

**J. P. Mascaro & Sons**  
Complete Solid Waste Disposal Systems  
2650 Audubon Road  
Audubon, PA 19403  
[www.jpмасcaro.com](http://www.jpмасcaro.com)

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**Jonathan T. March, P.E.**

Telephone: (267) 933-6120  
Facsimile: (267) 933-6121  
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March 15, 2017

Ms. Carrie McCumbers  
Division of Air Quality  
West Virginia Department of Environmental Protection  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

Re: Brooke County Landfill  
Title V Renewal

Attn: Title V Program Manager:

Enclosed we hereby submit a binder and two CDs with documents for renewal of the Title V permit for Brooke County Sanitary Landfill.

If you have any questions or need any additional information, please do not hesitate to contact me at 267-933-6120 or [jon.march@jpмасcaro.com](mailto:jon.march@jpмасcaro.com). Thank you.

Sincerely,

A handwritten signature in blue ink, appearing to be 'J. March', written over a large blue oval scribble.

Jon March, P.E.  
BCSL Engineer

cc: Mike D'Aurora, General Manager BCSL  
Robert Mullins, WVDEP



**BROOKE COUNTY SANITARY LANDFILL  
TITLE V PERMIT  
RENEWAL APPLICATION  
MARCH 2017**



**VALERO TERRESTRIAL D/B/A  
BROOKE COUNTY LANDFILL  
RD #2, BOX 410  
COLLIERS, WV 26035  
304-748-0014  
304-748-0005 FAX**

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WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57th Street SE
Charleston, WV 25304
Phone: (304) 926-0475
www.dep.wv.gov/daq

INITIAL/RENEWAL TITLE V PERMIT APPLICATION - GENERAL FORMS

Section 1: General Information

Form with 10 sections: 1. Name of Applicant, 2. Facility Name or Location, 3. DAQ Plant ID No., 4. Federal Employer ID No., 5. Permit Application Type, 6. Type of Business Entity, 7. Is the Applicant the..., 8. Number of onsite employees, 9. Governmental Code, 10. Business Confidentiality Claims.

<b>11. Mailing Address</b>		
<b>Street or P.O. Box:</b> 1118 Petrillo Rd		
<b>City:</b> Colliers	<b>State:</b> WV	<b>Zip:</b> 26035
<b>Telephone Number:</b> 304-748-0014		<b>Fax Number:</b> 304-748-0005

<b>12. Facility Location</b>		
<b>Street:</b> 1118 Petrillo Rd	<b>City:</b> Colliers	<b>County:</b> US
<b>UTM Easting:</b> 535.865 km	<b>UTM Northing:</b> 4469.677 km	<b>Zone:</b> <input checked="" type="checkbox"/> 17 or <input type="checkbox"/> 18
<p><b>Directions:</b> from the city of New Martinsville, take Route 2 south one mile. Make a left onto Rt. 180 to the landfill. : Following US Route 22 West from Pittsburgh, PA toward Weirton, WV, exit onto Harmon Creek Rd (County Rd 1), travel south (left off of ramp) approximately 1 mile. Look for sign on right for Brooke County Sanitary Landfill and turn right onto Petrilli Road (County Road 1/1). Follow this road about 1 mile to top of hill To scale house.</p>		
<b>Portable Source?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
<b>Is facility located within a nonattainment area?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>If yes, for what air pollutants?</b>
<b>Is facility located within 50 miles of another state?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>If yes, name the affected state(s).</b> PA OH
<b>Is facility located within 100 km of a Class I Area<sup>1</sup>?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  <b>If no, do emissions impact a Class I Area<sup>1</sup>?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>If yes, name the area(s).</b>
<sup>1</sup> Class I areas include Dolly Sods and Otter Creek Wilderness Areas in West Virginia, and Shenandoah National Park and James River Face Wilderness Area in Virginia.		

<b>13. Contact Information</b>		
<b>Responsible Official:</b> Mr. Pasquale Mascaro		<b>Title:</b> President
<b>Street or P.O. Box:</b> 2650 Audubon Rd		
<b>City:</b> Audubon	<b>State:</b> PA	<b>Zip:</b> 19403-
<b>Telephone Number:</b> (484) 398-6500	<b>Fax Number:</b> (267) 933-6121	
<b>E-mail address:</b> jon.march@jpmascaro.com		
<b>Environmental Contact:</b> Mr. Michael D'Aurora		<b>Title:</b> General Manager
<b>Street or P.O. Box:</b> 1118 Petrillo Rd		
<b>City:</b> Colliers	<b>State:</b> WV	<b>Zip:</b> 26035-
<b>Telephone Number:</b> (304) 748-0014	<b>Fax Number:</b> 267-933-6121	
<b>E-mail address:</b> mike.daurora@jpmascaro.com		
<b>Application Preparer:</b> Jonathan March, P.E.		<b>Title:</b> Corporate Engineer
<b>Company:</b> Solid Waste Services, Inc		
<b>Street or P.O. Box:</b> 2650 Audubon Rd		
<b>City:</b> Audubon	<b>State:</b> PA	<b>Zip:</b> 19403-
<b>Telephone Number:</b> (267) 933-6120	<b>Fax Number:</b> (267) 933-6121	
<b>E-mail address:</b> jon.march@jpmascaro.com		

**14. Facility Description**

List all processes, products, NAICS and SIC codes for normal operation, in order of priority. Also list any process, products, NAICS and SIC codes associated with any alternative operating scenarios if different from those listed for normal operation.

Process	Products	NAICS	SIC
Municipal Solid Waste Landfill	N/A		4953

**Provide a general description of operations.**

The Valero Terrestrial Corporation’s Brooke County Sanitary landfill is a 196 acre municipal solid waste landfill which began operations in the 1970’s. The disposal area is 180 acres. The maximum monthly tonnage of municipal solid waste accepted at Brooke County Landfill is 20,000 tons/month. The landfill accepts residential, commercial, industrial, construction/demolition waste, institutional waste, autoclaved or sterilized waste, and petroleum contaminated soil.

15. Provide an **Area Map** showing plant location as **ATTACHMENT A**.

16. Provide a **Plot Plan(s)**, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is located as **ATTACHMENT B**. For instructions, refer to “Plot Plan - Guidelines.”

17. Provide a detailed **Process Flow Diagram(s)** showing each process or emissions unit as **ATTACHMENT C**. Process Flow Diagrams should show all emission units, control equipment, emission points, and their relationships.

**Section 2: Applicable Requirements**

<b>18. Applicable Requirements Summary</b>	
Instructions: Mark all applicable requirements.	
<input type="checkbox"/> SIP	<input type="checkbox"/> FIP
<input checked="" type="checkbox"/> Minor source NSR (45CSR13)	<input type="checkbox"/> PSD (45CSR14)
<input type="checkbox"/> NESHAP (45CSR34)	<input type="checkbox"/> Nonattainment NSR (45CSR19)
<input checked="" type="checkbox"/> Section 111 NSPS	<input type="checkbox"/> Section 112(d) MACT standards
<input type="checkbox"/> Section 112(g) Case-by-case MACT	<input type="checkbox"/> 112(r) RMP
<input type="checkbox"/> Section 112(i) Early reduction of HAP	<input type="checkbox"/> Consumer/commercial prod. reqts., section 183(e)
<input type="checkbox"/> Section 129 Standards/Reqs.	<input type="checkbox"/> Stratospheric ozone (Title VI)
<input type="checkbox"/> Tank vessel reqt., section 183(f)	<input type="checkbox"/> Emissions cap 45CSR§30-2.6.1
<input type="checkbox"/> NAAQS, increments or visibility (temp. sources)	<input type="checkbox"/> 45CSR27 State enforceable only rule
<input checked="" type="checkbox"/> 45CSR4 State enforceable only rule	<input type="checkbox"/> Acid Rain (Title IV, 45CSR33)
<input type="checkbox"/> Emissions Trading and Banking (45CSR28)	<input type="checkbox"/> Compliance Assurance Monitoring (40CFR64)
<input type="checkbox"/> CAIR NO <sub>x</sub> Annual Trading Program (45CSR39)	<input type="checkbox"/> CAIR NO <sub>x</sub> Ozone Season Trading Program (45CSR40)
<input type="checkbox"/> CAIR SO <sub>2</sub> Trading Program (45CSR41)	

<b>19. Non Applicability Determinations</b>
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**List all requirements which the source has determined not applicable and for which a permit shield is requested. The listing shall also include the rule citation and the reason why the shield applies.**

- a. Any standard or other requirements under, 112 of the clean Air Act, including any requirement concerning accident prevention under 112(r) (7) of the clean Air Act, but not including the contents of any risk management plan required under 112(r) of the Clean Air Act;
- b. Any standard or other requirement of the acid deposition control program under Title IV of the Clean Air Act or the regulations promulgated thereunder;
- c. Any requirements established pursuant to 504(b) or 114(a)(3) of the Clean Air Act;
- d. Any standard or other requirement governing solid waste incineration under 129 of the Clean Air Act;
- e. Any standard or other requirement for consumer and commercial products under 183(c) of the Clean Air Act;
- f. Any standard or other requirement for tank vessels under 183(f) of the Clean Air Act;
- g. Any standard or other requirement of the regulations promulgated to protect stratospheric ozone under Title VI of the Clean Air Act, unless the Secretary determines that such requirements need not be contained in a Title V permit pursuant to an exemption by USEPA;
- h. Any national ambient air quality standard or increment or visibility requirement under part C of Title I of the Clean Air Act, but only as it would apply to temporary sources permitted pursuant to 504(e) of the Clean Air Act;

Permit Shield

**19. Non Applicability Determinations (Continued) - Attach additional pages as necessary.**

List all requirements which the source has determined not applicable and for which a permit shield is requested. The listing shall also include the rule citation and the reason why the shield applies.

Permit Shield

## 20. Facility-Wide Applicable Requirements

List all facility-wide applicable requirements. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements).

- a. Any standard or other requirement provided for in the State Implementation Plan approved by the United States Environmental Protection Agency (USEPA) or promulgated by USEPA through rulemaking under Title I of the Clean Air Act that implements the relevant requirements of the Act, including any revisions to that State Implementation Plan;
- b. Any term or condition of any precondition permits issued pursuant to regulations approved or promulgated through rulemaking under Title I, including parts C and D, of the Clean Air Act, including any permits issued under 45 C.S.R. 13, 45 C.S.R. 14, 45 C.S.R. 15, and 45 C.S.R. 19.
- c. Any standard or other requirement under 111 of the Clean Air Act, including 111(d).
- d. Any emissions cap and related requirements established for the source by agreement with the Chief and USEPA or otherwise applicable under the rules implemented by the secretary; and
- e. Any requirement imposed pursuant to the provisions of 45 C.S.R. 27 or any other State-only requirement for the State enforceable purposes only.

The rule citations are as follows:

45 C.S.R. 6- Open burning prohibited

45 C.S.R. 11- Standby plans for emergency episodes

WV Code 22-5-4(14)- The Chief can request any pertinent information such as annual emission inventory reporting.

