

Schwartz, Colin

From: Schwartz, Colin
Sent: Monday, November 14, 2016 3:56 PM
To: 'Nyiro, Doc'
Cc: 'Candace Bear'; Reynolds, Cynthia; 'O'Connor, Michael'; Fallon, Gail; Smith, Claudia
Subject: Final Part 71 Permit for Tekoi Landfill
Attachments: Cover Letter_RTC_TVPermit_TekoiLandfill2016.pdf

I have attached the final requested permit and the accompanying response to comments document for the Tekoi Landfill issued pursuant to the Title V Operating Permit Program at 40 CFR Part 71 (Part 71). We will also be posting the final Part 71 permit and response to comments in PDF format on our website at: <https://www.epa.gov/caa-permitting/caa-permits-issued-epa-region-8>.

In accordance with the regulations at §71.11(i), the permit will be effective 30 days after the date of this notice, on December 14, 2016. Within 30 days after a final permit decision has been issued, any person who filed comments on the draft permit or participated in the public hearing may petition the Environmental Appeals Board (EAB) to review any condition of the permit decision. The 30-day period within which a person may request review under this section begins when we have fulfilled the notice requirements for the final permit decision. Motions to reconsider a final order by the EAB must be filed within 10 days after service of the final order. A petition to the EAB is under Section 307(b) of the CAA, a prerequisite to seeking judicial review of the final agency action. For purposes of judicial review, final agency action occurs when we issue or deny a final permit and agency review procedures are exhausted.

If you have any questions or concerns regarding this final permit action, or would like a paper copy, please contact me.

Thank you,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

Schwartz, Colin

From: Schwartz, Colin
Sent: Monday, November 14, 2016 3:55 PM
Subject: Notice of Issuance of Renewed Title V Operating Permit on the Skull Valley Reservation

This is to notify you that the EPA has issued a final renewed Clean Air Act (CAA) Title V operating permit for the Waste Management, Inc. Tekoi Landfill pursuant to the Title V Operating Permit Program at 40 CFR Part 71 (Part 71). The final Part 71 permit and response to comments can be accessed in PDF format on our website at: <https://www.epa.gov/caa-permitting/caa-permits-issued-epa-region-8>.

In accordance with the regulations at §71.11(i), the permit will be effective 30 days after the date of this notice, on December 14, 2016. Within 30 days after a final permit decision has been issued, any person who filed comments on the draft permit or participated in the public hearing may petition the Environmental Appeals Board (EAB) to review any condition of the permit decision. The 30-day period within which a person may request review under this section begins when we have fulfilled the notice requirements for the final permit decision. Motions to reconsider a final order by the EAB must be filed within 10 days after service of the final order. A petition to the EAB is under Section 307(b) of the CAA, a prerequisite to seeking judicial review of the final agency action. For purposes of judicial review, final agency action occurs when we issue or deny a final permit and agency review procedures are exhausted.

Thank you,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

Schwartz, Colin

From: O'Connor, Michael <MOConnor@scsengineers.com>
Sent: Monday, August 15, 2016 1:33 PM
To: Schwartz, Colin
Cc: Nyiro, Doc
Subject: RE: Tekoi Title V Renewal - Supplemental Information

Colin –

If you are referring to the NMOC values for determination of NSPS status, that would be based on the NSPS version of the App E files I sent you; and you will see that it shows 43.15 Mg/yr for 2016; a slight drop, as expected, due to the lower fill rates provided by Doc.

Michael

From: Schwartz, Colin [mailto:Schwartz.Colin@epa.gov]
Sent: Monday, August 15, 2016 10:18 AM
To: O'Connor, Michael
Subject: RE: Tekoi Title V Renewal - Supplemental Information

Thank you Michael,

Are the NMOC Mg/yr values still correct in being 43.7 for 2016?

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

From: O'Connor, Michael [mailto:MOConnor@scsengineers.com]
Sent: Friday, August 12, 2016 4:29 PM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>
Cc: Nyiro, Doc <dneyiro@wm.com>
Subject: RE: Tekoi Title V Renewal - Supplemental Information

Colin –

Please find attached revised gas modeling and emission calculation files associated with the updated waste tonnage data provided by Doc. Note that all changes resulting from the updated data are very minor and should not significantly affect the permitting process that you have largely completed already.

The attached files include:

Three updated LandGem gas models intended to replace the Appendix E documents included in the original application;
Emission calculation tables 2 and 3 included in the original application included in the original application; and
A revised version of the GHG emissions form that was provided after the original application was submitted

I hope this information is sufficient to enable you to complete the Title V renewal permitting for the Tekoi Landfill.

Please contact me if you have any questions or require any additional information.

Have a great weekend.

Michael

Michael O'Connor
SCS Engineers
Office: 707.546.9461
Mobile: 707.536.6857
moconnor@scsengineers.com

From: Schwartz, Colin [<mailto:Schwartz.Colin@epa.gov>]
Sent: Thursday, August 11, 2016 9:59 AM
To: O'Connor, Michael
Subject: RE: Tekoi Title V Renewal - Supplemental Information

Michael,

If we could get any of the emissions that changed with their calculations that would be best. If the only emission source that has new values is E1 then that would suffice.

Thank you, and hope you had some good time off.

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

From: O'Connor, Michael [<mailto:MOConnor@scsengineers.com>]
Sent: Thursday, August 11, 2016 10:52 AM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>
Subject: FW: Tekoi Title V Renewal - Supplemental Information

Colin –

I was out for a couple of weeks and returned this week. I discussed with Doc the errors he discovered in the historical waste disposal tonnages. The discrepancies were associated with some inert material that had been incorrectly included with the regular, decomposable waste stream. The annual discrepancies were relatively minor and affected the data from 2008 through 2013. Doc updated the waste tonnage data in the 3 models we included in the original application. I have reviewed those models and have updated the emission calculations for the landfill source E1 accordingly. The slower actual fill rate had the effect of reducing the VOC emission numbers very slightly (by 1 ton or less). It would also be expected to have a similar effect on GHG emissions

I wanted to see what updated information you would like me to provide; E1 emission calc table, Emission Summary table, GHG table, any forms? Did Doc send you the updated gas models? If not, I can provide those as well.

Please let me know what you require, and I will get it to you.

Feel free to call if you wish to discuss this matter.

Regards,
Michael

Michael O'Connor
SCS Engineers
Office: 707.546.9461
Mobile: 707.536.6857
moconnor@scsengineers.com

From: Nyiro, Doc [<mailto:dnyiro@wm.com>]
Sent: Tuesday, July 26, 2016 10:44 AM
To: Schwartz, Colin
Cc: Okubo, Noreen; O'Connor, Michael
Subject: RE: Tekoi Title V Renewal - Supplemental Information

When I add up all the HAPs based on the tons/year, I get the same number as you. When I add up the pounds/year for all the HAPs, and then convert to tons/year, I get 0.041585. They both round to 0.0416 if that works for you. Otherwise, I guess either number should be fine.

Also, unfortunately I'm pretty sure I found an error in the historic waste acceptance rates in the LandGem runs. I am trying to confirm these numbers, but probably won't be able to get back to you until tomorrow. If these values change, it will probably affect some of the projected maximum emissions for E1.

I'm sorry about this potential mistake and the resulting inconvenience.

Thanks

From: Schwartz, Colin [<mailto:Schwartz.Colin@epa.gov>]
Sent: Tuesday, July 26, 2016 9:48 AM
To: Nyiro, Doc
Cc: Okubo, Noreen; O'Connor, Michael
Subject: RE: Tekoi Title V Renewal - Supplemental Information

Thank you, Doc.

I went through your HAP emissions for E3 and calculated total PTE HAP at 0.041641 tpy. Is this correct on your end as well?

If you concur on this value, I will be able to complete my end of the public comments and start to finalize the permit.

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

From: Nyiro, Doc [<mailto:dnyiro@wm.com>]
Sent: Tuesday, July 26, 2016 9:07 AM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>
Cc: Okubo, Noreen <Okubo.Noreen@epa.gov>; O'Connor, Michael <MOConnor@scsengineers.com>
Subject: RE: Tekoi Title V Renewal - Supplemental Information

Attached are the GHG calculations you requested. The calculations are based on year 2019 projected emissions, since this is the year that a gas collection system is projected to be installed. We project to exceed 50 Mg of NMOC emissions in 2017, based on a very conservative waste acceptance assumption in 2016. Once we exceed the 50 Mg threshold, we have 30 months to install a gas collection and control system (GCCS), thus the assumed 2019 GCCS installation date. This is the point when we expect to have the highest VOC and GHG emissions, since after this, the GCCS will collect and control 75% of the landfill gas generated.

The NMOC emissions estimates for 2016 and 2017 are shown in one of the LandGem runs in Appendix E of the permit application. A copy of that LandGem report is attached for your convenience. The [projected NMOC emissions in 2016 and 2017 are 44.57 Mg/year and 70.13 Mg/year respectively.

Michael is on vacation this week, so please let me know if you have any questions.

Thanks

From: Schwartz, Colin [<mailto:Schwartz.Colin@epa.gov>]
Sent: Wednesday, July 20, 2016 2:04 PM
To: O'Connor, Michael
Cc: Nyiro, Doc; Okubo, Noreen
Subject: RE: Tekoi Title V Renewal - Supplemental Information

Michael,

I appreciate the submittal information but have a few questions on Landfill Emissions E1.

In the original GHG submittal that was emailed me on April, 14, 2016, you supplied E1's CH₄ CO₂e at 106,177 tpy (4247.08 tpy CH₄). That number, if I am assuming correctly, corresponds to the NMOC emissions of 43.7 Mg/year for 2016 as listed in table 1, appendix F of your permit.

This new submittal has multiple GHG emissions listed ranging from 126,107 tpy of CH₄ CO₂e (5,044 tpy CH₄) up to approximately 190,950 tpy CO₂e. Can you provide your calculations for how you came up with these numbers and the new 2016 and 2017 NMOC emissions with the calculations shown that correspond with this increase in methane?

Thank you,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

From: O'Connor, Michael [<mailto:MOConnor@scsengineers.com>]
Sent: Wednesday, July 20, 2016 10:47 AM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>

Cc: Nyiro, Doc <dnyiro@wm.com>; Mark Franc (MFranc@wm.com) <MFranc@wm.com>

Subject: Tekoi Title V Renewal - Supplemental Information

Colin –

Per your recent communications with Doc and with me, SCS Engineers has prepared the attached letter with the additional information you requested associated with:

Re-designation of the John Deere generator engine to a significant source;
Greenhouse Gas Emissions

I trust this letter provides the additional information you require in order to complete the Title V renewal permitting for the Tekoi Landfill.

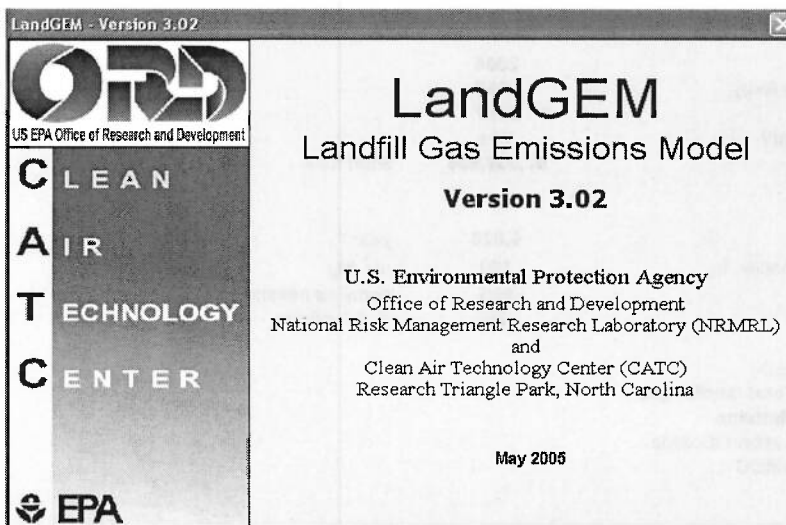
If you require a paper copy of this submittal, just let me know and I will send one.

If you have any additional questions about this matter, please contact me,

Regards,
Michael

Michael O'Connor
SCS Engineers
Office: 707.546.9461
Mobile: 707.536.6857
moconnor@scsengineers.com

Recycling is a good thing. Please recycle any printed emails.



Summary Report

Landfill Name or Identifier: Tekoi Landfill, Utah

Date: Thursday, August 11, 2016

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

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	2005	
Landfill Closure Year (with 80-year limit)	2052	
Actual Closure Year (without limit)	2052	
Have Model Calculate Closure Year?	Yes	
Waste Design Capacity	47,939,986	<i>short tons</i>

MODEL PARAMETERS

Methane Generation Rate, k	0.020	<i>year⁻¹</i>
Potential Methane Generation Capacity, L ₀	100	<i>m³/Mg</i>
NMOC Concentration	965	<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)
2005	140,242	154,266	0	0
2006	268,131	294,944	140,242	154,266
2007	264,525	290,978	408,373	449,210
2008	211,796	232,976	672,898	740,188
2009	173,041	190,345	884,695	973,164
2010	145,182	159,700	1,057,735	1,163,509
2011	153,767	169,144	1,202,917	1,323,209
2012	153,554	168,909	1,356,685	1,492,353
2013	171,218	188,340	1,510,238	1,661,262
2014	196,194	215,814	1,681,456	1,849,602
2015	174,515	191,967	1,877,651	2,065,416
2016	1,134,545	1,248,000	2,052,166	2,257,383
2017	1,134,545	1,248,000	3,186,711	3,505,383
2018	1,134,545	1,248,000	4,321,257	4,753,383
2019	1,134,545	1,248,000	5,455,802	6,001,383
2020	1,134,545	1,248,000	6,590,348	7,249,383
2021	1,134,545	1,248,000	7,724,893	8,497,383
2022	1,134,545	1,248,000	8,859,439	9,745,383
2023	1,134,545	1,248,000	9,993,984	10,993,383
2024	1,134,545	1,248,000	11,128,530	12,241,383
2025	1,134,545	1,248,000	12,263,075	13,489,383
2026	1,134,545	1,248,000	13,397,621	14,737,383
2027	1,134,545	1,248,000	14,532,166	15,985,383
2028	1,134,545	1,248,000	15,666,711	17,233,383
2029	1,134,545	1,248,000	16,801,257	18,481,383
2030	1,134,545	1,248,000	17,935,802	19,729,383
2031	1,134,545	1,248,000	19,070,348	20,977,383
2032	1,134,545	1,248,000	20,204,893	22,225,383
2033	1,134,545	1,248,000	21,339,439	23,473,383
2034	1,134,545	1,248,000	22,473,984	24,721,383
2035	1,134,545	1,248,000	23,608,530	25,969,383
2036	1,134,545	1,248,000	24,743,075	27,217,383
2037	1,134,545	1,248,000	25,877,621	28,465,383
2038	1,134,545	1,248,000	27,012,166	29,713,383
2039	1,134,545	1,248,000	28,146,711	30,961,383
2040	1,134,545	1,248,000	29,281,257	32,209,383
2041	1,134,545	1,248,000	30,415,802	33,457,383
2042	1,134,545	1,248,000	31,550,348	34,705,383
2043	1,134,545	1,248,000	32,684,893	35,953,383
2044	1,134,545	1,248,000	33,819,439	37,201,383

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2045	1,134,545	1,248,000	34,953,984	38,449,383
2046	1,134,545	1,248,000	36,088,530	39,697,383
2047	1,134,545	1,248,000	37,223,075	40,945,383
2048	1,134,545	1,248,000	38,357,621	42,193,383
2049	1,134,545	1,248,000	39,492,166	43,441,383
2050	1,134,545	1,248,000	40,626,711	44,689,383
2051	1,134,545	1,248,000	41,761,257	45,937,383
2052	686,003	754,603	42,895,802	47,185,383
2053	0	0	43,581,805	47,939,986
2054	0	0	43,581,805	47,939,986
2055	0	0	43,581,805	47,939,986
2056	0	0	43,581,805	47,939,986
2057	0	0	43,581,805	47,939,986
2058	0	0	43,581,805	47,939,986
2059	0	0	43,581,805	47,939,986
2060	0	0	43,581,805	47,939,986
2061	0	0	43,581,805	47,939,986
2062	0	0	43,581,805	47,939,986
2063	0	0	43,581,805	47,939,986
2064	0	0	43,581,805	47,939,986
2065	0	0	43,581,805	47,939,986
2066	0	0	43,581,805	47,939,986
2067	0	0	43,581,805	47,939,986
2068	0	0	43,581,805	47,939,986
2069	0	0	43,581,805	47,939,986
2070	0	0	43,581,805	47,939,986
2071	0	0	43,581,805	47,939,986
2072	0	0	43,581,805	47,939,986
2073	0	0	43,581,805	47,939,986
2074	0	0	43,581,805	47,939,986
2075	0	0	43,581,805	47,939,986
2076	0	0	43,581,805	47,939,986
2077	0	0	43,581,805	47,939,986
2078	0	0	43,581,805	47,939,986
2079	0	0	43,581,805	47,939,986
2080	0	0	43,581,805	47,939,986
2081	0	0	43,581,805	47,939,986
2082	0	0	43,581,805	47,939,986
2083	0	0	43,581,805	47,939,986
2084	0	0	43,581,805	47,939,986

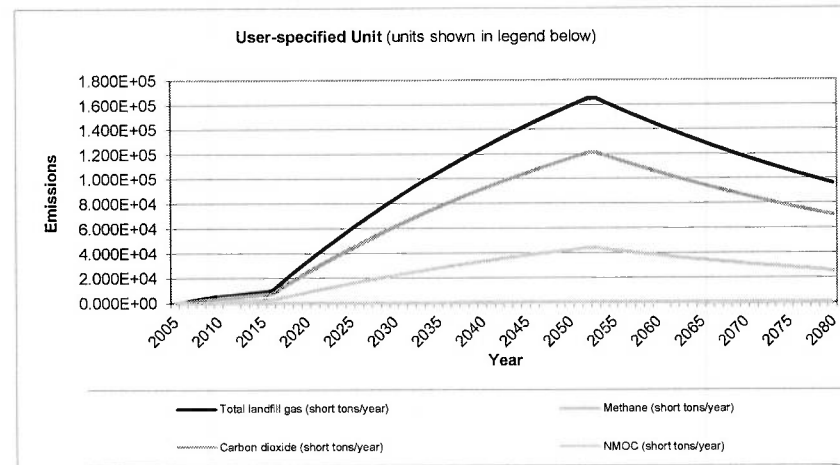
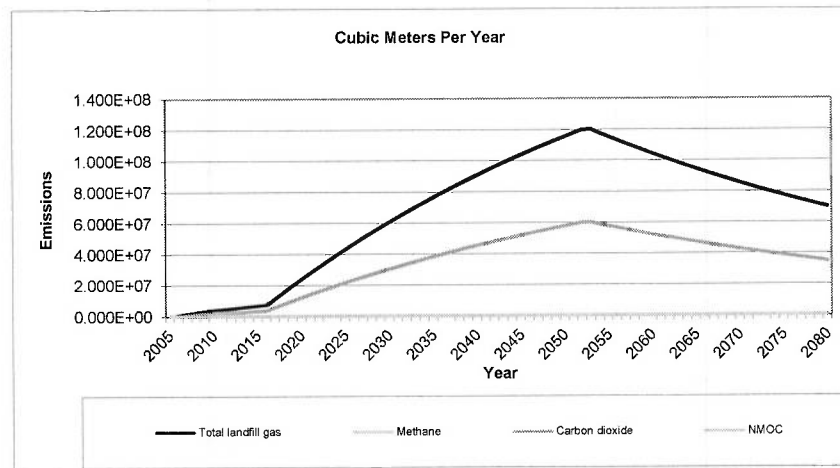
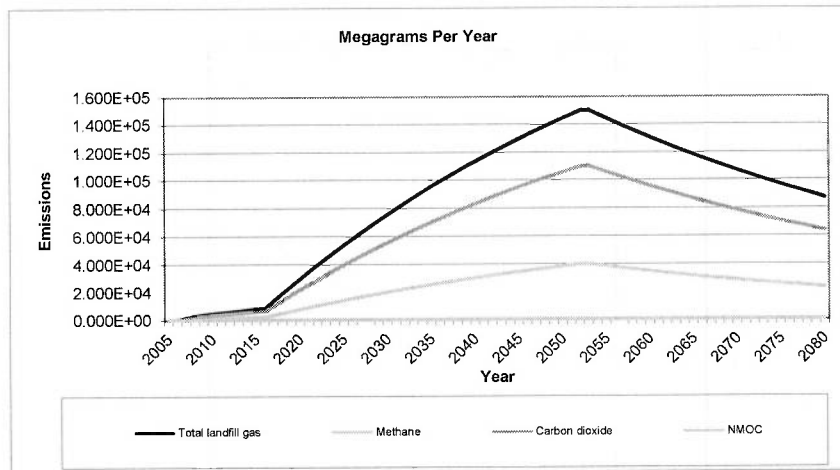
Pollutant Parameters

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)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2005	0	0	0	0	0	0
2006	6.943E+02	5.560E+05	7.637E+02	1.855E+02	2.780E+05	2.040E+02
2007	2.008E+03	1.608E+06	2.209E+03	5.363E+02	8.039E+05	5.900E+02
2008	3.278E+03	2.625E+06	3.606E+03	8.755E+02	1.312E+06	9.631E+02
2009	4.261E+03	3.412E+06	4.688E+03	1.138E+03	1.706E+06	1.252E+03
2010	5.034E+03	4.031E+06	5.537E+03	1.345E+03	2.015E+06	1.479E+03
2011	5.653E+03	4.526E+06	6.218E+03	1.510E+03	2.263E+06	1.661E+03
2012	6.302E+03	5.046E+06	6.932E+03	1.683E+03	2.523E+06	1.852E+03
2013	6.937E+03	5.555E+06	7.631E+03	1.853E+03	2.778E+06	2.038E+03
2014	7.648E+03	6.124E+06	8.412E+03	2.043E+03	3.062E+06	2.247E+03
2015	8.468E+03	6.780E+06	9.314E+03	2.262E+03	3.390E+06	2.488E+03
2016	9.164E+03	7.338E+06	1.008E+04	2.448E+03	3.669E+06	2.693E+03
2017	1.460E+04	1.169E+07	1.606E+04	3.900E+03	5.845E+06	4.290E+03
2018	1.993E+04	1.596E+07	2.192E+04	5.323E+03	7.978E+06	5.855E+03
2019	2.515E+04	2.014E+07	2.766E+04	6.718E+03	1.007E+07	7.389E+03
2020	3.027E+04	2.424E+07	3.329E+04	8.085E+03	1.212E+07	8.893E+03
2021	3.528E+04	2.825E+07	3.881E+04	9.425E+03	1.413E+07	1.037E+04
2022	4.020E+04	3.219E+07	4.422E+04	1.074E+04	1.610E+07	1.181E+04
2023	4.502E+04	3.605E+07	4.953E+04	1.203E+04	1.803E+07	1.323E+04
2024	4.975E+04	3.984E+07	5.472E+04	1.329E+04	1.992E+07	1.462E+04
2025	5.438E+04	4.355E+07	5.982E+04	1.453E+04	2.177E+07	1.598E+04
2026	5.892E+04	4.718E+07	6.481E+04	1.574E+04	2.359E+07	1.731E+04
2027	6.337E+04	5.074E+07	6.971E+04	1.693E+04	2.537E+07	1.862E+04
2028	6.773E+04	5.424E+07	7.451E+04	1.809E+04	2.712E+07	1.990E+04
2029	7.201E+04	5.766E+07	7.921E+04	1.923E+04	2.883E+07	2.116E+04
2030	7.620E+04	6.102E+07	8.382E+04	2.035E+04	3.051E+07	2.239E+04
2031	8.031E+04	6.431E+07	8.834E+04	2.145E+04	3.215E+07	2.360E+04
2032	8.433E+04	6.753E+07	9.277E+04	2.253E+04	3.376E+07	2.478E+04
2033	8.828E+04	7.069E+07	9.711E+04	2.358E+04	3.535E+07	2.594E+04
2034	9.215E+04	7.379E+07	1.014E+05	2.461E+04	3.689E+07	2.708E+04
2035	9.594E+04	7.682E+07	1.055E+05	2.563E+04	3.841E+07	2.819E+04
2036	9.966E+04	7.980E+07	1.096E+05	2.662E+04	3.990E+07	2.928E+04
2037	1.033E+05	8.272E+07	1.136E+05	2.759E+04	4.136E+07	3.035E+04
2038	1.069E+05	8.558E+07	1.176E+05	2.855E+04	4.279E+07	3.140E+04
2039	1.104E+05	8.838E+07	1.214E+05	2.948E+04	4.419E+07	3.243E+04
2040	1.138E+05	9.113E+07	1.252E+05	3.040E+04	4.556E+07	3.344E+04
2041	1.172E+05	9.382E+07	1.289E+05	3.130E+04	4.691E+07	3.443E+04
2042	1.205E+05	9.646E+07	1.325E+05	3.218E+04	4.823E+07	3.539E+04
2043	1.237E+05	9.905E+07	1.361E+05	3.304E+04	4.952E+07	3.634E+04
2044	1.269E+05	1.016E+08	1.395E+05	3.389E+04	5.079E+07	3.727E+04
2045	1.300E+05	1.041E+08	1.430E+05	3.472E+04	5.204E+07	3.819E+04
2046	1.330E+05	1.065E+08	1.463E+05	3.553E+04	5.325E+07	3.908E+04
2047	1.360E+05	1.089E+08	1.496E+05	3.633E+04	5.445E+07	3.996E+04
2048	1.389E+05	1.112E+08	1.528E+05	3.711E+04	5.562E+07	4.082E+04
2049	1.418E+05	1.135E+08	1.560E+05	3.787E+04	5.677E+07	4.166E+04
2050	1.446E+05	1.158E+08	1.591E+05	3.862E+04	5.789E+07	4.248E+04
2051	1.473E+05	1.180E+08	1.621E+05	3.936E+04	5.899E+07	4.329E+04
2052	1.500E+05	1.201E+08	1.650E+05	4.008E+04	6.007E+07	4.409E+04
2053	1.505E+05	1.205E+08	1.655E+05	4.019E+04	6.024E+07	4.421E+04
2054	1.475E+05	1.181E+08	1.622E+05	3.940E+04	5.905E+07	4.334E+04

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2055	1.446E+05	1.158E+08	1.590E+05	3.862E+04	5.788E+07	4.248E+04
2056	1.417E+05	1.135E+08	1.559E+05	3.785E+04	5.674E+07	4.164E+04
2057	1.389E+05	1.112E+08	1.528E+05	3.710E+04	5.561E+07	4.081E+04
2058	1.362E+05	1.090E+08	1.498E+05	3.637E+04	5.451E+07	4.000E+04
2059	1.335E+05	1.069E+08	1.468E+05	3.565E+04	5.343E+07	3.921E+04
2060	1.308E+05	1.047E+08	1.439E+05	3.494E+04	5.237E+07	3.844E+04
2061	1.282E+05	1.027E+08	1.410E+05	3.425E+04	5.134E+07	3.767E+04
2062	1.257E+05	1.006E+08	1.383E+05	3.357E+04	5.032E+07	3.693E+04
2063	1.232E+05	9.865E+07	1.355E+05	3.291E+04	4.932E+07	3.620E+04
2064	1.208E+05	9.669E+07	1.328E+05	3.225E+04	4.835E+07	3.548E+04
2065	1.184E+05	9.478E+07	1.302E+05	3.162E+04	4.739E+07	3.478E+04
2066	1.160E+05	9.290E+07	1.276E+05	3.099E+04	4.645E+07	3.409E+04
2067	1.137E+05	9.106E+07	1.251E+05	3.038E+04	4.553E+07	3.341E+04
2068	1.115E+05	8.926E+07	1.226E+05	2.978E+04	4.463E+07	3.275E+04
2069	1.093E+05	8.749E+07	1.202E+05	2.919E+04	4.375E+07	3.210E+04
2070	1.071E+05	8.576E+07	1.178E+05	2.861E+04	4.288E+07	3.147E+04
2071	1.050E+05	8.406E+07	1.155E+05	2.804E+04	4.203E+07	3.085E+04
2072	1.029E+05	8.240E+07	1.132E+05	2.749E+04	4.120E+07	3.023E+04
2073	1.009E+05	8.077E+07	1.109E+05	2.694E+04	4.038E+07	2.964E+04
2074	9.887E+04	7.917E+07	1.088E+05	2.641E+04	3.958E+07	2.905E+04
2075	9.691E+04	7.760E+07	1.066E+05	2.589E+04	3.880E+07	2.847E+04
2076	9.499E+04	7.606E+07	1.045E+05	2.537E+04	3.803E+07	2.791E+04
2077	9.311E+04	7.456E+07	1.024E+05	2.487E+04	3.728E+07	2.736E+04
2078	9.126E+04	7.308E+07	1.004E+05	2.438E+04	3.654E+07	2.682E+04
2079	8.946E+04	7.163E+07	9.840E+04	2.390E+04	3.582E+07	2.628E+04
2080	8.769E+04	7.021E+07	9.645E+04	2.342E+04	3.511E+07	2.576E+04
2081	8.595E+04	6.882E+07	9.454E+04	2.296E+04	3.441E+07	2.525E+04
2082	8.425E+04	6.746E+07	9.267E+04	2.250E+04	3.373E+07	2.475E+04
2083	8.258E+04	6.613E+07	9.084E+04	2.206E+04	3.306E+07	2.426E+04
2084	8.094E+04	6.482E+07	8.904E+04	2.162E+04	3.241E+07	2.378E+04
2085	7.934E+04	6.353E+07	8.728E+04	2.119E+04	3.177E+07	2.331E+04
2086	7.777E+04	6.228E+07	8.555E+04	2.077E+04	3.114E+07	2.285E+04
2087	7.623E+04	6.104E+07	8.385E+04	2.036E+04	3.052E+07	2.240E+04
2088	7.472E+04	5.983E+07	8.219E+04	1.996E+04	2.992E+07	2.195E+04
2089	7.324E+04	5.865E+07	8.057E+04	1.956E+04	2.932E+07	2.152E+04
2090	7.179E+04	5.749E+07	7.897E+04	1.918E+04	2.874E+07	2.109E+04
2091	7.037E+04	5.635E+07	7.741E+04	1.880E+04	2.817E+07	2.068E+04
2092	6.898E+04	5.523E+07	7.587E+04	1.842E+04	2.762E+07	2.027E+04
2093	6.761E+04	5.414E+07	7.437E+04	1.806E+04	2.707E+07	1.987E+04
2094	6.627E+04	5.307E+07	7.290E+04	1.770E+04	2.653E+07	1.947E+04
2095	6.496E+04	5.202E+07	7.146E+04	1.735E+04	2.601E+07	1.909E+04
2096	6.367E+04	5.099E+07	7.004E+04	1.701E+04	2.549E+07	1.871E+04
2097	6.241E+04	4.998E+07	6.865E+04	1.667E+04	2.499E+07	1.834E+04
2098	6.118E+04	4.899E+07	6.729E+04	1.634E+04	2.449E+07	1.797E+04
2099	5.997E+04	4.802E+07	6.596E+04	1.602E+04	2.401E+07	1.762E+04
2100	5.878E+04	4.707E+07	6.466E+04	1.570E+04	2.353E+07	1.727E+04
2101	5.761E+04	4.613E+07	6.338E+04	1.539E+04	2.307E+07	1.693E+04
2102	5.647E+04	4.522E+07	6.212E+04	1.508E+04	2.261E+07	1.659E+04
2103	5.535E+04	4.433E+07	6.089E+04	1.479E+04	2.216E+07	1.626E+04
2104	5.426E+04	4.345E+07	5.968E+04	1.449E+04	2.172E+07	1.594E+04
2105	5.318E+04	4.259E+07	5.850E+04	1.421E+04	2.129E+07	1.563E+04

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2106	5.213E+04	4.174E+07	5.734E+04	1.392E+04	2.087E+07	1.532E+04
2107	5.110E+04	4.092E+07	5.621E+04	1.365E+04	2.046E+07	1.501E+04
2108	5.009E+04	4.011E+07	5.510E+04	1.338E+04	2.005E+07	1.472E+04
2109	4.910E+04	3.931E+07	5.400E+04	1.311E+04	1.966E+07	1.443E+04
2110	4.812E+04	3.853E+07	5.294E+04	1.285E+04	1.927E+07	1.414E+04
2111	4.717E+04	3.777E+07	5.189E+04	1.260E+04	1.889E+07	1.386E+04
2112	4.624E+04	3.702E+07	5.086E+04	1.235E+04	1.851E+07	1.359E+04
2113	4.532E+04	3.629E+07	4.985E+04	1.211E+04	1.815E+07	1.332E+04
2114	4.442E+04	3.557E+07	4.887E+04	1.187E+04	1.779E+07	1.305E+04
2115	4.354E+04	3.487E+07	4.790E+04	1.163E+04	1.743E+07	1.279E+04
2116	4.268E+04	3.418E+07	4.695E+04	1.140E+04	1.709E+07	1.254E+04
2117	4.184E+04	3.350E+07	4.602E+04	1.117E+04	1.675E+07	1.229E+04
2118	4.101E+04	3.284E+07	4.511E+04	1.095E+04	1.642E+07	1.205E+04
2119	4.020E+04	3.219E+07	4.422E+04	1.074E+04	1.609E+07	1.181E+04
2120	3.940E+04	3.155E+07	4.334E+04	1.052E+04	1.577E+07	1.158E+04
2121	3.862E+04	3.092E+07	4.248E+04	1.032E+04	1.546E+07	1.135E+04
2122	3.785E+04	3.031E+07	4.164E+04	1.011E+04	1.516E+07	1.112E+04
2123	3.711E+04	2.971E+07	4.082E+04	9.911E+03	1.486E+07	1.090E+04
2124	3.637E+04	2.912E+07	4.001E+04	9.715E+03	1.456E+07	1.069E+04
2125	3.565E+04	2.855E+07	3.922E+04	9.523E+03	1.427E+07	1.047E+04
2126	3.494E+04	2.798E+07	3.844E+04	9.334E+03	1.399E+07	1.027E+04
2127	3.425E+04	2.743E+07	3.768E+04	9.149E+03	1.371E+07	1.006E+04
2128	3.357E+04	2.688E+07	3.693E+04	8.968E+03	1.344E+07	9.865E+03
2129	3.291E+04	2.635E+07	3.620E+04	8.790E+03	1.318E+07	9.670E+03
2130	3.226E+04	2.583E+07	3.548E+04	8.616E+03	1.292E+07	9.478E+03
2131	3.162E+04	2.532E+07	3.478E+04	8.446E+03	1.266E+07	9.290E+03
2132	3.099E+04	2.482E+07	3.409E+04	8.279E+03	1.241E+07	9.106E+03
2133	3.038E+04	2.433E+07	3.342E+04	8.115E+03	1.216E+07	8.926E+03
2134	2.978E+04	2.384E+07	3.276E+04	7.954E+03	1.192E+07	8.749E+03
2135	2.919E+04	2.337E+07	3.211E+04	7.796E+03	1.169E+07	8.576E+03
2136	2.861E+04	2.291E+07	3.147E+04	7.642E+03	1.145E+07	8.406E+03
2137	2.804E+04	2.246E+07	3.085E+04	7.491E+03	1.123E+07	8.240E+03
2138	2.749E+04	2.201E+07	3.024E+04	7.342E+03	1.101E+07	8.077E+03
2139	2.694E+04	2.158E+07	2.964E+04	7.197E+03	1.079E+07	7.917E+03
2140	2.641E+04	2.115E+07	2.905E+04	7.055E+03	1.057E+07	7.760E+03
2141	2.589E+04	2.073E+07	2.848E+04	6.915E+03	1.036E+07	7.606E+03
2142	2.537E+04	2.032E+07	2.791E+04	6.778E+03	1.016E+07	7.456E+03
2143	2.487E+04	1.992E+07	2.736E+04	6.644E+03	9.958E+06	7.308E+03
2144	2.438E+04	1.952E+07	2.682E+04	6.512E+03	9.761E+06	7.163E+03
2145	2.390E+04	1.914E+07	2.629E+04	6.383E+03	9.568E+06	7.022E+03

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2005	0	0	0	0	0	0
2006	5.088E+02	2.780E+05	5.597E+02	1.923E+00	5.365E+02	2.115E+00
2007	1.472E+03	8.039E+05	1.619E+03	5.562E+00	1.552E+03	6.118E+00
2008	2.402E+03	1.312E+06	2.642E+03	9.079E+00	2.533E+03	9.987E+00
2009	3.123E+03	1.706E+06	3.435E+03	1.180E+01	3.293E+03	1.298E+01
2010	3.689E+03	2.015E+06	4.058E+03	1.394E+01	3.890E+03	1.534E+01
2011	4.143E+03	2.263E+06	4.557E+03	1.566E+01	4.368E+03	1.722E+01
2012	4.619E+03	2.523E+06	5.081E+03	1.746E+01	4.870E+03	1.920E+01
2013	5.084E+03	2.778E+06	5.593E+03	1.922E+01	5.361E+03	2.114E+01
2014	5.605E+03	3.062E+06	6.165E+03	2.118E+01	5.910E+03	2.330E+01
2015	6.206E+03	3.390E+06	6.826E+03	2.345E+01	6.543E+03	2.580E+01
2016	6.716E+03	3.669E+06	7.388E+03	2.538E+01	7.081E+03	2.792E+01
2017	1.070E+04	5.845E+06	1.177E+04	4.044E+01	1.128E+04	4.448E+01
2018	1.460E+04	7.978E+06	1.606E+04	5.519E+01	1.540E+04	6.071E+01
2019	1.843E+04	1.007E+07	2.027E+04	6.966E+01	1.943E+04	7.662E+01
2020	2.218E+04	1.212E+07	2.440E+04	8.384E+01	2.339E+04	9.222E+01
2021	2.586E+04	1.413E+07	2.845E+04	9.773E+01	2.727E+04	1.075E+02
2022	2.946E+04	1.610E+07	3.241E+04	1.114E+02	3.107E+04	1.225E+02
2023	3.300E+04	1.803E+07	3.630E+04	1.247E+02	3.479E+04	1.372E+02
2024	3.646E+04	1.992E+07	4.011E+04	1.378E+02	3.844E+04	1.516E+02
2025	3.985E+04	2.177E+07	4.384E+04	1.506E+02	4.202E+04	1.657E+02
2026	4.318E+04	2.359E+07	4.750E+04	1.632E+02	4.553E+04	1.795E+02
2027	4.644E+04	2.537E+07	5.109E+04	1.755E+02	4.897E+04	1.931E+02
2028	4.964E+04	2.712E+07	5.460E+04	1.876E+02	5.234E+04	2.064E+02
2029	5.277E+04	2.883E+07	5.805E+04	1.994E+02	5.564E+04	2.194E+02
2030	5.585E+04	3.051E+07	6.143E+04	2.111E+02	5.888E+04	2.322E+02
2031	5.886E+04	3.215E+07	6.474E+04	2.224E+02	6.205E+04	2.447E+02
2032	6.181E+04	3.376E+07	6.799E+04	2.336E+02	6.517E+04	2.569E+02
2033	6.470E+04	3.535E+07	7.117E+04	2.445E+02	6.822E+04	2.690E+02
2034	6.753E+04	3.689E+07	7.429E+04	2.552E+02	7.121E+04	2.808E+02
2035	7.031E+04	3.841E+07	7.735E+04	2.657E+02	7.414E+04	2.923E+02
2036	7.304E+04	3.990E+07	8.034E+04	2.760E+02	7.701E+04	3.036E+02
2037	7.571E+04	4.136E+07	8.328E+04	2.861E+02	7.982E+04	3.147E+02
2038	7.833E+04	4.279E+07	8.616E+04	2.960E+02	8.258E+04	3.256E+02
2039	8.089E+04	4.419E+07	8.898E+04	3.057E+02	8.529E+04	3.363E+02
2040	8.341E+04	4.556E+07	9.175E+04	3.152E+02	8.794E+04	3.467E+02
2041	8.587E+04	4.691E+07	9.446E+04	3.245E+02	9.054E+04	3.570E+02
2042	8.829E+04	4.823E+07	9.712E+04	3.337E+02	9.309E+04	3.670E+02
2043	9.065E+04	4.952E+07	9.972E+04	3.426E+02	9.558E+04	3.769E+02
2044	9.298E+04	5.079E+07	1.023E+05	3.514E+02	9.803E+04	3.865E+02
2045	9.525E+04	5.204E+07	1.048E+05	3.600E+02	1.004E+05	3.960E+02
2046	9.748E+04	5.325E+07	1.072E+05	3.684E+02	1.028E+05	4.053E+02
2047	9.967E+04	5.445E+07	1.096E+05	3.767E+02	1.051E+05	4.143E+02
2048	1.018E+05	5.562E+07	1.120E+05	3.848E+02	1.073E+05	4.233E+02
2049	1.039E+05	5.677E+07	1.143E+05	3.927E+02	1.096E+05	4.320E+02
2050	1.060E+05	5.789E+07	1.166E+05	4.005E+02	1.117E+05	4.405E+02
2051	1.080E+05	5.899E+07	1.188E+05	4.081E+02	1.139E+05	4.489E+02
2052	1.100E+05	6.007E+07	1.210E+05	4.156E+02	1.159E+05	4.572E+02
2053	1.103E+05	6.024E+07	1.213E+05	4.168E+02	1.163E+05	4.585E+02
2054	1.081E+05	5.905E+07	1.189E+05	4.085E+02	1.140E+05	4.494E+02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2055	1.060E+05	5.788E+07	1.165E+05	4.004E+02	1.117E+05	4.405E+02
2056	1.039E+05	5.674E+07	1.142E+05	3.925E+02	1.095E+05	4.318E+02
2057	1.018E+05	5.561E+07	1.120E+05	3.847E+02	1.073E+05	4.232E+02
2058	9.978E+04	5.451E+07	1.098E+05	3.771E+02	1.052E+05	4.148E+02
2059	9.781E+04	5.343E+07	1.076E+05	3.696E+02	1.031E+05	4.066E+02
2060	9.587E+04	5.237E+07	1.055E+05	3.623E+02	1.011E+05	3.986E+02
2061	9.397E+04	5.134E+07	1.034E+05	3.552E+02	9.908E+04	3.907E+02
2062	9.211E+04	5.032E+07	1.013E+05	3.481E+02	9.712E+04	3.829E+02
2063	9.029E+04	4.932E+07	9.932E+04	3.412E+02	9.520E+04	3.753E+02
2064	8.850E+04	4.835E+07	9.735E+04	3.345E+02	9.331E+04	3.679E+02
2065	8.675E+04	4.739E+07	9.542E+04	3.278E+02	9.146E+04	3.606E+02
2066	8.503E+04	4.645E+07	9.353E+04	3.214E+02	8.965E+04	3.535E+02
2067	8.335E+04	4.553E+07	9.168E+04	3.150E+02	8.788E+04	3.465E+02
2068	8.170E+04	4.463E+07	8.987E+04	3.088E+02	8.614E+04	3.396E+02
2069	8.008E+04	4.375E+07	8.809E+04	3.026E+02	8.443E+04	3.329E+02
2070	7.849E+04	4.288E+07	8.634E+04	2.966E+02	8.276E+04	3.263E+02
2071	7.694E+04	4.203E+07	8.463E+04	2.908E+02	8.112E+04	3.199E+02
2072	7.541E+04	4.120E+07	8.296E+04	2.850E+02	7.951E+04	3.135E+02
2073	7.392E+04	4.038E+07	8.131E+04	2.794E+02	7.794E+04	3.073E+02
2074	7.246E+04	3.958E+07	7.970E+04	2.738E+02	7.640E+04	3.012E+02
2075	7.102E+04	3.880E+07	7.813E+04	2.684E+02	7.488E+04	2.953E+02
2076	6.962E+04	3.803E+07	7.658E+04	2.631E+02	7.340E+04	2.894E+02
2077	6.824E+04	3.728E+07	7.506E+04	2.579E+02	7.195E+04	2.837E+02
2078	6.689E+04	3.654E+07	7.358E+04	2.528E+02	7.052E+04	2.781E+02
2079	6.556E+04	3.582E+07	7.212E+04	2.478E+02	6.913E+04	2.726E+02
2080	6.426E+04	3.511E+07	7.069E+04	2.429E+02	6.776E+04	2.672E+02
2081	6.299E+04	3.441E+07	6.929E+04	2.381E+02	6.642E+04	2.619E+02
2082	6.174E+04	3.373E+07	6.792E+04	2.334E+02	6.510E+04	2.567E+02
2083	6.052E+04	3.306E+07	6.657E+04	2.287E+02	6.381E+04	2.516E+02
2084	5.932E+04	3.241E+07	6.526E+04	2.242E+02	6.255E+04	2.466E+02
2085	5.815E+04	3.177E+07	6.396E+04	2.198E+02	6.131E+04	2.417E+02
2086	5.700E+04	3.114E+07	6.270E+04	2.154E+02	6.010E+04	2.370E+02
2087	5.587E+04	3.052E+07	6.146E+04	2.111E+02	5.891E+04	2.323E+02
2088	5.476E+04	2.992E+07	6.024E+04	2.070E+02	5.774E+04	2.277E+02
2089	5.368E+04	2.932E+07	5.905E+04	2.029E+02	5.660E+04	2.232E+02
2090	5.262E+04	2.874E+07	5.788E+04	1.988E+02	5.548E+04	2.187E+02
2091	5.157E+04	2.817E+07	5.673E+04	1.949E+02	5.438E+04	2.144E+02
2092	5.055E+04	2.762E+07	5.561E+04	1.911E+02	5.330E+04	2.102E+02
2093	4.955E+04	2.707E+07	5.451E+04	1.873E+02	5.224E+04	2.060E+02
2094	4.857E+04	2.653E+07	5.343E+04	1.836E+02	5.121E+04	2.019E+02
2095	4.761E+04	2.601E+07	5.237E+04	1.799E+02	5.020E+04	1.979E+02
2096	4.667E+04	2.549E+07	5.133E+04	1.764E+02	4.920E+04	1.940E+02
2097	4.574E+04	2.499E+07	5.032E+04	1.729E+02	4.823E+04	1.902E+02
2098	4.484E+04	2.449E+07	4.932E+04	1.694E+02	4.727E+04	1.864E+02
2099	4.395E+04	2.401E+07	4.834E+04	1.661E+02	4.634E+04	1.827E+02
2100	4.308E+04	2.353E+07	4.739E+04	1.628E+02	4.542E+04	1.791E+02
2101	4.222E+04	2.307E+07	4.645E+04	1.596E+02	4.452E+04	1.755E+02
2102	4.139E+04	2.261E+07	4.553E+04	1.564E+02	4.364E+04	1.721E+02
2103	4.057E+04	2.216E+07	4.463E+04	1.533E+02	4.277E+04	1.687E+02
2104	3.977E+04	2.172E+07	4.374E+04	1.503E+02	4.193E+04	1.653E+02
2105	3.898E+04	2.129E+07	4.288E+04	1.473E+02	4.110E+04	1.620E+02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2106	3.821E+04	2.087E+07	4.203E+04	1.444E+02	4.028E+04	1.588E+02
2107	3.745E+04	2.046E+07	4.119E+04	1.415E+02	3.949E+04	1.557E+02
2108	3.671E+04	2.005E+07	4.038E+04	1.387E+02	3.870E+04	1.526E+02
2109	3.598E+04	1.966E+07	3.958E+04	1.360E+02	3.794E+04	1.496E+02
2110	3.527E+04	1.927E+07	3.880E+04	1.333E+02	3.719E+04	1.466E+02
2111	3.457E+04	1.889E+07	3.803E+04	1.307E+02	3.645E+04	1.437E+02
2112	3.389E+04	1.851E+07	3.727E+04	1.281E+02	3.573E+04	1.409E+02
2113	3.322E+04	1.815E+07	3.654E+04	1.255E+02	3.502E+04	1.381E+02
2114	3.256E+04	1.779E+07	3.581E+04	1.230E+02	3.433E+04	1.353E+02
2115	3.191E+04	1.743E+07	3.510E+04	1.206E+02	3.365E+04	1.327E+02
2116	3.128E+04	1.709E+07	3.441E+04	1.182E+02	3.298E+04	1.300E+02
2117	3.066E+04	1.675E+07	3.373E+04	1.159E+02	3.233E+04	1.275E+02
2118	3.005E+04	1.642E+07	3.306E+04	1.136E+02	3.169E+04	1.249E+02
2119	2.946E+04	1.609E+07	3.240E+04	1.113E+02	3.106E+04	1.225E+02
2120	2.888E+04	1.577E+07	3.176E+04	1.091E+02	3.045E+04	1.200E+02
2121	2.830E+04	1.546E+07	3.113E+04	1.070E+02	2.984E+04	1.177E+02
2122	2.774E+04	1.516E+07	3.052E+04	1.049E+02	2.925E+04	1.153E+02
2123	2.719E+04	1.486E+07	2.991E+04	1.028E+02	2.867E+04	1.131E+02
2124	2.666E+04	1.456E+07	2.932E+04	1.007E+02	2.810E+04	1.108E+02
2125	2.613E+04	1.427E+07	2.874E+04	9.875E+01	2.755E+04	1.086E+02
2126	2.561E+04	1.399E+07	2.817E+04	9.679E+01	2.700E+04	1.065E+02
2127	2.510E+04	1.371E+07	2.761E+04	9.487E+01	2.647E+04	1.044E+02
2128	2.461E+04	1.344E+07	2.707E+04	9.299E+01	2.594E+04	1.023E+02
2129	2.412E+04	1.318E+07	2.653E+04	9.115E+01	2.543E+04	1.003E+02
2130	2.364E+04	1.292E+07	2.601E+04	8.935E+01	2.493E+04	9.828E+01
2131	2.317E+04	1.266E+07	2.549E+04	8.758E+01	2.443E+04	9.634E+01
2132	2.271E+04	1.241E+07	2.499E+04	8.584E+01	2.395E+04	9.443E+01
2133	2.226E+04	1.216E+07	2.449E+04	8.415E+01	2.347E+04	9.256E+01
2134	2.182E+04	1.192E+07	2.401E+04	8.248E+01	2.301E+04	9.073E+01
2135	2.139E+04	1.169E+07	2.353E+04	8.085E+01	2.255E+04	8.893E+01
2136	2.097E+04	1.145E+07	2.306E+04	7.924E+01	2.211E+04	8.717E+01
2137	2.055E+04	1.123E+07	2.261E+04	7.768E+01	2.167E+04	8.544E+01
2138	2.015E+04	1.101E+07	2.216E+04	7.614E+01	2.124E+04	8.375E+01
2139	1.975E+04	1.079E+07	2.172E+04	7.463E+01	2.082E+04	8.209E+01
2140	1.936E+04	1.057E+07	2.129E+04	7.315E+01	2.041E+04	8.047E+01
2141	1.897E+04	1.036E+07	2.087E+04	7.170E+01	2.000E+04	7.887E+01
2142	1.860E+04	1.016E+07	2.046E+04	7.028E+01	1.961E+04	7.731E+01
2143	1.823E+04	9.958E+06	2.005E+04	6.889E+01	1.922E+04	7.578E+01
2144	1.787E+04	9.761E+06	1.965E+04	6.753E+01	1.884E+04	7.428E+01
2145	1.751E+04	9.568E+06	1.927E+04	6.619E+01	1.847E+04	7.281E+01

Tekoi Landfill

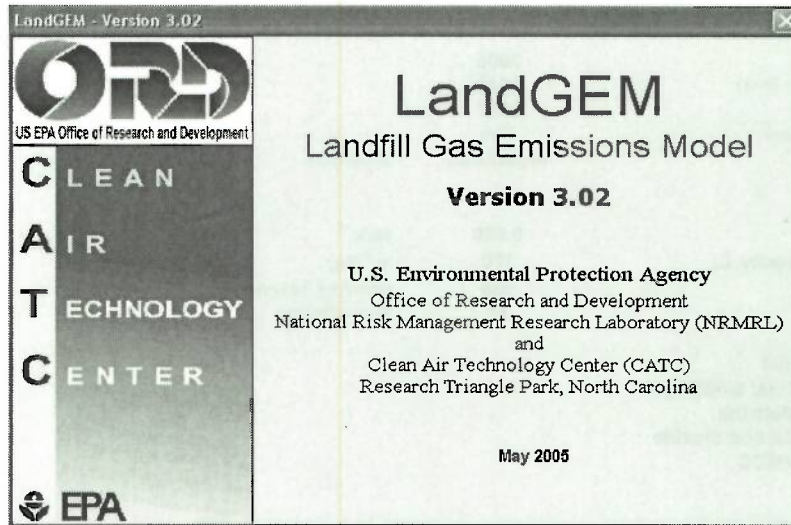
Potential-to-Emit Regulated Greenhouse Gas (tons)

Emission Source #	CO ₂	CH ₄ (as CO ₂ e)	N ₂ O (as CO ₂ e)	Total CO ₂ e
1	0.0	124,689	0.0	124,689
2	0.0	0.0	0.0	0.0
3	201	0.22	0.5	202
TOTAL	201	124,689	0.5	124,891

CO₂ = carbon dioxide; CH₄ = methane; N₂O = nitrous oxide; CO₂e = equivalent CO₂.

Note: Greenhouse gas (GHG) emissions cannot trigger major source requirements and the source cannot be considered a major source for GHG unless it is major for another pollutant. At this time Tekoi Landfill is not major for any other regulated pollutants.

