	L29	285.93	S31°04'56"W	L55	10.35±	N20°10'30"W	L81	195.23	S27°31'32"W	L107	279.81	N38°24'23"W
L4	309.62	S41°12'28"E	L30	118.38	N44°23'36"W	L56	3592.70	S66°54'50"E	L82	814.25	S28°12'54"W	L108	2110.87	S85°02'47"W
L5	763.34	S00°37'00"W	L31	44.69	S51°36'34"W	L57	514.15±	S62°08'21"E	L83	22.45	S24°08'33"W	L109	462.84	S55°15'39"W
L6	764.88	S26°44'27"W	L32	33.57	S32°46'24"W	L58	2216.24	N13°18'24"E	L84	840.56	S27°28'44"W	L110	129.67	N55°00'15"W
L7	218.55	S74°30'35"W	L33	28.80	S18°40'58"E	L59	1636.78	S77°51'06"E	L85	369.46	S25°58'56"W	L111	964.98	N00°14'00"E
L8	620.87	S31°27'47"W	L34	194.33	S60°03'44"W	L60	75.92	N19°53'40"E	L86	516.17	S26°14'11"W	L112	1023.00	N00°14'00"E
L9	1469.41	S13°30'22"E	L35	125.08	S63°25'14"W	L61	316.13	S63°46'30"E	L87	32.28	S33°09'57"E	L113	833.96	N46°20'56"E
L10	1795.34	S76°29'02"W	L36	90.36	S66°42'28"W	L62	220.64	S65°33'39"E	L88	37.80	S31°15'29"W	L114	1512.28±	N85°26'19"W
L11	1019.98	N05°22'07"E	L37	393.10	N00°42'17"W	L63	620.40	S63°58'26"E	L89	70.18	S26°14'11"W	L115	434.22	N16°29'57"E
L12	626.60	N54°01'07"E	L38	109.87	N69°04'52"W	L64	56.53	S44°35'18"W	L90	2331.37	S27°11'10"W	L116	1870.00±	N86°49'28"E
L13	900.50	N31°25'07"E	L39	345.57	N47°09'43"W	L65	128.14	S23°56'23"W	L91	339.87	S31°18'50"W	L117	410.59	N08°48'18"E
L14	562.26	N12°19'07"E	L40	612.99	N55°59'35"W	L66	58.71	S03°32'52"E	L92	546.44	N33°34'50"W	L118	10.49	N86°27'36"E
L15	35.97	N00°23'36"W	L41	261.09	N39°29'21"W	L67	68.38	S34°04'11"W	L93	315.65	N03°52'09"W	L119	264.71	S39°29'21"E
L16	268.49	N13°03'26"E	L42	0.94	N79°37'24"E	L68	113.65	S18°15'29"W	L94	211.29	N20°02'45"E	L120	612.99	S55°59'35"E
L17	231.47	N27°01'16"W	L43	801.08	N01°20'33"E	L69	120.70	S28°59'33"W	L95	146.08	N12°05'16"E	L121	345.57	S47°09'43"E
L18	292.39	N06°16'38"E	L44	339.57	N28°33'06"E	L70	135.59	S34°09'02"W	L96	147.34	N66°42'28"E	L122	109.87	S69°04'52"E
L19	2529.31	N53°49'23"W	L45	732.15	N36°12'46"E	L71	116.17	S25°43'40"W	L97	126.82	N63°25'14"E	L123	393.10	S00°42'17"E
L20	254.60	N31°15'29"E	L46	328.56	N56°48'05"W	L72	149.26	S28°06'03"W	L98	195.21	N60°03'44"E	L124	5.00	S80°38'34"E
L21	59.56	N23°55'11"E	L47	123.75	N68°48'05"W	L73	81.90	S16°03'34"W	L99	28.80	N18°40'58"W	L125	146.08	S12°05'16"W
L22	541.07	S55°51'56"E	L48	292.88	N82°48'05"W	L74	281.89	S16°02'26"W	L100	33.57	N32°46'24"E	L126	211.29	S20°02'45"W
L23	30.60	N54°45'31"W	L49	61.98	N84°25'32"W	L75	117.47	S03°40'31"W	L101	44.69	N51°36'34"E	L127	148.00	S03°52'09"E
L24	65.57	S23°55'09"W	L50	319.99±	N07°56'08"W	L76	1099.43	S10°57'50"W	L102	118.38	S44°23'36"E			
L25	252.02	S31°15'29"W	L51	1532.15	N52°45'23"E	L77	88.55	S28°53'50"E	L103	172.36	N17°17'19"W			
L26	40.29	N53°49'23"W	L52	250.00	N20°48'05"W	L78	263.11	S12°42'38"W	L104	100.00	N35°51'08"W			

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	CHD DIRECTION	CHORD	CURVE	LENGTH	RADIUS	DELTA	CHD DIRECTION	CHORD
C1	201.65	1574.41	7°20'18"	N27°35'20"E	201.51	C22	239.48	573.74	23°54'54"	S08°05'18"W	237.74
C2	197.80	1544.41	7°20'17"	N27°35'20"E	197.66	C23	355.84	2562.00	7°57'29"	N16°04'01"E	355.56
C3	7.53	89.00	4°50'45"	N28°39'34"E	7.52	C24	43.81	1612.00	1°33'25"	N11°18'34"E	43.80
C4	139.32	76.37	104°31'27"	N83°20'40"E	120.79	C25	24.51	25.00	56°10'37"	S38°37'09"W	23.54
C5	152.00	204.98	42°29'08"	N65°38'04"W	148.54	C26	288.62	210.00	78°44'43"	N20°41'23"E	266.43
C6	202.37	830.00	13°58'11"	S86°11'02"W	201.87	C27	157.16	175.00	51°27'22"	S07°02'43"W	151.94
C7	231.13	480.00	27°35'23"	S65°24'15"W	228.91	C28	54.24	165.00	18°50'10"	S42°11'29"W	54.00
C8	64.11	195.00	18°50'10"	S42°11'29"W	63.82	C29	216.69	450.00	27°35'23"	S65°24'15"W	214.60
C9	184.11	205.00	51°27'22"	S07°02'43"W	177.98	C30	195.05	800.00	13°58'11"	S86°11'02"W	194.57
C10	247.39	180.00	78°44'43"	N20°41'23"E	228.37	C31	129.78	175.01	42°29'08"	N65°38'18"W	126.82
C11	52.54	25.00	120°24'43"	S53°05'11"E	43.39	C32	179.99	106.37	96°56'54"	N87°07'56"E	159.27
C12	220.82	1617.00	7°49'28"	N03°12'27"E	220.65	C33	293.99	1020.60	16°30'15"	S47°44'28"E	292.97
C13	250.21	1125.00	12°44'36"	N07°04'35"W	249.70	C34	181.79	1179.40	8°49'53"	N51°34'39"W	181.61
C14	342.67	352.91	55°37'59"	N41°15'52"W	329.36	C35	492.32	1286.90	21°55'10"	S58°07'17"E	489.33
C15	45.18	1236.90	2°05'35"	S68°02'05"E	45.18	C36	294.12	302.91	55°37'59"	N41°15'52"W	282.70
C16	428.01	1236.90	19°49'35"	S57°04'30"E	425.88	C37	239.09	1075.00	12°44'36"	N07°04'35"W	238.60
C17	189.50	1229.40	8°49'53"	N51°34'39"W	189.31	C38	275.19	1567.00	10°03'43"	N04°19'34"E	274.83
C18	279.59	970.60	16°30'15"	S47°44'28"E	278.62	C39	74.92	1572.00	2°43'50"	N10°43'21"E	74.91
C19	65.69	182.29	20°38'50"	S34°15'53"W	65.34	C40	350.29	2522.00	7°57'29"	N16°04'01"E	350.01
C20	171.22	356.90	27°29'14"	S10°11'46"W	169.58	C41	256.17	613.74	23°54'54"	S08°05'18"W	254.32
C21	381.35	1450.00	15°04'08"	N20°26'03"E	380.25						

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NEAR VICINITY MAP - PROPERTY/FACILITY BOUNDARY
SURVEYED METES AND BOUNDS
OVERALL BOUNDARY GREEN RIDGE RECYCLING AND DISPOSAL FACILITY
HAMILTON DISTRICT - CUMBERLAND COUNTY, VIRGINIA

DESIGNED BY:
DRAWN BY: DAJ
CHECKED BY: CAS
SCALE: 1" = 500'
DATE: 08/03/2023

REVISIONS
NOVEMBER 6, 2019 OWNER INFORMATION
NOVEMBER 18, 2019 CLIENT DEED INFO
APRIL 21, 2021 PARCEL LABELS UPDATED
NOVEMBER 18, 2022 SURVEY TIE LINE

REVISIONS CON'T
TR-2 RESPONSE, May 12, 2023, Minor updates to original Part A application
Final Part A, updated note, 8/03/2023

PROJECT NUMBER: 18020117-090102

PTA ATTACHMENT IX
FIGURE 2B

Appendix C

Emission Calculations for Landfill Including HAP and Air Toxics

Green Ridge Recycling and Disposal Facility
Summary of Landfill Emissions

2031	Emissions (tpy)									
	PM	**PM10**	**PM2.5**	**Nox**	**CO**	**SO2**	**NMOC**	**VOC**	**Ind HAP**	**total HAP**
Fugitive/generated	-	-	-	-	2.07	-	27.3	8.4	1.9	5.3
Point Source	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	27.3	8.4	1.9	5.3

2044	Emissions (tpy)									
	PM	**PM10**	**PM2.5**	**Nox**	**CO**	**SO2**	**NMOC**	**VOC**	**Ind HAP**	**total HAP**
Fugitive	-	-	-	-	6.7	-	22.0	6.8	1.5	4.3
Point Source	4.2	4.2	4.2	16.9	77.2	3.4	1.3	0.4	0.09	0.26
Total	4.2	4.2	4.2	16.9	83.9	3.4	23.3	7.2	1.62	4.54

Permitting Thresholds	PTE - Worst Case (tpy)									
	PM	**PM10**	**PM2.5**	**Nox**	**CO**	**SO2**	**NMOC**	**VOC**	**Ind HAP**	**total HAP**
(tpy)	4.2	4.2	4.2	16.9	83.9	3.4	27.3	8.4	1.9	5.3
Major NSR	> 250	> 250	> 250	> 250	> 250	> 250	> 250	> 250	NA	NA
State Major	100 - 250	100 - 250	100 - 250	100 - 250	100 - 250	100 - 250	100 - 250	100 - 250	NA	NA
Minor NSR	25	15	10	40	100	40	-	25	NA	NA

Notes:
The anticipated last year of operation before control is required is 2031.
NMOC in 2031 is the generated from LANDGEM, inventory. VOC is the sum of VOC compound from LANDGEM, inventory.
The year of the greatest generation in LANDGEM is 2044. Control will be required under the NSPS by that time.
In the year 2044, NMOC is 25% of the NMOC generated in LANDGEM, inventory as 75% is assumed to be collected and controlled by the future flare.

Green Ridge Recycling and Disposal Facility
Future Open Flare Criteria and GHG Emissions

Given

Methane generated =	1,249	ft^3/min	*Inventory LandGEM, year 2044*
=	12,400	Mg/yr	*Inventory LandGEM, year 2044*
=	13,640	ton/yr	*(12,400 Mg/yr * 1.10231 ton/Mg)*
Landfill Gas generated =	2,498	ft^3/min	*Inventory LandGEM, year 2044*
Collection Efficiency =	75	%	*AP-42 Default*
Methane collected =	936.8	ft^3/min	*(1,249 ft3/min * 75 %)*
	56,205	ft^3/hr	*(936.8 ft3/min * 60 min/hr)*
	492,355,800	ft^3/yr	*(56,205 ft3/hr * 8,760 hr/yr)*
	10,230	ton/yr	*(13,640 ton/yr * 75 %)*
Landfill Gas collected =	1,874	ft^3/min	*(2,498 ft3/min * 75 %)*
	112,410	ft^3/hr	*(1,874 ft3/min * 60 min/hr)*
	984,711,600	ft^3/yr	*(112,410 ft3/hr * 8,760 hr/yr)*
NMOC generated =	87.96	ton/yr	*Inventory LandGEM, year 2044*
NMOC collected =	65.97	ton/yr	*(87.96 ton/yr * 75 %)*
VOC generated =	27.01	ton/yr	*Inventory LandGEM, year 2044*
VOC collected =	20.26	ton/yr	*(27.01 ton/yr * 75 %)*
Methane Concentration =	50	%	*AP-42 Default*
Methane Heat Content =	1,012	Btu/cf	*AP-42 Default*
Heat Input to Flare =	56,879,460	Btu/hr	*(56,205 ft3/hr * 1,012 Btu/cf)*
=	56.88	MMBtu/hr	
=	498,264	MMBtu/yr	*(56.88MMBtu/hr * 8,760 hr/yr)*
Operation =	8,760	hr/yr	*Worst Case for PTE*
Flare Efficiency =	98	%	*AP-42 Default*
H2S =	46.9	ppm	*AP-42 Default*
CO_2 generated =	37,430	ton/yr	*Inventory LandGEM, year 2044*

Pollutant	Emission factor	Units	Uncontrolled PTE tpy	Controlled potential emission rates	
				lbs/hr	tpy
$PM/PM_{10}/PM_{2.5}$	0.017	lb/MMBtu		0.97	4.2
SO2	46.9	ppm		0.78	3.4
NOX	0.068	lb/MMBtu		3.87	16.9
CO	0.31	lb/MMBtu		17.63	77.2
NMOC	from	LandGEM	65.97	0.30	1.3
VOC	from	LandGEM	27.01	0.12	0.5
CO2 (in collect LFG)	LANDGEM	ton/yr	37,430	-	37,430
CO2 (LFG combustion)	116.89	lb/MMBtu		-	29,121
CO2e (CO2)	1	GW potential	37,430	-	66,551
CH4 (in collect LFG)	LANDGEM	ton/yr	10,230		
CH4 (post-flare)	-				205
CH4 (LFG combustion)	2.21E-03	lb/MMBtu		-	0.55
CO2e (CH4)	25	GW potential		-	5,129
N2O (LFG combustion)	2.21E-04	lb/MMBtu		-	0.055
CO2e (N2O)	298	GW potential	0	-	16.41
Total CO2e	-	-		-	71,696

Notes:
1. GHG emission factors for methane (natural gas) combustion are based on default factors taken from EPA GHG Mandatory Reporting at 40 CFR Part 98, Subpart C, Tables C-1 and C-2.
2. PM, NOX, and CO emission factors taken from DEQ Permit Boilerplate Procedures for Municiapal Solid Waste Landfills (draft).
3. SO2 based on 98 pct. oxidation of H2S in the raw landfill gas.
4. NMOC and VOC is generated from LANDGEM year 2044, the year with the highest landfill gas generation.
5. All PM is assumed to be PM2.5 per AP-42, Section 2.4, Table 2.4-5 footnote b.

Green Ridge Recycling and Disposal Facility
Hazardous Air Pollutants and Air Toxic Emissions

Pollutant	2031 LANDGEM	2044 LANDGEM				Higher Between 2031 and 2044		CAS No.	TLV-TWA	TLV-STEL	Hourly SAAC	Annual SAAC	Exemption Rate	Exemption Rate	Exempt?	
	Generated	Generated	Fugitive	Out Flare	Total	(tpy)	(lb/hr)		(mg/m^3)	(mg/m^3)	($\mu g/m^3$)	($\mu g/m^3$)	(lb/hr)	(tons/yr)	(tpy)	(lb/hr)
1,1,1-Trichloroethane (methyl chloroform) - HAP	3.39E-02	1.09E-01	2.72E-02	1.63E-03	2.89E-02	3.39E-02	7.73E-03	79005	55	-	2750	110	3.63	7.975	Yes	Yes
1,1,2,2-Tetrachloroethane - HAP/VOC	9.76E-02	3.14E-01	7.85E-02	4.71E-03	8.32E-02	9.76E-02	2.23E-02	79345	6.9	-	345	13.8	0.4554	1.0005	Yes	Yes
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	1.26E-01	4.04E-01	1.01E-01	6.06E-03	1.07E-01	1.26E-01	2.87E-02	75343	810	1010	25250	1620	22.8	100	Yes	Yes
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	1.03E-02	3.30E-02	8.25E-03	4.95E-04	8.74E-03	1.03E-02	2.34E-03	75354	20	79	1975	40	2.607	2.9	Yes	Yes
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	2.15E-02	6.90E-02	1.73E-02	1.04E-03	1.83E-02	2.15E-02	4.90E-03	107062	40	-	2000	80	2.64	5.8	Yes	Yes
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	1.08E-02	3.46E-02	8.65E-03	5.19E-04	9.17E-03	1.08E-02	2.46E-03	78875	347	508	12700	694	16.764	50.315	Yes	Yes
2-Propanol (isopropyl alcohol) - VOC	1.59E+00	5.11E+00	1.28E+00	7.67E-02	1.35E+00	1.59E+00	3.63E-01									
Acetone	2.15E-01	6.92E-01	1.73E-01	1.04E-02	1.83E-01	2.15E-01	4.91E-02									
Acrylonitrile - HAP/VOC	1.77E-01	5.69E-01	1.42E-01	8.53E-03	1.51E-01	1.77E-01	4.04E-02	107131	4.3	-	215	8.6	0.2838	0.6235	Yes	Yes
Benzene - No or Unknown Co-disposal - HAP/VOC	7.85E-02	2.52E-01	6.31E-02	3.79E-03	6.69E-02	7.85E-02	1.79E-02	71432	32	-	1600	64	2.112	4.64	Yes	Yes
Bromodichloromethane - VOC	2.69E-01	8.64E-01	2.16E-01	1.30E-02	2.29E-01	2.69E-01	6.13E-02									
Butane - VOC	1.54E-01	4.94E-01	1.24E-01	7.42E-03	1.31E-01	1.54E-01	3.51E-02									
Carbon disulfide - HAP/VOC	2.33E-02	7.51E-02	1.88E-02	1.13E-03	1.99E-02	2.33E-02	5.33E-03	75150	31	-	1550	62	2.046	4.495	Yes	Yes
Carbon monoxide	2.07E+00	6.67E+00	1.67E+00	1.00E-01	1.77E+00	2.07E+00	4.73E-01									
Carbon tetrachloride - HAP/VOC	3.25E-04	1.05E-03	2.62E-04	1.57E-05	2.77E-04	3.25E-04	7.43E-05	56235	31	-	1550	62	2.046	4.495	Yes	Yes
Carbonyl sulfide - HAP/VOC	1.56E-02	5.01E-02	1.25E-02	7.51E-04	1.33E-02	1.56E-02	3.55E-03	463581	12.3	-	615	24.6	0.8118	1.7835	Yes	Yes
Chlorobenzene - HAP/VOC	1.49E-02	4.79E-02	1.20E-02	7.18E-04	1.27E-02	1.49E-02	3.40E-03	108907	46	-	2300	92	3.036	6.67	Yes	Yes
Chlorodifluoromethane	5.94E-02	1.91E-01	4.78E-02	2.87E-03	5.07E-02	5.94E-02	1.36E-02									
Chloroethane (ethyl chloride) - HAP/VOC	4.43E-02	1.43E-01	3.57E-02	2.14E-03	3.78E-02	4.43E-02	1.01E-02	75003	2640	-	132000	5280	22.8	100	Yes	Yes
Chloroform - HAP/VOC	1.89E-03	6.09E-03	1.52E-03	9.14E-05	1.61E-03	1.89E-03	4.32E-04	67663	49	-	2450	98	3.234	7.105	Yes	Yes
Chloromethane - HAP/VOC	3.20E-02	1.03E-01	2.58E-02	1.55E-03	2.73E-02	3.20E-02	7.31E-03	74873	103	207	5175	206	6.831	14.935	Yes	Yes
Dichlorobenzene - (HAP for para isomer/VOC)	1.63E-02	5.25E-02	1.31E-02	7.88E-04	1.39E-02	1.63E-02	3.73E-03	106467	451	661	16525	902	21.813	65.395	Yes	Yes
Dichlorodifluoromethane	1.02E+00	3.29E+00	8.23E-01	4.94E-02	8.72E-01	1.02E+00	2.34E-01									
Dichlorofluoromethane - VOC	1.41E-01	4.55E-01	1.14E-01	6.83E-03	1.21E-01	1.41E-01	3.23E-02									
Dichloromethane (methylene chloride) - HAP	6.29E-01	2.02E+00	5.06E-01	3.03E-02	5.36E-01	6.29E-01	1.44E-01	75092	174	-	8700	348	11.484	25.23	Yes	Yes
Dimethyl sulfide (methyl sulfide) - VOC	2.56E-01	8.24E-01	2.06E-01	1.24E-02	2.18E-01	2.56E-01	5.85E-02									
Ethane	1.41E+01	4.55E+01	1.14E+01	6.83E-01	1.21E+01	1.41E+01	3.23E+00									
Ethanol - VOC	6.58E-01	2.12E+00	5.29E-01	3.17E-02	5.61E-01	6.58E-01	1.50E-01									
Ethyl mercaptan (ethanethiol) - VOC	7.56E-02	2.43E-01	6.08E-02	3.65E-03	6.44E-02	7.56E-02	1.72E-02									
Ethylbenzene - HAP/VOC	2.58E-01	8.31E-01	2.08E-01	1.25E-02	2.20E-01	2.58E-01	5.89E-02	100414	434	543	13575	868	17.919	62.93	Yes	Yes
Ethylene dibromide - HAP/VOC	9.93E-05	3.20E-04	7.99E-05	4.79E-06	8.47E-05	9.93E-05	2.27E-05	106934	0.346	1	25	0.692	0.033	0.05017	Yes	Yes
Fluorotrichloromethane - VOC	5.52E-02	1.78E-01	4.44E-02	2.66E-03	4.71E-02	5.52E-02	1.26E-02									
Hexane - HAP/VOC	3.01E-01	9.68E-01	2.42E-01	1.45E-02	2.56E-01	3.01E-01	6.87E-02	110543	176	-	8800	352	11.616	25.52	Yes	Yes
Hydrogen sulfide	6.49E-01	2.09E+00	5.22E-01	3.13E-02	5.53E-01	6.49E-01	1.48E-01									
Mercury (total) - HAP	3.08E-05	9.90E-05	2.47E-05	7.42E-05	9.90E-05	9.90E-05	2.26E-05	7439976	0.1	-	5	0.2	0.0066	0.0145	Yes	Yes
Methyl ethyl ketone - VOC	2.71E-01	8.71E-01	2.18E-01	1.31E-02	2.31E-01	2.71E-01	6.18E-02									
Methyl isobutyl ketone - HAP/VOC	1.01E-01	3.24E-01	8.09E-02	4.86E-03	8.58E-02	1.01E-01	2.30E-02	108101	205	307	7675	410	10.131	29.725	Yes	Yes
Methyl mercaptan - VOC	6.36E-02	2.05E-01	5.12E-02	3.07E-03	5.42E-02	6.36E-02	1.45E-02									
Pentane - VOC	1.26E-01	4.05E-01	1.01E-01	6.08E-03	1.07E-01	1.26E-01	2.87E-02									
Perchloroethylene (tetrachloroethylene) - HAP	3.24E-01	1.04E+00	2.61E-01	1.57E-02	2.77E-01	3.24E-01	7.41E-02	127184	339	1357	33925	678	22.8	49.155	Yes	Yes
Propane - VOC	2.56E-01	8.25E-01	2.06E-01	1.24E-02	2.19E-01	2.56E-01	5.85E-02									
t-1,2-Dichloroethene - VOC	1.44E-01	4.62E-01	1.15E-01	6.93E-03	1.22E-01	1.44E-01	3.28E-02									
Toluene - No or Unknown Co-disposal - HAP/VOC	1.90E+00	6.11E+00	1.53E+00	9.17E-02	1.62E+00	1.90E+00	4.34E-01	108883	377	565	14125	754	18.645	54.665	Yes	Yes
Trichloroethylene (trichloroethene) - HAP/VOC	1.95E-01	6.26E-01	1.56E-01	9.39E-03	1.66E-01	1.95E-01	4.44E-02	79016	269	1070	26750	538	22.8	39.005	Yes	Yes
Vinyl chloride - HAP/VOC	2.41E-01	7.76E-01	1.94E-01	1.16E-02	2.06E-01	2.41E-01	5.51E-02	75014	13	-	650	26	0.858	1.885	Yes	Yes
Xylenes - HAP/VOC	6.74E-01	2.17E+00	5.42E-01	3.25E-02	5.74E-01	6.74E-01	1.54E-01	1330207	434	651	16275	868	21.483	62.93	Yes	Yes

= HAP

	2031
Total VOC	8.4
Highest Individual HAP	1.9
Total HAP	5.3

2044			
Generated	Fugitive	Out Flare	Total
27.0	6.8	0.41	7.2
	1.53	0.09	1.62
	4.28	0.26	4.54

Notes:
The anticipated last year of operation before control is required is 2031.
Because there won't be any contol in 2031, all pollutants are emitted as fugititve.
The year of the greatest generation in LANDGEM is 2044. Control will be required under the NSPS by that time.
In the year 2044, NMOC is 25% of the NMOC generated in LANDGEM, inventory as 75% is assumed to be collected and controlled by the future flare.