45 C.S.R. 23- Municipal Solid Waste Landfills

45 C.S.R. 30- Operating permit requirement

40CFR61- Asbestos inspection and removal

40CFR 60- Subpart WWW

40CFR60.11b-Subpart Kb

45 C.S.R. 4- No objectionable odors

45 C.S.R- 17- Particulate matter control program

Permit Shield

**For all facility-wide applicable requirements listed above, provide monitoring/testing / recordkeeping / reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number and/or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)**

**Are you in compliance with all facility-wide applicable requirements?**  Yes  No

**If no, complete the Schedule of Compliance Form as ATTACHMENT F.**

**20. Facility-Wide Applicable Requirements (Continued) - Attach additional pages as necessary.**

**List all facility-wide applicable requirements. For each applicable requirement, include the rule citation and/or permit with the condition number.**

- a. Any standard or other requirement provided for in the State Implementation Plan approved by the United States Environmental Protection Agency (USEPA) or promulgated by USEPA through rulemaking under Title I of the Clean Air Act that implements the relevant requirements of the Act, including any revisions to that State Implementation Plan;
- b. Any term or condition of any precondition permits issued pursuant to regulations approved or promulgated through rulemaking under Title I, including parts C and D, of the Clean Air Act, including any permits issued under 45 C.S.R. 13, 45 C.S.R. 14, 45 C.S.R. 15, and 45 C.S.R. 19.
- c. Any standard or other requirement under 111 of the Clean Air Act, including 111(d).
- d. Any emissions cap and related requirements established for the source by agreement with the Chief and USEPA or otherwise applicable under the rules implemented by the secretary; and
- e. Any requirement imposed pursuant to the provisions of 45 C.S.R. 27 or any other State-only requirement for the State enforceable purposes only.

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45 C.S.R- 17-Particulate matter control program

Permit Shield

**For all facility-wide applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number and/or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)**

<b>REQUIREMENT</b>	<b>PERMIT CONDITION #</b>	<b>POLLUTANT/PARAMETER</b>	<b>COMPLIANCE</b>
CSR 45-6-3.1	III.B.1.a.i	Refuse	N/A
40CFR61.145,61.148, & 61.150	III.B.1.a.iii	Asbestos	N/A
CSR 45-30-4.3.h.1.B	III.B.1.a.iv	Any newly applicable requirement	N/A
WV Code 22-5-4(a)(15)	III.B.1.a.v.	Testing	N/A
CSR 45-4-3.1	III.B.1.b.	any air pollutant	REPORTING
CSR 45-11-5.2	III.B.2.a.i	any regulated air pollutant	N/A
CSR 45-17	III.B.2.b.i.	Particulate matter	Submission of Control program
CSR 45-23/40CFR60.757(a)	III.B.2.a.ii	Solid waste	Volume calculation
40CFR60.752,753,755,756	III.B.2.a.iii/iv(a)-(h)	NMOC	recordkeeping & report
40CFR60.752,60.18	III.B.2.a.iv.(i)-(m)	NMOC	recordkeeping & report
WV Code 22-5-4(a)(14)	III.B.2 .a.v	Criteria air pollutants	report
40CFR60.116b(b)	III.B.2.a.vi.	vessel dimensions	recordkeeping
40CFR60.116b(d)	III.B.2.a.vii	Maximum true vapor pressure	Notification
40CFR61.154	III.B.2.a.viii	Asbestos	recordkeeping & report
CSR 45-23,40CFR60.757,758	N/A	Closure report	recordkeeping
40CFR63.1955 ( c )	N/A	recordkeeping & report	
40CFR63.1960	N/A	recordkeeping & report	
40CFR63.1980 (a&b)	N/A	recordkeeping and report	
40CFR63.6	N/A	recordkeeping & report	
40CFR63.10	N/A	recordkeeping & report	

**Are you in compliance with all facility-wide applicable requirements?**  Yes  No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

**21. Active Permits/Consent Orders**

Permit or Consent Order Number	Date of Issuance MM/DD/YYYY	List any Permit Determinations that Affect the Permit <i>(if any)</i>
R30-10300034-2007	03/13/2007	
CONSENT ORDER	02/27/2002	
R13-2463	05/15/2002	
R13-2476A	12/17/2004	
R13-2731	05/07/2007	
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**22. Inactive Permits/Obsolete Permit Conditions**

Permit Number	Date of Issuance	Permit Condition Number
R30-00900053-1996	10/23/2002	
R13-2475	5/15/2002	
R13-2475A	7/31/2007	
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Section 3: Facility-Wide Emissions

23. Facility-Wide Emissions Summary [Tons per Year]	
Criteria Pollutants	Potential Emissions
Carbon Monoxide (CO)	31.1
Nitrogen Oxides (NO <sub>x</sub> )	12.73
Lead (Pb)	N/A
Particulate Matter (PM <sub>2.5</sub> ) <sup>1</sup>	11.712
Particulate Matter (PM <sub>10</sub> ) <sup>1</sup>	78.1
Total Particulate Matter (TSP)	N/A
Sulfur Dioxide (SO <sub>2</sub> )	51.33
Volatile Organic Compounds (VOC)	72.25
Hazardous Air Pollutants <sup>2</sup>	Potential Emissions
1,1,2- TRICHLOROETHANE	0.045
ACRYLONITRILE	1.389
BENZENE	0.288
CARBON DISULFIDE	0.084
CARBON TETRACHLORIDE	0.012
CARBONYL SULFIDE	0.054
CHLOROBENZENE	0.054
XYLENE	2.502
CHLOROFORM	0.010
MERCURY	0.156
METHYL ETHYL KETONE	0.996
METHYL ISOBUTYL KETONE	0.234
TOLUENE	7.038
VINYL CHLORIDE	0.888
Regulated Pollutants other than Criteria and HAP	Potential Emissions
Carbon Dioxide	7963
Methane	2901

<sup>1</sup>*PM<sub>2.5</sub> and PM<sub>10</sub> are components of TSP.*

<sup>2</sup>*For HAPs that are also considered PM or VOCs, emissions should be included in both the HAPs section and the Criteria Pollutants section.*

**Section 4: Insignificant Activities**

<b>24. Insignificant Activities (Check all that apply)</b>	
<input checked="" type="checkbox"/>	1. Air compressors and pneumatically operated equipment, including hand tools.
<input checked="" type="checkbox"/>	2. Air contaminant detectors or recorders, combustion controllers or shutoffs.
<input checked="" type="checkbox"/>	3. Any consumer product used in the same manner as in normal consumer use, provided the use results in a duration and frequency of exposure which are not greater than those experienced by consumer, and which may include, but not be limited to, personal use items; janitorial cleaning supplies, office supplies and supplies to maintain copying equipment.
<input checked="" type="checkbox"/>	4. Bathroom/toilet vent emissions.
<input checked="" type="checkbox"/>	5. Batteries and battery charging stations, except at battery manufacturing plants.
<input checked="" type="checkbox"/>	6. Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents. Many lab fume hoods or vents might qualify for treatment as insignificant (depending on the applicable SIP) or be grouped together for purposes of description.
<input type="checkbox"/>	7. Blacksmith forges.
<input type="checkbox"/>	8. Boiler water treatment operations, not including cooling towers.
<input checked="" type="checkbox"/>	9. Brazing, soldering or welding equipment used as an auxiliary to the principal equipment at the source.
<input type="checkbox"/>	10. CO <sub>2</sub> lasers, used only on metals and other materials which do not emit HAP in the process.
<input checked="" type="checkbox"/>	11. Combustion emissions from propulsion of mobile sources, except for vessel emissions from Outer Continental Shelf sources.
<input checked="" type="checkbox"/>	12. Combustion units designed and used exclusively for comfort heating that use liquid petroleum gas or natural gas as fuel.
<input checked="" type="checkbox"/>	13. Comfort air conditioning or ventilation systems not used to remove air contaminants generated by or released from specific units of equipment.
<input type="checkbox"/>	14. Demineralized water tanks and demineralizer vents.
<input type="checkbox"/>	15. Drop hammers or hydraulic presses for forging or metalworking.
<input type="checkbox"/>	16. Electric or steam-heated drying ovens and autoclaves, but not the emissions from the articles or substances being processed in the ovens or autoclaves or the boilers delivering the steam.
<input type="checkbox"/>	17. Emergency (backup) electrical generators at residential locations.
<input checked="" type="checkbox"/>	18. Emergency road flares.
<input checked="" type="checkbox"/>	19. Emission units which do not have any applicable requirements and which emit criteria pollutants (CO, NO <sub>x</sub> , SO <sub>2</sub> , VOC and PM) into the atmosphere at a rate of less than 1 pound per hour and less than 10,000 pounds per year aggregate total for each criteria pollutant from all emission units.  Please specify all emission units for which this exemption applies along with the quantity of criteria pollutants emitted on an hourly and annual basis:  <u>Please refer to next page for list of units.</u>  _____  _____  _____  _____  _____  _____

#### Section 4. Insignificant Activities

Emission units which do not have any applicable requirements and which emit criteria pollutants (CO, NO<sub>x</sub>, SO<sub>2</sub>, VOC and PM) into the atmosphere at a rate of less than 1 pound per hour and less than 10,000 pounds per year aggregate total for each criteria pollutant from all emission units.

<u>Equipment Description</u>	<u>Design Capacity(gal)</u>	<u>Year Installed</u>
Secondary Leachate Pond	2,618,000	1998
Primary Leachate Pond	1,787,900	1991
Chloride Tank	6,000	1998
6A Leachate Pond	168,300	1991
Clarifier	6,000	1998
Clarifier	6,000	1998
Compost Leachate Pond	187,000	1993
AST-Trans C, 30 W Oil	300	1999
AST-15W40	300	1999
AST-ISO46 Icealube	300	1999
AST-Used Oil	275	1999
AST-Used Oil	3,200	1997
AST-15W40	500	1999
AST-Hyd. 68 Oil	500	1999
AST-Hyd. 30 Oil	300	1999
AST-Used Oil	500	1999
Portable Transfer Tank	500	1992
AST-Motor Oil	200	1992
AST-Hyd Oil	200	1992
Offroad Fuel Truck	750	1990

<b>24. Insignificant Activities (Check all that apply)</b>	
<input type="checkbox"/>	<p>20. Emission units which do not have any applicable requirements and which emit hazardous air pollutants into the atmosphere at a rate of less than 0.1 pounds per hour and less than 1,000 pounds per year aggregate total for all HAPs from all emission sources. This limitation cannot be used for any source which emits dioxin/furans nor for toxic air pollutants as per 45CSR27.</p> <p>Please specify all emission units for which this exemption applies along with the quantity of hazardous air pollutants emitted on an hourly and annual basis:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<input type="checkbox"/>	21. Environmental chambers not using hazardous air pollutant (HAP) gases.
<input checked="" type="checkbox"/>	22. Equipment on the premises of industrial and manufacturing operations used solely for the purpose of preparing food for human consumption.
<input type="checkbox"/>	23. Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment.
<input checked="" type="checkbox"/>	24. Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis.
<input checked="" type="checkbox"/>	25. Equipment used for surface coating, painting, dipping or spray operations, except those that will emit VOC or HAP.
<input checked="" type="checkbox"/>	26. Fire suppression systems.
<input checked="" type="checkbox"/>	27. Firefighting equipment and the equipment used to train firefighters.
<input checked="" type="checkbox"/>	28. Flares used solely to indicate danger to the public.
<input checked="" type="checkbox"/>	29. Fugitive emission related to movement of passenger vehicle provided the emissions are not counted for applicability purposes and any required fugitive dust control plan or its equivalent is submitted.
<input checked="" type="checkbox"/>	30. Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formulation.
<input checked="" type="checkbox"/>	31. Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal or plastic.
<input type="checkbox"/>	32. Humidity chambers.
<input type="checkbox"/>	33. Hydraulic and hydrostatic testing equipment.
<input checked="" type="checkbox"/>	34. Indoor or outdoor kerosene heaters.
<input checked="" type="checkbox"/>	35. Internal combustion engines used for landscaping purposes.
<input type="checkbox"/>	36. Laser trimmers using dust collection to prevent fugitive emissions.
<input type="checkbox"/>	37. Laundry activities, except for dry-cleaning and steam boilers.
<input type="checkbox"/>	38. Natural gas pressure regulator vents, excluding venting at oil and gas production facilities.
<input type="checkbox"/>	39. Oxygen scavenging (de-aeration) of water.
<input checked="" type="checkbox"/>	40. Ozone generators.