(Revised 8/11/16 by Michael O'Connor, SCS Engineers)



Summary Report

Landfill Name or Identifier: Tekoi Landfill, Utah

Date: Thursday, August 11, 2016

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

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	2005	
Landfill Closure Year (with 80-year limit)	2052	
Actual Closure Year (without limit)	2052	
Have Model Calculate Closure Year?	Yes	
Waste Design Capacity	47,939,986	short tons

MODEL PARAMETERS

Methane Generation Rate, k	0.020	year ⁻¹
Potential Methane Generation Capacity, L ₀	170	m ³ /Mg
NMOC Concentration	965	ppmv as hexane
Methane Content	50	% by volume

GASES / POLLUTANTS SELECTED

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

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2005	140,242	154,266	0	0
2006	268,131	294,944	140,242	154,266
2007	264,525	290,978	408,373	449,210
2008	211,796	232,976	672,898	740,188
2009	173,041	190,345	884,695	973,164
2010	145,182	159,700	1,057,735	1,163,509
2011	153,767	169,144	1,202,917	1,323,209
2012	153,554	168,909	1,356,685	1,492,353
2013	171,218	188,340	1,510,238	1,661,262
2014	196,194	215,814	1,681,456	1,849,602
2015	174,515	191,967	1,877,651	2,065,416
2016	1,134,545	1,248,000	2,052,166	2,257,383
2017	1,134,545	1,248,000	3,186,711	3,505,383
2018	1,134,545	1,248,000	4,321,257	4,753,383
2019	1,134,545	1,248,000	5,455,802	6,001,383
2020	1,134,545	1,248,000	6,590,348	7,249,383
2021	1,134,545	1,248,000	7,724,893	8,497,383
2022	1,134,545	1,248,000	8,859,439	9,745,383
2023	1,134,545	1,248,000	9,993,984	10,993,383
2024	1,134,545	1,248,000	11,128,530	12,241,383
2025	1,134,545	1,248,000	12,263,075	13,489,383
2026	1,134,545	1,248,000	13,397,621	14,737,383
2027	1,134,545	1,248,000	14,532,166	15,985,383
2028	1,134,545	1,248,000	15,666,711	17,233,383
2029	1,134,545	1,248,000	16,801,257	18,481,383
2030	1,134,545	1,248,000	17,935,802	19,729,383
2031	1,134,545	1,248,000	19,070,348	20,977,383
2032	1,134,545	1,248,000	20,204,893	22,225,383
2033	1,134,545	1,248,000	21,339,439	23,473,383
2034	1,134,545	1,248,000	22,473,984	24,721,383
2035	1,134,545	1,248,000	23,608,530	25,969,383
2036	1,134,545	1,248,000	24,743,075	27,217,383
2037	1,134,545	1,248,000	25,877,621	28,465,383
2038	1,134,545	1,248,000	27,012,166	29,713,383
2039	1,134,545	1,248,000	28,146,711	30,961,383
2040	1,134,545	1,248,000	29,281,257	32,209,383
2041	1,134,545	1,248,000	30,415,802	33,457,383
2042	1,134,545	1,248,000	31,550,348	34,705,383
2043	1,134,545	1,248,000	32,684,893	35,953,383
2044	1,134,545	1,248,000	33,819,439	37,201,383

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2045	1,134,545	1,248,000	34,953,984	38,449,383
2046	1,134,545	1,248,000	36,088,530	39,697,383
2047	1,134,545	1,248,000	37,223,075	40,945,383
2048	1,134,545	1,248,000	38,357,621	42,193,383
2049	1,134,545	1,248,000	39,492,166	43,441,383
2050	1,134,545	1,248,000	40,626,711	44,689,383
2051	1,134,545	1,248,000	41,761,257	45,937,383
2052	686,003	754,603	42,895,802	47,185,383
2053	0	0	43,581,805	47,939,986
2054	0	0	43,581,805	47,939,986
2055	0	0	43,581,805	47,939,986
2056	0	0	43,581,805	47,939,986
2057	0	0	43,581,805	47,939,986
2058	0	0	43,581,805	47,939,986
2059	0	0	43,581,805	47,939,986
2060	0	0	43,581,805	47,939,986
2061	0	0	43,581,805	47,939,986
2062	0	0	43,581,805	47,939,986
2063	0	0	43,581,805	47,939,986
2064	0	0	43,581,805	47,939,986
2065	0	0	43,581,805	47,939,986
2066	0	0	43,581,805	47,939,986
2067	0	0	43,581,805	47,939,986
2068	0	0	43,581,805	47,939,986
2069	0	0	43,581,805	47,939,986
2070	0	0	43,581,805	47,939,986
2071	0	0	43,581,805	47,939,986
2072	0	0	43,581,805	47,939,986
2073	0	0	43,581,805	47,939,986
2074	0	0	43,581,805	47,939,986
2075	0	0	43,581,805	47,939,986
2076	0	0	43,581,805	47,939,986
2077	0	0	43,581,805	47,939,986
2078	0	0	43,581,805	47,939,986
2079	0	0	43,581,805	47,939,986
2080	0	0	43,581,805	47,939,986
2081	0	0	43,581,805	47,939,986
2082	0	0	43,581,805	47,939,986
2083	0	0	43,581,805	47,939,986
2084	0	0	43,581,805	47,939,986

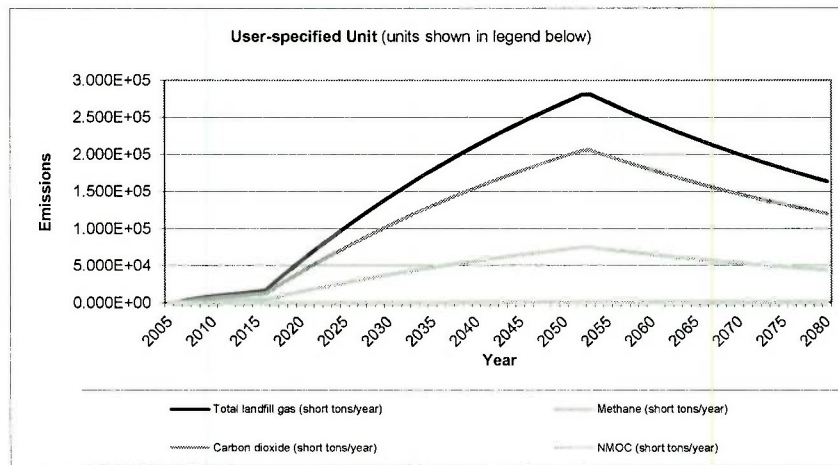
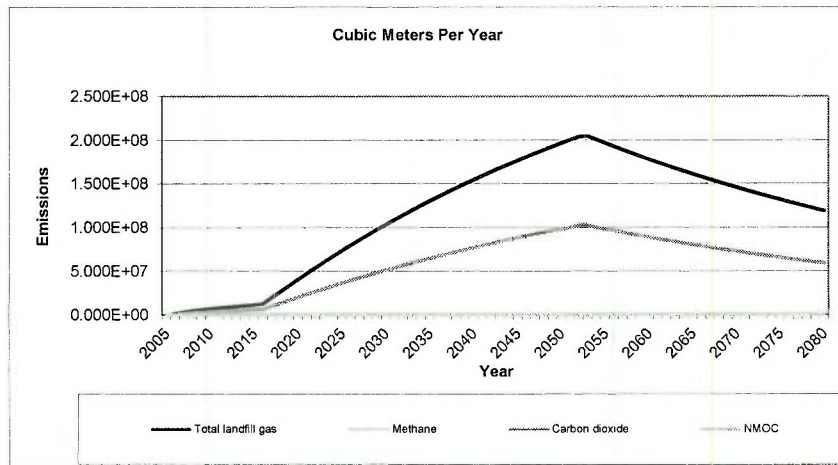
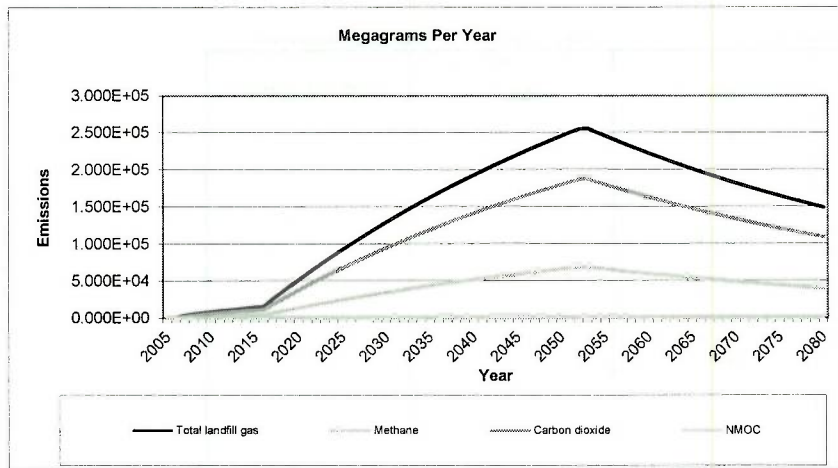
Pollutant Parameters

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)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2005	0	0	0	0	0	0
2006	1.180E+03	9.451E+05	1.298E+03	3.153E+02	4.726E+05	3.468E+02
2007	3.414E+03	2.733E+06	3.755E+03	9.118E+02	1.367E+06	1.003E+03
2008	5.572E+03	4.462E+06	6.129E+03	1.488E+03	2.231E+06	1.637E+03
2009	7.244E+03	5.801E+06	7.969E+03	1.935E+03	2.900E+06	2.129E+03
2010	8.557E+03	6.852E+06	9.413E+03	2.286E+03	3.426E+06	2.514E+03
2011	9.610E+03	7.695E+06	1.057E+04	2.567E+03	3.847E+06	2.824E+03
2012	1.071E+04	8.579E+06	1.178E+04	2.862E+03	4.289E+06	3.148E+03
2013	1.179E+04	9.444E+06	1.297E+04	3.150E+03	4.722E+06	3.465E+03
2014	1.300E+04	1.041E+07	1.430E+04	3.473E+03	5.205E+06	3.820E+03
2015	1.439E+04	1.153E+07	1.583E+04	3.845E+03	5.763E+06	4.230E+03
2016	1.558E+04	1.247E+07	1.714E+04	4.161E+03	6.237E+06	4.577E+03
2017	2.482E+04	1.987E+07	2.730E+04	6.629E+03	9.937E+06	7.292E+03
2018	3.388E+04	2.713E+07	3.726E+04	9.048E+03	1.356E+07	9.953E+03
2019	4.275E+04	3.423E+07	4.703E+04	1.142E+04	1.712E+07	1.256E+04
2020	5.145E+04	4.120E+07	5.660E+04	1.374E+04	2.060E+07	1.512E+04
2021	5.998E+04	4.803E+07	6.598E+04	1.602E+04	2.402E+07	1.762E+04
2022	6.834E+04	5.473E+07	7.518E+04	1.826E+04	2.736E+07	2.008E+04
2023	7.654E+04	6.129E+07	8.419E+04	2.044E+04	3.064E+07	2.249E+04
2024	8.457E+04	6.772E+07	9.303E+04	2.259E+04	3.386E+07	2.485E+04
2025	9.245E+04	7.403E+07	1.017E+05	2.469E+04	3.701E+07	2.716E+04
2026	1.002E+05	8.021E+07	1.102E+05	2.675E+04	4.010E+07	2.943E+04
2027	1.077E+05	8.626E+07	1.185E+05	2.878E+04	4.313E+07	3.165E+04
2028	1.151E+05	9.220E+07	1.267E+05	3.076E+04	4.610E+07	3.383E+04
2029	1.224E+05	9.802E+07	1.347E+05	3.270E+04	4.901E+07	3.597E+04
2030	1.295E+05	1.037E+08	1.425E+05	3.460E+04	5.186E+07	3.806E+04
2031	1.365E+05	1.093E+08	1.502E+05	3.647E+04	5.466E+07	4.011E+04
2032	1.434E+05	1.148E+08	1.577E+05	3.829E+04	5.740E+07	4.212E+04
2033	1.501E+05	1.202E+08	1.651E+05	4.009E+04	6.009E+07	4.410E+04
2034	1.567E+05	1.254E+08	1.723E+05	4.184E+04	6.272E+07	4.603E+04
2035	1.631E+05	1.306E+08	1.794E+05	4.357E+04	6.530E+07	4.792E+04
2036	1.694E+05	1.357E+08	1.864E+05	4.525E+04	6.783E+07	4.978E+04
2037	1.756E+05	1.406E+08	1.932E+05	4.691E+04	7.031E+07	5.160E+04
2038	1.817E+05	1.455E+08	1.999E+05	4.853E+04	7.274E+07	5.338E+04
2039	1.876E+05	1.502E+08	2.064E+05	5.012E+04	7.512E+07	5.513E+04
2040	1.935E+05	1.549E+08	2.128E+05	5.168E+04	7.746E+07	5.684E+04
2041	1.992E+05	1.595E+08	2.191E+05	5.320E+04	7.975E+07	5.852E+04
2042	2.048E+05	1.640E+08	2.253E+05	5.470E+04	8.199E+07	6.017E+04
2043	2.103E+05	1.684E+08	2.313E+05	5.617E+04	8.419E+07	6.179E+04
2044	2.157E+05	1.727E+08	2.372E+05	5.761E+04	8.635E+07	6.337E+04
2045	2.209E+05	1.769E+08	2.430E+05	5.902E+04	8.846E+07	6.492E+04
2046	2.261E+05	1.811E+08	2.487E+05	6.040E+04	9.053E+07	6.644E+04
2047	2.312E+05	1.851E+08	2.543E+05	6.175E+04	9.256E+07	6.793E+04
2048	2.362E+05	1.891E+08	2.598E+05	6.308E+04	9.455E+07	6.939E+04
2049	2.410E+05	1.930E+08	2.651E+05	6.438E+04	9.650E+07	7.082E+04
2050	2.458E+05	1.968E+08	2.704E+05	6.566E+04	9.842E+07	7.222E+04
2051	2.505E+05	2.006E+08	2.755E+05	6.691E+04	1.003E+08	7.360E+04
2052	2.551E+05	2.043E+08	2.806E+05	6.813E+04	1.021E+08	7.495E+04
2053	2.558E+05	2.048E+08	2.814E+05	6.833E+04	1.024E+08	7.516E+04
2054	2.507E+05	2.008E+08	2.758E+05	6.697E+04	1.004E+08	7.367E+04

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2055	2.458E+05	1.968E+08	2.703E+05	6.565E+04	9.840E+07	7.221E+04
2056	2.409E+05	1.929E+08	2.650E+05	6.435E+04	9.645E+07	7.078E+04
2057	2.361E+05	1.891E+08	2.597E+05	6.307E+04	9.454E+07	6.938E+04
2058	2.315E+05	1.853E+08	2.546E+05	6.182E+04	9.267E+07	6.801E+04
2059	2.269E+05	1.817E+08	2.496E+05	6.060E+04	9.083E+07	6.666E+04
2060	2.224E+05	1.781E+08	2.446E+05	5.940E+04	8.904E+07	6.534E+04
2061	2.180E+05	1.745E+08	2.398E+05	5.822E+04	8.727E+07	6.405E+04
2062	2.137E+05	1.711E+08	2.350E+05	5.707E+04	8.554E+07	6.278E+04
2063	2.094E+05	1.677E+08	2.304E+05	5.594E+04	8.385E+07	6.154E+04
2064	2.053E+05	1.644E+08	2.258E+05	5.483E+04	8.219E+07	6.032E+04
2065	2.012E+05	1.611E+08	2.213E+05	5.375E+04	8.056E+07	5.912E+04
2066	1.972E+05	1.579E+08	2.170E+05	5.268E+04	7.897E+07	5.795E+04
2067	1.933E+05	1.548E+08	2.127E+05	5.164E+04	7.740E+07	5.680E+04
2068	1.895E+05	1.517E+08	2.085E+05	5.062E+04	7.587E+07	5.568E+04
2069	1.857E+05	1.487E+08	2.043E+05	4.962E+04	7.437E+07	5.458E+04
2070	1.821E+05	1.458E+08	2.003E+05	4.863E+04	7.290E+07	5.350E+04
2071	1.785E+05	1.429E+08	1.963E+05	4.767E+04	7.145E+07	5.244E+04
2072	1.749E+05	1.401E+08	1.924E+05	4.673E+04	7.004E+07	5.140E+04
2073	1.715E+05	1.373E+08	1.886E+05	4.580E+04	6.865E+07	5.038E+04
2074	1.681E+05	1.346E+08	1.849E+05	4.489E+04	6.729E+07	4.938E+04
2075	1.647E+05	1.319E+08	1.812E+05	4.400E+04	6.596E+07	4.841E+04
2076	1.615E+05	1.293E+08	1.776E+05	4.313E+04	6.465E+07	4.745E+04
2077	1.583E+05	1.267E+08	1.741E+05	4.228E+04	6.337E+07	4.651E+04
2078	1.551E+05	1.242E+08	1.707E+05	4.144E+04	6.212E+07	4.559E+04
2079	1.521E+05	1.218E+08	1.673E+05	4.062E+04	6.089E+07	4.468E+04
2080	1.491E+05	1.194E+08	1.640E+05	3.982E+04	5.968E+07	4.380E+04
2081	1.461E+05	1.170E+08	1.607E+05	3.903E+04	5.850E+07	4.293E+04
2082	1.432E+05	1.147E+08	1.575E+05	3.826E+04	5.734E+07	4.208E+04
2083	1.404E+05	1.124E+08	1.544E+05	3.750E+04	5.621E+07	4.125E+04
2084	1.376E+05	1.102E+08	1.514E+05	3.676E+04	5.509E+07	4.043E+04
2085	1.349E+05	1.080E+08	1.484E+05	3.603E+04	5.400E+07	3.963E+04
2086	1.322E+05	1.059E+08	1.454E+05	3.531E+04	5.293E+07	3.885E+04
2087	1.296E+05	1.038E+08	1.426E+05	3.462E+04	5.189E+07	3.808E+04
2088	1.270E+05	1.017E+08	1.397E+05	3.393E+04	5.086E+07	3.732E+04
2089	1.245E+05	9.970E+07	1.370E+05	3.326E+04	4.985E+07	3.658E+04
2090	1.220E+05	9.773E+07	1.342E+05	3.260E+04	4.886E+07	3.586E+04
2091	1.196E+05	9.579E+07	1.316E+05	3.195E+04	4.790E+07	3.515E+04
2092	1.173E+05	9.390E+07	1.290E+05	3.132E+04	4.695E+07	3.445E+04
2093	1.149E+05	9.204E+07	1.264E+05	3.070E+04	4.602E+07	3.377E+04
2094	1.127E+05	9.021E+07	1.239E+05	3.009E+04	4.511E+07	3.310E+04
2095	1.104E+05	8.843E+07	1.215E+05	2.950E+04	4.421E+07	3.245E+04
2096	1.082E+05	8.668E+07	1.191E+05	2.891E+04	4.334E+07	3.180E+04
2097	1.061E+05	8.496E+07	1.167E+05	2.834E+04	4.248E+07	3.117E+04
2098	1.040E+05	8.328E+07	1.144E+05	2.778E+04	4.164E+07	3.056E+04
2099	1.019E+05	8.163E+07	1.121E+05	2.723E+04	4.081E+07	2.995E+04
2100	9.992E+04	8.001E+07	1.099E+05	2.669E+04	4.001E+07	2.936E+04
2101	9.794E+04	7.843E+07	1.077E+05	2.616E+04	3.921E+07	2.878E+04
2102	9.600E+04	7.688E+07	1.056E+05	2.564E+04	3.844E+07	2.821E+04
2103	9.410E+04	7.535E+07	1.035E+05	2.514E+04	3.768E+07	2.765E+04
2104	9.224E+04	7.386E+07	1.015E+05	2.464E+04	3.693E+07	2.710E+04
2105	9.041E+04	7.240E+07	9.945E+04	2.415E+04	3.620E+07	2.657E+04

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2106	8.862E+04	7.097E+07	9.749E+04	2.367E+04	3.548E+07	2.604E+04
2107	8.687E+04	6.956E+07	9.555E+04	2.320E+04	3.478E+07	2.552E+04
2108	8.515E+04	6.818E+07	9.366E+04	2.274E+04	3.409E+07	2.502E+04
2109	8.346E+04	6.683E+07	9.181E+04	2.229E+04	3.342E+07	2.452E+04
2110	8.181E+04	6.551E+07	8.999E+04	2.185E+04	3.275E+07	2.404E+04
2111	8.019E+04	6.421E+07	8.821E+04	2.142E+04	3.211E+07	2.356E+04
2112	7.860E+04	6.294E+07	8.646E+04	2.100E+04	3.147E+07	2.309E+04
2113	7.705E+04	6.169E+07	8.475E+04	2.058E+04	3.085E+07	2.264E+04
2114	7.552E+04	6.047E+07	8.307E+04	2.017E+04	3.024E+07	2.219E+04
2115	7.402E+04	5.928E+07	8.143E+04	1.977E+04	2.964E+07	2.175E+04
2116	7.256E+04	5.810E+07	7.981E+04	1.938E+04	2.905E+07	2.132E+04
2117	7.112E+04	5.695E+07	7.823E+04	1.900E+04	2.848E+07	2.090E+04
2118	6.971E+04	5.582E+07	7.668E+04	1.862E+04	2.791E+07	2.048E+04
2119	6.833E+04	5.472E+07	7.517E+04	1.825E+04	2.736E+07	2.008E+04
2120	6.698E+04	5.363E+07	7.368E+04	1.789E+04	2.682E+07	1.968E+04
2121	6.565E+04	5.257E+07	7.222E+04	1.754E+04	2.629E+07	1.929E+04
2122	6.435E+04	5.153E+07	7.079E+04	1.719E+04	2.577E+07	1.891E+04
2123	6.308E+04	5.051E+07	6.939E+04	1.685E+04	2.526E+07	1.853E+04
2124	6.183E+04	4.951E+07	6.801E+04	1.652E+04	2.476E+07	1.817E+04
2125	6.061E+04	4.853E+07	6.667E+04	1.619E+04	2.427E+07	1.781E+04
2126	5.941E+04	4.757E+07	6.535E+04	1.587E+04	2.378E+07	1.745E+04
2127	5.823E+04	4.663E+07	6.405E+04	1.555E+04	2.331E+07	1.711E+04
2128	5.708E+04	4.570E+07	6.278E+04	1.525E+04	2.285E+07	1.677E+04
2129	5.595E+04	4.480E+07	6.154E+04	1.494E+04	2.240E+07	1.644E+04
2130	5.484E+04	4.391E+07	6.032E+04	1.465E+04	2.196E+07	1.611E+04
2131	5.375E+04	4.304E+07	5.913E+04	1.436E+04	2.152E+07	1.579E+04
2132	5.269E+04	4.219E+07	5.796E+04	1.407E+04	2.110E+07	1.548E+04
2133	5.164E+04	4.135E+07	5.681E+04	1.379E+04	2.068E+07	1.517E+04
2134	5.062E+04	4.054E+07	5.568E+04	1.352E+04	2.027E+07	1.487E+04
2135	4.962E+04	3.973E+07	5.458E+04	1.325E+04	1.987E+07	1.458E+04
2136	4.864E+04	3.895E+07	5.350E+04	1.299E+04	1.947E+07	1.429E+04
2137	4.767E+04	3.818E+07	5.244E+04	1.273E+04	1.909E+07	1.401E+04
2138	4.673E+04	3.742E+07	5.140E+04	1.248E+04	1.871E+07	1.373E+04
2139	4.580E+04	3.668E+07	5.039E+04	1.223E+04	1.834E+07	1.346E+04
2140	4.490E+04	3.595E+07	4.939E+04	1.199E+04	1.798E+07	1.319E+04
2141	4.401E+04	3.524E+07	4.841E+04	1.176E+04	1.762E+07	1.293E+04
2142	4.314E+04	3.454E+07	4.745E+04	1.152E+04	1.727E+07	1.267E+04
2143	4.228E+04	3.386E+07	4.651E+04	1.129E+04	1.693E+07	1.242E+04
2144	4.145E+04	3.319E+07	4.559E+04	1.107E+04	1.659E+07	1.218E+04
2145	4.063E+04	3.253E+07	4.469E+04	1.085E+04	1.627E+07	1.194E+04

Results (Continued)

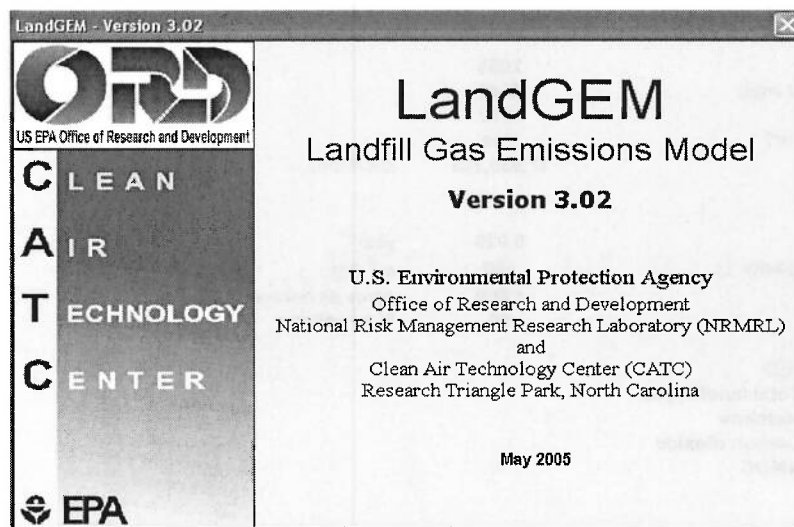
Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2005	0	0	0	0	0	0
2006	8.650E+02	4.726E+05	9.515E+02	3.269E+00	9.120E+02	3.596E+00
2007	2.502E+03	1.367E+06	2.752E+03	9.455E+00	2.638E+03	1.040E+01
2008	4.084E+03	2.231E+06	4.492E+03	1.543E+01	4.306E+03	1.698E+01
2009	5.309E+03	2.900E+06	5.840E+03	2.007E+01	5.598E+03	2.207E+01
2010	6.271E+03	3.426E+06	6.899E+03	2.370E+01	6.612E+03	2.607E+01
2011	7.043E+03	3.847E+06	7.747E+03	2.662E+01	7.426E+03	2.928E+01
2012	7.852E+03	4.289E+06	8.637E+03	2.967E+01	8.279E+03	3.264E+01
2013	8.643E+03	4.722E+06	9.508E+03	3.267E+01	9.113E+03	3.593E+01
2014	9.528E+03	5.205E+06	1.048E+04	3.601E+01	1.005E+04	3.961E+01
2015	1.055E+04	5.763E+06	1.160E+04	3.987E+01	1.112E+04	4.386E+01
2016	1.142E+04	6.237E+06	1.256E+04	4.315E+01	1.204E+04	4.746E+01
2017	1.819E+04	9.937E+06	2.001E+04	6.874E+01	1.918E+04	7.562E+01
2018	2.483E+04	1.356E+07	2.731E+04	9.383E+01	2.618E+04	1.032E+02
2019	3.133E+04	1.712E+07	3.447E+04	1.184E+02	3.304E+04	1.303E+02
2020	3.771E+04	2.060E+07	4.148E+04	1.425E+02	3.976E+04	1.568E+02
2021	4.396E+04	2.402E+07	4.836E+04	1.661E+02	4.635E+04	1.828E+02
2022	5.009E+04	2.736E+07	5.510E+04	1.893E+02	5.281E+04	2.082E+02
2023	5.610E+04	3.064E+07	6.170E+04	2.120E+02	5.914E+04	2.332E+02
2024	6.198E+04	3.386E+07	6.818E+04	2.343E+02	6.535E+04	2.577E+02
2025	6.775E+04	3.701E+07	7.453E+04	2.561E+02	7.144E+04	2.817E+02
2026	7.341E+04	4.010E+07	8.075E+04	2.774E+02	7.740E+04	3.052E+02
2027	7.895E+04	4.313E+07	8.685E+04	2.984E+02	8.325E+04	3.282E+02
2028	8.439E+04	4.610E+07	9.283E+04	3.189E+02	8.898E+04	3.508E+02
2029	8.972E+04	4.901E+07	9.869E+04	3.391E+02	9.459E+04	3.730E+02
2030	9.494E+04	5.186E+07	1.044E+05	3.588E+02	1.001E+05	3.947E+02
2031	1.001E+05	5.466E+07	1.101E+05	3.781E+02	1.055E+05	4.160E+02
2032	1.051E+05	5.740E+07	1.156E+05	3.971E+02	1.108E+05	4.368E+02
2033	1.100E+05	6.009E+07	1.210E+05	4.157E+02	1.160E+05	4.572E+02
2034	1.148E+05	6.272E+07	1.263E+05	4.339E+02	1.210E+05	4.773E+02
2035	1.195E+05	6.530E+07	1.315E+05	4.518E+02	1.260E+05	4.969E+02
2036	1.242E+05	6.783E+07	1.366E+05	4.693E+02	1.309E+05	5.162E+02
2037	1.287E+05	7.031E+07	1.416E+05	4.864E+02	1.357E+05	5.351E+02
2038	1.332E+05	7.274E+07	1.465E+05	5.032E+02	1.404E+05	5.535E+02
2039	1.375E+05	7.512E+07	1.513E+05	5.197E+02	1.450E+05	5.717E+02
2040	1.418E+05	7.746E+07	1.560E+05	5.359E+02	1.495E+05	5.895E+02
2041	1.460E+05	7.975E+07	1.606E+05	5.517E+02	1.539E+05	6.069E+02
2042	1.501E+05	8.199E+07	1.651E+05	5.672E+02	1.582E+05	6.239E+02
2043	1.541E+05	8.419E+07	1.695E+05	5.824E+02	1.625E+05	6.407E+02
2044	1.581E+05	8.635E+07	1.739E+05	5.974E+02	1.667E+05	6.571E+02
2045	1.619E+05	8.846E+07	1.781E+05	6.120E+02	1.707E+05	6.732E+02
2046	1.657E+05	9.053E+07	1.823E+05	6.263E+02	1.747E+05	6.889E+02
2047	1.694E+05	9.256E+07	1.864E+05	6.403E+02	1.786E+05	7.044E+02
2048	1.731E+05	9.455E+07	1.904E+05	6.541E+02	1.825E+05	7.195E+02
2049	1.766E+05	9.650E+07	1.943E+05	6.676E+02	1.863E+05	7.344E+02
2050	1.801E+05	9.842E+07	1.982E+05	6.808E+02	1.899E+05	7.489E+02
2051	1.836E+05	1.003E+08	2.019E+05	6.938E+02	1.936E+05	7.632E+02
2052	1.869E+05	1.021E+08	2.056E+05	7.065E+02	1.971E+05	7.772E+02
2053	1.875E+05	1.024E+08	2.062E+05	7.085E+02	1.977E+05	7.794E+02
2054	1.838E+05	1.004E+08	2.021E+05	6.945E+02	1.937E+05	7.639E+02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2055	1.801E+05	9.840E+07	1.981E+05	6.807E+02	1.899E+05	7.488E+02
2056	1.766E+05	9.645E+07	1.942E+05	6.673E+02	1.862E+05	7.340E+02
2057	1.731E+05	9.454E+07	1.904E+05	6.540E+02	1.825E+05	7.194E+02
2058	1.696E+05	9.267E+07	1.866E+05	6.411E+02	1.789E+05	7.052E+02
2059	1.663E+05	9.083E+07	1.829E+05	6.284E+02	1.753E+05	6.912E+02
2060	1.630E+05	8.904E+07	1.793E+05	6.160E+02	1.718E+05	6.775E+02
2061	1.598E+05	8.727E+07	1.757E+05	6.038E+02	1.684E+05	6.641E+02
2062	1.566E+05	8.554E+07	1.722E+05	5.918E+02	1.651E+05	6.510E+02
2063	1.535E+05	8.385E+07	1.688E+05	5.801E+02	1.618E+05	6.381E+02
2064	1.504E+05	8.219E+07	1.655E+05	5.686E+02	1.586E+05	6.255E+02
2065	1.475E+05	8.056E+07	1.622E+05	5.573E+02	1.555E+05	6.131E+02
2066	1.446E+05	7.897E+07	1.590E+05	5.463E+02	1.524E+05	6.009E+02
2067	1.417E+05	7.740E+07	1.559E+05	5.355E+02	1.494E+05	5.890E+02
2068	1.389E+05	7.587E+07	1.528E+05	5.249E+02	1.464E+05	5.774E+02
2069	1.361E+05	7.437E+07	1.497E+05	5.145E+02	1.435E+05	5.659E+02
2070	1.334E+05	7.290E+07	1.468E+05	5.043E+02	1.407E+05	5.547E+02
2071	1.308E+05	7.145E+07	1.439E+05	4.943E+02	1.379E+05	5.437E+02
2072	1.282E+05	7.004E+07	1.410E+05	4.845E+02	1.352E+05	5.330E+02
2073	1.257E+05	6.865E+07	1.382E+05	4.749E+02	1.325E+05	5.224E+02
2074	1.232E+05	6.729E+07	1.355E+05	4.655E+02	1.299E+05	5.121E+02
2075	1.207E+05	6.596E+07	1.328E+05	4.563E+02	1.273E+05	5.019E+02
2076	1.183E+05	6.465E+07	1.302E+05	4.473E+02	1.248E+05	4.920E+02
2077	1.160E+05	6.337E+07	1.276E+05	4.384E+02	1.223E+05	4.823E+02
2078	1.137E+05	6.212E+07	1.251E+05	4.297E+02	1.199E+05	4.727E+02
2079	1.115E+05	6.089E+07	1.226E+05	4.212E+02	1.175E+05	4.633E+02
2080	1.092E+05	5.968E+07	1.202E+05	4.129E+02	1.152E+05	4.542E+02
2081	1.071E+05	5.850E+07	1.178E+05	4.047E+02	1.129E+05	4.452E+02
2082	1.050E+05	5.734E+07	1.155E+05	3.967E+02	1.107E+05	4.364E+02
2083	1.029E+05	5.621E+07	1.132E+05	3.888E+02	1.085E+05	4.277E+02
2084	1.008E+05	5.509E+07	1.109E+05	3.811E+02	1.063E+05	4.193E+02
2085	9.885E+04	5.400E+07	1.087E+05	3.736E+02	1.042E+05	4.110E+02
2086	9.690E+04	5.293E+07	1.066E+05	3.662E+02	1.022E+05	4.028E+02
2087	9.498E+04	5.189E+07	1.045E+05	3.589E+02	1.001E+05	3.948E+02
2088	9.310E+04	5.086E+07	1.024E+05	3.518E+02	9.816E+04	3.870E+02
2089	9.125E+04	4.985E+07	1.004E+05	3.449E+02	9.621E+04	3.794E+02
2090	8.945E+04	4.886E+07	9.839E+04	3.380E+02	9.431E+04	3.718E+02
2091	8.767E+04	4.790E+07	9.644E+04	3.313E+02	9.244E+04	3.645E+02
2092	8.594E+04	4.695E+07	9.453E+04	3.248E+02	9.061E+04	3.573E+02
2093	8.424E+04	4.602E+07	9.266E+04	3.184E+02	8.882E+04	3.502E+02
2094	8.257E+04	4.511E+07	9.083E+04	3.121E+02	8.706E+04	3.433E+02
2095	8.093E+04	4.421E+07	8.903E+04	3.059E+02	8.533E+04	3.365E+02
2096	7.933E+04	4.334E+07	8.726E+04	2.998E+02	8.364E+04	3.298E+02
2097	7.776E+04	4.248E+07	8.554E+04	2.939E+02	8.199E+04	3.233E+02
2098	7.622E+04	4.164E+07	8.384E+04	2.881E+02	8.036E+04	3.169E+02
2099	7.471E+04	4.081E+07	8.218E+04	2.824E+02	7.877E+04	3.106E+02
2100	7.323E+04	4.001E+07	8.055E+04	2.768E+02	7.721E+04	3.044E+02
2101	7.178E+04	3.921E+07	7.896E+04	2.713E+02	7.568E+04	2.984E+02
2102	7.036E+04	3.844E+07	7.740E+04	2.659E+02	7.418E+04	2.925E+02
2103	6.897E+04	3.768E+07	7.586E+04	2.606E+02	7.272E+04	2.867E+02
2104	6.760E+04	3.693E+07	7.436E+04	2.555E+02	7.128E+04	2.810E+02
2105	6.626E+04	3.620E+07	7.289E+04	2.504E+02	6.986E+04	2.755E+02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2106	6.495E+04	3.548E+07	7.145E+04	2.455E+02	6.848E+04	2.700E+02
2107	6.366E+04	3.478E+07	7.003E+04	2.406E+02	6.713E+04	2.647E+02
2108	6.240E+04	3.409E+07	6.864E+04	2.358E+02	6.580E+04	2.594E+02
2109	6.117E+04	3.342E+07	6.729E+04	2.312E+02	6.449E+04	2.543E+02
2110	5.996E+04	3.275E+07	6.595E+04	2.266E+02	6.322E+04	2.493E+02
2111	5.877E+04	3.211E+07	6.465E+04	2.221E+02	6.196E+04	2.443E+02
2112	5.761E+04	3.147E+07	6.337E+04	2.177E+02	6.074E+04	2.395E+02
2113	5.647E+04	3.085E+07	6.211E+04	2.134E+02	5.953E+04	2.347E+02
2114	5.535E+04	3.024E+07	6.088E+04	2.092E+02	5.836E+04	2.301E+02
2115	5.425E+04	2.964E+07	5.968E+04	2.050E+02	5.720E+04	2.255E+02
2116	5.318E+04	2.905E+07	5.849E+04	2.010E+02	5.607E+04	2.211E+02
2117	5.212E+04	2.848E+07	5.734E+04	1.970E+02	5.496E+04	2.167E+02
2118	5.109E+04	2.791E+07	5.620E+04	1.931E+02	5.387E+04	2.124E+02
2119	5.008E+04	2.736E+07	5.509E+04	1.893E+02	5.280E+04	2.082E+02
2120	4.909E+04	2.682E+07	5.400E+04	1.855E+02	5.176E+04	2.041E+02
2121	4.812E+04	2.629E+07	5.293E+04	1.818E+02	5.073E+04	2.000E+02
2122	4.716E+04	2.577E+07	5.188E+04	1.782E+02	4.973E+04	1.961E+02
2123	4.623E+04	2.526E+07	5.085E+04	1.747E+02	4.874E+04	1.922E+02
2124	4.531E+04	2.476E+07	4.985E+04	1.713E+02	4.778E+04	1.884E+02
2125	4.442E+04	2.427E+07	4.886E+04	1.679E+02	4.683E+04	1.847E+02
2126	4.354E+04	2.378E+07	4.789E+04	1.645E+02	4.590E+04	1.810E+02
2127	4.268E+04	2.331E+07	4.694E+04	1.613E+02	4.500E+04	1.774E+02
2128	4.183E+04	2.285E+07	4.601E+04	1.581E+02	4.410E+04	1.739E+02
2129	4.100E+04	2.240E+07	4.510E+04	1.550E+02	4.323E+04	1.705E+02
2130	4.019E+04	2.196E+07	4.421E+04	1.519E+02	4.238E+04	1.671E+02
2131	3.939E+04	2.152E+07	4.333E+04	1.489E+02	4.154E+04	1.638E+02
2132	3.861E+04	2.110E+07	4.248E+04	1.459E+02	4.071E+04	1.605E+02
2133	3.785E+04	2.068E+07	4.163E+04	1.430E+02	3.991E+04	1.574E+02
2134	3.710E+04	2.027E+07	4.081E+04	1.402E+02	3.912E+04	1.542E+02
2135	3.637E+04	1.987E+07	4.000E+04	1.374E+02	3.834E+04	1.512E+02
2136	3.565E+04	1.947E+07	3.921E+04	1.347E+02	3.758E+04	1.482E+02
2137	3.494E+04	1.909E+07	3.843E+04	1.320E+02	3.684E+04	1.453E+02
2138	3.425E+04	1.871E+07	3.767E+04	1.294E+02	3.611E+04	1.424E+02
2139	3.357E+04	1.834E+07	3.693E+04	1.269E+02	3.539E+04	1.396E+02
2140	3.291E+04	1.798E+07	3.620E+04	1.244E+02	3.469E+04	1.368E+02
2141	3.225E+04	1.762E+07	3.548E+04	1.219E+02	3.401E+04	1.341E+02
2142	3.161E+04	1.727E+07	3.478E+04	1.195E+02	3.333E+04	1.314E+02
2143	3.099E+04	1.693E+07	3.409E+04	1.171E+02	3.267E+04	1.288E+02
2144	3.038E+04	1.659E+07	3.341E+04	1.148E+02	3.203E+04	1.263E+02
2145	2.977E+04	1.627E+07	3.275E+04	1.125E+02	3.139E+04	1.238E+02



Summary Report

Landfill Name or Identifier: Tekoi Landfill, Utah

Date: Tuesday, August 09, 2016

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	2005	
Landfill Closure Year (with 80-year limit)	2052	
Actual Closure Year (without limit)	2052	
Have Model Calculate Closure Year?	Yes	
Waste Design Capacity	47,939,986	short tons

MODEL PARAMETERS

Methane Generation Rate, k	0.020	year ⁻¹
Potential Methane Generation Capacity, L ₀	100	m ³ /Mg
NMOC Concentration	4,000	ppmv as hexane
Methane Content	50	% by volume

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	Total landfill gas
Gas / Pollutant #2:	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)
2005	140,242	154,266	0	0
2006	268,131	294,944	140,242	154,266
2007	264,525	290,978	408,373	449,210
2008	211,796	232,976	672,898	740,188
2009	173,041	190,345	884,695	973,164
2010	145,182	159,700	1,057,735	1,163,509
2011	153,767	169,144	1,202,917	1,323,209
2012	153,554	168,909	1,356,685	1,492,353
2013	171,218	188,340	1,510,238	1,661,262
2014	196,194	215,814	1,681,456	1,849,602
2015	174,515	191,967	1,877,651	2,065,416
2016	1,134,545	1,248,000	2,052,166	2,257,383
2017	1,134,545	1,248,000	3,186,711	3,505,383
2018	1,134,545	1,248,000	4,321,257	4,753,383
2019	1,134,545	1,248,000	5,455,802	6,001,383
2020	1,134,545	1,248,000	6,590,348	7,249,383
2021	1,134,545	1,248,000	7,724,893	8,497,383
2022	1,134,545	1,248,000	8,859,439	9,745,383
2023	1,134,545	1,248,000	9,993,984	10,993,383
2024	1,134,545	1,248,000	11,128,530	12,241,383
2025	1,134,545	1,248,000	12,263,075	13,489,383
2026	1,134,545	1,248,000	13,397,621	14,737,383
2027	1,134,545	1,248,000	14,532,166	15,985,383
2028	1,134,545	1,248,000	15,666,711	17,233,383
2029	1,134,545	1,248,000	16,801,257	18,481,383
2030	1,134,545	1,248,000	17,935,802	19,729,383
2031	1,134,545	1,248,000	19,070,348	20,977,383
2032	1,134,545	1,248,000	20,204,893	22,225,383
2033	1,134,545	1,248,000	21,339,439	23,473,383
2034	1,134,545	1,248,000	22,473,984	24,721,383
2035	1,134,545	1,248,000	23,608,530	25,969,383
2036	1,134,545	1,248,000	24,743,075	27,217,383
2037	1,134,545	1,248,000	25,877,621	28,465,383
2038	1,134,545	1,248,000	27,012,166	29,713,383
2039	1,134,545	1,248,000	28,146,711	30,961,383
2040	1,134,545	1,248,000	29,281,257	32,209,383
2041	1,134,545	1,248,000	30,415,802	33,457,383
2042	1,134,545	1,248,000	31,550,348	34,705,383
2043	1,134,545	1,248,000	32,684,893	35,953,383
2044	1,134,545	1,248,000	33,819,439	37,201,383

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2045	1,134,545	1,248,000	34,953,984	38,449,383
2046	1,134,545	1,248,000	36,088,530	39,697,383
2047	1,134,545	1,248,000	37,223,075	40,945,383
2048	1,134,545	1,248,000	38,357,621	42,193,383
2049	1,134,545	1,248,000	39,492,166	43,441,383
2050	1,134,545	1,248,000	40,626,711	44,689,383
2051	1,134,545	1,248,000	41,761,257	45,937,383
2052	686,003	754,603	42,895,802	47,185,383
2053	0	0	43,581,805	47,939,986
2054	0	0	43,581,805	47,939,986
2055	0	0	43,581,805	47,939,986
2056	0	0	43,581,805	47,939,986
2057	0	0	43,581,805	47,939,986
2058	0	0	43,581,805	47,939,986
2059	0	0	43,581,805	47,939,986
2060	0	0	43,581,805	47,939,986
2061	0	0	43,581,805	47,939,986
2062	0	0	43,581,805	47,939,986
2063	0	0	43,581,805	47,939,986
2064	0	0	43,581,805	47,939,986
2065	0	0	43,581,805	47,939,986
2066	0	0	43,581,805	47,939,986
2067	0	0	43,581,805	47,939,986
2068	0	0	43,581,805	47,939,986
2069	0	0	43,581,805	47,939,986
2070	0	0	43,581,805	47,939,986
2071	0	0	43,581,805	47,939,986
2072	0	0	43,581,805	47,939,986
2073	0	0	43,581,805	47,939,986
2074	0	0	43,581,805	47,939,986
2075	0	0	43,581,805	47,939,986
2076	0	0	43,581,805	47,939,986
2077	0	0	43,581,805	47,939,986
2078	0	0	43,581,805	47,939,986
2079	0	0	43,581,805	47,939,986
2080	0	0	43,581,805	47,939,986
2081	0	0	43,581,805	47,939,986
2082	0	0	43,581,805	47,939,986
2083	0	0	43,581,805	47,939,986
2084	0	0	43,581,805	47,939,986

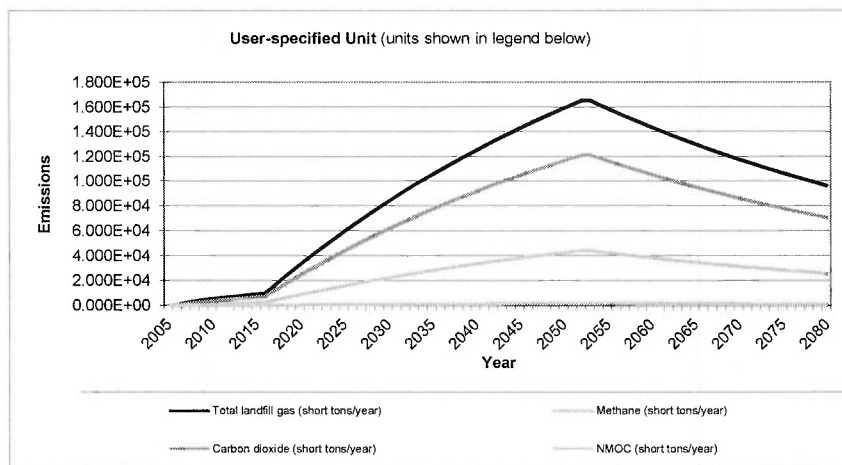
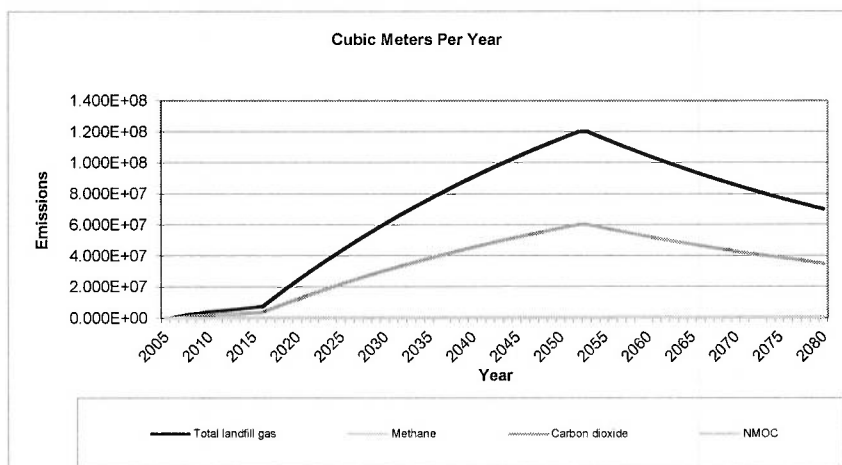
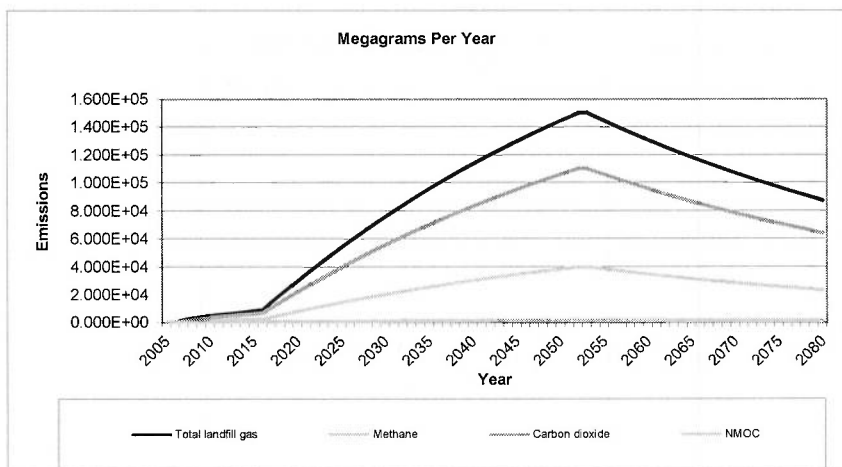
Pollutant Parameters

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)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2005	0	0	0	0	0	0
2006	6.943E+02	5.560E+05	7.637E+02	1.855E+02	2.780E+05	2.040E+02
2007	2.008E+03	1.608E+06	2.209E+03	5.363E+02	8.039E+05	5.900E+02
2008	3.278E+03	2.625E+06	3.606E+03	8.755E+02	1.312E+06	9.631E+02
2009	4.261E+03	3.412E+06	4.688E+03	1.138E+03	1.706E+06	1.252E+03
2010	5.034E+03	4.031E+06	5.537E+03	1.345E+03	2.015E+06	1.479E+03
2011	5.653E+03	4.526E+06	6.218E+03	1.510E+03	2.263E+06	1.661E+03
2012	6.302E+03	5.046E+06	6.932E+03	1.683E+03	2.523E+06	1.852E+03
2013	6.937E+03	5.555E+06	7.631E+03	1.853E+03	2.778E+06	2.038E+03
2014	7.648E+03	6.124E+06	8.412E+03	2.043E+03	3.062E+06	2.247E+03
2015	8.468E+03	6.780E+06	9.314E+03	2.262E+03	3.390E+06	2.488E+03
2016	9.164E+03	7.338E+06	1.008E+04	2.448E+03	3.669E+06	2.693E+03
2017	1.460E+04	1.169E+07	1.606E+04	3.900E+03	5.845E+06	4.290E+03
2018	1.993E+04	1.596E+07	2.192E+04	5.323E+03	7.978E+06	5.855E+03
2019	2.515E+04	2.014E+07	2.766E+04	6.718E+03	1.007E+07	7.389E+03
2020	3.027E+04	2.424E+07	3.329E+04	8.085E+03	1.212E+07	8.893E+03
2021	3.528E+04	2.825E+07	3.881E+04	9.425E+03	1.413E+07	1.037E+04
2022	4.020E+04	3.219E+07	4.422E+04	1.074E+04	1.610E+07	1.181E+04
2023	4.502E+04	3.605E+07	4.953E+04	1.203E+04	1.803E+07	1.323E+04
2024	4.975E+04	3.984E+07	5.472E+04	1.329E+04	1.992E+07	1.462E+04
2025	5.438E+04	4.355E+07	5.982E+04	1.453E+04	2.177E+07	1.598E+04
2026	5.892E+04	4.718E+07	6.481E+04	1.574E+04	2.359E+07	1.731E+04
2027	6.337E+04	5.074E+07	6.971E+04	1.693E+04	2.537E+07	1.862E+04
2028	6.773E+04	5.424E+07	7.451E+04	1.809E+04	2.712E+07	1.990E+04
2029	7.201E+04	5.766E+07	7.921E+04	1.923E+04	2.883E+07	2.116E+04
2030	7.620E+04	6.102E+07	8.382E+04	2.035E+04	3.051E+07	2.239E+04
2031	8.031E+04	6.431E+07	8.834E+04	2.145E+04	3.215E+07	2.360E+04
2032	8.433E+04	6.753E+07	9.277E+04	2.253E+04	3.376E+07	2.478E+04
2033	8.828E+04	7.069E+07	9.711E+04	2.358E+04	3.535E+07	2.594E+04
2034	9.215E+04	7.379E+07	1.014E+05	2.461E+04	3.689E+07	2.708E+04
2035	9.594E+04	7.682E+07	1.055E+05	2.563E+04	3.841E+07	2.819E+04
2036	9.966E+04	7.980E+07	1.096E+05	2.662E+04	3.990E+07	2.928E+04
2037	1.033E+05	8.272E+07	1.136E+05	2.759E+04	4.136E+07	3.035E+04
2038	1.069E+05	8.558E+07	1.176E+05	2.855E+04	4.279E+07	3.140E+04
2039	1.104E+05	8.838E+07	1.214E+05	2.948E+04	4.419E+07	3.243E+04
2040	1.138E+05	9.113E+07	1.252E+05	3.040E+04	4.556E+07	3.344E+04
2041	1.172E+05	9.382E+07	1.289E+05	3.130E+04	4.691E+07	3.443E+04
2042	1.205E+05	9.646E+07	1.325E+05	3.218E+04	4.823E+07	3.539E+04
2043	1.237E+05	9.905E+07	1.361E+05	3.304E+04	4.952E+07	3.634E+04
2044	1.269E+05	1.016E+08	1.395E+05	3.389E+04	5.079E+07	3.727E+04
2045	1.300E+05	1.041E+08	1.430E+05	3.472E+04	5.204E+07	3.819E+04
2046	1.330E+05	1.065E+08	1.463E+05	3.553E+04	5.325E+07	3.908E+04
2047	1.360E+05	1.089E+08	1.496E+05	3.633E+04	5.445E+07	3.996E+04
2048	1.389E+05	1.112E+08	1.528E+05	3.711E+04	5.562E+07	4.082E+04
2049	1.418E+05	1.135E+08	1.560E+05	3.787E+04	5.677E+07	4.166E+04
2050	1.446E+05	1.158E+08	1.591E+05	3.862E+04	5.789E+07	4.248E+04
2051	1.473E+05	1.180E+08	1.621E+05	3.936E+04	5.899E+07	4.329E+04
2052	1.500E+05	1.201E+08	1.650E+05	4.008E+04	6.007E+07	4.409E+04
2053	1.505E+05	1.205E+08	1.655E+05	4.019E+04	6.024E+07	4.421E+04
2054	1.475E+05	1.181E+08	1.622E+05	3.940E+04	5.905E+07	4.334E+04

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2055	1.446E+05	1.158E+08	1.590E+05	3.862E+04	5.788E+07	4.248E+04
2056	1.417E+05	1.135E+08	1.559E+05	3.785E+04	5.674E+07	4.164E+04
2057	1.389E+05	1.112E+08	1.528E+05	3.710E+04	5.561E+07	4.081E+04
2058	1.362E+05	1.090E+08	1.498E+05	3.637E+04	5.451E+07	4.000E+04
2059	1.335E+05	1.069E+08	1.468E+05	3.565E+04	5.343E+07	3.921E+04
2060	1.308E+05	1.047E+08	1.439E+05	3.494E+04	5.237E+07	3.844E+04
2061	1.282E+05	1.027E+08	1.410E+05	3.425E+04	5.134E+07	3.767E+04
2062	1.257E+05	1.006E+08	1.383E+05	3.357E+04	5.032E+07	3.693E+04
2063	1.232E+05	9.865E+07	1.355E+05	3.291E+04	4.932E+07	3.620E+04
2064	1.208E+05	9.669E+07	1.328E+05	3.225E+04	4.835E+07	3.548E+04
2065	1.184E+05	9.478E+07	1.302E+05	3.162E+04	4.739E+07	3.478E+04
2066	1.160E+05	9.290E+07	1.276E+05	3.099E+04	4.645E+07	3.409E+04
2067	1.137E+05	9.106E+07	1.251E+05	3.038E+04	4.553E+07	3.341E+04
2068	1.115E+05	8.926E+07	1.226E+05	2.978E+04	4.463E+07	3.275E+04
2069	1.093E+05	8.749E+07	1.202E+05	2.919E+04	4.375E+07	3.210E+04
2070	1.071E+05	8.576E+07	1.178E+05	2.861E+04	4.288E+07	3.147E+04
2071	1.050E+05	8.406E+07	1.155E+05	2.804E+04	4.203E+07	3.085E+04
2072	1.029E+05	8.240E+07	1.132E+05	2.749E+04	4.120E+07	3.023E+04
2073	1.009E+05	8.077E+07	1.109E+05	2.694E+04	4.038E+07	2.964E+04
2074	9.887E+04	7.917E+07	1.088E+05	2.641E+04	3.958E+07	2.905E+04
2075	9.691E+04	7.760E+07	1.066E+05	2.589E+04	3.880E+07	2.847E+04
2076	9.499E+04	7.606E+07	1.045E+05	2.537E+04	3.803E+07	2.791E+04
2077	9.311E+04	7.456E+07	1.024E+05	2.487E+04	3.728E+07	2.736E+04
2078	9.126E+04	7.308E+07	1.004E+05	2.438E+04	3.654E+07	2.682E+04
2079	8.946E+04	7.163E+07	9.840E+04	2.390E+04	3.582E+07	2.628E+04
2080	8.769E+04	7.021E+07	9.645E+04	2.342E+04	3.511E+07	2.576E+04
2081	8.595E+04	6.882E+07	9.454E+04	2.296E+04	3.441E+07	2.525E+04
2082	8.425E+04	6.746E+07	9.267E+04	2.250E+04	3.373E+07	2.475E+04
2083	8.258E+04	6.613E+07	9.084E+04	2.206E+04	3.306E+07	2.426E+04
2084	8.094E+04	6.482E+07	8.904E+04	2.162E+04	3.241E+07	2.378E+04
2085	7.934E+04	6.353E+07	8.728E+04	2.119E+04	3.177E+07	2.331E+04
2086	7.777E+04	6.228E+07	8.555E+04	2.077E+04	3.114E+07	2.285E+04
2087	7.623E+04	6.104E+07	8.385E+04	2.036E+04	3.052E+07	2.240E+04
2088	7.472E+04	5.983E+07	8.219E+04	1.996E+04	2.992E+07	2.195E+04
2089	7.324E+04	5.865E+07	8.057E+04	1.956E+04	2.932E+07	2.152E+04
2090	7.179E+04	5.749E+07	7.897E+04	1.918E+04	2.874E+07	2.109E+04
2091	7.037E+04	5.635E+07	7.741E+04	1.880E+04	2.817E+07	2.068E+04
2092	6.898E+04	5.523E+07	7.587E+04	1.842E+04	2.762E+07	2.027E+04
2093	6.761E+04	5.414E+07	7.437E+04	1.806E+04	2.707E+07	1.987E+04
2094	6.627E+04	5.307E+07	7.290E+04	1.770E+04	2.653E+07	1.947E+04
2095	6.496E+04	5.202E+07	7.146E+04	1.735E+04	2.601E+07	1.909E+04
2096	6.367E+04	5.099E+07	7.004E+04	1.701E+04	2.549E+07	1.871E+04
2097	6.241E+04	4.998E+07	6.865E+04	1.667E+04	2.499E+07	1.834E+04
2098	6.118E+04	4.899E+07	6.729E+04	1.634E+04	2.449E+07	1.797E+04
2099	5.997E+04	4.802E+07	6.596E+04	1.602E+04	2.401E+07	1.762E+04
2100	5.878E+04	4.707E+07	6.466E+04	1.570E+04	2.353E+07	1.727E+04
2101	5.761E+04	4.613E+07	6.338E+04	1.539E+04	2.307E+07	1.693E+04
2102	5.647E+04	4.522E+07	6.212E+04	1.508E+04	2.261E+07	1.659E+04
2103	5.535E+04	4.433E+07	6.089E+04	1.479E+04	2.216E+07	1.626E+04
2104	5.426E+04	4.345E+07	5.968E+04	1.449E+04	2.172E+07	1.594E+04
2105	5.318E+04	4.259E+07	5.850E+04	1.421E+04	2.129E+07	1.563E+04