Emissions Summary:

Total Road traffic Emissions (TPY)

	Annual PM Emissions (TPY)		Annual PM10 Emissions (TPY)		Annual PM2.5 Emissions (TPY)	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
TOTAL EMISSIONS	**58.14**	**6.00**	**14.72**	**1.51**	**1.53**	**0.16**

Section 1-Vehicle Traffic:

	Trips per year	Distance per trip (miles)	% on paved	% on unpaved	wt of vehicle (full, tons)	wt of vehicle (empty, tons)
Regional Waste Hauling	21,450	1.13	24%	76%	40	20
Leachate Hauling	8,866	0.96	28%	5%	34	16
Local Garbage Trucks	4,290	1.13	24%	76%	19	8
Construction Truck Traffice-Material Deliv	215	1.13	24%	76%	35	15
Construction Truck Traffice-Stone Trucks	4,290	1.13	24%	76%	35	15
Construction Truck Traffice-Concrete	215	1.13	24%	76%	35	15
Local residents	11,440	0.12	100%	0%	2.1	2
Employees	8,044	0.59	100%	0%	2	2
Vendors	858	0.59	100%	0%	2	2

Section 2-Vehicle Traffic Emissions

Section 2a-Unpaved roads

Basis for Calculations:

RACM - watering/speed reduction 90.00% pct. Table 2.1.1-3, Ohio EPA RACM Manual

Watering - Ohio RACM, Table 2.1.1-3 (50%), 15 mph speed reduction - Ohio RACM Table 2.1.1-3 (80%)

Emission Factors - AP-42 Section 13.2.2 (11/06)

E (lb/VMT) = $k\,(s/12)^a\,(W/3)^b$ values for k, a, and b - AP-42 Table 13.2.2-2

where:

s	4.8	silt percentage AP-42, Table 13.2.2-1 for sand and gravel processing plants
W	-	tons - mean vehicle weight
k	-	particle size multiplier, lb/VMT
a,b	-	coefficients

	k	a	b
PM	4.9	0.7	0.45
PM10	1.5	0.9	0.45
PM2.5	0.15	0.9	0.45

E_{ext} (lb/VMT) = E [(365 - P)/365] Section 13.2.2 Equation 2, control from natural mitigation (rain/snow)

P = 140 AP-42 Figure 13.2.2-1

Emission Calculations - Unpaved roadways

				Emission Factors (E_{ext})			Uncontroled Emissions			Controled Emissions		
	No. of trips per year	Distance VMT/yr	Mean vehicle weight, tons	PM lb/VMT	PM10 lb/VMT	PM2.5 lb/VMT	PM tpy	PM10 tpy	PM2.5 tpy	PM tpy	PM10 tpy	PM2.5 tpy
Regional Waste Hauling	16,302	18,421	30.0	4.48	1.14	0.11	41.29	10.52	1.05	4.13	1.05	0.11
Leachate Hauling	443	426	25.0	4.13	1.05	0.11	0.88	0.22	0.02	0.09	0.02	0.00
Local Garbage Trucks	3,260	3,684	13.5	3.13	0.80	0.08	5.76	1.47	0.15	0.58	0.15	0.01
Construction -Material	163	184	25.0	4.13	1.05	0.11	0.38	0.10	0.01	0.04	0.01	0.00
Construction-Stone trucks	3,260	3,684	25.0	4.13	1.05	0.11	7.61	1.94	0.19	0.76	0.19	0.02
Construction-concrete	163	184	25.0	4.13	1.05	0.11	0.38	0.10	0.01	0.04	0.01	0.00
Local residents	0	0	2.1	1.34	0.34	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Employees	0	0	2.0	1.33	0.34	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Vendors	0	0	2.0	1.33	0.34	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Total controlled emissions - unpaved roadways (CCR)							56.30	14.35	1.43	5.63	1.43	0.14

Section 2b-Paved road segments

AP-42 (01/2011 Version) Ch. 13.2.1, Equation (2):

$E_{ext} = [k \times (sL)^{0.91} \times (W)^{1.02}] \times (1-P/4N)$

E = particulate emission factor (lb/VMT)
k = particle size multiplier (lb/VMT) (AP-42 Table 13.2.1-1)
sL = road surface silt loading (g/m^2)(avg. of summer and winter sL for ADT <500, AP-42 Table 13.2.1-2)
W = Mean vehicle weight (tons)
P = number of wet days with at least 0.01 in of precipitation during the averaging period: 140 days
N = number of days in the averaging period = 365 (for annual)

RACM - watering 80.00% pct. Table 2.1.1-3, Ohio EPA RACM Manual

Emissions (TPY)

Vehicle	No. of trips per year	sL g/m^2	W tons	Total miles per year VMT	Uncontroled Emissions PM k=0.011 tpy	Uncontroled Emissions PM10 k=0.0022 tpy	Uncontroled Emissions PM2.5 k=0.00054 tpy	Controled Emissions PM tpy	Controled Emissions PM10 tpy	Controled Emissions PM2.5 tpy
Regional Waste Hauling	5,148	1.2	30.0	5,817	1.10	0.22	0.05	0.22	0.04	0.01
Leachate Hauling	2,482	1.2	25.0	2,383	0.37	0.07	0.02	0.07	0.01	0.00
Local Garbage Trucks	1,030	1.2	13.5	1,163	0.10	0.02	0.00	0.02	0.00	0.00
Construction -Material	51	1.2	25.0	58	0.01	0.00	0.00	0.00	0.00	0.00
Construction-Stone trucks	1,030	1.2	25.0	1,163	0.18	0.04	0.01	0.04	0.01	0.00
Construction-concrete	51	1.2	25.0	58	0.01	0.00	0.00	0.00	0.00	0.00
Local residents	11,440	1.2	2.1	1,373	0.02	0.00	0.00	0.00	0.00	0.00
Employees	8,044	1.2	2.0	4,746	0.06	0.01	0.00	0.01	0.00	0.00
Vendors	858	1.2	2.0	506	0.01	0.00	0.00	0.00	0.00	0.00
Total (tpy)					1.85	0.37	0.09	0.37	0.07	0.02

Notes

Annual average silt loading taken from AP-42 Table 13.2.1-2 for ADT <500. Assumes 8 months/yr at ubiquitius baseline (0.6 g/m^2) and 4 months of ubiquitous winter baseline (2.4 g/m^2).

Paved roadway control efficiency: watering (Ohio RACM: Table 2.1.1-3)

INVENTORY

Landfill Name or Identifier: Green Ridge Landfill

Enter year of emissions inventory: 2031

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/yr)*	*(av ft^3 /min)*	*(ft^3 /year)*	*(short tons/year)*
Total landfill gas	1.44E+04	1.16E+07	7.76E+02	4.08E+08	1.59E+04
Methane	3.86E+03	5.78E+06	3.88E+02	2.04E+08	4.24E+03
Carbon dioxide	1.06E+04	5.78E+06	3.88E+02	2.04E+08	1.16E+04
NMOC	2.49E+01	6.93E+03	4.66E-01	2.45E+05	2.73E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	3.08E-02	5.55E+00	3.73E-04	1.96E+02	3.39E-02
1,1,2,2-Tetrachloroethane - HAP/VOC	8.87E-02	1.27E+01	8.54E-04	4.49E+02	9.76E-02
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	1.14E-01	2.77E+01	1.86E-03	9.79E+02	1.26E-01
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	9.32E-03	2.31E+00	1.55E-04	8.16E+01	1.03E-02
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	1.95E-02	4.74E+00	3.18E-04	1.67E+02	2.15E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	9.78E-03	2.08E+00	1.40E-04	7.35E+01	1.08E-02
2-Propanol (isopropyl alcohol) - VOC	1.45E+00	5.78E+02	3.88E-02	2.04E+04	1.59E+00
Acetone	1.95E-01	8.09E+01	5.44E-03	2.86E+03	2.15E-01
Acrylonitrile - HAP/VOC	1.61E-01	7.28E+01	4.89E-03	2.57E+03	1.77E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	7.13E-02	2.20E+01	1.48E-03	7.75E+02	7.85E-02
Benzene - Co-disposal - HAP/VOC	4.13E-01	1.27E+02	8.54E-03	4.49E+03	4.54E-01
Bromodichloromethane - VOC	2.44E-01	3.58E+01	2.41E-03	1.27E+03	2.69E-01
Butane - VOC	1.40E-01	5.78E+01	3.88E-03	2.04E+03	1.54E-01
Carbon disulfide - HAP/VOC	2.12E-02	6.70E+00	4.50E-04	2.37E+02	2.34E-02
Carbon monoxide	1.89E+00	1.62E+03	1.09E-01	5.71E+04	2.07E+00
Carbon tetrachloride - HAP/VOC	2.96E-04	4.62E-02	3.11E-06	1.63E+00	3.25E-04
Carbonyl sulfide - HAP/VOC	1.42E-02	5.66E+00	3.81E-04	2.00E+02	1.56E-02
Chlorobenzene - HAP/VOC	1.35E-02	2.89E+00	1.94E-04	1.02E+02	1.49E-02
Chlorodifluoromethane	5.40E-02	1.50E+01	1.01E-03	5.31E+02	5.94E-02
Chloroethane (ethyl chloride) - HAP/VOC	4.03E-02	1.50E+01	1.01E-03	5.31E+02	4.44E-02
Chloroform - HAP/VOC	1.72E-03	3.47E-01	2.33E-05	1.22E+01	1.89E-03
Chloromethane - VOC	2.91E-02	1.39E+01	9.32E-04	4.90E+02	3.20E-02
Dichlorobenzene - (HAP for para isomer/VOC)	1.48E-02	2.43E+00	1.63E-04	8.57E+01	1.63E-02
Dichlorodifluoromethane	9.30E-01	1.85E+02	1.24E-02	6.53E+03	1.02E+00
Dichlorofluoromethane - VOC	1.29E-01	3.01E+01	2.02E-03	1.06E+03	1.42E-01
Dichloromethane (methylene chloride) - HAP	5.72E-01	1.62E+02	1.09E-02	5.71E+03	6.29E-01
Dimethyl sulfide (methyl sulfide) - VOC	2.33E-01	9.01E+01	6.06E-03	3.18E+03	2.56E-01
Ethane	1.29E+01	1.03E+04	6.91E-01	3.63E+05	1.42E+01
Ethanol - VOC	5.98E-01	3.12E+02	2.10E-02	1.10E+04	6.58E-01
Ethyl mercaptan (ethanethiol) - VOC	6.87E-02	2.66E+01	1.79E-03	9.39E+02	7.56E-02
Ethylbenzene - HAP/VOC	2.35E-01	5.32E+01	3.57E-03	1.88E+03	2.58E-01
Ethylene dibromide - HAP/VOC	9.03E-05	1.16E-02	7.76E-07	4.08E-01	9.93E-05
Fluorotrichloromethane - VOC	5.02E-02	8.78E+00	5.90E-04	3.10E+02	5.52E-02
Hexane - HAP/VOC	2.73E-01	7.63E+01	5.12E-03	2.69E+03	3.01E-01
Hydrogen sulfide	5.90E-01	4.16E+02	2.80E-02	1.47E+04	6.49E-01
Mercury (total) - HAP	2.80E-05	3.35E-03	2.25E-07	1.18E-01	3.08E-05
Methyl ethyl ketone - HAP/VOC	2.46E-01	8.21E+01	5.51E-03	2.90E+03	2.71E-01
Methyl isobutyl ketone - HAP/VOC	9.15E-02	2.20E+01	1.48E-03	7.75E+02	1.01E-01
Methyl mercaptan - VOC	5.78E-02	2.89E+01	1.94E-03	1.02E+03	6.36E-02
Pentane - VOC	1.14E-01	3.81E+01	2.56E-03	1.35E+03	1.26E-01
Perchloroethylene (tetrachloroethylene) - HAP	2.95E-01	4.28E+01	2.87E-03	1.51E+03	3.24E-01
Propane - VOC	2.33E-01	1.27E+02	8.54E-03	4.49E+03	2.56E-01
t-1,2-Dichloroethene - VOC	1.31E-01	3.24E+01	2.17E-03	1.14E+03	1.44E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.73E+00	4.51E+02	3.03E-02	1.59E+04	1.90E+00
Toluene - Co-disposal - HAP/VOC	7.53E+00	1.96E+03	1.32E-01	6.94E+04	8.28E+00
Trichloroethylene (trichloroethene) - HAP/VOC	1.77E-01	3.24E+01	2.17E-03	1.14E+03	1.95E-01
Vinyl chloride - HAP/VOC	2.19E-01	8.44E+01	5.67E-03	2.98E+03	2.41E-01
Xylenes - HAP/VOC	6.12E-01	1.39E+02	9.32E-03	4.90E+03	6.74E-01
Chlorine	7.16E-01	4.85E+02	3.26E-02	1.71E+04	7.87E-01

INVENTORY

Landfill Name or Identifier: Green Ridge Landfill

Enter year of emissions inventory: 2044

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/yr)*	*(av ft^3 /min)*	*(ft^3 /year)*	*(short tons/year)*
Total landfill gas	4.64E+04	3.72E+07	2.50E+03	1.31E+09	5.11E+04
Methane	1.24E+04	1.86E+07	1.25E+03	6.57E+08	1.36E+04
Carbon dioxide	3.40E+04	1.86E+07	1.25E+03	6.57E+08	3.74E+04
NMOC	8.00E+01	2.23E+04	1.50E+00	7.88E+05	8.80E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	9.90E-02	1.79E+01	1.20E-03	6.30E+02	1.09E-01
1,1,2,2-Tetrachloroethane - HAP/VOC	2.86E-01	4.09E+01	2.75E-03	1.44E+03	3.14E-01
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.67E-01	8.92E+01	6.00E-03	3.15E+03	4.04E-01
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	3.00E-02	7.44E+00	5.00E-04	2.63E+02	3.30E-02
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	6.28E-02	1.52E+01	1.02E-03	5.38E+02	6.90E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	3.15E-02	6.69E+00	4.50E-04	2.36E+02	3.46E-02
2-Propanol (isopropyl alcohol) - VOC	4.65E+00	1.86E+03	1.25E-01	6.57E+04	5.11E+00
Acetone	6.29E-01	2.60E+02	1.75E-02	9.19E+03	6.92E-01
Acrylonitrile - HAP/VOC	5.17E-01	2.34E+02	1.57E-02	8.27E+03	5.69E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	2.30E-01	7.07E+01	4.75E-03	2.50E+03	2.53E-01
Benzene - Co-disposal - HAP/VOC	1.33E+00	4.09E+02	2.75E-02	1.44E+04	1.46E+00
Bromodichloromethane - VOC	7.85E-01	1.15E+02	7.75E-03	4.07E+03	8.64E-01
Butane - VOC	4.49E-01	1.86E+02	1.25E-02	6.57E+03	4.94E-01
Carbon disulfide - HAP/VOC	6.83E-02	2.16E+01	1.45E-03	7.62E+02	7.51E-02
Carbon monoxide	6.06E+00	5.21E+03	3.50E-01	1.84E+05	6.67E+00
Carbon tetrachloride - HAP/VOC	9.52E-04	1.49E-01	9.99E-06	5.25E+00	1.05E-03
Carbonyl sulfide - HAP/VOC	4.55E-02	1.82E+01	1.22E-03	6.43E+02	5.01E-02
Chlorobenzene - HAP/VOC	4.35E-02	9.30E+00	6.25E-04	3.28E+02	4.79E-02
Chlorodifluoromethane	1.74E-01	4.83E+01	3.25E-03	1.71E+03	1.91E-01
Chloroethane (ethyl chloride) - HAP/VOC	1.30E-01	4.83E+01	3.25E-03	1.71E+03	1.43E-01
Chloroform - HAP/VOC	5.54E-03	1.12E+00	7.50E-05	3.94E+01	6.09E-03
Chloromethane - VOC	9.37E-02	4.46E+01	3.00E-03	1.58E+03	1.03E-01
Dichlorobenzene - (HAP for para isomer/VOC)	4.77E-02	7.81E+00	5.25E-04	2.76E+02	5.25E-02
Dichlorodifluoromethane	2.99E+00	5.95E+02	4.00E-02	2.10E+04	3.29E+00
Dichlorofluoromethane - VOC	4.14E-01	9.67E+01	6.50E-03	3.41E+03	4.55E-01
Dichloromethane (methylene chloride) - HAP	1.84E+00	5.21E+02	3.50E-02	1.84E+04	2.02E+00
Dimethyl sulfide (methyl sulfide) - VOC	7.50E-01	2.90E+02	1.95E-02	1.02E+04	8.24E-01
Ethane	4.14E+01	3.31E+04	2.22E+00	1.17E+06	4.55E+01
Ethanol - VOC	1.92E+00	1.00E+03	6.75E-02	3.55E+04	2.12E+00
Ethyl mercaptan (ethanethiol) - VOC	2.21E-01	8.55E+01	5.75E-03	3.02E+03	2.43E-01
Ethylbenzene - HAP/VOC	7.55E-01	1.71E+02	1.15E-02	6.04E+03	8.31E-01
Ethylene dibromide - HAP/VOC	2.91E-04	3.72E-02	2.50E-06	1.31E+00	3.20E-04
Fluorotrichloromethane - VOC	1.62E-01	2.83E+01	1.90E-03	9.98E+02	1.78E-01
Hexane - HAP/VOC	8.80E-01	2.45E+02	1.65E-02	8.67E+03	9.68E-01
Hydrogen sulfide	1.90E+00	1.34E+03	8.99E-02	4.73E+04	2.09E+00
Mercury (total) - HAP	9.00E-05	1.08E-02	7.25E-07	3.81E-01	9.90E-05
Methyl ethyl ketone - HAP/VOC	7.92E-01	2.64E+02	1.77E-02	9.32E+03	8.71E-01
Methyl isobutyl ketone - HAP/VOC	2.94E-01	7.07E+01	4.75E-03	2.50E+03	3.24E-01
Methyl mercaptan - VOC	1.86E-01	9.30E+01	6.25E-03	3.28E+03	2.05E-01
Pentane - VOC	3.68E-01	1.23E+02	8.24E-03	4.33E+03	4.05E-01
Perchloroethylene (tetrachloroethylene) - HAP	9.49E-01	1.38E+02	9.24E-03	4.86E+03	1.04E+00
Propane - VOC	7.50E-01	4.09E+02	2.75E-02	1.44E+04	8.25E-01
t-1,2-Dichloroethene - VOC	4.20E-01	1.04E+02	7.00E-03	3.68E+03	4.62E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	5.56E+00	1.45E+03	9.74E-02	5.12E+04	6.11E+00
Toluene - Co-disposal - HAP/VOC	2.42E+01	6.32E+03	4.25E-01	2.23E+05	2.66E+01
Trichloroethylene (trichloroethene) - HAP/VOC	5.69E-01	1.04E+02	7.00E-03	3.68E+03	6.26E-01
Vinyl chloride - HAP/VOC	7.06E-01	2.71E+02	1.82E-02	9.59E+03	7.76E-01
Xylenes - HAP/VOC	1.97E+00	4.46E+02	3.00E-02	1.58E+04	2.17E+00
Chlorine	2.30E+00	1.56E+03	1.05E-01	5.52E+04	2.53E+00

Appendix D

LANDGEM Calculated Emissions for Green Ridge

Summary Report

Landfill Name or Identifier: Green Ridge Landfill

Date: Monday, June 24, 2024

Description/Comments:
Green Ridge Emissions. Assume waste acceptance rates start at 1,500 tons per day; 5.5 days per week; 52 weeks per year. Use Inventory for k and Lo. NMOC concentration = 600 ppmv. Capacity is 7.1 million tons.