<b>24. Insignificant Activities (Check all that apply)</b>	
<input checked="" type="checkbox"/>	41. Plant maintenance and upkeep activities (e.g., grounds-keeping, general repairs, cleaning, painting, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots) provided these activities are not conducted as part of a manufacturing process, are not related to the source's primary business activity, and not otherwise triggering a permit modification. (Cleaning and painting activities qualify if they are not subject to VOC or HAP control requirements. Asphalt batch plant owners/operators must still get a permit if otherwise requested.)
<input checked="" type="checkbox"/>	42. Portable electrical generators that can be moved by hand from one location to another. "Moved by Hand" means that it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance, or device.
<input type="checkbox"/>	43. Process water filtration systems and demineralizers.
<input checked="" type="checkbox"/>	44. Repair or maintenance shop activities not related to the source's primary business activity, not including emissions from surface coating or de-greasing (solvent metal cleaning) activities, and not otherwise triggering a permit modification.
<input checked="" type="checkbox"/>	45. Repairs or maintenance where no structural repairs are made and where no new air pollutant emitting facilities are installed or modified.
<input type="checkbox"/>	46. Routing calibration and maintenance of laboratory equipment or other analytical instruments.
<input type="checkbox"/>	47. Salt baths using nonvolatile salts that do not result in emissions of any regulated air pollutants. Shock chambers.
<input type="checkbox"/>	48. Shock chambers.
<input type="checkbox"/>	49. Solar simulators.
<input checked="" type="checkbox"/>	50. Space heaters operating by direct heat transfer.
<input checked="" type="checkbox"/>	51. Steam cleaning operations.
<input type="checkbox"/>	52. Steam leaks.
<input type="checkbox"/>	53. Steam sterilizers.
<input type="checkbox"/>	54. Steam vents and safety relief valves.
<input type="checkbox"/>	55. Storage tanks, reservoirs, and pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized.
<input checked="" type="checkbox"/>	56. Storage tanks, vessels, and containers holding or storing liquid substances that will not emit any VOC or HAP. Exemptions for storage tanks containing petroleum liquids or other volatile organic liquids should be based on size limits such as storage tank capacity and vapor pressure of liquids stored and are not appropriate for this list.
<input checked="" type="checkbox"/>	57. Such other sources or activities as the Director may determine.
<input checked="" type="checkbox"/>	58. Tobacco smoking rooms and areas.
<input type="checkbox"/>	59. Vents from continuous emissions monitors and other analyzers.

*Section 5: Emission Units, Control Devices, and Emission Points*

<b>25. Equipment Table</b>
Fill out the <b>Title V Equipment Table</b> and provide it as <b>ATTACHMENT D</b> .
<b>26. Emission Units</b>
For each emission unit listed in the <b>Title V Equipment Table</b> , fill out and provide an <b>Emission Unit Form</b> as <b>ATTACHMENT E</b> .
For each emission unit not in compliance with an applicable requirement, fill out a <b>Schedule of Compliance Form</b> as <b>ATTACHMENT F</b> .
<b>27. Control Devices</b>
For each control device listed in the <b>Title V Equipment Table</b> , fill out and provide an <b>Air Pollution Control Device Form</b> as <b>ATTACHMENT G</b> .
For any control device that is required on an emission unit in order to meet a standard or limitation for which the potential pre-control device emissions of an applicable regulated air pollutant is greater than or equal to the Title V Major Source Threshold Level, refer to the <b>Compliance Assurance Monitoring (CAM) Form(s)</b> for CAM applicability. Fill out and provide these forms, if applicable, for each Pollutant Specific Emission Unit (PSEU) as <b>ATTACHMENT H</b> .

**Section 6: Certification of Information**

<b>28. Certification of Truth, Accuracy and Completeness and Certification of Compliance</b>	
<i>Note: This Certification must be signed by a responsible official. The <b>original</b>, signed in <b>blue ink</b>, must be submitted with the application. Applications without an <b>original</b> signed certification will be considered as incomplete.</i>	
<b>a. Certification of Truth, Accuracy and Completeness</b>	
I certify that I am a responsible official (as defined at 45CSR§30-2.38) and am accordingly authorized to make this submission on behalf of the owners or operators of the source described in this document and its attachments. I certify under penalty of law that I have personally examined and am familiar with the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine and/or imprisonment.	
<b>b. Compliance Certification</b>	
Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.	
<b>Responsible official (type or print)</b>	
Name: Mr. Pasquale N. Mascaro	Title: President
<b>Responsible official's signature:</b>	
Signature: 	Signature Date: <u>3/15/17</u>
(Must be signed and dated in blue ink)	

<b>Note: Please check all applicable attachments included with this permit application:</b>	
<input type="checkbox"/>	ATTACHMENT A: Area Map
<input checked="" type="checkbox"/>	ATTACHMENT B: Plot Plan(s)
<input type="checkbox"/>	ATTACHMENT C: Process Flow Diagram(s)
<input checked="" type="checkbox"/>	ATTACHMENT D: Equipment Table
<input checked="" type="checkbox"/>	ATTACHMENT E: Emission Unit Form(s)
<input type="checkbox"/>	ATTACHMENT F: Schedule of Compliance Form(s)
<input checked="" type="checkbox"/>	ATTACHMENT G: Air Pollution Control Device Form(s)
<input checked="" type="checkbox"/>	ATTACHMENT H: Compliance Assurance Monitoring (CAM) Form(s)

**All of the required forms and additional information can be found and downloaded from, the DEP website at [www.dep.wv.gov/dag](http://www.dep.wv.gov/dag), requested by phone (304) 926-0475, and/or obtained through the mail.**

**ATTACHMENT D - Emission Units Table**  
(includes all emission units at the facility except those designated as insignificant activities in Section 4, Item 24 of the General Forms)

Emission Unit ID <sup>1</sup>	Emission Point ID <sup>1</sup>	Emission Unit Description	Year Installed/ Modified	Design Capacity	Control Device <sup>1</sup>
01	01-FL1	FL1 - FLARE	2003	2400 scfm	
01	01-CL1	Closure Area – Closed and capped	Pre 1993	1,325,118 Mg	
01	01-A1	F-1 - Active	1993	666,000 Mg	
01	01-A2	F-2 - Active	1996	153,600 Mg	
01	01-A3	F-3 - Active	1999	247,800 Mg	
01	01-A4	F-4 thru F-8 - Future	Future	7,194,000 Mg	
01	01-T1,T2,T3	3 Leachate Treatment Tanks	1998	30,000 gal each	
01	01-P1	Paved Road	Pre 1999	App. 2000 Feet	
01	01-UP1	Unpaved Road	N/A	App. 7500 Feet	
01	01-TP1A-TP10A, 24S, OS5,6	Portable Rock Crusher/Screeners	2011	100 TPH /50,000 TPY	
01	01-1S,2S,3S, 4S	Composting Area	N/A	10,000 wet tons/month	

<sup>1</sup>For 45CSR13 permitted sources, the numbering system used for the emission points, control devices, and emission units should be consistent with the numbering system used in the 45CSR13 permit. For grandfathered sources, the numbering system should be consistent with registrations or emissions inventory previously submitted to DAQ. For emission points, control devices, and emissions units which have not been previously labeled, use the following 45CSR13 numbering system: 1S, 2S, 3S,... or other appropriate description for emission units; 1C, 2C, 3C,... or other appropriate designation for control devices; 1E, 2E, 3E, ... or other appropriate designation for emission points.

## ATTACHMENT E - Emission Unit Form

**Emission Unit Description**

<b>Emission unit ID number:</b> CL1,F1 TO F8	<b>Emission unit name:</b> CLOSED AREA AND ACTIVE AREAS	<b>List any control devices associated with this emission unit:</b> CAP & FLARE
---	--	--

**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
CLOSED & CAPPED LANDFILL AREA AND ACTIVE LANDFILL CELLS

<b>Manufacturer:</b> N/A	<b>Model number:</b> N/A	<b>Serial number:</b> N/A
-----------------------------	-----------------------------	------------------------------

<b>Construction date:</b> 1993	<b>Installation date:</b> MM/DD/YYYY	<b>Modification date(s):</b> MM/DD/YYYY
-----------------------------------	---	--

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):** 15,240,787 cf

<b>Maximum Hourly Throughput:</b> N/A	<b>Maximum Annual Throughput:</b> N/A	<b>Maximum Operating Schedule:</b> N/A
--	--	---

**Fuel Usage Data (fill out all applicable fields)**

<b>Does this emission unit combust fuel?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>If yes, is it?</b> <input type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired
--	--

<b>Maximum design heat input and/or maximum horsepower rating:</b>	<b>Type and Btu/hr rating of burners:</b>
--	---

**List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.**

**Describe each fuel expected to be used during the term of the permit.**

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value

<b>Emissions Data</b>		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)		31.1
Nitrogen Oxides (NO <sub>x</sub> )		12.73
Lead (Pb)		N/A
Particulate Matter (PM <sub>2.5</sub> )		11.712
Particulate Matter (PM <sub>10</sub> )		78.1
Total Particulate Matter (TSP)		N/A
Sulfur Dioxide (SO <sub>2</sub> )		51.33
Volatile Organic Compounds (VOC)		72.25
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Mercury		0.156
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY

**List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).**

***Applicable Requirements***

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

\_\_\_\_ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (*Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.*)

Are you in compliance with all applicable requirements for this emission unit? \_\_\_Yes \_\_\_No

If no, complete the **Schedule of Compliance Form** as ATTACHMENT F.

