

USER INPUTS

Landfill Name or Identifier:

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	<input type="text" value="1"/>	Waste Design Capacity entered is not used by the model unless 'Have Model Calculate Closure Year?' option is Yes.
Landfill Closure Year	<input type="text" value="15"/>	
Have Model Calculate Closure Year?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Waste Design Capacity	<input type="text" value="17.520.000"/>	<input type="text" value="megagrams"/>

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (year⁻¹)	<input type="text" value="CAA Conventional - 0.05"/>
Potential Methane Generation Capacity, L_o (m³/Mg)	<input type="text" value="CAA Conventional - 170"/>
NMOC Concentration (ppmv as hexane)	<input type="text" value="CAA - 4,000"/>
Methane Content (% by volume)	<input type="text" value="CAA - 50% by volume"/>

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1	<input type="text" value="Total landfill gas"/>	Default pollutant parameters are currently being used by model.	Edit Existing or Add New Pollutant Parameters
Gas / Pollutant #2	<input type="text" value="Methane"/>		
Gas / Pollutant #3	<input type="text" value="Carbon dioxide"/>		Restore Default Pollutant Parameters
Gas / Pollutant #4	<input type="text" value="NMOC"/>		

Description/Comments:

4: ENTER WASTE ACCEPTANCE RATES

Input Units:

Year	Input Units (Mg/year)	Calculated Units (short tons/year)
1	1.095.000	1.204.500
2	1.095.000	1.204.500
3	1.095.000	1.204.500
4	1.095.000	1.204.500
5	1.095.000	1.204.500
6	1.095.000	1.204.500
7	1.095.000	1.204.500
8	1.095.000	1.204.500
9	1.095.000	1.204.500
10	1.095.000	1.204.500
11	1.095.000	1.204.500
12	1.095.000	1.204.500
13	1.095.000	1.204.500
14	1.095.000	1.204.500
15	1.095.000	1.204.500
16	1.095.000	1.204.500
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18		
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Summary Report

Landfill Name or Identifier: Projeto Aterro Sanitário Iranduba/AM

Date: #####

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/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 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	1	
Landfill Closure Year (with 80-year limit)	15	
Actual Closure Year (without limit)	15	
Have Model Calculate Closure Year?	No	
Waste Design Capacity	17.520.000	<i>megagrams</i>

MODEL PARAMETERS

Methane Generation Rate, k	0,050	<i>year⁻¹</i>
Potential Methane Generation Capacity, L ₀	170	<i>m³/Mg</i>
NMOC Concentration	4.000	<i>ppmv as hexane</i>
Methane Content	50	<i>% by volume</i>

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)
1	1.095.000	1.204.500	0	0
2	1.095.000	1.204.500	1.095.000	1.204.500
3	1.095.000	1.204.500	2.190.000	2.409.000
4	1.095.000	1.204.500	3.285.000	3.613.500
5	1.095.000	1.204.500	4.380.000	4.818.000
6	1.095.000	1.204.500	5.475.000	6.022.500
7	1.095.000	1.204.500	6.570.000	7.227.000
8	1.095.000	1.204.500	7.665.000	8.431.500
9	1.095.000	1.204.500	8.760.000	9.636.000
10	1.095.000	1.204.500	9.855.000	10.840.500
11	1.095.000	1.204.500	10.950.000	12.045.000
12	1.095.000	1.204.500	12.045.000	13.249.500
13	1.095.000	1.204.500	13.140.000	14.454.000
14	1.095.000	1.204.500	14.235.000	15.658.500
15	1.095.000	1.204.500	15.330.000	16.863.000
16	0	0	16.425.000	18.067.500
17	0	0	16.425.000	18.067.500
18	0	0	16.425.000	18.067.500
19	0	0	16.425.000	18.067.500
20	0	0	16.425.000	18.067.500
21	0	0	16.425.000	18.067.500
22	0	0	16.425.000	18.067.500
23	0	0	16.425.000	18.067.500
24	0	0	16.425.000	18.067.500
25	0	0	16.425.000	18.067.500
26	0	0	16.425.000	18.067.500
27	0	0	16.425.000	18.067.500
28	0	0	16.425.000	18.067.500
29	0	0	16.425.000	18.067.500
30	0	0	16.425.000	18.067.500
31	0	0	16.425.000	18.067.500
32	0	0	16.425.000	18.067.500
33	0	0	16.425.000	18.067.500
34	0	0	16.425.000	18.067.500
35	0	0	16.425.000	18.067.500
36	0	0	16.425.000	18.067.500
37	0	0	16.425.000	18.067.500
38	0	0	16.425.000	18.067.500
39	0	0	16.425.000	18.067.500
40	0	0	16.425.000	18.067.500