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	**2027**	
Landfill Closure Year (with 80-year limit)	**2043**	
Actual Closure Year (without limit)	***2043***	
Have Model Calculate Closure Year?	**Yes**	
Waste Design Capacity	**7,100,000**	*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	**0.040**	$year^{-1}$
Potential Methane Generation Capacity, L_o	**100**	m^3/Mg
NMOC Concentration	**600**	*ppmv as hexane*
Methane Content	**50**	*% by volume*

GASES / POLLUTANTS SELECTED

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

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2027	390,000	429,000	0	0
2028	390,000	429,000	390,000	429,000
2029	390,000	429,000	780,000	858,000
2030	390,000	429,000	1,170,000	1,287,000
2031	390,000	429,000	1,560,000	1,716,000
2032	390,000	429,000	1,950,000	2,145,000
2033	390,000	429,000	2,340,000	2,574,000
2034	390,000	429,000	2,730,000	3,003,000
2035	390,000	429,000	3,120,000	3,432,000
2036	390,000	429,000	3,510,000	3,861,000
2037	390,000	429,000	3,900,000	4,290,000
2038	390,000	429,000	4,290,000	4,719,000
2039	390,000	429,000	4,680,000	5,148,000
2040	390,000	429,000	5,070,000	5,577,000
2041	390,000	429,000	5,460,000	6,006,000
2042	390,000	429,000	5,850,000	6,435,000
2043	214,545	236,000	6,240,000	6,864,000
2044	0	0	6,454,545	7,100,000
2045	0	0	6,454,545	7,100,000
2046	0	0	6,454,545	7,100,000
2047	0	0	6,454,545	7,100,000
2048	0	0	6,454,545	7,100,000
2049	0	0	6,454,545	7,100,000
2050	0	0	6,454,545	7,100,000
2051	0	0	6,454,545	7,100,000
2052	0	0	6,454,545	7,100,000
2053	0	0	6,454,545	7,100,000
2054	0	0	6,454,545	7,100,000
2055	0	0	6,454,545	7,100,000
2056	0	0	6,454,545	7,100,000
2057	0	0	6,454,545	7,100,000
2058	0	0	6,454,545	7,100,000
2059	0	0	6,454,545	7,100,000
2060	0	0	6,454,545	7,100,000
2061	0	0	6,454,545	7,100,000
2062	0	0	6,454,545	7,100,000
2063	0	0	6,454,545	7,100,000
2064	0	0	6,454,545	7,100,000
2065	0	0	6,454,545	7,100,000
2066	0	0	6,454,545	7,100,000

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2067	0	0	6,454,545	7,100,000
2068	0	0	6,454,545	7,100,000
2069	0	0	6,454,545	7,100,000
2070	0	0	6,454,545	7,100,000
2071	0	0	6,454,545	7,100,000
2072	0	0	6,454,545	7,100,000
2073	0	0	6,454,545	7,100,000
2074	0	0	6,454,545	7,100,000
2075	0	0	6,454,545	7,100,000
2076	0	0	6,454,545	7,100,000
2077	0	0	6,454,545	7,100,000
2078	0	0	6,454,545	7,100,000
2079	0	0	6,454,545	7,100,000
2080	0	0	6,454,545	7,100,000
2081	0	0	6,454,545	7,100,000
2082	0	0	6,454,545	7,100,000
2083	0	0	6,454,545	7,100,000
2084	0	0	6,454,545	7,100,000
2085	0	0	6,454,545	7,100,000
2086	0	0	6,454,545	7,100,000
2087	0	0	6,454,545	7,100,000
2088	0	0	6,454,545	7,100,000
2089	0	0	6,454,545	7,100,000
2090	0	0	6,454,545	7,100,000
2091	0	0	6,454,545	7,100,000
2092	0	0	6,454,545	7,100,000
2093	0	0	6,454,545	7,100,000
2094	0	0	6,454,545	7,100,000
2095	0	0	6,454,545	7,100,000
2096	0	0	6,454,545	7,100,000
2097	0	0	6,454,545	7,100,000
2098	0	0	6,454,545	7,100,000
2099	0	0	6,454,545	7,100,000
2100	0	0	6,454,545	7,100,000
2101	0	0	6,454,545	7,100,000
2102	0	0	6,454,545	7,100,000
2103	0	0	6,454,545	7,100,000
2104	0	0	6,454,545	7,100,000
2105	0	0	6,454,545	7,100,000
2106	0	0	6,454,545	7,100,000

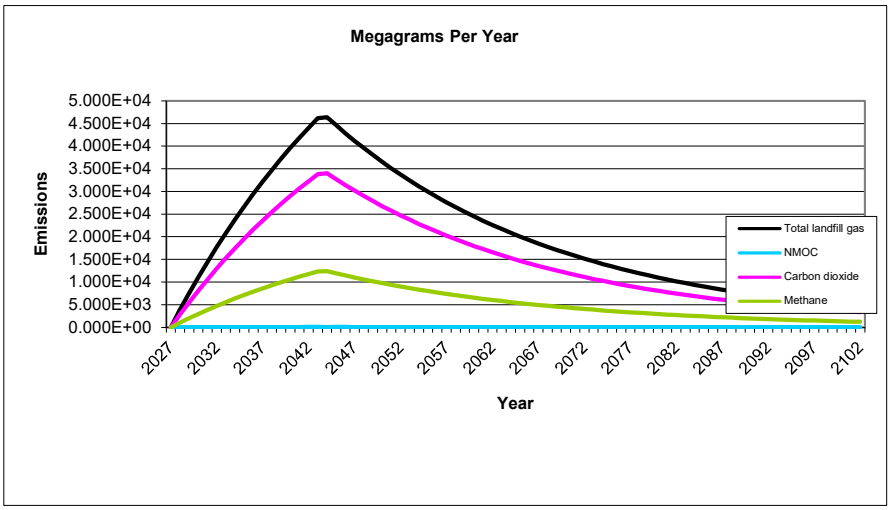
Pollutant Parameters

		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		
	Chlorine			42.00	35.45

Graphs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3.000E+04
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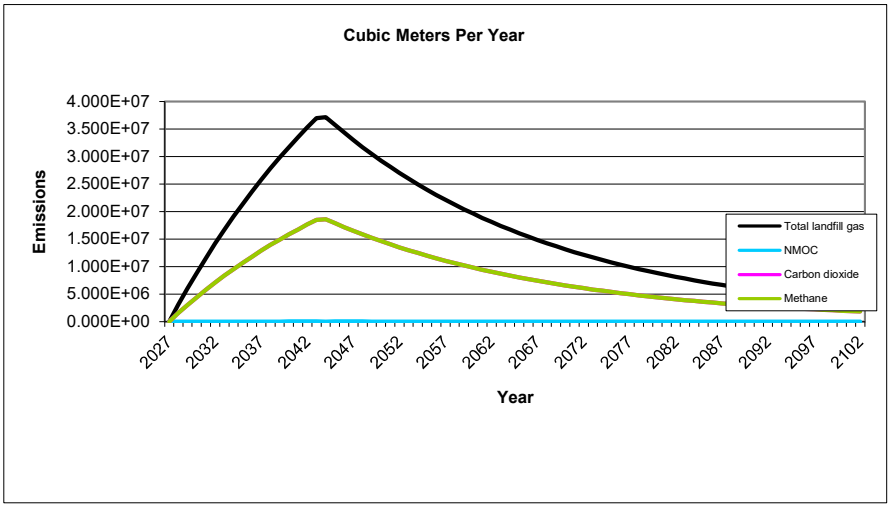
2.000E+04
1.500E+04
1.000E+04
5.000E+03
0.000E+00
2027
2032
2037
2042
2047
2052
2057
2062
2067
2072
2077
2082
2087
2092
2097
2102
Year
Total landfill gas
NMOC
Carbon dioxide
Methane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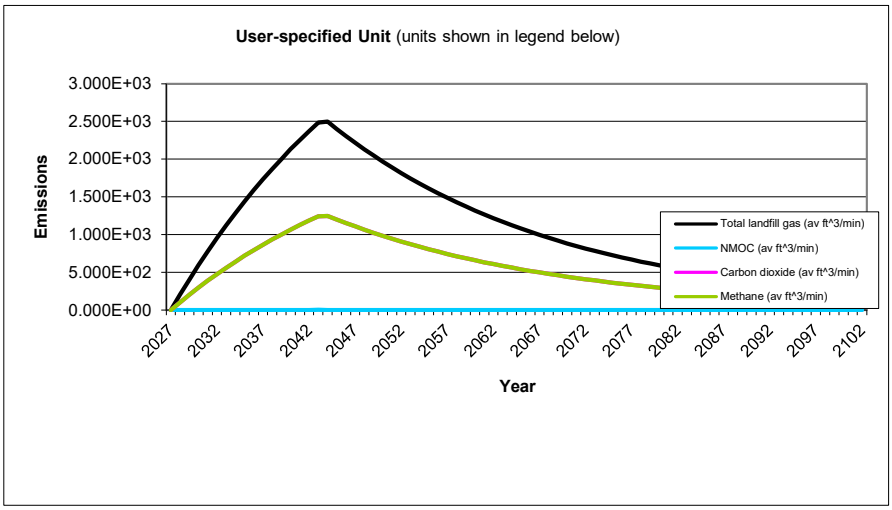
3.000E+07
2.500E+07
2.000E+07
1.500E+07
1.000E+07
5.000E+06
0.000E+00
2027
2032
2037
2042
2047
2052
2057
2062
2067
2072
2077
2082
2087
2092
2097
2102
Year
Total landfill gas
NMOC
Carbon dioxide
Methane


User-specified Unit (units shown in legend below)
Emissions
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2.500E+03
2.000E+03
1.500E+03
1.000E+03
5.000E+02
0.000E+00
2027
2032
2037
2042
2047
2052
2057
2062
2067
2072
2077
2082
2087
2092
2097
2102
Year
Total landfill gas (av ft^3/min)
NMOC (av ft^3/min)
Carbon dioxide (av ft^3/min)
Methane (av ft^3/min)

Results

Year	Total landfill gas			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2027	0	0	0	0	0	0
2028	3.827E+03	3.065E+06	2.059E+02	6.591E+00	1.839E+03	1.235E-01
2029	7.504E+03	6.009E+06	4.037E+02	1.292E+01	3.605E+03	2.422E-01
2030	1.104E+04	8.838E+06	5.938E+02	1.901E+01	5.303E+03	3.563E-01
2031	1.443E+04	1.156E+07	7.764E+02	2.485E+01	6.934E+03	4.659E-01
2032	1.769E+04	1.417E+07	9.519E+02	3.047E+01	8.500E+03	5.711E-01
2033	2.083E+04	1.668E+07	1.120E+03	3.587E+01	1.001E+04	6.723E-01
2034	2.384E+04	1.909E+07	1.282E+03	4.105E+01	1.145E+04	7.695E-01
2035	2.673E+04	2.140E+07	1.438E+03	4.603E+01	1.284E+04	8.628E-01
2036	2.951E+04	2.363E+07	1.588E+03	5.082E+01	1.418E+04	9.526E-01
2037	3.218E+04	2.577E+07	1.731E+03	5.542E+01	1.546E+04	1.039E+00
2038	3.474E+04	2.782E+07	1.869E+03	5.983E+01	1.669E+04	1.122E+00
2039	3.721E+04	2.979E+07	2.002E+03	6.408E+01	1.788E+04	1.201E+00
2040	3.958E+04	3.169E+07	2.129E+03	6.816E+01	1.901E+04	1.278E+00
2041	4.185E+04	3.351E+07	2.252E+03	7.207E+01	2.011E+04	1.351E+00
2042	4.404E+04	3.526E+07	2.369E+03	7.584E+01	2.116E+04	1.422E+00
2043	4.614E+04	3.694E+07	2.482E+03	7.946E+01	2.217E+04	1.489E+00
2044	4.643E+04	3.718E+07	2.498E+03	7.997E+01	2.231E+04	1.499E+00
2045	4.461E+04	3.572E+07	2.400E+03	7.683E+01	2.143E+04	1.440E+00
2046	4.286E+04	3.432E+07	2.306E+03	7.382E+01	2.059E+04	1.384E+00
2047	4.118E+04	3.298E+07	2.216E+03	7.092E+01	1.979E+04	1.329E+00
2048	3.957E+04	3.168E+07	2.129E+03	6.814E+01	1.901E+04	1.277E+00
2049	3.802E+04	3.044E+07	2.045E+03	6.547E+01	1.827E+04	1.227E+00
2050	3.653E+04	2.925E+07	1.965E+03	6.290E+01	1.755E+04	1.179E+00
2051	3.509E+04	2.810E+07	1.888E+03	6.044E+01	1.686E+04	1.133E+00
2052	3.372E+04	2.700E+07	1.814E+03	5.807E+01	1.620E+04	1.088E+00
2053	3.240E+04	2.594E+07	1.743E+03	5.579E+01	1.556E+04	1.046E+00
2054	3.113E+04	2.492E+07	1.675E+03	5.360E+01	1.495E+04	1.005E+00
2055	2.991E+04	2.395E+07	1.609E+03	5.150E+01	1.437E+04	9.654E-01
2056	2.873E+04	2.301E+07	1.546E+03	4.948E+01	1.380E+04	9.275E-01
2057	2.761E+04	2.211E+07	1.485E+03	4.754E+01	1.326E+04	8.912E-01
2058	2.652E+04	2.124E+07	1.427E+03	4.568E+01	1.274E+04	8.562E-01
2059	2.548E+04	2.041E+07	1.371E+03	4.389E+01	1.224E+04	8.226E-01
2060	2.448E+04	1.961E+07	1.317E+03	4.217E+01	1.176E+04	7.904E-01
2061	2.352E+04	1.884E+07	1.266E+03	4.051E+01	1.130E+04	7.594E-01
2062	2.260E+04	1.810E+07	1.216E+03	3.892E+01	1.086E+04	7.296E-01
2063	2.172E+04	1.739E+07	1.168E+03	3.740E+01	1.043E+04	7.010E-01
2064	2.086E+04	1.671E+07	1.123E+03	3.593E+01	1.002E+04	6.735E-01
2065	2.005E+04	1.605E+07	1.079E+03	3.452E+01	9.631E+03	6.471E-01
2066	1.926E+04	1.542E+07	1.036E+03	3.317E+01	9.254E+03	6.217E-01
2067	1.850E+04	1.482E+07	9.956E+02	3.187E+01	8.891E+03	5.974E-01
2068	1.778E+04	1.424E+07	9.566E+02	3.062E+01	8.542E+03	5.739E-01
2069	1.708E+04	1.368E+07	9.191E+02	2.942E+01	8.207E+03	5.514E-01
2070	1.641E+04	1.314E+07	8.830E+02	2.826E+01	7.885E+03	5.298E-01
2071	1.577E+04	1.263E+07	8.484E+02	2.716E+01	7.576E+03	5.090E-01
2072	1.515E+04	1.213E+07	8.151E+02	2.609E+01	7.279E+03	4.891E-01
2073	1.456E+04	1.166E+07	7.832E+02	2.507E+01	6.994E+03	4.699E-01
2074	1.399E+04	1.120E+07	7.525E+02	2.409E+01	6.719E+03	4.515E-01
2075	1.344E+04	1.076E+07	7.230E+02	2.314E+01	6.456E+03	4.338E-01
2076	1.291E+04	1.034E+07	6.946E+02	2.223E+01	6.203E+03	4.168E-01

Results (Continued)

Year	Total landfill gas			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2077	1.240E+04	9.933E+06	6.674E+02	2.136E+01	5.960E+03	4.004E-01
2078	1.192E+04	9.543E+06	6.412E+02	2.052E+01	5.726E+03	3.847E-01
2079	1.145E+04	9.169E+06	6.161E+02	1.972E+01	5.501E+03	3.696E-01
2080	1.100E+04	8.809E+06	5.919E+02	1.895E+01	5.286E+03	3.551E-01
2081	1.057E+04	8.464E+06	5.687E+02	1.820E+01	5.078E+03	3.412E-01
2082	1.016E+04	8.132E+06	5.464E+02	1.749E+01	4.879E+03	3.278E-01
2083	9.757E+03	7.813E+06	5.250E+02	1.680E+01	4.688E+03	3.150E-01
2084	9.375E+03	7.507E+06	5.044E+02	1.615E+01	4.504E+03	3.026E-01
2085	9.007E+03	7.213E+06	4.846E+02	1.551E+01	4.328E+03	2.908E-01
2086	8.654E+03	6.930E+06	4.656E+02	1.490E+01	4.158E+03	2.794E-01
2087	8.315E+03	6.658E+06	4.474E+02	1.432E+01	3.995E+03	2.684E-01
2088	7.989E+03	6.397E+06	4.298E+02	1.376E+01	3.838E+03	2.579E-01
2089	7.675E+03	6.146E+06	4.130E+02	1.322E+01	3.688E+03	2.478E-01
2090	7.375E+03	5.905E+06	3.968E+02	1.270E+01	3.543E+03	2.381E-01
2091	7.085E+03	5.674E+06	3.812E+02	1.220E+01	3.404E+03	2.287E-01
2092	6.808E+03	5.451E+06	3.663E+02	1.172E+01	3.271E+03	2.198E-01
2093	6.541E+03	5.237E+06	3.519E+02	1.126E+01	3.142E+03	2.111E-01
2094	6.284E+03	5.032E+06	3.381E+02	1.082E+01	3.019E+03	2.029E-01
2095	6.038E+03	4.835E+06	3.248E+02	1.040E+01	2.901E+03	1.949E-01
2096	5.801E+03	4.645E+06	3.121E+02	9.990E+00	2.787E+03	1.873E-01
2097	5.574E+03	4.463E+06	2.999E+02	9.599E+00	2.678E+03	1.799E-01
2098	5.355E+03	4.288E+06	2.881E+02	9.222E+00	2.573E+03	1.729E-01
2099	5.145E+03	4.120E+06	2.768E+02	8.861E+00	2.472E+03	1.661E-01
2100	4.943E+03	3.958E+06	2.660E+02	8.513E+00	2.375E+03	1.596E-01
2101	4.749E+03	3.803E+06	2.555E+02	8.179E+00	2.282E+03	1.533E-01
2102	4.563E+03	3.654E+06	2.455E+02	7.859E+00	2.192E+03	1.473E-01
2103	4.384E+03	3.511E+06	2.359E+02	7.551E+00	2.106E+03	1.415E-01
2104	4.212E+03	3.373E+06	2.266E+02	7.254E+00	2.024E+03	1.360E-01
2105	4.047E+03	3.241E+06	2.178E+02	6.970E+00	1.944E+03	1.307E-01
2106	3.889E+03	3.114E+06	2.092E+02	6.697E+00	1.868E+03	1.255E-01
2107	3.736E+03	2.992E+06	2.010E+02	6.434E+00	1.795E+03	1.206E-01
2108	3.590E+03	2.874E+06	1.931E+02	6.182E+00	1.725E+03	1.159E-01
2109	3.449E+03	2.762E+06	1.856E+02	5.939E+00	1.657E+03	1.113E-01
2110	3.314E+03	2.653E+06	1.783E+02	5.707E+00	1.592E+03	1.070E-01
2111	3.184E+03	2.549E+06	1.713E+02	5.483E+00	1.530E+03	1.028E-01
2112	3.059E+03	2.449E+06	1.646E+02	5.268E+00	1.470E+03	9.874E-02
2113	2.939E+03	2.353E+06	1.581E+02	5.061E+00	1.412E+03	9.487E-02
2114	2.824E+03	2.261E+06	1.519E+02	4.863E+00	1.357E+03	9.115E-02
2115	2.713E+03	2.172E+06	1.460E+02	4.672E+00	1.303E+03	8.758E-02
2116	2.607E+03	2.087E+06	1.402E+02	4.489E+00	1.252E+03	8.414E-02
2117	2.504E+03	2.005E+06	1.347E+02	4.313E+00	1.203E+03	8.084E-02
2118	2.406E+03	1.927E+06	1.295E+02	4.144E+00	1.156E+03	7.767E-02
2119	2.312E+03	1.851E+06	1.244E+02	3.981E+00	1.111E+03	7.463E-02
2120	2.221E+03	1.779E+06	1.195E+02	3.825E+00	1.067E+03	7.170E-02
2121	2.134E+03	1.709E+06	1.148E+02	3.675E+00	1.025E+03	6.889E-02
2122	2.050E+03	1.642E+06	1.103E+02	3.531E+00	9.851E+02	6.619E-02
2123	1.970E+03	1.577E+06	1.060E+02	3.393E+00	9.465E+02	6.359E-02
2124	1.893E+03	1.516E+06	1.018E+02	3.260E+00	9.094E+02	6.110E-02
2125	1.819E+03	1.456E+06	9.784E+01	3.132E+00	8.737E+02	5.871E-02
2126	1.747E+03	1.399E+06	9.401E+01	3.009E+00	8.395E+02	5.640E-02
2127	1.679E+03	1.344E+06	9.032E+01	2.891E+00	8.065E+02	5.419E-02

Results (Continued)