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2106	5.213E+04	4.174E+07	5.734E+04	1.392E+04	2.087E+07	1.532E+04
2107	5.110E+04	4.092E+07	5.621E+04	1.365E+04	2.046E+07	1.501E+04
2108	5.009E+04	4.011E+07	5.510E+04	1.338E+04	2.005E+07	1.472E+04
2109	4.910E+04	3.931E+07	5.400E+04	1.311E+04	1.966E+07	1.443E+04
2110	4.812E+04	3.853E+07	5.294E+04	1.285E+04	1.927E+07	1.414E+04
2111	4.717E+04	3.777E+07	5.189E+04	1.260E+04	1.889E+07	1.386E+04
2112	4.624E+04	3.702E+07	5.086E+04	1.235E+04	1.851E+07	1.359E+04
2113	4.532E+04	3.629E+07	4.985E+04	1.211E+04	1.815E+07	1.332E+04
2114	4.442E+04	3.557E+07	4.887E+04	1.187E+04	1.779E+07	1.305E+04
2115	4.354E+04	3.487E+07	4.790E+04	1.163E+04	1.743E+07	1.279E+04
2116	4.268E+04	3.418E+07	4.695E+04	1.140E+04	1.709E+07	1.254E+04
2117	4.184E+04	3.350E+07	4.602E+04	1.117E+04	1.675E+07	1.229E+04
2118	4.101E+04	3.284E+07	4.511E+04	1.095E+04	1.642E+07	1.205E+04
2119	4.020E+04	3.219E+07	4.422E+04	1.074E+04	1.609E+07	1.181E+04
2120	3.940E+04	3.155E+07	4.334E+04	1.052E+04	1.577E+07	1.158E+04
2121	3.862E+04	3.092E+07	4.248E+04	1.032E+04	1.546E+07	1.135E+04
2122	3.785E+04	3.031E+07	4.164E+04	1.011E+04	1.516E+07	1.112E+04
2123	3.711E+04	2.971E+07	4.082E+04	9.911E+03	1.486E+07	1.090E+04
2124	3.637E+04	2.912E+07	4.001E+04	9.715E+03	1.456E+07	1.069E+04
2125	3.565E+04	2.855E+07	3.922E+04	9.523E+03	1.427E+07	1.047E+04
2126	3.494E+04	2.798E+07	3.844E+04	9.334E+03	1.399E+07	1.027E+04
2127	3.425E+04	2.743E+07	3.768E+04	9.149E+03	1.371E+07	1.006E+04
2128	3.357E+04	2.688E+07	3.693E+04	8.968E+03	1.344E+07	9.865E+03
2129	3.291E+04	2.635E+07	3.620E+04	8.790E+03	1.318E+07	9.670E+03
2130	3.226E+04	2.583E+07	3.548E+04	8.616E+03	1.292E+07	9.478E+03
2131	3.162E+04	2.532E+07	3.478E+04	8.446E+03	1.266E+07	9.290E+03
2132	3.099E+04	2.482E+07	3.409E+04	8.279E+03	1.241E+07	9.106E+03
2133	3.038E+04	2.433E+07	3.342E+04	8.115E+03	1.216E+07	8.926E+03
2134	2.978E+04	2.384E+07	3.276E+04	7.954E+03	1.192E+07	8.749E+03
2135	2.919E+04	2.337E+07	3.211E+04	7.796E+03	1.169E+07	8.576E+03
2136	2.861E+04	2.291E+07	3.147E+04	7.642E+03	1.145E+07	8.406E+03
2137	2.804E+04	2.246E+07	3.085E+04	7.491E+03	1.123E+07	8.240E+03
2138	2.749E+04	2.201E+07	3.024E+04	7.342E+03	1.101E+07	8.077E+03
2139	2.694E+04	2.158E+07	2.964E+04	7.197E+03	1.079E+07	7.917E+03
2140	2.641E+04	2.115E+07	2.905E+04	7.055E+03	1.057E+07	7.760E+03
2141	2.589E+04	2.073E+07	2.848E+04	6.915E+03	1.036E+07	7.606E+03
2142	2.537E+04	2.032E+07	2.791E+04	6.778E+03	1.016E+07	7.456E+03
2143	2.487E+04	1.992E+07	2.736E+04	6.644E+03	9.958E+06	7.308E+03
2144	2.438E+04	1.952E+07	2.682E+04	6.512E+03	9.761E+06	7.163E+03
2145	2.390E+04	1.914E+07	2.629E+04	6.383E+03	9.568E+06	7.022E+03

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2005	0	0	0	0	0	0
2006	5.088E+02	2.780E+05	5.597E+02	7.971E+00	2.224E+03	8.768E+00
2007	1.472E+03	8.039E+05	1.619E+03	2.305E+01	6.431E+03	2.536E+01
2008	2.402E+03	1.312E+06	2.642E+03	3.763E+01	1.050E+04	4.140E+01
2009	3.123E+03	1.706E+06	3.435E+03	4.893E+01	1.365E+04	5.382E+01
2010	3.689E+03	2.015E+06	4.058E+03	5.779E+01	1.612E+04	6.357E+01
2011	4.143E+03	2.263E+06	4.557E+03	6.490E+01	1.811E+04	7.139E+01
2012	4.619E+03	2.523E+06	5.081E+03	7.235E+01	2.019E+04	7.959E+01
2013	5.084E+03	2.778E+06	5.593E+03	7.965E+01	2.222E+04	8.761E+01
2014	5.605E+03	3.062E+06	6.165E+03	8.780E+01	2.450E+04	9.658E+01
2015	6.206E+03	3.390E+06	6.826E+03	9.722E+01	2.712E+04	1.069E+02
2016	6.716E+03	3.669E+06	7.388E+03	1.052E+02	2.935E+04	1.157E+02
2017	1.070E+04	5.845E+06	1.177E+04	1.676E+02	4.676E+04	1.844E+02
2018	1.460E+04	7.978E+06	1.606E+04	2.288E+02	6.383E+04	2.517E+02
2019	1.843E+04	1.007E+07	2.027E+04	2.887E+02	8.055E+04	3.176E+02
2020	2.218E+04	1.212E+07	2.440E+04	3.475E+02	9.695E+04	3.823E+02
2021	2.586E+04	1.413E+07	2.845E+04	4.051E+02	1.130E+05	4.456E+02
2022	2.946E+04	1.610E+07	3.241E+04	4.616E+02	1.288E+05	5.077E+02
2023	3.300E+04	1.803E+07	3.630E+04	5.169E+02	1.442E+05	5.686E+02
2024	3.646E+04	1.992E+07	4.011E+04	5.712E+02	1.593E+05	6.283E+02
2025	3.985E+04	2.177E+07	4.384E+04	6.243E+02	1.742E+05	6.868E+02
2026	4.318E+04	2.359E+07	4.750E+04	6.765E+02	1.887E+05	7.441E+02
2027	4.644E+04	2.537E+07	5.109E+04	7.276E+02	2.030E+05	8.003E+02
2028	4.964E+04	2.712E+07	5.460E+04	7.776E+02	2.169E+05	8.554E+02
2029	5.277E+04	2.883E+07	5.805E+04	8.267E+02	2.306E+05	9.094E+02
2030	5.585E+04	3.051E+07	6.143E+04	8.748E+02	2.441E+05	9.623E+02
2031	5.886E+04	3.215E+07	6.474E+04	9.220E+02	2.572E+05	1.014E+03
2032	6.181E+04	3.376E+07	6.799E+04	9.682E+02	2.701E+05	1.065E+03
2033	6.470E+04	3.535E+07	7.117E+04	1.014E+03	2.828E+05	1.115E+03
2034	6.753E+04	3.689E+07	7.429E+04	1.058E+03	2.952E+05	1.164E+03
2035	7.031E+04	3.841E+07	7.735E+04	1.102E+03	3.073E+05	1.212E+03
2036	7.304E+04	3.990E+07	8.034E+04	1.144E+03	3.192E+05	1.259E+03
2037	7.571E+04	4.136E+07	8.328E+04	1.186E+03	3.309E+05	1.305E+03
2038	7.833E+04	4.279E+07	8.616E+04	1.227E+03	3.423E+05	1.350E+03
2039	8.089E+04	4.419E+07	8.898E+04	1.267E+03	3.535E+05	1.394E+03
2040	8.341E+04	4.556E+07	9.175E+04	1.307E+03	3.645E+05	1.437E+03
2041	8.587E+04	4.691E+07	9.446E+04	1.345E+03	3.753E+05	1.480E+03
2042	8.829E+04	4.823E+07	9.712E+04	1.383E+03	3.858E+05	1.521E+03
2043	9.065E+04	4.952E+07	9.972E+04	1.420E+03	3.962E+05	1.562E+03
2044	9.298E+04	5.079E+07	1.023E+05	1.457E+03	4.063E+05	1.602E+03
2045	9.525E+04	5.204E+07	1.048E+05	1.492E+03	4.163E+05	1.641E+03
2046	9.748E+04	5.325E+07	1.072E+05	1.527E+03	4.260E+05	1.680E+03
2047	9.967E+04	5.445E+07	1.096E+05	1.561E+03	4.356E+05	1.717E+03
2048	1.018E+05	5.562E+07	1.120E+05	1.595E+03	4.450E+05	1.754E+03
2049	1.039E+05	5.677E+07	1.143E+05	1.628E+03	4.541E+05	1.791E+03
2050	1.060E+05	5.789E+07	1.166E+05	1.660E+03	4.631E+05	1.826E+03
2051	1.080E+05	5.899E+07	1.188E+05	1.692E+03	4.720E+05	1.861E+03
2052	1.100E+05	6.007E+07	1.210E+05	1.723E+03	4.806E+05	1.895E+03
2053	1.103E+05	6.024E+07	1.213E+05	1.728E+03	4.820E+05	1.900E+03
2054	1.081E+05	5.905E+07	1.189E+05	1.693E+03	4.724E+05	1.863E+03

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2055	1.060E+05	5.788E+07	1.165E+05	1.660E+03	4.631E+05	1.826E+03
2056	1.039E+05	5.674E+07	1.142E+05	1.627E+03	4.539E+05	1.790E+03
2057	1.018E+05	5.561E+07	1.120E+05	1.595E+03	4.449E+05	1.754E+03
2058	9.978E+04	5.451E+07	1.098E+05	1.563E+03	4.361E+05	1.719E+03
2059	9.781E+04	5.343E+07	1.076E+05	1.532E+03	4.275E+05	1.685E+03
2060	9.587E+04	5.237E+07	1.055E+05	1.502E+03	4.190E+05	1.652E+03
2061	9.397E+04	5.134E+07	1.034E+05	1.472E+03	4.107E+05	1.619E+03
2062	9.211E+04	5.032E+07	1.013E+05	1.443E+03	4.026E+05	1.587E+03
2063	9.029E+04	4.932E+07	9.932E+04	1.414E+03	3.946E+05	1.556E+03
2064	8.850E+04	4.835E+07	9.735E+04	1.386E+03	3.868E+05	1.525E+03
2065	8.675E+04	4.739E+07	9.542E+04	1.359E+03	3.791E+05	1.495E+03
2066	8.503E+04	4.645E+07	9.353E+04	1.332E+03	3.716E+05	1.465E+03
2067	8.335E+04	4.553E+07	9.168E+04	1.306E+03	3.643E+05	1.436E+03
2068	8.170E+04	4.463E+07	8.987E+04	1.280E+03	3.570E+05	1.408E+03
2069	8.008E+04	4.375E+07	8.809E+04	1.254E+03	3.500E+05	1.380E+03
2070	7.849E+04	4.288E+07	8.634E+04	1.230E+03	3.430E+05	1.353E+03
2071	7.694E+04	4.203E+07	8.463E+04	1.205E+03	3.362E+05	1.326E+03
2072	7.541E+04	4.120E+07	8.296E+04	1.181E+03	3.296E+05	1.300E+03
2073	7.392E+04	4.038E+07	8.131E+04	1.158E+03	3.231E+05	1.274E+03
2074	7.246E+04	3.958E+07	7.970E+04	1.135E+03	3.167E+05	1.249E+03
2075	7.102E+04	3.880E+07	7.813E+04	1.113E+03	3.104E+05	1.224E+03
2076	6.962E+04	3.803E+07	7.658E+04	1.091E+03	3.043E+05	1.200E+03
2077	6.824E+04	3.728E+07	7.506E+04	1.069E+03	2.982E+05	1.176E+03
2078	6.689E+04	3.654E+07	7.358E+04	1.048E+03	2.923E+05	1.153E+03
2079	6.556E+04	3.582E+07	7.212E+04	1.027E+03	2.865E+05	1.130E+03
2080	6.426E+04	3.511E+07	7.069E+04	1.007E+03	2.809E+05	1.107E+03
2081	6.299E+04	3.441E+07	6.929E+04	9.868E+02	2.753E+05	1.085E+03
2082	6.174E+04	3.373E+07	6.792E+04	9.673E+02	2.698E+05	1.064E+03
2083	6.052E+04	3.306E+07	6.657E+04	9.481E+02	2.645E+05	1.043E+03
2084	5.932E+04	3.241E+07	6.526E+04	9.293E+02	2.593E+05	1.022E+03
2085	5.815E+04	3.177E+07	6.396E+04	9.109E+02	2.541E+05	1.002E+03
2086	5.700E+04	3.114E+07	6.270E+04	8.929E+02	2.491E+05	9.822E+02
2087	5.587E+04	3.052E+07	6.146E+04	8.752E+02	2.442E+05	9.627E+02
2088	5.476E+04	2.992E+07	6.024E+04	8.579E+02	2.393E+05	9.437E+02
2089	5.368E+04	2.932E+07	5.905E+04	8.409E+02	2.346E+05	9.250E+02
2090	5.262E+04	2.874E+07	5.788E+04	8.242E+02	2.299E+05	9.067E+02
2091	5.157E+04	2.817E+07	5.673E+04	8.079E+02	2.254E+05	8.887E+02
2092	5.055E+04	2.762E+07	5.561E+04	7.919E+02	2.209E+05	8.711E+02
2093	4.955E+04	2.707E+07	5.451E+04	7.762E+02	2.166E+05	8.539E+02
2094	4.857E+04	2.653E+07	5.343E+04	7.609E+02	2.123E+05	8.370E+02
2095	4.761E+04	2.601E+07	5.237E+04	7.458E+02	2.081E+05	8.204E+02
2096	4.667E+04	2.549E+07	5.133E+04	7.310E+02	2.039E+05	8.041E+02
2097	4.574E+04	2.499E+07	5.032E+04	7.166E+02	1.999E+05	7.882E+02
2098	4.484E+04	2.449E+07	4.932E+04	7.024E+02	1.959E+05	7.726E+02
2099	4.395E+04	2.401E+07	4.834E+04	6.885E+02	1.921E+05	7.573E+02
2100	4.308E+04	2.353E+07	4.739E+04	6.748E+02	1.883E+05	7.423E+02
2101	4.222E+04	2.307E+07	4.645E+04	6.615E+02	1.845E+05	7.276E+02
2102	4.139E+04	2.261E+07	4.553E+04	6.484E+02	1.809E+05	7.132E+02
2103	4.057E+04	2.216E+07	4.463E+04	6.355E+02	1.773E+05	6.991E+02
2104	3.977E+04	2.172E+07	4.374E+04	6.229E+02	1.738E+05	6.852E+02
2105	3.898E+04	2.129E+07	4.288E+04	6.106E+02	1.703E+05	6.717E+02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2106	3.821E+04	2.087E+07	4.203E+04	5.985E+02	1.670E+05	6.584E+02
2107	3.745E+04	2.046E+07	4.119E+04	5.867E+02	1.637E+05	6.453E+02
2108	3.671E+04	2.005E+07	4.038E+04	5.751E+02	1.604E+05	6.326E+02
2109	3.598E+04	1.966E+07	3.958E+04	5.637E+02	1.573E+05	6.200E+02
2110	3.527E+04	1.927E+07	3.880E+04	5.525E+02	1.541E+05	6.078E+02
2111	3.457E+04	1.889E+07	3.803E+04	5.416E+02	1.511E+05	5.957E+02
2112	3.389E+04	1.851E+07	3.727E+04	5.308E+02	1.481E+05	5.839E+02
2113	3.322E+04	1.815E+07	3.654E+04	5.203E+02	1.452E+05	5.724E+02
2114	3.256E+04	1.779E+07	3.581E+04	5.100E+02	1.423E+05	5.610E+02
2115	3.191E+04	1.743E+07	3.510E+04	4.999E+02	1.395E+05	5.499E+02
2116	3.128E+04	1.709E+07	3.441E+04	4.900E+02	1.367E+05	5.390E+02
2117	3.066E+04	1.675E+07	3.373E+04	4.803E+02	1.340E+05	5.284E+02
2118	3.005E+04	1.642E+07	3.306E+04	4.708E+02	1.313E+05	5.179E+02
2119	2.946E+04	1.609E+07	3.240E+04	4.615E+02	1.287E+05	5.076E+02
2120	2.888E+04	1.577E+07	3.176E+04	4.524E+02	1.262E+05	4.976E+02
2121	2.830E+04	1.546E+07	3.113E+04	4.434E+02	1.237E+05	4.877E+02
2122	2.774E+04	1.516E+07	3.052E+04	4.346E+02	1.213E+05	4.781E+02
2123	2.719E+04	1.486E+07	2.991E+04	4.260E+02	1.188E+05	4.686E+02
2124	2.666E+04	1.456E+07	2.932E+04	4.176E+02	1.165E+05	4.593E+02
2125	2.613E+04	1.427E+07	2.874E+04	4.093E+02	1.142E+05	4.502E+02
2126	2.561E+04	1.399E+07	2.817E+04	4.012E+02	1.119E+05	4.413E+02
2127	2.510E+04	1.371E+07	2.761E+04	3.933E+02	1.097E+05	4.326E+02
2128	2.461E+04	1.344E+07	2.707E+04	3.855E+02	1.075E+05	4.240E+02
2129	2.412E+04	1.318E+07	2.653E+04	3.778E+02	1.054E+05	4.156E+02
2130	2.364E+04	1.292E+07	2.601E+04	3.704E+02	1.033E+05	4.074E+02
2131	2.317E+04	1.266E+07	2.549E+04	3.630E+02	1.013E+05	3.993E+02
2132	2.271E+04	1.241E+07	2.499E+04	3.558E+02	9.927E+04	3.914E+02
2133	2.226E+04	1.216E+07	2.449E+04	3.488E+02	9.731E+04	3.837E+02
2134	2.182E+04	1.192E+07	2.401E+04	3.419E+02	9.538E+04	3.761E+02
2135	2.139E+04	1.169E+07	2.353E+04	3.351E+02	9.349E+04	3.686E+02
2136	2.097E+04	1.145E+07	2.306E+04	3.285E+02	9.164E+04	3.613E+02
2137	2.055E+04	1.123E+07	2.261E+04	3.220E+02	8.982E+04	3.542E+02
2138	2.015E+04	1.101E+07	2.216E+04	3.156E+02	8.805E+04	3.472E+02
2139	1.975E+04	1.079E+07	2.172E+04	3.093E+02	8.630E+04	3.403E+02
2140	1.936E+04	1.057E+07	2.129E+04	3.032E+02	8.459E+04	3.335E+02
2141	1.897E+04	1.036E+07	2.087E+04	2.972E+02	8.292E+04	3.269E+02
2142	1.860E+04	1.016E+07	2.046E+04	2.913E+02	8.128E+04	3.205E+02
2143	1.823E+04	9.958E+06	2.005E+04	2.856E+02	7.967E+04	3.141E+02
2144	1.787E+04	9.761E+06	1.965E+04	2.799E+02	7.809E+04	3.079E+02
2145	1.751E+04	9.568E+06	1.927E+04	2.744E+02	7.654E+04	3.018E+02

Schwartz, Colin

From: Nyiro, Doc <dnyiro@wm.com>
Sent: Thursday, June 16, 2016 4:58 PM
To: Schwartz, Colin
Cc: Diemer, Doug; Franc, Mark; Kloos, Brad; Thorley, David; Stevens, Trent; Welch, John; Abuchaibe, Farid
Subject: Comments on Draft Part 71 Renewal Permit: Tekoi Landfill
Attachments: Comments to EPA on Draft Title V Permit.pdf

Attached are comments from Waste Management on draft permit number V-SV-000001-2016.00 for the Tekoi Landfill. Please let me know if you have any questions about the comments.

Thanks

Doc Nyiro
Environmental Protection Manager
dnyiro@wm.com

Waste Management
5500 S. Quebec Street, Suite 250
Greenwood Village, CO 80111
Tel 303-486-6034
Cell 303-944-7526

Recycling is a good thing. Please recycle any printed emails.



WASTE MANAGEMENT

5500 S. Quebec Street, Suite 250
Greenwood Village, CO 80111

June 16, 2016

Mr. Colin Schwartz
U.S. EPA
Region 8 Air Program, 8P-AR
Tribal permit Program
1595 Wynkoop Street
Denver, CO 80202

Sent by Email

**RE: Tekoi Landfill
Draft Air Quality Operating Permit
Permit Number V-SV-000001-2016.00**

Dear Mr. Schwartz,

On behalf of Waste Management, I am providing the following comments on the above referenced draft permit and the associated Statement of Basis.

Comments on Draft Air Quality Operating Permit

- The permit is issued to Waste Management of Utah, Inc. (WMU) as requested in the permit renewal application. The entity that operates the landfill is CR Group, LLC, which is a subsidiary of WMU. We are requesting that the permit be issued to CR Group, LLC.
- On the cover page, the location is listed as Section 18, Township 5 South, and Range 8 West. Although this is the information that was provided in the permit renewal application, the correct location is Section 26, Township 5 South, Range 8 West. This change should also be made on Page 1 of the permit.
- On Page 1, the Parent Company is listed as Waste Management of Utah, LLC. The Parent Company should be changed to Waste Management, Inc.
- On Page 1, the Responsible Official is listed as Area Vice President. We would like to change the Responsible Official to Area Director of Disposal Operations.
- On Page 2, Table 3, for Emission Unit IDs IE1, IE2, and IE3, please change the annual operating hours from 140, 420, and 420 to 715, 3,120, and 650 respectively. This change would result in the emissions from IE2 exceeding the insignificant threshold.
- On Page 2, Table 3, for Emission Unit ID IE1, change the description of the unit from Non-emergency diesel fuel pump to Non-emergency generator to power fuel pump.
- On Page 5, Section III.A. indicates the facility is subject to 40 CFR 63, Subpart AAAA. Since the NMOC emission rate at the facility is currently less than 50 megagrams per year, we do not believe the facility is currently subject to this regulation.

- On Page 9, Section V.A. indicates that 40 CFR Part 60, Subpart IIII applies to engines IE1 and IE2. Based on the years the engines were manufactured, 2000 and 2002, we do not believe these engines are subject to this regulation.

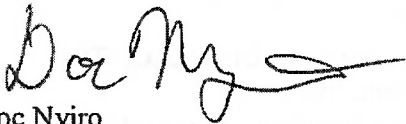
Comments on the Statement of Basis for Draft Permit Number V-SV-000001-2016.00

- On Page 1, Section I.A., the owner of the facility is listed as WMU, but should be listed as the Skull Valley Band of Goshutes. As previously mentioned, we are requesting to change the operator from WMU to CR Group, LLC.
- On Page 1, Section I.A., as previously mentioned, the location should be changed to Section 26, Township 5 South, Range 8 West.
- On Page 2, Section I.D., Table 1, the construction date for the facility is listed as January 14, 2005, as was provided in the permit renewal application. The correct date is December 10, 2004.
- On Page 2, Section I.D., Table 2, for Emission Unit IDs IE1, IE2, and IE3, please change the annual operating hours from 140, 420, and 420 to 715, 3,120, and 650 respectively. This change would result in the emissions from IE2 exceeding the insignificant threshold.
- On Page 2, Section I.D., Table 2, for Emission Unit ID IE1, change the description of the unit from Non-emergency diesel fuel pump to Non-emergency generator to power fuel pump.
- On Page 5, Section II.C. indicates the facility is subject to 40 CFR 63, Subpart AAAA. Since the NMOC emission rate at the facility is currently less than 50 megagrams per year, we do not believe the facility is currently subject to this regulation.
- On Page 7, Section I.H., the first paragraph refers to flammable substances which are potentially present in the natural gas stream entering the facility. As a point of clarification, there is no natural gas stream entering the facility.

Thank you for the opportunity to review the draft permit and to provide comments.

If you have any questions about these comments, please call me at 303-486-6034.

Sincerely,



Doc Nyiro

Environmental Protection Manager

cc: Farid Abuchaibe, Waste Management
 Doug Diemer, Waste Management
 Mark Franc, Waste Management
 Brad Kloos, Waste Management
 David Thorley, Waste Management
 Trent Stevens, Waste Management
 John Welch, Waste Management

Schwartz, Colin

From: O'Connor, Michael <MOConnor@scsengineers.com>
Sent: Wednesday, July 20, 2016 10:47 AM
To: Schwartz, Colin
Cc: Nyiro, Doc; Mark Franc (MFranc@wm.com)
Subject: Tekoi Title V Renewal - Supplemental Information
Attachments: Tekoi TV Renewal App_ Supplemental Info_7-20-16.pdf

Colin –

Per your recent communications with Doc and with me, SCS Engineers has prepared the attached letter with the additional information you requested associated with:

Re-designation of the John Deere generator engine to a significant source;
Greenhouse Gas Emissions

I trust this letter provides the additional information you require in order to complete the Title V renewal permitting for the Tekoi Landfill.

If you require a paper copy of this submittal, just let me know and I will send one.

If you have any additional questions about this matter, please contact me,

Regards,
Michael

Michael O'Connor
SCS Engineers
Office: 707.546.9461
Mobile: 707.536.6857
moconnor@scsengineers.com

SCS ENGINEERS

July 20, 2016
File No. 01207310.00, Task 36

Part 71 Contact
c/o Colin Schwartz
Air Permits Division
EPA Region 8
1595 Wynkoop Street (8P-AR)
Denver, CO 80202-1129
Ph: 303-312-7040

**SUBJECT: TITLE V RENEWAL APPLICATION
SUPPLEMENTAL INFORMATION
TEKOI LANDFILL, TOOELE COUNTY, UTAH
PERMIT NO. (V-SV-00001-2010.00)**

Dear Mr. Schwartz:

On behalf of CR Group, LLC, SCS Engineers (SCS) is submitting this letter to provide additional information associated with the Title V permit renewal application submitted to the U. S. Environmental Protection Agency (EPA), Region 8 on March 22, 2016.

The additional information is provided below and in the attached tables and forms.

Emission Source

The additional information primarily pertains to re-designation of one previously insignificant emissions source to a significant emission source. This source is a John Deere diesel engine powering a generator, formerly designated as insignificant emission source 2 (IE2) and now proposed as significant emission source 3 (E3). Due to a proposed increase in the maximum potential number of annual operating hours (from 2,000 to 3,120 hours), potential emissions of oxides of nitrogen (NOx) exceed the significant source threshold of 2 tons per year.

The generator, including the John Deere Engine, was purchased by CR Group, LLC in 2008 when the assets of the previous waste company operating the Tekoi Landfill were acquired by CR Group, LLC. The generator was at the Tekoi Landfill when CR Group, LLC purchased it, but it is not known when the previous company installed the generator at Tekoi or when it was installed at its current location at Tekoi. The model year, as stamped on the engine, is 2002.

Revised criteria and hazardous air pollutant (CAP and HAP) emissions have been calculated (see attached Table 7). In addition, revised greenhouse gas emissions have been calculated, and are presented in the attached tables.

Facility Operator

We are requesting that the facility operator be changed as follows:

New Name: **CR Group, LLC**

Current Name: Waste Management of Utah, Inc.

Responsible Official

The new designated Responsible Official for the facility is:

Doug Diemer

Director, Post-Collection Operations

A revised Certification of Truth, Accuracy, and Completeness (CTAC) form signed by the new Responsible Official is attached.

Parent Company

It was previously requested to indicate the parent company as Waste Management, Inc. We wish to revise that request. Please indicate on the permit that the parent company is:

Waste Management of Utah, Inc.

If you have any questions regarding this submittal or require any additional information, please contact the undersigned at (707) 546-9461 or Doc Nyiro at (720) 876-2621.

Sincerely,



Michael O'Connor
Senior Project Professional
SCS ENGINEERS

Attachments:

CAP and HAP Emissions from Internal Combustion Engine (E3)
Greenhouse Gas Emissions Tables
Revised CTAC Form

cc: Mark Franc, WM – electronic copy
Doc Nyiro, WM – electronic copy

ATTACHMENTS

CAP and HAP Emissions from Internal Combustion Engine (E3)

TABLE 7
CRITERIA AND HAZARDOUS AIR POLLUTANT EMISSIONS FROM INTERNAL COMBUSTION ENGINE
TEKOI LANDFILL, UTAH
EMISSION UNIT E3

Note: Formerly Insignificant Source IE2; now Significant Source based on NOx emissions from maximum operation.

CRITERIA AIR POLLUTANTS		Fuel Type		Rating (hp)	Maximum	NOx		CO	
Unit Description					(hrs/yr)	(g/bhp-hr)	(lb/yr)	(g/bhp-hr)	(lb/yr)
Actual									(ton/yr)
John Deere (generator engine)	Diesel		165		1461	5.48	2,910	1.45	359
PTE									0.18
John Deere (generator engine)	Diesel		165		3120	5.48	6,214	3.11	766
								0.68	0.38

		Fuel Type		Rating (hp)	Maximum	VOC		SOx	
Unit Description					(hrs/yr)	(g/bhp-hr)	(lb/yr)	(g/bhp-hr)	(lb/yr)
Actual									(ton/yr)
John Deere (generator engine)	Diesel		165		1461	0.30	159	0.08	494
PTE									0.25
John Deere (generator engine)	Diesel		165		3120	0.30	340	0.17	1,055
								0.93	0.53

		Fuel Type		Rating (hp)	Maximum	PM	
Unit Description					(hrs/yr)	(g/bhp-hr)	(ton/yr)
Actual							
John Deere (generator engine)	Diesel		165		1461	0.41	218
PTE							0.11
John Deere (generator engine)	Diesel		165		3120	0.41	465
							0.23

CAP Emission Factors

		NOx	NOx	CO	CO	VOC	VOC	SOx	SOx	PM	PM	Emission Certification
		lb/hp-hr	g/bhp-hr	lb/hp-hr	g/bhp-hr	lb/hp-hr	g/bhp-hr	lb/hp-hr	g/bhp-hr	lb/hp-hr	g/bhp-hr	
John Deere (generator engine)			5.48		0.68			0.00205	0.93		0.41	EO U-R-004-0119

NOTES:

EO = Executive Order

Criteria pollutant emission factors taken from the Executive Order for this engine, with the exception of SOx, which is from AP-42, Table 3.3-1. HAP emission factors taken from AP-42, Table 3.3-2.

HAZARDOUS AIR POLLUTANTS (HAP)

HAP Emission Factors: Compound [lb/hp-hr]		Benzene	6,53E-06	Toluene	2.86E-06	Xylenes	2.00E-06	Formaldehyde	8.26E-06
		(lb/yr)	(ton/yr)	(lb/yr)	(ton/yr)	(lb/yr)	(ton/yr)	(lb/yr)	(ton/yr)
Actual									
John Deere (generator engine)		1.57E+00	7.87E-04	6.89E-01	3.45E-04	4.82E-01	2.41E-04	1.99E+00	9.96E-04
PTE									
John Deere (generator engine)		3.36E+00	1.68E-03	1.47E+00	7.36E-04	1.03E+00	5.15E-04	4.25E+00	2.13E-03

HAP Emission Factors: Compound [lb/hp-hr]		Acetaldehyde	5.37E-06	1,3-Butadiene	3.91E-05	Acrolein	9.25E-05	Naphthalene	5.06E-06
		(lb/yr)	(ton/yr)	(lb/yr)	(ton/yr)	(lb/yr)	(ton/yr)	(lb/yr)	(ton/yr)
Actual									
John Deere (generator engine)		1.29E+00	6.47E-04	9.43E+00	4.71E-03	2.23E+01	1.11E-02	1.22E+00	6.10E-04
PTE									
John Deere (generator engine)		2.76E+00	1.38E-03	2.01E+01	1.01E-02	4.76E+01	2.38E-02	2.60E+00	1.30E-03

Greenhouse Gas Emissions Tables

**TABLE 1. GHG EMISSIONS CALCULATIONS - LANDFILL GAS (E1)
TEKOI LANDFILL, TOOELE COUNTY, UTAH**

Year	LFG Collection ³ (scf/year)	Methane Generation (tons/year)	Generated Methane Emitted Through Surface (ton/year) ^{1, 2}	Generated Carbon Dioxide Emitted Through Surface (ton/year)	Carbon Dioxide from Methane Oxidation in Surface (ton/year) ^{1, 2}
2019 ³	539,265,600	5,605	5,044	15,413	1,541
2019	179,755,200	1,868	1,681	5,138	514

Notes:

¹ 75% collection efficiency assumed.

² 10% oxidation of methane in landfill surface based on EPA GHG Reporting Rule

³ For 2019, the last year prior to operation of a gas collection and control system, 75% of generated LFG emissions is considered to be reasonably collectible; and therefore controlled emissions.

75.0% Collection Efficiency
525600 min/yr

2019	7,473	2019 tons/yr methane production
2019	1,026	scfm (2019 LFG collection rate; based on LandGEM)
2019	1,368	scfm (2019 LFG generation rate from LandGEM)

Table 2. GHG EMISSIONS CALCULATIONS - DIESEL FUEL INTERNAL COMBUSTION ENGINE (E3)
TEKOI LANDFILL, TOOELE COUNTY, UTAH

	Diesel Fuel Use (gallons/year)	Fuel High Heat Value (MMBtu/gal)	Heat Input (MMBtu/year)	Methane from Diesel Combustion (ton/year)	Nitrous Oxide from Diesel Combustion (ton/year)	Carbon Dioxide from Diesel Emissions (ton/year)
Maximum PTE	17,878	0.138	2,467	0.009	0.002	201

Notes:

5.73 gal/hour (diesel usage rate)
 3120 hrs/year (maximum engine operation)
 907 kg/ton
 0.0032 kg methane/MMBTU
 0.00063 kg N₂O/MMBTU
 73.96 kg carbon dioxide/MMBTU

**TABLE 3. SUMMARY OF GHG EMISSIONS
TEKOI LANDFILL, TOOELE COUNTY, UTAH**

Source	(tons/yr)	(tons CO ₂ e/yr)	Biogenic?	Fugitive?
Fugitive Methane Emissions	1,681	42,036	No	Yes
Fugitive Carbon Dioxide Emissions	5,651	5,651	Yes	Yes
Fugitive Emissions Total		47,687		
Controlled Methane Emissions	5,044	126,107	No	No
Controlled Carbon Dioxide Emissions	16,954	16,954	Yes	No
Controlled Emissions Total		143,061		
Stack Diesel Methane Emissions	0.01	0.22	No	No
Stack Diesel Carbon Dioxide Emissions	201	201	No	No
Stack Diesel Nitrous Oxide Emissions	0.002	0.5	No	No
Combustion Emissions Total		202		
Total GHG Emissions		190,950		

**GHG EMISSION FACTORS
TEKOI LANDFILL, TOOELE COUNTY, UTAH**

Emission Factors ¹ (kg/MMBtu)			
Fuel	Carbon Dioxide	Methane	Nitrous Oxide
Diesel	73.96	3.20E-03	6.30E-04

Notes:

¹ Emission factors obtained from 40 CFR Part 98 Tables C-1 and C-2.

GHG TYPES

Anthropogenic	Biogenic	Fugitive	Unregulated	Regulated
Landfill surface CH ₄	Landfill surface CO ₂	Landfill surface CO ₂ CH ₄	Fugitive LF surface CO ₂ CH ₄	Controlled LF surface CH ₄
Diesel Engine CO ₂ CH ₄ N ₂ O				Diesel Engine CO ₂ CH ₄ N ₂ O

GHG EMISSIONS BY SOURCE

Source	(tons CO ₂ e/yr)
Fugitive LF surface	47,687
Controlled LF surface	143,061
Diesel Engine	202
Total	190,950

BIOGENIC GHG EMISSIONS

Source	(tons CO ₂ e/yr)
LF Surface	22,606
Total	22,606

ANTHROPOGENIC GHG EMISSIONS

Source	(tons CO ₂ e/yr)
LF Surface	168,143
Diesel Engine	202
Total	168,344

REGULATED GHG EMISSIONS

Source	(tons CO ₂ e/yr)
Controlled LFG	126,107
Diesel Engine	202
Total	126,309

Tekoi Landfill

Potential-to-Emit Regulated Greenhouse Gas (tons)

Emission Source #	CO ₂	CH ₄ (as CO ₂ e)	N ₂ O (as CO ₂ e)	Total CO ₂ e
1	0.0	126,107	0.0	126,107
2	0.0	0.0	0.0	0.0
3	201	0.22	0.5	202
TOTAL	201	126,107	0.5	126,309

CO₂ = carbon dioxide; CH₄ = methane; N₂O = nitrous oxide; CO₂e = equivalent CO₂.

Note: Greenhouse gas (GHG) emissions cannot trigger major source requirements and the source cannot be considered a major source for GHG unless it is major for another pollutant. At this time Tekoi Landfill is not major for any other regulated pollutants.

(Completed 7/19/16 by Michael O'Connor, SCS Engineers)

Revised CTAC Form



OMB No. 2060-0336, Expires 6/30/2015
(Approval extended during OMB review)

Federal Operating Permit Program (40 CFR Part 71)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible Official

Name: (Last) Diemer (First) Doug (MI)

Title Director, Post Collection Operations

Street or P.O. Box 222 S. Mill Avenue, Suite 333

City Tempe State AZ ZIP 85281 -

Telephone 480-457-⁴⁸³⁵~~4812~~ Ext. Facsimile 866-404-8396

B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) 

Name (typed) Doug Diemer Date: 7 / 19 / 16

Schwartz, Colin

From: Nyiro, Doc <dnyiro@wm.com>
Sent: Tuesday, July 26, 2016 11:56 AM
To: Schwartz, Colin
Subject: RE: Tekoi Title V Renewal - Supplemental Information

I will. If it does affect the VOC emissions, it will also affect the GHG emissions. I will get this figured out as quickly as possible and get you the updated information.

Thanks for your understanding.

From: Schwartz, Colin [mailto:Schwartz.Colin@epa.gov]
Sent: Tuesday, July 26, 2016 11:51 AM
To: Nyiro, Doc
Subject: RE: Tekoi Title V Renewal - Supplemental Information

Ok, thank you for that heads up. If you do have an error and it affects the E1 VOC emissions, could you please provide that new number as well?

Regards,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

From: Nyiro, Doc [mailto:dnyiro@wm.com]
Sent: Tuesday, July 26, 2016 11:44 AM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>
Cc: Okubo, Noreen <Okubo.Noreen@epa.gov>; O'Connor, Michael <MOConnor@scsengineers.com>
Subject: RE: Tekoi Title V Renewal - Supplemental Information

When I add up all the HAPs based on the tons/year, I get the same number as you. When I add up the pounds/year for all the HAPs, and then convert to tons/year, I get 0.041585. They both round to 0.0416 if that works for you. Otherwise, I guess either number should be fine.

Also, unfortunately I'm pretty sure I found an error in the historic waste acceptance rates in the LandGem runs. I am trying to confirm these numbers, but probably won't be able to get back to you until tomorrow. If these values change, it will probably affect some of the projected maximum emissions for E1.

I'm sorry about this potential mistake and the resulting inconvenience.

Thanks

From: Schwartz, Colin [mailto:Schwartz.Colin@epa.gov]
Sent: Tuesday, July 26, 2016 9:48 AM
To: Nyiro, Doc

Cc: Okubo, Noreen; O'Connor, Michael

Subject: RE: Tekoi Title V Renewal - Supplemental Information

Thank you, Doc.

I went through your HAP emissions for E3 and calculated total PTE HAP at 0.041641 tpy. Is this correct on your end as well?

If you concur on this value, I will be able to complete my end of the public comments and start to finalize the permit.

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

From: Nyiro, Doc [<mailto:dnyiro@wm.com>]

Sent: Tuesday, July 26, 2016 9:07 AM

To: Schwartz, Colin <Schwartz.Colin@epa.gov>

Cc: Okubo, Noreen <Okubo.Noreen@epa.gov>; O'Connor, Michael <MOConnor@scsengineers.com>

Subject: RE: Tekoi Title V Renewal - Supplemental Information

Attached are the GHG calculations you requested. The calculations are based on year 2019 projected emissions, since this is the year that a gas collection system is projected to be installed. We project to exceed 50 Mg of NMOC emissions in 2017, based on a very conservative waste acceptance assumption in 2016. Once we exceed the 50 Mg threshold, we have 30 months to install a gas collection and control system (GCCS), thus the assumed 2019 GCCS in installation date. This is the point when we expect to have the highest VOC and GHG emissions, since after this, the GCCS will collect and control 75% of the landfill gas generated.

The NMOC emissions estimates for 2016 and 2017 are shown in one of the LandGem runs in Appendix E of the permit application. A copy of that LandGem report is attached for your convenience. The [projected NMOC emissions in 2016 and 2017 are 44.57 Mg/year and 70.13 Mg/year respectively.

Michael is on vacation this week, so please let me know if you have any questions.

Thanks

From: Schwartz, Colin [<mailto:Schwartz.Colin@epa.gov>]

Sent: Wednesday, July 20, 2016 2:04 PM

To: O'Connor, Michael

Cc: Nyiro, Doc; Okubo, Noreen

Subject: RE: Tekoi Title V Renewal - Supplemental Information

Michael,

I appreciate the submittal information but have a few questions on Landfill Emissions E1.

In the original GHG submittal that was emailed me on April, 14, 2016, you supplied E1's CH₄ CO₂e at 106,177 tpy (4247.08 tpy CH₄). That number, if I am assuming correctly, corresponds to the NMOC emissions of 43.7 Mg/year for 2016 as listed in table 1, appendix F of your permit.

This new submittal has multiple GHG emissions listed ranging from 126,107 tpy of CH₄ CO₂e (5,044 tpy CH₄) up to approximately 190,950 tpy CO₂e. Can you provide your calculations for how you came up with these numbers and the new 2016 and 2017 NMOC emissions with the calculations shown that correspond with this increase in methane?

Thank you,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

From: O'Connor, Michael [<mailto:MOConnor@scsengineers.com>]
Sent: Wednesday, July 20, 2016 10:47 AM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>
Cc: Nyiro, Doc <dnyiro@wm.com>; Mark Franc (MFranc@wm.com) <MFranc@wm.com>
Subject: Tekoi Title V Renewal - Supplemental Information

Colin –

Per your recent communications with Doc and with me, SCS Engineers has prepared the attached letter with the additional information you requested associated with:

Re-designation of the John Deere generator engine to a significant source;
Greenhouse Gas Emissions

I trust this letter provides the additional information you require in order to complete the Title V renewal permitting for the Tekoi Landfill.

If you require a paper copy of this submittal, just let me know and I will send one.

If you have any additional questions about this matter, please contact me,

Regards,
Michael

Michael O'Connor
SCS Engineers
Office: 707.546.9461
Mobile: 707.536.6857
moconnor@scsengineers.com

Recycling is a good thing. Please recycle any printed emails.

Potential-to-Emit Regulated Greenhouse Gas (tons)

EU#	CO ₂ *	CH ₄ * (as CO ₂ e)	N ₂ O* as CO ₂ e)	C CO ₂ e*
1	0.0	106,177	0.0	0.0
2	0.0	0.0	0.0	0.0
TOTAL		106,177		

CO₂ = carbon dioxide; CH₄ = methane; N₂O = nitrous oxide;
CO₂e = equivalent CO₂,

Note: Greenhouse gas (GHG) emissions cannot trigger major source requirements and the source cannot be considered a major source for GHG unless it is major for another pollutant. At this time Tekoi Landfill is not major for any other regulated pollutants.

Federal Operating Permit Program (40 CFR Part 71)

POTENTIAL TO EMIT (PTE)

For each emissions unit at the facility, list the unit ID and the PTE of each air pollutant listed below and sum the values to determine the total PTE for the facility. It may be helpful to complete form **EMISS** before completing this form. Report each pollutant at each unit to the nearest tenth (0.1) of a ton; values may be reported with greater precision (i.e., more decimal places) if desired. Report facility total PTE for each listed pollutant on this form and in section J of form **GIS**. The HAP column is for the PTE of all HAPs for each unit. You may use an attachment to show any pollutants that may be present in major amounts that are not already listed on the form (this is not common).

Emissions Unit ID	Regulated Air Pollutants and Pollutants for which Source is Major (PTE in tons/yr)						
	NOx	VOC	SO2	PM10	CO	Lead	HAP
E1	0.0	94.1	0.0	0.0	0.0	0.0	4.9
E2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FACILITY TOTALS:		94.1					4.9

**GHG EMISSIONS CALCULATIONS
TEKOI LANDFILL, TOOELE COUNTY, UTAH**

Year	LFG Collection ³ (scf/year)	Methane Generation (ton/year)	Generated Methane Emitted Through Surface (ton/year) ^{1,2}	Methane From Control Device (ton/year)	Nitrous Oxide from Methane Combustion (ton/year)	Generated Carbon Dioxide Emitted Through Surface (ton/year)	Carbon Dioxide from Methane Oxidation in Surface (ton/year) ^{1,2}	Carbon Dioxide from Methane Combustion (ton/year)
2019 ³	539,265,600	5,615	5,053	NA	NA	15,440	1,544	NA
2019	179,755,200	1,872	1,684	NA	NA	5,147	515	NA

Notes:

¹ 75% collection efficiency assumed.

² 10% oxidation of methane in landfill surface based on EPA GHG Reporting Rule

³ For 2019, the last year prior to operation of a gas collection and control system, 75% of generated LFG is considered to be reasonably collectible; and therefore controlled emission:

75.0% Collection Efficiency

506 BTU/scf LFG
 104.06 kg CO₂/MMBTU methane
 907 kg/ton
 0.0032 kg methane/MMBTU
 0.00063 kg N₂O/MMBTU
 35.31 scf/m³
 23.69 L/mol
 44.01 g/mol
 525600 min/yr
 0.9074 MG/ton

2019	6,793	2019 MG/yr methane production
2019	1,026	scfm (2019 LFG collection rate; based on LandGEM)
2019	1,368	scfm (2019 LFG generation rate from LandGEM)

**SUMMARY OF GHG EMISSIONS
TEKOI LANDFILL, TOOELE COUNTY, UTAH**

2019

Source	(tons/yr)	(tons CO ₂ e/yr)	Biogenic?	Fugitive?
Fugitive Methane Emissions	1,684	35,372	No	Yes
Fugitive Carbon Dioxide Emissions	5,661	118,891	Yes	Yes
Fugitive Emissions Total		154,263		
Controlled Methane Emissions	5,053	106,117	No	No
Controlled Carbon Dioxide Emissions	16,984	16,984	Yes	No
Controlled Emissions Total		123,102		
Stack Carbon Dioxide	NA	NA	Yes	No
Methane from Combustion	NA	NA	No	No
Nitrous Oxide from Combustion	NA	NA	No	No
Combustion Emissions Total		0		
Total GHG Emissions		277,365		

**GHG EMISSION FACTORS
TEKOI LANDFILL, TOOELE COUNTY, UTAH**

Fuel	Emission Factors ¹ (kg/MMBtu)		
	Carbon Dioxide	Methane	Nitrous Oxide
LFG	104.06	3.20E-03	6.30E-04

Notes:

¹ Emission factors obtained from 40 CFR Part 98 Tables C-1 and C-2, except carbon dioxide emission factor for LFG, which was obtained from Title 17 Code of California Regulations (CCR) Subchapter 10, Appendix A to include emissions passing through the control device uncombusted.

GHG TYPES

Anthropogenic	Biogenic	Fugitive	Unregulated	Regulated
Landfill surface CH ₄	Landfill surface CO ₂	Landfill surface CO ₂	Flare CO ₂	Flare CH ₄
Flare CH ₄	Flare CO ₂	CH ₄	Fugitive LF surface CO ₂	N ₂ O
N ₂ O			CH ₄	Controlled LF surface CH ₄

2019

GHG EMISSIONS BY SOURCE

Source	(tons CO ₂ e/yr)
Fugitive LF surface	154,263
Controlled LF surface	123,102
Flare	NA
Total	277,365

BIOGENIC GHG EMISSIONS

Source	(tons CO ₂ e/yr)
LF Surface	135,875
Flare	NA
Total	135,875

ANTHROPOGENIC GHG EMISSIONS

Source	(tons CO ₂ e/yr)
LF Surface	141,490
Flare	NA
Total	141,490

REGULATED GHG EMISSIONS

Source	(tons CO ₂ e/yr)
Flare	NA
Controlled LFG	106,117
Total	106,117

Federal Operating Permit Program (40 CFR Part 71)

INSIGNIFICANT EMISSIONS (IE)

On this page list each insignificant activity or emission unit. In the "number" column, indicate the number of units in this category. Descriptions should be brief but unique. Indicate which emissions criterion of part 71 is the basis for the exemption.

Number	Description of Activities or Emissions Units	RAP (except HAP)	HAP
IE1*	Isuzu 89-hp stationary diesel engine (fuel pump)	VOC	HAP
IE2*	John Deere 165-hp stationary diesel engine (generator)	VOC	HAP
IE3**	Subaru-Robin 13-hp stationary gasoline engine (water pump)	VOC	HAP
IE4*	12,000 gallon diesel fuel tank	VOC	HAP
	Soil Stockpiles	PM	
	Leachate collection system	VOC	HAP

* Currently listed as insignificant emission units in Title V Permit.

** Replaced 11-hp diesel-fired engine listed in Permit as IE3 in January 2016.

See Appendix C for emission calculations for all sources listed.

Schwartz, Colin

From: Schwartz, Colin
Sent: Monday, May 16, 2016 3:57 PM
Subject: Notice of Public Comment Period – Draft Title V Operating Permit on the Skull Valley Band of Goshutes Indian Reservation

In accordance with the regulations at 40 CFR 71.11(d), the EPA is hereby providing notification of the availability for public comment of the draft Clean Air Act Title V operating permit for the following source located on the Skull Valley Band of Goshutes Indian Reservation:

Waste Management of Utah, Inc. Tekoi Landfill

Electronic copies of the draft permit, Statement of Basis, application and other supporting information may be viewed online at: <https://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>.

Paper copies of the draft permit, Statement of Basis, application and other supporting information may be obtained by contacting the EPA and/or Tribal contacts identified on the attached public notice bulletin.

Comments may be sent by mail to:

US EPA Region 8
Air Program Office
1595 Wynkoop Street, 8P-AR
Denver, CO 80202
Attn: Colin Schwartz

or

Electronically to R8AirPermitting@epa.gov

In accordance with the regulations at §71.11(d), the Agency is providing a 30-day period from May 17, 2016 to June 16, 2016 for public comment on this draft permit. Comments must be received by 5:00pm MST June 16, 2016, to be considered in the issuance of the final permit. If a public hearing is held regarding this permit, you will be sent a copy of the public hearing notice at least 30 days in advance of the hearing date.

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

Schwartz, Colin

From: Schwartz, Colin
Sent: Monday, May 16, 2016 3:33 PM
To: O'Connor, Michael
Cc: Candace Bear; Vance, Sam; Rothery, Deirdre; Okubo, Noreen
Subject: Draft Title V Operating Permit for Tekoi Landfill
Attachments: Tekoi Landfill Public Notice Bulletin SV 4-5-16.docx; Draft WM Tekoi Landfill Permit V-SV-000001-2016.00ccs.docx; Draft WM SOB Tekoi Landfill SV-000001-2016.00ccs.docx

Mr. O'Connor,

I have attached the requested draft permit, the accompanying Statement of Basis, and the public notice for the Tekoi Landfill. We will also be posting the application, public notice, draft permit, Statement of Basis, and other supporting information in PDF format on our website at: <https://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8> by the start of the public comment period.

In accordance with the regulations at 40 CFR 71.11(d), we are providing a 30-day period from May 17, 2016 to June 16, 2016 for public comment on this draft permit. Comments must be received by 5:00pm MST June 16, 2016, to be considered in the issuance of the final permit.

Please submit any written comments you may have concerning the terms and conditions of this permit. You can send them directly to me at Schwartz.Colin@epa.gov, or to r8airpermitting@epa.gov. Should the EPA not accept any or all of these comments, you will be notified in writing and will be provided with the reasons for not accepting them.

Thank you,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

Public Notice: Request For Comments



Draft Air Quality Operating Permit for Federal Clean Air Act Title V to Control Air Pollutant Emissions from Tekoi Landfill on the Skull Valley Indian Reservation



Public notice issued:

May 17, 2016

Written comments due:

5 p.m., June 16, 2016

For further information, contact:

Colin Schwartz, U.S. EPA Region 8

What is being proposed?

EPA proposes to issue a Clean Air Act (CAA), 40 Code of Federal Register, Part 71, Title V Renewal Permit for the Tekoi Landfill on the Skull Valley Band of Goshute Indian Community.

Tekoi Landfill
Waste Management of Utah, Inc.
6976 West California Ave
Salt Lake City, UT 84104

EPA issues CAA Title V operating permits in Indian country where EPA has not approved a tribe to implement the Title V operating permit program. The Skull Valley Band of Goshute Indian Community does not have an approved Title V operating permit program.

Air pollutant emissions come from the landfill and associated equipment. The draft operating permit includes requirements for air pollutant emissions control.

Permit number:

V-SV-000001-2016.00

How can I review documents?

You can review the draft CAA Title V Operating Permit, the application, and Statement of Basis at:

Tooele County Clerk Office
47 N Main St,
Tooele, UT 84074

Skull Valley Band of Goshute Indians
1198 North Main Street
Grantsville, UT, 84029
Phone: 435-882-4532

U.S. EPA Region 8
Air Program Office (8P-AR)
1595 Wynkoop St.
Denver, CO 80202
Phone: 303-312-6043

All documents will be available for review at the U.S. EPA Region 8 office Monday through Friday from 8:00 am to 4:00 pm (excluding Federal holidays).

Electronic copies of the proposed Title V permit, Statement of Basis and all supporting materials may also be viewed at:
<http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>

What are EPA's responsibilities?

The U.S. EPA Region 8 Air Program is the regulatory agency that helps protect and preserve air quality on the Skull Valley Indian Reservation.

One way EPA does this is by issuing CAA Title V operating permits for major air emission sources that require air pollutant emissions control and monitoring. The purpose of this notice is to invite you to submit written comments on this proposed permit through the process detailed in this notice.

What happens next?

EPA will review and consider all comments received during the comment period.

Following this review, EPA may issue the permit, issue with revisions, or deny the permit.

Public Comment Period:

The EPA will accept written comments on this draft Title V Operating Permit beginning:

**May 17, 2016
through**

5 p.m. June 16, 2016.

Where can I send written comments?

EPA accepts comments by mail and e-mail.

How can I make comments by e-mail?