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
41	0	0	16.425.000	18.067.500
42	0	0	16.425.000	18.067.500
43	0	0	16.425.000	18.067.500
44	0	0	16.425.000	18.067.500
45	0	0	16.425.000	18.067.500
46	0	0	16.425.000	18.067.500
47	0	0	16.425.000	18.067.500
48	0	0	16.425.000	18.067.500
49	0	0	16.425.000	18.067.500
50	0	0	16.425.000	18.067.500
51	0	0	16.425.000	18.067.500
52	0	0	16.425.000	18.067.500
53	0	0	16.425.000	18.067.500
54	0	0	16.425.000	18.067.500
55	0	0	16.425.000	18.067.500
56	0	0	16.425.000	18.067.500
57	0	0	16.425.000	18.067.500
58	0	0	16.425.000	18.067.500
59	0	0	16.425.000	18.067.500
60	0	0	16.425.000	18.067.500
61	0	0	16.425.000	18.067.500
62	0	0	16.425.000	18.067.500
63	0	0	16.425.000	18.067.500
64	0	0	16.425.000	18.067.500
65	0	0	16.425.000	18.067.500
66	0	0	16.425.000	18.067.500
67	0	0	16.425.000	18.067.500
68	0	0	16.425.000	18.067.500
69	0	0	16.425.000	18.067.500
70	0	0	16.425.000	18.067.500
71	0	0	16.425.000	18.067.500
72	0	0	16.425.000	18.067.500
73	0	0	16.425.000	18.067.500
74	0	0	16.425.000	18.067.500
75	0	0	16.425.000	18.067.500
76	0	0	16.425.000	18.067.500
77	0	0	16.425.000	18.067.500
78	0	0	16.425.000	18.067.500
79	0	0	16.425.000	18.067.500
80	0	0	16.425.000	18.067.500

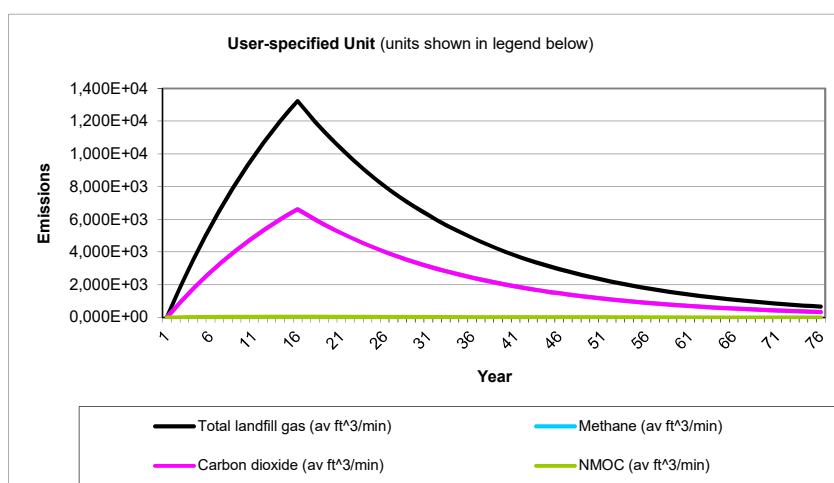
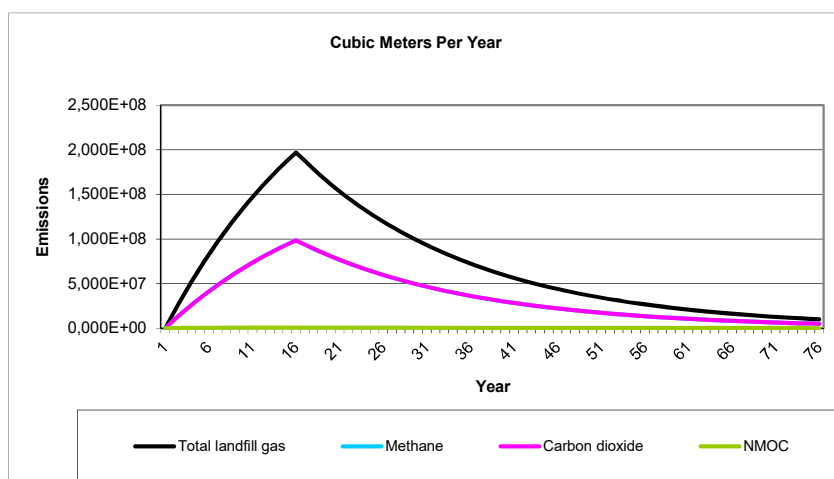
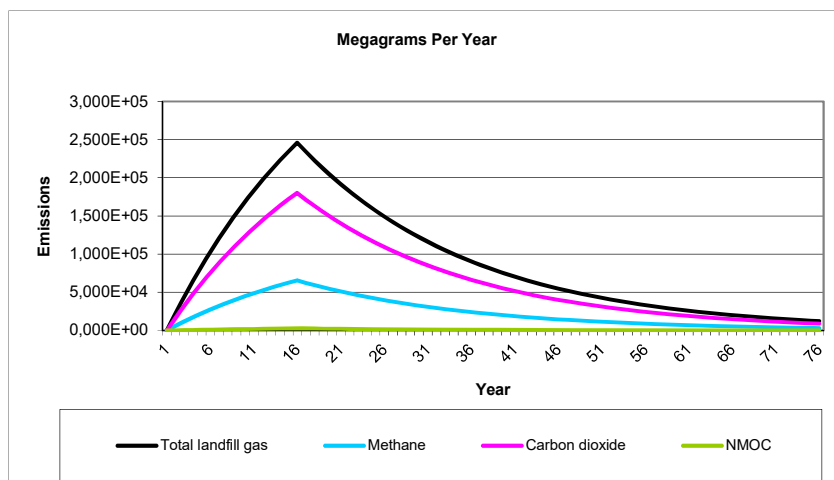
Pollutant Parameters