## ATTACHMENT G - Air Pollution Control Device Form

**Control device ID number:**  
01-F1

**List all emission units associated with this control device.**  
CL1, A1,A2,A3,A4

**Manufacturer:**  
John Zink

**Model number:**  
Enclosed ZTOF

**Installation date:**  
2003

**Type of Air Pollution Control Device:**

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Baghouse/Fabric Filter               | <input type="checkbox"/> Venturi Scrubber      | <input type="checkbox"/> Multiclone                           |
| <input type="checkbox"/> Carbon Bed Adsorber                  | <input type="checkbox"/> Packed Tower Scrubber | <input type="checkbox"/> Single Cyclone                       |
| <input type="checkbox"/> Carbon Drum(s)                       | <input type="checkbox"/> Other Wet Scrubber    | <input type="checkbox"/> Cyclone Bank                         |
| <input type="checkbox"/> Catalytic Incinerator                | <input type="checkbox"/> Condenser             | <input type="checkbox"/> Settling Chamber                     |
| <input type="checkbox"/> Thermal Incinerator                  | <input checked="" type="checkbox"/> Flare      | <input type="checkbox"/> Other (describe) _____               |
| <input type="checkbox"/> Wet Plate Electrostatic Precipitator |  | <input type="checkbox"/> Dry Plate Electrostatic Precipitator |

**List the pollutants for which this device is intended to control and the capture and control efficiencies.**

Pollutant	Capture Efficiency	Control Efficiency
METHANE/landfill gases	98%	98.6%

**Explain the characteristic design parameters of this control device (flow rates, pressure drops, number of bags, size, temperatures, etc.).**

The flare is 10 feet in outside diameter by 40 feet in height. Its system capacity is 2400 SCFM with 50% methane and 50% carbon dioxide and other inert gases. Minimum destruction efficiency is 98% at 1600 to 1800 degrees Fahrenheit. High temperature shutdown point is 2000<sup>o</sup> F and low temperature alarm is 1200<sup>o</sup> F.

**Is this device subject to the CAM requirements of 40 C.F.R. 64?**  Yes  No

If Yes, **Complete ATTACHMENT H**

If No, **Provide justification.**

**Describe the parameters monitored and/or methods used to indicate performance of this control device.**

LFG flow rate, Flare Stack temperature, and status of heat exchanger. Gas moisture and flow rate were determined by USEPA Method 2C, "Determination of Stack Gas Velocity and Volumetric Flow Rate in Small Stacks or Ducts (Standard Pitot Tube)" USEPA Method 4, "Determination of Moisture Content in Stack Gases". USEPA Method 2B" Determination of Exhaust Gas Volume Flow Rate from Gasoline Vapor Incinerators" USEPA Method 3A, O<sub>2</sub> and CO<sub>2</sub> Determinations (outlet). USEPA Method 3C O<sub>2</sub> and CO<sub>2</sub> determinations (inlet). USEPA Method 10, co determination. USEPA Method 25A THC and USEPA Method 18 Methane determination.

## ATTACHMENT H - Compliance Assurance Monitoring (CAM) Plan Form

For definitions and information about the CAM rule, please refer to 40 CFR Part 64. Additional information (including guidance documents) may also be found at <http://www.epa.gov/ttn/emc/cam.html>

### CAM APPLICABILITY DETERMINATION

1) Does the facility have a PSEU (Pollutant-Specific Emissions Unit considered separately with respect to EACH regulated air pollutant) that is subject to CAM (40 CFR Part 64), which must be addressed in this CAM plan submittal? To determine applicability, a PSEU must meet all of the following criteria (*If No, then the remainder of this form need not be completed*):

YES  NO

- a. The PSEU is located at a major source that is required to obtain a Title V permit;
- b. The PSEU is subject to an emission limitation or standard for the applicable regulated air pollutant that is NOT exempt;

#### LIST OF EXEMPT EMISSION LIMITATIONS OR STANDARDS:

- NSPS (40 CFR Part 60) or NESHAP (40 CFR Parts 61 and 63) proposed after 11/15/1990.
  - Stratospheric Ozone Protection Requirements.
  - Acid Rain Program Requirements.
  - Emission Limitations or Standards for which a WVDEP Division of Air Quality Title V permit specifies a continuous compliance determination method, as defined in 40 CFR §64.1.
  - An emission cap that meets the requirements specified in 40 CFR §70.4(b)(12).
- c. The PSEU uses an add-on control device (as defined in 40 CFR §64.1) to achieve compliance with an emission limitation or standard;
  - d. The PSEU has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than the Title V Major Source Threshold Levels; AND
  - e. The PSEU is NOT an exempt backup utility power emissions unit that is municipally-owned.

### BASIS OF CAM SUBMITTAL

2) Mark the appropriate box below as to why this CAM plan is being submitted as part of an application for a Title V permit:

RENEWAL APPLICATION. ALL PSEUs for which a CAM plan has NOT yet been approved need to be addressed in this CAM plan submittal.

INITIAL APPLICATION (submitted after 4/20/98). ONLY large PSEUs (i. e., PSEUs with potential post-control device emissions of an applicable regulated air pollutant that are equal to or greater than Major Source Threshold Levels) need to be addressed in this CAM plan submittal.

SIGNIFICANT MODIFICATION TO LARGE PSEUs. ONLY large PSEUs being modified after 4/20/98 need to be addressed in this cam plan submittal. For large PSEUs with an approved CAM plan, Only address the appropriate monitoring requirements affected by the significant modification.



**CAM MONITORING APPROACH CRITERIA**

Complete this section for **EACH** PSEU that needs to be addressed in this CAM plan submittal. This section may be copied as needed for each PSEU. This section is to be used to provide monitoring data and information for **EACH** indicator selected for **EACH** PSEU in order to meet the monitoring design criteria specified in 40 CFR §64.3 and §64.4. If more than two indicators are being selected for a PSEU or if additional space is needed, attach and label accordingly with the appropriate PSEU designation, pollutant, and indicator numbers.

4a) PSEU Designation:	4b) Pollutant:	4c) <sup>a</sup> Indicator No. 1:	4d) <sup>a</sup> Indicator No. 2:
<b>5a) GENERAL CRITERIA</b> Describe the <u>MONITORING APPROACH</u> used to measure the indicators:			
<sup>b</sup> Establish the appropriate <u>INDICATOR RANGE</u> or the procedures for establishing the indicator range which provides a reasonable assurance of compliance:			
<b>5b) PERFORMANCE CRITERIA</b> Provide the <u>SPECIFICATIONS FOR OBTAINING REPRESENTATIVE DATA</u> , such as detector location, installation specifications, and minimum acceptable accuracy:			
<sup>c</sup> For new or modified monitoring equipment, provide <u>VERIFICATION PROCEDURES</u> , including manufacturer's recommendations, <u>TO CONFIRM THE OPERATIONAL STATUS</u> of the monitoring:			
Provide <u>QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC) PRACTICES</u> that are adequate to ensure the continuing validity of the data, (i.e., daily calibrations, visual inspections, routine maintenance, RATA, etc.):			
<sup>d</sup> Provide the <u>MONITORING FREQUENCY</u> :			
Provide the <u>DATA COLLECTION PROCEDURES</u> that will be used:			
Provide the <u>DATA AVERAGING PERIOD</u> for the purpose of determining whether an excursion or exceedance has occurred:			

<sup>a</sup> Describe all indicators to be monitored which satisfies 40 CFR §64.3(a). Indicators of emission control performance for the control device and associated capture system may include measured or predicted emissions (including visible emissions or opacity), process and control device operating parameters that affect control device (and capture system) efficiency or emission rates, or recorded findings of inspection and maintenance activities.

<sup>b</sup> Indicator Ranges may be based on a single maximum or minimum value or at multiple levels that are relevant to distinctly different operating conditions, expressed as a function of process variables, expressed as maintaining the applicable indicator in a particular operational status or designated condition, or established as interdependent between more than one indicator. For CEMS, COMS, or PEMS, include the most recent certification test for the monitor.

<sup>c</sup> The verification for operational status should include procedures for installation, calibration, and operation of the monitoring equipment, conducted in accordance with the manufacturer's recommendations, necessary to confirm the monitoring equipment is operational prior to the commencement of the required monitoring.

<sup>d</sup> Emission units with post-control PTE ≥ 100 percent of the amount classifying the source as a major source (i.e., Large PSEU) must collect four or more values per hour to be averaged. A reduced data collection frequency may be approved in limited circumstances. Other emission units must collect data at least once per 24 hour period.

**RATIONALE AND JUSTIFICATION**

Complete this section for EACH PSEU that needs to be addressed in this CAM plan submittal. This section may be copied as needed for each PSEU. This section is to be used to provide rationale and justification for the selection of EACH indicator and monitoring approach and EACH indicator range in order to meet the submittal requirements specified in 40 CFR §64.4.

6a) PSEU Designation:

6b) Regulated Air Pollutant:

7) **INDICATORS AND THE MONITORING APPROACH:** Provide the rationale and justification for the selection of the indicators and the monitoring approach used to measure the indicators. Also provide any data supporting the rationale and justification. Explain the reasons for any differences between the verification of operational status or the quality assurance and control practices proposed, and the manufacturer's recommendations. (If additional space is needed, attach and label accordingly with the appropriate PSEU designation and pollutant):

8) **INDICATOR RANGES:** Provide the rationale and justification for the selection of the indicator ranges. The rationale and justification shall indicate how EACH indicator range was selected by either a COMPLIANCE OR PERFORMANCE TEST, a TEST PLAN AND SCHEDULE, or by ENGINEERING ASSESSMENTS. Depending on which method is being used for each indicator range, include the specific information required below for that specific indicator range. (If additional space is needed, attach and label accordingly with the appropriate PSEU designation and pollutant):

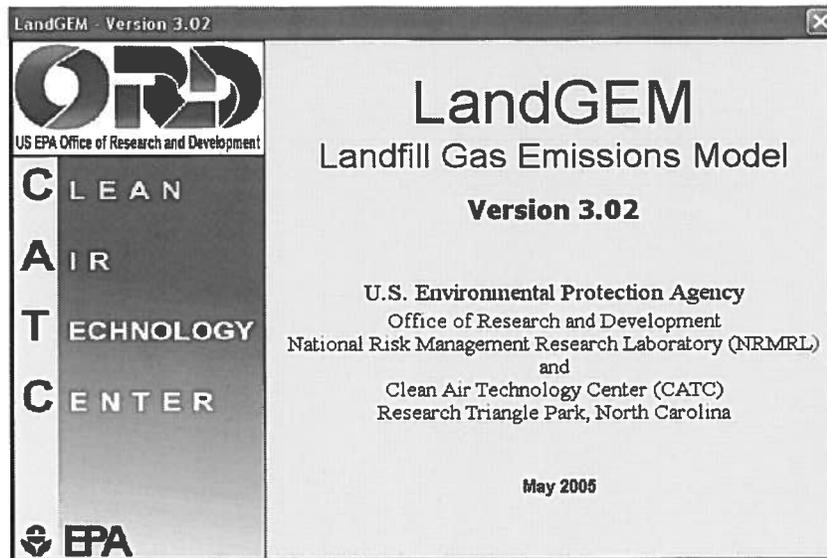
- COMPLIANCE OR PERFORMANCE TEST (Indicator ranges determined from control device operating parameter data obtained during a compliance or performance test conducted under regulatory specified conditions or under conditions representative of maximum potential emissions under anticipated operating conditions. Such data may be supplemented by engineering assessments and manufacturer's recommendations). The rationale and justification shall INCLUDE a summary of the compliance or performance test results that were used to determine the indicator range, and documentation indicating that no changes have taken place that could result in a significant change in the control system performance or the selected indicator ranges since the compliance or performance test was conducted.
- TEST PLAN AND SCHEDULE (Indicator ranges will be determined from a proposed implementation plan and schedule for installing, testing, and performing any other appropriate activities prior to use of the monitoring). The rationale and justification shall INCLUDE the proposed implementation plan and schedule that will provide for use of the monitoring as expeditiously as practicable after approval of this CAM plan, except that in no case shall the schedule for completing installation and beginning operation of the monitoring exceed 180 days after approval.
- ENGINEERING ASSESSMENTS (Indicator Ranges or the procedures for establishing indicator ranges are determined from engineering assessments and other data, such as manufacturers' design criteria and historical monitoring data, because factors specific to the type of monitoring, control device, or PSEU make compliance or performance testing unnecessary). The rationale and justification shall INCLUDE documentation demonstrating that compliance testing is not required to establish the indicator range.