Year	Total landfill gas			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2128	1.613E+03	1.292E+06	8.678E+01	2.778E+00	7.749E+02	5.207E-02
2129	1.550E+03	1.241E+06	8.338E+01	2.669E+00	7.445E+02	5.003E-02
2130	1.489E+03	1.192E+06	8.011E+01	2.564E+00	7.153E+02	4.806E-02
2131	1.431E+03	1.145E+06	7.697E+01	2.464E+00	6.873E+02	4.618E-02
2132	1.374E+03	1.101E+06	7.395E+01	2.367E+00	6.603E+02	4.437E-02
2133	1.321E+03	1.057E+06	7.105E+01	2.274E+00	6.345E+02	4.263E-02
2134	1.269E+03	1.016E+06	6.826E+01	2.185E+00	6.096E+02	4.096E-02
2135	1.219E+03	9.761E+05	6.559E+01	2.099E+00	5.857E+02	3.935E-02
2136	1.171E+03	9.378E+05	6.301E+01	2.017E+00	5.627E+02	3.781E-02
2137	1.125E+03	9.011E+05	6.054E+01	1.938E+00	5.406E+02	3.633E-02
2138	1.081E+03	8.657E+05	5.817E+01	1.862E+00	5.194E+02	3.490E-02
2139	1.039E+03	8.318E+05	5.589E+01	1.789E+00	4.991E+02	3.353E-02
2140	9.980E+02	7.992E+05	5.370E+01	1.719E+00	4.795E+02	3.222E-02
2141	9.589E+02	7.678E+05	5.159E+01	1.651E+00	4.607E+02	3.095E-02
2142	9.213E+02	7.377E+05	4.957E+01	1.587E+00	4.426E+02	2.974E-02
2143	8.852E+02	7.088E+05	4.762E+01	1.524E+00	4.253E+02	2.857E-02
2144	8.505E+02	6.810E+05	4.576E+01	1.465E+00	4.086E+02	2.745E-02
2145	8.171E+02	6.543E+05	4.396E+01	1.407E+00	3.926E+02	2.638E-02
2146	7.851E+02	6.287E+05	4.224E+01	1.352E+00	3.772E+02	2.534E-02
2147	7.543E+02	6.040E+05	4.058E+01	1.299E+00	3.624E+02	2.435E-02
2148	7.247E+02	5.803E+05	3.899E+01	1.248E+00	3.482E+02	2.340E-02
2149	6.963E+02	5.576E+05	3.746E+01	1.199E+00	3.345E+02	2.248E-02
2150	6.690E+02	5.357E+05	3.599E+01	1.152E+00	3.214E+02	2.160E-02
2151	6.428E+02	5.147E+05	3.458E+01	1.107E+00	3.088E+02	2.075E-02
2152	6.176E+02	4.945E+05	3.323E+01	1.064E+00	2.967E+02	1.994E-02
2153	5.934E+02	4.751E+05	3.192E+01	1.022E+00	2.851E+02	1.915E-02
2154	5.701E+02	4.565E+05	3.067E+01	9.818E-01	2.739E+02	1.840E-02
2155	5.477E+02	4.386E+05	2.947E+01	9.433E-01	2.632E+02	1.768E-02
2156	5.263E+02	4.214E+05	2.831E+01	9.063E-01	2.528E+02	1.699E-02
2157	5.056E+02	4.049E+05	2.720E+01	8.708E-01	2.429E+02	1.632E-02
2158	4.858E+02	3.890E+05	2.614E+01	8.366E-01	2.334E+02	1.568E-02
2159	4.667E+02	3.737E+05	2.511E+01	8.038E-01	2.242E+02	1.507E-02
2160	4.484E+02	3.591E+05	2.413E+01	7.723E-01	2.155E+02	1.448E-02
2161	4.309E+02	3.450E+05	2.318E+01	7.420E-01	2.070E+02	1.391E-02
2162	4.140E+02	3.315E+05	2.227E+01	7.129E-01	1.989E+02	1.336E-02
2163	3.977E+02	3.185E+05	2.140E+01	6.850E-01	1.911E+02	1.284E-02
2164	3.821E+02	3.060E+05	2.056E+01	6.581E-01	1.836E+02	1.234E-02
2165	3.672E+02	2.940E+05	1.975E+01	6.323E-01	1.764E+02	1.185E-02
2166	3.528E+02	2.825E+05	1.898E+01	6.075E-01	1.695E+02	1.139E-02
2167	3.389E+02	2.714E+05	1.824E+01	5.837E-01	1.628E+02	1.094E-02

Results (Continued)

Year	Carbon dioxide			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2027	0	0	0	0	0	0
2028	2.805E+03	1.532E+06	1.030E+02	1.022E+03	1.532E+06	1.030E+02
2029	5.500E+03	3.004E+06	2.019E+02	2.004E+03	3.004E+06	2.019E+02
2030	8.089E+03	4.419E+06	2.969E+02	2.948E+03	4.419E+06	2.969E+02
2031	1.058E+04	5.778E+06	3.882E+02	3.855E+03	5.778E+06	3.882E+02
2032	1.297E+04	7.084E+06	4.759E+02	4.726E+03	7.084E+06	4.759E+02
2033	1.526E+04	8.338E+06	5.602E+02	5.563E+03	8.338E+06	5.602E+02
2034	1.747E+04	9.543E+06	6.412E+02	6.367E+03	9.543E+06	6.412E+02
2035	1.959E+04	1.070E+07	7.190E+02	7.140E+03	1.070E+07	7.190E+02
2036	2.163E+04	1.181E+07	7.938E+02	7.882E+03	1.181E+07	7.938E+02
2037	2.358E+04	1.288E+07	8.656E+02	8.595E+03	1.288E+07	8.656E+02
2038	2.546E+04	1.391E+07	9.346E+02	9.280E+03	1.391E+07	9.346E+02
2039	2.727E+04	1.490E+07	1.001E+03	9.939E+03	1.490E+07	1.001E+03
2040	2.900E+04	1.585E+07	1.065E+03	1.057E+04	1.585E+07	1.065E+03
2041	3.067E+04	1.676E+07	1.126E+03	1.118E+04	1.676E+07	1.126E+03
2042	3.227E+04	1.763E+07	1.185E+03	1.176E+04	1.763E+07	1.185E+03
2043	3.381E+04	1.847E+07	1.241E+03	1.232E+04	1.847E+07	1.241E+03
2044	3.403E+04	1.859E+07	1.249E+03	1.240E+04	1.859E+07	1.249E+03
2045	3.270E+04	1.786E+07	1.200E+03	1.192E+04	1.786E+07	1.200E+03
2046	3.141E+04	1.716E+07	1.153E+03	1.145E+04	1.716E+07	1.153E+03
2047	3.018E+04	1.649E+07	1.108E+03	1.100E+04	1.649E+07	1.108E+03
2048	2.900E+04	1.584E+07	1.064E+03	1.057E+04	1.584E+07	1.064E+03
2049	2.786E+04	1.522E+07	1.023E+03	1.015E+04	1.522E+07	1.023E+03
2050	2.677E+04	1.462E+07	9.826E+02	9.757E+03	1.462E+07	9.826E+02
2051	2.572E+04	1.405E+07	9.441E+02	9.374E+03	1.405E+07	9.441E+02
2052	2.471E+04	1.350E+07	9.071E+02	9.006E+03	1.350E+07	9.071E+02
2053	2.374E+04	1.297E+07	8.715E+02	8.653E+03	1.297E+07	8.715E+02
2054	2.281E+04	1.246E+07	8.373E+02	8.314E+03	1.246E+07	8.373E+02
2055	2.192E+04	1.197E+07	8.045E+02	7.988E+03	1.197E+07	8.045E+02
2056	2.106E+04	1.150E+07	7.729E+02	7.675E+03	1.150E+07	7.729E+02
2057	2.023E+04	1.105E+07	7.426E+02	7.374E+03	1.105E+07	7.426E+02
2058	1.944E+04	1.062E+07	7.135E+02	7.085E+03	1.062E+07	7.135E+02
2059	1.868E+04	1.020E+07	6.855E+02	6.807E+03	1.020E+07	6.855E+02
2060	1.794E+04	9.803E+06	6.587E+02	6.540E+03	9.803E+06	6.587E+02
2061	1.724E+04	9.419E+06	6.328E+02	6.284E+03	9.419E+06	6.328E+02
2062	1.656E+04	9.049E+06	6.080E+02	6.037E+03	9.049E+06	6.080E+02
2063	1.592E+04	8.694E+06	5.842E+02	5.800E+03	8.694E+06	5.842E+02
2064	1.529E+04	8.354E+06	5.613E+02	5.573E+03	8.354E+06	5.613E+02
2065	1.469E+04	8.026E+06	5.393E+02	5.355E+03	8.026E+06	5.393E+02
2066	1.412E+04	7.711E+06	5.181E+02	5.145E+03	7.711E+06	5.181E+02
2067	1.356E+04	7.409E+06	4.978E+02	4.943E+03	7.409E+06	4.978E+02
2068	1.303E+04	7.118E+06	4.783E+02	4.749E+03	7.118E+06	4.783E+02
2069	1.252E+04	6.839E+06	4.595E+02	4.563E+03	6.839E+06	4.595E+02
2070	1.203E+04	6.571E+06	4.415E+02	4.384E+03	6.571E+06	4.415E+02
2071	1.156E+04	6.313E+06	4.242E+02	4.212E+03	6.313E+06	4.242E+02
2072	1.110E+04	6.066E+06	4.076E+02	4.047E+03	6.066E+06	4.076E+02
2073	1.067E+04	5.828E+06	3.916E+02	3.888E+03	5.828E+06	3.916E+02
2074	1.025E+04	5.600E+06	3.762E+02	3.736E+03	5.600E+06	3.762E+02
2075	9.848E+03	5.380E+06	3.615E+02	3.589E+03	5.380E+06	3.615E+02
2076	9.462E+03	5.169E+06	3.473E+02	3.449E+03	5.169E+06	3.473E+02

Results (Continued)

Year	Carbon dioxide			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2077	9.091E+03	4.966E+06	3.337E+02	3.313E+03	4.966E+06	3.337E+02
2078	8.734E+03	4.772E+06	3.206E+02	3.183E+03	4.772E+06	3.206E+02
2079	8.392E+03	4.585E+06	3.080E+02	3.059E+03	4.585E+06	3.080E+02
2080	8.063E+03	4.405E+06	2.960E+02	2.939E+03	4.405E+06	2.960E+02
2081	7.747E+03	4.232E+06	2.843E+02	2.823E+03	4.232E+06	2.843E+02
2082	7.443E+03	4.066E+06	2.732E+02	2.713E+03	4.066E+06	2.732E+02
2083	7.151E+03	3.907E+06	2.625E+02	2.606E+03	3.907E+06	2.625E+02
2084	6.871E+03	3.753E+06	2.522E+02	2.504E+03	3.753E+06	2.522E+02
2085	6.601E+03	3.606E+06	2.423E+02	2.406E+03	3.606E+06	2.423E+02
2086	6.342E+03	3.465E+06	2.328E+02	2.312E+03	3.465E+06	2.328E+02
2087	6.094E+03	3.329E+06	2.237E+02	2.221E+03	3.329E+06	2.237E+02
2088	5.855E+03	3.199E+06	2.149E+02	2.134E+03	3.199E+06	2.149E+02
2089	5.625E+03	3.073E+06	2.065E+02	2.050E+03	3.073E+06	2.065E+02
2090	5.405E+03	2.953E+06	1.984E+02	1.970E+03	2.953E+06	1.984E+02
2091	5.193E+03	2.837E+06	1.906E+02	1.893E+03	2.837E+06	1.906E+02
2092	4.989E+03	2.726E+06	1.831E+02	1.818E+03	2.726E+06	1.831E+02
2093	4.794E+03	2.619E+06	1.760E+02	1.747E+03	2.619E+06	1.760E+02
2094	4.606E+03	2.516E+06	1.691E+02	1.679E+03	2.516E+06	1.691E+02
2095	4.425E+03	2.417E+06	1.624E+02	1.613E+03	2.417E+06	1.624E+02
2096	4.251E+03	2.323E+06	1.561E+02	1.550E+03	2.323E+06	1.561E+02
2097	4.085E+03	2.232E+06	1.499E+02	1.489E+03	2.232E+06	1.499E+02
2098	3.925E+03	2.144E+06	1.441E+02	1.430E+03	2.144E+06	1.441E+02
2099	3.771E+03	2.060E+06	1.384E+02	1.374E+03	2.060E+06	1.384E+02
2100	3.623E+03	1.979E+06	1.330E+02	1.320E+03	1.979E+06	1.330E+02
2101	3.481E+03	1.902E+06	1.278E+02	1.269E+03	1.902E+06	1.278E+02
2102	3.344E+03	1.827E+06	1.228E+02	1.219E+03	1.827E+06	1.228E+02
2103	3.213E+03	1.755E+06	1.179E+02	1.171E+03	1.755E+06	1.179E+02
2104	3.087E+03	1.687E+06	1.133E+02	1.125E+03	1.687E+06	1.133E+02
2105	2.966E+03	1.620E+06	1.089E+02	1.081E+03	1.620E+06	1.089E+02
2106	2.850E+03	1.557E+06	1.046E+02	1.039E+03	1.557E+06	1.046E+02
2107	2.738E+03	1.496E+06	1.005E+02	9.979E+02	1.496E+06	1.005E+02
2108	2.631E+03	1.437E+06	9.656E+01	9.588E+02	1.437E+06	9.656E+01
2109	2.528E+03	1.381E+06	9.278E+01	9.212E+02	1.381E+06	9.278E+01
2110	2.428E+03	1.327E+06	8.914E+01	8.851E+02	1.327E+06	8.914E+01
2111	2.333E+03	1.275E+06	8.564E+01	8.504E+02	1.275E+06	8.564E+01
2112	2.242E+03	1.225E+06	8.229E+01	8.170E+02	1.225E+06	8.229E+01
2113	2.154E+03	1.177E+06	7.906E+01	7.850E+02	1.177E+06	7.906E+01
2114	2.069E+03	1.131E+06	7.596E+01	7.542E+02	1.131E+06	7.596E+01
2115	1.988E+03	1.086E+06	7.298E+01	7.247E+02	1.086E+06	7.298E+01
2116	1.910E+03	1.044E+06	7.012E+01	6.962E+02	1.044E+06	7.012E+01
2117	1.835E+03	1.003E+06	6.737E+01	6.689E+02	1.003E+06	6.737E+01
2118	1.763E+03	9.634E+05	6.473E+01	6.427E+02	9.634E+05	6.473E+01
2119	1.694E+03	9.256E+05	6.219E+01	6.175E+02	9.256E+05	6.219E+01
2120	1.628E+03	8.893E+05	5.975E+01	5.933E+02	8.893E+05	5.975E+01
2121	1.564E+03	8.544E+05	5.741E+01	5.700E+02	8.544E+05	5.741E+01
2122	1.503E+03	8.209E+05	5.516E+01	5.477E+02	8.209E+05	5.516E+01
2123	1.444E+03	7.887E+05	5.300E+01	5.262E+02	7.887E+05	5.300E+01
2124	1.387E+03	7.578E+05	5.092E+01	5.056E+02	7.578E+05	5.092E+01
2125	1.333E+03	7.281E+05	4.892E+01	4.858E+02	7.281E+05	4.892E+01
2126	1.281E+03	6.996E+05	4.700E+01	4.667E+02	6.996E+05	4.700E+01
2127	1.230E+03	6.721E+05	4.516E+01	4.484E+02	6.721E+05	4.516E+01

Results (Continued)

Year	Carbon dioxide			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2128	1.182E+03	6.458E+05	4.339E+01	4.308E+02	6.458E+05	4.339E+01
2129	1.136E+03	6.204E+05	4.169E+01	4.139E+02	6.204E+05	4.169E+01
2130	1.091E+03	5.961E+05	4.005E+01	3.977E+02	5.961E+05	4.005E+01
2131	1.048E+03	5.727E+05	3.848E+01	3.821E+02	5.727E+05	3.848E+01
2132	1.007E+03	5.503E+05	3.697E+01	3.671E+02	5.503E+05	3.697E+01
2133	9.678E+02	5.287E+05	3.552E+01	3.527E+02	5.287E+05	3.552E+01
2134	9.299E+02	5.080E+05	3.413E+01	3.389E+02	5.080E+05	3.413E+01
2135	8.934E+02	4.881E+05	3.279E+01	3.256E+02	4.881E+05	3.279E+01
2136	8.584E+02	4.689E+05	3.151E+01	3.128E+02	4.689E+05	3.151E+01
2137	8.247E+02	4.505E+05	3.027E+01	3.006E+02	4.505E+05	3.027E+01
2138	7.924E+02	4.329E+05	2.908E+01	2.888E+02	4.329E+05	2.908E+01
2139	7.613E+02	4.159E+05	2.794E+01	2.775E+02	4.159E+05	2.794E+01
2140	7.314E+02	3.996E+05	2.685E+01	2.666E+02	3.996E+05	2.685E+01
2141	7.028E+02	3.839E+05	2.580E+01	2.561E+02	3.839E+05	2.580E+01
2142	6.752E+02	3.689E+05	2.478E+01	2.461E+02	3.689E+05	2.478E+01
2143	6.487E+02	3.544E+05	2.381E+01	2.364E+02	3.544E+05	2.381E+01
2144	6.233E+02	3.405E+05	2.288E+01	2.272E+02	3.405E+05	2.288E+01
2145	5.989E+02	3.272E+05	2.198E+01	2.183E+02	3.272E+05	2.198E+01
2146	5.754E+02	3.143E+05	2.112E+01	2.097E+02	3.143E+05	2.112E+01
2147	5.528E+02	3.020E+05	2.029E+01	2.015E+02	3.020E+05	2.029E+01
2148	5.311E+02	2.902E+05	1.950E+01	1.936E+02	2.902E+05	1.950E+01
2149	5.103E+02	2.788E+05	1.873E+01	1.860E+02	2.788E+05	1.873E+01
2150	4.903E+02	2.679E+05	1.800E+01	1.787E+02	2.679E+05	1.800E+01
2151	4.711E+02	2.574E+05	1.729E+01	1.717E+02	2.574E+05	1.729E+01
2152	4.526E+02	2.473E+05	1.661E+01	1.650E+02	2.473E+05	1.661E+01
2153	4.349E+02	2.376E+05	1.596E+01	1.585E+02	2.376E+05	1.596E+01
2154	4.178E+02	2.282E+05	1.534E+01	1.523E+02	2.282E+05	1.534E+01
2155	4.014E+02	2.193E+05	1.473E+01	1.463E+02	2.193E+05	1.473E+01
2156	3.857E+02	2.107E+05	1.416E+01	1.406E+02	2.107E+05	1.416E+01
2157	3.706E+02	2.024E+05	1.360E+01	1.351E+02	2.024E+05	1.360E+01
2158	3.560E+02	1.945E+05	1.307E+01	1.298E+02	1.945E+05	1.307E+01
2159	3.421E+02	1.869E+05	1.256E+01	1.247E+02	1.869E+05	1.256E+01
2160	3.287E+02	1.795E+05	1.206E+01	1.198E+02	1.795E+05	1.206E+01
2161	3.158E+02	1.725E+05	1.159E+01	1.151E+02	1.725E+05	1.159E+01
2162	3.034E+02	1.657E+05	1.114E+01	1.106E+02	1.657E+05	1.114E+01
2163	2.915E+02	1.592E+05	1.070E+01	1.062E+02	1.592E+05	1.070E+01
2164	2.801E+02	1.530E+05	1.028E+01	1.021E+02	1.530E+05	1.028E+01
2165	2.691E+02	1.470E+05	9.877E+00	9.807E+01	1.470E+05	9.877E+00
2166	2.585E+02	1.412E+05	9.490E+00	9.423E+01	1.412E+05	9.490E+00
2167	2.484E+02	1.357E+05	9.118E+00	9.053E+01	1.357E+05	9.118E+00

INVENTORY

Landfill Name or Identifier: Green Ridge Landfill

Enter year of emissions inventory: 2031

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	1.443E+04	1.156E+07	7.764E+02	4.081E+08	1.587E+04
Methane	3.855E+03	5.778E+06	3.882E+02	2.040E+08	4.240E+03
Carbon dioxide	1.058E+04	5.778E+06	3.882E+02	2.040E+08	1.163E+04
NMOC	2.485E+01	6.934E+03	4.659E-01	2.449E+05	2.734E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	3.078E-02	5.547E+00	3.727E-04	1.959E+02	3.386E-02
1,1,2,2-Tetrachloroethane - HAP/VOC	8.874E-02	1.271E+01	8.541E-04	4.489E+02	9.762E-02
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	1.142E-01	2.773E+01	1.863E-03	9.794E+02	1.256E-01
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	9.319E-03	2.311E+00	1.553E-04	8.162E+01	1.025E-02
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	1.950E-02	4.738E+00	3.183E-04	1.673E+02	2.145E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	9.775E-03	2.080E+00	1.398E-04	7.346E+01	1.075E-02
2-Propanol (isopropyl alcohol) - VOC	1.445E+00	5.778E+02	3.882E-02	2.040E+04	1.589E+00
Acetone	1.954E-01	8.089E+01	5.435E-03	2.857E+03	2.150E-01
Acrylonitrile - HAP/VOC	1.607E-01	7.280E+01	4.892E-03	2.571E+03	1.767E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	7.133E-02	2.196E+01	1.475E-03	7.754E+02	7.846E-02
Benzene - Co-disposal - HAP/VOC	4.130E-01	1.271E+02	8.541E-03	4.489E+03	4.543E-01
Bromodichloromethane - VOC	2.441E-01	3.582E+01	2.407E-03	1.265E+03	2.685E-01
Butane - VOC	1.397E-01	5.778E+01	3.882E-03	2.040E+03	1.536E-01
Carbon disulfide - HAP/VOC	2.122E-02	6.702E+00	4.503E-04	2.367E+02	2.335E-02
Carbon monoxide	1.885E+00	1.618E+03	1.087E-01	5.713E+04	2.073E+00
Carbon tetrachloride - HAP/VOC	2.958E-04	4.622E-02	3.106E-06	1.632E+00	3.253E-04
Carbonyl sulfide - HAP/VOC	1.415E-02	5.662E+00	3.805E-04	2.000E+02	1.556E-02
Chlorobenzene - HAP/VOC	1.353E-02	2.889E+00	1.941E-04	1.020E+02	1.488E-02
Chlorodifluoromethane	5.403E-02	1.502E+01	1.009E-03	5.305E+02	5.943E-02
Chloroethane (ethyl chloride) - HAP/VOC	4.031E-02	1.502E+01	1.009E-03	5.305E+02	4.435E-02
Chloroform - HAP/VOC	1.722E-03	3.467E-01	2.329E-05	1.224E+01	1.894E-03
Chloromethane - VOC	2.912E-02	1.387E+01	9.317E-04	4.897E+02	3.203E-02
Dichlorobenzene - (HAP for para isomer/VOC)	1.484E-02	2.427E+00	1.631E-04	8.570E+01	1.632E-02
Dichlorodifluoromethane	9.298E-01	1.849E+02	1.242E-02	6.530E+03	1.023E+00
Dichlorofluoromethane - VOC	1.286E-01	3.005E+01	2.019E-03	1.061E+03	1.415E-01
Dichloromethane (methylene chloride) - HAP	5.716E-01	1.618E+02	1.087E-02	5.713E+03	6.287E-01
Dimethyl sulfide (methyl sulfide) - VOC	2.329E-01	9.014E+01	6.056E-03	3.183E+03	2.562E-01
Ethane	1.286E+01	1.028E+04	6.910E-01	3.632E+05	1.415E+01
Ethanol - VOC	5.980E-01	3.120E+02	2.096E-02	1.102E+04	6.578E-01
Ethyl mercaptan (ethanethiol) - VOC	6.868E-02	2.658E+01	1.786E-03	9.386E+02	7.555E-02
Ethylbenzene - HAP/VOC	2.347E-01	5.316E+01	3.572E-03	1.877E+03	2.582E-01
Ethylene dibromide - HAP/VOC	9.030E-05	1.156E-02	7.764E-07	4.081E-01	9.933E-05
Fluorotrichloromethane - VOC	5.018E-02	8.782E+00	5.901E-04	3.102E+02	5.520E-02
Hexane - HAP/VOC	2.734E-01	7.627E+01	5.124E-03	2.693E+03	3.007E-01
Hydrogen sulfide	5.897E-01	4.160E+02	2.795E-02	1.469E+04	6.487E-01
Mercury (total) - HAP	2.796E-05	3.351E-03	2.252E-07	1.183E-01	3.076E-05
Methyl ethyl ketone - HAP/VOC	2.461E-01	8.205E+01	5.513E-03	2.897E+03	2.707E-01
Methyl isobutyl ketone - HAP/VOC	9.147E-02	2.196E+01	1.475E-03	7.754E+02	1.006E-01
Methyl mercaptan - VOC	5.781E-02	2.889E+01	1.941E-03	1.020E+03	6.359E-02
Pentane - VOC	1.144E-01	3.813E+01	2.562E-03	1.347E+03	1.259E-01
Perchloroethylene (tetrachloroethylene) - HAP	2.949E-01	4.276E+01	2.873E-03	1.510E+03	3.244E-01
Propane - VOC	2.331E-01	1.271E+02	8.541E-03	4.489E+03	2.564E-01
t-1,2-Dichloroethene - VOC	1.305E-01	3.236E+01	2.174E-03	1.143E+03	1.435E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	1.727E+00	4.507E+02	3.028E-02	1.592E+04	1.900E+00
Toluene - Co-disposal - HAP/VOC	7.528E+00	1.964E+03	1.320E-01	6.938E+04	8.281E+00
Trichloroethylene (trichloroethene) - HAP/VOC	1.768E-01	3.236E+01	2.174E-03	1.143E+03	1.945E-01
Vinyl chloride - HAP/VOC	2.193E-01	8.436E+01	5.668E-03	2.979E+03	2.412E-01
Xylenes - HAP/VOC	6.123E-01	1.387E+02	9.317E-03	4.897E+03	6.735E-01
Chlorine	7.156E-01	4.853E+02	3.261E-02	1.714E+04	7.872E-01