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



Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1	0	0	0	0	0	0
2	2,273E+04	1,820E+07	1,223E+03	6,072E+03	9,101E+06	6,115E+02
3	4,436E+04	3,552E+07	2,386E+03	1,185E+04	1,776E+07	1,193E+03
4	6,492E+04	5,199E+07	3,493E+03	1,734E+04	2,599E+07	1,747E+03
5	8,449E+04	6,766E+07	4,546E+03	2,257E+04	3,383E+07	2,273E+03
6	1,031E+05	8,256E+07	5,547E+03	2,754E+04	4,128E+07	2,774E+03
7	1,208E+05	9,673E+07	6,500E+03	3,227E+04	4,837E+07	3,250E+03
8	1,376E+05	1,102E+08	7,406E+03	3,677E+04	5,511E+07	3,703E+03
9	1,537E+05	1,230E+08	8,268E+03	4,105E+04	6,152E+07	4,134E+03
10	1,689E+05	1,352E+08	9,087E+03	4,512E+04	6,762E+07	4,544E+03
11	1,834E+05	1,469E+08	9,867E+03	4,899E+04	7,343E+07	4,934E+03
12	1,972E+05	1,579E+08	1,061E+04	5,267E+04	7,895E+07	5,304E+03
13	2,103E+05	1,684E+08	1,131E+04	5,617E+04	8,420E+07	5,657E+03
14	2,228E+05	1,784E+08	1,199E+04	5,951E+04	8,919E+07	5,993E+03
15	2,346E+05	1,879E+08	1,262E+04	6,268E+04	9,395E+07	6,312E+03
16	2,459E+05	1,969E+08	1,323E+04	6,569E+04	9,846E+07	6,616E+03
17	2,339E+05	1,873E+08	1,259E+04	6,249E+04	9,366E+07	6,293E+03
18	2,225E+05	1,782E+08	1,197E+04	5,944E+04	8,909E+07	5,986E+03
19	2,117E+05	1,695E+08	1,139E+04	5,654E+04	8,475E+07	5,694E+03
20	2,014E+05	1,612E+08	1,083E+04	5,378E+04	8,062E+07	5,417E+03
21	1,915E+05	1,534E+08	1,030E+04	5,116E+04	7,668E+07	5,152E+03
22	1,822E+05	1,459E+08	9,802E+03	4,866E+04	7,294E+07	4,901E+03
23	1,733E+05	1,388E+08	9,324E+03	4,629E+04	6,939E+07	4,662E+03
24	1,649E+05	1,320E+08	8,869E+03	4,403E+04	6,600E+07	4,435E+03
25	1,568E+05	1,256E+08	8,437E+03	4,189E+04	6,278E+07	4,218E+03
26	1,492E+05	1,194E+08	8,025E+03	3,984E+04	5,972E+07	4,013E+03
27	1,419E+05	1,136E+08	7,634E+03	3,790E+04	5,681E+07	3,817E+03
28	1,350E+05	1,081E+08	7,262E+03	3,605E+04	5,404E+07	3,631E+03
29	1,284E+05	1,028E+08	6,908E+03	3,429E+04	5,140E+07	3,454E+03
30	1,221E+05	9,779E+07	6,571E+03	3,262E+04	4,890E+07	3,285E+03
31	1,162E+05	9,302E+07	6,250E+03	3,103E+04	4,651E+07	3,125E+03
32	1,105E+05	8,849E+07	5,945E+03	2,952E+04	4,424E+07	2,973E+03
33	1,051E+05	8,417E+07	5,655E+03	2,808E+04	4,209E+07	2,828E+03
34	9,999E+04	8,007E+07	5,380E+03	2,671E+04	4,003E+07	2,690E+03
35	9,511E+04	7,616E+07	5,117E+03	2,541E+04	3,808E+07	2,559E+03
36	9,047E+04	7,245E+07	4,868E+03	2,417E+04	3,622E+07	2,434E+03
37	8,606E+04	6,891E+07	4,630E+03	2,299E+04	3,446E+07	2,315E+03
38	8,186E+04	6,555E+07	4,404E+03	2,187E+04	3,278E+07	2,202E+03
39	7,787E+04	6,236E+07	4,190E+03	2,080E+04	3,118E+07	2,095E+03
40	7,407E+04	5,931E+07	3,985E+03	1,979E+04	2,966E+07	1,993E+03
41	7,046E+04	5,642E+07	3,791E+03	1,882E+04	2,821E+07	1,895E+03
42	6,702E+04	5,367E+07	3,606E+03	1,790E+04	2,683E+07	1,803E+03
43	6,375E+04	5,105E+07	3,430E+03	1,703E+04	2,553E+07	1,715E+03
44	6,065E+04	4,856E+07	3,263E+03	1,620E+04	2,428E+07	1,631E+03
45	5,769E+04	4,619E+07	3,104E+03	1,541E+04	2,310E+07	1,552E+03
46	5,487E+04	4,394E+07	2,952E+03	1,466E+04	2,197E+07	1,476E+03
47	5,220E+04	4,180E+07	2,808E+03	1,394E+04	2,090E+07	1,404E+03
48	4,965E+04	3,976E+07	2,671E+03	1,326E+04	1,988E+07	1,336E+03
49	4,723E+04	3,782E+07	2,541E+03	1,262E+04	1,891E+07	1,271E+03
50	4,493E+04	3,598E+07	2,417E+03	1,200E+04	1,799E+07	1,209E+03