RATIONALE AND JUSTIFICATION:

**TITLE V PERMIT APPLICATION CHECKLIST  
FOR ADMINISTRATIVE COMPLETENESS**

A complete application is demonstrated when all of the information required below is properly prepared, completed and attached. The items listed below are required information which must be submitted with a Title V permit application. Any submittal will be considered incomplete if the required information is not included.\*

<input checked="" type="checkbox"/>	Two signed copies of the application (at least one <u>must</u> contain the original “ <i>Certification</i> ” page signed and dated in blue ink)
<input checked="" type="checkbox"/>	Correct number of copies of the application on separate CDs or diskettes, (i.e. at least one disc per copy)
<input checked="" type="checkbox"/>	*Table of Contents (needs to be included but not for administrative completeness)
<input checked="" type="checkbox"/>	Facility information
<input checked="" type="checkbox"/>	Description of process and products, including NAICS and SIC codes, and including alternative operating scenarios
<input type="checkbox"/>	Area map showing plant location
<input checked="" type="checkbox"/>	Plot plan showing buildings and process areas
<input type="checkbox"/>	Process flow diagram(s), showing all emission units, control equipment, emission points, and their relationships
<input checked="" type="checkbox"/>	Identification of all applicable requirements with a description of the compliance status, the methods used for demonstrating compliance, and a Schedule of Compliance Form (ATTACHMENT F) for all requirements for which the source is not in compliance
<input checked="" type="checkbox"/>	Listing of all active permits and consent orders (if applicable)
<input checked="" type="checkbox"/>	Facility-wide emissions summary
<input checked="" type="checkbox"/>	Identification of Insignificant Activities
<input checked="" type="checkbox"/>	ATTACHMENT D - Title V Equipment Table completed for all emission units at the facility except those designated as insignificant activities
<input checked="" type="checkbox"/>	ATTACHMENT E - Emission Unit Form completed for each emission unit listed in the Title V Equipment Table (ATTACHMENT D) and a Schedule of Compliance Form (ATTACHMENT F) for all requirements for which the emission unit is not in compliance
<input checked="" type="checkbox"/>	ATTACHMENT G - Air Pollution Control Device Form completed for each control device listed in the Title V Equipment Table (ATTACHMENT D)
<input checked="" type="checkbox"/>	ATTACHMENT H – Compliance Assurance Monitoring (CAM) Plan Form completed for each control device for which the “Is the device subject to CAM?” question is answered “Yes” on the Air Pollution Control Device Form (ATTACHMENT G)
<input checked="" type="checkbox"/>	General Application Forms signed by a Responsible Official
<input type="checkbox"/>	Confidential Information submitted in accordance with 45CSR31



## Summary Report

**Landfill Name or Identifier:** Brooke County Landfill

**Date:** Wednesday, March 15, 2017

### Description/Comments:

#### About LandGEM:

First-Order Decomposition Rate Equation:

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

Where,

$Q_{CH_4}$  = annual methane generation in the year of the calculation ( $m^3/year$ )

$i$  = 1-year time increment

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

$j$  = 0.1-year time increment

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

$L_o$  = 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/landfigp.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 conventional 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	<b>1991</b>	
Landfill Closure Year (with 80-year limit)	<b>2060</b>	
Actual Closure Year (without limit)	<b>2060</b>	
Have Model Calculate Closure Year?	<b>No</b>	
Waste Design Capacity		<i>short tons</i>

## MODEL PARAMETERS

Methane Generation Rate, k	<b>0.050</b>	<i>year<sup>-1</sup></i>
Potential Methane Generation Capacity, L <sub>0</sub>	<b>170</b>	<i>m<sup>3</sup>/Mg</i>
NMOC Concentration	<b>595</b>	<i>ppmv as hexane</i>
Methane Content	<b>50</b>	<i>% by volume</i>

## GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	<b>Carbon dioxide</b>
Gas / Pollutant #2:	<b>Methane</b>
Gas / Pollutant #3:	<b>Carbon monoxide</b>
Gas / Pollutant #4:	<b>Total landfill gas</b>

## WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1991	236,057	259,663	0	0
1992	235,554	259,109	236,057	259,663
1993	153,091	168,400	471,611	518,772
1994	176,213	193,834	624,702	687,172
1995	138,665	152,531	800,915	881,006
1996	142,922	157,214	939,579	1,033,537
1997	102,101	112,311	1,082,501	1,190,751
1998	129,980	142,978	1,184,602	1,303,062
1999	189,466	208,413	1,314,582	1,446,040
2000	231,371	254,508	1,504,048	1,654,453
2001	203,133	223,446	1,735,419	1,908,961
2002	191,391	210,530	1,938,552	2,132,407
2003	139,366	153,303	2,129,943	2,342,937
2004	60,476	66,524	2,269,309	2,496,240
2005	56,945	62,639	2,329,785	2,562,764
2006	48,535	53,388	2,386,730	2,625,403
2007	46,321	50,953	2,435,265	2,678,791
2008	38,274	42,101	2,481,585	2,729,744
2009	48,279	53,107	2,519,859	2,771,845
2010	35,715	39,286	2,568,138	2,824,952
2011	33,709	37,080	2,603,853	2,864,238
2012	39,380	43,318	2,637,562	2,901,318
2013	59,862	65,848	2,676,942	2,944,636
2014	99,989	109,988	2,736,804	3,010,484
2015	71,611	78,772	2,836,793	3,120,472
2016	52,015	57,217	2,908,404	3,199,244
2017	52,015	57,217	2,960,419	3,256,461
2018	52,015	57,217	3,012,435	3,313,678
2019	52,015	57,217	3,064,450	3,370,895
2020	52,015	57,217	3,116,465	3,428,112
2021	52,015	57,217	3,168,481	3,485,329
2022	52,015	57,217	3,220,496	3,542,546
2023	52,015	57,217	3,272,512	3,599,763
2024	52,015	57,217	3,324,527	3,656,980
2025	52,015	57,217	3,376,543	3,714,197
2026	52,015	57,217	3,428,558	3,771,414
2027	52,015	57,217	3,480,574	3,828,631
2028	52,015	57,217	3,532,589	3,885,848
2029	52,015	57,217	3,584,605	3,943,065
2030	52,015	57,217	3,636,620	4,000,282

## WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2031	52,015	57,217	3,688,635	4,057,499
2032	52,015	57,217	3,740,651	4,114,716
2033	52,015	57,217	3,792,666	4,171,933
2034	52,015	57,217	3,844,682	4,229,150
2035	52,015	57,217	3,896,697	4,286,367
2036	52,015	57,217	3,948,713	4,343,584
2037	52,015	57,217	4,000,728	4,400,801
2038	52,015	57,217	4,052,744	4,458,018
2039	52,015	57,217	4,104,759	4,515,235
2040	52,015	57,217	4,156,775	4,572,452
2041	52,015	57,217	4,208,790	4,629,669
2042	52,015	57,217	4,260,805	4,686,886
2043	52,015	57,217	4,312,821	4,744,103
2044	52,015	57,217	4,364,836	4,801,320
2045	52,015	57,217	4,416,852	4,858,537
2046	52,015	57,217	4,468,867	4,915,754
2047	52,015	57,217	4,520,883	4,972,971
2048	52,015	57,217	4,572,898	5,030,188
2049	52,015	57,217	4,624,914	5,087,405
2050	52,015	57,217	4,676,929	5,144,622
2051	52,015	57,217	4,728,945	5,201,839
2052	52,015	57,217	4,780,960	5,259,056
2053	52,015	57,217	4,832,975	5,316,273
2054	52,015	57,217	4,884,991	5,373,490
2055	52,015	57,217	4,937,006	5,430,707
2056	52,015	57,217	4,989,022	5,487,924
2057	52,015	57,217	5,041,037	5,545,141
2058	52,015	57,217	5,093,053	5,602,358
2059	52,015	57,217	5,145,068	5,659,575
2060	0	0	5,197,084	5,716,792
2061	0	0	5,197,084	5,716,792
2062	0	0	5,197,084	5,716,792
2063	0	0	5,197,084	5,716,792
2064	0	0	5,197,084	5,716,792
2065	0	0	5,197,084	5,716,792
2066	0	0	5,197,084	5,716,792
2067	0	0	5,197,084	5,716,792
2068	0	0	5,197,084	5,716,792
2069	0	0	5,197,084	5,716,792
2070	0	0	5,197,084	5,716,792

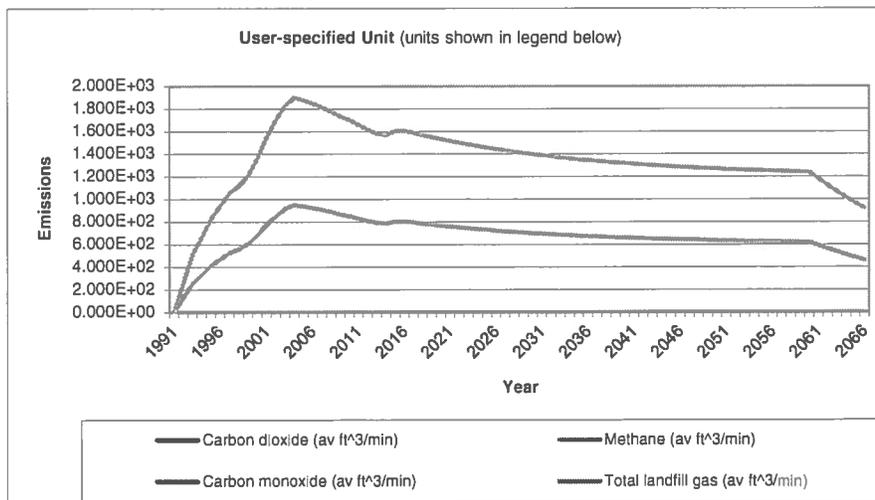
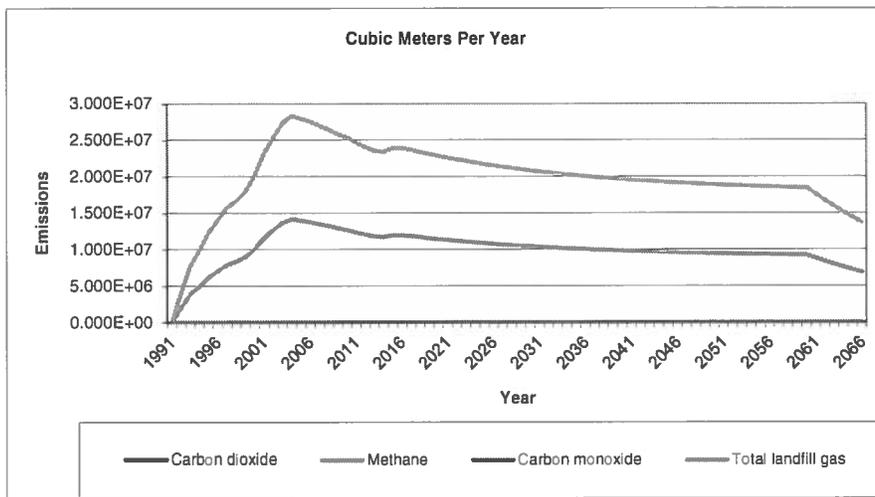
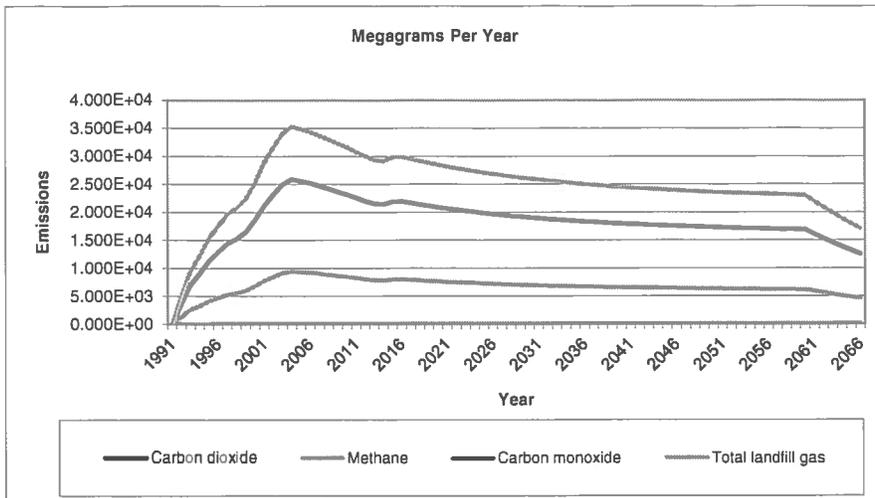
**Pollutant Parameters**