To make comments via e-mail, click on the name of the contact person at the website below.

**U.S. EPA
Region 8 Air Program
8P-AR
Tribal Permit Program
1595 Wynkoop Street
Denver CO 80202
Phone: 800.227.8917**

<http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>

Notice of Intent to Issue Clean Air Act
Title V Federal Operating Permits
United States Environmental Protection Agency
Region 8, Air Program

Take notice that the United States Environmental Protection Agency (U.S. EPA) has received an application to issue an operating permit that regulates air pollution emissions from the following source located within the exterior boundaries of the Skull Valley Indian Reservation in Tooele County, Utah:

Waste Management of Utah, Inc.
Tekoi Landfill

This source is required to obtain a Clean Air Act title V Permit to Operate in accordance with part 71 of Title 40 of the Code of Federal Regulations. The permit will contain all the Clean Air Act requirements that apply to the source and will require that the source conduct monitoring sufficient to enable U.S. EPA and the public to determine whether the source is complying with the air quality requirements that apply to it. This proceeding is subject to the administrative requirements of 40 CFR 71.11.

Members of the public may review copies of the draft permit prepared by U.S. EPA, the Statement of Basis for the draft permit, the application, and all supporting materials submitted by the source, at the Tooele County Clerk's Office in Tooele, Utah, the Skull Valley Band of Goshute Indian's Environmental Programs Office in Grantsville, Utah, and at the US EPA Region 8 office, in Denver, Colorado. All documents will be available for review at the US EPA Region 8 office Monday through Friday from 8:00 a.m. to 5:00 p.m. (excluding Federal holidays). Electronic copies of the draft permit and Statement of Basis may also be viewed at: <https://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>.

If you have comments on the draft permit, you have 30 calendar days from the date of this notice to submit them. You have the right to request a public hearing on the draft permit. Requests for a public hearing must be made by the close of the 30-day public comment period, must include the issues proposed to be raised at the hearing, and must contain your reasons for requesting a hearing. If a public hearing is granted, the comment period will be extended through the date of the public hearing. All comments and public hearing requests should be addressed to Colin Schwartz, U.S. EPA, Region 8, Air Program (8P-AR), 1595 Wynkoop Street, Denver, CO 80202. All comments received on or before June 16, 2016, and all comments made during a public hearing will be considered in arriving at a final decision on the permit. The final permit is a public record that can be obtained upon request. A statement of reasons for changes made to the draft permit and responses to comments received will be sent to persons who commented on the draft permit.

If you believe any conditions of the draft permit are inappropriate or that our initial decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, you must raise all reasonably ascertainable issues and submit all reasonably ascertainable arguments supporting your position by the end of the comment period. Any supporting materials that you submit must be included in full and may not be incorporated by reference, unless they are already part of the administrative record for this permit proceeding or consist of tribal, or federal statutes and regulations, U.S. EPA documents of general availability, or other generally available referenced materials.

If you would like to be added to our mailing list to be informed of future actions on these or other Clean Air Act permits issued in Indian Country, please send your name and address to Part 71 Permitting Contact, U.S. EPA Region 8, Air Program (8P-AR), 1595 Wynkoop Street, Denver, CO 80202-1129.



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8**

1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

MAY 12 2016

Ref: 8P-AR

Ms. Marilyn K. Gillette
Tooele County Clerk
47 S. Main St. Room #318
Tooele, UT 84074

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Ms. Gillette:

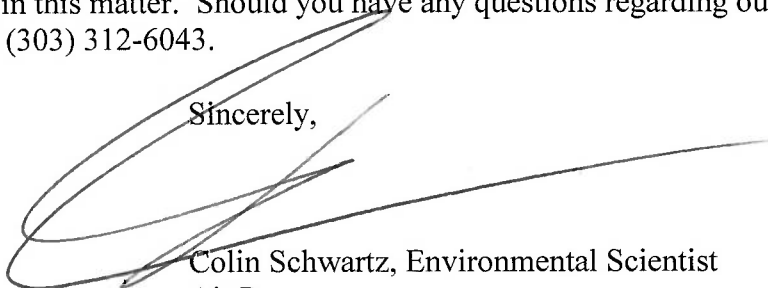
The U.S. Environmental Protection Agency (EPA) Region 8, will be issuing a public notice in the Tooele Transcript Bulletin and the Salt Lake Tribune on May 17, 2016 regarding the draft Clean Air Act Title V Permit to Operate (40 CFR part 71) for the following source:

Waste Management of Utah, Inc. – Tekoi Landfill

The public comment period for this notice will end on June 16, 2016. Please make the enclosed draft permit, Statement of Basis, and permit application available for public inspection until the end of the public comment period.

Thank you for your assistance in this matter. Should you have any questions regarding our request you may contact me at (303) 312-6043.

Sincerely,



Colin Schwartz, Environmental Scientist
Air Program

Enclosures



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8**

1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

MAY 12 2016

Ref: 8P-AR

Mr. Bryce Bird
Director Air Quality Division
Utah Department of Environmental Quality
P.O Box 144820
Salt Lake City UT 84114

Re: Notice of Title V Operating Permit Renewal for Operations on the Skull Valley Band of Goshute Indian Community

Dear Mr. Bird:

In accordance with 40 CFR 71.8 and 71.11(d)(2), the U.S. Environmental Protection Agency Region 8 is hereby providing notification to all affected states and tribes of the issuance of the draft title V federal operating permit for the following source located on the Skull Valley Band of Goshute Indians:

Waste Management of Utah, Inc. – Tekoi Landfill

Part 71 Permit Contact – Colin Schwartz, (303)-312-6043

A copy of the draft permit and Statement of Basis may be obtained by contacting the part 71 permit contact. The permit application and other supporting information pertinent to the permit decision are available for review at the following locations:

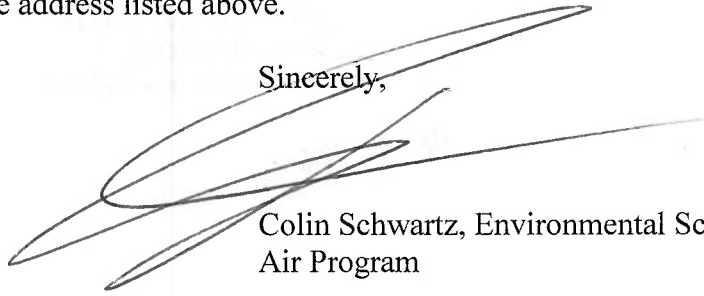
U.S. EPA Region 8	Skull Valley Indian Reservation	Tooele County Clerk
Air Program (8P-AR)	1198 North Main St.	47 S. Main St. Room #318
1595 Wynkoop St.	Grantsville, UT 84029	Tooele, UT 84074
Denver, CO 80202		

Electronic copies of the draft permit and Statement of Basis may also be viewed online at:
<http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>.

In accordance with §71.11(d)(2), EPA Region 8 is providing a 30-day period from May 17, 2016, to June 16, 2016, for public comment on this draft permit. Comments must be received by June 16, 2016, to be considered in the issuance of the final permit. If a public hearing is held regarding this permit, you will be sent a copy of the public hearing notice at least 30 days in advance of the hearing date.

Please submit any written recommendations you may have concerning the terms and conditions of this permit to me at the address listed above.

Sincerely,

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Colin Schwartz, Environmental Scientist
Air Program

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8

1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

MAY 12 2016

Ref: 8P-AR

Candace Bear, Chairwoman
Skull Valley Band of Goshute Indians
P.O. Box 448
Grantsville, UT 84029

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: Transmittal of Draft Title V Permit to Operate on the Skull Valley Indian Reservation

Dear Ms. Bear:

In accordance with 40 CFR 71.8 and 71.11(d)(2), the U.S. Environmental Protection Agency (EPA) Region 8 is hereby providing notification to all affected states and tribes of the issuance of the draft Clean Air Act Title V Permit to Operate for the following source located on the Skull Valley Band of Goshute Indians:

Waste Management of Utah, Inc. – Tekoi Landfill

Region 8 is providing a 30-day period, from May 17, 2016 to June 16, 2016 for comment. Please make the enclosed draft permit, Statement of Basis, permit application, and additional supporting information available for public inspection until the end of the public comment period.

Electronic copies of the draft permit and Statement of Basis may also be viewed online at:
<http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>.

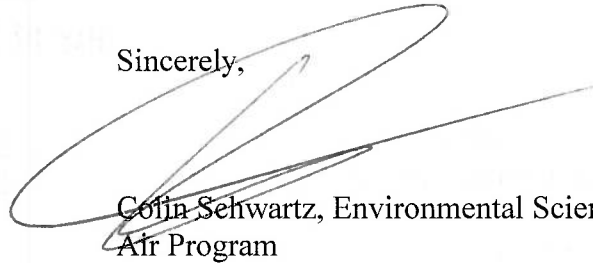
In addition to maintaining the docket in your office, please submit any written recommendations you may have concerning the terms and conditions of the draft permit to me at the following address:

Colin Schwartz
US EPA Region 8
Air Program, 8P-AR
1595 Wynkoop Street
Denver, CO 80202
(303)-312-6520

We have also enclosed copies of a public notice bulletin. Please post this bulletin in locations that you see fit to broadly advertise this public comment period.

Should EPA not accept any or all of these recommendations, you will be notified in writing and will be provided with the reasons for not accepting them. Comments must be received by June 16, 2016, to be considered in the issuance of the final renewal permits for this facility. If a public hearing is held regarding this permit, you will be sent a copy of the public hearing notice at least 30 days in advance of the hearing date.

Sincerely,

A handwritten signature in black ink, appearing to read 'Colin Schwartz', is written over the typed name.

Colin Schwartz, Environmental Scientist
Air Program

Enclosures



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8

1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

Ref: 8P-AR

MAY 12 2016

Gari Lafferty, Chairwomen
Paiute Indian Tribe of Utah
440 North Paiute Dr.
Cedar City, UT 84720

Re: Notice of Title V Operating Permit Renewal for Operations on the Skull Valley Band of Goshute Indian Community

Dear Ms. Nelson:

In accordance with 40 CFR 71.8 and 71.11(d)(2), the U.S. Environmental Protection Agency Region 8 is hereby providing notification to all affected states and tribes of the issuance of the draft title V federal operating permit for the following source located on the Skull Valley Band of Goshute Indians:

Waste Management of Utah, Inc. – Tekoi Landfill

Part 71 Permit Contact – Colin Schwartz, (303)-312-6043

A copy of the draft permit and Statement of Basis may be obtained by contacting the part 71 permit contact. The permit application and other supporting information pertinent to the permit decision are available for review at the following locations:

U.S. EPA Region 8
Air Program (8P-AR)
1595 Wynkoop St.
Denver, CO 80202

Skull Valley Indian Reservation
1198 North Main St.
Grantsville, UT 84029

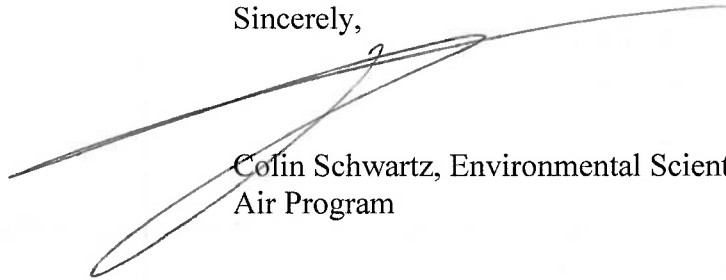
Tooele County Clerk
47 S. Main St. Room #318
Tooele, UT 84074

Electronic copies of the draft permit and Statement of Basis may also be viewed online at:
<http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>.

In accordance with §71.11(d)(2), EPA Region 8 is providing a 30-day period from May 17, 2016, to June 16, 2016, for public comment on this draft permit. Comments must be received by June 16, 2016, to be considered in the issuance of the final permit. If a public hearing is held regarding this permit, you will be sent a copy of the public hearing notice at least 30 days in advance of the hearing date.

Please submit any written recommendations you may have concerning the terms and conditions of this permit to me at the address listed above.

Sincerely,

A handwritten signature in dark ink, consisting of a series of overlapping loops and a long horizontal stroke extending to the right.

Colin Schwartz, Environmental Scientist
Air Program

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8

1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

MAY 12 2016

Ref: 8P-AR

Mr. Bud Rolofson, Air Quality Manager
USDA Forest Service
Rocky Mountain Region
740 Simms Street
Golden, Colorado 80401

Re: Notice of Title V Operating Permit Renewal for Operations on the Skull Valley Band of Goshute Indian Community

Dear Mr. Rolofson:

In accordance with 40 CFR 71.8 and 71.11(d)(2), the U.S. Environmental Protection Agency Region 8 is hereby providing notification to all affected states and tribes of the issuance of the draft title V federal operating permit for the following source located on the Skull Valley Band of Goshute Indians:

Waste Management of Utah, Inc. – Tekoi Landfill

Part 71 Permit Contact – Colin Schwartz, (303)-312-6043

A copy of the draft permit and Statement of Basis may be obtained by contacting the part 71 permit contact. The permit application and other supporting information pertinent to the permit decision are available for review at the following locations:

U.S. EPA Region 8
Air Program (8P-AR)
1595 Wynkoop St.
Denver, CO 80202

Skull Valley Indian Reservation
1198 North Main St.
Grantsville, UT 84029

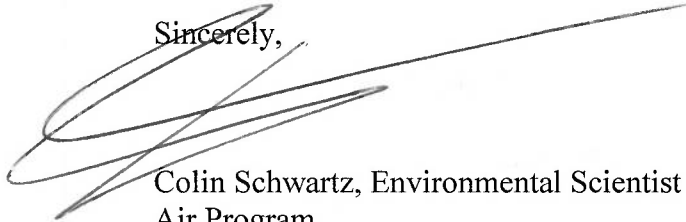
Tooele County Clerk
47 S. Main St. Room #318
Tooele, UT 84074

Electronic copies of the draft permit and Statement of Basis may also be viewed online at:
<http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>.

In accordance with §71.11(d)(2), EPA Region 8 is providing a 30-day period from May 17, 2016, to June 16, 2016, for public comment on this draft permit. Comments must be received by June 16, 2016, to be considered in the issuance of the final permit. If a public hearing is held regarding this permit, you will be sent a copy of the public hearing notice at least 30 days in advance of the hearing date.

Please submit any written recommendations you may have concerning the terms and conditions of this permit to me at the address listed above.

Sincerely,

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Colin Schwartz, Environmental Scientist
Air Program

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8

1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

MAY 12 2016

Ref: 8P-AR

Mr. Bruce Pargeets, Acting Director, Energy, Minerals, & Air Director
Ute Indian Tribe
P.O. Box 70, 910 South 7500 East
Fort Duchesne, UT 84026

Re: Notice of Title V Operating Permit Renewal for Operations on the Skull Valley Band of Goshute Indian Community

Dear Mr. Pargeets:

In accordance with 40 CFR 71.8 and 71.11(d)(2), the U.S. Environmental Protection Agency Region 8 is hereby providing notification to all affected states and tribes of the issuance of the draft title V federal operating permit for the following source located on the Skull Valley Band of Goshute Indians:

Waste Management of Utah, Inc. – Tekoi Landfill

Part 71 Permit Contact – Colin Schwartz, (303)-312-6043

A copy of the draft permit and Statement of Basis may be obtained by contacting the part 71 permit contact. The permit application and other supporting information pertinent to the permit decision are available for review at the following locations:

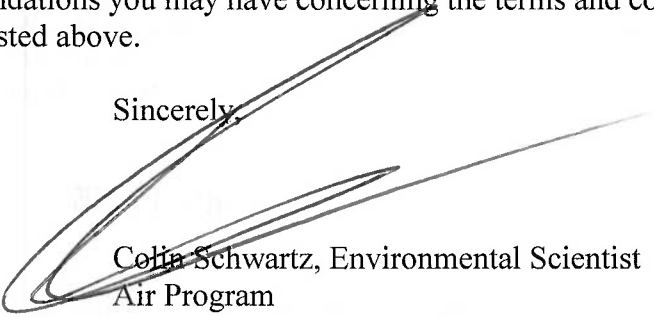
U.S. EPA Region 8	Skull Valley Indian Reservation	Tooele County Clerk
Air Program (8P-AR)	1198 North Main St.	47 S. Main St. Room #318
1595 Wynkoop St.	Grantsville, UT 84029	Tooele, UT 84074
Denver, CO 80202		

Electronic copies of the draft permit and Statement of Basis may also be viewed online at:
<http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>.

In accordance with §71.11(d)(2), EPA Region 8 is providing a 30-day period from May 17, 2016, to June 16, 2016, for public comment on this draft permit. Comments must be received by June 16, 2016, to be considered in the issuance of the final permit. If a public hearing is held regarding this permit, you will be sent a copy of the public hearing notice at least 30 days in advance of the hearing date.

Please submit any written recommendations you may have concerning the terms and conditions of this permit to me at the address listed above.

Sincerely,



Colin Schwartz, Environmental Scientist
Air Program

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8

1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

Ref: 8P-AR

MAY 12 2016

Mr. Jason Walker, Air Coordinator
Northwestern Band of the Shoshoni Nation
707 North Main St.
Brigham City, UT 84302

Re: Notice of Title V Operating Permit Renewal for Operations on the Skull Valley Band of Goshute Indian Community

Dear Mr. Walker:

In accordance with 40 CFR 71.8 and 71.11(d)(2), the U.S. Environmental Protection Agency Region 8 is hereby providing notification to all affected states and tribes of the issuance of the draft title V federal operating permit for the following source located on the Skull Valley Band of Goshute Indians:

Waste Management of Utah, Inc. – Tekoi Landfill

Part 71 Permit Contact – Colin Schwartz, (303)-312-6043

A copy of the draft permit and Statement of Basis may be obtained by contacting the part 71 permit contact. The permit application and other supporting information pertinent to the permit decision are available for review at the following locations:

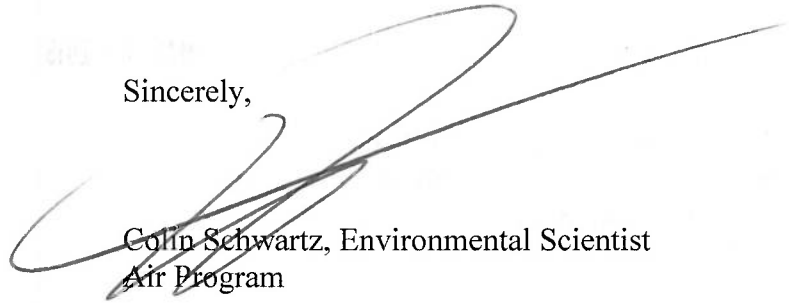
U.S. EPA Region 8	Skull Valley Indian Reservation	Tooele County Clerk
Air Program (8P-AR)	1198 North Main St.	47 S. Main St. Room #318
1595 Wynkoop St.	Grantsville, UT 84029	Tooele, UT 84074
Denver, CO 80202		

Electronic copies of the draft permit and Statement of Basis may also be viewed online at:
<http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>.

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Please submit any written recommendations you may have concerning the terms and conditions of this permit to me at the address listed above.

Sincerely,

A handwritten signature in black ink, appearing to read 'Colin Schwartz', is written over the printed name and title.

Colin Schwartz, Environmental Scientist
Air Program

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8

1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

MAY 12 2016

Ref: 8P-AR

Ms. Carol McCoy, Chief- Air Resources Division
Policy, Planning and Permit Review
National Park Service - AIR
P.O. Box 25287
Denver, Colorado 80225

Re: Notice of Title V Operating Permit Renewal for Operations on the Skull Valley Band of Goshute Indian Community

Dear Mr. Bunyak:

In accordance with 40 CFR 71.8 and 71.11(d)(2), the U.S. Environmental Protection Agency Region 8 is hereby providing notification to all affected states and tribes of the issuance of the draft title V federal operating permit for the following source located on the Skull Valley Band of Goshute Indians:

Waste Management of Utah, Inc. – Tekoi Landfill

Part 71 Permit Contact – Colin Schwartz, (303)-312-6043

A copy of the draft permit and Statement of Basis may be obtained by contacting the part 71 permit contact. The permit application and other supporting information pertinent to the permit decision are available for review at the following locations:

U.S. EPA Region 8
Air Program (8P-AR)
1595 Wynkoop St.
Denver, CO 80202

Skull Valley Indian Reservation
1198 North Main St.
Grantsville, UT 84029

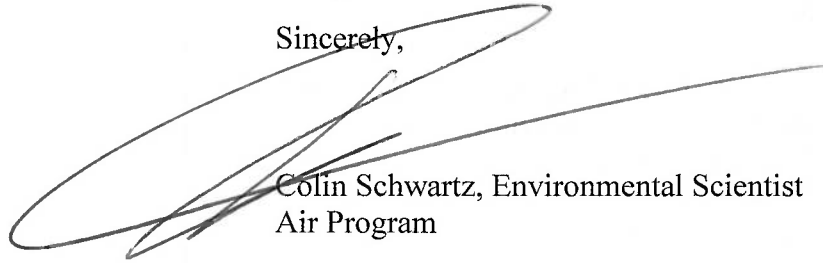
Tooele County Clerk
47 S. Main St. Room #318
Tooele, UT 84074

Electronic copies of the draft permit and Statement of Basis may also be viewed online at:
<http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>.

In accordance with §71.11(d)(2), EPA Region 8 is providing a 30-day period from May 17, 2016, to June 16, 2016, for public comment on this draft permit. Comments must be received by June 16, 2016, to be considered in the issuance of the final permit. If a public hearing is held regarding this permit, you will be sent a copy of the public hearing notice at least 30 days in advance of the hearing date.

Please submit any written recommendations you may have concerning the terms and conditions of this permit to me at the address listed above.

Sincerely,

A handwritten signature in black ink, consisting of a large, sweeping loop followed by a series of smaller, overlapping strokes that extend to the right.

Colin Schwartz, Environmental Scientist
Air Program

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8

1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>

MAY 12 2016

Ref: 8P-AR

Mr. Scott Bradley
Area Vice President
Waste Management, Inc.
222 S. Mill Avenue, Suite 333
Tempe, Arizona 85281

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: Draft Part 71 Operating Permit, Permit #V-SV-000001-2016.00, Waste Management of Utah, Inc., Tekoi Landfill

Dear Mr. Bradley:

The Environmental Protection Agency, Region 8, has completed its review of Waste Management of Utah Inc. (WM's) application for the Tekoi Landfill to obtain a renewed Clean Air Act Title V operating permit pursuant to the Title V Operating Permit Program at 40 CFR part 71(Part 71). The EPA received the application on March 22, 2016.

Enclosed you will find the draft Part 71 operating permit and the corresponding Statement of Basis. The regulations at 40 CFR 71.11(d) require that an applicant, the public and affected states have the opportunity to submit written comments on any draft Part 71 operating permit. All written comments submitted within 30 calendar days after the public notice is published will be considered by the agency in making its final permit decision. Public notice will be published in the Tooele Transcript Bulletin and Salt Lake Tribune on Tuesday, May 17, 2016. The public comment period will end on Thursday, June 16, 2016.

The conditions contained in the permit will become effective and enforceable by the agency if the permit is issued final. If you are unable to accept any term or condition of the draft permit, please submit your written comments, along with the reason(s) for non-acceptance to:

Part 71 Permitting Lead
U.S. EPA, Region 8
Air Program (8P-AR)
1595 Wynkoop Street
Denver, Colorado 80202

If you have any questions concerning the enclosed draft permit or Statement of Basis, please contact Colin Schwartz of my staff at (303) 312-6043.

Sincerely,

A handwritten signature in black ink, appearing to read "Monica S. Morales for".

Monica S. Morales, Acting Director
Air Program

Enclosures

cc: Candace Bear, Skull Valley Band of Goshute Indians Community, Chairwomen
Bruce Clabaugh, Waste Management of Utah, Inc., Environmental Protection Manager
Brad Kloos, Waste Management of Utah, Inc., Senior District Manager



**Air Pollution Control
Federal Clean Air Act (CAA) Title V Permit to Operate
Statement of Basis for Draft Permit No. V-SV-000001-2016.00**

**Waste Management of Utah, Inc.
Tekoi Landfill
Skull Valley Indian Reservation
Tooele County, Utah**

I. Facility Information

A. Location

The Tekoi Landfill (TLF) is owned and operated by Waste Management of Utah, Inc. (WM) and is located within the exterior boundaries of the Skull Valley Band of Goshute Indian Community, in the north-central part of the State of Utah. The exact location is Section 18, Township 5 South, Range 8 West, Tooele County, Utah. The mailing address is:

Tekoi Landfill
Waste Management of Utah, Inc.
6976 West California Ave
Salt Lake City, UT 84104

B. Contact

Brad Kloos, District Manager
Waste Management of Utah, Inc.
6976 West California Avenue
Salt Lake City, Utah 84104
Phone: (801) 731-5542
Fax: (801) 250-8549

C. Description of Operations

The TLF, which is owned by the Skull Valley Band of Goshute Indian Community and operated by WM, serves as a regional municipal solid waste (MSW) and construction and demolition (C&D) debris disposal facility.

The Initial Title V Operating Permit for the TLF was issued by the United States Environmental Protection Agency Region 8 (EPA) and became effective on September 22, 2011. The 5-year permit term expires on September 22, 2016. The application for renewal of the permit was prepared by SCS Engineers (SCS) on behalf of WM.

No hazardous wastes or infectious wastes are accepted for disposal, nor is the incineration of waste permitted. TLF currently accepts approximately 750 tons of waste per day (tpd); however, it is permitted to accept a maximum of 4,000 tpd.

The landfill is comprised of a 6-phase MSW disposal area, as well as two C&D disposal areas. The MSW portion of the landfill was operated as a balefill landfill until November 2010. A balefill is a type of landfill in which MSW is mechanically baled before being placed in the MSW disposal area. The bales were approximately 45" x 45" x 60" and weighed approximately 4,000 pounds. TLF has not conducted balefill operations for several years and does not expect to

resume such operation in the future. Therefore, WM has requested that any reference to such operation be removed from the Title V Permit. The site now accepts only loose (unbaled) MSW. The method of disposal has no effect on landfill emissions.

D. Emission Points

Table 1 lists emission units and emission generating activities, including any air pollution control devices. The Title V Operating Permit Program at 40 CFR part 71 (Part 71) allows the Permittee to separately list in the permit application units or activities that qualify as “insignificant” based on potential emissions below 2 tons per year (tpy) for all regulated pollutants that are not listed as hazardous air pollutants (HAPs) under section 112(b) and below 1,000 lbs/year or the de minimis level established under section 112(g), whichever is lower, for HAPs. However, the application may not omit information needed to determine the applicability of, or to impose, any applicable requirement. Units and activities that qualify as “insignificant” for the purposes of the Part 71 application are in no way exempt from applicable requirements or any requirements of the Part 71 permit.

Table 1 – Emission Units and Emission Generating Activities

Unit I.D.	Description	Control Equipment
E1	MSW Landfill: 45 million cubic meters design capacity. Construction Date: 01/14/2005	NA (NMOC* <50 Mg/year)
E2	Fugitive Dust Emissions from Paved Roads, Unpaved Roads, and Material Handling.	NA

*Non-methane organic compound (NMOC)

Table 2 - Insignificant Emission Units*

Emission Unit ID	Description
IE1	Isuzu; 89 hp diesel-fired stationary compression ignition engine. Construction Date: Pre June 12, 2006; Manufactured 2000. Use: ~140 hrs/year; Non-emergency diesel fuel pump.
IE2	John Deere (6.8L); 165 hp diesel-fired stationary compression ignition engine. Construction Date: Pre June 12, 2006; Manufactured 2002. Use: ~420 hrs/year; Non-emergency generator to power lights.
IE3	Honda; 13 hp gas-powered spark ignition engine. Model Year: 2014. Use: ~420 hrs/year; Non-emergency water pump.
IE4	1 - 12,000 gallon diesel fuel tank.

*Insignificant emission units can change at the facility as long as the new or replacement units meet the criteria for insignificance, and TLF supplies information as required under 40 CFR part 71 and this permit. The insignificant emission unit status does not exempt these emission units from the requirements of the NSPS and MACT standards that may apply.

E. Potential to Emit

Pursuant to 40 CFR 52.21, potential to emit (PTE) is defined as the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation, or the effect it would have on emissions, is federally enforceable. Independently enforceable applicable requirements are considered enforceable to the extent that the source is in compliance with the

standard. In addition, beneficial reductions in non-targeted pollutants resulting from compliance with an independently enforceable applicable requirement may be counted towards PTE provided the emission reduction of the non-targeted pollutant is enforceable as a practical matter and the source is complying with the requirement. See the 1995 guidance memo signed by John Seitz, Director of the Office of Air Quality Planning and Standards titled, “Options for Limiting Potential to Emit of a Stationary Source under Section 112 and Title V of the Clean Air Act.”

The TLF does not currently have a gas collection and control system (GCCS) for landfill gas (LFG) emissions. Under the New Source Performance Standards (NSPS) for MSW Landfills at 40 CFR, Part 60, subpart WWW (NSPS WWW), landfill owners/operators are required to install a GCCS when the landfill design capacity is greater than 2.5 million megagrams (Mg) by mass and 2.5 million cubic meters by volume (MMm^3v) and the NMOC emission rate is greater than 50 Mg per year (Mg/yr). TLF has a design capacity of approximately 45 MMm^3v for MSW disposal. As required by NSPS WWW, an initial design capacity report was submitted to the EPA on March 31, 2008; and an NMOC emission rate for the landfill was calculated using the procedures specified in 40 CFR 60.754. The calculated annual NMOC emission rate was determined using the EPA’s Landfill Gas Emissions Model (*LandGEM [Version 3.02]*). The annual rate was projected to exceed 50 Mg/yr, triggering the additional requirements specified in 40 CFR 60.752(b)(2) as of March 10, 2008, the date the annual rate report was submitted.

Tier 2 field sampling activities, as allowed under NSPS WWW, were initially conducted in June 2008. The report concluded the estimated annual NMOC emission rate would exceed 50 Mg/yr in 2009. Subsequent Tier 2 testing has been conducted at the site, most recently in 2013. The results were submitted to the EPA in a January 2014 report. The Tier 2 NMOC concentration of 965 parts per million by volume (ppmv) of hexane was used to calculate annual NMOC emission rates, which were determined to be less than 50 Mg/yr for the 5-year period from 2013 through 2017. This Tier 2 NMOC concentration value is used in this application for emission calculations. Per NSPS WWW, this Tier 2 concentration is valid for up to 5 years. As such, additional Tier 2 testing will be required in 2018.

When the calculated NMOC emission rate is equal to or greater than 50 Mg/yr, TLF will be required to submit a GCCS design plan signed by a professional engineer within one year and install a GCCS that captures the gas generated within the landfill within 30 months after the first annual report in which the emission rate equals or exceeds 50 Mg/yr. TLF will comply with these requirements when NMOC emissions exceed 50 Mg/yr using Tier 2 methods. Fugitive PTE related to LFG will decrease considerably after the GCCS is installed.

The year in which NMOC emissions will likely first exceed 50 Mg/year will be 2017 based on expected growth calculations provided in the application. A GCCS will be required to go online within 30 months of this date or by 2020. Under this scenario, 2019 is expected to be the last year when LFG emissions would be completely uncontrolled under the NSPS scenario. Beginning earliest in 2020, the NSPS-required GCCS would reduce NMOC emissions by 65% to 85%, as specified in the NSPS (default value is 75%).

Table 3 – Potential-to-Emit With Legally and Practically Enforceable Controls

Regulated Air Pollutants (tpy)											
	NO _x	CO	VOC	PM	SO ₂	CH ₂ O	Total HAPs	NMOC	CH ₄ (as CO _{2e})	N ₂ O (as CO _{2e})	CO ₂ and CO _{2e}
E1	0	0	94.1	0	0		4.9	241.4	106,177	0	0
E2	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0
TOTAL	0	0	94.4	0	0		4.9	241.1	106,177	0	0

Note: NO_x = nitrogen oxide; CO = carbon monoxide; VOC = volatile organic compound; PM = particulate matter; SO₂ = sulfur dioxide; CH₂O = formaldehyde; HAP = hazardous air pollutant; CO₂ = carbon dioxide; CH₄ = methane; N₂O = nitrous oxide; CO_{2e} = equivalent CO₂;

II. Applicable Requirement Review

The following sections discuss the information provided by WM in their Part 71 renewal application, certified to be true and accurate by the Responsible Official of this facility.

A. **40 CFR 52.21: Prevention of Significant Deterioration**

The Prevention of Significant Deterioration (PSD) Permit Program at 40 CFR part 52 is a preconstruction review requirement of the CAA that applies to proposed projects that are sufficiently large (in terms of emissions) to be a “major” stationary source or “major” modification of an existing stationary source. Source size is defined in terms of “PTE,” which is its capability at maximum design capacity to emit a pollutant, except as constrained by existing legally and practically enforceable conditions applicable to the source. A new stationary source or a modification to an existing minor stationary source is major if the proposed project has the PTE any pollutant regulated under the CAA in amounts equal to or exceeding specified major source thresholds, which are 100 tpy for 28 listed industrial source categories and 250 tpy for all other sources. The PSD Permit Program also applies to modifications at existing major sources that cause a “significant net emissions increase” at that source. Significance levels for each pollutant are defined in the PSD regulations at 40 CFR 52.21.

According to the emissions information provided by WM in their Part 71 application, the TLF is currently a minor source of emissions that is not subject to the PSD Permit Program, as the PTE does not exceed the major source thresholds of any criteria pollutants regulated under the PSD Permit Program.

B. **40 CFR Part 60, Subpart WWW: Standards of Performance for Municipal Solid Waste Landfills**

This rule applies to MSW landfills that commenced construction, reconstruction or modification on or after May 30, 1991.

The TLF is a MSW landfill that commenced construction, reconstruction or modification on or after May 30, 1991, with a design capacity of 45 MMm³; therefore, 40 CFR part 60, subpart WWW applies.

NMOC emissions are projected to be below 50 Mg/yr until the year 2017. Therefore, there is not currently a requirement for the landfill to capture and control LFG emissions. If at any time the NMOC emission rate calculated by the procedure in subpart WWW is equal to or greater than 50 Mg/yr the permittee will need to comply with the applicable requirements for installing, operating,

and maintaining a GCCS, as well as applying for a significant permit modification to incorporate the requirements to capture and control LFG emissions pursuant to 40 CFR 60.752(b)(2).

Pursuant to 40 CFR 60.752(c), the facility is required to obtain a Part 71 operating permit because its design capacity is greater than 2.5 MMm³v.

C. 40 CFR Part 60, Subpart IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

This rule applies, in part, to owners and operators of stationary compression ignition (CI) internal combustion engines (ICE) that commence construction after July 11, 2005 where the stationary CI ICE are:

- a. Manufactured after April 1, 2006 and are not fire pump engines, or
- b. Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

This subpart also applies to owners and operators of stationary CI ICE that modify or reconstruct their stationary ICE after July 11, 2005.

According to the information provided by WM, emission units IE1, and IE2 were constructed prior to 2007 with a displacement of less than 10 liters per cylinder. The IE1 is an Isuzu 89 hp diesel-fired stationary compression ignition engine manufactured in 2000, while IE2 is a John Deere, 165 hp diesel-fired stationary compression ignition engine that was manufactured in 2002. IE1 is a non-emergency diesel fuel pump engine, and IE2 is used as a non-emergency generator engine to power lighting. Therefore, emission units IE1 and IE2 are subject to the requirements of NSPS IIII.

D. 40 CFR Part 60, Subpart JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

This subpart establishes emission standards and compliance requirements for the control of emissions from stationary spark ignition internal combustion engines that commenced construction, modification, or reconstruction after June 12, 2006, and are manufactured on or after specified manufacture trigger dates. The manufacture trigger dates are based on the engine type, fuel used, and maximum engine hp.

According to information provided by WM in their Part 71 application, emission unit IE3 operating at the TLF is a 13 hp Honda Water Pump engine that was manufactured after the manufacture trigger date in the rule, January 1, 2008. Therefore, emission unit IE3 is subject to the requirements of NSPS JJJJ.

E. 40 CFR Part 63, Subpart AAAA: National Emission Standards for Hazardous Air Pollutants for Municipal Solid Waste Landfills

This rule establishes national emission standards for hazardous air pollutants (NESHAP) for

existing and new MSW landfills that have accepted waste since November 8, 1987 or have the additional capacity for future waste deposition.

According to WM, the TLF is a MSW landfill that is currently accepting waste and is an area source of HAP emissions that has a design capacity equal to or greater than 2.5 MMm³; therefore, this subpart applies to the facility.

F. 40 CFR Part 63, Subpart ZZZZ (MACT ZZZZ): National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)

This subpart establishes emission standards and operating limitations for the control of HAP emissions from spark ignition and compression ignition RICE.

According to the information provided by WM in their Part 71 application, a stationary Isuzu diesel engine (IE1) with 89 hp and a stationary John Deere diesel engine (IE2) with 165 hp operating at the TLF were both constructed before June 12, 2006. These two engines are operating at an area source of HAP emissions. According to information provided by WM in their Part 71 application, emission units IE1 and IE2 are subject to the requirements for non-emergency stationary compression ignition RICE.

G. 40 CFR Part 64: Compliance Assurance Monitoring

Pursuant to requirements concerning enhanced monitoring and compliance certification under the CAA, the EPA promulgated regulations to implement compliance assurance monitoring (CAM) for major stationary sources of air pollution, for purposes of Title V permitting that are required to obtain operating permits under Part 71. The rule requires owners or operators of such sources to conduct monitoring that provide a reasonable assurance of compliance with applicable requirements under the CAA. The effective date of this rule is November 21, 1997.

1. CAM Applicability

According to 40 CFR 64.2(a), CAM applies to each pollutant specific emission unit (PSEU) located at a major source which is required to obtain a Part 71 permit if the unit satisfies all of the following criteria:

- (a) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant other than an emissions limitation or standard that is exempt under 40 CFR 64.2(b)(1);
- (b) The unit uses a control device to achieve compliance with any such limit or standard; and
- (c) The unit has pre-control device emissions of the applicable regulated pollutant that are equal to or greater than 100 percent of the amount, in tpy, required for a source to be classified as a major Title V source.

2. CAM Plan Submittal Deadlines

- (a) Large PSEUs. A CAM plan submittal for all PSEUs with the PTE (taking into

account control devices) of any one regulated air pollutant in an amount equal to or greater than 100 percent of the amount, in tpy, required for a source to be classified as a major source, is due at the following times:

- (i) On or after April 20, 1998, if by that date, a Part 71 application has either:
 - (A) Not been filed; or
 - (B) Not yet been determined to be complete.
 - (ii) On or after April 20, 1998, if a Part 71 permit application for a significant modification is submitted with respect to those PSEUs for which the requested permit revision is applicable; or
 - (iii) Upon application for a renewed Part 71 permit and a CAM plan has not yet been submitted with an initial or a significant modification application, as specified above.
- (b) Other PSEUs. A CAM Plan must be submitted for all PSEUs that are not large PSEUs, but are subject to this rule, upon application for a Part 71 renewal permit.

According to information provided by WM in their Part 71 application, there are currently no PSEUs at the TLF that are subject to an emission standard or limitation. Therefore, the facility is not subject to CAM requirements.

H. 40 CFR Part 68: Chemical Accident Prevention Provisions

This rule applies to stationary sources that manufacture, process, use, store, or otherwise handle more than the threshold quantity of a regulated substance in a process. Regulated substances include 77 toxic and 63 flammable substances which are potentially present in the natural gas stream entering the facility and in the storage vessels located at the facility. The quantity of a regulated substance in a process is determined according to the procedures presented under 40 CFR 68.115. 40 CFR 68.115(b)(1) and (2)(i) indicate that toxic and flammable substances in a mixture do not need to be considered when determining whether more than a threshold quantity is present at a stationary source if the concentration of the substance is below one percent by weight of the mixture.

Based on the information provided by WM in their Part 71 application, the TLF currently has no regulated substances above the threshold quantities in this rule; therefore, is not subject to the requirement to develop and submit a risk management plan. However, WM has an ongoing responsibility to submit this plan IF a substance is listed that the total source has in quantities over the threshold amount or IF the total source ever increases the amount of any regulated substance above the threshold quantity.

I. 40 CFR Part 71: Emergency Provisions

In this draft Part 71 renewal permit, the EPA is not including the “Emergency Provisions” located in permit condition III.O. of the existing effective Part 71 permit. These provisions were modeled on the “Emergency provision” contained in the regulations in 40 CFR Part 71 applicable to federal operating permit programs. Specifically, in the regulations discussing the contents of Title V operating permits issued under the federal operating permits program, 40

CFR 71.6(g) provides that certain “emergency” events can constitute “an affirmative defense in an action brought for non-compliance” with certain emission limits contained in the permit, when certain conditions are met. However, nothing in the CAA or 40 CFR Part 71 requires that these types of emergency provisions be included as conditions in operating permits issued by the EPA, and for the reasons discussed below, we are exercising our discretion not to include them in this draft Part 71 renewal permit.

In 2014, a federal court ruled that the CAA does not authorize the EPA to create affirmative defense provisions applicable to certain enforcement actions. *See NRDC v. EPA*, 749 F.3d 1055 (D.C. Cir. 2014). The court ruled that Sections 113 and 304 of the CAA preclude the EPA from creating affirmative defense provisions in the Agency's regulations imposing HAP emission limits on sources. The court concluded that those affirmative defense provisions purported to alter the jurisdiction of federal courts generally provided in the CAA to assess liability and impose penalties for violations of emission limits in private civil enforcement cases, and that the CAA did not provide authority for the EPA to do so. Consistent with the reasoning in the *NRDC v. EPA* court decision, the EPA has determined that it is also not appropriate under the CAA to alter the jurisdiction of the federal courts through affirmative defenses provisions in its Title V regulations, such as those contained in the emergency provisions of 40 CFR 71.6(g), and that such provisions are inconsistent with the CAA. In light of the above-described D.C. Circuit Court decision and the EPA's obligation to issue Title V permits consistent with the applicable requirements of the Act, it is no longer appropriate to propose to include permit conditions modeled on affirmative defenses such as those contained in the emergency provisions of 40 CFR 71.6(g) in operating permits issued by the EPA.

Although the EPA views the Part 71 emergency provisions as discretionary (i.e., neither the statute nor the regulations mandate their inclusion in Part 71 permits), the EPA is considering whether to make changes to the Part 71 Permit Program regulations in order to ensure the EPA's regulations are consistent with the recent D.C. Circuit decisions; and if so, how best to make those changes. Until that time, as part of the normal permitting process, it is appropriate for the EPA permitting authorities to rely on the discretionary nature of the existing emergency provisions to continue to choose not to include permit terms modeled on those provisions in Part 71 permits that we are issuing in the first instance or renewing. By doing so, we are not only fulfilling the EPA's obligation to issue Title V permits consistent with the applicable requirements of the Act, but are also helping to ensure that permittees do not continue to rely on permit provisions that have been found legally invalid.

III. EPA Authority

Title V of the CAA requires that the EPA promulgate, administer, and enforce a federal operating permit program when a state does not submit an approvable program within the time frame set by Title V or does not adequately administer and enforce its EPA approved program. On July 1, 1996 (61 FR 34202), the EPA adopted regulations codified at 40 CFR part 71 setting forth the procedures and terms under which the agency would administer a federal operating permit program. These regulations were updated on February 19, 1999 (64 FR 8247) to incorporate the EPA's approach for issuing federal operating permits to stationary sources in Indian country.

As described in 40 CFR 71.4(a), the EPA will implement a Part 71 program in areas where a state, local, or tribal agency has not developed an approved Part 70 program. Unlike states, tribes are not required to develop operating permits programs, though the EPA encourages tribes to do

so. See, e.g., Indian Tribes: Air Quality Planning and Management (63 FR 7253, February 12, 1998) (also known as the “Tribal Authority Rule”). Therefore, within Indian country, the EPA will administer and enforce a Part 71 federal operating permit program for stationary sources until a tribe receives approval to administer their own operating permit program.

IV. Use of All Credible Evidence

Determinations of deviations, continuous or intermittent compliance status, or violations of the permit are not limited to the testing or monitoring methods required by the underlying regulations or this permit; other credible evidence (including any evidence admissible under the Federal Rules of Evidence) must be considered by the Permittee and the EPA in such determinations.

V. Public Participation

A. Public Notice

As described in 40 CFR 71.11(a)(5), all Part 71 draft operating permits must be publicly noticed and made available for public comment. The public notice of permit actions and public comment period is described in 40 CFR 71(d).

There will be a 30 day public comment period for actions pertaining to this draft permit. Notification will be given for this draft permit by mailing a copy of the notice to the permit applicant, the affected states, tribal and local air pollution control agencies, the city and county executives, and the state and federal land managers which have jurisdiction over the area where the source is located. A notification will also be provided to all persons who have submitted a written request to be included on the mailing list.

If you would like to be added to our mailing list to be informed of future actions on this or other CAA permits issued in Indian country, please send an email using the link for Region 8 CAA permit public comment opportunities at <http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>, indicating you would like to be added to the list for permit actions on the Skull Valley Indian Reservation, or send your name and address to the contact listed below:

Part 71 Permitting Lead
U.S. Environmental Protection Agency, Region 8
1595 Wynkoop Street (8P-AR)
Denver, Colorado 80202-1129

Public notice will be published in the Tooele Transcript Bulletin and Salt Lake Tribune giving opportunity for public comment on the draft permit and the opportunity to request a public hearing.

B. Opportunity to Comment

Members of the public will be given an opportunity to review a copy of the draft permit prepared by the EPA, the application, this Statement of Basis for the draft permit and all supporting materials for the draft permit. Copies of these documents are available at:

Tooele County Clerk Office
47 N Main St.
Tooele, UT 84074

and

Skull Valley Band of Goshute Indians
1198 North Main Street
Grantsville, UT 84029
Phone: 435-882-4532

and

U.S. Environmental Protection Agency, Region 8
Air Program Office
1595 Wynkoop Street (8P-AR)
Denver, Colorado 80202-1129
Phone: 303-312-6043

All documents are available for review at the EPA Region 8 office Monday through Friday from 8:00 a.m. to 4:00 p.m. (excluding federal holidays). Electronic copies of the draft permit, statement of basis and permitting record may also be viewed at:

<http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8>.

Any interested person may submit written comments on the draft Part 71 operating permit during the public comment period to the Part 71 Permitting Lead at the address listed in Section A above, or by email using the instructions on the public comment opportunities web site address listed above. All comments will be considered and answered by the EPA in making the final decision on the permit. The EPA keeps a record of the commenters and of the issues raised during the public participation process.

Anyone, including the applicant, who believes any condition of the draft permit is inappropriate should raise all reasonable ascertainable issues and submit all arguments supporting their position by the close of the public comment period. Any supporting materials submitted must be included in full and may not be incorporated by reference, unless the material has already been submitted as part of the administrative record in the same proceeding or consists of state or federal statutes and regulations, EPA documents of general applicability or other generally available reference material.

The final permit will be a public record that can be obtained upon request. A statement of reasons for changes made to the draft permit and responses to comments received will be sent to all persons who comment on the draft permit. The final permit and response to comments document will also be available online at: <https://www.epa.gov/caa-permitting/caa-permitting/public-comment-opportunities-region-8>.

C. Opportunity to Request a Hearing

A person may submit a written request for a public hearing to the Part 71 Permitting Lead, U.S. EPA Region 8, by stating the nature of the issues to be raised at the public hearing. Based on the number of hearing requests received, the EPA will hold a public hearing whenever it finds there

is a significant degree of public interest in a draft operating permit. The EPA will provide public notice of the public hearing. If a public hearing is held, any person may submit oral or written statements and data concerning the draft permit.

D. Appeal of Permits

Within 30 days after the issuance of a final permit decision, any person who filed comments on the draft permit or participated in the public hearing may petition to the Environmental Appeals Board (EAB) to review any condition of the permit decision. Any person who failed to file comments or participate in the public hearing may petition for administrative review, only if the changes from the draft to the final permit decision or other new grounds were not reasonably foreseeable during the public comment period. The 30-day period to appeal a permit begins with the EPA's service of the notice of the final permit decision.

The petition to appeal a permit must include a statement of the reasons supporting the review, a demonstration that any issues were raised during the public comment period, a demonstration that it was impracticable to raise the objections within the public comment period, or that the grounds for such objections arose after such a period. When appropriate, the petition may include a showing that the condition in question is based on a finding of fact or conclusion of law which is clearly erroneous; or, an exercise of discretion, or an important policy consideration that the EAB should review.

The EAB will issue an order either granting or denying the petition for review, within a reasonable time following the filing of the petition. Public notice of the grant of review will establish a briefing schedule for the appeal and state that any interested person may file an amicus brief. Notice of denial of review will be sent only to the permit applicant and to the person requesting the review. To the extent review is denied, the conditions of the final permit decision become final agency action.

A motion to reconsider a final order shall be filed within ten days after the service of the final order. Every motion must set forth the matters claimed to have been erroneously decided and the nature of the alleged errors. Motions for reconsideration shall be directed to the Administrator rather than the EAB. A motion for reconsideration shall not stay the effective date of the final order unless it is specifically ordered by the EAB.

E. Petition to Reopen a Permit for Cause

Any interested person may petition the EPA to reopen a permit for cause, and the EPA may commence a permit reopening on its own initiative.

The EPA will only revise, revoke and reissue, or terminate a permit for the reasons specified in 40 CFR 71.7(f) or 71.6(a)(6)(i). All requests must be in writing and must contain facts or reasons supporting the request. If the EPA decides the request is not justified, it will send the requester a brief written response giving a reason for the decision. Denial of these requests is not subject to public notice, comment, or hearings. Denials can be informally appealed to the EAB by a letter briefly setting forth the relevant facts.

United States Environmental Protection Agency
Region 8
Air Program
1595 Wynkoop Street
Denver, Colorado 80202



**Air Pollution Control Permit to Operate
Title V Operating Permit Program at 40 CFR Part 71**

In accordance with the provisions of Title V of the Clean Air Act (CAA) and the Title V Operating Permit Program at 40 CFR part 71 (Part 71) and applicable rules and regulations,

**Waste Management of Utah, Inc.
Tekoi Landfill**

is authorized to operate air emission units and to conduct other air pollutant emitting activities in accordance with the permit conditions listed in this permit.

This source is authorized to operate at the following location:

**Section 18, Township 5 South, Range 8 West
40.358323 N, -112.724416 West
on the Skull Valley Indian Reservation
Tooele County, Utah**

Terms not otherwise defined in this permit have the meaning assigned to them in the referenced regulations. All terms and conditions of the permit are enforceable by the EPA and citizens under the CAA.

Monica Morales, Acting Director
Air Program
U.S. EPA Region 8

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**Air Pollution Control Permit to Operate
Title V Operating Permit Program at 40 CFR Part 71**

**Waste Management of Utah, LLC
Tekoi Landfill**

Permit Number: V-SV-000001-2016.00
Replaces Permit No.: V-SV-00001-2010.00

Issue Date: May 17, 2016
Effective Date: June 16, 2016
Expiration Date: June 16, 2021

The permit number cited above should be referenced in future correspondence regarding this facility.

Table 1. Part 71 Permitting History

Date of Action	Permit Number	Type of Action	Description of Action
September 22, 2011	V-SV-00001-2010.00	Initial Permit	
May 17, 2016	V-SV-000001-2016.00	Permit Renewal	

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I. Facility Information and Emission Unit Identification

A. Facility Information

Parent Company Name: Waste Management of Utah, LLC

Plant Operator Name: Tekoi Landfill

Plant Location: Latitude 40.358323 N, Longitude -112.724416 W
Section, 18, Township 5, Range 8 West

Region: 8

State: Utah

County: Tooele

Reservation: Skull Valley Band of Goshute Indian Community

Tribe: Skull Valley Band of Goshute Indians

Responsible Official: Area Vice President

SIC Code: 4953

Description:

The Tekoi Landfill (TLF), which is owned by the Skull Valley Band of Goshute Indian Community and operated by Waste Management of Utah, Inc (WM), serves as a regional municipal solid waste (MSW) and construction and demolition (C&D) debris disposal facility.

No hazardous wastes or infectious wastes are accepted for disposal, nor is the incineration of waste permitted. TLF currently accepts approximately 750 tons of waste per day (tpd); however, it is permitted to accept a maximum of 4,000 tpd.

The landfill is comprised of a 6-phase MSW disposal area, as well as two C&D disposal areas. The MSW portion of the landfill was operated as a balefill landfill until November 2010. A balefill is a type of landfill in which MSW is mechanically baled before being placed in the MSW disposal area. The bales were approximately 45" x 45" x 60" and weighed approximately 4,000 pounds. TLF has not conducted balefill operations for several years and does not expect to resume such operation in the future. Therefore, WM has requested that any reference to such operation be removed from the Title V Permit. The site now accepts only loose (unbaled) MSW. The method of disposal has no effect on landfill emissions.

B. Facility Emission Points

Table 2 – Emission Units and Emission Generating Activities

Unit I.D.	Description	Control Equipment
E1	MSW Landfill MSW and C&D Debris Disposal	None
E2	Fugitive Dust Emissions from Paved, Unpaved Roads, and Material Handling	None

Table 3 - Insignificant Emission Units*

Emission Unit ID	Description
IE1	Isuzu; 89 horsepower (hp) diesel-fired stationary compression ignition engine. Construction Date: Pre June 12, 2006; Manufactured 2000. Use: ~140 hrs/year; Non-emergency diesel fuel pump
IE2	John Deere (6.8L); 165 hp diesel-fired stationary compression ignition engine. Construction Date: Pre June 12, 2006; Manufactured 2002. Use: ~420 hrs/year; Non-emergency generator to power lights.
IE3	Honda; 13 hp gas-powered spark ignition engine. Constructed Date: January 2016; Manufactured 2014. Use: ~420 hrs/year; Non-emergency water pump.
IE4	1 - 12,000-gallon diesel fuel tank

*Insignificant emission units can change at the facility as long as the new or replacement units meet the criteria for insignificance, and TLF supplies information as required under 40 CFR part 71 and this permit. The insignificant emission unit status does not exempt these emission units from the requirements of the NSPS and MACT standards that may apply.

II. Standards of Performance for Municipal Solid Waste Landfills

A. 40 CFR Part 60, Subpart WWW - Standards

1. This facility is subject to the requirements of 40 CFR part 60, subpart WWW. Notwithstanding conditions in this permit, the Permittee shall comply with all applicable requirements of 40 CFR part 60, subpart WWW.
2. 40 CFR 60, subpart WWW applies as follows:
 - (a) §60.750(a) - This facility is a MSW landfill that was constructed, reconstructed or modified on or after May 30, 1991; and
 - (b) §60.752(b) – This facility has a design capacity greater than 2.5 million megagrams.

[40 CFR 60.750 - 60.759]

B. Standards for Air Emissions

1. The Permittee shall calculate an non-methane organic compound (NMOC) emission rate for the landfill using the procedure and default values specified in §60.754(a)(1).
[40 CFR 60.752(b)]
2. **Tier 1:** The Permittee shall compare the calculated NMOC mass emission rate to the standard of 50 megagrams per year as required by §60.754(a)(2).
 - (a) If the calculated NMOC emission rate is less than 50 megagrams per year using Tier 1, the Permittee shall:
 - (i) Submit an emission rate report as provided in §60.757(b)(1); and
 - (ii) Recalculate the NMOC mass emission rate annually using the procedure and default values specified in §60.754(a)(1) and using Tier 1 as specified in §60.754(a)(2) until such time as the calculated emission rate is equal to or greater than 50 megagrams per year or the landfill is closed.
[40 CFR 60.752(b)(1) and 40 CFR 60.754(a)(1)(i)]
 - (b) If the calculated NMOC emission rate using the default values of §60.754(a)(1) is equal to or greater than 50 megagrams per year using Tier 1, the Permittee shall either:
 - (i) Comply with §60.752(b)(2) as follows:
 - (A) Submit a collection and control system design plan prepared by a professional engineer within 1 year;
 - (B) Install a collection and control system, as specified in §60.752(b)(2)(ii)(A) or (B) and §60.752(b)(2)(iii), within 30 months after the first annual report in which the rate equals or exceeds 50 megagram per year; and
 - (C) Comply with the specifications for active collection systems as specified in §60.759.or
 - (ii) Determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the procedures provided in paragraph §60.754(a)(3) and identified as Tier 2.
[40 CFR 60.752(b)(2) and 40 CFR 60.754(a)(1)(ii)]
3. **Tier 2:** The Permittee shall calculate a site-specific NMOC concentration as required by §60.754(a)(3) and recalculate the NMOC mass emission rate using the equations provided in §60.754(a)(1) using the average NMOC concentration from the collected samples instead of the default value in the equation in §60.754(a)(1).
 - (a) If the resulting NMOC mass emission rate is less than 50 megagrams per year using Tier 2, the Permittee shall:
 - (i) Submit a periodic estimate of the emission rate report as provided in §60.757(b)(1); and

- (ii) Retest the site-specific NMOC concentration every 5 years using Tier 2.