INVENTORY

Landfill Name or Identifier: Green Ridge Landfill

Enter year of emissions inventory: 2044

Gas / Pollutant	Emission Rate				
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(ft^3/year)*	*(short tons/year)*
Total landfill gas	4.643E+04	3.718E+07	2.498E+03	1.313E+09	5.108E+04
Methane	1.240E+04	1.859E+07	1.249E+03	6.565E+08	1.364E+04
Carbon dioxide	3.403E+04	1.859E+07	1.249E+03	6.565E+08	3.743E+04
NMOC	7.997E+01	2.231E+04	1.499E+00	7.879E+05	8.796E+01
1,1,1-Trichloroethane (methyl chloroform) - HAP	9.903E-02	1.785E+01	1.199E-03	6.303E+02	1.089E-01
1,1,2,2-Tetrachloroethane - HAP/VOC	2.855E-01	4.090E+01	2.748E-03	1.444E+03	3.141E-01
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	3.673E-01	8.924E+01	5.996E-03	3.151E+03	4.041E-01
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	2.998E-02	7.436E+00	4.997E-04	2.626E+02	3.298E-02
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	6.275E-02	1.524E+01	1.024E-03	5.384E+02	6.902E-02
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	3.145E-02	6.693E+00	4.497E-04	2.364E+02	3.460E-02
2-Propanol (isopropyl alcohol) - VOC	4.648E+00	1.859E+03	1.249E-01	6.565E+04	5.113E+00
Acetone	6.287E-01	2.603E+02	1.749E-02	9.192E+03	6.916E-01
Acrylonitrile - HAP/VOC	5.170E-01	2.342E+02	1.574E-02	8.272E+03	5.687E-01
Benzene - No or Unknown Co-disposal - HAP/VOC	2.295E-01	7.065E+01	4.747E-03	2.495E+03	2.525E-01
Benzene - Co-disposal - HAP/VOC	1.329E+00	4.090E+02	2.748E-02	1.444E+04	1.462E+00
Bromodichloromethane - VOC	7.854E-01	1.153E+02	7.745E-03	4.071E+03	8.640E-01
Butane - VOC	4.494E-01	1.859E+02	1.249E-02	6.565E+03	4.944E-01
Carbon disulfide - HAP/VOC	6.829E-02	2.157E+01	1.449E-03	7.616E+02	7.512E-02
Carbon monoxide	6.064E+00	5.206E+03	3.498E-01	1.838E+05	6.671E+00
Carbon tetrachloride - HAP/VOC	9.517E-04	1.487E-01	9.993E-06	5.252E+00	1.047E-03
Carbonyl sulfide - HAP/VOC	4.552E-02	1.822E+01	1.224E-03	6.434E+02	5.007E-02
Chlorobenzene - HAP/VOC	4.352E-02	9.296E+00	6.246E-04	3.283E+02	4.787E-02
Chlorodifluoromethane	1.738E-01	4.834E+01	3.248E-03	1.707E+03	1.912E-01
Chloroethane (ethyl chloride) - HAP/VOC	1.297E-01	4.834E+01	3.248E-03	1.707E+03	1.427E-01
Chloroform - HAP/VOC	5.539E-03	1.115E+00	7.495E-05	3.939E+01	6.093E-03
Chloromethane - VOC	9.370E-02	4.462E+01	2.998E-03	1.576E+03	1.031E-01
Dichlorobenzene - (HAP for para isomer/VOC)	4.774E-02	7.808E+00	5.246E-04	2.757E+02	5.251E-02
Dichlorodifluoromethane	2.992E+00	5.949E+02	3.997E-02	2.101E+04	3.291E+00
Dichlorofluoromethane - VOC	4.138E-01	9.667E+01	6.495E-03	3.414E+03	4.552E-01
Dichloromethane (methylene chloride) - HAP	1.839E+00	5.206E+02	3.498E-02	1.838E+04	2.023E+00
Dimethyl sulfide (methyl sulfide) - VOC	7.495E-01	2.900E+02	1.949E-02	1.024E+04	8.244E-01
Ethane	4.139E+01	3.309E+04	2.223E+00	1.169E+06	4.553E+01
Ethanol - VOC	1.924E+00	1.004E+03	6.745E-02	3.545E+04	2.117E+00
Ethyl mercaptan (ethanethiol) - VOC	2.210E-01	8.552E+01	5.746E-03	3.020E+03	2.431E-01
Ethylbenzene - HAP/VOC	7.552E-01	1.710E+02	1.149E-02	6.040E+03	8.307E-01
Ethylene dibromide - HAP/VOC	2.906E-04	3.718E-02	2.498E-06	1.313E+00	3.196E-04
Fluorotrichloromethane - VOC	1.615E-01	2.826E+01	1.899E-03	9.979E+02	1.776E-01
Hexane - HAP/VOC	8.796E-01	2.454E+02	1.649E-02	8.666E+03	9.676E-01
Hydrogen sulfide	1.897E+00	1.339E+03	8.994E-02	4.727E+04	2.087E+00
Mercury (total) - HAP	8.997E-05	1.078E-02	7.245E-07	3.808E-01	9.897E-05
Methyl ethyl ketone - HAP/VOC	7.918E-01	2.640E+02	1.774E-02	9.323E+03	8.710E-01
Methyl isobutyl ketone - HAP/VOC	2.943E-01	7.065E+01	4.747E-03	2.495E+03	3.237E-01
Methyl mercaptan - VOC	1.860E-01	9.296E+01	6.246E-03	3.283E+03	2.046E-01
Pentane - VOC	3.682E-01	1.227E+02	8.244E-03	4.333E+03	4.050E-01
Perchloroethylene (tetrachloroethylene) - HAP	9.489E-01	1.376E+02	9.244E-03	4.858E+03	1.044E+00
Propane - VOC	7.500E-01	4.090E+02	2.748E-02	1.444E+04	8.250E-01
t-1,2-Dichloroethene - VOC	4.198E-01	1.041E+02	6.995E-03	3.677E+03	4.618E-01
Toluene - No or Unknown Co-disposal - HAP/VOC	5.557E+00	1.450E+03	9.743E-02	5.121E+04	6.112E+00
Toluene - Co-disposal - HAP/VOC	2.422E+01	6.321E+03	4.247E-01	2.232E+05	2.664E+01
Trichloroethylene (trichloroethene) - HAP/VOC	5.690E-01	1.041E+02	6.995E-03	3.677E+03	6.259E-01
Vinyl chloride - HAP/VOC	7.056E-01	2.714E+02	1.824E-02	9.586E+03	7.762E-01
Xylenes - HAP/VOC	1.970E+00	4.462E+02	2.998E-02	1.576E+04	2.167E+00
Chlorine	2.303E+00	1.562E+03	1.049E-01	5.515E+04	2.533E+00

Appendix E

LANDGEM Tier 1

Summary Report

Landfill Name or Identifier: Green Ridge Landfill - Tier 1

Date: Monday, June 24, 2024

Description/Comments:
Green Ridge Emissions. Assume waste acceptance rates start at 1,500 tons per day; 5.5 days per week; 52 weeks per year. Use CAA Conventional for k and Lo. NMOC concentration = 4000 ppmv. Capacity is 7.1 million tons.

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	**2027**	
Landfill Closure Year (with 80-year limit)	**2043**	
Actual Closure Year (without limit)	***2043***	
Have Model Calculate Closure Year?	**Yes**	
Waste Design Capacity	**7,100,000**	*short tons*

MODEL PARAMETERS

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

GASES / POLLUTANTS SELECTED

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

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2027	390,000	429,000	0	0
2028	390,000	429,000	390,000	429,000
2029	390,000	429,000	780,000	858,000
2030	390,000	429,000	1,170,000	1,287,000
2031	390,000	429,000	1,560,000	1,716,000
2032	390,000	429,000	1,950,000	2,145,000
2033	390,000	429,000	2,340,000	2,574,000
2034	390,000	429,000	2,730,000	3,003,000
2035	390,000	429,000	3,120,000	3,432,000
2036	390,000	429,000	3,510,000	3,861,000
2037	390,000	429,000	3,900,000	4,290,000
2038	390,000	429,000	4,290,000	4,719,000
2039	390,000	429,000	4,680,000	5,148,000
2040	390,000	429,000	5,070,000	5,577,000
2041	390,000	429,000	5,460,000	6,006,000
2042	390,000	429,000	5,850,000	6,435,000
2043	214,545	236,000	6,240,000	6,864,000
2044	0	0	6,454,545	7,100,000
2045	0	0	6,454,545	7,100,000
2046	0	0	6,454,545	7,100,000
2047	0	0	6,454,545	7,100,000
2048	0	0	6,454,545	7,100,000
2049	0	0	6,454,545	7,100,000
2050	0	0	6,454,545	7,100,000
2051	0	0	6,454,545	7,100,000
2052	0	0	6,454,545	7,100,000
2053	0	0	6,454,545	7,100,000
2054	0	0	6,454,545	7,100,000
2055	0	0	6,454,545	7,100,000
2056	0	0	6,454,545	7,100,000
2057	0	0	6,454,545	7,100,000
2058	0	0	6,454,545	7,100,000
2059	0	0	6,454,545	7,100,000
2060	0	0	6,454,545	7,100,000
2061	0	0	6,454,545	7,100,000
2062	0	0	6,454,545	7,100,000
2063	0	0	6,454,545	7,100,000
2064	0	0	6,454,545	7,100,000
2065	0	0	6,454,545	7,100,000
2066	0	0	6,454,545	7,100,000

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2067	0	0	6,454,545	7,100,000
2068	0	0	6,454,545	7,100,000
2069	0	0	6,454,545	7,100,000
2070	0	0	6,454,545	7,100,000
2071	0	0	6,454,545	7,100,000
2072	0	0	6,454,545	7,100,000
2073	0	0	6,454,545	7,100,000
2074	0	0	6,454,545	7,100,000
2075	0	0	6,454,545	7,100,000
2076	0	0	6,454,545	7,100,000
2077	0	0	6,454,545	7,100,000
2078	0	0	6,454,545	7,100,000
2079	0	0	6,454,545	7,100,000
2080	0	0	6,454,545	7,100,000
2081	0	0	6,454,545	7,100,000
2082	0	0	6,454,545	7,100,000
2083	0	0	6,454,545	7,100,000
2084	0	0	6,454,545	7,100,000
2085	0	0	6,454,545	7,100,000
2086	0	0	6,454,545	7,100,000
2087	0	0	6,454,545	7,100,000
2088	0	0	6,454,545	7,100,000
2089	0	0	6,454,545	7,100,000
2090	0	0	6,454,545	7,100,000
2091	0	0	6,454,545	7,100,000
2092	0	0	6,454,545	7,100,000
2093	0	0	6,454,545	7,100,000
2094	0	0	6,454,545	7,100,000
2095	0	0	6,454,545	7,100,000
2096	0	0	6,454,545	7,100,000
2097	0	0	6,454,545	7,100,000
2098	0	0	6,454,545	7,100,000
2099	0	0	6,454,545	7,100,000
2100	0	0	6,454,545	7,100,000
2101	0	0	6,454,545	7,100,000
2102	0	0	6,454,545	7,100,000
2103	0	0	6,454,545	7,100,000
2104	0	0	6,454,545	7,100,000
2105	0	0	6,454,545	7,100,000
2106	0	0	6,454,545	7,100,000

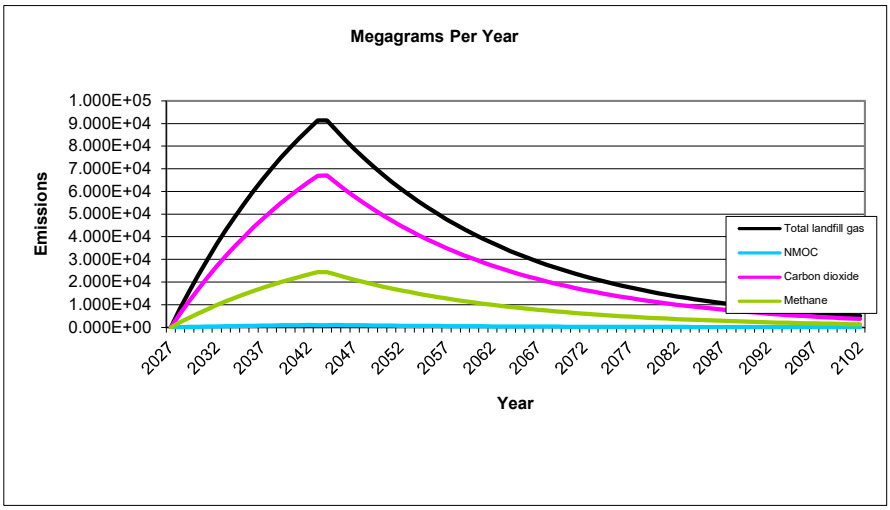
Pollutant Parameters

		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		
	Chlorine			42.00	35.45

Graphs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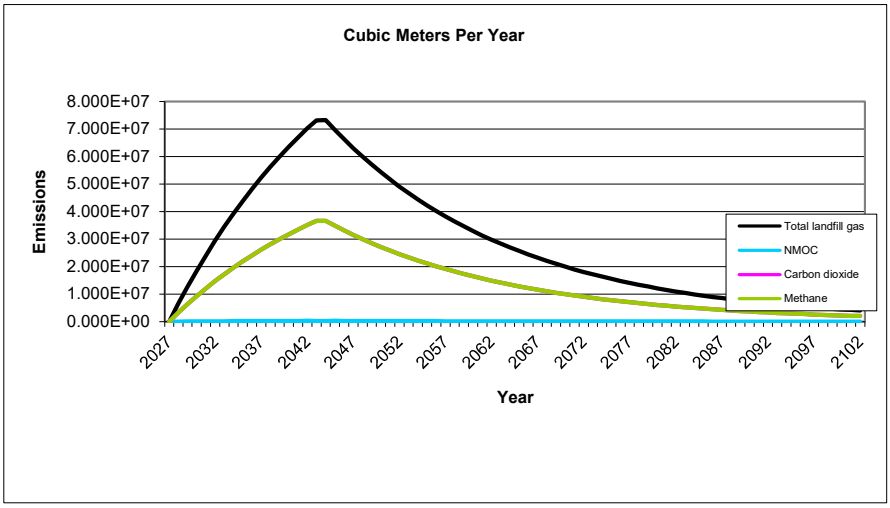
7.000E+04
6.000E+04
5.000E+04
4.000E+04
3.000E+04
2.000E+04
1.000E+04
0.000E+00
2027
2032
2037
2042
2047
2052
2057
2062
2067
2072
2077
2082
2087
2092
2097
2102
Year
Total landfill gas
NMOC
Carbon dioxide
Methane


Cubic Meters Per Year
Emissions
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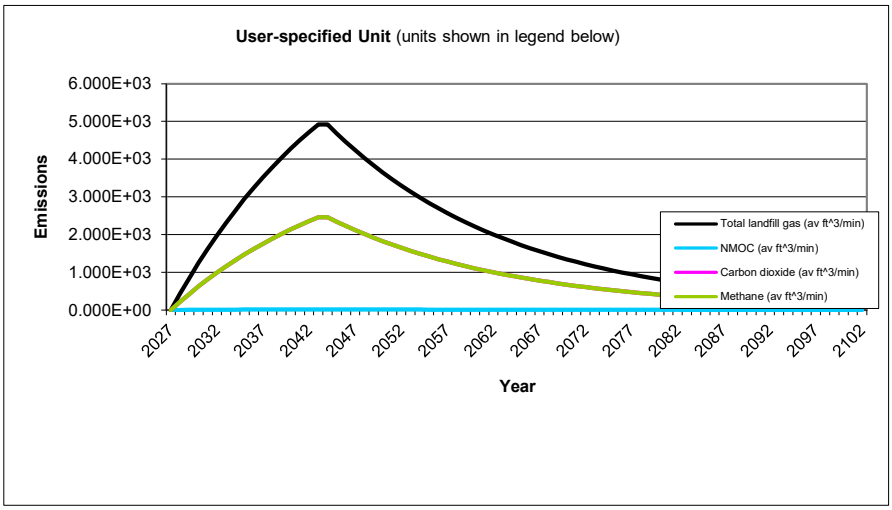
7.000E+07
6.000E+07
5.000E+07
4.000E+07
3.000E+07
2.000E+07
1.000E+07
0.000E+00
2027
2032
2037
2042
2047
2052
2057
2062
2067
2072
2077
2082
2087
2092
2097
2102
Year
Total landfill gas
NMOC
Carbon dioxide
Methane


User-specified Unit (units shown in legend below)
Emissions
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5.000E+03
4.000E+03
3.000E+03
2.000E+03
1.000E+03
0.000E+00
2027
2032
2037
2042
2047
2052
2057
2062
2067
2072
2077
2082
2087
2092
2097
2102
Year
Total landfill gas (av ft^3/min)
NMOC (av ft^3/min)
Carbon dioxide (av ft^3/min)
Methane (av ft^3/min)

Results

Year	Total landfill gas			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2027	0	0	0	0	0	0
2028	8.096E+03	6.483E+06	4.356E+02	9.295E+01	2.593E+04	1.742E+00
2029	1.580E+04	1.265E+07	8.500E+02	1.814E+02	5.060E+04	3.400E+00
2030	2.312E+04	1.852E+07	1.244E+03	2.655E+02	7.407E+04	4.976E+00
2031	3.009E+04	2.410E+07	1.619E+03	3.455E+02	9.639E+04	6.476E+00
2032	3.672E+04	2.940E+07	1.976E+03	4.216E+02	1.176E+05	7.903E+00
2033	4.303E+04	3.445E+07	2.315E+03	4.940E+02	1.378E+05	9.260E+00
2034	4.902E+04	3.926E+07	2.638E+03	5.629E+02	1.570E+05	1.055E+01
2035	5.473E+04	4.382E+07	2.945E+03	6.284E+02	1.753E+05	1.178E+01
2036	6.016E+04	4.817E+07	3.237E+03	6.907E+02	1.927E+05	1.295E+01
2037	6.532E+04	5.230E+07	3.514E+03	7.499E+02	2.092E+05	1.406E+01
2038	7.023E+04	5.624E+07	3.779E+03	8.063E+02	2.249E+05	1.511E+01
2039	7.490E+04	5.998E+07	4.030E+03	8.599E+02	2.399E+05	1.612E+01
2040	7.934E+04	6.354E+07	4.269E+03	9.110E+02	2.541E+05	1.708E+01
2041	8.357E+04	6.692E+07	4.496E+03	9.595E+02	2.677E+05	1.799E+01
2042	8.759E+04	7.014E+07	4.713E+03	1.006E+03	2.806E+05	1.885E+01
2043	9.142E+04	7.320E+07	4.918E+03	1.050E+03	2.928E+05	1.967E+01
2044	9.141E+04	7.320E+07	4.918E+03	1.050E+03	2.928E+05	1.967E+01
2045	8.695E+04	6.963E+07	4.678E+03	9.983E+02	2.785E+05	1.871E+01
2046	8.271E+04	6.623E+07	4.450E+03	9.496E+02	2.649E+05	1.780E+01
2047	7.868E+04	6.300E+07	4.233E+03	9.033E+02	2.520E+05	1.693E+01
2048	7.484E+04	5.993E+07	4.027E+03	8.593E+02	2.397E+05	1.611E+01
2049	7.119E+04	5.701E+07	3.830E+03	8.174E+02	2.280E+05	1.532E+01
2050	6.772E+04	5.423E+07	3.643E+03	7.775E+02	2.169E+05	1.457E+01
2051	6.442E+04	5.158E+07	3.466E+03	7.396E+02	2.063E+05	1.386E+01
2052	6.127E+04	4.907E+07	3.297E+03	7.035E+02	1.963E+05	1.319E+01
2053	5.829E+04	4.667E+07	3.136E+03	6.692E+02	1.867E+05	1.254E+01
2054	5.544E+04	4.440E+07	2.983E+03	6.366E+02	1.776E+05	1.193E+01
2055	5.274E+04	4.223E+07	2.838E+03	6.055E+02	1.689E+05	1.135E+01
2056	5.017E+04	4.017E+07	2.699E+03	5.760E+02	1.607E+05	1.080E+01
2057	4.772E+04	3.821E+07	2.568E+03	5.479E+02	1.529E+05	1.027E+01
2058	4.539E+04	3.635E+07	2.442E+03	5.212E+02	1.454E+05	9.769E+00
2059	4.318E+04	3.458E+07	2.323E+03	4.958E+02	1.383E+05	9.293E+00
2060	4.107E+04	3.289E+07	2.210E+03	4.716E+02	1.316E+05	8.840E+00
2061	3.907E+04	3.129E+07	2.102E+03	4.486E+02	1.251E+05	8.408E+00
2062	3.717E+04	2.976E+07	2.000E+03	4.267E+02	1.190E+05	7.998E+00
2063	3.535E+04	2.831E+07	1.902E+03	4.059E+02	1.132E+05	7.608E+00
2064	3.363E+04	2.693E+07	1.809E+03	3.861E+02	1.077E+05	7.237E+00
2065	3.199E+04	2.561E+07	1.721E+03	3.673E+02	1.025E+05	6.884E+00
2066	3.043E+04	2.437E+07	1.637E+03	3.493E+02	9.746E+04	6.548E+00
2067	2.894E+04	2.318E+07	1.557E+03	3.323E+02	9.271E+04	6.229E+00
2068	2.753E+04	2.205E+07	1.481E+03	3.161E+02	8.819E+04	5.925E+00
2069	2.619E+04	2.097E+07	1.409E+03	3.007E+02	8.389E+04	5.636E+00
2070	2.491E+04	1.995E+07	1.340E+03	2.860E+02	7.980E+04	5.361E+00
2071	2.370E+04	1.898E+07	1.275E+03	2.721E+02	7.590E+04	5.100E+00
2072	2.254E+04	1.805E+07	1.213E+03	2.588E+02	7.220E+04	4.851E+00
2073	2.144E+04	1.717E+07	1.154E+03	2.462E+02	6.868E+04	4.615E+00
2074	2.040E+04	1.633E+07	1.097E+03	2.342E+02	6.533E+04	4.390E+00
2075	1.940E+04	1.554E+07	1.044E+03	2.228E+02	6.214E+04	4.175E+00
2076	1.846E+04	1.478E+07	9.930E+02	2.119E+02	5.911E+04	3.972E+00