<b>Gas / Pollutant Default Parameters:</b>				<b>User-specified Pollutant Parameters:</b>	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
<b>Gases</b>	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
<b>Pollutants</b>	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,1,2- 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		





**Graphs**



**Results**

Year	Carbon dioxide			Methane		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
1991	0	0	0	0	0	0
1992	3.592E+03	1.962E+06	1.318E+02	1.309E+03	1.962E+06	1.318E+02
1993	7.000E+03	3.824E+06	2.569E+02	2.551E+03	3.824E+06	2.569E+02
1994	8.988E+03	4.910E+06	3.299E+02	3.276E+03	4.910E+06	3.299E+02
1995	1.123E+04	6.135E+06	4.122E+02	4.093E+03	6.135E+06	4.122E+02
1996	1.279E+04	6.989E+06	4.696E+02	4.662E+03	6.989E+06	4.696E+02
1997	1.434E+04	7.836E+06	5.265E+02	5.228E+03	7.836E+06	5.265E+02
1998	1.520E+04	8.302E+06	5.578E+02	5.539E+03	8.302E+06	5.578E+02
1999	1.643E+04	8.978E+06	6.032E+02	5.989E+03	8.978E+06	6.032E+02
2000	1.851E+04	1.011E+07	6.796E+02	6.748E+03	1.011E+07	6.796E+02
2001	2.113E+04	1.154E+07	7.757E+02	7.702E+03	1.154E+07	7.757E+02
2002	2.319E+04	1.267E+07	8.513E+02	8.453E+03	1.267E+07	8.513E+02
2003	2.497E+04	1.364E+07	9.166E+02	9.102E+03	1.364E+07	9.166E+02
2004	2.588E+04	1.414E+07	9.498E+02	9.431E+03	1.414E+07	9.498E+02
2005	2.553E+04	1.395E+07	9.372E+02	9.306E+03	1.395E+07	9.372E+02
2006	2.515E+04	1.374E+07	9.233E+02	9.168E+03	1.374E+07	9.233E+02
2007	2.467E+04	1.348E+07	9.054E+02	8.990E+03	1.348E+07	9.054E+02
2008	2.417E+04	1.320E+07	8.871E+02	8.808E+03	1.320E+07	8.871E+02
2009	2.357E+04	1.288E+07	8.652E+02	8.591E+03	1.288E+07	8.652E+02
2010	2.316E+04	1.265E+07	8.500E+02	8.440E+03	1.265E+07	8.500E+02
2011	2.257E+04	1.233E+07	8.285E+02	8.226E+03	1.233E+07	8.285E+02
2012	2.198E+04	1.201E+07	8.069E+02	8.012E+03	1.201E+07	8.069E+02
2013	2.151E+04	1.175E+07	7.895E+02	7.839E+03	1.175E+07	7.895E+02
2014	2.137E+04	1.168E+07	7.845E+02	7.789E+03	1.168E+07	7.845E+02
2015	2.185E+04	1.194E+07	8.020E+02	7.964E+03	1.194E+07	8.020E+02
2016	2.187E+04	1.195E+07	8.029E+02	7.972E+03	1.195E+07	8.029E+02
2017	2.160E+04	1.180E+07	7.928E+02	7.872E+03	1.180E+07	7.928E+02
2018	2.134E+04	1.166E+07	7.832E+02	7.777E+03	1.166E+07	7.832E+02
2019	2.109E+04	1.152E+07	7.740E+02	7.686E+03	1.152E+07	7.740E+02
2020	2.085E+04	1.139E+07	7.653E+02	7.599E+03	1.139E+07	7.653E+02
2021	2.063E+04	1.127E+07	7.571E+02	7.517E+03	1.127E+07	7.571E+02
2022	2.041E+04	1.115E+07	7.492E+02	7.439E+03	1.115E+07	7.492E+02
2023	2.021E+04	1.104E+07	7.417E+02	7.365E+03	1.104E+07	7.417E+02
2024	2.001E+04	1.093E+07	7.346E+02	7.294E+03	1.093E+07	7.346E+02
2025	1.983E+04	1.083E+07	7.278E+02	7.227E+03	1.083E+07	7.278E+02
2026	1.965E+04	1.074E+07	7.214E+02	7.163E+03	1.074E+07	7.214E+02
2027	1.949E+04	1.064E+07	7.152E+02	7.102E+03	1.064E+07	7.152E+02
2028	1.933E+04	1.056E+07	7.094E+02	7.044E+03	1.056E+07	7.094E+02
2029	1.918E+04	1.048E+07	7.038E+02	6.989E+03	1.048E+07	7.038E+02
2030	1.903E+04	1.040E+07	6.986E+02	6.936E+03	1.040E+07	6.986E+02
2031	1.889E+04	1.032E+07	6.935E+02	6.886E+03	1.032E+07	6.935E+02
2032	1.876E+04	1.025E+07	6.888E+02	6.839E+03	1.025E+07	6.888E+02
2033	1.864E+04	1.018E+07	6.842E+02	6.794E+03	1.018E+07	6.842E+02
2034	1.852E+04	1.012E+07	6.799E+02	6.751E+03	1.012E+07	6.799E+02
2035	1.841E+04	1.006E+07	6.758E+02	6.710E+03	1.006E+07	6.758E+02
2036	1.830E+04	1.000E+07	6.719E+02	6.671E+03	1.000E+07	6.719E+02
2037	1.820E+04	9.944E+06	6.682E+02	6.634E+03	9.944E+06	6.682E+02
2038	1.811E+04	9.892E+06	6.646E+02	6.599E+03	9.892E+06	6.646E+02
2039	1.802E+04	9.842E+06	6.613E+02	6.566E+03	9.842E+06	6.613E+02
2040	1.793E+04	9.794E+06	6.581E+02	6.534E+03	9.794E+06	6.581E+02

**Results (Continued)**

Year	Carbon dioxide			Methane		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
2041	1.784E+04	9.749E+06	6.550E+02	6.504E+03	9.749E+06	6.550E+02
2042	1.777E+04	9.706E+06	6.521E+02	6.475E+03	9.706E+06	6.521E+02
2043	1.769E+04	9.665E+06	6.494E+02	6.448E+03	9.665E+06	6.494E+02
2044	1.762E+04	9.626E+06	6.467E+02	6.422E+03	9.626E+06	6.467E+02
2045	1.755E+04	9.588E+06	6.442E+02	6.397E+03	9.588E+06	6.442E+02
2046	1.749E+04	9.553E+06	6.419E+02	6.373E+03	9.553E+06	6.419E+02
2047	1.743E+04	9.520E+06	6.396E+02	6.351E+03	9.520E+06	6.396E+02
2048	1.737E+04	9.488E+06	6.375E+02	6.330E+03	9.488E+06	6.375E+02
2049	1.731E+04	9.457E+06	6.354E+02	6.309E+03	9.457E+06	6.354E+02
2050	1.726E+04	9.428E+06	6.335E+02	6.290E+03	9.428E+06	6.335E+02
2051	1.721E+04	9.401E+06	6.316E+02	6.272E+03	9.401E+06	6.316E+02
2052	1.716E+04	9.375E+06	6.299E+02	6.254E+03	9.375E+06	6.299E+02
2053	1.711E+04	9.350E+06	6.282E+02	6.238E+03	9.350E+06	6.282E+02
2054	1.707E+04	9.326E+06	6.266E+02	6.222E+03	9.326E+06	6.266E+02
2055	1.703E+04	9.304E+06	6.251E+02	6.207E+03	9.304E+06	6.251E+02
2056	1.699E+04	9.282E+06	6.237E+02	6.193E+03	9.282E+06	6.237E+02
2057	1.695E+04	9.262E+06	6.223E+02	6.179E+03	9.262E+06	6.223E+02
2058	1.692E+04	9.243E+06	6.210E+02	6.166E+03	9.243E+06	6.210E+02
2059	1.688E+04	9.224E+06	6.198E+02	6.154E+03	9.224E+06	6.198E+02
2060	1.685E+04	9.207E+06	6.186E+02	6.142E+03	9.207E+06	6.186E+02
2061	1.603E+04	8.758E+06	5.884E+02	5.843E+03	8.758E+06	5.884E+02
2062	1.525E+04	8.330E+06	5.597E+02	5.558E+03	8.330E+06	5.597E+02
2063	1.451E+04	7.924E+06	5.324E+02	5.287E+03	7.924E+06	5.324E+02
2064	1.380E+04	7.538E+06	5.065E+02	5.029E+03	7.538E+06	5.065E+02
2065	1.312E+04	7.170E+06	4.818E+02	4.784E+03	7.170E+06	4.818E+02
2066	1.248E+04	6.820E+06	4.583E+02	4.550E+03	6.820E+06	4.583E+02
2067	1.188E+04	6.488E+06	4.359E+02	4.328E+03	6.488E+06	4.359E+02
2068	1.130E+04	6.171E+06	4.147E+02	4.117E+03	6.171E+06	4.147E+02
2069	1.075E+04	5.870E+06	3.944E+02	3.916E+03	5.870E+06	3.944E+02
2070	1.022E+04	5.584E+06	3.752E+02	3.725E+03	5.584E+06	3.752E+02
2071	9.723E+03	5.312E+06	3.569E+02	3.544E+03	5.312E+06	3.569E+02
2072	9.249E+03	5.053E+06	3.395E+02	3.371E+03	5.053E+06	3.395E+02
2073	8.798E+03	4.806E+06	3.229E+02	3.206E+03	4.806E+06	3.229E+02
2074	8.369E+03	4.572E+06	3.072E+02	3.050E+03	4.572E+06	3.072E+02
2075	7.961E+03	4.349E+06	2.922E+02	2.901E+03	4.349E+06	2.922E+02
2076	7.572E+03	4.137E+06	2.780E+02	2.760E+03	4.137E+06	2.780E+02
2077	7.203E+03	3.935E+06	2.644E+02	2.625E+03	3.935E+06	2.644E+02
2078	6.852E+03	3.743E+06	2.515E+02	2.497E+03	3.743E+06	2.515E+02
2079	6.518E+03	3.561E+06	2.392E+02	2.375E+03	3.561E+06	2.392E+02
2080	6.200E+03	3.387E+06	2.276E+02	2.260E+03	3.387E+06	2.276E+02
2081	5.897E+03	3.222E+06	2.165E+02	2.149E+03	3.222E+06	2.165E+02
2082	5.610E+03	3.065E+06	2.059E+02	2.045E+03	3.065E+06	2.059E+02
2083	5.336E+03	2.915E+06	1.959E+02	1.945E+03	2.915E+06	1.959E+02
2084	5.076E+03	2.773E+06	1.863E+02	1.850E+03	2.773E+06	1.863E+02
2085	4.828E+03	2.638E+06	1.772E+02	1.760E+03	2.638E+06	1.772E+02
2086	4.593E+03	2.509E+06	1.686E+02	1.674E+03	2.509E+06	1.686E+02
2087	4.369E+03	2.387E+06	1.604E+02	1.592E+03	2.387E+06	1.604E+02
2088	4.156E+03	2.270E+06	1.525E+02	1.515E+03	2.270E+06	1.525E+02
2089	3.953E+03	2.160E+06	1.451E+02	1.441E+03	2.160E+06	1.451E+02
2090	3.760E+03	2.054E+06	1.380E+02	1.371E+03	2.054E+06	1.380E+02
2091	3.577E+03	1.954E+06	1.313E+02	1.304E+03	1.954E+06	1.313E+02