[40 CFR 60.754(a)(3)(i)]

- (b) If the resulting NMOC mass emission rate is equal to or greater than 50 megagrams per year using Tier 2, the Permittee shall either:

- (i) Comply with §60.752(b)(2) as follows:

- (A) Submit a collection and control system design plan prepared by a professional engineer within 1 year;
- (B) Install a collection and control system, as specified in §60.752(b)(2)(ii)(A) or (B) and §60.752(b)(2)(iii), within 30 months after the first annual report in which the rate equals or exceeds 50 megagram per year; and
- (C) Comply with the specifications for active collection systems as specified in §60.759.

or

- (ii) Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the procedures specified in paragraph §60.754(a)(4) and identified as Tier 3.

[40 CFR 60.752(b)(2) and 40 CFR 60.754(a)(3)(ii)]

- 4. **Tier 3:** The Permittee shall determine the site-specific methane generation rate constant as required by §60.754(a)(4) and recalculate the NMOC mass emission rate using the site-specific methane generation rate constant, the NMOC concentration previously determined by Tier 2, and the equations provided in §60.754(a)(1).

- (a) If the resulting NMOC mass emission rate is less than 50 megagrams per year using Tier 3, the Permittee shall:

- (i) Submit a periodic emission rate report as provided in §60.757(b)(1); and
- (ii) Recalculate the NMOC emission rate annually as provided in §60.757(b)(1) using the equations in paragraph §60.754(a)(1), the site-specific methane generation rate constant, and NMOC concentration rate obtained by Tier 2 every 5 years. The site-specific methane generation rate constant is performed only once, and the value obtained from this test shall be used in all subsequent annual NMOC emission rate calculations.

[40 CFR 60.754(a)(4)(ii)]

- (b) If the resulting NMOC mass emission rate is equal to or greater than 50 megagrams per year using Tier 3, the Permittee shall comply with §60.752(b)(2) as follows:

- (i) Submit a collection and control system design plan prepared by a professional engineer within 1 year; and
- (ii) Install a collection and control system, as specified in §60.752(b)(2)(ii)(A) or (B) and §60.752(b)(2)(iii), within 30 months after the first annual report in which the rate equals or exceeds 50 megagram per year; and

- (iii) Comply with the specifications for active collection systems as specified in §60.759.

[40 CFR 60.752(b)(2) and 40 CFR 60.754(a)(4)(i)]

C. Compliance Provisions [40 CFR 60.755]

The specified methods in §60.755(a)(1) - (a)(6) shall be used to determine whether the gas collection and control system is in compliance with §60.752(b)(2)(ii).

D. Monitoring of Operations [40 CFR 60.756]

The requirements of §60.756(a) - (f) shall be used to monitor the capture and control system requirements of §60.752(b)(2).

E. Reporting Requirements [40 CFR 60.757]

If the NMOC emission rate equals or exceeds 50 megagrams per year, the Permittee shall meet the applicable reporting requirements of §60.757(a) - (g).

F. Recordkeeping Requirements [40 CFR 60.758]

The Permittee shall meet the applicable recordkeeping requirements of §60.758(a) - (f).

III. 40 CFR Part 63, Subpart AAAA – National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste (MSW) Landfills

A. 40 CFR 63, Subpart AAAA - Standards

1. This facility is subject to the requirements of 40 CFR part 63, subpart AAAA. Notwithstanding conditions in this permit, the Permittee shall comply with all applicable requirements of 40 CFR part 63, subpart AAAA.
 - (a). 40 CFR 63, subpart AAAA applies as follows:(a) §63.1935(a) - This facility is a MSW landfill that has accepted waste since November 8, 1987 or has additional capacity for waste deposition; and
 - (b) §63.1935(a)(3) – This facility has a design capacity greater than 2.5 million megagrams and is an area source MSW landfill.

[40 CFR 63.1930 – 63.1990]

B. Non-Methane Organic Compound Emission Rate < 50 Mg/year

If the uncontrolled NMOC emission rate is less than 50 megagrams per year, as calculated according to §60.754(a) of the MSW landfills NSPS in 40 CFR part 60, subpart WWW, the Permittee shall recalculate the NMOC emission rate annually as specified in 40 CFR 60.752(b)(1) using the procedures specified in 40 CFR 60.754(a)(1) until such time as the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, or the landfill is closed.

[40 CFR 63.1935(a)(3)]

[Explanatory note: The requirements of 40 CFR part 60, subpart WWW are summarized in the section on requirements from the Standards of Performance for Municipal Solid Waste Landfills in this permit.]

C. Non-Methane Organic Compound Emission Rate \geq 50 Mg/year

If the uncontrolled NMOC emission rate is equal to or greater than 50 megagrams per year, as calculated according to §60.754(a) of the MSW landfills NSPS in 40 CFR part 60, subpart WWW, the Permittee shall comply with 40 CFR part 63, subpart AAAA by meeting the standards, monitoring, recordkeeping and reporting requirements as specified in 40 CFR part 60, subpart WWW in addition to the following standards, monitoring, recordkeeping and reporting requirements that apply to the facility.

[40 CFR 63.1935(a)(3)]

[Explanatory note: The requirements of 40 CFR part 60, subpart WWW are summarized in the section on requirements from the Standards of Performance for Municipal Solid Waste Landfills in this permit.]

1. Standards for Air Emissions

- (a) The Permittee shall comply with the requirements of 40 CFR part 60, subpart WWW.

[40 CFR 63.1955(a)]

- (b) If the Permittee is required by 40 CFR 60.752(b)(2) of 40 CFR part 60, subpart WWW to install a collection and control system, the Permittee must comply with the requirements in §§63.1960 through 63.1985, and with the general provisions as specified in Table 1 of 40 CFR part 63, subpart AAAA.

[40 CFR 63.1955(b)]

- (c) For approval of collection and control systems that include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions, the Permittee must follow the procedures in 40 CFR 60.752(b)(2). If alternatives have already been approved under 40 CFR part 60, subpart WWW, these alternatives can be used to comply with 40 CFR 63, subpart AAAA, except as specified in 63.1955(c).

[40 CFR 63.1955(c)]

2. Compliance Provisions [40 CFR 63.1960]

Compliance shall be determined by the requirements of §63.1960. This includes performance testing, monitoring of the collection system, continuous parameter monitoring, and other credible evidence. In addition, continuous parameter monitoring data, collected under subpart WWW, are used to demonstrate compliance with the operating conditions for control systems. Finally, you must develop a written startup, shutdown, and malfunction (SSM) plan according to the provisions in 40 CFR 63.6(e)(3). A copy of the SSM plan must be maintained on site.

3. Monitoring and Testing [40 CFR 63.1980(g)]

If the Permittee adds any liquids other than leachate in a controlled fashion to the waste mass and does not comply with the bioreactor requirements in §§63.1947, 63.1955(c) and 63.1980(c) through (f) of 40 CFR part 63, subpart AAAA, the Permittee must keep a record of calculations as specified in §63.1980(g).

4. Recordkeeping and Reporting Requirements

- (a) The Permittee must comply with the recordkeeping requirements as specified in §60.758(a) of 40 CFR part 60, subpart WWW, except that the annual report described in 40 CFR 60.757(f) must be submitted every 6 months.
[40 CFR 63.1980(a)]
- (b) The Permittee must keep records and reports as specified in the general provisions of 40 CFR part 60 and in Table 1 of 40 CFR part 63, subpart AAAA. Applicable records in the general provisions include items such as SSM plans and the SSM plan reports.
[40 CFR 63.1980(b)]

IV. 40 CFR Part 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants from Reciprocating Internal Combustion Engines

A. Applicability

40 CFR part 63, subpart ZZZZ applies to the following emission units:

- 1. Isuzu engine identified as IE1 in Table 3 of this permit;
- 2. John Deere engine identified as IE2 in Table 3 of this permit;
- 3. Honda engine identified as IE3 in Table 3 of this permit.

[40 CFR 63.6585 - 63.6590]

B. Requirements for Engine IE3

- 1. The Permittee must meet the requirements of 40 CFR part 63, subpart ZZZZ by meeting the requirements of 40 CFR part 60, subpart JJJJ, for stationary SI engines. No further requirements apply to engine unit IE3 under 40 CFR part 63.
[40 CFR 63.6590(c)]
- 2. Pursuant to 40 CFR part 60, subpart JJJJ, this engine is subject to 40 CFR part 60, subpart JJJJ, as it was manufactured after July 1, 2008. As such, there are additional requirements outlined in this permit that apply to this engine.

[40 CFR 60.4230(a)(1)]

C. Requirements for Engines IE1 and IE2

1. Emission and Operating Limitations

- a. Except during periods of startup, the Permittee shall:
 - i. Change oil and filter every 1,000 hours of operation or annually, whichever comes first;
 - ii. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first; and
 - iii. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.
- b. During periods of startup the Permittee shall minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply.

[40 CFR 63.6603(a) and Table 2d: 1(a)-(c)]

2. Testing and Initial Compliance Requirements

The Permittee must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop a maintenance plan which must provide, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practices for minimizing emissions.

[40 CFR 66.6625(e)(4) and Table 6: 9(a)(i)-(ii)]

3. Continuous Compliance Requirements

- a. The Permittee must be in compliance with the emission limitations, operating limitations, and other requirements which apply, at all times.
- b. The Permittee must operate and maintain the engines, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions, at all times.
- c. The Permittee must demonstrate continuous compliance with each emission limitation, operating limitation and other requirements that apply.

[40 CFR 63.6605(a)]

[40 CFR 63.6605(b)]

[40 CFR 63.6640 (a)]

4. Notifications, Reports, and Records

- a. The Permittee must submit notifications as specified in §63.6645.
- b. The Permittee must submit reports as specified in §63.6650.
- c. The Permittee must keep records as specified in §63.6655.
- d. The Permittee must keep the records in the format and for the duration as specified in §63.6660.

[40 CFR 63.6645, 63.6650, 63.6655, 63.6660]

V. **40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines**

A. Applicability

40 CFR part 60, subpart IIII applies to the following engines:

1. IE1 Isuzu engine identified as IE1 in Table 3 of this permit;
2. John Deere engine identified as IE2 in Table 3 of this permit.

[40 CFR 60.4200]

B. Emission Standards for Owners and Operators

The Permittee, as an owner or operator of pre-2007 model year non-emergency stationary compression ignition internal combustion engines (CI ICE) with a displacement of less than 10 liters per cylinder, must comply with the emission standards in the following table:

Table 4 – Emission Standards for IE1 and IE2

Emission standards for stationary pre-2007 model year engines with a displacement of <10 liters per cylinder (g/hp-hr)						
Maximum Engine Power	Engine	NMHC + NO _x	HC	NO _x	CO	PM
(75≤hp<100)	IE1			6.9		
(100≤hp<175)	IE2			6.9		

[40 CFR 60.4204 and 40 CFR Part 60 subpart IIII Table 1]

C. Compliance Requirements

1. The Permittee, as the owner or operator of the CI ICE, must
 - i. Comply with the emission standards;

- ii. Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions;
- iii. Only change those settings that are permitted by the manufacturer; and
- iv. Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply.

[40 CFR 60.4211(a)]

2. The Permittee, as the owner or operator of a pre-2007 model year stationary CI ICE must comply with the emission standards specified in §60.4204(a), and must demonstrate compliance according to one of the following methods:

- i. Purchase an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications;
- ii. Keep records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in 40 CFR part 60, subpart IIII and these methods must have been followed correctly;
- iii. Keep records of engine manufacturer and control device vendor data indicating compliance with the standards; and
- iv. Conduct an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

[40 CFR 60.4211(b)]

VI. 40 CFR Part 60, Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

A. Applicability

40 CFR part 60, subpart JJJJ applies to the following engines:

- 1. Honda engine identified as IE3 in Table 2 of this permit.

[40 CFR 60.4230]

B. Emission Standards for Owners and Operators

The Permittee, as an owner or operator of a 2014 model year non-emergency SI ICE must comply with the emission standards set in 40 CFR 60.4231(a).

[40 CFR 60.4233(a)]

C. Compliance Requirements for Owners and Operators

- a. The Permittee, as the owner or operator of the CI ICE, must
 - i. Comply with the emission standards;
 - ii. Operate and maintain the stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions;

- iii. Only change those settings that are permitted by the manufacturer; and
- iv. Meet the requirements of 40 CFR parts 90 or 1054, as they apply.

[40 CFR 60.4243]

VII. Facility-Wide Requirements [40 CFR 71.6(a)(1)]

Conditions in this section of this permit apply to all emissions units located at the source, including any units not specifically listed in Table 2 of the Facility Emission Points section of this permit.

A. Recordkeeping Requirements [40 CFR 71.6(a)(3)(ii)]

The Permittee shall comply with the following generally applicable recordkeeping requirements:

1. If the Permittee determines that his or her stationary source that emits (or has the potential to emit, without considering controls) one or more HAPs is not subject to a relevant standard or other requirement established under 40 CFR Part 63, the Permittee shall keep a record of the applicability determination on site at the source for a period of 5 years after the determination, or until the source changes its operations to become an affected source, whichever comes first. The record of the applicability determination shall include an analysis (or other information) that demonstrates why the Permittee believes the source is unaffected (e.g., because the source is an area source).

[40 CFR 63.10(b)(3)]
2. Records shall be kept of off permit changes, as required by the Off Permit Changes section of this permit.

B. Reporting Requirements [40 CFR 71.6(a)(3)(iii)]

1. The Permittee shall submit to the EPA all reports of any required monitoring under this permit semiannually. The first report shall cover the period from the effective date of this permit through December 31st, 2016. Thereafter, the report shall be submitted semi-annually, by April 1st and October 1st of each year. The report due on April 1st shall cover the 6 month period ending on the last day of December before the report is due. The report due on October 1st shall cover the 6 month period ending on the last day of June before the report is due. All instances of deviations from permit requirements shall be clearly identified in such reports. All required reports shall be certified by a responsible official consistent with the Submissions section of this permit.

[Explanatory note: To help Part 71 Permittees meet reporting responsibilities, the EPA has developed a form "SIXMON" for 6 month monitoring reports. The form may be found on EPA's website at: <https://www.epa.gov/title-v-operating-permits/epa-issued-operating-permits.>]

2. "Deviation" means any situation in which an emissions unit fails to meet a permit term or condition. A deviation is not always a violation. A deviation can be determined by observation or through review of data obtained from any testing, monitoring, or recordkeeping established in

accordance with 40 CFR 71.6(a)(3)(i) and (a)(3)(ii). For a situation lasting more than 24 hours which constitutes a deviation, each 24-hour period is considered a separate deviation. Included in the meaning of deviation are any of the following:

- (a) A situation where emissions exceed an emission limitation or standard;
- (b) A situation where process or emissions control device parameter values indicate that an emission limitation or standard has not been met; or
- (c) A situation in which observations or data collected demonstrate noncompliance with an emission limitation or standard or any work practice or operating condition required by the permit.

3. The Permittee shall promptly report to the EPA deviations from permit requirements, including those attributable to upset conditions as defined in this permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. “Prompt” is defined as follows:

- (a) Any definition of “prompt” or a specific time frame for reporting deviations provided in an underlying applicable requirement as identified in this permit.
- (b) Where the underlying applicable requirement fails to address the time frame for reporting deviations, reports of deviations will be submitted based on the following schedule:
 - (i) For emissions of a HAP or a toxic air pollutant (as identified in the applicable regulation) that continue for more than an hour in excess of permit requirements, the report must be made within 24 hours of the occurrence.
 - (ii) For emissions of any regulated air pollutant, excluding a HAP or a toxic air pollutant that continues for more than 2 hours in excess of permit requirements, the report must be made within 48 hours.
 - (iii) For all other deviations from permit requirements, the report shall be submitted with the semi-annual monitoring report.
- (c) If any of the conditions in (i) or (ii) of paragraph (b) above are met, the Permittee must notify EPA by telephone (1-800-227-6312), facsimile (303-312-6409), or by email to r8airreportenforcement@epa.gov based on the timetables listed above. *[Notification must specify that this notification is a deviation report for a Part 71 permit]*. A written notice, certified consistent with the Submissions section of this permit must be submitted within 10 working days of the occurrence. All deviations reported under this section must also be identified in the 6-month report required under Condition 1 in this section of this permit.

[Explanatory note: To help Part 71 Permittees meet reporting responsibilities, the EPA has developed a form “PDR” for prompt deviation reporting. The form may be found on the EPA’s website at: <https://www.epa.gov/title-v-operating-permits/epa-issued-operating-permits.>]

VIII. General Provisions

A. **Annual Fee Payment [40 CFR 71.9]**

1. The Permittee shall pay an annual permit fee in accordance with the procedures outlined below.
2. The Permittee shall pay the annual permit fee each year no later than April 1st. The fee shall cover the previous calendar year.
3. The fee payment shall be in United States currency and shall be paid by money order, bank draft, certified check, corporate check, or electronic funds transfer payable to the order of the U.S. Environmental Protection Agency.
4. The Permittee shall send fee payment and a completed fee filing form to:

For regular U.S. Postal Service mail

U.S. Environmental Protection Agency
FOIA and Miscellaneous Payments
Cincinnati Finance Center
P.O. Box 979078
St. Louis, MO 63197-9000

**For non-U.S. Postal Service express mail
(FedEx, Airborne, DHL, and UPS)**

U.S. Bank
Government Lockbox 979078
U.S. EPA FOIA & Misc. Payments
1005 Convention Plaza
SL-MO-C2-GL
St. Louis, MO 63101

5. The Permittee shall send an updated fee calculation worksheet form and a photocopy of each fee payment check (or other confirmation of actual fee paid) submitted annually by the same deadline as required for fee payment to the address listed in the Submissions section of this permit.

[Explanatory note: The fee filing form “FF” and the fee calculation worksheet form “FEE” may be found on the EPA website at:

<https://www.epa.gov/title-v-operating-permits/epa-issued-operating-permits.1>

6. Basis for calculating annual fee:
 - (a) The annual emissions fee shall be calculated by multiplying the total tons of actual emissions of all “regulated pollutants (for fee calculation)” emitted from the source by the presumptive emissions fee (in dollars per ton) in effect at the time of calculation.
 - (i) “Actual emissions” means the actual rate of emissions in tpy of any regulated pollutant (for fee calculation) emitted from a Part 71 source over the preceding calendar year. Actual emissions shall be calculated using each emissions unit’s actual operating hours, production rates, in-place control equipment, and types of materials processed, stored, or combusted during the preceding calendar year.
 - (ii) Actual emissions shall be computed using methods required by the permit for determining compliance, such as monitoring or source testing data.
 - (iii) If actual emissions cannot be determined using the compliance methods in the permit, the Permittee shall use other federally recognized procedures.

[Explanatory note: The presumptive fee amount is revised each calendar year to account for inflation, and it is available from the EPA prior to the start of each calendar year.]

- (b) The Permittee shall exclude the following emissions from the calculation of fees:
- (i) The amount of actual emissions of each regulated pollutant (for fee calculation) that the source emits in excess of 4,000 tpy;
 - (ii) Actual emissions of any regulated pollutant (for fee calculation) already included in the fee calculation; and
 - (iii) The quantity of actual emissions (for fee calculation) of insignificant activities [defined in 40 CFR 71.5(c)(11)(i)] or of insignificant emissions levels from emissions at the source identified in the Permittee's application pursuant to 40 CFR 71.5(c)(11)(ii).

7. Fee calculation worksheets shall be certified as to truth, accuracy, and completeness by a responsible official.

[Explanatory note: The fee calculation worksheet form already incorporates a section to help you meet this responsibility.]

8. The Permittee shall retain fee calculation worksheets and other emissions-related data used to determine fee payment for 5 years following submittal of fee payment. [Emission-related data include, for example, emissions-related forms provided by the EPA and used by the Permittee for fee calculation purposes, emissions-related spreadsheets, and emissions-related data, such as records of emissions monitoring data and related support information required to be kept in accordance with 40 CFR 71.6(a)(3)(ii).]
9. Failure of the Permittee to pay fees in a timely manner shall subject the Permittee to assessment of penalties and interest in accordance with 40 CFR 71.9(l).
10. When notified by the EPA of underpayment of fees, the Permittee shall remit full payment within 30 days of receipt of notification.
11. A Permittee who thinks an EPA-assessed fee is in error and who wishes to challenge such fee, shall provide a written explanation of the alleged error to the EPA along with full payment of the EPA assessed fee.

B. Annual Emissions Inventory [40 CFR 71.9(h)(1)and (2)]

1. The Permittee shall submit an annual emissions report of its actual emissions for both criteria pollutants and regulated HAPs for this source for the preceding calendar year for fee assessment purposes. The annual emissions report shall be certified by a responsible official and shall be submitted each year to the EPA by April 1st.
2. The annual emissions report shall be submitted to the EPA at the address listed in the Submissions section of this permit.

[Explanatory note: An annual emissions report, required at the same time as the fee calculation worksheet by 40 CFR 71.9(h), has been incorporated into the fee calculation worksheet form as a convenience.]

C. Compliance Requirements [40 CFR 71.6(a)(6), Section 113(a) and 113(e)(1) of the CAA, and 40 CFR 51.212, 52.12, 52.33, 60.11(g), 61.12]

1. Compliance with the Permit

- (a) The Permittee must comply with all conditions of this Part 71 permit. Any permit noncompliance constitutes a violation of the CAA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
- (b) It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- (c) For the purpose of submitting compliance certifications in accordance with §71.6(c)(5), or establishing whether or not a person has violated or is in violation of any requirement of this permit, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

2. Compliance Schedule [40 CFR 71.5(c)(8)(iii)]

- (a) For applicable requirements with which the source is in compliance, the source will continue to comply with such requirements.
- (b) For applicable requirements that will become effective during the permit term, the source shall meet such requirements on a timely basis.

3. Compliance Certifications [40 CFR 71.6(c)(5)]

- (a) The Permittee shall submit to the EPA a certification of compliance with permit terms and conditions, including emission limitations, standards, or work practices annually by April 1st, and shall cover the same 12-month period as the two consecutive semi-annual monitoring reports.

[Explanatory note: To help Part 71 Permittees meet reporting responsibilities, the EPA has developed a reporting form for annual compliance certifications. The form may be found on the EPA website at: <https://www.epa.gov/title-v-operating-permits/epa-issued-operating-permits.>]

- (b) The compliance certification shall be certified as to truth, accuracy, and completeness by a responsible official consistent with 40 CFR 71.5(d).
- (c) The certification shall include the following:

- (i) Identification of each permit term or condition that is the basis of the certification;
- (ii) The identification of the method(s) or other means used for determining the compliance status of each term and condition during the certification period, and whether such methods or other means provide continuous or intermittent data. Such methods and other means shall include, at a minimum, the methods and means required in this permit. If necessary, the Permittee also shall identify any other material information that must be included in the certification to comply with Section 113(c)(2) of the CAA, which prohibits knowingly making a false certification or omitting material information;
- (iii) The status of compliance with each term and condition of the permit for the period covered by the certification based on the method or means designated in (ii) above. The certification shall identify each deviation and take it into account in the compliance certification;
- (iv) Such other facts as the EPA may require to determine the compliance status of the source; and
- (v) Whether compliance with each permit term was continuous or intermittent.

D. Duty to Provide and Supplement Information

[40 CFR 71.6(a)(6)(v), 71.5(a)(3), and 71.5(b)]

- 1. The Permittee shall furnish to the EPA, within a reasonable time, any information that EPA may request in writing to determine whether cause exists for modifying, revoking, and reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, the Permittee shall also furnish to the EPA copies of records that are required to be kept pursuant to the terms of the permit, including information claimed to be confidential. Information claimed to be confidential must be accompanied by a claim of confidentiality according to the provisions of 40 CFR Part 2, Subpart B.
- 2. The Permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information. In addition, a Permittee shall provide additional information as necessary to address any requirements that become applicable after the date a complete application is filed, but prior to release of a draft permit.

E. Submissions [40 CFR 71.5(d), 71.6(c)(1) and 71.9(h)(2)]

- 1. Any document (application form, report, compliance certification, etc.) required to be submitted under this permit shall be certified by a responsible official as to truth, accuracy, and completeness. Such certifications shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

[Explanatory note: the EPA has developed a reporting form "CTAC" for certifying truth, accuracy and completeness of Part 71 submissions. The form may be found on EPA website at:

<https://www.epa.gov/title-v-operating-permits/epa-issued-operating-permits.>]

All fee calculation worksheets and applications for renewals and permit modifications shall be submitted to:

Part 71 Permit Contact, Air Program, 8P-AR
U.S. Environmental Protection Agency,
1595 Wynkoop Street
Denver, Colorado 80202

2. Except where otherwise specified, all reports, test data, monitoring data, notifications, and compliance certifications shall be submitted to:

Director, Air Toxics and Technical Enforcement Program, 8ENF-AT
U.S. Environmental Protection Agency,
1595 Wynkoop Street
Denver, Colorado 80202

F. Severability Clause [40 CFR 71.6(a)(5)]

The provisions of this permit are severable, and in the event of any challenge to any portion of this permit, or if any portion is held invalid, the remaining permit conditions shall remain valid and in force.

G. Permit Actions [40 CFR 71.6(a)(6)(iii)]

This permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

H. Administrative Permit Amendments [40 CFR 71.7(d)]

The Permittee may request the use of administrative permit amendment procedures for a permit revision that:

1. Corrects typographical errors;
2. Identifies a change in the name, address, or phone number of any person identified in the permit, or provides a similar minor administrative change at the source;
3. Requires more frequent monitoring or reporting by the Permittee;
4. Allows for a change in ownership or operational control of a source where the EPA determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new Permittee has been submitted to the EPA;
5. Incorporates into the Part 71 permit the requirements from preconstruction review permits authorized under an EPA-approved program, provided that such a program meets procedural requirements substantially equivalent to the requirements of 40 CFR 71.7 and 71.8 that would be applicable to the change if it were subject to review as a permit modification, and compliance requirements substantially equivalent to those contained in 40 CFR 71.6; or

6. Incorporates any other type of change which EPA has determined to be similar to those listed in (1) through (5) above.

[Note to Permittee: If 1 through 5 above do not apply, please contact the EPA for a determination of similarity prior to submitting your request for an administrative permit amendment under this provision.]

I. Minor Permit Modifications [40 CFR 71.7(e)(1)]

1. The Permittee may request the use of minor permit modification procedures only for those modifications that:
 - (a) Do not violate any applicable requirement;
 - (b) Do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
 - (c) Do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis;
 - (d) Do not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:
 - (i) A federally enforceable emissions cap assumed to avoid classification as a modification under any provision of Title I; and
 - (ii) An alternative emissions limit approved pursuant to regulations promulgated under Section 112(i)(5) of the CAA;
 - (e) Are not modifications under any provision of Title I of the CAA; and
 - (f) Are not required to be processed as a significant modification.
2. Notwithstanding the list of changes ineligible for minor permit modification procedures in 1 above, minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in an applicable implementation plan or in applicable requirements promulgated by EPA.
3. An application requesting the use of minor permit modification procedures shall meet the requirements of 40 CFR 71.5(c) and shall include the following:
 - (a) A description of the change, the emissions resulting from the change, and any new applicable requirements that will apply if the change occurs;
 - (b) The source's suggested draft permit;

- (c) Certification by a responsible official, consistent with 40 CFR 71.5(d), that the proposed modification meets the criteria for use of minor permit modification procedures and a request that such procedures be used; and
 - (d) Completed forms for the permitting authority to use to notify affected States as required under 40 CFR 71.8.
4. The source may make the change proposed in its minor permit modification application immediately after it files such application. After the source makes the change allowed by the preceding sentence, and until the permitting authority takes any of the actions authorized by 40 CFR 71.7(e)(1)(iv)(A) through (C), the source must comply with both the applicable requirements governing the change and the proposed permit terms and conditions. During this time period, the source need not comply with the existing permit terms and conditions it seeks to modify. However, if the source fails to comply with its proposed permit terms and conditions during this time period, the existing permit terms and conditions it seeks to modify may be enforced against it.
5. The permit shield under 40 CFR 71.6(f) may not extend to minor permit modifications.

J. Significant Permit Modifications [40 CFR 71.7(e)(3), 71.8(d), and 71.5(a)(2)]

1. The Permittee must request the use of significant permit modification procedures for those modifications that:
- (a) Do not qualify as minor permit modifications or as administrative amendments;
 - (b) Are significant changes in existing monitoring permit terms or conditions; or
 - (c) Are relaxations of reporting or recordkeeping permit terms or conditions.
2. Nothing herein shall be construed to preclude the Permittee from making changes consistent with Part 71 that would render existing permit compliance terms and conditions irrelevant.
3. Permittees must meet all requirements of Part 71 for applications, public participation, and review by affected states and tribes for significant permit modifications. For the application to be determined complete, the Permittee must supply all information that is required by 40 CFR 71.5(c) for permit issuance and renewal, but only that information that is related to the proposed change.

K. Reopening for Cause [40 CFR 71.7(f)]

The permit may be reopened and revised prior to expiration under any of the following circumstances:

1. Additional applicable requirements under the CAA become applicable to a major Part 71 source with a remaining permit term of three or more years. Such a reopening shall be completed no later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions have been extended pursuant to 40 CFR 71.7(c)(3);

2. Additional requirements (including excess emissions requirements) become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit;
3. EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit; or
4. EPA determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

L. Property Rights [40 CFR 71.6(a)(6)(iv)]

This permit does not convey any property rights of any sort, or any exclusive privilege.

M. Inspection and Entry [40 CFR 71.6(c)(2)]

Upon presentation of credentials and other documents as may be required by law, the Permittee shall allow the EPA or an authorized representative to perform the following:

1. Enter upon the Permittee's premises where a Part 71 source is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
4. As authorized by the CAA, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

N. Emergency Provisions [40 CFR 71.6(g)]

1. In addition to any emergency or upset provision contained in any applicable requirement, the Permittee may seek to establish that noncompliance with a technology-based emission limitation under this permit was due to an emergency. To do so, the Permittee shall demonstrate the affirmative defense of emergency through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (a) An emergency occurred and that the Permittee can identify the cause(s) of the emergency;
 - (b) The permitted source was at the time being properly operated;
 - (c) During the period of the emergency the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards, or other requirements in this permit; and

- (d) The Permittee submitted notice of the emergency to the EPA within two working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. This notice fulfills the requirements for prompt notification of deviations.
2. In any enforcement proceedings the Permittee attempting to establish the occurrence of an emergency has the burden of proof.
3. An “emergency” means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error.

O. Transfer of Ownership or Operation [40 CFR 71.7(d)(1)(iv)]

A change in ownership or operational control of this source may be treated as an administrative permit amendment if the EPA determines no other change in this permit is necessary and provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new Permittee has been submitted to the EPA.

P. Off Permit Changes [40 CFR 71.6(a)(12) and 40 CFR 71.6(a)(3)(ii)]

The Permittee is allowed to make certain changes without a permit revision, provided that the following requirements are met, and that all records required by this section are kept for a period of 5 years:

1. Each change is not addressed or prohibited by this permit;
2. Each change shall meet with all applicable requirements and shall not violate any existing permit term or condition;
3. Changes under this provision may not include changes subject to any requirement of 40 CFR parts 72 through 78 or modifications under any provision of Title I of the CAA;
4. The Permittee must provide contemporaneous written notice to the EPA of each change, except for changes that qualify as insignificant activities under 40 CFR 71.5(c)(11). The written notice must describe each change, the date of the change, any change in emissions, pollutants emitted, and any applicable requirements that would apply as a result of the change;
5. The permit shield does not apply to changes made under this provision;
6. The Permittee must keep a record describing all changes that result in emissions of any regulated air pollutant subject to any applicable requirement not otherwise regulated under this permit, and the emissions resulting from those changes;

7. The notice shall be kept on site and made available to the EPA on request, in accordance with the general recordkeeping provision of this permit; and
8. Submittal of the written notice required above shall not constitute a waiver, exemption, or shield from applicability of any applicable standard or PSD permitting requirements under 40 CFR 52.21 that would be triggered by the change.

Q. Permit Expiration and Renewal [40 CFR 71.5(a)(1)(iii), 71.5(a)(2), 71.5(c)(5), 71.6(a)(11), 71.7(b), 71.7(c)(1), and 71.7(c)(3)]

1. This permit shall expire upon the earlier occurrence of the following events:
 - (a) Five (5) years elapse from the date of issuance; or
 - (b) The source is issued a Part 70 or Part 71 permit under an EPA-approved or delegated permit program.
2. Expiration of this permit terminates the Permittee's right to operate unless a timely and complete permit renewal application has been submitted at least 6 months but not more than 18 months prior to the date of expiration of this permit.
3. If the Permittee submits a timely and complete permit application for renewal, consistent with 40 CFR 71.5(a)(2), but the EPA has failed to issue or deny the renewal permit, then all the terms and conditions of the permit, including any permit shield granted pursuant to 40 CFR 71.6(f) shall remain in effect until the renewal permit has been issued or denied.
4. The Permittee's failure to have a Part 71 permit is not a violation of this part until the EPA takes final action on the permit renewal application. This protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit any additional information identified as being needed to process the application by the deadline specified in writing by the EPA.
5. Renewal of this permit is subject to the same procedural requirements that apply to initial permit issuance, including those for public participation, affected State, and tribal review.
6. The application for renewal shall include the current permit number, description of permit revisions and off permit changes that occurred during the permit term, any applicable requirements that were promulgated and not incorporated into the permit during the permit term, and other information required by the application form.

Schwartz, Colin

From: Schwartz, Colin
Sent: Thursday, April 21, 2016 3:11 PM
To: 'Candace Bear'
Subject: RE: Tekoi Landfill

Ms. Bear,

Thank you for taking the time to respond back to me. I truly appreciate your assistance with this.

Regards,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

From: Candace Bear [mailto:Candaceb@svgoshutes.com]
Sent: Wednesday, April 20, 2016 7:24 PM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>
Subject: RE: Tekoi Landfill

Mr. Schwartz,

We currently do not have an environmental director on staff. The mailing address remains the same for the tribal office.

Thank you,
Candace

*Candace Bear
Tribal Chairperson
Skull Valley Band of Goshutes
Skull Valley Office
1198 North Main Street
Tooele, UT 84074*

*Office: (435) 882-4532
Cell: (435) 830-4526*

From: Schwartz, Colin [mailto:Schwartz.Colin@epa.gov]
Sent: Thursday, April 14, 2016 12:33 PM
To: Candace Bear
Subject: Tekoi Landfill

Ms. Candace Bear,

The Environmental Protection Agency has been evaluating an application renewal on the Skull Valley Band Goshute Indian Reservation in Tooele County, Utah. The Tekoi Landfill Application from Waste Management of Utah arrived at our offices approximately 3 weeks ago.

I am making sure that you have received a copy and, if not, I would be happy to send you a pdf copy. I am also available whenever you would like to discuss questions or concerns you may have with the application or permit. I will be writing the permit so please consider me your point of contact, and feel free to call or email me at any time. Before the 30 day public comment period, I will send you the public notice and the date that the notice will be published.

If you could confirm your mailing address and environmental director that we have is correct, I would greatly appreciate that.

Nicole Howell
Skull Valley Band of Goshute Indians
P.O. Box 448
Grantsville, UT
84029

Thank you and have a great week.

Regards,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-7040

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Schwartz, Colin

From: Schwartz, Colin
Sent: Thursday, April 14, 2016 1:27 PM
To: 'O'Connor, Michael'
Subject: RE: Tekoi Landfill

Thank you, Michael. These forms look good so far and I believe this is all we need currently.

However, the Subaru Robin Engine is said to be replaced in your application, and the new, gas powered, Honda Engine takes its place - in the newest forms you sent over, it is suggested that the Honda motor (now listed at 11 hp in the double asterisk **) is off site and the Subaru engine is the new water pump?

Should your IE Form_rev 4-10-16 read for IE3: "Honda 13 hp stationary gasoline engine (water pump)?"

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-7040

From: O'Connor, Michael [mailto:MOConnor@scsenineers.com]
Sent: Thursday, April 14, 2016 1:12 PM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>
Cc: Nyiro, Doc <dneyiro@wm.com>
Subject: RE: Tekoi Landfill

Colin -

Here is the updated information you requested:

Insignificant Emissions Source Form

Potential to Emit Form (includes only non-fugitive emissions, which in the case of the VOC and HAP emissions reported are actually fugitive emissions, but considered as reasonably controlled emissions, and thus regulated emissions.

Greenhouse Gas PTE Form (Word file) - I have reported here just the regulated GHG emissions. Similarly to the VOC emissions, this is the 75% of the total gas generated, and considered to be reasonably controlled. GHG emissions from the remaining 25% are considered true fugitive emissions and as such, not regulated.

GHG Emission calculations and summary tables - this pdf file has the GHG calculations as well as summary tables that include all categories of GHG emissions; for your information.

Please let me know if you have any questions or require any additional information.

Regards,
Michael

Michael O'Connor
SCS Engineers

Office: 707.546.9461
Mobile: 707.536.6857
moconnor@scsenngineers.com

From: Schwartz, Colin [mailto:Schwartz.Colin@epa.gov]
Sent: Wednesday, April 06, 2016 12:12 PM
To: O'Connor, Michael
Subject: RE: Tekoi Landfill

Thank you, Michael, this clears it up a bit for me. I'll wait for your final documents to add them to our files.
Please do not hesitate to contact me if you have any further questions.

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-7040

From: O'Connor, Michael [mailto:MOConnor@scsenngineers.com]
Sent: Wednesday, April 06, 2016 12:18 PM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>
Cc: Nyiro, Doc <dnyiro@wvm.com>
Subject: RE: Tekoi Landfill

Mr. Schwartz –

I prepared the following chart to try to sort out the insignificant emission source situation at Tekoi. Please review summary below regarding insignificant emissions, showing what was provided as part of the initial Title V permitting, what was issued in the initial TV permit, and what was provided in this renewal permit:

(2016)		Should be		Notes	
Initial TV application		Initial TV Permit		TV Renewal App	
IE1	55.2-hp Isuzu diesel engine <i>(and subsequent additional information submitted)</i>	same	OK	89-hp (correction; same emissions provided in initial app and in renewal app	
IE2	150-hp John Deere diesel engine	same	OK	165-hp (correction; same emissions provided in initial app and in renewal app	
IE3	11-hp Subaru-Robin diesel engine	same		11-hp Subaru-Robin gasoline engine	emissions for both engines provided in renewal app

IE4 12,000-gal diesel fuel tank

same
emissions provided in initial app and in renewal app

OK

Soil Stockpiles

not listed

Included in
emissions provided in initial app

Leachate system

not listed

Included in
emissions provided in initial app

app
and in renewal app

IE5 500-gal engine oil UST

not listed

listed on footnote in initial

included
app and inadvertently in renewal app
(no such tank on-site)

(site says no such engine oil tank; maybe had been previously

confused with mobile diesel fueling tank)

225-gal mobile diesel tank

not listed

listed on footnote in initial

included
app and inadvertently in renewal app
Mobile source; not subject to permitting)

(site says they have a 500-gal truck-mounted diesel fuel tank; so a mobile source)

The Insignificant Emissions form included in the application appears to be generally correct with the following correction and assorted comments:

--IE3 -- this is a recent replacement engine. The hp and fuel description needs to be corrected. Should it still be considered IE3, with a different description or will it have new ID?

--Soil stockpiles and leachate system -- these were presented in the original TV application as insignificant sources, but were not included in the initial TV permit; so not sure what to do with them. I left them off the IE form for this application;

--Engine oil tank -- there appears to be no engine oil tank on-site

--The mobile diesel fuel tank is actually 500 gal, but because it is portable, I assumed not subject to permitting

Let me know if any questions or comments about this, then I can make any needed revisions and send you the revised form.

Michael

Michael O'Connor
SCS Engineers

Office: 707.546.9461

Mobile: 707.536.6857
mcoconnor@scsengineers.com

From: Schwartz, Colin [mailto:Schwartz.Colin@epa.gov]
Sent: Thursday, March 31, 2016 10:13 AM
To: O'Connor, Michael
Subject: Tekoi Landfill

Michael,

The insignificant units seemed to have changed from the initial permit in Tekoi Landfill. The renewal application it mentions some of these changes. Could you please clarify the new Insignificant Emission Unit with a description and manufacture information, or preferably enter in the form which I have provided a link for below:
<https://www.epa.gov/sites/production/files/2015-11/documents/ie.pdf>

Could you please do the same for tanks as you do for engines? Table C-2 notes three tanks on site, a 12,000 gallon (IE4?), 500 (IE5 not listed in the renewal, listed in initial permit however), and a 225 gallon mobile diesel tank.

Thank you,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-7040

Schwartz, Colin

From: Schwartz, Colin
Sent: Wednesday, April 06, 2016 10:24 AM
To: 'O'Connor, Michael'
Subject: RE: Tekoi Landfill

Michael,

The clarified form would most certainly be appreciated. We also are hoping for the GHG form to put in with the submission.

The last item I am working on is the PTE table for your statement of basis, I have added the link the old 2010 Statement of Basis where this is found on page 5 (Table 3).

<https://www.epa.gov/sites/production/files/documents/WM-TekoiLandfillFinalInitialSOBV-SV-00001-2010.00.pdf>

Missing from your recent application table is the 500 gallon tank, IE5, but the tank is mentioned on PDF page 84 of your application in Table C-2. A 225 gallon tank is also mentioned here too. Before I can finish the table discussed above I will need this information.

Finally, I would just like to thank you for getting back to me so quickly. You have been extremely helpful throughout this process.

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-7040

From: O'Connor, Michael [mailto:MOConnor@scsengineers.com]
Sent: Tuesday, April 05, 2016 5:33 PM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>
Cc: Nyiro, Doc <dnnyiro@wm.com>
Subject: RE: Tekoi Landfill

Mr. Schwartz –

Again, I see my oversight has caused confusion. On form EMISS, we included both VOC and NMOC non-fugitive emissions, but on the EPA's PTE form, NMOC is not included. It appears to have inadvertently ended up on the form in the PM10 column. So that should be removed. And you are correct in your email; E1 should have no PM associated with it. Note also that PM was not reported on the PTE form, as all the PM for E2 is fugitive emissions, which are not considered for applicability determinations.

If no additional questions on this form, I will provide a new form with that correction.

Michael

Michael O'Connor
SCS Engineers
Office: 707.546.9461
Mobile: 707.536.6857
mconnor@scsenngineers.com

From: Schwartz, Colin [<mailto:Schwartz.Colin@epa.gov>]
Sent: Tuesday, April 05, 2016 2:48 PM
To: O'Connor, Michael
Subject: RE: Tekoi Landfill

Thank you,

I am reviewing the older application and it looks like E2, which is roads and activities, has PM10 associated with it and E1 has no PM. Is this not the case anymore?

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-7040

From: O'Connor, Michael [<mailto:MConnor@scsenngineers.com>]
Sent: Tuesday, April 05, 2016 2:43 PM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>
Subject: RE: Tekoi Landfill

Mr. Schwartz –

The emission unit values are correct as reported on the PTE (as well as on the EMIS form); however, I did not carry those to the Totals row at the bottom of the PTE form. Here is the revised form.

Please let me know if you have any questions.

I will try to get you that GHG PTE form completed as soon as possible and get that to you.

Regards,
Michael

Michael O'Connor
SCS Engineers
Office: 707.546.9461
Mobile: 707.536.6857
mconnor@scsenngineers.com

From: Schwartz, Colin [mailto:Schwartz.Colin@epa.gov]
Sent: Wednesday, March 30, 2016 10:21 AM
To: O'Connor, Michael
Subject: RE: Tekoi Landfill

Michael,

I have been looking through the permit and have a question on attached files from you application. Your facility totals on the PTE page do not match, could you please clarify these values?

Also, Noreen has told me you are working on the Annual Emissions Report, would it be possible for you to complete the GHG PTE file that I attached in a word document? I will stress that this document is NOT due on April 1.

Thanks for your help,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-7040

From: O'Connor, Michael [mailto:MOConnor@scsenengineers.com]
Sent: Wednesday, March 30, 2016 10:23 AM
To: Schwartz, Colin <Schwartz.Colin@epa.gov>
Subject: RE: Tekoi Landfill

Great.

Contact me anytime if you have any questions or need any additional information.

Michael

Michael O'Connor
SCS Engineers
Office: 707.546.9461
Mobile: 707.536.6857
mocconnor@scsenengineers.com

From: Schwartz, Colin [mailto:Schwartz.Colin@epa.gov]
Sent: Wednesday, March 30, 2016 8:19 AM
To: O'Connor, Michael
Subject: Tekoi Landfill

Hello Michael,

I would just like to introduce myself as the individual who will be working on the Tekoi Landfill Title V Permit Renewal. I am working through the administrative checklist currently and will let you know if I have any questions as I go through it.

Please do not hesitate to contact me and I look forward to working with you on this.

Regards,

Colin C. Schwartz
Environmental Scientist
Air Program Division
US EPA Region 8- Denver, CO
303-312-7040

R8 Active Municipal Solid Waste (MSW) Landfills (within tribal boundaries)

Landfill Name	Location	Operator	MSW Cell Size (current cells and closed cells)	MSW received/year	Current Cell Est. Closure Date
Tekoi Municipal Solid Waste Landfill Facility	Skull Valley Reservation, UT	Waste Management	90 acres	265,000 tons/year	~2024
Buffalo Gap Landfill	Pine Ridge Reservation, SD	Oglala Sioux Tribe	10 acres	15,000 tons/year	2017-18 (20 year cell expansion planned)
Rosebud Landfill	Rosebud Indian Reservation, SD	Rosebud Sioux Tribe	16 acres	10,500 tons/year	2021-22
Cheyenne River Sanitary Landfill	Cheyenne River Reservation, SD	Cheyenne River Sioux Tribe	15 acres	7,500 tons/year	~2030
Roberts County Landfill	Lake Traverse Reservation, SD	Roberts County, SD	30 acres	12,000 tons/year	2017 (15-20 year cell expansion planned)
City of Wolf Point Landfill	Ft. Peck Indian Reservation, MT	City of Wolf Point, MT	34 acres	9,500 tons/year	2030

Potential-to-Emit Regulated Greenhouse Gas (tons)

EU#	CO ₂ *	CH ₄ * (as CO ₂ e) N ₂ O* (as CO ₂ e)	C CO ₂ e*	
1	0.0	106,177	0.0	0.0
2	0.0	0.0	0.0	0.0
TOTAL				106,177

CO₂ = carbon dioxide; CH₄ = methane; N₂O = nitrous oxide;
CO₂e = equivalent CO₂

Note: Greenhouse gas (GHG) emissions cannot trigger major source requirements and the source cannot be considered a major source for GHG unless it is major for another pollutant. At this time Tekoi Landfill is not major for any other regulated pollutants.

**GHG EMISSIONS CALCULATIONS
TEKOL LANDFILL, TOOELE COUNTY, UTAH**

Year	LFG Collection ³	Methane Generation	Generated Methane Emitted Through Surface	Methane From Control Device	Nitrous Oxide from Methane Combustion	Generated Carbon Dioxide Emitted Through Surface	Carbon Dioxide from Methane Oxidation in Surface	Carbon Dioxide from Methane Combustion
2019 ³	(scf/year)	(ton/year)	(ton/year) ^{1,2}	(ton/year)	(ton/year)	(ton/year)	(ton/year) ^{1,2}	(ton/year)
2019	539,265,600	5,615	5,053	NA	NA	15,440	1,544	NA
2019	179,755,200	1,872	1,684	NA	NA	5,147	515	NA

Notes:

¹ 75% collection efficiency assumed.

² 10% oxidation of methane in landfill surface based on EPA GHG Reporting Rule

³ For 2019, the last year prior to operation of a gas collection and control system, 75% of generated LFG is considered to be reasonably collectible; and therefore controlled emission.

75.0% Collection Efficiency
 506 BTU/scf LFG
 104.06 kg CO₂/MMBTU methane
 907 kg/ton
 0.0032 kg methane/MMBTU
 0.00063 kg N₂O/MMBTU
 35.31 scf/m³
 23.69 L/mol
 44.01 g/mol
 525600 min/yr
 0.9074 MG/ton

2019	6,793	2019 MG/yr methane production
2019	1,026	scfm (2019 LFG collection rate; based on LandGEM)
2019	1,368	scfm (2019 LFG generation rate from LandGEM)

SUMMARY OF GHG EMISSIONS TEKOI LANDFILL, TOOELE COUNTY, UTAH

2019

Source	(tons/yr)	(tons CO ₂ e/yr)	Biogenic?	Fugitive?
Fugitive Methane Emissions	1,684	35,372	No	Yes
Fugitive Carbon Dioxide Emissions	5,661	118,891	Yes	Yes
Fugitive Emissions Total		154,263		
Controlled Methane Emissions	5,053	106,117	No	No
Controlled Carbon Dioxide Emissions	16,984	16,984	Yes	No
Controlled Emissions Total		123,102		
Stack Carbon Dioxide	NA	NA	Yes	No
Methane from Combustion	NA	NA	No	No
Nitrous Oxide from Combustion	NA	NA	No	No
Combustion Emissions Total		0		
Total GHG Emissions		277,365		

GHG EMISSION FACTORS TEKOI LANDFILL, TOOELE COUNTY, UTAH

Emission Factors ¹ (kg/MMBtu)	Fuel	Carbon Dioxide	Methane	Nitrous Oxide
	LFG	104.06	3.20E-03	6.30E-04

Notes:

¹ Emission factors obtained from 40 CFR Part 98 Tables C-1 and C-2, except carbon dioxide emission factor for LFG, which was obtained from Title 17 Code of California Regulations (CCR) Subchapter 10, Appendix A to include emissions passing through the control device uncombusted.

GHG TYPES

Anthropogenic	Landfill surface	CH ₄	Biogenic	Landfill surface	CO ₂	Fugitive	Landfill surface	CO ₂	Unregulated	Landfill surface	CH ₄	Regulated	Controlled LF surface	CH ₄
	Flare	CH ₄		Flare	CO ₂		Flare	CO ₂		Flare	CO ₂		Flare	CH ₄

2019

GHG EMISSIONS BY SOURCE

Source	(tons CO ₂ e/yr)	Fugitive LF surface	154,263	Controlled LF surface	123,102	Flare	NA	Total	277,365
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BIOGENIC GHG EMISSIONS

Source	(tons CO ₂ e/yr)	LF Surface	135,875	Flare	NA	Total	135,875
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ANTHROPOGENIC GHG EMISSIONS

Source	(tons CO ₂ e/yr)	LF Surface	141,490	Flare	NA	Total	141,490
--------	-----------------------------	------------	---------	-------	----	-------	---------

REGULATED GHG EMISSIONS

Source	(tons CO ₂ e/yr)	Flare	NA	Controlled LFG	106,117	Total	106,117
--------	-----------------------------	-------	----	----------------	---------	-------	---------

1. The first part of the paper is devoted to a general discussion of the problem of the existence of a solution of the system of equations

$$\frac{dx}{dt} = A(x)u, \quad \frac{dy}{dt} = B(y)v, \quad (1)$$

where $A(x)$ and $B(y)$ are matrices depending on x and y respectively, and u and v are vectors depending on x and y respectively.

It is assumed that the matrices $A(x)$ and $B(y)$ are continuous and the vectors u and v are continuous and bounded.

The second part of the paper is devoted to a study of the stability of the solutions of the system (1).

It is shown that if the matrices $A(x)$ and $B(y)$ are symmetric and the vectors u and v are continuous and bounded, then the solutions of the system (1) are stable.

The third part of the paper is devoted to a study of the asymptotic behavior of the solutions of the system (1).

It is shown that if the matrices $A(x)$ and $B(y)$ are symmetric and the vectors u and v are continuous and bounded, then the solutions of the system (1) tend to zero as $t \rightarrow \infty$.

The fourth part of the paper is devoted to a study of the periodic solutions of the system (1).

It is shown that if the matrices $A(x)$ and $B(y)$ are symmetric and the vectors u and v are continuous and bounded, then the system (1) has periodic solutions.

The fifth part of the paper is devoted to a study of the bifurcation of the solutions of the system (1).

It is shown that if the matrices $A(x)$ and $B(y)$ are symmetric and the vectors u and v are continuous and bounded, then the system (1) has bifurcation points.

The sixth part of the paper is devoted to a study of the global properties of the solutions of the system (1).

It is shown that if the matrices $A(x)$ and $B(y)$ are symmetric and the vectors u and v are continuous and bounded, then the solutions of the system (1) are global.

The seventh part of the paper is devoted to a study of the qualitative properties of the solutions of the system (1).

It is shown that if the matrices $A(x)$ and $B(y)$ are symmetric and the vectors u and v are continuous and bounded, then the solutions of the system (1) have certain qualitative properties.

The eighth part of the paper is devoted to a study of the numerical properties of the solutions of the system (1).

It is shown that if the matrices $A(x)$ and $B(y)$ are symmetric and the vectors u and v are continuous and bounded, then the solutions of the system (1) have certain numerical properties.

Schwartz, Colin

From: O'Connor, Michael <MOConnor@scsengineers.com>
Sent: Wednesday, April 06, 2016 12:18 PM
To: Schwartz, Colin
Cc: Nyiro, Doc
Subject: RE: Tekoi Landfill

Mr. Schwartz –

I prepared the following chart to try to sort out the insignificant emission source situation at Tekoi. Please review summary below regarding insignificant emissions, showing what was provided as part of the initial Title V permitting, what was issued in the initial TV permit, and what was provided in this renewal permit:

Initial TV application	Initial TV Permit	TV Renewal App
------------------------	-------------------	----------------

(2016)	Should be	Notes
IE1 55.2-hp Isuzu diesel engine (and subsequent additional information submitted)	same	89-hp (correction; same emissions provided in initial app and in renewal app)
IE2 150-hp John Deere diesel engine (engine)	OK	165-hp (correction; same emissions provided in initial app and in renewal app)
IE3 11-hp Subaru-Robin diesel engine 13-hp Honda gasoline engine	same	11-hp Subaru-Robin gasoline engine emissions for both engines provided in renewal app
IE4 12,000-gal diesel fuel tank	same	emissions provided in initial app and in renewal app
IE5 500-gal engine oil UST	not listed	not

Leachate system
app and in renewal app
included in initial app

Soil Stockpiles
app and in renewal app
included in initial app

Leachate system
app and in renewal app
included in initial app

500-gal engine oil UST
not listed

12,000-gal diesel fuel tank
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150-hp John Deere diesel engine
(engine)
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55.2-hp Isuzu diesel engine
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13-hp Honda gasoline engine
emissions for both engines provided in renewal app

12,000-gal diesel fuel tank
same

emissions provided in initial app and in renewal app

Soil Stockpiles
app and in renewal app
included in initial app

Leachate system
app and in renewal app
included in initial app

500-gal engine oil UST
not listed

not

included in initial app

app and inadvertently in renewal app
(no such tank on-site)

(site says no such engine oil tank; maybe had been previously)

confused with mobile diesel fueling tank)

Could you please do the same for tanks as you do for engines? Table C-2 notes three tanks on site, a 12,000 gallon (IE4?), 500 (IE5 not listed in the renewal, listed in initial permit however), and a 225 gallon mobile diesel tank.

<https://www.epa.gov/sites/production/files/2015-11/documents/ie.pdf>

The insignificant units seemed to have changed from the initial permit in Tekoi Landfill. The renewal application it mentions some of these changes. Could you please clarify the new Insignificant Emission Unit with a description and manufacture information, or preferably enter in the form which I have provided a link for below:

Michael,

From: Schwartz, Colin [mailto:Schwartz.Colin@epa.gov]
Sent: Thursday, March 31, 2016 10:13 AM
To: O'Connor, Michael
Subject: Tekoi Landfill

Michael O'Connor
SCS Engineers
Office: 707.546.9461
Mobile: 707.536.6857
mcoconnor@scsengineers.com

Michael

Let me know if any questions or comments about this, then I can make any needed revisions and send you the revised form.