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)
51	4,274E+04	3,422E+07	2,299E+03	1,142E+04	1,711E+07	1,150E+03
52	4,065E+04	3,255E+07	2,187E+03	1,086E+04	1,628E+07	1,094E+03
53	3,867E+04	3,096E+07	2,081E+03	1,033E+04	1,548E+07	1,040E+03
54	3,678E+04	2,945E+07	1,979E+03	9,825E+03	1,473E+07	9,895E+02
55	3,499E+04	2,802E+07	1,883E+03	9,346E+03	1,401E+07	9,413E+02
56	3,328E+04	2,665E+07	1,791E+03	8,890E+03	1,333E+07	8,954E+02
57	3,166E+04	2,535E+07	1,703E+03	8,457E+03	1,268E+07	8,517E+02
58	3,012E+04	2,412E+07	1,620E+03	8,044E+03	1,206E+07	8,102E+02
59	2,865E+04	2,294E+07	1,541E+03	7,652E+03	1,147E+07	7,706E+02
60	2,725E+04	2,182E+07	1,466E+03	7,279E+03	1,091E+07	7,331E+02
61	2,592E+04	2,076E+07	1,395E+03	6,924E+03	1,038E+07	6,973E+02
62	2,466E+04	1,974E+07	1,327E+03	6,586E+03	9,872E+06	6,633E+02
63	2,345E+04	1,878E+07	1,262E+03	6,265E+03	9,390E+06	6,309E+02
64	2,231E+04	1,787E+07	1,200E+03	5,959E+03	8,933E+06	6,002E+02
65	2,122E+04	1,699E+07	1,142E+03	5,669E+03	8,497E+06	5,709E+02
66	2,019E+04	1,616E+07	1,086E+03	5,392E+03	8,082E+06	5,431E+02
67	1,920E+04	1,538E+07	1,033E+03	5,129E+03	7,688E+06	5,166E+02
68	1,827E+04	1,463E+07	9,828E+02	4,879E+03	7,313E+06	4,914E+02
69	1,738E+04	1,391E+07	9,348E+02	4,641E+03	6,957E+06	4,674E+02
70	1,653E+04	1,323E+07	8,892E+02	4,415E+03	6,617E+06	4,446E+02
71	1,572E+04	1,259E+07	8,459E+02	4,199E+03	6,295E+06	4,229E+02
72	1,496E+04	1,198E+07	8,046E+02	3,995E+03	5,988E+06	4,023E+02
73	1,423E+04	1,139E+07	7,654E+02	3,800E+03	5,696E+06	3,827E+02
74	1,353E+04	1,084E+07	7,280E+02	3,615E+03	5,418E+06	3,640E+02
75	1,287E+04	1,031E+07	6,925E+02	3,438E+03	5,154E+06	3,463E+02
76	1,224E+04	9,805E+06	6,588E+02	3,271E+03	4,902E+06	3,294E+02
77	1,165E+04	9,326E+06	6,266E+02	3,111E+03	4,663E+06	3,133E+02
78	1,108E+04	8,872E+06	5,961E+02	2,959E+03	4,436E+06	2,980E+02
79	1,054E+04	8,439E+06	5,670E+02	2,815E+03	4,219E+06	2,835E+02
80	1,002E+04	8,027E+06	5,394E+02	2,678E+03	4,014E+06	2,697E+02
81	9,536E+03	7,636E+06	5,130E+02	2,547E+03	3,818E+06	2,565E+02
82	9,071E+03	7,263E+06	4,880E+02	2,423E+03	3,632E+06	2,440E+02
83	8,628E+03	6,909E+06	4,642E+02	2,305E+03	3,455E+06	2,321E+02
84	8,207E+03	6,572E+06	4,416E+02	2,192E+03	3,286E+06	2,208E+02
85	7,807E+03	6,252E+06	4,200E+02	2,085E+03	3,126E+06	2,100E+02
86	7,426E+03	5,947E+06	3,996E+02	1,984E+03	2,973E+06	1,998E+02
87	7,064E+03	5,657E+06	3,801E+02	1,887E+03	2,828E+06	1,900E+02
88	6,720E+03	5,381E+06	3,615E+02	1,795E+03	2,690E+06	1,808E+02
89	6,392E+03	5,118E+06	3,439E+02	1,707E+03	2,559E+06	1,720E+02
90	6,080E+03	4,869E+06	3,271E+02	1,624E+03	2,434E+06	1,636E+02
91	5,784E+03	4,631E+06	3,112E+02	1,545E+03	2,316E+06	1,556E+02
92	5,502E+03	4,405E+06	2,960E+02	1,470E+03	2,203E+06	1,480E+02
93	5,233E+03	4,191E+06	2,816E+02	1,398E+03	2,095E+06	1,408E+02
94	4,978E+03	3,986E+06	2,678E+02	1,330E+03	1,993E+06	1,339E+02
95	4,735E+03	3,792E+06	2,548E+02	1,265E+03	1,896E+06	1,274E+02
96	4,504E+03	3,607E+06	2,423E+02	1,203E+03	1,803E+06	1,212E+02