Results (Continued)

Year	Total landfill gas			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2077	1.756E+04	1.406E+07	9.445E+02	2.016E+02	5.623E+04	3.778E+00
2078	1.670E+04	1.337E+07	8.985E+02	1.917E+02	5.349E+04	3.594E+00
2079	1.588E+04	1.272E+07	8.546E+02	1.824E+02	5.088E+04	3.419E+00
2080	1.511E+04	1.210E+07	8.130E+02	1.735E+02	4.840E+04	3.252E+00
2081	1.437E+04	1.151E+07	7.733E+02	1.650E+02	4.604E+04	3.093E+00
2082	1.367E+04	1.095E+07	7.356E+02	1.570E+02	4.379E+04	2.942E+00
2083	1.301E+04	1.041E+07	6.997E+02	1.493E+02	4.166E+04	2.799E+00
2084	1.237E+04	9.906E+06	6.656E+02	1.420E+02	3.963E+04	2.662E+00
2085	1.177E+04	9.423E+06	6.331E+02	1.351E+02	3.769E+04	2.533E+00
2086	1.119E+04	8.964E+06	6.023E+02	1.285E+02	3.585E+04	2.409E+00
2087	1.065E+04	8.526E+06	5.729E+02	1.223E+02	3.411E+04	2.292E+00
2088	1.013E+04	8.111E+06	5.449E+02	1.163E+02	3.244E+04	2.180E+00
2089	9.635E+03	7.715E+06	5.184E+02	1.106E+02	3.086E+04	2.073E+00
2090	9.165E+03	7.339E+06	4.931E+02	1.052E+02	2.936E+04	1.972E+00
2091	8.718E+03	6.981E+06	4.690E+02	1.001E+02	2.792E+04	1.876E+00
2092	8.293E+03	6.640E+06	4.462E+02	9.521E+01	2.656E+04	1.785E+00
2093	7.888E+03	6.317E+06	4.244E+02	9.057E+01	2.527E+04	1.698E+00
2094	7.504E+03	6.008E+06	4.037E+02	8.615E+01	2.403E+04	1.615E+00
2095	7.138E+03	5.715E+06	3.840E+02	8.195E+01	2.286E+04	1.536E+00
2096	6.789E+03	5.437E+06	3.653E+02	7.795E+01	2.175E+04	1.461E+00
2097	6.458E+03	5.172E+06	3.475E+02	7.415E+01	2.069E+04	1.390E+00
2098	6.143E+03	4.919E+06	3.305E+02	7.053E+01	1.968E+04	1.322E+00
2099	5.844E+03	4.679E+06	3.144E+02	6.709E+01	1.872E+04	1.258E+00
2100	5.559E+03	4.451E+06	2.991E+02	6.382E+01	1.780E+04	1.196E+00
2101	5.288E+03	4.234E+06	2.845E+02	6.071E+01	1.694E+04	1.138E+00
2102	5.030E+03	4.028E+06	2.706E+02	5.775E+01	1.611E+04	1.082E+00
2103	4.784E+03	3.831E+06	2.574E+02	5.493E+01	1.532E+04	1.030E+00
2104	4.551E+03	3.644E+06	2.449E+02	5.225E+01	1.458E+04	9.794E-01
2105	4.329E+03	3.467E+06	2.329E+02	4.970E+01	1.387E+04	9.317E-01
2106	4.118E+03	3.298E+06	2.216E+02	4.728E+01	1.319E+04	8.862E-01
2107	3.917E+03	3.137E+06	2.108E+02	4.497E+01	1.255E+04	8.430E-01
2108	3.726E+03	2.984E+06	2.005E+02	4.278E+01	1.193E+04	8.019E-01
2109	3.544E+03	2.838E+06	1.907E+02	4.069E+01	1.135E+04	7.628E-01
2110	3.372E+03	2.700E+06	1.814E+02	3.871E+01	1.080E+04	7.256E-01
2111	3.207E+03	2.568E+06	1.726E+02	3.682E+01	1.027E+04	6.902E-01
2112	3.051E+03	2.443E+06	1.641E+02	3.503E+01	9.771E+03	6.565E-01
2113	2.902E+03	2.324E+06	1.561E+02	3.332E+01	9.295E+03	6.245E-01
2114	2.760E+03	2.210E+06	1.485E+02	3.169E+01	8.842E+03	5.941E-01
2115	2.626E+03	2.103E+06	1.413E+02	3.015E+01	8.410E+03	5.651E-01
2116	2.498E+03	2.000E+06	1.344E+02	2.868E+01	8.000E+03	5.375E-01
2117	2.376E+03	1.903E+06	1.278E+02	2.728E+01	7.610E+03	5.113E-01
2118	2.260E+03	1.810E+06	1.216E+02	2.595E+01	7.239E+03	4.864E-01
2119	2.150E+03	1.721E+06	1.157E+02	2.468E+01	6.886E+03	4.627E-01
2120	2.045E+03	1.637E+06	1.100E+02	2.348E+01	6.550E+03	4.401E-01
2121	1.945E+03	1.558E+06	1.047E+02	2.233E+01	6.231E+03	4.186E-01
2122	1.850E+03	1.482E+06	9.955E+01	2.124E+01	5.927E+03	3.982E-01
2123	1.760E+03	1.409E+06	9.470E+01	2.021E+01	5.638E+03	3.788E-01
2124	1.674E+03	1.341E+06	9.008E+01	1.922E+01	5.363E+03	3.603E-01
2125	1.593E+03	1.275E+06	8.569E+01	1.828E+01	5.101E+03	3.427E-01
2126	1.515E+03	1.213E+06	8.151E+01	1.739E+01	4.852E+03	3.260E-01
2127	1.441E+03	1.154E+06	7.753E+01	1.654E+01	4.616E+03	3.101E-01

Results (Continued)

Year	Total landfill gas			NMOC		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2128	1.371E+03	1.098E+06	7.375E+01	1.574E+01	4.391E+03	2.950E-01
2129	1.304E+03	1.044E+06	7.015E+01	1.497E+01	4.176E+03	2.806E-01
2130	1.240E+03	9.932E+05	6.673E+01	1.424E+01	3.973E+03	2.669E-01
2131	1.180E+03	9.448E+05	6.348E+01	1.355E+01	3.779E+03	2.539E-01
2132	1.122E+03	8.987E+05	6.038E+01	1.289E+01	3.595E+03	2.415E-01
2133	1.068E+03	8.548E+05	5.744E+01	1.226E+01	3.419E+03	2.297E-01
2134	1.015E+03	8.132E+05	5.464E+01	1.166E+01	3.253E+03	2.185E-01
2135	9.660E+02	7.735E+05	5.197E+01	1.109E+01	3.094E+03	2.079E-01
2136	9.189E+02	7.358E+05	4.944E+01	1.055E+01	2.943E+03	1.977E-01
2137	8.740E+02	6.999E+05	4.703E+01	1.003E+01	2.800E+03	1.881E-01
2138	8.314E+02	6.658E+05	4.473E+01	9.546E+00	2.663E+03	1.789E-01
2139	7.909E+02	6.333E+05	4.255E+01	9.080E+00	2.533E+03	1.702E-01
2140	7.523E+02	6.024E+05	4.048E+01	8.637E+00	2.410E+03	1.619E-01
2141	7.156E+02	5.730E+05	3.850E+01	8.216E+00	2.292E+03	1.540E-01
2142	6.807E+02	5.451E+05	3.662E+01	7.815E+00	2.180E+03	1.465E-01
2143	6.475E+02	5.185E+05	3.484E+01	7.434E+00	2.074E+03	1.393E-01
2144	6.159E+02	4.932E+05	3.314E+01	7.072E+00	1.973E+03	1.326E-01
2145	5.859E+02	4.692E+05	3.152E+01	6.727E+00	1.877E+03	1.261E-01
2146	5.573E+02	4.463E+05	2.998E+01	6.399E+00	1.785E+03	1.199E-01
2147	5.301E+02	4.245E+05	2.852E+01	6.087E+00	1.698E+03	1.141E-01
2148	5.043E+02	4.038E+05	2.713E+01	5.790E+00	1.615E+03	1.085E-01
2149	4.797E+02	3.841E+05	2.581E+01	5.507E+00	1.536E+03	1.032E-01
2150	4.563E+02	3.654E+05	2.455E+01	5.239E+00	1.462E+03	9.820E-02
2151	4.340E+02	3.476E+05	2.335E+01	4.983E+00	1.390E+03	9.341E-02
2152	4.129E+02	3.306E+05	2.221E+01	4.740E+00	1.322E+03	8.885E-02
2153	3.927E+02	3.145E+05	2.113E+01	4.509E+00	1.258E+03	8.452E-02
2154	3.736E+02	2.991E+05	2.010E+01	4.289E+00	1.197E+03	8.040E-02
2155	3.554E+02	2.846E+05	1.912E+01	4.080E+00	1.138E+03	7.648E-02
2156	3.380E+02	2.707E+05	1.819E+01	3.881E+00	1.083E+03	7.275E-02
2157	3.215E+02	2.575E+05	1.730E+01	3.692E+00	1.030E+03	6.920E-02
2158	3.059E+02	2.449E+05	1.646E+01	3.512E+00	9.797E+02	6.582E-02
2159	2.909E+02	2.330E+05	1.565E+01	3.340E+00	9.319E+02	6.261E-02
2160	2.768E+02	2.216E+05	1.489E+01	3.177E+00	8.864E+02	5.956E-02
2161	2.633E+02	2.108E+05	1.416E+01	3.022E+00	8.432E+02	5.666E-02
2162	2.504E+02	2.005E+05	1.347E+01	2.875E+00	8.021E+02	5.389E-02
2163	2.382E+02	1.907E+05	1.282E+01	2.735E+00	7.630E+02	5.126E-02
2164	2.266E+02	1.814E+05	1.219E+01	2.601E+00	7.258E+02	4.876E-02
2165	2.155E+02	1.726E+05	1.160E+01	2.475E+00	6.904E+02	4.639E-02
2166	2.050E+02	1.642E+05	1.103E+01	2.354E+00	6.567E+02	4.412E-02
2167	1.950E+02	1.562E+05	1.049E+01	2.239E+00	6.247E+02	4.197E-02

Results (Continued)

Year	Carbon dioxide			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2027	0	0	0	0	0	0
2028	5.934E+03	3.242E+06	2.178E+02	2.163E+03	3.242E+06	2.178E+02
2029	1.158E+04	6.325E+06	4.250E+02	4.220E+03	6.325E+06	4.250E+02
2030	1.695E+04	9.258E+06	6.221E+02	6.177E+03	9.258E+06	6.221E+02
2031	2.205E+04	1.205E+07	8.095E+02	8.038E+03	1.205E+07	8.095E+02
2032	2.691E+04	1.470E+07	9.878E+02	9.809E+03	1.470E+07	9.878E+02
2033	3.153E+04	1.723E+07	1.157E+03	1.149E+04	1.723E+07	1.157E+03
2034	3.593E+04	1.963E+07	1.319E+03	1.309E+04	1.963E+07	1.319E+03
2035	4.011E+04	2.191E+07	1.472E+03	1.462E+04	2.191E+07	1.472E+03
2036	4.409E+04	2.409E+07	1.618E+03	1.607E+04	2.409E+07	1.618E+03
2037	4.787E+04	2.615E+07	1.757E+03	1.745E+04	2.615E+07	1.757E+03
2038	5.147E+04	2.812E+07	1.889E+03	1.876E+04	2.812E+07	1.889E+03
2039	5.489E+04	2.999E+07	2.015E+03	2.001E+04	2.999E+07	2.015E+03
2040	5.815E+04	3.177E+07	2.134E+03	2.119E+04	3.177E+07	2.134E+03
2041	6.125E+04	3.346E+07	2.248E+03	2.232E+04	3.346E+07	2.248E+03
2042	6.419E+04	3.507E+07	2.356E+03	2.340E+04	3.507E+07	2.356E+03
2043	6.700E+04	3.660E+07	2.459E+03	2.442E+04	3.660E+07	2.459E+03
2044	6.699E+04	3.660E+07	2.459E+03	2.442E+04	3.660E+07	2.459E+03
2045	6.373E+04	3.481E+07	2.339E+03	2.323E+04	3.481E+07	2.339E+03
2046	6.062E+04	3.312E+07	2.225E+03	2.209E+04	3.312E+07	2.225E+03
2047	5.766E+04	3.150E+07	2.117E+03	2.102E+04	3.150E+07	2.117E+03
2048	5.485E+04	2.996E+07	2.013E+03	1.999E+04	2.996E+07	2.013E+03
2049	5.218E+04	2.850E+07	1.915E+03	1.902E+04	2.850E+07	1.915E+03
2050	4.963E+04	2.711E+07	1.822E+03	1.809E+04	2.711E+07	1.822E+03
2051	4.721E+04	2.579E+07	1.733E+03	1.721E+04	2.579E+07	1.733E+03
2052	4.491E+04	2.453E+07	1.648E+03	1.637E+04	2.453E+07	1.648E+03
2053	4.272E+04	2.334E+07	1.568E+03	1.557E+04	2.334E+07	1.568E+03
2054	4.063E+04	2.220E+07	1.492E+03	1.481E+04	2.220E+07	1.492E+03
2055	3.865E+04	2.112E+07	1.419E+03	1.409E+04	2.112E+07	1.419E+03
2056	3.677E+04	2.009E+07	1.350E+03	1.340E+04	2.009E+07	1.350E+03
2057	3.497E+04	1.911E+07	1.284E+03	1.275E+04	1.911E+07	1.284E+03
2058	3.327E+04	1.817E+07	1.221E+03	1.213E+04	1.817E+07	1.221E+03
2059	3.165E+04	1.729E+07	1.162E+03	1.153E+04	1.729E+07	1.162E+03
2060	3.010E+04	1.645E+07	1.105E+03	1.097E+04	1.645E+07	1.105E+03
2061	2.863E+04	1.564E+07	1.051E+03	1.044E+04	1.564E+07	1.051E+03
2062	2.724E+04	1.488E+07	9.998E+02	9.927E+03	1.488E+07	9.998E+02
2063	2.591E+04	1.415E+07	9.510E+02	9.443E+03	1.415E+07	9.510E+02
2064	2.465E+04	1.346E+07	9.046E+02	8.983E+03	1.346E+07	9.046E+02
2065	2.344E+04	1.281E+07	8.605E+02	8.544E+03	1.281E+07	8.605E+02
2066	2.230E+04	1.218E+07	8.186E+02	8.128E+03	1.218E+07	8.186E+02
2067	2.121E+04	1.159E+07	7.786E+02	7.731E+03	1.159E+07	7.786E+02
2068	2.018E+04	1.102E+07	7.407E+02	7.354E+03	1.102E+07	7.407E+02
2069	1.919E+04	1.049E+07	7.045E+02	6.996E+03	1.049E+07	7.045E+02
2070	1.826E+04	9.974E+06	6.702E+02	6.654E+03	9.974E+06	6.702E+02
2071	1.737E+04	9.488E+06	6.375E+02	6.330E+03	9.488E+06	6.375E+02
2072	1.652E+04	9.025E+06	6.064E+02	6.021E+03	9.025E+06	6.064E+02
2073	1.571E+04	8.585E+06	5.768E+02	5.728E+03	8.585E+06	5.768E+02
2074	1.495E+04	8.166E+06	5.487E+02	5.448E+03	8.166E+06	5.487E+02
2075	1.422E+04	7.768E+06	5.219E+02	5.182E+03	7.768E+06	5.219E+02
2076	1.353E+04	7.389E+06	4.965E+02	4.930E+03	7.389E+06	4.965E+02

Results (Continued)

Year	Carbon dioxide			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2077	1.287E+04	7.029E+06	4.723E+02	4.689E+03	7.029E+06	4.723E+02
2078	1.224E+04	6.686E+06	4.492E+02	4.461E+03	6.686E+06	4.492E+02
2079	1.164E+04	6.360E+06	4.273E+02	4.243E+03	6.360E+06	4.273E+02
2080	1.107E+04	6.050E+06	4.065E+02	4.036E+03	6.050E+06	4.065E+02
2081	1.053E+04	5.755E+06	3.867E+02	3.839E+03	5.755E+06	3.867E+02
2082	1.002E+04	5.474E+06	3.678E+02	3.652E+03	5.474E+06	3.678E+02
2083	9.532E+03	5.207E+06	3.499E+02	3.474E+03	5.207E+06	3.499E+02
2084	9.067E+03	4.953E+06	3.328E+02	3.304E+03	4.953E+06	3.328E+02
2085	8.625E+03	4.712E+06	3.166E+02	3.143E+03	4.712E+06	3.166E+02
2086	8.204E+03	4.482E+06	3.011E+02	2.990E+03	4.482E+06	3.011E+02
2087	7.804E+03	4.263E+06	2.864E+02	2.844E+03	4.263E+06	2.864E+02
2088	7.423E+03	4.055E+06	2.725E+02	2.705E+03	4.055E+06	2.725E+02
2089	7.061E+03	3.858E+06	2.592E+02	2.574E+03	3.858E+06	2.592E+02
2090	6.717E+03	3.669E+06	2.465E+02	2.448E+03	3.669E+06	2.465E+02
2091	6.389E+03	3.490E+06	2.345E+02	2.329E+03	3.490E+06	2.345E+02
2092	6.078E+03	3.320E+06	2.231E+02	2.215E+03	3.320E+06	2.231E+02
2093	5.781E+03	3.158E+06	2.122E+02	2.107E+03	3.158E+06	2.122E+02
2094	5.499E+03	3.004E+06	2.019E+02	2.004E+03	3.004E+06	2.019E+02
2095	5.231E+03	2.858E+06	1.920E+02	1.907E+03	2.858E+06	1.920E+02
2096	4.976E+03	2.718E+06	1.826E+02	1.814E+03	2.718E+06	1.826E+02
2097	4.733E+03	2.586E+06	1.737E+02	1.725E+03	2.586E+06	1.737E+02
2098	4.502E+03	2.460E+06	1.653E+02	1.641E+03	2.460E+06	1.653E+02
2099	4.283E+03	2.340E+06	1.572E+02	1.561E+03	2.340E+06	1.572E+02
2100	4.074E+03	2.226E+06	1.495E+02	1.485E+03	2.226E+06	1.495E+02
2101	3.875E+03	2.117E+06	1.422E+02	1.412E+03	2.117E+06	1.422E+02
2102	3.686E+03	2.014E+06	1.353E+02	1.344E+03	2.014E+06	1.353E+02
2103	3.506E+03	1.916E+06	1.287E+02	1.278E+03	1.916E+06	1.287E+02
2104	3.335E+03	1.822E+06	1.224E+02	1.216E+03	1.822E+06	1.224E+02
2105	3.173E+03	1.733E+06	1.165E+02	1.156E+03	1.733E+06	1.165E+02
2106	3.018E+03	1.649E+06	1.108E+02	1.100E+03	1.649E+06	1.108E+02
2107	2.871E+03	1.568E+06	1.054E+02	1.046E+03	1.568E+06	1.054E+02
2108	2.731E+03	1.492E+06	1.002E+02	9.953E+02	1.492E+06	1.002E+02
2109	2.598E+03	1.419E+06	9.535E+01	9.467E+02	1.419E+06	9.535E+01
2110	2.471E+03	1.350E+06	9.070E+01	9.006E+02	1.350E+06	9.070E+01
2111	2.350E+03	1.284E+06	8.628E+01	8.567E+02	1.284E+06	8.628E+01
2112	2.236E+03	1.221E+06	8.207E+01	8.149E+02	1.221E+06	8.207E+01
2113	2.127E+03	1.162E+06	7.807E+01	7.751E+02	1.162E+06	7.807E+01
2114	2.023E+03	1.105E+06	7.426E+01	7.373E+02	1.105E+06	7.426E+01
2115	1.924E+03	1.051E+06	7.064E+01	7.014E+02	1.051E+06	7.064E+01
2116	1.831E+03	1.000E+06	6.719E+01	6.672E+02	1.000E+06	6.719E+01
2117	1.741E+03	9.513E+05	6.391E+01	6.346E+02	9.513E+05	6.391E+01
2118	1.656E+03	9.049E+05	6.080E+01	6.037E+02	9.049E+05	6.080E+01
2119	1.576E+03	8.607E+05	5.783E+01	5.742E+02	8.607E+05	5.783E+01
2120	1.499E+03	8.187E+05	5.501E+01	5.462E+02	8.187E+05	5.501E+01
2121	1.426E+03	7.788E+05	5.233E+01	5.196E+02	7.788E+05	5.233E+01
2122	1.356E+03	7.408E+05	4.978E+01	4.942E+02	7.408E+05	4.978E+01
2123	1.290E+03	7.047E+05	4.735E+01	4.701E+02	7.047E+05	4.735E+01
2124	1.227E+03	6.703E+05	4.504E+01	4.472E+02	6.703E+05	4.504E+01
2125	1.167E+03	6.376E+05	4.284E+01	4.254E+02	6.376E+05	4.284E+01
2126	1.110E+03	6.065E+05	4.075E+01	4.047E+02	6.065E+05	4.075E+01
2127	1.056E+03	5.770E+05	3.877E+01	3.849E+02	5.770E+05	3.877E+01

Results (Continued)