--The mobile diesel fuel tank is actually 500 gal, but because it is portable, I assumed not subject to permitting

--Engine oil tank – there appears to be no engine oil tank on-site

application;

--Soil stockpiles and leachate system – these were presented in the original TV application as insignificant sources, but were not included in the initial TV permit, so not sure what to do with them. I left them off the IE form for this

considered IE3, with a different description or will it have new ID?

--IE3 – this is a recent replacement engine. The hp and fuel description needs to be corrected. Should it still be

and assorted comments:

The Insignificant Emissions form included in the application appears to be generally correct with the following correction

(site says they have a 500-gal truck-mounted diesel fuel tank; so a mobile source)

permitting)

app and inadvertently in renewal app
Mobile source; not subject to

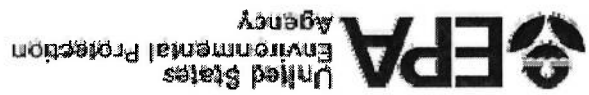
listed on footnote in initial

not

not listed

225-gal mobile diesel tank

included



OMB No. 2060-0336, Expires 06/30/2015
(Approval extended during OMB review)

Federal Operating Permit Program (40 CFR Part 71)

INSIGNIFICANT EMISSIONS (IE)

On this page list each insignificant activity or emission unit. In the "number" column, indicate the number of units in this category. Descriptions should be brief but unique. Indicate which emissions criterion of part 71 is the basis for the exemption.

Number	Description of Activities or Emissions Units	RAP (except HAP)	HAP
IE1*	Isuzu 89-hp stationary diesel engine (fuel pump)	VOC	HAP
IE2*	John Deere 165-hp stationary diesel engine (generator)	VOC	HAP
IE3**	Subaru-Robin 13-hp stationary gasoline engine (water pump)	VOC	HAP
IE4*	12,000 gallon diesel fuel tank	VOC	HAP
	Soil Stockpiles	PM	
	Leachate collection system	VOC	HAP

* Currently listed as insignificant emission units in Title V Permit.
** Replaced 11-hp diesel-fired engine listed in Permit as IE3 in January 2016.
See Appendix C for emission calculations for all sources listed.



**Title V Operating Permit
Renewal Application
Tekoi Landfill
Tooele County, Utah
(Operating Permit V-SV-0001-09.00)**

Presented to:

Waste Management of Utah, Inc.



8652 South 4000 West
West Jordan, UT 84088
(801) 282-8201

Presented by:

SCS ENGINEERS

3117 Fite Circle, Suite 108
Sacramento, CA 95827
(916) 361-1297

March 2016

File No. 01207310.00, Task 35

Offices Nationwide
www.scsengineers.com

**Title V Operating Permit
Renewal Application
Tekoi Landfill
Tooele County, Utah
(Operating Permit V-SV-0001-09.00)**

Presented To:

Waste Management of Utah, Inc.
8652 South 4000 West
West Jordan, UT 84088
(801) 282-8201

Presented By:

SCS ENGINEERS
3117 Fite Circle, Suite 108
Sacramento, CA 95827
(916) 361-1297

March 2016
File No. 01207310.00, Task 35

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- A Current Part 71 Operating Permit
- B Part 71 Application Forms
- C Emission Calculations for Insignificant Sources
- D WIAC Report
- E LandGEM Landfill Gas Generation Model Results (AP-42 and NSPS)
- F Five-Year NMOC Emissions Rate Report (January 2014) (excerpt)
- G Annual Compliance Certification (March 2015)
- H Six-Month Monitoring Report (September 2015)
- I 2014 Annual Fee Emission Calculations (March 2015)
- J GHG Fee Adjustment Payment Letter (March 2016)

1 INTRODUCTION / SOURCE DESCRIPTION

The Tekoi Landfill (TLF), which owned by the Skull Valley Band Goshute Indian Community (SVBGIC) and operated by CR Group, LLC (CR), serves as a regional municipal solid waste (MSW) and construction and demolition (C&D) debris disposal facility.

The Initial Title V Permit (Permit) for the TLF was issued by the United States Environmental Protection Agency (USEPA) and became effective on September 22, 2011. The 5-year permit term expires on September 22, 2016. This application has been prepared by SCS Engineers (SCS) on behalf of Waste Management of Utah, Inc (WM) for renewal of the Permit. A copy of the Permit is provided as **Appendix A**.

No hazardous wastes or infectious wastes are accepted for disposal, nor is the incineration of waste permitted. TLF currently accepts approximately 750 tons of waste per day (tpd); however, it is permitted to accept a maximum of 4,000 tpd.

The landfill is comprised of a 6-Phase MSW disposal area and a North and South C&D debris disposal area. The MSW portion of the landfill previously operated as a balefill landfill, but has not done so for several years and does not expect to resume such operation in the future. Therefore, it is requested that any reference to such operation be removed from the Title V Permit.

Wastes that are accepted for disposal at TLF include:

- MSW
- C&D debris

A site map of the TLF is provided as **Figure 1**.

1.1 LOCATION

TLF is located on a portion of Section 18, Township 5 South, Range 8 West, in the SVBGIC, in Tooele County, Utah.

1.2 OPERATING SCHEDULE

TLF's typical operating hours are 5 days a week (Monday through Friday) for approximately 9 hours per day. The site is generally closed on Saturdays and Sundays. However, TLF may operate on Saturdays on a non-routine basis, as necessary. There are no restrictions on operational days or on operational hours per day in the current Title V Permit. Site hours may extend beyond the typical operating hours to allow for site preparation and daily cover application, as well as for seasonal variation in waste acceptance or as needed to service the facility's customers.

2 SITE CHARACTERISTICS

2.1 DESIGN

Construction of the TLF began in December 2004, and was designed using cut and fill methods. As stated above, the landfill is comprised of a 6-Phase MSW disposal area and a North and South C&D debris disposal area. The disposal areas were formed primarily by excavating to a designed floor elevation and gradient, and by raised embankments around the perimeter of the refuse areas. Phase division berms are provided at a spacing of 780 to 790 feet extending from the north embankment to the south embankment through the fill area. These berms separate the cell into 6 individual phases and leachate management areas designated as Phase 1 through Phase 6 (Phase 1 being the northernmost area and Phases 5 and 6 the southernmost areas). The leachate sumps and floor areas of each phase are designed with similar sump and floor configurations. Approximate lined operational MSW fill areas are provided below in **Table 1**.

Table 1. MSW Operational Areas

Phase	Operational Area (acres)
1	72.5
2	72.5
3	71.8
4	71.8
5	29.7
6	35.0
Total	353.2

The total footprint for the MSW and C&D disposal area is approximately 428.3 acres.

2.2 LINING SYSTEM

Each phase has a state-of-the-art base, composite liner containment system consisting of either a low permeability compacted soil liner (Compacted Clay Liner, CCL) or Geosynthetic Clay Liner (GCL) and an overlying geomembrane. The CCL includes 2 feet of compacted soil consisting of natural onsite soils amended with imported materials as needed, such as bentonite clay, to achieve a maximum permeability of 1×10^{-7} cm/sec as required by 40 Code of Federal Regulations (CFR) Part 258. The geomembrane consists of a 60-millimeter high-density polyethylene (HDPE) geomembrane liner. The composite liner system covers the floor area, side slopes, and the berms.

2.3 LEACHATE COLLECTION SYSTEM

The leachate collection system consists of a geonet drainage layer placed directly over the HDPE geomembrane liner system. In addition, 6-inch diameter perforated leachate conveyance pipes are positioned on the south side of each landfill phase. Also, 4-inch diameter perforated conveyance pipes extend north along the west side of the floor for each phase. The 4-inch diameter and 6-inch diameter leachate conveyance pipes provide an outlet from the geonet drainage layer so hydraulic head build-up does not exceed the 1 foot of depth allowed by 40 CFR Part 258. Drainage rock is also placed around the leachate conveyance pipes as structural fill to support the overlying load imposed by the waste pile.

The leachate conveyance pipes consist of perforated corrugated HDPE pipe and are designed to receive leachate from the leachate collection system and subsequently convey the leachate to the low point of each Phase.

Additionally, a series of 8-inch HDPE pipes withdraw the leachate from the low points of each phase, directing the flow to a leachate collection pond located near the south west corner of the MSW area, where the leachate is evaporated.

2.4 GAS COLLECTION AND CONTROL SYSTEM

TLF does not currently have a landfill gas (LFG) collection and control system (GCCS). Under the New Source Performance Standards (NSPS) for MSW Landfills (40 CFR, Part 60, Subpart WWW), landfill owners/operators are required to install a GCCS when the landfill design capacity is greater than 2.5 million megagrams (Mg) by mass and 2.5 million cubic meters by volume and the non-methane organic compound (NMOC) emission rate is greater than 50 Mg per year. TLF has a design capacity of approximately 45 million cubic meters by volume for MSW disposal. As required by NSPS regulations, an initial design capacity report was submitted to the USEPA Region 8 on March 31, 2008; and an NMOC emission rate for the landfill was calculated using the procedures specified in § 60.754. The calculated annual NMOC emission rate was determined using the EPA's Landfill Gas Emissions Model (*LandGEM [Version 3.02]*). The annual rate was projected to exceed 50 Mg/year, triggering the additional requirements specified in 40 CFR § 60.752(b)(2) as of March 10, 2008, the date the annual rate report was submitted.

Tier 2 field sampling activities, as allowed under NSPS regulations, were initially conducted in June 2008. The report concluded the estimated annual NMOC emission rate would exceed 50 Mg per year (Mg/yr) in 2009. Subsequent Tier 2 testing has been conducted at the site, most recently in 2013. The results were submitted to the EPA in a January 2014 report. The Tier 2 NMOC concentration of 965 parts per million by volume (ppmv) as hexane was used to calculate annual NMOC emission rates, which were determined to be less than 50 Mg/yr for the 5-year period from 2013 through 2017. This Tier 2 NMOC concentration value is used in this application for emission calculations. Per NSPS regulations, this Tier 2 concentration is valid for up to 5 years. As such, additional Tier 2 testing will be required in 2018. An excerpt of the January 2014 NMOC Report is provided as **Appendix F**.

When the calculated NMOC emission rate is equal to or greater than 50 Mg/yr, TLF will be required to submit a GCCS design plan signed by a professional engineer within one year and install a GCCS that captures the gas generated within the landfill within 30 months after the first annual report in which the emission rate equals or exceeds 50 Mg/yr. TLF will comply with these requirements when NMOC emissions exceed 50 Mg/yr using Tier 2 methods. Fugitive potential to emit (PTE) emissions related to LFG will decrease considerably after the GCCS is installed.

3 EMISSION RELATED INFORMATION

Emissions from significant sources are summarized on the Forms EMISS and PTE (see **Appendix B**) as required by the Part 71 Permit Application Package developed by the USEPA. Supporting emission calculations for each significant source are provided in attached **Tables 2 through 6**. Emission calculations documenting estimated emissions from insignificant sources are provided in **Appendix C**.

3.1 FUGITIVE EMISSION SOURCES

The following fugitive emission sources are associated with the TLF operations:

- LFG emissions containing NMOCs, volatile organic compounds (VOCs), and hazardous air pollutants (HAPs) are generated by the microbial degradation of MSW.
- Paved and unpaved roadways used by refuse hauling vehicles and other on-site vehicles generate fugitive particulate matter (PM) dust emissions, including particulate matter less than 10 microns (PM-10), PM-2.5, and total suspended particulate (TSP).
- PM dust emissions are generated from transportation, stockpiling, and disposition of soil cover material on the landfill surface.
- Stockpile erosion occurs due to the affects of wind on cover stockpiles and landfill surfaces with daily, intermediate, and/or final cover material. The resulting PM dust emissions have been determined as insignificant for Title V permitting purposes pursuant to Part 71 §71.5(c)(11)(ii)(A) and (B); calculated PTE of PM-10 emissions were 0.08 tons per year. Emission calculations for insignificant sources are provided in **Appendix C**.
- Leachate collection, storage and recirculation generates very low levels of VOCs and HAPs. The leachate is generated by precipitation or other moisture which percolates through the refuse mass and is collected by the subsurface leachate recovery system. The leachate is collected from the drainage layer and pumped through the series of 8-inch HDPE conveyance pipes to the leachate evaporation pond. Emissions from this source are considered to be insignificant for Title V permitting purposes pursuant to Part 71 §71.5(c)(11)(ii)(A) and (B); PTE HAP emissions were 9.2 pounds per year (lb/yr) (**Appendix C**).

3.2 NON-FUGITIVE EMISSION SOURCES

The following non-fugitive emission sources are associated with the TLF operations:

- Internal combustion engine (ICE) emissions generate nitrogen oxides (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), VOC, HAPs, and PM emissions. TLF currently uses three stationary IC engines: one 89-horsepower (hp) diesel-powered generator engine, one 165-hp diesel-powered generator engine, and one 13-hp gasoline-powered water pump engine. Emissions from all three engines are considered insignificant for Title V purposes, as their PTE criteria air pollutant (CAP) and HAP emission levels are below the significance thresholds pursuant to Part 71 §71.5(c)(11)(ii)(A) and (B) (**Appendix C**).

Changes from current Title V Permit: The 11-hp water pump engine currently listed on the Title V Permit as IE3 was replaced in January 2016 by the model year 2014 13-hp gasoline-powered engine noted above. The old engine was subject to the NSPS regulations applicable to compression-ignition (CI or diesel-powered) engines (NSPS Part 60, Subpart IIII), This new engine is subject to the NSPS regulations for spark-ignition (SI) engines (Subpart JJJJ); which require that the engine be certified and that it be operated and maintained in accordance with manufacturer's instructions.

- TLF has a diesel fuel storage tank on site. This emission unit is considered insignificant for Title V purposes based on vapor pressure of diesel (0.4 psi) and insignificant VOC and HAP emission levels pursuant to Part 71 §71.5(c)(11)(ii)(A) and (B) (**Appendix C**).

4 METHODOLOGY FOR EMISSION CALCULATIONS

Assumptions, methodologies, and conversions for the emission calculations for the revised Title V permit application are discussed in the following section and the attached emissions calculation tables (**Tables 2 through 6**). Actual emissions (for 2015) and potential emissions are calculated and provided in this application.

4.1 LANDFILL AND RELATED EMISSIONS

4.1.1 LFG Emissions

The LFG estimates were based on the landfill design capacity, refuse disposal rates, and estimated future refuse disposal rates. The current disposal rate (for 2015) is 191,967 tpy. Future disposal rates presented in this application are the maximum potential fill rate based on 4,000 tpd and operating 6 days per week; for a fill rate of 1,248,000 tons per year). Based upon a design capacity of 45 million cubic yards (estimated to accommodate 47,939,986 tons of MSW, the current amount of waste in place, and this maximum fill rate, the year of closure would be 2052 (excluding post closure activities).

LFG generation estimates, in standard cubic feet per minute (scfm), are developed using USEPA's Landfill Gas Emissions Model (*LandGEM, Version 3.02*), using two scenarios, (1)

region-specific $k = 0.02$ and $L_o = 100 \text{ m}^3/\text{Mg}$ parameters which are recommended in the EPA's "Compilation of Air Pollutant Emission Factors" (AP-42) document for dry climates, and reported historical and estimated future disposal rates and (2) the NSPS $k = 0.02$ and $L_o = 170 \text{ m}^3/\text{Mg}$ parameters to assess when a GCCS will be required under the NSPS.

NSPS inputs to the LandGEM are used for NSPS applicability, and the NSPS scenario noted above was developed to determine when a GCCS would be required at TLF. The NSPS is a federally enforceable requirement that limits PTE for regulated landfills by requiring a landfill to install a GCCS within 30 months of the first annual NMOC report in which the NMOC emission rate equals or exceeds 50 Mg/yr. Once the GCCS is installed, fugitive PTE emissions will drop considerably.

The year in which NMOC emissions will likely first exceed 50 Mg/year will be 2017. A GCCS will be required to go online within 30 months of this date or by 2020. Under this scenario, 2019 is expected to be the last year when LFG emissions would be completely uncontrolled under the NSPS scenario. Beginning earliest in 2020, the NSPS-required GCCS would reduce NMOC emissions by 65% to 85%, as specified in the NSPS (default value is 75%).

PTE emissions for the controlled landfill were estimated using the AP-42 version of the LandGEM model run in accordance with USEPA guidance and the NSPS rule, which indicates that AP-42 defaults were to be used for all Clean Air Act purposes besides the NSPS (i.e. Title V). In addition, default HAP concentrations in LFG from the Waste Industry Air Coalition (WIAC) report titled, *Comparison of Recent Landfill Gas Analysis with Historic AP-42 Values* (**Appendix D**) were used in the analysis. The AP-42 model scenario is run twice for this application. One run uses the most recent Tier 2 NMOC concentration (965 ppmv) to determine current emissions; and the other run uses the NSPS default concentration (4,000 ppmv) as a worst-case scenario to determine NMOC PTE. The year of maximum LFG generation is 2052; while the year of maximum non-fugitive (controlled) NMOC emissions is expected to occur in 2019, the year before a GCCS is expected to be installed. Non-fugitive emissions are Regulated Emissions; used for determining major source and prevention of significant deterioration (PSD) status under the Clean Air Act (CAA). As such, PTE for regulated emissions and for unregulated (fugitive) emissions are presented separately in the attached Significant Source Emissions Summary table (**Table 2**).

Results of both runs of the LandGEM model using AP-42 defaults as well as the LandGEM NSPS model run are provided in **Appendix E**.

4.2 FUGITIVE DUST EMISSIONS FROM VEHICLE TRAFFIC AND LANDFILL COVER ACTIVITIES

4.2.1 Vehicle Traffic on Paved Roads

PM-10, PM-2.5, and TSP emissions from vehicles are estimated by multiplying a vehicle emissions factor (in lbs/vehicle-mile) by total vehicle mileage. The vehicle emissions factors are determined using the following equation as referenced in AP-42, P. 13.2.1-3, Equation (2):

$$E = [k(sL/2)^{0.91} (W)^{1.02}] (1-P/4N)$$

where:

E = Emission factor (lb/vehicle-mile traveled (VMT))

k = Particle size multiplier for PM-10 particle size (dimensionless) = 0.022 lbs/VMT, 0.0024 lbs/VMT for PM-2.5, 0.082 lbs/VMT for TSP (from AP-42, Table 13.2-1.1)

sL = Road surface silt loading factor (grams per cubic meter [g/m²]) = 7.4 g/m² (from AP-42, Table 13.2.1-4), default for landfill roads.

W = Mean vehicle weight (tons) = 24.50 tons

P = Number of days with >0.01 inches of rainfall = 90 days (from AP-42, Figure 13.2.1-2)

N = Number of days in averaging period for P estimate = 365 days (from AP-42, Section 13.2.1-7)

Actual (2015) emissions are scaled up to estimate PTE emissions by using the ratio of the permitted waste acceptance rate (1,248,000 tpy) to the actual waste acceptance for 2015 of 191,967 tons, for a scaling ratio of 6.50.

4.2.2 Vehicle Traffic on Unpaved Roads and Landfill Surfaces

PM-10, PM-2.5 and TSP emissions from vehicles are estimated by multiplying a vehicle emissions factor (in lbs/vehicle-mile) by total vehicle mileage. The vehicle emissions factors are determined using the following equation as referenced in AP-42, P. 13.2.2-4, Equation (1a):

$$E_{\text{ext}} = [(k) (s/12)^a (W/3)^b (365-p/365)]$$

Where:

E_{ext} = Annual size-specific emission factor extrapolated for natural mitigation (lb/VMT)

k = Empirical constant = 1.5 lb/VMT for PM-10, 0.15 lb/VMT for PM-2.5, and 4.9 lb/VMT for TSP (AP-42, Table 13.2.1.3)

s = Silt content of road surface material (%) (6.4% for unpaved roads per AP-42, Table 13.2.2-1), default for municipal solid waste landfills.

a = Empirical constant = 0.9 (unitless) for PM-10, 0.9 for PM-2.5, and 0.7 for TSP (AP-42, Table 13.2.2-2)

W = Mean vehicle weight = 18.40 tons

b = Empirical constant = 0.45 (unitless) for PM-10, PM-2.5, and TSP (AP-42, Table 13.2.2-2)

p = Number of days with at least 0.01 in. of precipitation/year = 90 days (estimated using AP-42, Figure 13.2.1-2)

Differences between actual (2015) and PTE emissions are based in part on differences in the total miles traveled under each scenario (**Table 4**); as well as on the calculated ratio of the permitted waste acceptance rate (1,248,000 tpy) to the actual waste acceptance for 2015 of 191,967 tons in order to scale up for maximum conditions; for a scaling ratio of 6.50.

4.2.3 Unloading Cover Material

Actual and PTE fugitive dust emissions from unloading cover material into storage piles and onto the landfill are calculated using an emissions factor (in lbs/ton transferred) multiplied by the amount of material transferred per year. The emissions factor is estimated using the following equation (from AP 42, p. 13.2.4.3).

$$E = k (0.0032) (G/5)^{1.3} / (H/2)^{1.4}$$

E = Emission factor (lb/ton)

k = Particle size multiplier = 0.35 for PM-10, 0.053 for PM-2.5, and 0.74 for TSP (from AP-42, p. 13.2.4.3)

G = Mean wind speed = 5.0 miles per hour (mph) (from Salt Lake City International Airport)

H = Material moisture content (from AP-42, Table 13.2.4-1) = 12 % (mean value for MSW landfill cover material)

Emissions under the PTE scenario are calculated by multiplying actual emissions by the ratio of the permitted waste acceptance rate (1,248,000 tons/year) to the actual waste acceptance for 2015 of 191,967 tons in order to scale up for maximum conditions; for a scaling ratio of 6.50.

4.2.4 Wind Erosion of Cover Storage Piles [Insignificant]

Fugitive dust emissions from wind erosion of the cover storage piles are estimated multiplying emission factors (in lbs/acre) by the area of the storage piles. Emissions factors for windblown dust have been published in the EPA's FIRE (Factor Information and Retrieval System) database, with separate emission factors for actual active and inactive days. The calculated PM-10 emissions, as shown in **Appendix C** are 0.5 tpy, less than the significant source threshold of 2 tpy. As such this emission source is considered insignificant for Title V permitting purposes.

Emissions under the PTE scenario are calculated by multiplying actual emissions by the ratio of the permitted waste acceptance rate (1,248,000 tons/year) to the actual waste acceptance for 2015 of 191,967 tpy) in order to scale up for maximum conditions; for a scaling ratio of 6.50.

4.3 EMISSIONS FROM INTERNAL COMBUSTION ENGINES [INSIGNIFICANT]

Stationary ICEs used on site consist of one 89-hp diesel-powered generator engine, one 165-hp diesel-powered generator engine, and one 13-hp gasoline-powered water pump engine. These are

denoted on the current Title V Permit as insignificant Emission Units IE1, IE2, and IE3, respectively. Both current (2015) and PTE emissions were calculated. The PTE hours of operation are estimated based upon the ratio of PTE-to-actual refuse tonnages multiplied by the current hours of operation; emissions of CAP and HAP emissions for each engine were calculated using the emissions factors contained in AP-42, 3.3.

The calculated emissions, as shown in **Appendix C**, are all less than the significant source thresholds of 2 tpy and 1,000 pounds per year (lbs/yr) for CAPs and HAPs, respectively. As such, all of these stationary engines are considered insignificant sources for Title V permitting purposes.

4.4 OTHER INTERNAL COMBUSTION ENGINES [NOT SUBJECT TO PERMITTING]

Several other ICEs used at the site are portable (non-road engines) and as such not subject to permitting, per the definition of 'non-road' in 40 CFR 89 and the definition of 'stationary source' in Title III, Section 302 of the CAA which states that a non-road emission source is not regulated under the CAA. These engines are listed below and are intended as an update of the non-road engine list found in Section I (d) of the Statement of Basis document for the current Title V Permit.

Tekoi Landfill Non-Road Engines

Make/Model	Rated Output (hp)	Use	Fuel	2015 Hours
Briggs-Vanguard 305447	16	Alladin Pressure washer	Gasoline	5
Kohler CS125TG	12.5	Blue Star welder	Gasoline	10
Cat C1.1	28.2	Tarpomatic	Diesel	25
John Deere 4045DF150B	84	Sullair Compressor	Diesel	65
Perkins 103-10	23.5	Towable light plant	Diesel	1040
Cat C1.1	28.2	Towable light plant	Diesel	1040
Lister	14.6	Allmand light plant	Diesel	10
Predator 212cc	6.5	Generator	Gasoline	1040
Predator 212cc	6.5	Generator	Gasoline	1040
Honda GX270	8.5	Compressor	gas	10
Cat 3054	130	Tipper	Diesel	1300
Cat C4.4	142	Pony motor (tipper)	Diesel	10

4.5 EMISSIONS FROM LEACHATE MANAGEMENT ACTIVITIES [INSIGNIFICANT]

Emissions from leachate management activities are estimated using the assumption that during collection and management of the leachate, all VOCs and HAPs in the leachate will be emitted.

Current leachate generation is estimated at approximately, 33.8 gallons per week, based upon leachate sampling event in November 2006. The maximum potential volume of leachate generated, 12,884,500 gallons per year, was estimated by using the total landfill footprint (acres) and annual rainfall.

PTE VOC and HAP emissions are estimated by multiplying the concentration by the total amount of leachate generated and converting to tons or pounds (**Appendix C**). Emissions from this source are considered to be insignificant for Title V permitting purposes pursuant to Part 71 §71.5 (11)(ii)(A) and (B) because calculated PTE VOC and HAP emissions were below the respective thresholds of 2 tpy and 1,000 lbs/yr.

Calculated VOC and HAP emissions are provided in **Appendix C**.

4.6 EMISSIONS FROM FUEL STORAGE TANKS [INSIGNIFICANT]

VOC emissions from storage and transfer of fuel in the diesel fuel storage tank have been estimated utilizing EPA's TANKS 4.09 program. The emissions from this activity are considered insignificant for Title V permitting purposes because the VOC emissions were less than the 2 tpy threshold and HAP emissions were less than the 1,000 lbs/yr threshold.

Calculated VOC and HAP emissions are provided in **Appendix C**.

5 APPLICATION FORMS

This Title V permit renewal application has been prepared in accordance with the federal 40 CFR Part 71 regulations. As such, it includes the required EPA Title V forms, emission inventories, a regulatory applicability and compliance review, and other required elements of a Title V application. The following EPA Part 71 forms are provided in **Appendix B**:

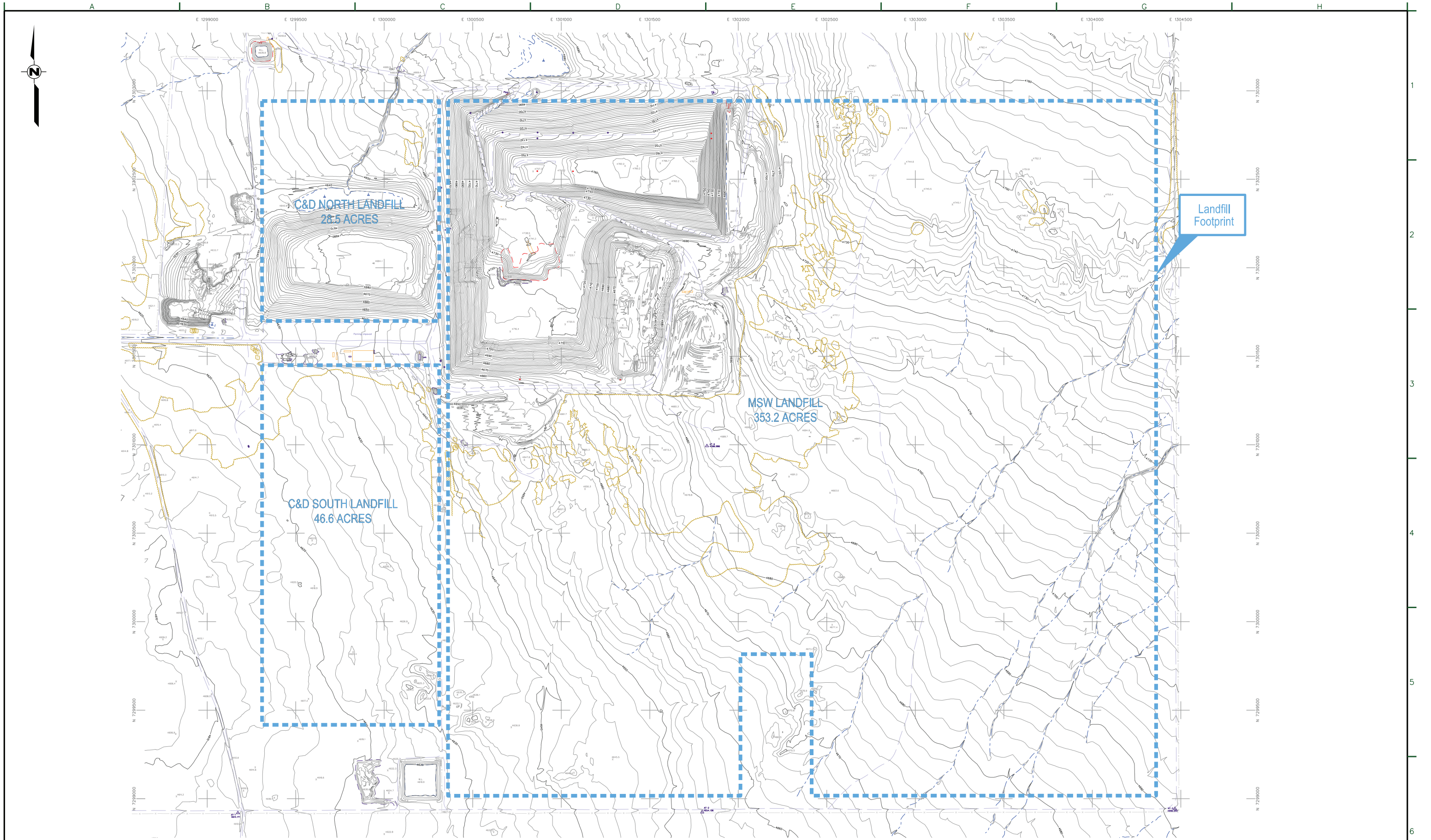
- General Information and Summary (GIS)
- Emission Unit Description for Process Sources (EUD3) (for E1 and E2)
- Insignificant Activities (IE)
- Emission Calculations (EMISS)
- Potential to Emit Summary (PTE)
- Compliance Plan and Compliance Certification (I-COMP)
- Certification of Truth, Accuracy, and Completeness (CTAC)

6 FEES

Per a telephone communication between SCS and Ms. Noreen Okubo of the USEPA, Region 8, the annual fee calculation and payment due on April 1 each year satisfies all Title V-related fees, with the exception of a one-time GHG Fee Adjustment required, to be paid this year. As such, only that fee is required to be submitted as part of this Title V renewal application process. Ms. Okuba indicated that a Fee Worksheet Form should be completed for that fee, and that payment

should be made under separate cover and documented in this application. The Fee Worksheet Form has been completed and a check for the \$520 fee has been submitted to the EPA. A copy of the fee submittal is provided as **Appendix J**.

Figure 1
Site Map



THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN IS THE PROPERTY OF WASTE MANAGEMENT ("WM"). THIS DOCUMENT IS, AND CONTAINS, CONFIDENTIAL AND TRADE SECRET INFORMATION OF WM. REPRODUCTION, DISCLOSURE OR USE THEREOF IS PERMISSIBLE ONLY AS PROVIDED BY CONTRACTOR OR AS EXPRESSLY AUTHORIZED IN WRITING BY WM. THIS DOCUMENT IS LOANED FOR LIMITED PURPOSES ONLY, AND REMAINS THE PROPERTY OF WM. IT IS TO BE RETURNED UPON REQUEST AND IN ALL EVENTS UPON COMPLETION OF THE PURPOSE OF THE LOAN.

Revisions			
No.	Description	Date	By

Approved By:	Mark Franc
Checked By:	
Drawn By:	Corporate Design Services

Project Location:
**TEKOI LANDFILL
DUGWAY, UTAH**

2015 Topography Dated
February 5, 2015

Drawing No.	UT03-2769-AIR-02	
Scale:	As Shown	Sheet Number:
Date:	April 2015	2

Tables

TABLE 2
FACILITY SIGNIFICANT SOURCE EMISSIONS SUMMARY
ACTUAL EMISSIONS AND PTE FOR REGULATED EMISSIONS
TEKOI LANDFILL

Actual Emissions (2015)

Emission Source	NMOC (tons/yr)	NOx (tons/yr)	CO (tons/yr)	VOC (tons/yr)	PM10 (tons/yr)	SOx (tons/yr)
E1	26.8	NA	NA	10.5	NA	NA
E2	NA	NA	NA	NA	9.6	NA
Total	26.8	0.0	0.0	10.5	9.6	0

Potential to Emit Emissions - Regulated (Non-Fugitive) Emissions ¹

Emission Source	NMOC (tons/yr)	NOx (tons/yr)	CO (tons/yr)	VOC (tons/yr)	PM10 (tons/yr)	SOx (tons/yr)
E1 (2019) ²	241.4	NA	NA	94.1	NA	NA
E2	NA	NA	NA	NA	NA	NA
Total	241.4	0.0	0.0	94.1	0.0	0.0

E1= Emission unit ID

¹ For purposes of major source and prevention of significant deterioration (PSD) determination, only non-fugitive emissions are considered.

² For NMOC and VOC emissions prior to installation of a gas collection and control system, USEPA has indicated that 75% of LFG could be reasonably collected, and as such is not considered to be fugitive emissions. For PTE for NMOC and VOC, maximum non-fugitive emissions are expected to occur in 2019, the final year prior to when a GCCS is required under NSPS to be installed and operating (estimated to be in 2020).

TABLE 3
LANDFILL GAS FUGITIVE EMISSIONS (E1)
TEKOI LANDFILL

CAS Number	Pollutant	Molecular Weight	Default Concentration In LFG ⁽¹⁾	Actual (2015) Pollutants Generated in LFG ⁽²⁾	Actual (2015) Pollutants Generated in LFG ⁽²⁾	Potential to Emit (2019) Pollutants Generated in LFG ⁽²⁾	Potential to Emit (2019) Fugitive Pollutants ⁽⁸⁾	Potential to Emit (2019) Controlled Pollutants ⁽⁸⁾
Hazardous Air Pollutants (HAPs) ⁽¹⁾		(g/mol)	(ppmv)	(tons/year)	(lbs/year)	(tons/year)	(tons/year)	(tons/year)
71-55-6	1,1,1-Trichloroethane (methyl chloroform)	133.41	0.168	7.22E-03	1.44E+01	2.09E-02	5.23E-03	1.57E-02
79-34-5	1,1,2,2-Tetrachloroethane	167.85	0.070	3.79E-03	7.57E+00	1.10E-02	2.74E-03	8.23E-03
75-34-3	1,1-Dichloroethane (ethylidene dichloride)	98.97	0.741	2.36E-02	4.73E+01	6.85E-02	1.71E-02	5.14E-02
75-35-4	1,1-Dichloroethene (vinylidene chloride)	96.94	0.092	2.87E-03	5.75E+00	8.33E-03	2.08E-03	6.25E-03
107-06-2	1,2-Dichloroethane (ethylene dichloride)	98.96	0.120	3.83E-03	7.65E+00	1.11E-02	2.77E-03	8.32E-03
78-87-5	1,2-Dichloropropane (propylene dichloride)	112.99	0.023	8.37E-04	1.67E+00	2.43E-03	6.07E-04	1.82E-03
107-13-1	Acrylonitrile ⁽³⁾	53.06	0.036	6.15E-04	1.23E+00	1.78E-03	4.46E-04	1.34E-03
71-43-2	Benzene ⁽⁴⁾	78.11	0.972	2.45E-02	4.89E+01	7.09E-02	1.77E-02	5.32E-02
75-15-0	Carbon disulfide	76.13	0.320	7.85E-03	1.57E+01	2.27E-02	5.69E-03	1.71E-02
56-23-5	Carbon tetrachloride ⁽³⁾	153.84	0.007	3.47E-04	6.94E-01	1.01E-03	2.51E-04	7.54E-04
463-58-1	Carbonyl sulfide	60.07	0.183	3.54E-03	7.08E+00	1.03E-02	2.57E-03	7.70E-03
108-90-7	Chlorobenzene	112.56	0.227	8.23E-03	1.65E+01	2.39E-02	5.96E-03	1.79E-02
75-00-3	Chloroethane (ethyl chloride)	64.52	0.239	4.97E-03	9.94E+00	1.44E-02	3.60E-03	1.08E-02
67-66-3	Chloroform	119.39	0.021	8.08E-04	1.62E+00	2.34E-03	5.85E-04	1.76E-03
74-87-3	Chloromethane (methyl chloride)	50.49	0.249	4.05E-03	8.10E+00	1.17E-02	2.93E-03	8.80E-03
106-46-7	Dichlorobenzene (1,4-Dichlorobenzene)	147	1.607	7.61E-02	1.52E+02	2.21E-01	5.51E-02	1.65E-01
75-09-2	Dichloromethane (Methylene Chloride)	84.94	3.395	9.29E-02	1.86E+02	2.69E-01	6.73E-02	2.02E-01
100-41-4	Ethylbenzene	106.16	6.789	2.32E-01	4.64E+02	6.73E-01	1.68E-01	5.05E-01
106-93-4	Ethylene dibromide (1,2-Dibromoethane) ⁽³⁾	187.88	0.046	2.78E-03	5.57E+00	8.07E-03	2.02E-03	6.05E-03
110-54-3	Hexane	86.18	2.324	6.45E-02	1.29E+02	1.87E-01	4.67E-02	1.40E-01
7439-97-6	Mercury (total)	200.61	2.92E-04	1.89E-05	3.77E-02	5.47E-05	1.37E-05	4.10E-05
78-93-3	Methyl ethyl ketone	72.11	10.557	2.45E-01	4.91E+02	7.11E-01	1.78E-01	5.33E-01
108-10-1	Methyl isobutyl ketone	100.16	0.75	2.42E-02	4.84E+01	7.01E-02	1.75E-02	5.26E-02
127-18-4	Perchloroethylene (tetrachloroethylene)	165.83	1.193	6.37E-02	1.27E+02	1.85E-01	4.62E-02	1.39E-01
108-88-3	Toluene ⁽⁴⁾	92.13	25.405	7.54E-01	1.51E+03	2.19E+00	5.46E-01	1.64E+00
79-01-6	Trichloroethylene (trichloroethene)	131.40	0.681	2.88E-02	5.77E+01	8.35E-02	2.09E-02	6.27E-02
75-01-4	Vinyl chloride	62.5	1.077	2.17E-02	4.34E+01	6.28E-02	1.57E-02	4.71E-02
1330-20-7	Xylenes	106.16	16.582	5.67E-01	1.13E+03	1.64E+00	4.11E-01	1.23E+00
	Total HAPs			2.27	4.54E+03	6.58	1.64	4.93

	Pollutant	Molecular Weight	Concentration In LFG	Actual (2015) Pollutants Generated in LFG ⁽²⁾	Actual (2015) Pollutants Generated in LFG ⁽²⁾	Potential to Emit (2019) Pollutants Generated in LFG ⁽²⁾	Potential to Emit (2019) Fugitive Pollutants ⁽⁸⁾	Potential to Emit (2019) Controlled Pollutants ⁽⁸⁾
	Criteria Air Pollutants	(g/mol)	(ppmv)	(tons/year)	(lbs/year)	(tons/year)	(tons/year)	(tons/year)
Actual	Volatile Organic Compounds (VOCs) as Hexane ⁽⁵⁾	86.18	376	10.5	20,901			
Actual	Total Non-Methane Organics (NMOCs) as Hexane ⁽⁶⁾	86.18	965	26.8	53,593			
PTE (2019) ⁽¹⁰⁾	Volatile Organic Compounds (VOCs) as Hexane ⁽⁵⁾	86.18	1,560			125.5	31.4	94.1
PTE (2019) ⁽¹⁰⁾	Total Non-Methane Organics (NMOCs) as Hexane ⁽⁹⁾	8618%	4,000			321.9	80.5	241.4
PTE (2053) ⁽¹⁰⁾	Volatile Organic Compounds (VOCs) as Hexane ⁽⁵⁾	86.18	1,560			741.9	185.5	11.1
PTE (2053) ⁽¹⁰⁾	Total Non-Methane Organics (NMOCs) as Hexane ⁽⁹⁾	86.18	4,000			1902.4	475.6	28.5

Notes:

- (1) List is from AP-42, Section 2.4; Values obtained from WIAC, 2001, except for value for mercury, which was obtained from Table 2.4-1 of AP-42.
- (2) Actual emissions are based on LFG generation from the landfill for 2015 with no gas collection. PTE based on 2019 (maximum non-fugitive emissions)
- (3) The value shown is the minimum detection limit. These compounds were not detected in MSW-only sites monitored in WIAC study.
- (4) Default concentrations for benzene and toluene are based on WIAC values for site with no co-disposal.
- (5) For VOCs, 39% by weight of NMOC concentrations assumed per AP-42.
- (6) NMOC concentration based on 2013 site-specific Tier 2 test results (965 ppmv as hexane)
- (7) scfm based upon USEPA LandGEM estimate using region specific $k=(0.020)$ and $L_0=(100)$.
- (8) Assumes 75% collection and 98% control of collected LFG, per NSPS requirement to install and operate a gas collection and control system after exceeding 50 MG/yr of uncontrolled NMOC emissions.
- (9) AP-42 default NMOC concentration used to estimate maximum potential to emit NMOC emissions.
- (10) 2019 is the year of maximum regulated (non-fugitive) emissions (prior to installation of GCCSO; 2053 is year of maximum landfill gas generation.

MODEL INPUT VARIABLES	
Actual NMOC concentration in landfill gas ⁶	965 ppmv as hexane
PTE NMOC concentration in landfill gas ⁹	4,000 ppmv as hexane
Methane Content of LFG adjusted to:	50%
Actual Landfill Gas Generation Rate ⁷	472 scfm LFG generation in 2015, from LandGEM model)
PTE Landfill Gas Generation Rate ⁷	1368 scfm LFG generation in 2019, from LandGEM model)
PTE Landfill Gas Generation Rate ⁷	8086 scfm LFG generation in 2053, from LandGEM model)

TABLE 4
FUGITIVE DUST EMISSIONS FROM PAVED ROADWAY (E2)
TEKOI LANDFILL

Emission Source: Paved Roadway Current
Length of Road: 7,920 feet
Round Trip Road Length = 3.00 miles

Calculation of Average Vehicle Miles Traveled (VMT)

Type of Vehicle	Average Number of Vehicles/Day	Number of Trips Per day	Average VMT		
			(per day) Actual	Operational Days/yr ¹	(per year) Actual
Transfer Trucks					
Transfer Trucks and Trailers	9	1.0	27.0	260	7,020
Other Trucks					
Diesel Fuel Truck ²	0.10	1.0	0.30	260	78
Service Truck	1.00	1.0	3.00	260	780
2007 Dodge Dakota	1.00	1.0	3.00	260	780
2008 F150	1.00	2.0	6.00	260	1,560
Private Vehicles					
Private (Employee Vehicles)	5	1.0	15.0	260	3,900
TOTALS	17	7.0	54.3		14,118

¹ 260 days/yr reflects 5 day work week

² Assumes approximately 2 fuel deliveries per month

Vehicle Type	Average Weight (tons)	Average VMT (per year)	Weight times Annual VMT (tons)
Transfer Trucks and Trailers	45.0	7,020	315,900
Diesel Fuel Truck	19.2	78	1,498
Service Truck	16.5	780	12,870
2007 Dodge Dakota	2.5	780	1,950
2008 F150	2.5	1,560	3,900
Private (Employee Vehicles)	2.5	3,900	9,750
TOTAL			345,867.60
Average Vehicle Weight (tons)			24.50

Methodologies:

AP-42, Section 13.2.1-3, Equation (2), for Paved Roads.

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

E = Emission factor in pounds per vehicle mile traveled (lb/VMT)
k = Particle size multiplier (lb/VMT)
sL = Road surface silt loading factor (g/m²)
W = Average Vehicle weight in tons
P = Number of days with rain > 0.01 inches
N = Averaging period

Fugitive Dust Control Measures: Control Efficiency
 Watering Roads as needed: None 0%
 Street Sweeping as needed: None 0%
 Cumulative Total Control: 0%

Variables:	k factor ¹	Silt loading ² (sL)	W	P ³	N (Long Term)
Pollutant	lb/VMT	g/m ²	Tons	days	days
PM-10	0.0022	7.4	24.50	90	365

¹ From AP-42, Table 13.2-1.1

² From AP-42, Table 13.2.1-4

³ From AP-42, Figure 13.2.1-2

Summary of PM10 Emissions From Roadway Segment PRD-1

Pollutant	Emission Factor	Actual Emissions	
	lb/VMT (daily)	lbs/day	tons/yr
PM-10	0.3332	18.09	2.35

TABLE 5
FUGITIVE DUST EMISSIONS FROM UNPAVED ROADWAY (E2)
TEKOI LANDFILL

Emission Source: Unpaved Roadway (Main Haul Road)

Length of Road: feet

Round Trip Road Length =

Current

2,600 feet

0.98 miles

Future

6,000 feet

2.27 miles

Calculation of Average Vehicle Miles Traveled (VMT)

Type of Vehicle	Average Number of Vehicles/Day	Number of Trips Per day	Current Average VMT			PTE Average VMT		
			(per day) Actual	Operational Days/yr ¹	(per year) Actual	(per day) PTE	Operational Days/yr ¹	(per year) Actual
Dozers								
CAT D5 Dozer	1	1	0.98	260	256	2.3	260	591
CAT D8R	1	1	0.98	260	256	2.3	260	591
Loaders								
CAT 950G	1	5	4.9	260	1,280	11.4	260	2,955
Komatsu 250 Loader	1	5	4.9	260	1,280	11.4	260	2,955
Water Trucks								
Diesel Water Truck	1	2	2.0	260	512	4.5	260	1,182
Compactor								
826H CAT Compactor	0	0	0.0	260	0	0.0	260	0
Scraper								
627E	1	21	20.7	260	5,377	47.7	260	12,409
Transfer Trucks								
Off-Site Transfer Trucks and Trailers	18	1	17.7	260	4,609	40.9	260	10,636
Other Trucks								
Site Fuel Truck	1	2	2.0	260	512	4.5	260	1,182
Yard Truck	1	24	23.6	260	6,145	54.5	260	14,182
Yard Truck (spare)	1	0	0.0	260	0	0.0	260	0
Ford F150	1	3	3.0	260	768	6.8	260	1,773
Service Truck	1	2	2.0	260	512	4.5	260	1,182
Private Vehicles								
Private (Employee Vehicles)	5	2	9.8	260	2,561	23	260	5,909
TOTALS	34	69	93		24,070	214		55,545

TABLE 5
FUGITIVE DUST EMISSIONS FROM UNPAVED ROADWAY (E2)
TEKOI LANDFILL

¹ 260 days/yr reflects 5 day work week

²Remains in trash area.

	Average Weight	Average VMT	Weight times Annual VMT
Vehicle Type	(tons)	(per year)	(tons)
Dozers			
CAT D5 Dozer	13.39	256.1	3,429
CAT D8R1	41.7	256.1	10,678
Loaders			
CAT 950G	18.6	1,280	23,852
Komatsu 250 Loader	8.0	1,280	10,242
Water Trucks			
Diesel Water Truck	35.9	512	18,375
CAT 826H Compactor	40.8	0	0
Scraper			
627E	38.2	5,377	205,519
Transfer Trucks			
Off-Site Transfer Trucks and Trailers	26.0	4,609	119,836
Other Trucks			
Site Fuel Truck	35.9	512	18,375
Yard Truck AM Generator	4.4	6,145	27,040
Yard Truck (Mack MR6885 - spare)	4.4	0	0
Ford F150 (2008)	3.1	768	2,389
Service Truck	12.8	512	6,550
Private Vehicles			
Private (Employee Vehicles)	2.5	2,561	6,402
TOTAL			442,857
Average Vehicle Weight (tons)			18.40

Methodologies:

AP-42, Section 13.2.2.2, Equation (1a), for Unpaved Roads at Industrial Sites.

TABLE 5
FUGITIVE DUST EMISSIONS FROM UNPAVED ROADWAY (E2)
TEKOI LANDFILL

$$E = k(s/12)^a \cdot (W/3)^b \cdot [(365-P)/365]$$

E	=	Emission factor in pounds per vehicle mile traveled (lb/VMT)
k	=	Particle size multiplier (lb/VMT)
a	=	Empirical Constant from Table 13.2.2-2
b	=	Empirical Constant from Table 13.2.2-2
s	=	Surface material silt content (%)
W	=	Average Vehicle weight in tons
P	=	Number of days with rain > 0.01 inches

Fugitive Dust Control Measures:	Control Efficiency	Source:
Watering Roads as needed:	80%	EPA: AP-42, Section 13.2.2.3
Chemical Dust Suppressants: None	0%	
Cumulative Total Control:	80%	

Variables:	k factor ¹	a	b	Surface Silt Content ² (%)	W	P ³
Pollutant	lb/VMT			(%)	Tons	days
PM-10	1.5	0.9	0.45	6.4	18.40	90
PM-2.5	0.15	0.9	0.45	6.4	18.40	90
TSP	4.9	0.7	0.45	6.4	18.40	90

¹ From AP-42, Section 13.2.1.3

² AP-42 (Table 13.2.2-1) mean silt content for municipal solid waste landfills

³ From AP-42, Figure 13.2.1-2

Summary of PM10 Emissions From Roadway Segment UPR-2

Pollutant	Emission Factor lb/VMT (daily)	Actual Emissions		Emissions - Future Road Length		Increase
		lbs/day	tons/yr	lbs/day	tons/yr	tons/yr
PM-10	1.4517	26.88	3.49	62.03	8.06	4.57

TABLE 6 **FUGITIVE DUST EMISSIONS FROM MATERIAL HANDLING (E2)** **TEKOI LANDFILL**

According to AP-42, Section 13.2.4, Aggregate Handling and Storage Piles:

AP-42, Section 13.2.4.3 Predictive Emission Factor Equations (11/06)

Total dust emissions from aggregate storage piles result from several distinct source activities within the storage cycle:

1. Loading of aggregate onto storage piles (batch or continuous drop operations).
2. Equipment traffic in storage area.
3. Wind erosion of pile surfaces and ground areas around piles.
4. Loadout of aggregate for shipment or for return to the process stream (batch or continuous).

Either adding aggregate material to a storage pile or removing it usually involves dropping the material onto a receiving surface. Truck dumping on the pile or loading out from the pile to a truck with a front-end loader are examples of batch drop operations. Adding material to the pile by a conveyor stacker is an example of a continuous drop operation.

The quantity of particulate matter emissions generated by either type of drop operation may be estimated using equation 1.

$$E = k(0.0032) [(G/5)^{1.3}]/[(H/2)^{1.4}]$$

E = Emission Factor, lb/ton

k = particle size multiplier (dimensionless) (Section 13.2.4.3)

G = mean wind speed, miles per hour (mph)

H = Material moisture content (%) (Table 13.2.4-1)

Particle Size Multiplier, k

Particle Size	k
PM-10	0.35
PM-2.5	0.053
PM-30 (TSP)	0.74

Mean Wind Speed, U

Based on Meteorological Data from Salt Lake City International Airport

	Wind Speed
	(mph)
Average	5.00

Material Moisture Content, %

For municipal Solid Waste Landfills (cover material)

M = 12% (mean)

Emission Factor Calculation

For PM-10: $E = [(0.35) * (0.0032) * [(8.60/5)^{1.3} / (0.12/2)^{1.4}]$
E = 0.0575 lb/ton

For PM-2.5 $E = [(0.053) * (0.0032) * [(8.60/5)^{1.3} / (0.12/2)^{1.4}]$
E = 0.0087 lb/ton

For PM-30 (TSP): $E = [(0.74) * (0.0032) * [(8.60/5)^{1.3} / (0.12/2)^{1.4}]$
E = 0.1216 lb/ton

Fugitive Dust from Material Handling

Actual	
Estimated Density of Soil Cover:	2,400 lbs/yd ³
Estimated Density of ADC:	1,080 lb/yd ³
Percent of soil/ADC to refuse:	35%
Current Average Disposal Rate:	738 tpd
Estimated Density of Refuse:	1,465 lb/yd ³
Volume of Refuse Disposed:	1,008 yd ³ /day
Amount of Cover Used =	353 yd ³ of soil/ADC cover used 0 tons/day ADC cover used 423 tons/day soil cover used 110,020 tons/yr soil cover used 21 scraper loads per day assuming each scraper is 17 cubic yards
Actual	
PM-10 Emissions =	7,593.80 lb/yr 24.34 lb/day 3.80 ton/yr

APPENDICES

Appendix A
Current Part 71 Operating Permit

United States Environmental Protection Agency
Region 8
Air Program
1595 Wynkoop Street
Denver, Colorado 80202



AIR POLLUTION CONTROL
TITLE V PERMIT TO OPERATE

In accordance with the provisions of title V of the Clean Air Act and 40 CFR part 71 and applicable rules and regulations,

Waste Management of Utah, Inc.
Tekoi Landfill

is authorized to operate air emission units and to conduct other air pollutant emitting activities in accordance with the permit conditions listed in this permit.

This source is authorized to operate at the following location:

Section 18, Township 5 South, Range 8 West
on the Skull Valley Band Goshute Indian Reservation
Tooele County, Utah

Terms not otherwise defined in this permit have the meaning assigned to them in the referenced regulations. All terms and conditions of the permit are enforceable by EPA and citizens under the Clean Air Act.

Carl Daly, Director
Air Program
US EPA Region 8

**AIR POLLUTION CONTROL
TITLE V PERMIT TO OPERATE
Waste Management of Utah, LLC
Tekoi Landfill**

Permit Number: V-SV-00001-2010.00
Replaces Permit No.: NA

Issue Date: September 12, 2011
Effective Date: September 22, 2011
Expiration Date: September 22, 2016

The permit number cited above should be referenced in future correspondence regarding this facility.

Permit Issuance History

DATE OF ISSUANCE	TYPE OF ACTION	SECTION NUMBER AND TITLE	DESCRIPTION OF ACTION
September 2011	Initial Permit Issuance		Permit: V-SV-00001-2010.00

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Abbreviations and Acronyms

AR	Acid Rain
ARP	Acid Rain Program
bbls	Barrels
BACT	Best Available Control Technology
CAA	Clean Air Act [42 U.S.C. Section 7401 et seq.]
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CI	Compression Ignition
CFR	Code of Federal Regulations
CMS	Continuous Monitoring System (includes COMS, CEMS and diluent monitoring)
COMS	Continuous Opacity Monitoring System
CO	Carbon monoxide
CO ₂	Carbon dioxide
DAHS	Data Acquisition and Handling System
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
EIP	Economic Incentives Programs
EPA	Environmental Protection Agency
FGD	Flue gas desulfurization
gal	Gallon
GPM	Gallons per minute
H ₂ S	Hydrogen sulfide
HAP	Hazardous Air Pollutant
hr	Hour
Id. No.	Identification Number
kg	Kilogram
lb	Pound
MACT	Maximum Achievable Control Technology
MVAC	Motor Vehicle Air Conditioner
Mg	Megagram
MMBtu	Million British Thermal Units
mo	Month
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMHC	Non-methane hydrocarbons
NMOC	Non-methane organic compounds
NO _x	Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
pH	Negative logarithm of effective hydrogen ion concentration (acidity)
PM	Particulate Matter
PM ₁₀	Particulate matter less than 10 microns in diameter
ppm	Parts per million
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
psi	Pounds per square inch
psia	Pounds per square inch absolute
RICE	Reciprocating Internal Combustion Engine
RMP	Risk Management Plan
scfm	Standard cubic feet per minute
SNAP	Significant New Alternatives Program
SO ₂	Sulfur Dioxide
tpy	Ton Per Year
US EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds

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I. Source Information and Emission Unit Identification

I.A. Source Information

Parent Company Name: Waste Management of Utah, Inc.