97	4,285E+03	3,431E+06	2,305E+02	1,144E+03	1,715E+06	1,153E+02
98	4,076E+03	3,264E+06	2,193E+02	1,089E+03	1,632E+06	1,096E+02
99	3,877E+03	3,104E+06	2,086E+02	1,036E+03	1,552E+06	1,043E+02
100	3,688E+03	2,953E+06	1,984E+02	9,851E+02	1,477E+06	9,921E+01
101	3,508E+03	2,809E+06	1,887E+02	9,370E+02	1,405E+06	9,437E+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)
102	3,337E+03	2,672E+06	1,795E+02	8,913E+02	1,336E+06	8,977E+01
103	3,174E+03	2,542E+06	1,708E+02	8,479E+02	1,271E+06	8,539E+01
104	3,019E+03	2,418E+06	1,624E+02	8,065E+02	1,209E+06	8,122E+01
105	2,872E+03	2,300E+06	1,545E+02	7,672E+02	1,150E+06	7,726E+01
106	2,732E+03	2,188E+06	1,470E+02	7,298E+02	1,094E+06	7,350E+01
107	2,599E+03	2,081E+06	1,398E+02	6,942E+02	1,040E+06	6,991E+01
108	2,472E+03	1,980E+06	1,330E+02	6,603E+02	9,898E+05	6,650E+01
109	2,351E+03	1,883E+06	1,265E+02	6,281E+02	9,415E+05	6,326E+01
110	2,237E+03	1,791E+06	1,203E+02	5,975E+02	8,956E+05	6,017E+01
111	2,128E+03	1,704E+06	1,145E+02	5,683E+02	8,519E+05	5,724E+01
112	2,024E+03	1,621E+06	1,089E+02	5,406E+02	8,103E+05	5,445E+01
113	1,925E+03	1,542E+06	1,036E+02	5,143E+02	7,708E+05	5,179E+01
114	1,831E+03	1,466E+06	9,853E+01	4,892E+02	7,332E+05	4,927E+01
115	1,742E+03	1,395E+06	9,373E+01	4,653E+02	6,975E+05	4,686E+01
116	1,657E+03	1,327E+06	8,915E+01	4,426E+02	6,635E+05	4,458E+01
117	1,576E+03	1,262E+06	8,481E+01	4,210E+02	6,311E+05	4,240E+01
118	1,499E+03	1,201E+06	8,067E+01	4,005E+02	6,003E+05	4,034E+01
119	1,426E+03	1,142E+06	7,674E+01	3,810E+02	5,710E+05	3,837E+01
120	1,357E+03	1,086E+06	7,299E+01	3,624E+02	5,432E+05	3,650E+01
121	1,291E+03	1,033E+06	6,943E+01	3,447E+02	5,167E+05	3,472E+01
122	1,228E+03	9,830E+05	6,605E+01	3,279E+02	4,915E+05	3,302E+01
123	1,168E+03	9,351E+05	6,283E+01	3,119E+02	4,675E+05	3,141E+01
124	1,111E+03	8,894E+05	5,976E+01	2,967E+02	4,447E+05	2,988E+01
125	1,057E+03	8,461E+05	5,685E+01	2,822E+02	4,230E+05	2,842E+01
126	1,005E+03	8,048E+05	5,407E+01	2,685E+02	4,024E+05	2,704E+01
127	9,560E+02	7,656E+05	5,144E+01	2,554E+02	3,828E+05	2,572E+01
128	9,094E+02	7,282E+05	4,893E+01	2,429E+02	3,641E+05	2,446E+01
129	8,651E+02	6,927E+05	4,654E+01	2,311E+02	3,464E+05	2,327E+01
130	8,229E+02	6,589E+05	4,427E+01	2,198E+02	3,295E+05	2,214E+01
131	7,827E+02	6,268E+05	4,211E+01	2,091E+02	3,134E+05	2,106E+01
132	7,446E+02	5,962E+05	4,006E+01	1,989E+02	2,981E+05	2,003E+01
133	7,083E+02	5,671E+05	3,811E+01	1,892E+02	2,836E+05	1,905E+01
134	6,737E+02	5,395E+05	3,625E+01	1,800E+02	2,697E+05	1,812E+01
135	6,409E+02	5,132E+05	3,448E+01	1,712E+02	2,566E+05	1,724E+01
136	6,096E+02	4,881E+05	3,280E+01	1,628E+02	2,441E+05	1,640E+01
137	5,799E+02	4,643E+05	3,120E+01	1,549E+02	2,322E+05	1,560E+01
138	5,516E+02	4,417E+05	2,968E+01	1,473E+02	2,208E+05	1,484E+01
139	5,247E+02	4,201E+05	2,823E+01	1,401E+02	2,101E+05	1,411E+01
140	4,991E+02	3,997E+05	2,685E+01	1,333E+02	1,998E+05	1,343E+01
141	4,748E+02	3,802E+05	2,554E+01	1,268E+02	1,901E+05	1,277E+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)
1	0	0	0	0	0	0