Year	Carbon dioxide			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2128	1.005E+03	5.488E+05	3.688E+01	3.661E+02	5.488E+05	3.688E+01
2129	9.556E+02	5.221E+05	3.508E+01	3.483E+02	5.221E+05	3.508E+01
2130	9.090E+02	4.966E+05	3.337E+01	3.313E+02	4.966E+05	3.337E+01
2131	8.647E+02	4.724E+05	3.174E+01	3.151E+02	4.724E+05	3.174E+01
2132	8.225E+02	4.493E+05	3.019E+01	2.998E+02	4.493E+05	3.019E+01
2133	7.824E+02	4.274E+05	2.872E+01	2.852E+02	4.274E+05	2.872E+01
2134	7.442E+02	4.066E+05	2.732E+01	2.712E+02	4.066E+05	2.732E+01
2135	7.079E+02	3.867E+05	2.599E+01	2.580E+02	3.867E+05	2.599E+01
2136	6.734E+02	3.679E+05	2.472E+01	2.454E+02	3.679E+05	2.472E+01
2137	6.406E+02	3.499E+05	2.351E+01	2.335E+02	3.499E+05	2.351E+01
2138	6.093E+02	3.329E+05	2.237E+01	2.221E+02	3.329E+05	2.237E+01
2139	5.796E+02	3.166E+05	2.128E+01	2.112E+02	3.166E+05	2.128E+01
2140	5.513E+02	3.012E+05	2.024E+01	2.009E+02	3.012E+05	2.024E+01
2141	5.245E+02	2.865E+05	1.925E+01	1.911E+02	2.865E+05	1.925E+01
2142	4.989E+02	2.725E+05	1.831E+01	1.818E+02	2.725E+05	1.831E+01
2143	4.745E+02	2.592E+05	1.742E+01	1.730E+02	2.592E+05	1.742E+01
2144	4.514E+02	2.466E+05	1.657E+01	1.645E+02	2.466E+05	1.657E+01
2145	4.294E+02	2.346E+05	1.576E+01	1.565E+02	2.346E+05	1.576E+01
2146	4.084E+02	2.231E+05	1.499E+01	1.489E+02	2.231E+05	1.499E+01
2147	3.885E+02	2.123E+05	1.426E+01	1.416E+02	2.123E+05	1.426E+01
2148	3.696E+02	2.019E+05	1.357E+01	1.347E+02	2.019E+05	1.357E+01
2149	3.516E+02	1.921E+05	1.290E+01	1.281E+02	1.921E+05	1.290E+01
2150	3.344E+02	1.827E+05	1.227E+01	1.219E+02	1.827E+05	1.227E+01
2151	3.181E+02	1.738E+05	1.168E+01	1.159E+02	1.738E+05	1.168E+01
2152	3.026E+02	1.653E+05	1.111E+01	1.103E+02	1.653E+05	1.111E+01
2153	2.878E+02	1.572E+05	1.056E+01	1.049E+02	1.572E+05	1.056E+01
2154	2.738E+02	1.496E+05	1.005E+01	9.979E+01	1.496E+05	1.005E+01
2155	2.604E+02	1.423E+05	9.560E+00	9.492E+01	1.423E+05	9.560E+00
2156	2.477E+02	1.353E+05	9.093E+00	9.029E+01	1.353E+05	9.093E+00
2157	2.357E+02	1.287E+05	8.650E+00	8.589E+01	1.287E+05	8.650E+00
2158	2.242E+02	1.225E+05	8.228E+00	8.170E+01	1.225E+05	8.228E+00
2159	2.132E+02	1.165E+05	7.827E+00	7.771E+01	1.165E+05	7.827E+00
2160	2.028E+02	1.108E+05	7.445E+00	7.392E+01	1.108E+05	7.445E+00
2161	1.929E+02	1.054E+05	7.082E+00	7.032E+01	1.054E+05	7.082E+00
2162	1.835E+02	1.003E+05	6.737E+00	6.689E+01	1.003E+05	6.737E+00
2163	1.746E+02	9.537E+04	6.408E+00	6.363E+01	9.537E+04	6.408E+00
2164	1.661E+02	9.072E+04	6.095E+00	6.052E+01	9.072E+04	6.095E+00
2165	1.580E+02	8.630E+04	5.798E+00	5.757E+01	8.630E+04	5.798E+00
2166	1.503E+02	8.209E+04	5.515E+00	5.476E+01	8.209E+04	5.515E+00
2167	1.429E+02	7.808E+04	5.246E+00	5.209E+01	7.808E+04	5.246E+00

Appendix F

LANDGEM Tier 2

Summary Report

Landfill Name or Identifier: Green Ridge Landfill - Tier 2

Date: Monday, June 24, 2024

Description/Comments:
Green Ridge Emissions. Assume waste acceptance rates start at 1,500 tons per day; 5.5 days per week; 52 weeks per year. Use CAA Conventional for k and Lo. NMOC concentration = 600 ppmv. Capacity is 7.1 million tons.

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	**2027**	
Landfill Closure Year (with 80-year limit)	**2043**	
Actual Closure Year (without limit)	***2043***	
Have Model Calculate Closure Year?	**Yes**	
Waste Design Capacity	**7,100,000**	*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	**0.050**	$year^{-1}$
Potential Methane Generation Capacity, L_o	**170**	m^3/Mg
NMOC Concentration	**600**	*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)*
2027	390,000	429,000	0	0
2028	390,000	429,000	390,000	429,000
2029	390,000	429,000	780,000	858,000
2030	390,000	429,000	1,170,000	1,287,000
2031	390,000	429,000	1,560,000	1,716,000
2032	390,000	429,000	1,950,000	2,145,000
2033	390,000	429,000	2,340,000	2,574,000
2034	390,000	429,000	2,730,000	3,003,000
2035	390,000	429,000	3,120,000	3,432,000
2036	390,000	429,000	3,510,000	3,861,000
2037	390,000	429,000	3,900,000	4,290,000
2038	390,000	429,000	4,290,000	4,719,000
2039	390,000	429,000	4,680,000	5,148,000
2040	390,000	429,000	5,070,000	5,577,000
2041	390,000	429,000	5,460,000	6,006,000
2042	390,000	429,000	5,850,000	6,435,000
2043	214,545	236,000	6,240,000	6,864,000
2044	0	0	6,454,545	7,100,000
2045	0	0	6,454,545	7,100,000
2046	0	0	6,454,545	7,100,000
2047	0	0	6,454,545	7,100,000
2048	0	0	6,454,545	7,100,000
2049	0	0	6,454,545	7,100,000
2050	0	0	6,454,545	7,100,000
2051	0	0	6,454,545	7,100,000
2052	0	0	6,454,545	7,100,000
2053	0	0	6,454,545	7,100,000
2054	0	0	6,454,545	7,100,000
2055	0	0	6,454,545	7,100,000
2056	0	0	6,454,545	7,100,000
2057	0	0	6,454,545	7,100,000
2058	0	0	6,454,545	7,100,000
2059	0	0	6,454,545	7,100,000
2060	0	0	6,454,545	7,100,000
2061	0	0	6,454,545	7,100,000
2062	0	0	6,454,545	7,100,000
2063	0	0	6,454,545	7,100,000
2064	0	0	6,454,545	7,100,000
2065	0	0	6,454,545	7,100,000
2066	0	0	6,454,545	7,100,000

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2067	0	0	6,454,545	7,100,000
2068	0	0	6,454,545	7,100,000
2069	0	0	6,454,545	7,100,000
2070	0	0	6,454,545	7,100,000
2071	0	0	6,454,545	7,100,000
2072	0	0	6,454,545	7,100,000
2073	0	0	6,454,545	7,100,000
2074	0	0	6,454,545	7,100,000
2075	0	0	6,454,545	7,100,000
2076	0	0	6,454,545	7,100,000
2077	0	0	6,454,545	7,100,000
2078	0	0	6,454,545	7,100,000
2079	0	0	6,454,545	7,100,000
2080	0	0	6,454,545	7,100,000
2081	0	0	6,454,545	7,100,000
2082	0	0	6,454,545	7,100,000
2083	0	0	6,454,545	7,100,000
2084	0	0	6,454,545	7,100,000
2085	0	0	6,454,545	7,100,000
2086	0	0	6,454,545	7,100,000
2087	0	0	6,454,545	7,100,000
2088	0	0	6,454,545	7,100,000
2089	0	0	6,454,545	7,100,000
2090	0	0	6,454,545	7,100,000
2091	0	0	6,454,545	7,100,000
2092	0	0	6,454,545	7,100,000
2093	0	0	6,454,545	7,100,000
2094	0	0	6,454,545	7,100,000
2095	0	0	6,454,545	7,100,000
2096	0	0	6,454,545	7,100,000
2097	0	0	6,454,545	7,100,000
2098	0	0	6,454,545	7,100,000
2099	0	0	6,454,545	7,100,000
2100	0	0	6,454,545	7,100,000
2101	0	0	6,454,545	7,100,000
2102	0	0	6,454,545	7,100,000
2103	0	0	6,454,545	7,100,000
2104	0	0	6,454,545	7,100,000
2105	0	0	6,454,545	7,100,000
2106	0	0	6,454,545	7,100,000

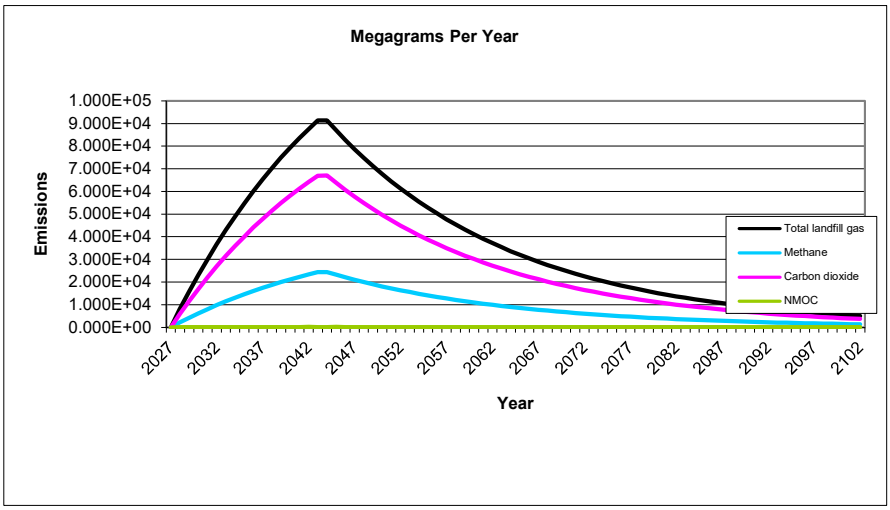
Pollutant Parameters

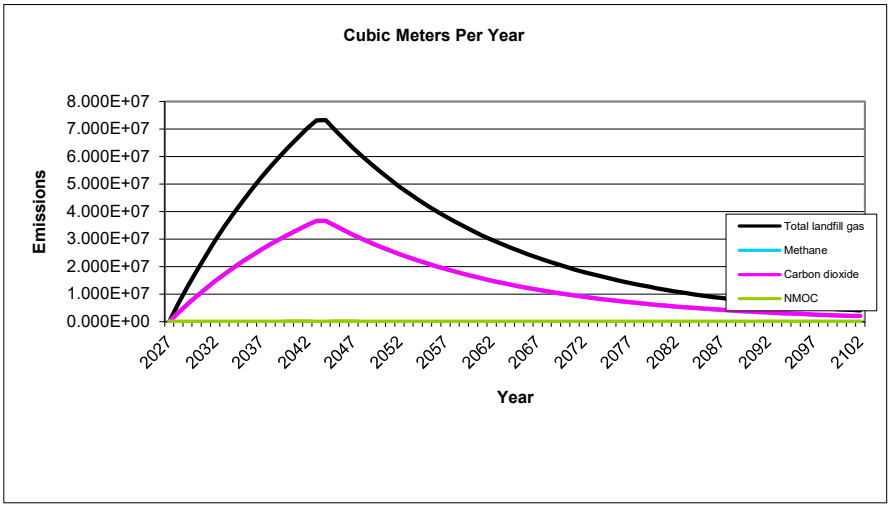
		Gas / Pollutant Default Parameters:		*User-specified Pollutant Parameters:*	
	Compound	Concentration (*ppmv*)	Molecular Weight	Concentration (*ppmv*)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl 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		

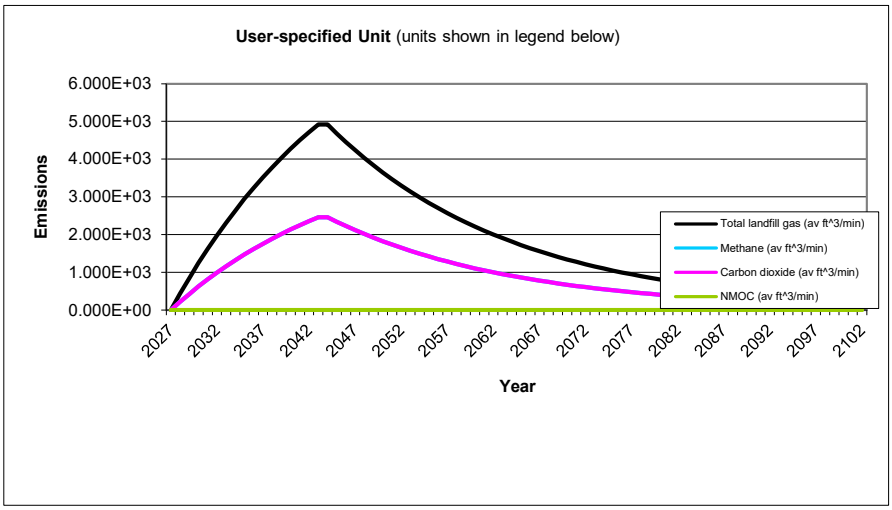
Pollutant Parameters (Continued)

		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
1.000E+05
9.000E+04
8.000E+04
7.000E+04
6.000E+04
5.000E+04
4.000E+04
3.000E+04
2.000E+04
1.000E+04
0.000E+00
2027
2032
2037
2042
2047
2052
2057
2062
2067
2072
2077
2082
2087
2092
2097
2102
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