Plant Name: Tekoi Landfill

Plant Location: Section 18, Township 5 South, Range 8 West
Latitude: 40.358323 N
Longitude: 112.724416 W

Region: 8

State: Utah

County: Tooele

Reservation: Skull Valley Band Goshute Indian Community

Tribe: Skull Valley Band of Goshute Indians

Responsible Official: Area Vice President

SIC Code: 4953

AFS Plant Identification Number: 49-045-00088

Other Clean Air Act Permits: There are no other Federal Clean Air Act permits, such as PSD or minor NSR, issued to this facility.

Description of Process:

The Tekoi Landfill (TLF), which is owned by the Skull Valley Band of Goshute Indian Community (SVBGIC) and operated by Waste Management of Utah, Inc (WM), serves as a regional municipal solid waste (MSW) and construction and demolition (C&D) debris disposal facility.

No hazardous wastes or infectious wastes are accepted for disposal, nor is the incineration of waste permitted. TLF currently accepts approximately 785 tons of waste per day (tpd); however, it is permitted to accept a maximum of 4,000 tpd with a design capacity of 45 million cubic meters.

The landfill is comprised of a 6-Phase MSW disposal area and a North and South C&D disposal area. The MSW portion of the landfill was operated as a balefill landfill until November 2010. A balefill is a type of landfill in which MSW is mechanically baled before being placed in the facility. The bales are approximately 45" x 45" x 60" and weigh approximately 4,000 pounds. The site now accepts only loose (unbaled) MSW. The method of disposal has no effect on landfill emissions.

This process description is provided for informational purposes only, and is not a basis for any enforceable limiting conditions unless explicitly stated.

I.B. Source Emission Points

**Table 1 - Emission Units
Waste Management, Tekoi Landfill**

Emission Unit ID	Description	Control Equipment
E1	MSW Landfill: 45 million cubic meters design capacity. Construction Date: 01/14/2005	None (NMOC <50 Mg/year)
E2	Fugitive Dust Emissions from Paved Roads, Unpaved Roads, and Material Handling	None

**Table 2 -- Insignificant Emission Units*
Waste Management, Tekoi Landfill**

Emission Unit ID	Description
IE1	Isuzu; 55.2 hp diesel-fired stationary compression ignition engine. Construction Date: Pre June 12, 2006; Manufactured 2000. Use: ~140 hrs/year; Non-emergency diesel fuel pump
IE2	John Deere (6.8L); 150 hp diesel-fired stationary compression ignition engine. Construction Date: Pre June 12, 2006; Manufactured 2002. Use: ~420 hrs/year; Non-emergency generator to power lights.
IE3	Subaru-Robin; 11 hp diesel-fired stationary compression ignition engine. Construction Date: Post June 12, 2006; Manufactured 2007. Use: ~420 hrs/year; Non-emergency water pump.
IE4	1 - 12,000 gallon diesel fuel tank
IE5	1 - 500 gallon engine oil tank

*Insignificant emission units can change at the facility as long as the new or replacement units meet the criteria for insignificance, and TLF supplies information as required under 40 CFR part 71 and this permit. The insignificant emission unit status does not exempt these emission units from the requirements of the NSPS and MACT standards that may apply.

II. Standards of Performance for Municipal Solid Waste Landfills

II.A. 40 CFR Part 60, Subpart A – General Provisions

This facility is subject to the requirements of 40 CFR part 60, subpart A as stated in §60.1. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 60, subpart A.

[40 CFR 60.1 - 60.19]

II.B. 40 CFR Part 60, Subpart WWW - Standards

1. This facility is subject to the requirements of 40 CFR part 60, subpart WWW. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 60, subpart WWW.
2. 40 CFR 60, Subpart WWW applies as follows:
 - (a) §60.750(a) - This facility is a MSW landfill that was constructed, reconstructed or modified on or after May 30, 1991; and
 - (b) §60.752(b) – This facility has a design capacity greater than 2.5 million megagrams.

[40 CFR 60.750 - 60.759]

II.C. Standards for Air Emissions

1. The permittee shall calculate an NMOC emission rate for the landfill using the procedure and default values specified in §60.754(a)(1).

[40 CFR 60.752(b)]
2. **Tier 1:** The permittee shall compare the calculated NMOC mass emission rate to the standard of 50 megagrams per year as required by §60.754(a)(2).
 - (a) If the calculated NMOC emission rate is less than 50 megagrams per year using Tier 1, the permittee shall:
 - (i) Submit an emission rate report as provided in §60.757(b)(1); and
 - (ii) Recalculate the NMOC mass emission rate annually using the procedure and default values specified in §60.754(a)(1) and using Tier 1 as specified in §60.754(a)(2) until such time as the calculated emission rate is equal to or greater than 50 megagrams per year or the landfill is closed.

[40 CFR 60.752(b)(1) and 40 CFR 60.754(a)(1)(i)]

(b) If the calculated NMOC emission rate using the default values of §60.754(a)(1) is equal to or greater than 50 megagrams per year using Tier 1, the permittee shall either:

(i) Comply with §60.752(b)(2) as follows:

- (A) Submit a collection and control system design plan prepared by a professional engineer within 1 year; and
- (B) Install a collection and control system, as specified in §60.752(b)(2)(ii)(A) or (B) and §60.752(b)(2)(iii), within 30 months after the first annual report in which the rate equals or exceeds 50 megagram per year; and
- (C) Comply with the specifications for active collection systems as specified in §60.759.

or

(ii) Determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the procedures provided in paragraph §60.754(a)(3) and identified as Tier 2.

[40 CFR 60.752(b)(2) and 40 CFR 60.754(a)(1)(ii)]

3. **Tier 2:** The permittee shall calculate a site-specific NMOC concentration as required by §60.754(a)(3) and recalculate the NMOC mass emission rate using the equations provided in §60.754(a)(1) using the average NMOC concentration from the collected samples instead of the default value in the equation in §60.754(a)(1).

(a) If the resulting NMOC mass emission rate is less than 50 megagrams per year using Tier 2, the permittee shall:

- (i) Submit a periodic estimate of the emission rate report as provided in §60.757(b)(1); and
- (ii) Retest the site-specific NMOC concentration every 5 years using Tier 2.

[40 CFR 60.754(a)(3)(i)]

(b) If the resulting NMOC mass emission rate is equal to or greater than 50 megagrams per year using Tier 2, the permittee shall either:

(i) Comply with §60.752(b)(2) as follows:

- (A) Submit a collection and control system design plan prepared by a professional engineer within 1 year; and
- (B) Install a collection and control system, as specified in §60.752(b)(2)(ii)(A) or (B) and §60.752(b)(2)(iii), within 30 months after the first annual report in which the rate equals or exceeds 50 megagram per year; ; and
- (C) Comply with the specifications for active collection systems as specified in §60.759.

or

- (ii) Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the procedures specified in paragraph §60.754(a)(4) and identified as Tier 3.

[40 CFR 60.752(b)(2) and 40 CFR 60.754(a)(3)(ii)]

4. **Tier 3:** The permittee shall determine the site-specific methane generation rate constant as required by §60.754(a)(4) and recalculate the NMOC mass emission rate using the site-specific methane generation rate constant, the NMOC concentration previously determined by Tier 2, and the equations provided in §60.754(a)(1).

- (a) If the resulting NMOC mass emission rate is less than 50 megagrams per year using Tier 3, the permittee shall:

- (i) Submit a periodic emission rate report as provided in §60.757(b)(1); and
- (ii) Recalculate the NMOC emission rate annually as provided in §60.757(b)(1) using the equations in paragraph §60.754(a)(1), the site-specific methane generation rate constant, and NMOC concentration rate obtained by Tier 2 every 5 years. The site-specific methane generation rate constant is performed only once, and the value obtained from this test shall be used in all subsequent annual NMOC emission rate calculations.

[40 CFR 60.754(a)(4)(ii)]

- (b) If the resulting NMOC mass emission rate is equal to or greater than 50 megagrams per year using Tier 3, the permittee shall comply with §60.752(b)(2) as follows:

- (A) Submit a collection and control system design plan prepared by a professional engineer within 1 year; and
- (B) Install a collection and control system, as specified in §60.752(b)(2)(ii)(A) or (B) and §60.752(b)(2)(iii), within 30 months after the first annual report in which the rate equals or exceeds 50 megagram per year ; and
- (C) Comply with the specifications for active collection systems as specified in §60.759.

[40 CFR 60.752(b)(2) and 40 CFR 60.754(a)(4)(i)]

II.D. Compliance Provisions [40 CFR 60.755]

The specified methods in §60.755(a)(1) - (a)(6) shall be used to determine whether the gas collection and control system is in compliance with §60.752(b)(2)(ii).

II.E. Monitoring of Operations [40 CFR 60.756]

The requirements of §60.756(a) - (f) shall be used to monitor the capture and control system requirements of §60.752(b)(2).

II.F. Reporting Requirements [40 CFR 60.757]

If the NMOC emission rate equals or exceeds 50 megagrams per year, the permittee shall meet the applicable reporting requirements of §60.757(a) - (g).

II.G. Recordkeeping Requirements [40 CFR 60.758]

The permittee shall meet the applicable recordkeeping requirements of §60.758(a) - (f).

III. 40 CFR Part 63, Subpart AAAA – National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste(MSW) Landfills

III.A. 40 CFR Part 63, Subpart A – General Provisions

This facility is subject to the requirements of 40 CFR part 63, subpart A as stated in Table 1 of 40 CFR part 63, subpart AAAA and §§63.1960 through 63.1985. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 63, subpart A.

[40 CFR 63.1 - 63.16 and 40 CFR 63.1955(d)(1)]

III.B. 40 CFR 63, Subpart AAAA - Standards

1. This facility is subject to the requirements of 40 CFR part 63, subpart AAAA. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 63, subpart AAAA.
2. 40 CFR 63, Subpart AAAA applies as follows:
 - (a) §63.1935(a) - This facility is a MSW landfill that has accepted waste since November 8, 1987 or has additional capacity for waste deposition; and
 - (b) §63.1935(a)(3) – This facility has a design capacity greater than 2.5 million megagrams and is an area source MSW landfill.

[40 CFR 63.1930 – 63.1990]

III.C. Non-Methane Organic Compound Emission Rate < 50 Mg/year

If the uncontrolled non-methane organic compound (NMOC) emission rate is less than 50 megagrams per year, as calculated according to §60.754(a) of the MSW landfills new source performance standards in 40 CFR part 60, subpart WWW, the permittee shall recalculate the NMOC emission rate annually as specified in 40 CFR 60.752(b)(1) using the procedures specified in 40 CFR 60.754(a)(1) until such time as the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, or the landfill is closed.

[40 CFR 63.1935(a)(3)]

[Explanatory note: The requirements of 40 CFR part 60, subpart WWW are summarized in the Standards of Performance for Municipal Solid Waste Landfills requirements in this permit.]

III.D. Non-Methane Organic Compound Emission Rate ≥ 50 Mg/year

If the uncontrolled non-methane organic compound (NMOC) emission rate is equal to or greater than 50 megagrams per year, as calculated according to §60.754(a) of the MSW landfills new source performance standards in 40 CFR part 60, subpart WWW, the permittee shall comply with 40 CFR part 63, subpart AAAA by meeting the standards, monitoring, recordkeeping and reporting requirements as specified in 40 CFR part 60, subpart WWW in addition to the following standards, monitoring, recordkeeping and reporting requirements that apply to the facility.

[Explanatory note: The requirements of 40 CFR part 60, subpart WWW are summarized in the Standards of Performance for Municipal Solid Waste Landfills requirements in this permit.]

1. Standards for Air Emissions

- (a) The permittee shall comply with the requirements of 40 CFR part 60, subpart WWW.
[40 CFR 63.1955(a)]
- (b) If the permittee is required by 40 CFR 60.752(b)(2) of 40 CFR part 60, subpart WWW to install a collection and control system, the permittee must comply with the requirements in §§63.1960 through 63.1985, and with the general provisions as specified in Table 1 of 40 CFR part 63, subpart AAAA.
[40 CFR 63.1955(b)]
- (c) For approval of collection and control systems that include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions, the permittee must follow the procedures in 40 CFR 60.752(b)(2). If alternatives have already been approved under 40 CFR part 60, subpart WWW, these alternatives can be used to comply with 40 CFR 63, subpart AAAA, except as specified in 63.1955(c).
[40 CFR 63.1955(c)]

2. Compliance Provisions [40 CFR 63.1960]

Compliance shall be determined by the requirements of §63.1960.

3. Monitoring and Testing [40 CFR 63.1980(g)]

If the permittee adds any liquids other than leachate in a controlled fashion to the waste mass and does not comply with the bioreactor requirements in §§63.1947, 63.1955(c) and 63.1980(c) through (f) of 40 CFR part 63, subpart AAAA, the permittee must keep a record of calculations as specified in §63.1980(g).

4. Recordkeeping and Reporting Requirements

- (a) The permittee must comply with the recordkeeping requirements as specified in §60.758(a) of 40 CFR part 60, subpart WWW, except that the annual report described in 40 CFR §60.757(f) must be submitted every 6 months.
[40 CFR 63.1980(a)]
- (b) The permittee must keep records and reports as specified in the general provisions of 40 CFR part 60 and in Table 1 of 40 CFR part 63, subpart AAAA. Applicable records in the general provisions include items such as startup, shutdown and malfunction (SSM) plans and the SSM plan reports.
[40 CFR 63.1980(b)]

IV. 40 CFR Part 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants from Reciprocating Internal Combustion Engines

IV.A. 40 CFR Part 63, Subpart A - General Provisions [40 CFR 63.1 - 63.16]

This facility is subject to the requirements of 40 CFR part 63, subpart A as outlined in Table 8 of 40 CFR part 63, subpart ZZZZ. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 63, subpart A.

[40 CFR 63.6665 and Table 8]

IV.B. 40 CFR Part 63, Subpart ZZZZ – Standards

1. This facility is subject to the requirements of 40 CFR part 63, subpart ZZZZ for stationary reciprocating internal combustion engines (RICE). Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 63, subpart ZZZZ.

2. 40 CFR part 63, subpart ZZZZ applies to the following stationary engines:

IE1: Isuzu; 55.2 hp diesel-fired compression ignition engine.
Construction Date: Pre June 12, 2006; Manufactured 2000.
Compliance Date: May 3, 2013.

IE2: John Deere (6.8L); 150 hp diesel-fired compression ignition engine.
Construction Date: Pre June 12, 2006; Manufactured 2002.
Compliance Date: May 3, 2013.

IE3: Subaru-Robin; 11 hp diesel-fired compression ignition engine.
Construction Date: Post June 12, 2006; Manufactured 2007.
Compliance Date: Upon Start-up.

[40 CFR 63.6585 - 63.6590]

IV.C. Requirements for Engine IE3

1. The permittee must meet the requirements of 40 CFR part 63, subpart ZZZZ by meeting the requirements of 40 CFR part 60, subpart IIII, for stationary CI engines. No further requirements apply to engine unit IE3 under 40 CFR part 63.

[40 CFR 63.6590(c) and 40 CFR 63.6590(c)(1)]

2. Pursuant to 40 CFR part 60, subpart IIII, this engine is subject to 40 CFR part 60, subpart IIII, as it was manufactured after April 1, 2006. As such, there are additional requirements outlined in this permit that apply to this engine.

[40 CFR 60.4200(a)(2)(i)]

IV.D. Requirements for Engines IE1 and IE2

1. Emission and Operating Limitations

- a. Except during periods of startup, the permittee shall:

- i. Change oil and filter every 1,000 hours of operation or annually, whichever comes first;
 - ii. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first;
 - iii. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.
- b. During periods of startup the permittee shall minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply.

[40 CFR 63.6603(a) and Table 2d: 1(a)-(b)]

2. Operation and Maintenance

The permittee must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop a maintenance plan which must provide, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practices for minimizing emissions.

[40 CFR 66.6625(e) and Table 6: 9(a)(i)-(ii)]

3. Compliance Requirements

a. The permittee must:

- i. Be in compliance with the emission limitations and operating limitations, which apply, at all times.

[40 CFR 63.6605(a)]

- ii. Operate and maintain the engines, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions, at all times.

[40 CFR 63.6605(b)]

- iii. Demonstrate continuous compliance with each emission limitation and operating limitation that apply.

[40 CFR 63.6640 (a)]

- b. For new, reconstructed, and rebuilt stationary RICE, deviations from the emission or operating limitations that occur during the first 200 hours of operation from engine startup (engine burn-in period) are not violations. Rebuilt stationary RICE means a stationary RICE that has been rebuilt as that term is defined in 40 CFR 94.11(a).

[40 CFR 63.6640 (d)]

4. Recordkeeping

- a. The permittee must keep records of operation and maintenance to show continuous compliance with each emission or operating limitation and to demonstrate that the engine was operated and maintained according to the required maintenance plan.

[40 CFR 63.6655 (d)-(e)]

- b. Records must be in a form suitable and readily available for expeditious review according to §63.10(b)(1).

[40 CFR 63.6660(a)]

- c. Each record must be kept for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

[40 CFR 63.6660(b)]

- d. Each record must be readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1).

[40 CFR 63.6660(c)]

V. 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

V.A. 40 CFR 60, Subpart A – General Provisions [40 CFR 60.1 - 60.19]

This facility is subject to the requirements of 40 CFR part 60, subpart A as outlined in Table 8 of 40 CFR 60, subpart IIII. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 60, subpart A.

[40 CFR 60.4218 and Table 8]

V.B. 40 CFR 60, Subpart IIII – Standards

1. This facility is subject to the requirements of 40 CFR part 60, subpart IIII. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 60, subpart IIII.
2. 40 CFR part 60, subpart IIII applies to the following engines:
 - IE1: Isuzu; 55.2 hp diesel-fired compression ignition engine.
Model Year: Pre 2007; Manufactured 2000.
Compliance Date: May 3, 2013.
 - IE2: John Deere (6.8L); 150 hp diesel-fired compression ignition engine; EPA Tier 2 Certified for NOx.
Model Year: Pre 2007; Manufactured 2002.
Compliance Date: May 3, 2013.
 - IE3: Subaru-Robin; 11 hp diesel-fired compression ignition engine.
Model Year: 2007; Manufactured 2007.
Compliance Date: Upon Start-up.

[40 CFR 60.4200]

V.C. Requirements for Engines IE1 and IE2

1. Emission Standards

The permittee, as an owner or operator of pre-2007 model year non-emergency stationary compression ignition internal combustion engines (CI ICE) with a displacement of less than 10 liters per cylinder, must comply with the emission standards in the following table.

Emission standards for stationary pre-2007 model year engines with a displacement of <10 liters per cylinder (g/hp-hr)						
Maximum Engine Power	Engine	NMHC + NO _x	HC	NO _x	CO	PM
(50≤hp<75)	IE1			6.9		
(100≤hp<175)	IE2			6.9		

[40 CFR 60.4204 and Table 1]

2. Compliance Requirements

- a. The permittee, as the owner or operator of the CI ICE, must
 - i. Comply with the emission standards;
 - ii. Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed and approved by the engine manufacturer;
 - iii. Only change those settings that are permitted by the manufacturer; and
 - iv. Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply.

[40 CFR 60.4211(a)]

- b. The permittee, as the owner or operator of a pre-2007 model year stationary CI ICE who must comply with the emission standards specified in §60.4204(a), must demonstrate compliance according to one of the following methods:
 - i. Purchase an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications;
 - ii. Keep records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in 40 CFR part 60, subpart IIII and these methods must have been followed correctly;
 - iii. Keep records of engine manufacturer data indicating compliance with the standards;
 - iv. Keep records of control device vendor data indicating compliance with the standards; or
 - v. Conduct an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

[40 CFR 60.4211 (b)]

V.D. Requirements for Engine IE3

1. Emission Standards

- a. The permittee, as the owner or operator of 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder, must comply with the manufacturer certification emission standards for new CI ICE in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable.
[40 CFR 60.4204(b)]
- b. Stationary CI ICE manufacturers must certify their 2007 model year and later non-emergency stationary CI ICE with a maximum engine power less than or equal to 3,000 hp and a displacement of less than 10 liters per cylinder to the certification emission standards for new non-road CI engines in 40 CFR 89.112, 40 CFR 89.113, 40 CFR 1039.101, 40 CFR 1039.102, 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, and 40 CFR 1039.115, as applicable, for all pollutants, for the same model year and maximum engine power.

[40 CFR 60.4201(a)]

2. Fuel Usage Requirements

Beginning October 1, 2010, the permittee, as an owner or operator of stationary CI ICE subject to 40 CFR part 60, subpart IIII with a displacement of less than 30 liters per cylinder that use diesel fuel, must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for non-road diesel fuel.

[40 CFR 60.4207(b)]

3. Compliance Requirements

- a. The permittee, as an owner or operator of stationary CI ICE subject to 40 CFR part 60. Subpart III, must meet the following compliance requirements:
 - i. Comply with the emission standards;
 - ii. Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed and approved by the engine manufacturer;
 - iii. Only change those settings that are permitted by the manufacturer; and
 - iv. Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply.

[40 CFR 60.4211(a)]

- b. The permittee, as an owner or operator of a 2007 model year and later stationary CI internal combustion engine, must comply by purchasing an engine certified to the emission standards in §60.4204(b), as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

[40 CFR 60.4211(c)]

VI. Facility-Wide Requirements

Conditions in this section of the permit apply to all emissions units located at the facility, including any units not specifically listed in this permit.

[40 CFR 71.6(a)(1)]

VI.A. General Recordkeeping Requirements [40 CFR 71.6(a)(3)(ii) and 63.10(b)(3)]

The permittee shall comply with the following generally applicable recordkeeping requirements:

1. If the permittee determines that his or her stationary source that emits (or has the potential to emit, without federally recognized controls) one or more hazardous air pollutants that is not subject to a relevant standard or other requirement established under 40 CFR part 63, the permittee shall keep a record of the applicability determination on site at the source for a period of five (5) years after the determination, or until the source changes its operations to become an affected source, whichever comes first. The record of the applicability determination shall include an analysis (or other information) that demonstrates why the permittee believes the source is unaffected (e.g., because the source is an area source).

[40 CFR 63.10(b)(3)]

VI.B. General Reporting Requirements [40 CFR 71.6(a)(3)(iii)]

This permit was issued Sept 22, 2011? This cannot be correct

1. The permittee shall submit to the EPA Regional Office all reports of any required monitoring under this permit semi-annually. Reports shall be submitted by April 1st and October 1st of each year. The first report due on October 1, 2011 shall cover the period from the effective date of this permit through August 31, 2011. Thereafter, the report due on April 1st shall cover the six-month period ending on the last day of February before the report is due. The report due on October 1st shall cover the six-month period ending on the last day of August before the report is due. All instances of deviations from permit requirements shall be clearly identified in such reports.

[Explanatory note: To help part 71 permittees meet reporting responsibilities, EPA has developed a form "SLXMON" for six-month monitoring reports. The form may be found on the EPA website at: <http://www.epa.gov/air/oaqps/permits/p71forms.html>]

2. "Deviation" means any situation in which an emissions unit fails to meet a permit term or condition. A deviation is not always a violation. A deviation can be determined by observation or through review of data obtained from any testing, monitoring, or recordkeeping established in accordance with §71.6(a)(3)(i) and (a)(3)(ii). For a situation lasting more than 24 hours which constitutes a deviation, each 24 hour period is considered a separate deviation. Included in the meaning of deviation are any of the following:
 - (a) A situation where emissions exceed an emission limitation or standard;
 - (b) A situation where process or emissions control device parameter values indicate that an emission limitation or standard has not been met; or

- (c) A situation in which observations or data collected demonstrate noncompliance with an emission limitation or standard or any work practice or operating condition required by the permit.
3. The permittee shall promptly report to the EPA Regional Office any deviations from permit requirements, including those attributable to upset conditions as defined in this permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. "Prompt" is defined as follows:
- (a) Any definition of "prompt" or a specific timeframe for reporting deviations provided in an underlying applicable requirement as identified in this permit; or
 - (b) Where the underlying applicable requirement fails to address the time frame for reporting deviations, reports of deviations will be submitted based on the following schedule:
 - (i) For emissions of a hazardous air pollutant or a toxic air pollutant (as identified in the applicable regulation) that continue for more than an hour in excess of permit requirements, the report shall be made within 24 hours of the occurrence;
 - (ii) For emissions of any regulated air pollutant, excluding a hazardous air pollutant or a toxic air pollutant that continue for more than two (2) hours in excess of permit requirements, the report shall be made within 48 hours; and
 - (iii) For all other deviations from permit requirements, the report shall be submitted with the semi-annual monitoring.
 - (c) If either of the conditions in (i) and (ii) above is met, the source shall notify EPA by telephone (1-800-227-8917) or facsimile (303-312-6064) based on the timetables listed above. *[Explanatory note: Notification by telephone or facsimile must specify that this notification is a deviation report for a part 71 permit. A written notice, certified consistent with the requirements of this permit must be submitted within ten (10) working days of the occurrence. All deviations reported under this section must also be identified in the 6-month report.]*

[Explanatory Note: To help part 71 permittees meet reporting responsibilities, EPA has developed a form "PDR" for prompt deviation reporting. The form may be found on the EPA website at: <http://www.epa.gov/air/oaqps/permits/p71forms.html>.]

VI.C. Permit Shield [40 CFR 71.6(f)(3)]

1. Nothing in this permit shall alter or affect the following:
- (a) The liability of a permittee for any violation of applicable requirements prior to or at the time of permit issuance;
 - (b) The ability of the EPA to obtain information under Section 114 of the CAA; or
 - (c) The provisions of Section 303 of the CAA (emergency orders), including the authority of the Administrator under that section.

[40 CFR 71.6(f)(3)]

VII. Part 71 Administrative Requirements

VII.A. Annual Fee Payment [40 CFR 71.6(a)(7) and 40 CFR 71.9]

1. The permittee shall pay an annual permit fee in accordance with the procedures outlined below.

[40 CFR 71.9(a)]

2. The permittee shall pay the annual permit fee each year no later than April 1. The annual fee shall be based on the previous calendar year (January 1 – December 31).

[40 CFR 71.9(h)]

3. The fee payment shall be in United States currency and shall be paid by money order, bank draft, certified check, corporate check, or electronic funds transfer payable to the order of the U.S. Environmental Protection Agency.

[40 CFR 71.9(k)(1)]

4. The permittee shall send fee payment and a completed fee filing form to:

For regular U.S. Postal Service mail

U.S. Environmental Protection Agency
FOIA and Miscellaneous Payments
Cincinnati Finance Center
P.O. Box 979078
St. Louis, MO 63197-9000

For non-U.S. Postal Service express mail

(FedEx, Airborne, DHL, and UPS)

U.S. Bank
Government Lockbox 979078
U.S. EPA FOIA & Misc. Payments
1005 Convention Plaza
SL-MO-C2-GL
St. Louis, MO 63101

[40 CFR 71.9(k)(2)]

5. The permittee shall send an updated fee calculation worksheet form and a photocopy of each fee payment check (or other confirmation of actual fee paid) submitted annually by the same deadline as required for fee payment.

[40 CFR 71.9(h)(1)]

[Explanatory note: The fee filing form "FF" and the fee calculation worksheet form "FEE" may be found on EPA website at: <http://www.epa.gov/air/oaqps/permits/p71forms.html>]

6. Basis for calculating annual fee:

- (a) The annual emissions fee shall be calculated by multiplying the total tons of actual emissions of all “regulated pollutants (for fee calculation)” emitted from the source by the presumptive emissions fee (in dollars/ton) in effect at the time of calculation.

[40 CFR 71.9(c)(1)]

- (i) “Actual emissions” means the actual rate of emissions in tpy of any regulated pollutant (for fee calculation) emitted from a part 71 source over the preceding calendar year. Actual emissions shall be calculated using each emissions units actual operating hours, production rates, in-place control equipment, and types of materials processed, stored, or combusted during the preceding calendar year.

[40 CFR 71.9(c)(6)]

- (ii) Actual emissions shall be computed using methods required by the permit for determining compliance, such as monitoring or source testing data.

[40 CFR 71.9(h)(3)]

- (iii) If actual emissions cannot be determined using the compliance methods in the permit, the permittee shall use other federally recognized procedures.

[40 CFR 71.9(e)(2)]

[Explanatory note: The presumptive fee amount is revised each calendar year to account for inflation, and it is available from EPA prior to the start of each calendar year.]

- (b) The permittee shall exclude the following emissions from the calculation of fees:

- (i) The amount of actual emissions of each regulated pollutant (for fee calculation) that the source emits in excess of 4,000 tons per year (tpy);

[40 CFR 71.9(c)(5)(i)]

- (ii) Actual emissions of any regulated pollutant (for fee calculation) already included in the fee calculation; and

[40 CFR 71.9(c)(5)(ii)]

- (iii) The quantity of actual emissions (for fee calculation) of insignificant activities [defined in §71.5(c)(11)(i)] or of insignificant emissions levels from emissions units identified in the permittee’s application pursuant to §71.5(c)(11)(ii).

[40 CFR 71.9(c)(5)(iii)]

7. Fee calculation worksheets shall be certified as to truth, accuracy, and completeness by a responsible official.

[40 CFR 71.9(h)(2)]

[Explanatory note: The fee calculation worksheet form already incorporates a section to help you meet this responsibility.]

8. The permittee shall retain fee calculation worksheets and other emissions-related data used to determine fee payment for 5 years following submittal of fee payment. *[Emission-related data include, for example, emissions-related forms provided by EPA and used by the permittee for fee calculation purposes, emissions-related spreadsheets, and emissions-related data, such as records of emissions monitoring data and related support information required to be kept in accordance with §71.6(a)(3)(ii).]*

[40 CFR 71.9(i)]

9. Failure of the permittee to pay fees in a timely manner shall subject the permittee to assessment of penalties and interest in accordance with §71.9(l).

[40 CFR 71.9(l)]

10. When notified by EPA of underpayment of fees, the permittee shall remit full payment within 30 days of receipt of notification.

[40 CFR 71.9(j)(2)]

11. A permittee who thinks an EPA assessed fee is in error and who wishes to challenge such fee, shall provide a written explanation of the alleged error to EPA along with full payment of the EPA assessed fee.

[40 CFR 71.9(j)(3)]

VII.B. Annual Emissions Inventory [40 CFR 71.9(h)(1)and (2)]

The permittee shall submit an annual emissions report of its actual emissions for both criteria pollutants and regulated HAPs for this facility for the preceding calendar year for fee assessment purposes. The annual emissions report shall be certified by a responsible official and shall be submitted each year to EPA by April 1st.

[Explanatory note: An annual emissions report, required at the same time as the fee calculation worksheet by §71.9(h), has been incorporated into the fee calculation worksheet form as a convenience.]

VII.C. Compliance Requirements

1. Compliance with the Permit

- (a) The permittee must comply with all conditions of this part 71 permit. Any permit noncompliance constitutes a violation of the CAA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

[40 CFR 71.6(a)(6)(i)]

- (b) It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

[40 CFR 71.6(a)(6)(ii)]

- (c) For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any requirement of this permit, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

[Section 113(a) and 113(e)(1) of the Act, 40 CFR 51.212, 52.12, 52.33, 60.11(g), and 61.12]

2. Compliance Schedule

- (a) For applicable requirements with which the source is in compliance, the source will continue to comply with such requirements.

[40 CFR 71.5(c)(8)(iii)(A)]

- (b) For applicable requirements that will become effective during the permit term, the source shall meet such requirements on a timely basis.

[40 CFR 71.5(c)(8)(iii)(B)]

3. Compliance Certifications

- (a) The permittee shall submit to EPA a certification of compliance with permit terms and conditions, including emission limitations, standards, or work practices annually on April 1st. The certification of compliance shall cover the previous calendar year.

[40 CFR 71.6(c)(5)]

- (b) The compliance certification shall be certified as to truth, accuracy, and completeness by a responsible official consistent with §71.5(d).

[40 CFR 71.6(c)(5)]

- (c) The certification shall include the following:

- (i) Identification of each permit term or condition that is the basis of the certification;

- (ii) The identification of the method(s) or other means used for determining the compliance status of each term and condition during the certification period, and whether such methods or other means provide continuous or intermittent data. Such methods and other means shall include, at a minimum, the methods and means required in this permit. If necessary, the permittee also shall identify any other material information that must be included in the certification to comply with Section 113(c)(2) of the CAA, which prohibits knowingly making a false certification or omitting material information;

- (iii) The status of compliance with each term and condition of the permit for the period covered by the certification shall be based on the method or means designated above. The certification shall identify each deviation and take it into account in the compliance certification;
- (iv) Such other facts as the EPA may require to determine the compliance status of the source; and
- (v) Whether compliance with each permit term was continuous or intermittent.

[40 CFR 71.6(c)(5)(iii)]

[Explanatory note: To help part 71 permittees meet reporting responsibilities, EPA has developed a reporting form for annual compliance certifications. The form may be found on EPA website at: <http://www.epa.gov/air/oaqps/permits/p71forms.html>]

VII.D. Duty to Provide and Supplement Information

[40 CFR 71.6(a)(6)(v), 71.5(a)(3), and 71.5(b)]

1. The permittee shall furnish to EPA, within a reasonable time, any information that EPA may request in writing to determine whether cause exists for modifying, revoking, and reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, the permittee shall also furnish to the EPA copies of records that are required to be kept pursuant to the terms of the permit, including information claimed to be confidential. Information claimed to be confidential must be accompanied by a claim of confidentiality according to the provisions of 40 CFR part 2, subpart B.
2. The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information. In addition, a permittee shall provide additional information as necessary to address any requirements that become applicable after the date a complete application is filed, but prior to release of a draft permit.

[40 CFR 71.6(a)(6)(v) and 40 CFR 71.5(a)(3)]

[40 CFR 71.5(b)]

VII.E. Submissions [40 CFR 71.5(d), 71.6(c)(1) and 71.9(h)(2)]

1. Any document (application form, report, compliance certification, etc.) required to be submitted under this permit shall be certified by a responsible official as to truth, accuracy, and completeness. Such certifications shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

[Explanatory note: EPA has developed a reporting form "CTAC" for certifying truth, accuracy and completeness of part 71 submissions. The form may be found on EPA website at: <http://www.epa.gov/air/oaqps/permits/p71forms.html>]

2. Any documents required to be submitted under this permit, including reports, test data, monitoring data, notifications, compliance certifications, fee calculation worksheets, and applications for renewals and permit modifications shall be submitted to:

Part 71 Permit Contact
Air Program, 8P-AR
U.S. Environmental Protection Agency,
1595 Wynkoop Street
Denver, Colorado 80202-1129

VII.F. Severability Clause [40 CFR 71.6(a)(5)]

The provisions of this permit are severable, and in the event of any challenge to any portion of this permit, or if any portion is held invalid, the remaining permit conditions shall remain valid and in force.

VII.G. Permit Actions [40 CFR 71.6(a)(6)(iii)]

This permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

VII.H. Administrative Permit Amendments [40 CFR 71.7(d)]

1. The permittee may request the use of administrative permit amendment procedures for a permit revision that:
 - (a) Corrects typographical errors;
 - (b) Identifies a change in the name, address, or phone number of any person identified in the permit, or provides a similar minor administrative change at the source;
 - (c) Requires more frequent monitoring or reporting by the permittee;
 - (d) Allows for a change in ownership or operational control of a source where the EPA determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee has been submitted to the EPA;
 - (e) Incorporates into the part 71 permit the requirements from preconstruction review permits authorized under an EPA-approved program, provided that such a program meets procedural requirements substantially equivalent to the requirements of §§71.7 and 71.8 that would be applicable to the change if it were subject to review as a permit modification, and compliance requirements substantially equivalent to those contained in §71.6; or
 - (f) Incorporates any other type of change which EPA has determined to be similar to those listed above in subparagraphs (a) through (e) above.

[Explanatory note: If subparagraphs (a) through (e) above do not apply, please contact EPA for a determination of similarity prior to submitting your request for an administrative permit amendment under this provision.]

VII.I. Minor Permit Modifications [40 CFR 71.7(e)(1)]

1. The permittee may request the use of minor permit modification procedures only for those modifications that:
 - (a) Do not violate any applicable requirement;
 - (b) Do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
 - (c) Do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis;
 - (d) Do not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:
 - (i) A federally enforceable emissions cap assumed to avoid classification as a modification under any provision of title I; and
 - (ii) An alternative emissions limit approved pursuant to regulations promulgated under Section 112(i)(5) of the CAA;
 - (e) Are not modifications under any provision of title I of the CAA; and
 - (f) Are not required to be processed as a significant modification.

[40 CFR 71.7(e)(1)(i)(A)]
2. Notwithstanding the list of changes ineligible for minor permit modification procedures above, minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in an applicable implementation plan or in applicable requirements promulgated by EPA.

[40 CFR 71.7(e)(1)(i)(B)]
3. An application requesting the use of minor permit modification procedures shall meet the requirements of §71.5(c) and shall include the following:
 - (a) A description of the change, the emissions resulting from the change, and any new applicable requirements that will apply if the change occurs;
 - (b) The source's suggested draft permit;

- (c) Certification by a responsible official, consistent with §71.5(d), that the proposed modification meets the criteria for use of minor permit modification procedures and a request that such procedures be used; and
- (d) Completed forms for the permitting authority to use to notify affected States as required under §71.8.

[40 CFR 71.7(e)(1)(ii)]

- 4. The source may make the change proposed in its minor permit modification application immediately after it files such application. After the source makes the change allowed by the preceding sentence, and until the permitting authority takes any of the actions authorized by §71.7(e)(1)(iv)(A) through (C), the source must comply with both the applicable requirements governing the change and the proposed permit terms and conditions. During this time period, the source need not comply with the existing permit terms and conditions it seeks to modify. However, if the source fails to comply with its proposed permit terms and conditions during this time period, the existing permit terms and conditions it seeks to modify may be enforced against it.

[40 CFR 71.7(e)(1)(v)]

- 5. The permit shield under §71.6(f) may not extend to minor permit modifications.

[40 CFR 71.7(e)(1)(vi)]

VII.J. Group Processing of Minor Permit Modifications. [40 CFR 71.7(e)(2)]

- 1. Group processing of modifications by EPA may be used only for those permit modifications:
 - (a) That meet the criteria for minor permit modification procedures under this permit; and
 - (b) That collectively are below the threshold level of 10 percent of the emissions allowed by the permit for the emissions unit for which the change is requested, 20 percent of the applicable definition of major source in §71.2, or 5 tpy per year, whichever is least.

[40 CFR 71.7(e)(2)(i)]

- 2. An application requesting the use of group processing procedures shall be submitted to EPA, shall meet the requirements of §71.5(c), and shall include the following:
 - (a) A description of the change, the emissions resulting from the change, and any new applicable requirements that will apply if the change occurs;
 - (b) The source's suggested draft permit;
 - (c) Certification by a responsible official, consistent with §71.5(d), that the proposed modification meets the criteria for use of group processing procedures and a request that such procedures be used;

- (d) A list of the source's other pending applications awaiting group processing, and a determination of whether the requested modification, aggregated with these other applications, equals or exceeds the threshold set under the subparagraph above; and
- (e) Completed forms for the permitting authority to use to notify affected States as required under §71.8.

[40 CFR 71.7(e)(2)(ii)]

- 3. The source may make the change proposed in its minor permit modification application immediately after it files such application. After the source makes the change allowed by the preceding sentence, and until the permitting authority takes any of the actions authorized by §71.7(e)(1)(iv)(A) through (C), the source must comply with both the applicable requirements governing the change and the proposed permit terms and conditions. During this time period, the source need not comply with the existing permit terms and conditions it seeks to modify. However, if the source fails to comply with its proposed permit terms and conditions during this time period, the existing permit terms and conditions it seeks to modify may be enforced against it.

[40 CFR 71.7(e)(2)(v)]

- 4. The permit shield under §71.6(f) may not extend to group processing of minor permit modifications.

[40 CFR 71.7(e)(2)(vi)]

VII.K. Significant Permit Modifications [40 CFR 71.7(e)(3)]

- 1. The permittee must request the use of significant permit modification procedures for those modifications that:

- (a) Do not qualify as minor permit modifications or as administrative amendments;
- (b) Are significant changes in existing monitoring permit terms or conditions; or
- (c) Are relaxations of reporting or recordkeeping permit terms or conditions.

[40 CFR 71.7(e)(3)(i)]

- 2. Nothing herein shall be construed to preclude the permittee from making changes consistent with part 71 that would render existing permit compliance terms and conditions irrelevant.

[40 CFR 71.7(e)(3)(i)]

- 3. Permittees must meet all requirements of part 71 for applications, public participation, and review by affected states and tribes for significant permit modifications. For the application to be determined complete, the permittee must supply all information that is required by §71.5(c) for permit issuance and renewal, but only that information that is related to the proposed change.

[40 CFR 71.7(e)(3)(ii), 71.8(d), and 71.5(a)(2)]

VII.L. Reopening for Cause [40 CFR 71.7(f)]

1. The permit may be reopened and revised prior to expiration under any of the following circumstances:
 - (a) Additional applicable requirements under the Act become applicable to a major part 71 source with a remaining permit term of 3 or more years. Such a reopening shall be completed no later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions have been extended pursuant to §71.7(c)(3);
 - (b) Additional requirements (including excess emissions requirements) become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit;
 - (c) EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit; or
 - (d) EPA determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

VII.M. Property Rights [40 CFR 71.6(a)(6)(iv)]

This permit does not convey any property rights of any sort, or any exclusive privilege.

VII.N. Inspection and Entry [40 CFR 71.6(c)(2)]

Upon presentation of credentials and other documents as may be required by law, the permittee shall allow EPA or an authorized representative to perform the following:

1. Enter upon the permittee's premises where a part 71 source is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
4. As authorized by the CAA, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

VII.O. Emergency Provisions [40 CFR 71.6(g)]

1. In addition to any emergency or upset provision contained in any applicable requirement, the permittee may seek to establish that noncompliance with a technology-based emission limitation under this permit was due to an emergency. To do so, the permittee shall

demonstrate the affirmative defense of emergency through properly signed, contemporaneous operating logs, or other relevant evidence that:

- (a) An emergency occurred and that the permittee can identify the cause(s) of the emergency;
 - (b) The permitted facility was at the time being properly operated;
 - (c) During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards, or other requirements in this permit; and
 - (d) The permittee submitted notice of the emergency to EPA within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. This notice fulfills the requirements for prompt notification of deviations.
2. In any enforcement proceeding the permittee attempting to establish the occurrence of an emergency has the burden of proof.
 3. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error.

VII.P. Transfer of Ownership or Operation [40 CFR 71.7(d)(1)(iv)]

A change in ownership or operational control of this facility may be treated as an administrative permit amendment if the EPA determines no other change in this permit is necessary and provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee has been submitted to EPA.

VII.Q. Off Permit Changes [40 CFR 71.6(a)(12) and 40 CFR 71.6(a)(3)(ii)]

The permittee is allowed to make certain changes without a permit revision, provided that the following requirements are met:

1. Each change is not addressed or prohibited by this permit;
2. Each change shall meet with all applicable requirements and shall not violate any existing permit term or condition;
3. Changes under this provision may not include changes subject to any requirement of 40 CFR parts 72 through 78 or modifications under any provision of Title I of the CAA;

4. The permittee must provide contemporaneous written notice to EPA of each change, except for changes that qualify as insignificant activities under §71.5(c)(11). The written notice must describe each change, the date of the change, any change in emissions, pollutants emitted, and any applicable requirements that would apply as a result of the change;
5. The permit shield does not apply to changes made under this provision; and
6. The permittee must keep a record describing all changes that result in emissions of any regulated air pollutant subject to any applicable requirement not otherwise regulated under this permit, and the emissions resulting from those changes.
7. The notice shall be kept on site and made available to EPA on request, in accordance with the general recordkeeping provision of this permit.
8. Submittal of the written notice required above shall not constitute a waiver, exemption, or shield from applicability of any applicable standard or PSD permitting requirements under 40 CFR 52.21 that would be triggered by the replacement of any one emission unit, or by replacement of multiple emission units.

VII.R. Permit Expiration and Renewal [40 CFR 71.5(a)(1)(iii), 71.5(a)(2), 71.5(c)(5), 71.6(a)(11), 71.7(b), 71.7(c)(1), and 71.7(c)(3)]

1. This permit shall expire upon the earlier occurrence of the following events:
 - (a) Five (5) years elapse from the date of issuance; or
 - (b) The source is issued a part 70 or part 71 permit under an EPA approved or delegated permit program.

[40 CFR 71.6(a)(11)]
2. Expiration of this permit terminates the permittee's right to operate unless a timely and complete permit renewal application has been submitted at least 6 months but not more than 18 months prior to the date of expiration of this permit.

[40 CFR 71.5(a)(1)(iii)]
3. If the permittee submits a timely and complete permit application for renewal, consistent with §71.5(a)(2), but EPA has failed to issue or deny the renewal permit, then all the terms and conditions of the permit, including any permit shield granted pursuant to §71.6(f) shall remain in effect until the renewal permit has been issued or denied.

[40 CFR 71.7(c)(3)]
4. The permittee's failure to have a part 71 permit is not a violation of this part until EPA takes final action on the permit renewal application. This protection shall cease to apply if, subsequent to the completeness determination, the permittee fails to submit any additional information identified as being needed to process the application by the deadline specified in writing by EPA.

[40 CFR 71.7(b)]

5. Renewal of this permit is subject to the same procedural requirements that apply to initial permit issuance, including those for public participation, affected State, and tribal review.

[40 CFR 71.7(c)(1)]

6. The application for renewal shall include the current permit number, description of permit revisions and off permit changes that occurred during the permit term, any applicable requirements that were promulgated and not incorporated into the permit during the permit term, and other information required by the application form.

[40 CFR 71.5(a)(2) and 71.5(c)(5)]

VIII. Appendix

VIII.A. Inspection Information

1. Driving Directions:

To get to the Tekoi Landfill:

- Take Exit #77 (State Rd 196 exit) off Interstate 80;
- Proceed south on State Rd 196 for 28 miles;
- Landfill is located on the east side of the road.

2. Global Positioning System (GPS):

Latitude: 40.358323 N

Longitude: 112.724416 W

3. Safety Considerations:

A site visit requires steel toe boots, hard hat, and safety glasses.

Appendix B
Part 71 Permit Application Forms

Federal Operating Permit Program (40 CFR Part 71)**GENERAL INFORMATION AND SUMMARY (GIS)****A. Mailing Address and Contact Information**

Facility name Tekoi Landfill

Mailing address: Street or P.O. Box 6976 West California Avenue

City Salt Lake City State UT ZIP 84104 - _____

Contact person: Brad Kloos Title Senior District Manager

Telephone (801) 605 - 1954 Ext. _____

Facsimile (_____) _____ - _____

B. Facility Location

Temporary source? ___ Yes X No Plant site location _____

Section 18, Township, 5, Range West (Skull Valley Band of Goshute Indians Community)

City Skull Valley Band of Ghoshute Indian Reservation State UT County Tooele EPA Region 8

Is the facility located within:

Indian lands? X YES ___ NO An offshore source in federal waters? ___ YES X NO

Non-attainment area? ___ YES X NO If yes, for what air pollutants? _____

Within 50 miles of affected State? ___ YES X NO If yes, What State(s)? _____

C. Owner

Name Skull Valley Band of Ghoshute Indians Street/P.O. Box 1198 North Main Street

City Tooele State UT ZIP 8404

Telephone (435) 882 - 4532 Ext _____

D. Operator

Name Waste Management of Utah, Inc. Street/P.O. Box 2433 S 2050 W

City West Haven State UT ZIP 84401

Telephone (801) 605 - 1954 Ext _____

E. Application Type

Mark only one permit application type and answer the supplementary question appropriate for the type marked.

☐ Initial Permit ☒ Renewal ☐ Significant Mod ☐ Minor Permit Mod(MPM)

☐ Group Processing, MPM ☐ Administrative Amendment

For initial permits, when did operations commence? ____ / ____ / ____

For permit renewal, what is the expiration date of current permit? 09 / 22 / 16

F. Applicable Requirement Summary

Mark the types of applicable requirements that apply:

☒ SIP ☐ FIP/TIP ☐ PSD ☐ Non-attainment NSR

☐ Minor source NSR ☒ Section 111 ☐ Phase I acid rain ☐ Phase II acid rain

☒ Stratospheric ozone ☐ OCS regulations ☒ NESHAP ☐ Sec. 112(d) MACT

☐ Sec. 112(g) MACT ☐ Early reduction of HAP ☐ Sec 112(j) MACT ☐ RMP [Sec.112(r)]

☐ Section 129 ☐ NAAQS, increments or visibility but for temporary sources (This is rare)

Is the source subject to the Deepwater Port Act? ☐ YES ☒ NO

Has a risk management plan been registered? ☐ YES ☒ NO Agency _____

Phase II acid rain application submitted? ☐ YES ☒ NO If YES, Permitting Authority _____

G. Source-Wide PTE Restrictions and Generic Applicable Requirements

Cite and describe any emissions-limiting requirements and/or facility-wide "generic" applicable requirements.

40 CFR 60.752(A) – Requires landfill owner/operator to install a gas collection system when the NMOC emission rate exceeds 50 Mg per year

Please see attached Title V permit for other applicable requirements.

H. Process Description

List processes, products, and SIC codes for the facility.

Process	Products	SIC
Waste disposal	None	4953

I. Emission Unit Identification

Assign an emissions unit ID and describe each emissions unit at the facility. Control equipment and/or alternative operating scenarios associated with emissions units should be listed on a separate line. Applicants may exclude from this list any insignificant emissions units or activities.

Emissions Unit ID	Description of Unit
E1	Fugitive NMOC and VOC emissions from MSW landfill: 45 million meters design capacity
E2	Fugitive dust emissions from paved roads, unpaved roads, and material handling

Enter potential to emit (PTE) for the facility as a whole for each regulated air pollutant listed below. Enter the name of the single HAP emitted in the greatest amount and its PTE. For all pollutants, stipulations to major source status may be indicated by entering "major" in the space for PTE. Indicate the total actual emissions for fee purposes for the facility in the space provided. Applications for permit modifications need not include actual emissions information.

NOx 0.0 tons/yr VOC 94.1 tons/yr SO2 0.0 tons/yr

PM-10 0.0 tons/yr CO 0.0 tons/yr Lead 0.0 tons/yr

Total HAP 4.9 tons/yr

Single HAP with greatest amount Toluene PTE 1.64 tons/yr

Total of regulated pollutants (for fee calculation), Sec. F, line 5 of form FEE tons/yr

Permit number(s) V-SV-0000-2010.00 Permit type Title V Permitting authority USEPA, Region 8

Permit number(s) _____ Permit type _____ Permitting authority _____

Emission unit(s) subject to general permit NA

Check one: ☐ Application made ☐ Coverage granted

General permit identifier _____ Expiration Date ____/____/____

Does this application cross-reference information? X YES NO (If yes, see instructions)

EPA Form 5900-79

Federal Operating Permit Program (40 CFR Part 71)**EMISSION UNIT DESCRIPTION FOR PROCESS SOURCES (EUD-3)****A. General Information**Emissions unit ID: **E1** Description: **Municipal Solid Waste Landfill (MSW)**SIC Code (4-digit): **4953** SCC Code _____**B. Emissions Unit Description**Primary use or equipment type: **MSW and Construction and Demolition Debris Disposal**Manufacturer **NA**Model No. **NA**Serial No. **NA**Installation date **01 / 14 / 2005**Raw materials **NA**Finished products **NA**Temporary source: **X** No ____ Yes**C. Activity or Production: Rates Waste Disposal**

Activity or Production Rate	Amount/Hour	Amount/Year
Actual Rate	Not Applicable	191,967 tons/year
Maximum rate	Not Applicable	1,248,000 tons/year

D. Associated Air Pollution Control EquipmentEmissions unit ID: **Not Applicable** Device Type **Not Applicable**

Manufacturer _____ Model No. _____

Serial No. _____ Installation date ____/____/____

Control efficiency (%) _____ Capture efficiency (%) _____

Air pollutant(s) controlled _____ Efficiency estimation method _____

E. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (This is not common)).

Stack height (ft)	Not Applicable	Inside stack diameter (ft)	Not Applicable
Stack temp (F)	Not Applicable	Design stack flow rate (ACFM)	Not Applicable
Actual stack flow rate (ACFM)	Not Applicable	Velocity (ft/sec)	Not Applicable

Federal Operating Permit Program (40 CFR Part 71)**EMISSION UNIT DESCRIPTION FOR PROCESS SOURCES (EUD-3)****A. General Information**

Emissions unit ID: **E2** Description: **Fugitive Dust Emissions from Paved & Unpaved Roads and Material Handling**

SIC Code (4-digit): **4953** SCC Code _____

B. Emissions Unit Description

Primary use or equipment type: **Waste Transfer Trucks, Haul Trucks, Heavy Equipment**

Manufacturer **NA**

Model No. **NA**

Serial No. **NA**

Installation date **NA**

Raw materials **NA**

Finished products **NA**

Temporary source: **X** No ___ Yes

C. Activity or Production: Rates Waste Disposal

Activity or Production Rate	Amount/Hour	Amount/Year
Actual Rate	Not Applicable	191,967 tons/year
Maximum rate	Not Applicable	1,248,000 tons/year

D. Associated Air Pollution Control Equipment

Emissions unit ID: **Not Applicable** Device Type **Not Applicable**

Manufacturer _____ Model No _____

Serial No. _____ Installation date ____/____/____

Control efficiency (%) _____ Capture efficiency (%) _____

Air pollutant(s) controlled _____ Efficiency estimation method _____

E. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (This is not common)).

Stack height (ft)	Not Applicable	Inside stack diameter (ft)	Not Applicable
Stack temp (F)	Not Applicable	Design stack flow rate (ACFM)	Not Applicable
Actual stack flow rate (ACFM)	Not Applicable	Velocity (ft/sec)	Not Applicable

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

Calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID E1 and E2

B. Identification and Quantification of Emissions

For each emissions unit identified above, list each regulated air pollutant or other pollutant for which the source is major, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. See instructions concerning GHGs. Values should be reported to the nearest tenth (0.1) of a ton for yearly values or tenth (0.1) of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
VOC (E1)		21.5	94.1	
NMOC (E1)		55.1	241.4	
Total HAP (E1)		1.1	4.93	
PM10 (E2)		0.0	0.0	

Notes:

Only GHG Fee Adjustment is associated with this application (see form FEE in Appendix B).

Therefore, no actual emissions are included on this form.

Potential to Emit emissions are regulated emissions only (fugitive emissions not included).

Federal Operating Permit Program (40 CFR Part 71)

POTENTIAL TO EMIT (PTE)

For each emissions unit at the facility, list the unit ID and the PTE of each air pollutant listed below and sum the values to determine the total PTE for the facility. It may be helpful to complete form **EMISS** before completing this form. Report each pollutant at each unit to the nearest tenth (0.1) of a ton; values may be reported with greater precision (i.e., more decimal places) if desired. Report facility total PTE for each listed pollutant on this form and in section **J** of form **GIS**. The HAP column is for the PTE of all HAPs for each unit. You may use an attachment to show any pollutants that may be present in major amounts that are not already listed on the form (this is not common).

Emissions Unit ID	Regulated Air Pollutants and Pollutants for which Source is Major (PTE in tons/yr)						
	NOx	VOC	SO2	PM10	CO	Lead	HAP
E1	0.0	94.1	0.0	241.4	0.0	0.0	4.9
E2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FACILITY TOTALS:		201		209			10.5



OMB No. 2060-0336, Expires 06/30/2015
(Approval extended during OMB review)

Federal Operating Permit Program (40 CFR Part 71)

INITIAL COMPLIANCE PLAN AND COMPLIANCE CERTIFICATION (I-COMP)

SECTION A - COMPLIANCE STATUS AND COMPLIANCE PLAN

Complete this section for each unique combination of applicable requirements and emissions units at the facility. List all compliance methods (monitoring, recordkeeping and reporting) you used to determine compliance with the applicable requirement described above. Indicate your compliance status at this time for this requirement and compliance methods and check "YES" or "NO" to the follow-up question.

Emission Unit ID(s): E1, E2

(Insignificant Emissions:
IE1, IE2, IE3, IE4, stockpiles, leachate storage)

Applicable Requirement (Describe and Cite)

Please see:

March 2015 Annual Compliance Certification for all Emission Units listed on current Title V Permit (Attachment G)

September 2015 Six-Month Monitoring Report for all Emission Units listed on current Title V Permit (Attachment H)

Note: There are no applicable federally enforceable requirements for insignificant emission units IE4.