2	1,666E+04	9,101E+06	6,115E+02	2,610E+02	7,281E+04	4,892E+00
3	3,251E+04	1,776E+07	1,193E+03	5,092E+02	1,421E+05	9,546E+00
4	4,758E+04	2,599E+07	1,747E+03	7,454E+02	2,080E+05	1,397E+01
5	6,192E+04	3,383E+07	2,273E+03	9,700E+02	2,706E+05	1,818E+01
6	7,556E+04	4,128E+07	2,774E+03	1,184E+03	3,302E+05	2,219E+01
7	8,854E+04	4,837E+07	3,250E+03	1,387E+03	3,869E+05	2,600E+01
8	1,009E+05	5,511E+07	3,703E+03	1,580E+03	4,409E+05	2,962E+01
9	1,126E+05	6,152E+07	4,134E+03	1,764E+03	4,922E+05	3,307E+01
10	1,238E+05	6,762E+07	4,544E+03	1,939E+03	5,410E+05	3,635E+01
11	1,344E+05	7,343E+07	4,934E+03	2,106E+03	5,874E+05	3,947E+01
12	1,445E+05	7,895E+07	5,304E+03	2,264E+03	6,316E+05	4,244E+01
13	1,541E+05	8,420E+07	5,657E+03	2,414E+03	6,736E+05	4,526E+01
14	1,633E+05	8,919E+07	5,993E+03	2,558E+03	7,136E+05	4,794E+01
15	1,720E+05	9,395E+07	6,312E+03	2,694E+03	7,516E+05	5,050E+01
16	1,802E+05	9,846E+07	6,616E+03	2,824E+03	7,877E+05	5,293E+01
17	1,714E+05	9,366E+07	6,293E+03	2,686E+03	7,493E+05	5,035E+01
18	1,631E+05	8,909E+07	5,986E+03	2,555E+03	7,128E+05	4,789E+01
19	1,551E+05	8,475E+07	5,694E+03	2,430E+03	6,780E+05	4,555E+01
20	1,476E+05	8,062E+07	5,417E+03	2,312E+03	6,449E+05	4,333E+01
21	1,404E+05	7,668E+07	5,152E+03	2,199E+03	6,135E+05	4,122E+01
22	1,335E+05	7,294E+07	4,901E+03	2,092E+03	5,836E+05	3,921E+01
23	1,270E+05	6,939E+07	4,662E+03	1,990E+03	5,551E+05	3,730E+01
24	1,208E+05	6,600E+07	4,435E+03	1,893E+03	5,280E+05	3,548E+01
25	1,149E+05	6,278E+07	4,218E+03	1,800E+03	5,023E+05	3,375E+01
26	1,093E+05	5,972E+07	4,013E+03	1,713E+03	4,778E+05	3,210E+01
27	1,040E+05	5,681E+07	3,817E+03	1,629E+03	4,545E+05	3,054E+01
28	9,892E+04	5,404E+07	3,631E+03	1,550E+03	4,323E+05	2,905E+01
29	9,409E+04	5,140E+07	3,454E+03	1,474E+03	4,112E+05	2,763E+01
30	8,950E+04	4,890E+07	3,285E+03	1,402E+03	3,912E+05	2,628E+01
31	8,514E+04	4,651E+07	3,125E+03	1,334E+03	3,721E+05	2,500E+01
32	8,099E+04	4,424E+07	2,973E+03	1,269E+03	3,539E+05	2,378E+01
33	7,704E+04	4,209E+07	2,828E+03	1,207E+03	3,367E+05	2,262E+01
34	7,328E+04	4,003E+07	2,690E+03	1,148E+03	3,203E+05	2,152E+01
35	6,971E+04	3,808E+07	2,559E+03	1,092E+03	3,046E+05	2,047E+01
36	6,631E+04	3,622E+07	2,434E+03	1,039E+03	2,898E+05	1,947E+01
37	6,307E+04	3,446E+07	2,315E+03	9,881E+02	2,757E+05	1,852E+01
38	6,000E+04	3,278E+07	2,202E+03	9,399E+02	2,622E+05	1,762E+01
39	5,707E+04	3,118E+07	2,095E+03	8,940E+02	2,494E+05	1,676E+01
40	5,429E+04	2,966E+07	1,993E+03	8,504E+02	2,373E+05	1,594E+01
41	5,164E+04	2,821E+07	1,895E+03	8,090E+02	2,257E+05	1,516E+01
42	4,912E+04	2,683E+07	1,803E+03	7,695E+02	2,147E+05	1,442E+01
43	4,673E+04	2,553E+07	1,715E+03	7,320E+02	2,042E+05	1,372E+01
44	4,445E+04	2,428E+07	1,631E+03	6,963E+02	1,942E+05	1,305E+01
45	4,228E+04	2,310E+07	1,552E+03	6,623E+02	1,848E+05	1,242E+01
46	4,022E+04	2,197E+07	1,476E+03	6,300E+02	1,758E+05	1,181E+01
47	3,826E+04	2,090E+07	1,404E+03	5,993E+02	1,672E+05	1,123E+01
48	3,639E+04	1,988E+07	1,336E+03	5,701E+02	1,590E+05	1,069E+01
49	3,461E+04	1,891E+07	1,271E+03	5,423E+02	1,513E+05	1,016E+01