**Results (Continued)**

Year	Carbon dioxide			Methane		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
2092	3.402E+03	1.859E+06	1.249E+02	1.240E+03	1.859E+06	1.249E+02
2093	3.237E+03	1.768E+06	1.188E+02	1.180E+03	1.768E+06	1.188E+02
2094	3.079E+03	1.682E+06	1.130E+02	1.122E+03	1.682E+06	1.130E+02
2095	2.929E+03	1.600E+06	1.075E+02	1.067E+03	1.600E+06	1.075E+02
2096	2.786E+03	1.522E+06	1.023E+02	1.015E+03	1.522E+06	1.023E+02
2097	2.650E+03	1.448E+06	9.727E+01	9.658E+02	1.448E+06	9.727E+01
2098	2.521E+03	1.377E+06	9.252E+01	9.187E+02	1.377E+06	9.252E+01
2099	2.398E+03	1.310E+06	8.801E+01	8.739E+02	1.310E+06	8.801E+01
2100	2.281E+03	1.246E+06	8.372E+01	8.313E+02	1.246E+06	8.372E+01
2101	2.170E+03	1.185E+06	7.963E+01	7.907E+02	1.185E+06	7.963E+01
2102	2.064E+03	1.127E+06	7.575E+01	7.521E+02	1.127E+06	7.575E+01
2103	1.963E+03	1.072E+06	7.206E+01	7.155E+02	1.072E+06	7.206E+01
2104	1.867E+03	1.020E+06	6.854E+01	6.806E+02	1.020E+06	6.854E+01
2105	1.776E+03	9.704E+05	6.520E+01	6.474E+02	9.704E+05	6.520E+01
2106	1.690E+03	9.230E+05	6.202E+01	6.158E+02	9.230E+05	6.202E+01
2107	1.607E+03	8.780E+05	5.899E+01	5.858E+02	8.780E+05	5.899E+01
2108	1.529E+03	8.352E+05	5.612E+01	5.572E+02	8.352E+05	5.612E+01
2109	1.454E+03	7.945E+05	5.338E+01	5.300E+02	7.945E+05	5.338E+01
2110	1.383E+03	7.557E+05	5.078E+01	5.042E+02	7.557E+05	5.078E+01
2111	1.316E+03	7.189E+05	4.830E+01	4.796E+02	7.189E+05	4.830E+01
2112	1.252E+03	6.838E+05	4.594E+01	4.562E+02	6.838E+05	4.594E+01
2113	1.191E+03	6.505E+05	4.370E+01	4.340E+02	6.505E+05	4.370E+01
2114	1.133E+03	6.187E+05	4.157E+01	4.128E+02	6.187E+05	4.157E+01
2115	1.077E+03	5.886E+05	3.955E+01	3.927E+02	5.886E+05	3.955E+01
2116	1.025E+03	5.599E+05	3.762E+01	3.735E+02	5.599E+05	3.762E+01
2117	9.748E+02	5.325E+05	3.578E+01	3.553E+02	5.325E+05	3.578E+01
2118	9.273E+02	5.066E+05	3.404E+01	3.380E+02	5.066E+05	3.404E+01
2119	8.821E+02	4.819E+05	3.238E+01	3.215E+02	4.819E+05	3.238E+01
2120	8.390E+02	4.584E+05	3.080E+01	3.058E+02	4.584E+05	3.080E+01
2121	7.981E+02	4.360E+05	2.930E+01	2.909E+02	4.360E+05	2.930E+01
2122	7.592E+02	4.148E+05	2.787E+01	2.767E+02	4.148E+05	2.787E+01
2123	7.222E+02	3.945E+05	2.651E+01	2.632E+02	3.945E+05	2.651E+01
2124	6.870E+02	3.753E+05	2.522E+01	2.504E+02	3.753E+05	2.522E+01
2125	6.534E+02	3.570E+05	2.399E+01	2.382E+02	3.570E+05	2.399E+01
2126	6.216E+02	3.396E+05	2.282E+01	2.265E+02	3.396E+05	2.282E+01
2127	5.913E+02	3.230E+05	2.170E+01	2.155E+02	3.230E+05	2.170E+01
2128	5.624E+02	3.073E+05	2.064E+01	2.050E+02	3.073E+05	2.064E+01
2129	5.350E+02	2.923E+05	1.964E+01	1.950E+02	2.923E+05	1.964E+01
2130	5.089E+02	2.780E+05	1.868E+01	1.855E+02	2.780E+05	1.868E+01
2131	4.841E+02	2.645E+05	1.777E+01	1.764E+02	2.645E+05	1.777E+01

**Results (Continued)**

Year	Carbon monoxide			Total landfill gas		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
1991	0	0	0	0	0	0
1992	6.400E-01	5.494E+02	3.691E-02	4.901E+03	3.924E+06	2.637E+02
1993	1.247E+00	1.071E+03	7.195E-02	9.552E+03	7.648E+06	5.139E+02
1994	1.602E+00	1.375E+03	9.238E-02	1.226E+04	9.820E+06	6.598E+02
1995	2.001E+00	1.718E+03	1.154E-01	1.532E+04	1.227E+07	8.245E+02
1996	2.280E+00	1.957E+03	1.315E-01	1.746E+04	1.398E+07	9.391E+02
1997	2.556E+00	2.194E+03	1.474E-01	1.957E+04	1.567E+07	1.053E+03
1998	2.708E+00	2.325E+03	1.562E-01	2.074E+04	1.660E+07	1.116E+03
1999	2.929E+00	2.514E+03	1.689E-01	2.242E+04	1.796E+07	1.206E+03
2000	3.299E+00	2.832E+03	1.903E-01	2.526E+04	2.023E+07	1.359E+03
2001	3.766E+00	3.232E+03	2.172E-01	2.883E+04	2.309E+07	1.551E+03
2002	4.133E+00	3.548E+03	2.384E-01	3.164E+04	2.534E+07	1.703E+03
2003	4.450E+00	3.820E+03	2.567E-01	3.407E+04	2.729E+07	1.833E+03
2004	4.611E+00	3.958E+03	2.659E-01	3.531E+04	2.827E+07	1.900E+03
2005	4.550E+00	3.906E+03	2.624E-01	3.484E+04	2.790E+07	1.874E+03
2006	4.483E+00	3.848E+03	2.585E-01	3.432E+04	2.748E+07	1.847E+03
2007	4.396E+00	3.773E+03	2.535E-01	3.366E+04	2.695E+07	1.811E+03
2008	4.307E+00	3.697E+03	2.484E-01	3.298E+04	2.641E+07	1.774E+03
2009	4.201E+00	3.606E+03	2.423E-01	3.216E+04	2.575E+07	1.730E+03
2010	4.127E+00	3.542E+03	2.380E-01	3.160E+04	2.530E+07	1.700E+03
2011	4.022E+00	3.452E+03	2.320E-01	3.080E+04	2.466E+07	1.657E+03
2012	3.917E+00	3.363E+03	2.259E-01	2.999E+04	2.402E+07	1.614E+03
2013	3.833E+00	3.290E+03	2.211E-01	2.935E+04	2.350E+07	1.579E+03
2014	3.809E+00	3.269E+03	2.196E-01	2.916E+04	2.335E+07	1.569E+03
2015	3.894E+00	3.342E+03	2.246E-01	2.981E+04	2.387E+07	1.604E+03
2016	3.898E+00	3.346E+03	2.248E-01	2.985E+04	2.390E+07	1.606E+03
2017	3.849E+00	3.304E+03	2.220E-01	2.947E+04	2.360E+07	1.586E+03
2018	3.802E+00	3.264E+03	2.193E-01	2.911E+04	2.331E+07	1.566E+03
2019	3.758E+00	3.226E+03	2.167E-01	2.877E+04	2.304E+07	1.548E+03
2020	3.716E+00	3.189E+03	2.143E-01	2.845E+04	2.278E+07	1.531E+03
2021	3.676E+00	3.155E+03	2.120E-01	2.814E+04	2.254E+07	1.514E+03
2022	3.637E+00	3.122E+03	2.098E-01	2.785E+04	2.230E+07	1.498E+03
2023	3.601E+00	3.091E+03	2.077E-01	2.757E+04	2.208E+07	1.483E+03
2024	3.566E+00	3.061E+03	2.057E-01	2.731E+04	2.187E+07	1.469E+03
2025	3.533E+00	3.033E+03	2.038E-01	2.705E+04	2.166E+07	1.456E+03
2026	3.502E+00	3.006E+03	2.020E-01	2.681E+04	2.147E+07	1.443E+03
2027	3.472E+00	2.981E+03	2.003E-01	2.659E+04	2.129E+07	1.430E+03
2028	3.444E+00	2.956E+03	1.986E-01	2.637E+04	2.112E+07	1.419E+03
2029	3.417E+00	2.933E+03	1.971E-01	2.616E+04	2.095E+07	1.408E+03
2030	3.391E+00	2.911E+03	1.956E-01	2.597E+04	2.079E+07	1.397E+03
2031	3.367E+00	2.890E+03	1.942E-01	2.578E+04	2.064E+07	1.387E+03
2032	3.344E+00	2.870E+03	1.929E-01	2.560E+04	2.050E+07	1.378E+03
2033	3.322E+00	2.851E+03	1.916E-01	2.543E+04	2.037E+07	1.368E+03
2034	3.301E+00	2.833E+03	1.904E-01	2.527E+04	2.024E+07	1.360E+03
2035	3.281E+00	2.816E+03	1.892E-01	2.512E+04	2.012E+07	1.352E+03
2036	3.262E+00	2.800E+03	1.881E-01	2.498E+04	2.000E+07	1.344E+03
2037	3.244E+00	2.784E+03	1.871E-01	2.484E+04	1.989E+07	1.336E+03
2038	3.227E+00	2.770E+03	1.861E-01	2.471E+04	1.978E+07	1.329E+03
2039	3.210E+00	2.756E+03	1.852E-01	2.458E+04	1.968E+07	1.323E+03
2040	3.195E+00	2.742E+03	1.843E-01	2.446E+04	1.959E+07	1.316E+03