Cubic Meters Per Year
Emissions
8.000E+07
7.000E+07
6.000E+07
5.000E+07
4.000E+07
3.000E+07
2.000E+07
1.000E+07
0.000E+00
2027
2032
2037
2042
2047
2052
2057
2062
2067
2072
2077
2082
2087
2092
2097
2102
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
Emissions
6.000E+03
5.000E+03
4.000E+03
3.000E+03
2.000E+03
1.000E+03
0.000E+00
2027
2032
2037
2042
2047
2052
2057
2062
2067
2072
2077
2082
2087
2092
2097
2102
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)*
2027	0	0	0	0	0	0
2028	8.096E+03	6.483E+06	4.356E+02	2.163E+03	3.242E+06	2.178E+02
2029	1.580E+04	1.265E+07	8.500E+02	4.220E+03	6.325E+06	4.250E+02
2030	2.312E+04	1.852E+07	1.244E+03	6.177E+03	9.258E+06	6.221E+02
2031	3.009E+04	2.410E+07	1.619E+03	8.038E+03	1.205E+07	8.095E+02
2032	3.672E+04	2.940E+07	1.976E+03	9.809E+03	1.470E+07	9.878E+02
2033	4.303E+04	3.445E+07	2.315E+03	1.149E+04	1.723E+07	1.157E+03
2034	4.902E+04	3.926E+07	2.638E+03	1.309E+04	1.963E+07	1.319E+03
2035	5.473E+04	4.382E+07	2.945E+03	1.462E+04	2.191E+07	1.472E+03
2036	6.016E+04	4.817E+07	3.237E+03	1.607E+04	2.409E+07	1.618E+03
2037	6.532E+04	5.230E+07	3.514E+03	1.745E+04	2.615E+07	1.757E+03
2038	7.023E+04	5.624E+07	3.779E+03	1.876E+04	2.812E+07	1.889E+03
2039	7.490E+04	5.998E+07	4.030E+03	2.001E+04	2.999E+07	2.015E+03
2040	7.934E+04	6.354E+07	4.269E+03	2.119E+04	3.177E+07	2.134E+03
2041	8.357E+04	6.692E+07	4.496E+03	2.232E+04	3.346E+07	2.248E+03
2042	8.759E+04	7.014E+07	4.713E+03	2.340E+04	3.507E+07	2.356E+03
2043	9.142E+04	7.320E+07	4.918E+03	2.442E+04	3.660E+07	2.459E+03
2044	9.141E+04	7.320E+07	4.918E+03	2.442E+04	3.660E+07	2.459E+03
2045	8.695E+04	6.963E+07	4.678E+03	2.323E+04	3.481E+07	2.339E+03
2046	8.271E+04	6.623E+07	4.450E+03	2.209E+04	3.312E+07	2.225E+03
2047	7.868E+04	6.300E+07	4.233E+03	2.102E+04	3.150E+07	2.117E+03
2048	7.484E+04	5.993E+07	4.027E+03	1.999E+04	2.996E+07	2.013E+03
2049	7.119E+04	5.701E+07	3.830E+03	1.902E+04	2.850E+07	1.915E+03
2050	6.772E+04	5.423E+07	3.643E+03	1.809E+04	2.711E+07	1.822E+03
2051	6.442E+04	5.158E+07	3.466E+03	1.721E+04	2.579E+07	1.733E+03
2052	6.127E+04	4.907E+07	3.297E+03	1.637E+04	2.453E+07	1.648E+03
2053	5.829E+04	4.667E+07	3.136E+03	1.557E+04	2.334E+07	1.568E+03
2054	5.544E+04	4.440E+07	2.983E+03	1.481E+04	2.220E+07	1.492E+03
2055	5.274E+04	4.223E+07	2.838E+03	1.409E+04	2.112E+07	1.419E+03
2056	5.017E+04	4.017E+07	2.699E+03	1.340E+04	2.009E+07	1.350E+03
2057	4.772E+04	3.821E+07	2.568E+03	1.275E+04	1.911E+07	1.284E+03
2058	4.539E+04	3.635E+07	2.442E+03	1.213E+04	1.817E+07	1.221E+03
2059	4.318E+04	3.458E+07	2.323E+03	1.153E+04	1.729E+07	1.162E+03
2060	4.107E+04	3.289E+07	2.210E+03	1.097E+04	1.645E+07	1.105E+03
2061	3.907E+04	3.129E+07	2.102E+03	1.044E+04	1.564E+07	1.051E+03
2062	3.717E+04	2.976E+07	2.000E+03	9.927E+03	1.488E+07	9.998E+02
2063	3.535E+04	2.831E+07	1.902E+03	9.443E+03	1.415E+07	9.510E+02
2064	3.363E+04	2.693E+07	1.809E+03	8.983E+03	1.346E+07	9.046E+02
2065	3.199E+04	2.561E+07	1.721E+03	8.544E+03	1.281E+07	8.605E+02
2066	3.043E+04	2.437E+07	1.637E+03	8.128E+03	1.218E+07	8.186E+02
2067	2.894E+04	2.318E+07	1.557E+03	7.731E+03	1.159E+07	7.786E+02
2068	2.753E+04	2.205E+07	1.481E+03	7.354E+03	1.102E+07	7.407E+02
2069	2.619E+04	2.097E+07	1.409E+03	6.996E+03	1.049E+07	7.045E+02
2070	2.491E+04	1.995E+07	1.340E+03	6.654E+03	9.974E+06	6.702E+02
2071	2.370E+04	1.898E+07	1.275E+03	6.330E+03	9.488E+06	6.375E+02
2072	2.254E+04	1.805E+07	1.213E+03	6.021E+03	9.025E+06	6.064E+02
2073	2.144E+04	1.717E+07	1.154E+03	5.728E+03	8.585E+06	5.768E+02
2074	2.040E+04	1.633E+07	1.097E+03	5.448E+03	8.166E+06	5.487E+02
2075	1.940E+04	1.554E+07	1.044E+03	5.182E+03	7.768E+06	5.219E+02
2076	1.846E+04	1.478E+07	9.930E+02	4.930E+03	7.389E+06	4.965E+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)*
2077	1.756E+04	1.406E+07	9.445E+02	4.689E+03	7.029E+06	4.723E+02
2078	1.670E+04	1.337E+07	8.985E+02	4.461E+03	6.686E+06	4.492E+02
2079	1.588E+04	1.272E+07	8.546E+02	4.243E+03	6.360E+06	4.273E+02
2080	1.511E+04	1.210E+07	8.130E+02	4.036E+03	6.050E+06	4.065E+02
2081	1.437E+04	1.151E+07	7.733E+02	3.839E+03	5.755E+06	3.867E+02
2082	1.367E+04	1.095E+07	7.356E+02	3.652E+03	5.474E+06	3.678E+02
2083	1.301E+04	1.041E+07	6.997E+02	3.474E+03	5.207E+06	3.499E+02
2084	1.237E+04	9.906E+06	6.656E+02	3.304E+03	4.953E+06	3.328E+02
2085	1.177E+04	9.423E+06	6.331E+02	3.143E+03	4.712E+06	3.166E+02
2086	1.119E+04	8.964E+06	6.023E+02	2.990E+03	4.482E+06	3.011E+02
2087	1.065E+04	8.526E+06	5.729E+02	2.844E+03	4.263E+06	2.864E+02
2088	1.013E+04	8.111E+06	5.449E+02	2.705E+03	4.055E+06	2.725E+02
2089	9.635E+03	7.715E+06	5.184E+02	2.574E+03	3.858E+06	2.592E+02
2090	9.165E+03	7.339E+06	4.931E+02	2.448E+03	3.669E+06	2.465E+02
2091	8.718E+03	6.981E+06	4.690E+02	2.329E+03	3.490E+06	2.345E+02
2092	8.293E+03	6.640E+06	4.462E+02	2.215E+03	3.320E+06	2.231E+02
2093	7.888E+03	6.317E+06	4.244E+02	2.107E+03	3.158E+06	2.122E+02
2094	7.504E+03	6.008E+06	4.037E+02	2.004E+03	3.004E+06	2.019E+02
2095	7.138E+03	5.715E+06	3.840E+02	1.907E+03	2.858E+06	1.920E+02
2096	6.789E+03	5.437E+06	3.653E+02	1.814E+03	2.718E+06	1.826E+02
2097	6.458E+03	5.172E+06	3.475E+02	1.725E+03	2.586E+06	1.737E+02
2098	6.143E+03	4.919E+06	3.305E+02	1.641E+03	2.460E+06	1.653E+02
2099	5.844E+03	4.679E+06	3.144E+02	1.561E+03	2.340E+06	1.572E+02
2100	5.559E+03	4.451E+06	2.991E+02	1.485E+03	2.226E+06	1.495E+02
2101	5.288E+03	4.234E+06	2.845E+02	1.412E+03	2.117E+06	1.422E+02
2102	5.030E+03	4.028E+06	2.706E+02	1.344E+03	2.014E+06	1.353E+02
2103	4.784E+03	3.831E+06	2.574E+02	1.278E+03	1.916E+06	1.287E+02
2104	4.551E+03	3.644E+06	2.449E+02	1.216E+03	1.822E+06	1.224E+02
2105	4.329E+03	3.467E+06	2.329E+02	1.156E+03	1.733E+06	1.165E+02
2106	4.118E+03	3.298E+06	2.216E+02	1.100E+03	1.649E+06	1.108E+02
2107	3.917E+03	3.137E+06	2.108E+02	1.046E+03	1.568E+06	1.054E+02
2108	3.726E+03	2.984E+06	2.005E+02	9.953E+02	1.492E+06	1.002E+02
2109	3.544E+03	2.838E+06	1.907E+02	9.467E+02	1.419E+06	9.535E+01
2110	3.372E+03	2.700E+06	1.814E+02	9.006E+02	1.350E+06	9.070E+01
2111	3.207E+03	2.568E+06	1.726E+02	8.567E+02	1.284E+06	8.628E+01
2112	3.051E+03	2.443E+06	1.641E+02	8.149E+02	1.221E+06	8.207E+01
2113	2.902E+03	2.324E+06	1.561E+02	7.751E+02	1.162E+06	7.807E+01
2114	2.760E+03	2.210E+06	1.485E+02	7.373E+02	1.105E+06	7.426E+01
2115	2.626E+03	2.103E+06	1.413E+02	7.014E+02	1.051E+06	7.064E+01
2116	2.498E+03	2.000E+06	1.344E+02	6.672E+02	1.000E+06	6.719E+01
2117	2.376E+03	1.903E+06	1.278E+02	6.346E+02	9.513E+05	6.391E+01
2118	2.260E+03	1.810E+06	1.216E+02	6.037E+02	9.049E+05	6.080E+01
2119	2.150E+03	1.721E+06	1.157E+02	5.742E+02	8.607E+05	5.783E+01
2120	2.045E+03	1.637E+06	1.100E+02	5.462E+02	8.187E+05	5.501E+01
2121	1.945E+03	1.558E+06	1.047E+02	5.196E+02	7.788E+05	5.233E+01
2122	1.850E+03	1.482E+06	9.955E+01	4.942E+02	7.408E+05	4.978E+01
2123	1.760E+03	1.409E+06	9.470E+01	4.701E+02	7.047E+05	4.735E+01
2124	1.674E+03	1.341E+06	9.008E+01	4.472E+02	6.703E+05	4.504E+01
2125	1.593E+03	1.275E+06	8.569E+01	4.254E+02	6.376E+05	4.284E+01
2126	1.515E+03	1.213E+06	8.151E+01	4.047E+02	6.065E+05	4.075E+01
2127	1.441E+03	1.154E+06	7.753E+01	3.849E+02	5.770E+05	3.877E+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)*
2128	1.371E+03	1.098E+06	7.375E+01	3.661E+02	5.488E+05	3.688E+01
2129	1.304E+03	1.044E+06	7.015E+01	3.483E+02	5.221E+05	3.508E+01
2130	1.240E+03	9.932E+05	6.673E+01	3.313E+02	4.966E+05	3.337E+01
2131	1.180E+03	9.448E+05	6.348E+01	3.151E+02	4.724E+05	3.174E+01
2132	1.122E+03	8.987E+05	6.038E+01	2.998E+02	4.493E+05	3.019E+01
2133	1.068E+03	8.548E+05	5.744E+01	2.852E+02	4.274E+05	2.872E+01
2134	1.015E+03	8.132E+05	5.464E+01	2.712E+02	4.066E+05	2.732E+01
2135	9.660E+02	7.735E+05	5.197E+01	2.580E+02	3.867E+05	2.599E+01
2136	9.189E+02	7.358E+05	4.944E+01	2.454E+02	3.679E+05	2.472E+01
2137	8.740E+02	6.999E+05	4.703E+01	2.335E+02	3.499E+05	2.351E+01
2138	8.314E+02	6.658E+05	4.473E+01	2.221E+02	3.329E+05	2.237E+01
2139	7.909E+02	6.333E+05	4.255E+01	2.112E+02	3.166E+05	2.128E+01
2140	7.523E+02	6.024E+05	4.048E+01	2.009E+02	3.012E+05	2.024E+01
2141	7.156E+02	5.730E+05	3.850E+01	1.911E+02	2.865E+05	1.925E+01
2142	6.807E+02	5.451E+05	3.662E+01	1.818E+02	2.725E+05	1.831E+01
2143	6.475E+02	5.185E+05	3.484E+01	1.730E+02	2.592E+05	1.742E+01
2144	6.159E+02	4.932E+05	3.314E+01	1.645E+02	2.466E+05	1.657E+01
2145	5.859E+02	4.692E+05	3.152E+01	1.565E+02	2.346E+05	1.576E+01
2146	5.573E+02	4.463E+05	2.998E+01	1.489E+02	2.231E+05	1.499E+01
2147	5.301E+02	4.245E+05	2.852E+01	1.416E+02	2.123E+05	1.426E+01
2148	5.043E+02	4.038E+05	2.713E+01	1.347E+02	2.019E+05	1.357E+01
2149	4.797E+02	3.841E+05	2.581E+01	1.281E+02	1.921E+05	1.290E+01
2150	4.563E+02	3.654E+05	2.455E+01	1.219E+02	1.827E+05	1.227E+01
2151	4.340E+02	3.476E+05	2.335E+01	1.159E+02	1.738E+05	1.168E+01
2152	4.129E+02	3.306E+05	2.221E+01	1.103E+02	1.653E+05	1.111E+01
2153	3.927E+02	3.145E+05	2.113E+01	1.049E+02	1.572E+05	1.056E+01
2154	3.736E+02	2.991E+05	2.010E+01	9.979E+01	1.496E+05	1.005E+01
2155	3.554E+02	2.846E+05	1.912E+01	9.492E+01	1.423E+05	9.560E+00
2156	3.380E+02	2.707E+05	1.819E+01	9.029E+01	1.353E+05	9.093E+00
2157	3.215E+02	2.575E+05	1.730E+01	8.589E+01	1.287E+05	8.650E+00
2158	3.059E+02	2.449E+05	1.646E+01	8.170E+01	1.225E+05	8.228E+00
2159	2.909E+02	2.330E+05	1.565E+01	7.771E+01	1.165E+05	7.827E+00
2160	2.768E+02	2.216E+05	1.489E+01	7.392E+01	1.108E+05	7.445E+00
2161	2.633E+02	2.108E+05	1.416E+01	7.032E+01	1.054E+05	7.082E+00
2162	2.504E+02	2.005E+05	1.347E+01	6.689E+01	1.003E+05	6.737E+00
2163	2.382E+02	1.907E+05	1.282E+01	6.363E+01	9.537E+04	6.408E+00
2164	2.266E+02	1.814E+05	1.219E+01	6.052E+01	9.072E+04	6.095E+00
2165	2.155E+02	1.726E+05	1.160E+01	5.757E+01	8.630E+04	5.798E+00
2166	2.050E+02	1.642E+05	1.103E+01	5.476E+01	8.209E+04	5.515E+00
2167	1.950E+02	1.562E+05	1.049E+01	5.209E+01	7.808E+04	5.246E+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)*
2027	0	0	0	0	0	0
2028	5.934E+03	3.242E+06	2.178E+02	1.394E+01	3.890E+03	2.614E-01
2029	1.158E+04	6.325E+06	4.250E+02	2.721E+01	7.590E+03	5.100E-01
2030	1.695E+04	9.258E+06	6.221E+02	3.982E+01	1.111E+04	7.465E-01
2031	2.205E+04	1.205E+07	8.095E+02	5.182E+01	1.446E+04	9.714E-01
2032	2.691E+04	1.470E+07	9.878E+02	6.324E+01	1.764E+04	1.185E+00
2033	3.153E+04	1.723E+07	1.157E+03	7.410E+01	2.067E+04	1.389E+00
2034	3.593E+04	1.963E+07	1.319E+03	8.443E+01	2.355E+04	1.583E+00
2035	4.011E+04	2.191E+07	1.472E+03	9.425E+01	2.629E+04	1.767E+00
2036	4.409E+04	2.409E+07	1.618E+03	1.036E+02	2.890E+04	1.942E+00
2037	4.787E+04	2.615E+07	1.757E+03	1.125E+02	3.138E+04	2.109E+00
2038	5.147E+04	2.812E+07	1.889E+03	1.209E+02	3.374E+04	2.267E+00
2039	5.489E+04	2.999E+07	2.015E+03	1.290E+02	3.599E+04	2.418E+00
2040	5.815E+04	3.177E+07	2.134E+03	1.366E+02	3.812E+04	2.561E+00
2041	6.125E+04	3.346E+07	2.248E+03	1.439E+02	4.015E+04	2.698E+00
2042	6.419E+04	3.507E+07	2.356E+03	1.508E+02	4.208E+04	2.828E+00
2043	6.700E+04	3.660E+07	2.459E+03	1.574E+02	4.392E+04	2.951E+00
2044	6.699E+04	3.660E+07	2.459E+03	1.574E+02	4.392E+04	2.951E+00
2045	6.373E+04	3.481E+07	2.339E+03	1.497E+02	4.178E+04	2.807E+00
2046	6.062E+04	3.312E+07	2.225E+03	1.424E+02	3.974E+04	2.670E+00
2047	5.766E+04	3.150E+07	2.117E+03	1.355E+02	3.780E+04	2.540E+00
2048	5.485E+04	2.996E+07	2.013E+03	1.289E+02	3.596E+04	2.416E+00
2049	5.218E+04	2.850E+07	1.915E+03	1.226E+02	3.420E+04	2.298E+00
2050	4.963E+04	2.711E+07	1.822E+03	1.166E+02	3.254E+04	2.186E+00
2051	4.721E+04	2.579E+07	1.733E+03	1.109E+02	3.095E+04	2.079E+00
2052	4.491E+04	2.453E+07	1.648E+03	1.055E+02	2.944E+04	1.978E+00
2053	4.272E+04	2.334E+07	1.568E+03	1.004E+02	2.800E+04	1.882E+00
2054	4.063E+04	2.220E+07	1.492E+03	9.548E+01	2.664E+04	1.790E+00
2055	3.865E+04	2.112E+07	1.419E+03	9.083E+01	2.534E+04	1.703E+00
2056	3.677E+04	2.009E+07	1.350E+03	8.640E+01	2.410E+04	1.619E+00
2057	3.497E+04	1.911E+07	1.284E+03	8.218E+01	2.293E+04	1.541E+00
2058	3.327E+04	1.817E+07	1.221E+03	7.818E+01	2.181E+04	1.465E+00
2059	3.165E+04	1.729E+07	1.162E+03	7.436E+01	2.075E+04	1.394E+00
2060	3.010E+04	1.645E+07	1.105E+03	7.074E+01	1.973E+04	1.326E+00
2061	2.863E+04	1.564E+07	1.051E+03	6.729E+01	1.877E+04	1.261E+00
2062	2.724E+04	1.488E+07	9.998E+02	6.400E+01	1.786E+04	1.200E+00
2063	2.591E+04	1.415E+07	9.510E+02	6.088E+01	1.699E+04	1.141E+00
2064	2.465E+04	1.346E+07	9.046E+02	5.791E+01	1.616E+04	1.086E+00
2065	2.344E+04	1.281E+07	8.605E+02	5.509E+01	1.537E+04	1.033E+00
2066	2.230E+04	1.218E+07	8.186E+02	5.240E+01	1.462E+04	9.823E-01
2067	2.121E+04	1.159E+07	7.786E+02	4.985E+01	1.391E+04	9.344E-01
2068	2.018E+04	1.102E+07	7.407E+02	4.742E+01	1.323E+04	8.888E-01
2069	1.919E+04	1.049E+07	7.045E+02	4.510E+01	1.258E+04	8.454E-01
2070	1.826E+04	9.974E+06	6.702E+02	4.290E+01	1.197E+04	8.042E-01
2071	1.737E+04	9.488E+06	6.375E+02	4.081E+01	1.139E+04	7.650E-01
2072	1.652E+04	9.025E+06	6.064E+02	3.882E+01	1.083E+04	7.277E-01
2073	1.571E+04	8.585E+06	5.768E+02	3.693E+01	1.030E+04	6.922E-01
2074	1.495E+04	8.166E+06	5.487E+02	3.513E+01	9.800E+03	6.584E-01
2075	1.422E+04	7.768E+06	5.219E+02	3.341E+01	9.322E+03	6.263E-01
2076	1.353E+04	7.389E+06	4.965E+02	3.178E+01	8.867E+03	5.958E-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)*
2077	1.287E+04	7.029E+06	4.723E+02	3.023E+01	8.435E+03	5.667E-01
2078	1.224E+04	6.686E+06	4.492E+02	2.876E+01	8.023E+03	5.391E-01
2079	1.164E+04	6.360E+06	4.273E+02	2.736E+01	7.632E+03	5.128E-01
2080	1.107E+04	6.050E+06	4.065E+02	2.602E+01	7.260E+03	4.878E-01
2081	1.053E+04	5.755E+06	3.867E+02	2.475E+01	6.906E+03	4.640E-01
2082	1.002E+04	5.474E+06	3.678E+02	2.355E+01	6.569E+03	4.414E-01
2083	9.532E+03	5.207E+06	3.499E+02	2.240E+01	6.249E+03	4.198E-01
2084	9.067E+03	4.953E+06	3.328E+02	2.131E+01	5.944E+03	3.994E-01
2085	8.625E+03	4.712E+06	3.166E+02	2.027E+01	5.654E+03	3.799E-01
2086	8.204E+03	4.482E+06	3.011E+02	1.928E+01	5.378E+03	3.614E-01
2087	7.804E+03	4.263E+06	2.864E+02	1.834E+01	5.116E+03	3.437E-01
2088	7.423E+03	4.055E+06	2.725E+02	1.744E+01	4.866E+03	3.270E-01
2089	7.061E+03	3.858E+06	2.592E+02	1.659E+01	4.629E+03	3.110E-01
2090	6.717E+03	3.669E+06	2.465E+02	1.578E+01	4.403E+03	2.959E-01
2091	6.389E+03	3.490E+06	2.345E+02	1.501E+01	4.189E+03	2.814E-01
2092	6.078E+03	3.320E+06	2.231E+02	1.428E+01	3.984E+03	2.677E-01
2093	5.781E+03	3.158E+06	2.122E+02	1.358E+01	3.790E+03	2.546E-01
2094	5.499E+03	3.004E+06	2.019E+02	1.292E+01	3.605E+03	2.422E-01
2095	5.231E+03	2.858E+06	1.920E+02	1.229E+01	3.429E+03	2.304E-01
2096	4.976E+03	2.718E+06	1.826E+02	1.169E+01	3.262E+03	2.192E-01
2097	4.733E+03	2.586E+06	1.737E+02	1.112E+01	3.103E+03	2.085E-01
2098	4.502E+03	2.460E+06	1.653E+02	1.058E+01	2.952E+03	1.983E-01
2099	4.283E+03	2.340E+06	1.572E+02	1.006E+01	2.808E+03	1.886E-01
2100	4.074E+03	2.226E+06	1.495E+02	9.573E+00	2.671E+03	1.794E-01
2101	3.875E+03	2.117E+06	1.422E+02	9.106E+00	2.540E+03	1.707E-01
2102	3.686E+03	2.014E+06	1.353E+02	8.662E+00	2.417E+03	1.624E-01
2103	3.506E+03	1.916E+06	1.287E+02	8.240E+00	2.299E+03	1.544E-01
2104	3.335E+03	1.822E+06	1.224E+02	7.838E+00	2.187E+03	1.469E-01
2105	3.173E+03	1.733E+06	1.165E+02	7.456E+00	2.080E+03	1.398E-01
2106	3.018E+03	1.649E+06	1.108E+02	7.092E+00	1.979E+03	1.329E-01
2107	2.871E+03	1.568E+06	1.054E+02	6.746E+00	1.882E+03	1.265E-01
2108	2.731E+03	1.492E+06	1.002E+02	6.417E+00	1.790E+03	1.203E-01
2109	2.598E+03	1.419E+06	9.535E+01	6.104E+00	1.703E+03	1.144E-01
2110	2.471E+03	1.350E+06	9.070E+01	5.806E+00	1.620E+03	1.088E-01
2111	2.350E+03	1.284E+06	8.628E+01	5.523E+00	1.541E+03	1.035E-01
2112	2.236E+03	1.221E+06	8.207E+01	5.254E+00	1.466E+03	9.848E-02
2113	2.127E+03	1.162E+06	7.807E+01	4.998E+00	1.394E+03	9.368E-02
2114	2.023E+03	1.105E+06	7.426E+01	4.754E+00	1.326E+03	8.911E-02
2115	1.924E+03	1.051E+06	7.064E+01	4.522E+00	1.262E+03	8.476E-02
2116	1.831E+03	1.000E+06	6.719E+01	4.301E+00	1.200E+03	8.063E-02
2117	1.741E+03	9.513E+05	6.391E+01	4.092E+00	1.142E+03	7.670E-02
2118	1.656E+03	9.049E+05	6.080E+01	3.892E+00	1.086E+03	7.296E-02
2119	1.576E+03	8.607E+05	5.783E+01	3.702E+00	1.033E+03	6.940E-02
2120	1.499E+03	8.187E+05	5.501E+01	3.522E+00	9.825E+02	6.601E-02
2121	1.426E+03	7.788E+05	5.233E+01	3.350E+00	9.346E+02	6.279E-02
2122	1.356E+03	7.408E+05	4.978E+01	3.187E+00	8.890E+02	5.973E-02
2123	1.290E+03	7.047E+05	4.735E+01	3.031E+00	8.456E+02	5.682E-02
2124	1.227E+03	6.703E+05	4.504E+01	2.883E+00	8.044E+02	5.405E-02
2125	1.167E+03	6.376E+05	4.284E+01	2.743E+00	7.652E+02	5.141E-02
2126	1.110E+03	6.065E+05	4.075E+01	2.609E+00	7.279E+02	4.890E-02
2127	1.056E+03	5.770E+05	3.877E+01	2.482E+00	6.924E+02	4.652E-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)*
2128	1.005E+03	5.488E+05	3.688E+01	2.361E+00	6.586E+02	4.425E-02
2129	9.556E+02	5.221E+05	3.508E+01	2.246E+00	6.265E+02	4.209E-02
2130	9.090E+02	4.966E+05	3.337E+01	2.136E+00	5.959E+02	4.004E-02
2131	8.647E+02	4.724E+05	3.174E+01	2.032E+00	5.669E+02	3.809E-02
2132	8.225E+02	4.493E+05	3.019E+01	1.933E+00	5.392E+02	3.623E-02
2133	7.824E+02	4.274E+05	2.872E+01	1.839E+00	5.129E+02	3.446E-02
2134	7.442E+02	4.066E+05	2.732E+01	1.749E+00	4.879E+02	3.278E-02
2135	7.079E+02	3.867E+05	2.599E+01	1.664E+00	4.641E+02	3.118E-02
2136	6.734E+02	3.679E+05	2.472E+01	1.582E+00	4.415E+02	2.966E-02
2137	6.406E+02	3.499E+05	2.351E+01	1.505E+00	4.199E+02	2.822E-02
2138	6.093E+02	3.329E+05	2.237E+01	1.432E+00	3.995E+02	2.684E-02
2139	5.796E+02	3.166E+05	2.128E+01	1.362E+00	3.800E+02	2.553E-02
2140	5.513E+02	3.012E+05	2.024E+01	1.296E+00	3.614E+02	2.429E-02
2141	5.245E+02	2.865E+05	1.925E+01	1.232E+00	3.438E+02	2.310E-02
2142	4.989E+02	2.725E+05	1.831E+01	1.172E+00	3.270E+02	2.197E-02
2143	4.745E+02	2.592E+05	1.742E+01	1.115E+00	3.111E+02	2.090E-02
2144	4.514E+02	2.466E+05	1.657E+01	1.061E+00	2.959E+02	1.988E-02
2145	4.294E+02	2.346E+05	1.576E+01	1.009E+00	2.815E+02	1.891E-02
2146	4.084E+02	2.231E+05	1.499E+01	9.598E-01	2.678E+02	1.799E-02
2147	3.885E+02	2.123E+05	1.426E+01	9.130E-01	2.547E+02	1.711E-02
2148	3.696E+02	2.019E+05	1.357E+01	8.684E-01	2.423E+02	1.628E-02
2149	3.516E+02	1.921E+05	1.290E+01	8.261E-01	2.305E+02	1.548E-02
2150	3.344E+02	1.827E+05	1.227E+01	7.858E-01	2.192E+02	1.473E-02
2151	3.181E+02	1.738E+05	1.168E+01	7.475E-01	2.085E+02	1.401E-02
2152	3.026E+02	1.653E+05	1.111E+01	7.110E-01	1.984E+02	1.333E-02
2153	2.878E+02	1.572E+05	1.056E+01	6.763E-01	1.887E+02	1.268E-02
2154	2.738E+02	1.496E+05	1.005E+01	6.434E-01	1.795E+02	1.206E-02
2155	2.604E+02	1.423E+05	9.560E+00	6.120E-01	1.707E+02	1.147E-02
2156	2.477E+02	1.353E+05	9.093E+00	5.821E-01	1.624E+02	1.091E-02
2157	2.357E+02	1.287E+05	8.650E+00	5.537E-01	1.545E+02	1.038E-02
2158	2.242E+02	1.225E+05	8.228E+00	5.267E-01	1.470E+02	9.874E-03
2159	2.132E+02	1.165E+05	7.827E+00	5.011E-01	1.398E+02	9.392E-03
2160	2.028E+02	1.108E+05	7.445E+00	4.766E-01	1.330E+02	8.934E-03
2161	1.929E+02	1.054E+05	7.082E+00	4.534E-01	1.265E+02	8.498E-03
2162	1.835E+02	1.003E+05	6.737E+00	4.313E-01	1.203E+02	8.084E-03
2163	1.746E+02	9.537E+04	6.408E+00	4.102E-01	1.144E+02	7.690E-03
2164	1.661E+02	9.072E+04	6.095E+00	3.902E-01	1.089E+02	7.315E-03
2165	1.580E+02	8.630E+04	5.798E+00	3.712E-01	1.036E+02	6.958E-03
2166	1.503E+02	8.209E+04	5.515E+00	3.531E-01	9.850E+01	6.618E-03
2167	1.429E+02	7.808E+04	5.246E+00	3.359E-01	9.370E+01	6.296E-03