50	3,293E+04	1,799E+07	1,209E+03	5,158E+02	1,439E+05	9,669E+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)
51	3,132E+04	1,711E+07	1,150E+03	4,907E+02	1,369E+05	9,197E+00
52	2,979E+04	1,628E+07	1,094E+03	4,667E+02	1,302E+05	8,749E+00
53	2,834E+04	1,548E+07	1,040E+03	4,440E+02	1,239E+05	8,322E+00
54	2,696E+04	1,473E+07	9,895E+02	4,223E+02	1,178E+05	7,916E+00
55	2,564E+04	1,401E+07	9,413E+02	4,017E+02	1,121E+05	7,530E+00
56	2,439E+04	1,333E+07	8,954E+02	3,821E+02	1,066E+05	7,163E+00
57	2,320E+04	1,268E+07	8,517E+02	3,635E+02	1,014E+05	6,814E+00
58	2,207E+04	1,206E+07	8,102E+02	3,458E+02	9,646E+04	6,481E+00
59	2,100E+04	1,147E+07	7,706E+02	3,289E+02	9,176E+04	6,165E+00
60	1,997E+04	1,091E+07	7,331E+02	3,129E+02	8,728E+04	5,864E+00
61	1,900E+04	1,038E+07	6,973E+02	2,976E+02	8,302E+04	5,578E+00
62	1,807E+04	9,872E+06	6,633E+02	2,831E+02	7,898E+04	5,306E+00
63	1,719E+04	9,390E+06	6,309E+02	2,693E+02	7,512E+04	5,048E+00
64	1,635E+04	8,933E+06	6,002E+02	2,561E+02	7,146E+04	4,801E+00
65	1,555E+04	8,497E+06	5,709E+02	2,437E+02	6,797E+04	4,567E+00
66	1,479E+04	8,082E+06	5,431E+02	2,318E+02	6,466E+04	4,344E+00
67	1,407E+04	7,688E+06	5,166E+02	2,205E+02	6,151E+04	4,133E+00
68	1,339E+04	7,313E+06	4,914E+02	2,097E+02	5,851E+04	3,931E+00
69	1,273E+04	6,957E+06	4,674E+02	1,995E+02	5,565E+04	3,739E+00
70	1,211E+04	6,617E+06	4,446E+02	1,898E+02	5,294E+04	3,557E+00
71	1,152E+04	6,295E+06	4,229E+02	1,805E+02	5,036E+04	3,383E+00
72	1,096E+04	5,988E+06	4,023E+02	1,717E+02	4,790E+04	3,218E+00
73	1,043E+04	5,696E+06	3,827E+02	1,633E+02	4,556E+04	3,062E+00
74	9,917E+03	5,418E+06	3,640E+02	1,554E+02	4,334E+04	2,912E+00
75	9,434E+03	5,154E+06	3,463E+02	1,478E+02	4,123E+04	2,770E+00
76	8,974E+03	4,902E+06	3,294E+02	1,406E+02	3,922E+04	2,635E+00
77	8,536E+03	4,663E+06	3,133E+02	1,337E+02	3,731E+04	2,507E+00
78	8,120E+03	4,436E+06	2,980E+02	1,272E+02	3,549E+04	2,384E+00
79	7,724E+03	4,219E+06	2,835E+02	1,210E+02	3,376E+04	2,268E+00
80	7,347E+03	4,014E+06	2,697E+02	1,151E+02	3,211E+04	2,157E+00
81	6,989E+03	3,818E+06	2,565E+02	1,095E+02	3,054E+04	2,052E+00
82	6,648E+03	3,632E+06	2,440E+02	1,041E+02	2,905E+04	1,952E+00
83	6,324E+03	3,455E+06	2,321E+02	9,906E+01	2,764E+04	1,857E+00
84	6,015E+03	3,286E+06	2,208E+02	9,423E+01	2,629E+04	1,766E+00
85	5,722E+03	3,126E+06	2,100E+02	8,964E+01	2,501E+04	1,680E+00
86	5,443E+03	2,973E+06	1,998E+02	8,526E+01	2,379E+04	1,598E+00
87	5,177E+03	2,828E+06	1,900E+02	8,111E+01	2,263E+04	1,520E+00
88	4,925E+03	2,690E+06	1,808E+02	7,715E+01	2,152E+04	1,446E+00
89	4,685E+03	2,559E+06	1,720E+02	7,339E+01	2,047E+04	1,376E+00
90	4,456E+03	2,434E+06	1,636E+02	6,981E+01	1,948E+04	1,309E+00
91	4,239E+03	2,316E+06	1,556E+02	6,640E+01	1,853E+04	1,245E+00
92	4,032E+03	2,203E+06	1,480E+02	6,316E+01	1,762E+04	1,184E+00
93	3,835E+03	2,095E+06	1,408E+02	6,008E+01	1,676E+04	1,126E+00
94	3,648E+03	1,993E+06	1,339E+02	5,715E+01	1,594E+04	1,071E+00
95	3,470E+03	1,896E+06	1,274E+02	5,437E+01	1,517E+04	1,019E+00