**Results (Continued)**

Year	Carbon monoxide			Total landfill gas		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
2041	3.180E+00	2.730E+03	1.834E-01	2.435E+04	1.950E+07	1.310E+03
2042	3.166E+00	2.718E+03	1.826E-01	2.424E+04	1.941E+07	1.304E+03
2043	3.153E+00	2.706E+03	1.818E-01	2.414E+04	1.933E+07	1.299E+03
2044	3.140E+00	2.695E+03	1.811E-01	2.404E+04	1.925E+07	1.293E+03
2045	3.128E+00	2.685E+03	1.804E-01	2.395E+04	1.918E+07	1.288E+03
2046	3.116E+00	2.675E+03	1.797E-01	2.386E+04	1.911E+07	1.284E+03
2047	3.105E+00	2.665E+03	1.791E-01	2.378E+04	1.904E+07	1.279E+03
2048	3.095E+00	2.657E+03	1.785E-01	2.370E+04	1.898E+07	1.275E+03
2049	3.085E+00	2.648E+03	1.779E-01	2.362E+04	1.891E+07	1.271E+03
2050	3.076E+00	2.640E+03	1.774E-01	2.355E+04	1.886E+07	1.267E+03
2051	3.067E+00	2.632E+03	1.769E-01	2.348E+04	1.880E+07	1.263E+03
2052	3.058E+00	2.625E+03	1.764E-01	2.341E+04	1.875E+07	1.260E+03
2053	3.050E+00	2.618E+03	1.759E-01	2.335E+04	1.870E+07	1.256E+03
2054	3.042E+00	2.611E+03	1.755E-01	2.329E+04	1.865E+07	1.253E+03
2055	3.035E+00	2.605E+03	1.750E-01	2.324E+04	1.861E+07	1.250E+03
2056	3.028E+00	2.599E+03	1.746E-01	2.318E+04	1.856E+07	1.247E+03
2057	3.021E+00	2.593E+03	1.742E-01	2.313E+04	1.852E+07	1.245E+03
2058	3.015E+00	2.588E+03	1.739E-01	2.308E+04	1.849E+07	1.242E+03
2059	3.009E+00	2.583E+03	1.735E-01	2.304E+04	1.845E+07	1.240E+03
2060	3.003E+00	2.578E+03	1.732E-01	2.299E+04	1.841E+07	1.237E+03
2061	2.857E+00	2.452E+03	1.648E-01	2.187E+04	1.752E+07	1.177E+03
2062	2.717E+00	2.333E+03	1.567E-01	2.081E+04	1.666E+07	1.119E+03
2063	2.585E+00	2.219E+03	1.491E-01	1.979E+04	1.585E+07	1.065E+03
2064	2.459E+00	2.111E+03	1.418E-01	1.883E+04	1.508E+07	1.013E+03
2065	2.339E+00	2.008E+03	1.349E-01	1.791E+04	1.434E+07	9.635E+02
2066	2.225E+00	1.910E+03	1.283E-01	1.703E+04	1.364E+07	9.165E+02
2067	2.116E+00	1.817E+03	1.221E-01	1.620E+04	1.298E+07	8.718E+02
2068	2.013E+00	1.728E+03	1.161E-01	1.541E+04	1.234E+07	8.293E+02
2069	1.915E+00	1.644E+03	1.104E-01	1.466E+04	1.174E+07	7.889E+02
2070	1.822E+00	1.564E+03	1.051E-01	1.395E+04	1.117E+07	7.504E+02
2071	1.733E+00	1.487E+03	9.993E-02	1.327E+04	1.062E+07	7.138E+02
2072	1.648E+00	1.415E+03	9.506E-02	1.262E+04	1.011E+07	6.790E+02
2073	1.568E+00	1.346E+03	9.042E-02	1.200E+04	9.613E+06	6.459E+02
2074	1.491E+00	1.280E+03	8.601E-02	1.142E+04	9.144E+06	6.144E+02
2075	1.419E+00	1.218E+03	8.182E-02	1.086E+04	8.698E+06	5.844E+02
2076	1.349E+00	1.158E+03	7.783E-02	1.033E+04	8.274E+06	5.559E+02
2077	1.284E+00	1.102E+03	7.403E-02	9.828E+03	7.870E+06	5.288E+02
2078	1.221E+00	1.048E+03	7.042E-02	9.349E+03	7.486E+06	5.030E+02
2079	1.161E+00	9.970E+02	6.699E-02	8.893E+03	7.121E+06	4.785E+02
2080	1.105E+00	9.483E+02	6.372E-02	8.459E+03	6.774E+06	4.551E+02
2081	1.051E+00	9.021E+02	6.061E-02	8.047E+03	6.443E+06	4.329E+02
2082	9.997E-01	8.581E+02	5.766E-02	7.654E+03	6.129E+06	4.118E+02
2083	9.509E-01	8.162E+02	5.484E-02	7.281E+03	5.830E+06	3.917E+02
2084	9.046E-01	7.764E+02	5.217E-02	6.926E+03	5.546E+06	3.726E+02
2085	8.604E-01	7.386E+02	4.962E-02	6.588E+03	5.275E+06	3.545E+02
2086	8.185E-01	7.025E+02	4.720E-02	6.267E+03	5.018E+06	3.372E+02
2087	7.786E-01	6.683E+02	4.490E-02	5.961E+03	4.773E+06	3.207E+02
2088	7.406E-01	6.357E+02	4.271E-02	5.670E+03	4.541E+06	3.051E+02
2089	7.045E-01	6.047E+02	4.063E-02	5.394E+03	4.319E+06	2.902E+02
2090	6.701E-01	5.752E+02	3.865E-02	5.131E+03	4.109E+06	2.761E+02
2091	6.374E-01	5.471E+02	3.676E-02	4.881E+03	3.908E+06	2.626E+02

**Results (Continued)**

Year	Carbon monoxide			Total landfill gas		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
2092	6.063E-01	5.205E+02	3.497E-02	4.643E+03	3.718E+06	2.498E+02
2093	5.768E-01	4.951E+02	3.326E-02	4.416E+03	3.536E+06	2.376E+02
2094	5.486E-01	4.709E+02	3.164E-02	4.201E+03	3.364E+06	2.260E+02
2095	5.219E-01	4.480E+02	3.010E-02	3.996E+03	3.200E+06	2.150E+02
2096	4.964E-01	4.261E+02	2.863E-02	3.801E+03	3.044E+06	2.045E+02
2097	4.722E-01	4.053E+02	2.723E-02	3.616E+03	2.895E+06	1.945E+02
2098	4.492E-01	3.856E+02	2.591E-02	3.439E+03	2.754E+06	1.850E+02
2099	4.273E-01	3.668E+02	2.464E-02	3.272E+03	2.620E+06	1.760E+02
2100	4.064E-01	3.489E+02	2.344E-02	3.112E+03	2.492E+06	1.674E+02
2101	3.866E-01	3.319E+02	2.230E-02	2.960E+03	2.370E+06	1.593E+02
2102	3.678E-01	3.157E+02	2.121E-02	2.816E+03	2.255E+06	1.515E+02
2103	3.498E-01	3.003E+02	2.018E-02	2.679E+03	2.145E+06	1.441E+02
2104	3.328E-01	2.856E+02	1.919E-02	2.548E+03	2.040E+06	1.371E+02
2105	3.165E-01	2.717E+02	1.826E-02	2.424E+03	1.941E+06	1.304E+02
2106	3.011E-01	2.585E+02	1.737E-02	2.305E+03	1.846E+06	1.240E+02
2107	2.864E-01	2.458E+02	1.652E-02	2.193E+03	1.756E+06	1.180E+02
2108	2.724E-01	2.339E+02	1.571E-02	2.086E+03	1.670E+06	1.122E+02
2109	2.592E-01	2.225E+02	1.495E-02	1.984E+03	1.589E+06	1.068E+02
2110	2.465E-01	2.116E+02	1.422E-02	1.888E+03	1.511E+06	1.016E+02
2111	2.345E-01	2.013E+02	1.352E-02	1.795E+03	1.438E+06	9.660E+01
2112	2.231E-01	1.915E+02	1.286E-02	1.708E+03	1.368E+06	9.189E+01
2113	2.122E-01	1.821E+02	1.224E-02	1.625E+03	1.301E+06	8.741E+01
2114	2.018E-01	1.732E+02	1.164E-02	1.545E+03	1.237E+06	8.315E+01
2115	1.920E-01	1.648E+02	1.107E-02	1.470E+03	1.177E+06	7.909E+01
2116	1.826E-01	1.568E+02	1.053E-02	1.398E+03	1.120E+06	7.523E+01
2117	1.737E-01	1.491E+02	1.002E-02	1.330E+03	1.065E+06	7.156E+01
2118	1.652E-01	1.418E+02	9.530E-03	1.265E+03	1.013E+06	6.807E+01
2119	1.572E-01	1.349E+02	9.066E-03	1.204E+03	9.637E+05	6.475E+01
2120	1.495E-01	1.283E+02	8.623E-03	1.145E+03	9.167E+05	6.160E+01
2121	1.422E-01	1.221E+02	8.203E-03	1.089E+03	8.720E+05	5.859E+01
2122	1.353E-01	1.161E+02	7.803E-03	1.036E+03	8.295E+05	5.573E+01
2123	1.287E-01	1.105E+02	7.422E-03	9.854E+02	7.890E+05	5.302E+01
2124	1.224E-01	1.051E+02	7.060E-03	9.373E+02	7.506E+05	5.043E+01
2125	1.164E-01	9.995E+01	6.716E-03	8.916E+02	7.140E+05	4.797E+01
2126	1.108E-01	9.508E+01	6.388E-03	8.481E+02	6.791E+05	4.563E+01
2127	1.054E-01	9.044E+01	6.077E-03	8.068E+02	6.460E+05	4.341E+01
2128	1.002E-01	8.603E+01	5.780E-03	7.674E+02	6.145E+05	4.129E+01
2129	9.534E-02	8.184E+01	5.499E-03	7.300E+02	5.845E+05	3.928E+01
2130	9.069E-02	7.784E+01	5.230E-03	6.944E+02	5.560E+05	3.736E+01
2131	8.627E-02	7.405E+01	4.975E-03	6.605E+02	5.289E+05	3.554E+01