96	3,301E+03	1,803E+06	1,212E+02	5,172E+01	1,443E+04	9,694E-01
97	3,140E+03	1,715E+06	1,153E+02	4,919E+01	1,372E+04	9,221E-01
98	2,987E+03	1,632E+06	1,096E+02	4,679E+01	1,305E+04	8,771E-01
99	2,841E+03	1,552E+06	1,043E+02	4,451E+01	1,242E+04	8,344E-01
100	2,703E+03	1,477E+06	9,921E+01	4,234E+01	1,181E+04	7,937E-01
101	2,571E+03	1,405E+06	9,437E+01	4,028E+01	1,124E+04	7,550E-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)
102	2,446E+03	1,336E+06	8,977E+01	3,831E+01	1,069E+04	7,181E-01
103	2,326E+03	1,271E+06	8,539E+01	3,644E+01	1,017E+04	6,831E-01
104	2,213E+03	1,209E+06	8,122E+01	3,467E+01	9,671E+03	6,498E-01
105	2,105E+03	1,150E+06	7,726E+01	3,297E+01	9,199E+03	6,181E-01
106	2,002E+03	1,094E+06	7,350E+01	3,137E+01	8,751E+03	5,880E-01
107	1,905E+03	1,040E+06	6,991E+01	2,984E+01	8,324E+03	5,593E-01
108	1,812E+03	9,898E+05	6,650E+01	2,838E+01	7,918E+03	5,320E-01
109	1,723E+03	9,415E+05	6,326E+01	2,700E+01	7,532E+03	5,061E-01
110	1,639E+03	8,956E+05	6,017E+01	2,568E+01	7,165E+03	4,814E-01
111	1,559E+03	8,519E+05	5,724E+01	2,443E+01	6,815E+03	4,579E-01
112	1,483E+03	8,103E+05	5,445E+01	2,324E+01	6,483E+03	4,356E-01
113	1,411E+03	7,708E+05	5,179E+01	2,210E+01	6,167E+03	4,143E-01
114	1,342E+03	7,332E+05	4,927E+01	2,103E+01	5,866E+03	3,941E-01
115	1,277E+03	6,975E+05	4,686E+01	2,000E+01	5,580E+03	3,749E-01
116	1,214E+03	6,635E+05	4,458E+01	1,902E+01	5,308E+03	3,566E-01
117	1,155E+03	6,311E+05	4,240E+01	1,810E+01	5,049E+03	3,392E-01
118	1,099E+03	6,003E+05	4,034E+01	1,721E+01	4,803E+03	3,227E-01
119	1,045E+03	5,710E+05	3,837E+01	1,637E+01	4,568E+03	3,069E-01
120	9,943E+02	5,432E+05	3,650E+01	1,558E+01	4,345E+03	2,920E-01
121	9,458E+02	5,167E+05	3,472E+01	1,482E+01	4,134E+03	2,777E-01
122	8,997E+02	4,915E+05	3,302E+01	1,409E+01	3,932E+03	2,642E-01
123	8,558E+02	4,675E+05	3,141E+01	1,341E+01	3,740E+03	2,513E-01
124	8,141E+02	4,447E+05	2,988E+01	1,275E+01	3,558E+03	2,390E-01
125	7,744E+02	4,230E+05	2,842E+01	1,213E+01	3,384E+03	2,274E-01
126	7,366E+02	4,024E+05	2,704E+01	1,154E+01	3,219E+03	2,163E-01
127	7,007E+02	3,828E+05	2,572E+01	1,098E+01	3,062E+03	2,058E-01
128	6,665E+02	3,641E+05	2,446E+01	1,044E+01	2,913E+03	1,957E-01
129	6,340E+02	3,464E+05	2,327E+01	9,932E+00	2,771E+03	1,862E-01
130	6,031E+02	3,295E+05	2,214E+01	9,447E+00	2,636E+03	1,771E-01
131	5,737E+02	3,134E+05	2,106E+01	8,987E+00	2,507E+03	1,685E-01
132	5,457E+02	2,981E+05	2,003E+01	8,548E+00	2,385E+03	1,602E-01
133	5,191E+02	2,836E+05	1,905E+01	8,132E+00	2,269E+03	1,524E-01
134	4,938E+02	2,697E+05	1,812E+01	7,735E+00	2,158E+03	1,450E-01
135	4,697E+02	2,566E+05	1,724E+01	7,358E+00	2,053E+03	1,379E-01
136	4,468E+02	2,441E+05	1,640E+01	6,999E+00	1,953E+03	1,312E-01
137	4,250E+02	2,322E+05	1,560E+01	6,658E+00	1,857E+03	1,248E-01
138	4,043E+02	2,208E+05	1,484E+01	6,333E+00	1,767E+03	1,187E-01
139	3,845E+02	2,101E+05	1,411E+01	6,024E+00	1,681E+03	1,129E-01
140	3,658E+02	1,998E+05	1,343E+01	5,730E+00	1,599E+03	1,074E-01
141	3,479E+02	1,901E+05	1,277E+01	5,451E+00	1,521E+03	1,022E-01