Compliance Methods for the Above (Description and Citation):

Compliance Status:

☒ In Compliance: Will you continue to comply up to permit issuance? ☒ Yes
☐ No

☐ Not In Compliance: Will you be in compliance at permit issuance? ☐ Yes ☐ No

☐ Future-Effective Requirement: Do you expect to meet this on a timely basis? ☐ Yes ☐ No

Emission Unit ID(s): **See above**

Applicable Requirement (Description and Citation):

Compliance Methods for the Above (Description and Citation):

Compliance Status:

☐ In Compliance: Will you continue to comply up to permit issuance? ☐ Yes ☐ No

☐ Not In Compliance: Will you be in compliance at permit issuance? ☐ Yes ☐ No

☐ Future-Effective Requirement: Do you expect to meet this on a timely basis? ☐ Yes ☐ No

B. SCHEDULE OF COMPLIANCE

Complete this section if you answered "NO" to any of the questions in section A. Also, complete this section if required to submit a schedule of compliance by an applicable requirement. Please attach copies of any judicial consent decrees or administrative orders for this requirement.

Unit(s) NA Requirement _____

Reason for Noncompliance. Briefly explain reason for noncompliance at time of permit issuance or that future-effective requirement will not be met on a timely basis:

Narrative Description of how Source Compliance Will be Achieved. Briefly explain your plan for achieving compliance:

Schedule of Compliance. Provide a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance, including a date for final compliance.

Remedial Measure or Action	Date to be Achieved

C. SCHEDULE FOR SUBMISSION OF PROGRESS REPORTS

Only complete this section if you are required to submit one or more schedules of compliance in section B or if an applicable requirement requires submittal of a progress report. If a schedule of compliance is required, your progress report should start within 6 months of application submittal and subsequently, no less than every six months. One progress report may include information on multiple schedules of compliance.

<p>Contents of Progress Report (describe): NA</p> <p>First Report ____/____/____ Frequency of Submittal _____</p>
<p>Contents of Progress Report (describe):</p> <p>First Report ____/____/____ Frequency of Submittal _____</p>

D. SCHEDULE FOR SUBMISSION OF COMPLIANCE CERTIFICATIONS

This section must be completed once by every source. Indicate when you would prefer to submit compliance certifications during the term of your permit (at least once per year).

Frequency of submittal annually Beginning 4 / 1 / 17

E. COMPLIANCE WITH ENHANCED MONITORING & COMPLIANCE CERTIFICATION REQUIREMENTS

This section must be completed once by every source. To certify compliance with these, you must be able to certify compliance for every applicable requirement related to monitoring and compliance certification at every unit.

Enhanced Monitoring Requirements: X In Compliance Not In Compliance

Compliance Certification Requirements: X In Compliance Not In Compliance



OMB No. 2060-0336, Expires 6/30/2015
(Approval extended during OMB review)

Federal Operating Permit Program (40 CFR Part 71)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible Official

Name: (Last) Bradley (First) Scott (MI) _____

Title Area Vice President

Street or P.O. Box 222 S. Mill Avenue, Suite 333

City Tempe State AZ ZIP 85281 - _____

Telephone (480) 457-4810 Ext. _____ Facsimile (866) 404-8396

B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) 

Name (typed) Scott Bradley Date: 3 / 18 / 16

Appendix C

Backup Calculations for Emissions Estimates For Insignificant Sources

TABLE C-1
CRITERIA AIR POLLUTANT EMISSIONS FROM INTERNAL COMBUSTION ENGINES
TEKOI LANDFILL, UTAH
(IE1, IE2, IE3)

Unit Description	Fuel Type	Rating (hp)	Maximum	NOx			CO		
Actual			(hrs/yr)	(g/bhp-hr)	(lb/yr)	(ton/yr)	(g/bhp-hr)	(lb/yr)	(ton/yr)
Isuzu (fuel pump engine) [IE1]	Diesel	89	110	6.90	149	0.07	3.03	65	0.03
John Deere (generator engine) [IE2]	Diesel	165	1461	5.48	2,910	1.45	0.68	359	0.18
Subarau-Robin (water pump engine) [IE3]	Diesel	11	100	5.48	13.28	0.01	4.05	9.82	0.00
PTE									
Isuzu (fuel pump engine) [IE1]	Diesel	89	715	6.90	968	0.48	3.03	425	0.21
John Deere (generator engine) [IE2]	Diesel	165	2000	5.48	3,983	1.99	0.68	491	0.25
Honda GX390 (new water pump engine) [IE3]	Gasoline	13	650	4.99	92.97	0.05	3.16	58.82	0.03

Unit Description	Fuel Type	Rating (hp)	Maximum	VOC			SOx		
Actual			(hrs/yr)	(g/bhp-hr)	(lb/day)	(ton/yr)	(g/bhp-hr)	(lb/day)	(ton/yr)
Isuzu (fuel pump engine) [IE1]	Diesel	89	130	1.12	28.58	0.01	0.93	23.72	0.01
John Deere (generator engine) [IE2]	Diesel	165	130	0.30	14.19	0.01	0.93	43.97	0.02
Subarau-Robin (water pump engine) [IE3]	Diesel	11	260	0.30	1.89	0.00	0.93	5.86	0.00
PTE									
Isuzu (fuel pump engine) [IE1]	Diesel	89	715	1.12	157	0.08	0.93	130	0.07
John Deere (generator engine) [IE2]	Diesel	165	3120	0.30	340	0.17	0.93	1055	0.53
Honda GX390 (new water pump engine) [IE3]	Gasoline	13	650	6.80	127	0.06	0.27	4.99	0.002

Unit Description	Fuel Type	Rating (hp)	Maximum	PM		
Actual			(hrs/yr)	(g/bhp-hr)	(lb/day)	(ton/yr)
Isuzu (fuel pump engine) [IE1]	Diesel	89	130	1.00	25.45	0.01
John Deere (generator engine) [IE2]	Diesel	165	130	0.41	19.39	0.01
Subarau-Robin (water pump engine) [IE3]	Diesel	11	260	0.37	2.32	0.00
PTE						
Isuzu (fuel pump engine) [IE1]	Diesel	89	715	1.00	140	0.07
John Deere (generator engine) [IE2]	Diesel	165	3120	0.41	465	0.23
Honda GX390 (new water pump engine) [IE3]	Gasoline	13	650	0.3270	6.09	0.003

Calculation of Maximum PTE Emissions:

Because emissions are directly proportional to refuse accepted, and all other variables remain constant under the PTE conditions, maximum PTE can be calculated by multiplying actual operation hours by the ratio of PTE to actual refuse tonnages:

$$1,248,000 \text{ tpy} / (PTE / 191,967 \text{ tpy (actual)}) = 6.50$$

3.030048

Emission Factors

Isuzu (fuel pump engine)
John Deere (generator engine)
Honda (old water pump engine)
Honda GX390 (new water pump engine)

NOx	NOx	CO	CO	VOC	VOC	SOx	SOx	PM	PM
lb/hp-hr	g/bhp-hr	lb/hp-hr	g/bhp-hr	lb/hp-hr	g/bhp-hr	lb/hp-hr	g/bhp-hr	lb/hp-hr	g/bhp-hr
	6.90	0.00668	3.03	0.00247	1.12	0.00205	0.93	0.0022	1.00
	5.48		0.68		0.30	0.00205	0.93		0.41
	5.48		4.05		0.30	0.00205	0.93		0.37
	0.0110	4.99	0.0070	3.16	0.0150	6.80	0.0006	0.27	0.0007
									0.33

Emission Certification

EPA Certificate of Conformance SZX-NR2-00-31
EO U-R-004-0119
EO U-R-034-0146

NOTES:

EO = Executive Order

Criteria pollutant emission factors taken from AP-42, Table 3.3-1, and HAP emission factors taken from AP-42, Table 3.3-2.

TABLE C-2
EMISSION SOURCE ESTIMATES FROM DIESEL FUEL STORAGE AND DISPENSING
TEKOI BALEFILL LANDFILL, UTAH

Fuel Amounts	VOC Emissions Factor^(a) (lb/1000 gal)	Amount Dispensed (gal/yr)^(b)	Total VOC Emissions (tpy)	Total VOC Emissions (lb/hr)
Tank Losses	8.2	12,000	0.0492	1.12E-02
Vapor Control Unit Losses	5.0	12,000	0.0300	6.84E-03
Total Losses			0.0792	0.0181
HAPs from Diesel Fuel^(c)	Composition Percent (% of total)	Diesel VOC Emissions (tpy)	Compound Emissions (tpy)	Compound Emissions (lb/hr)
Hexane (Isomers + n-Hexane)	5.89%	0.0792	4.66E-03	1.06E-03
1,1,2-Trichloroethane	0.02%	0.0792	1.58E-05	3.61E-06
Benzene	1.58%	0.0792	1.25E-03	2.86E-04
Toluene	2.11%	0.0792	1.67E-03	3.81E-04
Ethylbenzene	0.22%	0.0792	1.74E-04	3.98E-05
Xylene (Isomers + o-Xylene)	1.07%	0.0792	8.47E-04	1.93E-04
Cumene	0.01%	0.0792	7.92E-06	1.81E-06
Chlorobenzene	0.02%	0.0792	1.58E-05	3.61E-06
Napthalene	0.01%	0.0792	7.92E-06	1.81E-06
TOTAL HAPs			8.66E-03	1.98E-03

Notes:

This emission unit qualifies as an insignificant activity per NAC 445B.288 (f) for storage containers for petroleum liquids having a capacity of less than 40,000 gallons.

The site has one 12,000 gallon diesel fuel underground storage tank (UST), one 500 gallon UST engine oil tank, and a 225-gallon mobile diesel tank.

Emissions from the engine oil tanks and diesel fuel tank are negligible.

(a) Emissions factors (amount of fuel volatilized) are from EPA's FIRE (Factor Information and Retrieval System) database and from AP-42 Section 4-4-5.

(b) Average amount of diesel dispensed provided by the landfill staff, data from year 2007.

(c) Composition percent for volatilized HAPs from diesel are from EPA's SPECIATE database v. 3.1 (Profile #1015).

TABLE C-3
FUGITIVE DUST FROM WIND EROSION (Piles)
TEKOI LANDFILL, UTAH

Aggregate storage piles are typically comprised of nonhomogeneous materials with a portion of nonerodible elements like vegetation and larger particles. Conditions of erosion tend to decay rapidly as erodible materials are carried off leaving a greater percentage of nonerodible materials. The aggregate material surfaces that exist on undisturbed storage piles have finite availability of erodible materials. Disturbing of the pile, as in the case of load-in or load-out, tends to replenish the erodible surface condition. (AP-42, Section 13.2.5, EPA, Jan 1995)

Stockpiles 1, 2 are the only stockpiles at the TBL that are borrowed from regularly. The remaining stockpiles are untouched. Therefore, Stockpiles 1, 2 will be the only stockpiles considered to have active soil areas.

Soil Stockpiles	Total Area (ft²)*	Approximate Active Soil Area (ft²)**
Stockpile No 1**	78,895	19,724
Stockpile No 2**	18,632	4,658
Stockpile No 3	35,360	0
Stockpile No 4	55,521	0
Stockpile No 5	584,780	0
TOTAL (ft²)	773,188	24,382
TOTAL (acres)	17.75	0.56
Total		

*Areas estimated using AutoCAD 2000 and current topography provided by WM staff.

** Assuming that approximately 25% of the total area is loose at a time.

	(a) Current Ave. Area of cover storage (acres)	Number of day/yr	(b) TSP Emission Factors (lbs/acre/day)	PM-10 Emissions (d)			TSP Emissions (c)			PM-2.5 Emissions (e)		
				(lb/yr)	(lb/day)	(tpy)	(lb/yr)	(lb/day)	(ton/yr)	(lb/yr)	(lb/day)	(ton/yr)
Emissions on active days	0.56	260	6.3	138	0.44	0.07	275	1.06	0.14	14	31.20	0.01
Emissions during inactive days	0.56	105	1.7	15.0	0.05	0.01	30.0	0.29	0.01	0.0	0.03	0.00
Total Actual Emissions				153	0.42	0.08	305	0.84	0.15	14	0.04	0.01
Total PTE Emissions (f)				991	2.72	0.50	1,983	5.43	0.99	89	0.24	0.04

(a) Current average area of cover storage is estimated from summing all the areas of soil stockpiles on site.

(b) Emissions factors are based on EPA's FIRE (Factor Information and Retrieval System) database.

(c) Equals emissions factors X number of days per year X acres of cover storage.

(d) $PM_{10} = (\text{Total Suspended Particulates}) \times 50\%$ (SJVUAPCD Regulation II, Rule 2201, Section 4.1.1.2).

(e) PM-2.5 emissions factor = Ratio of k value of PM-10 and PM-2.5 from unpaved roads.

(f) Scaling factor based on ratio of maximum potential annual waste tonnage and actual waste tonnage for 2015:

6.5

TABLE C-4
LEACHATE COLLECTION SYSTEM EMISSION CALCULATIONS
TEKOI LANDFILL, UTAH

VOC Emissions:

Sampling Period	Total Volatile Organics ¹	Annual Precipitation ³	Actual Annual Leachate Generation ⁴	Actual Annual Fugitive VOC Emissions ⁵	Maximum Landfill Area ²	Estimated Leachate Production	PTE Annual Leachate Generation	PTE Annual Fugitive VOC Emissions ⁵
	(ug/L)	(inches)	(gal)	(lbs)	(acres)	(gal/acre/day)	(gal)	(lbs)
11/20/2006	85.6	15.7	1,760	0.0013	353.0	100.0	12,884,500	9.20

HAPs Emissions

Compound	Concentration ¹	Average HAP Emissions		PTE HAP Emissions	
	(ug/L)	lbs/yr	tons/yr	lbs/yr	tons/yr
Acetone	0.0	0.000	0.000000	0.000	0.000000
Acrolein	0.0	0.000	0.000000	0.000	0.000000
Acrylonitrile	0.0	0.000	0.000000	0.000	0.000000
2-Chloroethyl Vinyl Ether	0.0	0.000	0.000000	0.000	0.000000
Benzene	0.0	0.000	0.000000	0.000	0.000000
Bromodichloromethane	0.0	0.000	0.000000	0.000	0.000000
Bromoform	0.0	0.000	0.000000	0.000	0.000000
Bromomethane	0.0	0.000	0.000000	0.000	0.000000
2-Butanone	0.0	0.000	0.000000	0.000	0.000000
Carbon Disulfide	0.0	0.000	0.000000	0.000	0.000000
Carbon Tetrachloride	0.0	0.000	0.000000	0.000	0.000000
Chlorobenzene	0.0	0.000	0.000000	0.000	0.000000
Chloroethene	0.0	0.000	0.000000	0.000	0.000000
Chloroform	0.0	0.000	0.000000	0.000	0.000000
Chloromethane	0.0	0.000	0.000000	0.000	0.000000
Dibromochloromethane	0.0	0.000	0.000000	0.000	0.000000
1,1-Dichloroethane	2.6	0.000	0.000000	0.280	0.000140
1,2-Dichloroethane	22.0	0.000	0.000000	2.365	0.001183
1,1-Dichloroethene	0.0	0.000	0.000000	0.000	0.000000
cis-1,2-Dichloroethane	0.0	0.000	0.000000	0.000	0.000000
trans-1,2-Dichloroethane	0.0	0.000	0.000000	0.000	0.000000
1,2-Dichloropropane	0.0	0.000	0.000000	0.000	0.000000
cis-1,3-Dichloropropane	0.0	0.000	0.000000	0.000	0.000000
trans-1,3-Dichloropropane	0.0	0.000	0.000000	0.000	0.000000
Ethylbenzene	0.0	0.000	0.000000	0.000	0.000000
2-Hexanone	0.0	0.000	0.000000	0.000	0.000000
Methylene chloride	61.0	0.001	0.000000	6.558	0.003279
4-Methyl-2-pentanone	0.0	0.000	0.000000	0.000	0.000000
Styrene	0.0	0.000	0.000000	0.000	0.000000
1,1,2,2-Tetrachloroethane	0.0	0.000	0.000000	0.000	0.000000
Tetrachloroethylene	0.0	0.000	0.000000	0.000	0.000000
Toluene	0.0	0.000	0.000000	0.000	0.000000
1,1,1-Trichloroethane	0.0	0.000	0.000000	0.000	0.000000
1,1,2-Trichloroethane	0.0	0.000	0.000000	0.000	0.000000
Trichloroethane	0.0	0.000	0.000000	0.000	0.000000
Vinyl Chloride	0.0	0.000	0.000000	0.000	0.000000
m-,p-Xylene	0.0	0.000	0.000000	0.000	0.000000
o-Xylene	0.0	0.000	0.000000	0.000	0.000000
TOTAL		0.00	0.000001	9.20	0.004602

Notes:

¹ Based on leachate analysis performed on November 20, 2006.

VOC and HAP emission estimates were calculated by using detection limits for compounds listed as non-detect. Those compounds which have no data were not analyzed. The leachate was analyzed by EPA Method 8260B for volatile organics.

² Full build-out of the MSW landfill.
percent runoff potential.

³ Taken from regional rainfall data collected from Western Regional Climatic Center.

⁴ Current annual leachate generation as calculated from 2170 milliliters collected over 3 hours during the November 2006 sampling event.

⁵ Assuming that 100 percent of volatile organic compounds detected will volatilize.

Example Calculations:

Actual Annual Fugitive VOC Emissions (tons) = (Actual Annual Leachate Generation [gal]) * (3.785 L/1gal) * (1g/1,000,000ug)
* (Total VOC [ug/l]) * (1lb/453.6g) * (1 ton/2000 lb)

PTE Annual Fugitive VOC Emissions (tons) = (PTE Annual Leachate Generation [gal]) * (3.785 L/1gal) * (1g/1,000,000ug)
* (Total VOC [ug/l]) * (1lb/453.6g) * (1 ton/2000 lb)

Appendix D
WIAC Report

**Waste Industry Air Coalition
Comparison of Recent Landfill Gas Analyses
with Historic AP-42 Values**

by

Ray Huitric, County Sanitation Districts of Los Angeles County
Patrick Sullivan, SCS Engineers
Amy Tinker, SCS Engineers

January 2001

Summary

The Waste Industry Air Coalition (WIAC) is comprised of the Solid Waste Association of North America (SWANA) and the National Solid Wastes Management Association. Members of these associations have reported that the AP-42 landfill gas (LFG) defaults, derived from analyses made on average 13 years ago, overestimate the current trace LFG constituent levels.

The WIAC previously submitted three reports addressing LFG trace constituents. An initial report submitted in August 1999¹ showed a continuous long term hazardous air pollutants (HAP) decline at six California landfills (see LFG Constituent Declines below). HAP levels typically declined five fold or more over a ten year period. A second WIAC report was submitted November 1999² showing that Hydrogen Chloride levels in recent source tests are more than four times less than the AP-42 default. A third WIAC report was submitted in May 2000³ showing that the average of recent non-methane organic compound (NMOC) analyses at 144 landfills was 30% less than the current AP-42 defaults.

This fourth report presents a nationwide WIAC survey of recent trace LFG constituent analyses. The WIAC obtained test results from 75 landfills that were made on average within the last two years. The WIAC survey found that the current trace constituent levels are two to four times less than the AP-42 defaults. For the compounds associated with greater health risk at high concentrations, the differences were yet larger. These findings support those from the previous three reports that the AP-42 defaults substantially overstate current LFG constituent levels.

The decline in LFG constituent levels over time may be due to a variety of factors including:

- improvement of analytical methodologies that better identify and quantify trace constituents;
- federal introduction of waste management regulations that strictly regulate hazardous waste disposal;
- federal introduction of municipal solid waste landfill regulations that detect and prevent disposal of unacceptable hazardous wastes; and
- industry transition to processes and products requiring less or no hazardous materials.

In view of the detected decline, it is strongly recommended that the AP-42 defaults be revised to reflect the current LFG constituent levels. From the California landfill results, showing a continuous long term declining trend in the LFG constituents, it can be reasonably anticipated that additional declines will occur. As a result, two further recommendations are offered. First, older AP-42 data should be purged, to eliminate unrepresentative results, and replaced with current data. The most recent AP-42 revision in 1995 only added new but did not purge older values. Second, U.S. EPA should recognize landfills as a unique source for which its AP-42 defaults will need to change over time. U.S. EPA should consider additional future updates of the AP-42 to address the anticipated declines.

¹ "Documentation of Large MSW Landfill Gas Constituent Declines From US EPA AP-42 Default Values", Ray Huitric, County Sanitation Districts of Los Angeles County, and submitted by John Skinner, Executive Director and CEO, SWANA, on August 30, 1999.

² Correspondence titled "Submission of Hydrogen Chloride Test Data from Landfill Gas Fired Combustion Devices" dated November 1999 from Edwin P. Valis, Jr., Project Manager, EMCON to Roy Huntley, Emission Factor and Inventory Group, OAQPS, U.S. Environmental Protection Agency.

³ Correspondence titled "Preliminary Data on Non-Methane Organic Compound (NMOC) Concentrations in Landfill Gas" dated May 9, 2000 from Edward W. Repa, Director of Environmental Programs, NSWMA to Roy Huntley, Emission Factor and Inventory Group, OAQPS, U.S. Environmental Protection Agency.

The WIAC will provide the analyses it collected to U.S. EPA for use in developing new AP-42 values. Since it is recognized that this process will require time, it is recommended that the U.S. EPA make the results contained in this report available on its Internet site as an interim reference.

Report Objectives

This report documents actual landfill gas concentrations for compounds of concern using a national database derived from laboratory analyses employing U.S. EPA standard methods. Herein we establish that differences between the data presented in this report and the current AP-42 default values warrant their full-scale review by U.S. EPA. WIAC believes that the data presented here far better represent current conditions for many compounds and that such a review is well warranted.

Procedures and Results

AP-42 data management procedures were applied to the portion of the WIAC data set having AP-42 default values. The data management procedures address, for example, data screening, air dilution, and data averaging methods. The results of these procedures follow.

Data Collection and Screening

WIAC collected LFG analyses from 75 landfills in sixteen states. This information was processed using U.S. EPA's AP-42 data management procedures. U.S. EPA uses a screening process to remove analytically unacceptable, poorly documented or questionable results.⁴ A review of the collected data indicated that the sample analyses would likely pass the AP-42 data screening process. The reported samples were normal, untreated LFG derived from typical gas collection systems. The analytical methodologies appeared to be consistent with those accepted by U.S. EPA.

The analytical results were corrected for air dilution using fixed gas analyses (specifically, methane and carbon dioxide). Several samples lacked either or both methane and carbon dioxide and were excluded. Additionally, some results appeared to be default values (e.g., 50% methane and 50% carbon dioxide) or were unusually high; these were excluded as well. In all, analyses from 27 landfills were omitted from subsequent evaluations.

Data Rating

The data for compounds from the remaining 48 landfills were rated from "A" (strongest) to "E" (weakest) using U.S. EPA's rating system. This process largely depends on the number of 'good' results (A for 20 and up, B for 10 to 19, C for 6 to 9, D for 3 to 5, E for 1 to 2). U.S. EPA also adjusts the rating for a compound's variability. If the arithmetic standard deviation is twice or greater than EPA's default value, then the rating is decreased by one letter. Table 1 summarizes the WIAC rating results and compares these with U.S. EPA's AP-42 data set for 43 compounds.

⁴ "EMISSION FACTOR DOCUMENTATION FOR AP-42 SECTION 2.4 MUNICIPAL SOLID WASTE LANDFILLS REVISED" Office of Air Quality Planning and Standards, Office of Air and Radiation, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, August 1997; see Table 4-1

Table 1. Count of AP-42 compounds at each rating level (A is strongest; total of 43 compounds).

Rating	Count	
	WIAC	AP-42
A	12	4
B	14	21
C	2	8
D	6	6
E	9	4

The overall rating of the WIAC database is essentially the same as that for U.S. EPA's. For example when the letter grade is expressed as a numeric value (e.g., A = 1, B =2, etc.), the average ratings for the WIAC and U.S. EPA data sets are identical.

Nondetects

AP-42 directs that in general nondetect values should be halved then treated as "real" data. However if a nondetect exceeds by two times the maximum of the detects for a compound, then it should be discarded. It appears that the AP-42 guidance directs that this should be done on a facility-by-facility basis as well as on an emission category basis. However the guidance is unclear. A conservative approach was taken by eliminating only nondetects that were more than double the maximum detection among all facilities.

AP-42 also directs that if all values are nondetects then the result should be clearly indicated as such. U.S. EPA does not indicate which values reported within the LFG portion of AP-42 are nondetects.

Data Averaging

AP-42 specifies that data from a single landfill are to be arithmetically averaged. The result from each landfill is then further averaged using an arithmetic average, geometric mean, or median depending on whether the landfill data are normally distributed, lognormally distributed, or neither, respectively. The distribution type was determined for each compound using the probability plot correlation coefficient method.⁵ Where fewer than four landfills reported a compound, the distribution type could not be determined. Instead, the distribution type originally used by U.S. EPA in AP-42 was employed. The distribution type was found to differ from U.S. EPA's for sixteen compounds.

The WIAC data set was averaged using both U.S. EPA's original and the newer WIAC's distribution types (see Table 2). The original distribution types were applied so that an "apples to apples" comparison was possible. Doing otherwise could either create or obscure differences between the data sets. The averages calculated based on U.S. EPA's and WIAC's averaging types are shown in the WIAC column labeled "1" and "2", respectively. Values in WIAC column 2 having a different distribution type are highlighted in gray. The results using the two data averaging methods are discussed in Data Summary below.

Codisposal Landfills

Because of detected statistical differences, EPA developed separate codisposal and municipal solid waste (MSW) only default AP-42 levels for toluene and benzene. All other default values

⁵ This test was developed by J.J. Filliben in 1975 as reported in "Statistical Training Course for Ground-Water Monitoring Data Analysis", sponsored by the U.S. Environmental Protection Agency Office of Solid Waste, 1992.

were developed from the combined data sets. WIAC surveyed five codisposal sites and 70 MSW-only sites. The WIAC toluene and benzene data were separately analyzed by disposal site type. No significant differences were found between types of disposal sites for other compounds with one exception. Carbon tetrachloride was detected at one codisposal site but at none of the MSW-only disposal sites. The WIAC value for carbon tetrachloride includes the codisposal sites as these had only a slight effect on the calculated value. The value is reported in Table 2 as a 'nondetect' with a footnote indicating that it was found at one codisposal site.

Data Summary

The WIAC results are compared with AP-42 default concentrations in Table 2. WIAC 1 and 2 show the data prepared using past AP-42 and WIAC updated averaging methods, respectively (see Data Averaging above). The WIAC 1 and 2 concentrations are similarly reduced from AP-42 values by 76% and 80%, respectively. However simple alkane and alcohol compounds for which relatively few analyses were available disproportionately skewed the results. Omitting these compounds shows identical 56% overall reductions. Nearly identical reductions are also noted for aromatic (58%) and chlorinated (79%) compounds. Even though the AP-42 and WIAC averaging methods do not have any large overall effect, the two methods did lead to very significant differences for individual compounds (e.g., note those for 1,1,2,2-Tetrachloroethane).

Discussion

AP-42 and WIAC Differences

The differences between the AP-42 default values and the WIAC survey results may be traced to various factors. It was noted above that there are differences in the age of analyses between the AP-42 and WIAC data sets. Trends in LFG constituents have been well documented and are addressed in the next section. Apart from differences in the age of analyses, it was found that procedures used in U.S. EPA's preparation of the AP-42 defaults departed from the AP-42 guidance⁶ in its use of nondetects and the minimum number of sources used for developing default values.

The guidance specifies that nondetects should be used in the development of default values. However all nondetects were discarded in at least one AP-42 update.⁷ Nondetects may be discarded under certain circumstances specified by the guidance where these are much greater in magnitude than detects (doing otherwise would bias the default values high). However, the AP-42 documentation does not identify which values are detects or nondetects making it impossible to implement this procedure. Finally, the guidance states that default values developed entirely from nondetects should be clearly identified as such. Since nondetects are not documented, this procedure cannot be carried out.

⁶ "Procedures for Preparing Emission Factor Documents" Office of Air quality Planning and Standards, Office of Air and Radiation, U.S. Environmental Protection Agency, Research Triangle Park, NC, November 1997 (EPA-454/R-95-015 REVISED).

⁷ Phone communication (June 2000) with Stephen Roe, U.S. EPA contractor for past AP-42 revisions.

Table 2. WIAC results compared with AP-42 defaults. WIAC-1 values use AP-42 averaging methods. Some WIAC-2 values, grayed in column 2, use different methods (see text).

Compound	WIAC Sites	Concentration, ppmv		
		AP-42	WIAC-1	WIAC-2
1,1,1-Trichloroethane (methyl chloroform)	46	0.48	0.168	0.168
1,1,2,2-Tetrachloroethane	19	1.11	0.070	0.005
1,1-Dichloroethane (ethylidene dichloride)	45	2.35	0.741	0.741
1,1-Dichloroethene (vinylidene chloride)	45	0.2	0.092	0.092
1,2-Dichloroethane (ethylene dichloride)	47	0.41	0.120	0.120
1,2-Dichloropropane (propylene dichloride)	17	0.18	0.023	0.023
2-Propanol (isopropyl alcohol)	3	50.1	7.908	7.908
Acetone	8	7.01	6.126	7.075
Acrylonitrile	3	6.33	<0.036	<0.036
Benzene (Co-Disposal)	3	11.1	10.376	10.376
Benzene (No Co-Disposal)	44	1.91	0.972	0.972
Bromodichloromethane	7	3.13	<0.311	<0.264
Carbon disulfide	31	0.58	0.320	0.221
Carbon tetrachloride	37	0.004	<0.007*	<0.007*
Carbonyl sulfide	29	0.49	0.183	0.183
Chlorobenzene	46	0.25	0.227	0.227
Chlorodifluoromethane (Freon 22)	1	1.3	0.355	0.355
Chloroethane (ethyl chloride)	21	1.25	0.239	0.448
Chloroform	45	0.03	0.021	0.010
Chloromethane	8	1.21	0.249	0.136
Dichlorobenzene	34	0.21	1.607	1.448
Dichlorodifluoromethane (Freon 12)	19	15.7	1.751	0.964
Dichloromethane (Methylene Chloride)	47	14.3	3.395	3.395
Dimethyl sulfide (methyl sulfide)	34	7.82	6.809	6.809
Ethane	1	889	7.943	7.943
Ethanol	4	27.2	118.618	64.425
Ethyl mercaptan (Ethanethiol)	36	2.28	1.356	0.226
Ethylbenzene	26	4.61	6.789	6.789
Ethylene dibromide	30	0.001	<0.046	<0.005
Fluorotrichloromethane (Freon 11)	25	0.76	0.327	0.327
Hexane	4	6.57	2.324	2.063
Hydrogen sulfide	40	35.5	23.578	23.578
Methyl ethyl ketone	8	7.09	10.557	12.694
Methyl isobutyl ketone	7	1.87	0.750	0.750
Methyl mercaptan	36	2.49	1.292	1.266
Perchloroethylene (tetrachloroethylene)	48	3.73	1.193	1.193
Propane	1	11.1	14.757	19.858
Toluene (Co-Disposal)	3	165	37.456	37.456
Toluene (No Co-Disposal)	43	39.3	25.405	25.405
trans-1,2 Dichlorethene	1	2.84	0.051	0.051
Trichloroethylene (trichloroethene)	48	2.82	0.681	0.681
Vinyl Chloride	46	7.34	1.077	1.077
Xylenes	45	12.1	16.582	16.582

Note: "<" indicates that the compound was detected at none of the WIAC sites.

* Carbon Tetrachloride was detected at one codisposal site but at none of 35 MSW-only disposal sites.

The guidance also states that a minimum of ten sources should be used in developing a default value (use of fewer sources results in unreliable values). However several of the AP-42 defaults were developed from many fewer samples and sometimes just one sample. In view of the high variability observed between landfill test results, it is recommended that U.S. EPA carefully review its practices in developing AP-42 defaults with fewer than ten samples. At a minimum, defaults derived from limited data should be clearly identified and users cautioned as to their questionable reliability.

LFG Constituent Declines

Large, long term declines in LFG HAP values were documented in the August 1999 WIAC report. This report focused on four active and two closed landfills in Southern California. The decline at the active landfills was concurrent with implementation of waste-screening programs that prevented the disposal of incidental amounts of hazardous wastes present in the municipal solid waste stream starting in the early 1980's. U.S. EPA's Resource Conservation and Recovery Act (RCRA) rules for MSW landfills, implemented starting October 9, 1991 (40 CFR 258.20) also began requiring such exclusion programs on a nationwide basis. Additionally, the U.S. EPA established Subtitle C requirements per the 1984 RCRA amendments that set minimum treatment standards for listed wastes. This program ensured that the treatment residuals were placed in Subtitle C landfills. The combination of these programs likely reduced or eliminated incidental hazardous waste disposal in active MSW landfills.

An attempt was made to determine whether a similar long term decline could be detected at other active landfills represented in the AP-42 database. A comparison was made of those sites that were reported by both EPA and WIAC. However it was found that many of the AP-42 landfills had coded names. The only active sites identifiably the same were those already reported in the August 1999 report. It is recommended that U.S. EPA identify the coded AP-42 landfills so that a meaningful comparison could be made with the WIAC results.

The LFG HAP decline for the two closed landfills in the August 1999 report would be unrelated to improved hazardous waste management practices. However the anaerobic decomposition processes at these sites are likely to have brought about such declines through one or more mechanism. HAP compounds will tend to volatilize into newly generated anaerobic gases; the gases together with the trace constituents will ultimately exit the landfill, removing the HAP compounds. Additionally, anaerobic processes may destroy or transform some HAP compounds.

Another factor to consider in the decline of HAP compounds is the effect of improved laboratory methodologies in recent years. Areas of improvement include utilization of more sophisticated equipment and adoption of standardized procedures for all analytical aspects. Some of the improved procedures include sample container preparation, instrument calibration, and quality assurance acceptance criteria.

Equipment and procedure improvements reduce the scatter of data, increase data reliability, minimize compound misidentifications, and lower detection limits. Detection limits are especially important since several of the AP-42 compounds have few or no detections; improved detection limits would tend to lower the calculated AP-42 defaults. One laboratory submitting data for this report indicated that detection limits were more than halved in the last five years.

Urban Air Toxics Strategy

The U.S. EPA used AP-42 defaults for the recently completed Urban Air Toxics (UAT) Strategy. A review of the UAT findings based on the newer WIAC results is presented in Table 3. For all compounds detected in LFG, municipal landfills dropped in rank among industrial sources. The

drop was typically from sixth to at least thirteenth or more. Four of the nine compounds dropped from the ranking and rank no more than 17th. The average MSW landfill contribution per compound dropped from 13% to 1.5%. One of the more dramatic findings concerns U.S. EPA's original attribution of 84% of all 1,1,2,2-Tetrachloroethane emissions to landfills; the WIAC findings show that the landfill emission level is about 2% of all sources. These findings indicate that municipal landfills have markedly less emissions, compared to other industrial sources, than U.S. EPA previously estimated.

Table 3. Summary of changes to Urban Air Toxic (UAT) emission estimates based on changes from AP-42 defaults to current compound levels measured by WIAC.

Compound	Annual Tons		Portion of UAT Inventory		Rank		Number of Sources
	AP-42	WIAC	AP-42	WIAC	AP-42	WIAC	
1,1,2,2-Tetrachloroethane	216	1.0	84.08%	2.37%	1	5	16
1,2-Dichloropropane	23.6	3.0	3.59%	1.48%	6	8	12
Acrylonitrile	389	2.2	15.28%	0.10%	3	15	17
Benzene	173	87.9	3.86%	2.00%	11	13	17
Chloroform	4.17	1.3	4.94%	1.63%	6	9	17
Ethylene Dichloride	47	13.7	1.15%	0.34%	10	*	17
Methylene Chloride	1550	367	1.67%	0.40%	11	*	17
Tetrachloroethylene	717	229	0.59%	0.19%	6	*	17
Trichloroethylene	429	104	0.64%	0.16%	13	*	17
Vinyl Chloride	531	77.9	19.65%	3.46%	2	4	17
Vinylidene Chloride	22.5	10.3	10.10%	3.45%	4	5	14

* Landfill emissions are less than for other ranked sources.

Conclusions

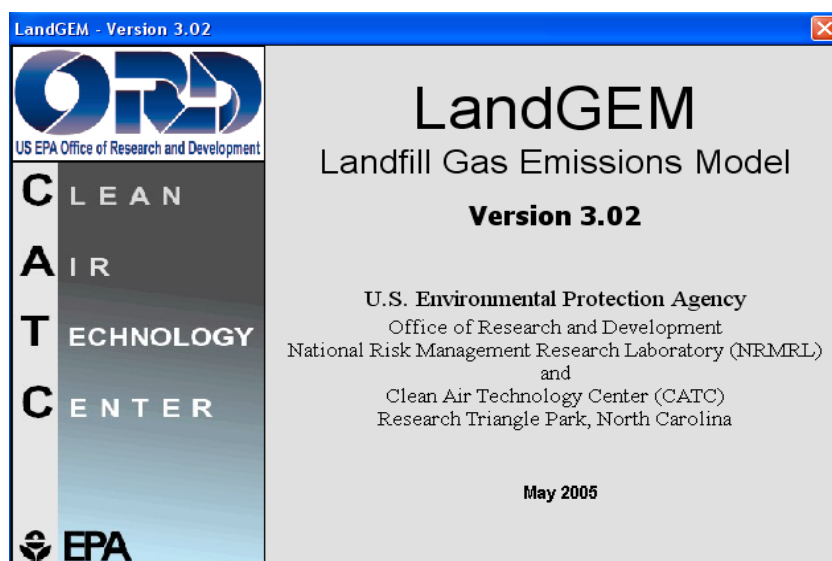
WIAC conducted a national survey of recent LFG analyses. Recent results from 75 landfills were analyzed using AP-42 methodologies. The AP-42 defaults were found to typically overestimate current levels by two to four hundred percent. For some of the more health significant compounds, the differences were larger yet. The overestimated AP-42 values may potentially misdirect U.S. EPA's policy development. For example, the recently completed Urban Air Toxics Strategy appears to have substantially overestimated actual landfill emissions. Furthermore, the existing AP-42 default values may adversely impact individual landfills required to use these values.

As a result, WIAC believes that the AP-42 defaults should be revised to reflect the decline in LFG constituents. The most recent AP-42 revision in 1995 added new data to older values and averaged the combined data sets. This approach is appropriate only for data that does not trend. It is recommended that older data be purged and replaced using current data presented in this paper.

Appendix E

LandGEM Landfill Gas Generation Model Results (AP-42 and NSPS)

AP-42 (Inventory) LandGEM for Current Emissions (2015)
Using Tier 2 NMOC Value



Summary Report

Landfill Name or Identifier: Tekoi Landfill, Utah

Date: Monday, March 21, 2016

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

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	2005	
Landfill Closure Year (with 80-year limit)	2052	
Actual Closure Year (without limit)	2052	
Have Model Calculate Closure Year?	Yes	
Waste Design Capacity	47,939,986	<i>short tons</i>

MODEL PARAMETERS

Methane Generation Rate, k	0.020	<i>year⁻¹</i>
Potential Methane Generation Capacity, L ₀	100	<i>m³/Mg</i>
NMOC Concentration	965	<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)
2005	140,242	154,266	0	0
2006	268,131	294,944	140,242	154,266
2007	264,525	290,978	408,373	449,210
2008	192,975	212,273	672,898	740,188
2009	185,518	204,070	865,874	952,461
2010	170,159	187,175	1,051,392	1,156,531
2011	183,426	201,769	1,221,551	1,343,706
2012	172,854	190,140	1,404,977	1,545,475
2013	169,091	186,000	1,577,832	1,735,615
2014	196,194	215,814	1,746,922	1,921,615
2015	174,515	191,967	1,943,117	2,137,428
2016	1,134,545	1,248,000	2,117,632	2,329,395
2017	1,134,545	1,248,000	3,252,178	3,577,395
2018	1,134,545	1,248,000	4,386,723	4,825,395
2019	1,134,545	1,248,000	5,521,268	6,073,395
2020	1,134,545	1,248,000	6,655,814	7,321,395
2021	1,134,545	1,248,000	7,790,359	8,569,395
2022	1,134,545	1,248,000	8,924,905	9,817,395
2023	1,134,545	1,248,000	10,059,450	11,065,395
2024	1,134,545	1,248,000	11,193,996	12,313,395
2025	1,134,545	1,248,000	12,328,541	13,561,395
2026	1,134,545	1,248,000	13,463,087	14,809,395
2027	1,134,545	1,248,000	14,597,632	16,057,395
2028	1,134,545	1,248,000	15,732,178	17,305,395
2029	1,134,545	1,248,000	16,866,723	18,553,395
2030	1,134,545	1,248,000	18,001,268	19,801,395
2031	1,134,545	1,248,000	19,135,814	21,049,395
2032	1,134,545	1,248,000	20,270,359	22,297,395
2033	1,134,545	1,248,000	21,404,905	23,545,395
2034	1,134,545	1,248,000	22,539,450	24,793,395
2035	1,134,545	1,248,000	23,673,996	26,041,395
2036	1,134,545	1,248,000	24,808,541	27,289,395
2037	1,134,545	1,248,000	25,943,087	28,537,395
2038	1,134,545	1,248,000	27,077,632	29,785,395
2039	1,134,545	1,248,000	28,212,178	31,033,395
2040	1,134,545	1,248,000	29,346,723	32,281,395
2041	1,134,545	1,248,000	30,481,268	33,529,395
2042	1,134,545	1,248,000	31,615,814	34,777,395
2043	1,134,545	1,248,000	32,750,359	36,025,395
2044	1,134,545	1,248,000	33,884,905	37,273,395

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2045	1,134,545	1,248,000	35,019,450	38,521,395
2046	1,134,545	1,248,000	36,153,996	39,769,395
2047	1,134,545	1,248,000	37,288,541	41,017,395
2048	1,134,545	1,248,000	38,423,087	42,265,395
2049	1,134,545	1,248,000	39,557,632	43,513,395
2050	1,134,545	1,248,000	40,692,178	44,761,395
2051	1,134,545	1,248,000	41,826,723	46,009,395
2052	620,537	682,591	42,961,268	47,257,395
2053	0	0	43,581,805	47,939,986
2054	0	0	43,581,805	47,939,986
2055	0	0	43,581,805	47,939,986
2056	0	0	43,581,805	47,939,986
2057	0	0	43,581,805	47,939,986
2058	0	0	43,581,805	47,939,986
2059	0	0	43,581,805	47,939,986
2060	0	0	43,581,805	47,939,986
2061	0	0	43,581,805	47,939,986
2062	0	0	43,581,805	47,939,986
2063	0	0	43,581,805	47,939,986
2064	0	0	43,581,805	47,939,986
2065	0	0	43,581,805	47,939,986
2066	0	0	43,581,805	47,939,986
2067	0	0	43,581,805	47,939,986
2068	0	0	43,581,805	47,939,986
2069	0	0	43,581,805	47,939,986
2070	0	0	43,581,805	47,939,986
2071	0	0	43,581,805	47,939,986
2072	0	0	43,581,805	47,939,986
2073	0	0	43,581,805	47,939,986
2074	0	0	43,581,805	47,939,986
2075	0	0	43,581,805	47,939,986
2076	0	0	43,581,805	47,939,986
2077	0	0	43,581,805	47,939,986
2078	0	0	43,581,805	47,939,986
2079	0	0	43,581,805	47,939,986
2080	0	0	43,581,805	47,939,986
2081	0	0	43,581,805	47,939,986
2082	0	0	43,581,805	47,939,986
2083	0	0	43,581,805	47,939,986
2084	0	0	43,581,805	47,939,986

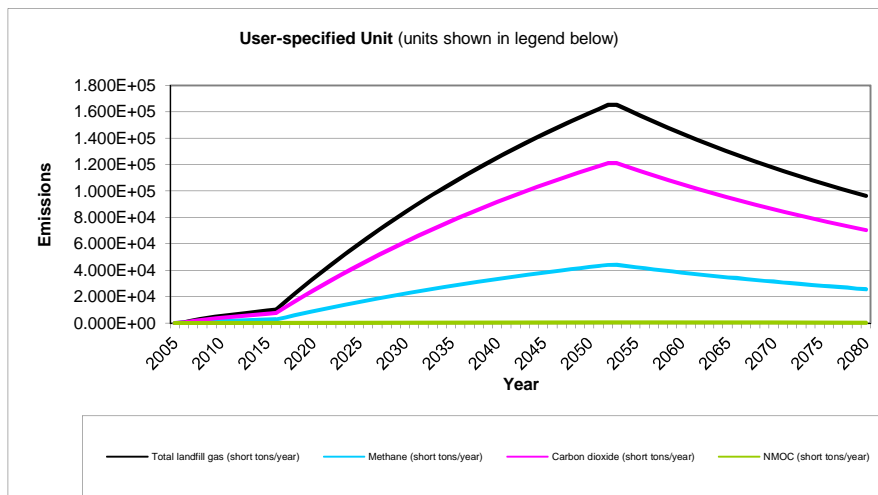
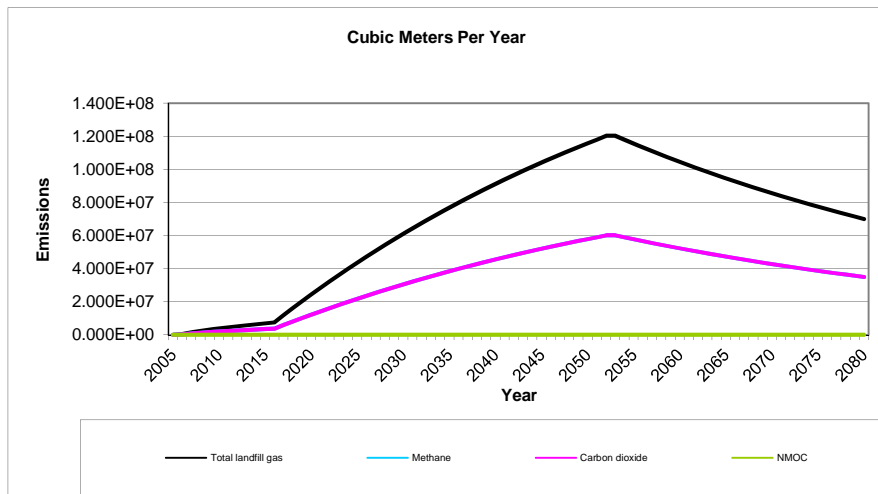
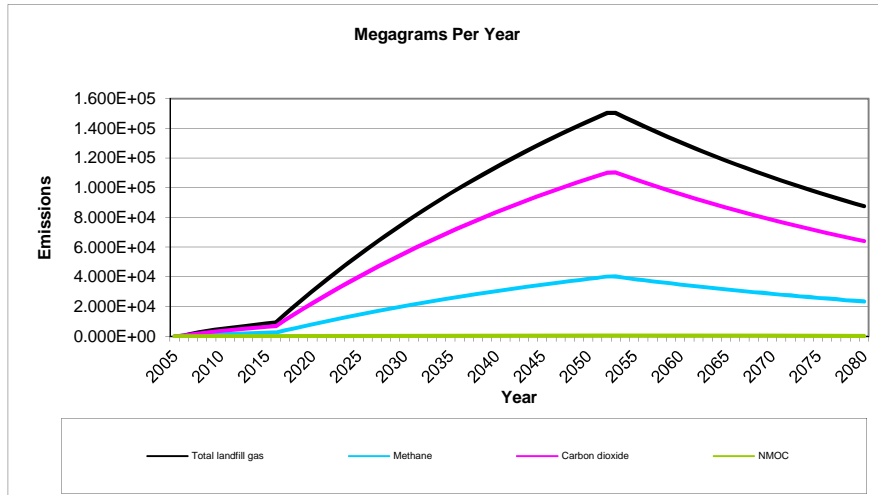
Pollutant Parameters

Gas / Pollutant Default Parameters:				User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas	4,000	0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC		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)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2005	0	0	0	0	0	0
2006	6.943E+02	5.560E+05	7.637E+02	1.855E+02	2.780E+05	2.040E+02
2007	2.008E+03	1.608E+06	2.209E+03	5.363E+02	8.039E+05	5.900E+02
2008	3.278E+03	2.625E+06	3.606E+03	8.755E+02	1.312E+06	9.631E+02
2009	4.168E+03	3.338E+06	4.585E+03	1.113E+03	1.669E+06	1.225E+03
2010	5.004E+03	4.007E+06	5.505E+03	1.337E+03	2.004E+06	1.470E+03
2011	5.747E+03	4.602E+06	6.322E+03	1.535E+03	2.301E+06	1.689E+03
2012	6.542E+03	5.238E+06	7.196E+03	1.747E+03	2.619E+06	1.922E+03
2013	7.268E+03	5.820E+06	7.995E+03	1.941E+03	2.910E+06	2.135E+03
2014	7.961E+03	6.375E+06	8.757E+03	2.126E+03	3.187E+06	2.339E+03
2015	8.775E+03	7.026E+06	9.652E+03	2.344E+03	3.513E+06	2.578E+03
2016	9.465E+03	7.579E+06	1.041E+04	2.528E+03	3.790E+06	2.781E+03
2017	1.489E+04	1.193E+07	1.638E+04	3.978E+03	5.963E+06	4.376E+03
2018	2.022E+04	1.619E+07	2.224E+04	5.400E+03	8.094E+06	5.940E+03
2019	2.543E+04	2.037E+07	2.798E+04	6.793E+03	1.018E+07	7.473E+03
2020	3.055E+04	2.446E+07	3.360E+04	8.159E+03	1.223E+07	8.975E+03
2021	3.556E+04	2.847E+07	3.911E+04	9.498E+03	1.424E+07	1.045E+04
2022	4.047E+04	3.241E+07	4.452E+04	1.081E+04	1.620E+07	1.189E+04
2023	4.529E+04	3.626E+07	4.981E+04	1.210E+04	1.813E+07	1.331E+04
2024	5.001E+04	4.004E+07	5.501E+04	1.336E+04	2.002E+07	1.469E+04
2025	5.463E+04	4.375E+07	6.010E+04	1.459E+04	2.187E+07	1.605E+04
2026	5.917E+04	4.738E+07	6.508E+04	1.580E+04	2.369E+07	1.738E+04
2027	6.361E+04	5.094E+07	6.997E+04	1.699E+04	2.547E+07	1.869E+04
2028	6.797E+04	5.443E+07	7.477E+04	1.816E+04	2.721E+07	1.997E+04
2029	7.224E+04	5.785E+07	7.946E+04	1.930E+04	2.892E+07	2.123E+04
2030	7.643E+04	6.120E+07	8.407E+04	2.041E+04	3.060E+07	2.246E+04
2031	8.053E+04	6.448E+07	8.858E+04	2.151E+04	3.224E+07	2.366E+04
2032	8.455E+04	6.770E+07	9.301E+04	2.258E+04	3.385E+07	2.484E+04
2033	8.849E+04	7.086E+07	9.734E+04	2.364E+04	3.543E+07	2.600E+04
2034	9.236E+04	7.396E+07	1.016E+05	2.467E+04	3.698E+07	2.714E+04
2035	9.615E+04	7.699E+07	1.058E+05	2.568E+04	3.849E+07	2.825E+04
2036	9.986E+04	7.996E+07	1.098E+05	2.667E+04	3.998E+07	2.934E+04
2037	1.035E+05	8.288E+07	1.138E+05	2.765E+04	4.144E+07	3.041E+04
2038	1.071E+05	8.573E+07	1.178E+05	2.860E+04	4.287E+07	3.146E+04
2039	1.106E+05	8.853E+07	1.216E+05	2.953E+04	4.427E+07	3.249E+04
2040	1.140E+05	9.128E+07	1.254E+05	3.045E+04	4.564E+07	3.349E+04
2041	1.173E+05	9.397E+07	1.291E+05	3.135E+04	4.698E+07	3.448E+04
2042	1.206E+05	9.660E+07	1.327E+05	3.222E+04	4.830E+07	3.545E+04
2043	1.239E+05	9.919E+07	1.363E+05	3.309E+04	4.959E+07	3.640E+04
2044	1.270E+05	1.017E+08	1.397E+05	3.393E+04	5.086E+07	3.733E+04
2045	1.301E+05	1.042E+08	1.431E+05	3.476E+04	5.210E+07	3.824E+04
2046	1.332E+05	1.066E+08	1.465E+05	3.557E+04	5.332E+07	3.913E+04
2047	1.362E+05	1.090E+08	1.498E+05	3.637E+04	5.451E+07	4.001E+04
2048	1.391E+05	1.114E+08	1.530E+05	3.715E+04	5.568E+07	4.086E+04
2049	1.419E+05	1.137E+08	1.561E+05	3.791E+04	5.683E+07	4.170E+04
2050	1.447E+05	1.159E+08	1.592E+05	3.866E+04	5.795E+07	4.253E+04
2051	1.475E+05	1.181E+08	1.622E+05	3.940E+04	5.905E+07	4.334E+04
2052	1.502E+05	1.203E+08	1.652E+05	4.012E+04	6.013E+07	4.413E+04
2053	1.503E+05	1.203E+08	1.653E+05	4.014E+04	6.017E+07	4.416E+04
2054	1.473E+05	1.180E+08	1.620E+05	3.935E+04	5.898E+07	4.328E+04

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2055	1.444E+05	1.156E+08	1.588E+05	3.857E+04	5.781E+07	4.243E+04
2056	1.415E+05	1.133E+08	1.557E+05	3.781E+04	5.667E+07	4.159E+04
2057	1.387E+05	1.111E+08	1.526E+05	3.706E+04	5.555E+07	4.076E+04
2058	1.360E+05	1.089E+08	1.496E+05	3.632E+04	5.445E+07	3.996E+04
2059	1.333E+05	1.067E+08	1.466E+05	3.560E+04	5.337E+07	3.916E+04
2060	1.307E+05	1.046E+08	1.437E+05	3.490E+04	5.231E+07	3.839E+04
2061	1.281E+05	1.026E+08	1.409E+05	3.421E+04	5.128E+07	3.763E+04
2062	1.255E+05	1.005E+08	1.381E+05	3.353E+04	5.026E+07	3.688E+04
2063	1.230E+05	9.853E+07	1.354E+05	3.287E+04	4.926E+07	3.615E+04
2064	1.206E+05	9.658E+07	1.327E+05	3.222E+04	4.829E+07	3.544E+04
2065	1.182E+05	9.467E+07	1.300E+05	3.158E+04	4.733E+07	3.474E+04
2066	1.159E+05	9.279E+07	1.275E+05	3.095E+04	4.640E+07	3.405E+04
2067	1.136E+05	9.095E+07	1.249E+05	3.034E+04	4.548E+07	3.337E+04
2068	1.113E+05	8.915E+07	1.225E+05	2.974E+04	4.458E+07	3.271E+04
2069	1.091E+05	8.739E+07	1.200E+05	2.915E+04	4.369E+07	3.207E+04
2070	1.070E+05	8.566E+07	1.177E+05	2.857E+04	4.283E+07	3.143E+04
2071	1.049E+05	8.396E+07	1.153E+05	2.801E+04	4.198E+07	3.081E+04
2072	1.028E+05	8.230E+07	1.131E+05	2.745E+04	4.115E+07	3.020E+04
2073	1.007E+05	8.067E+07	1.108E+05	2.691E+04	4.033E+07	2.960E+04
2074	9.875E+04	7.907E+07	1.086E+05	2.638E+04	3.954E+07	2.901E+04
2075	9.679E+04	7.751E+07	1.065E+05	2.585E+04	3.875E+07	2.844E+04
2076	9.488E+04	7.597E+07	1.044E+05	2.534E+04	3.799E+07	2.788E+04
2077	9.300E+04	7.447E+07	1.023E+05	2.484E+04	3.723E+07	2.732E+04
2078	9.116E+04	7.299E+07	1.003E+05	2.435E+04	3.650E+07	2.678E+04
2079	8.935E+04	7.155E+07	9.829E+04	2.387E+04	3.577E+07	2.625E+04
2080	8.758E+04	7.013E+07	9.634E+04	2.339E+04	3.507E+07	2.573E+04
2081	8.585E+04	6.874E+07	9.443E+04	2.293E+04	3.437E+07	2.522E+04
2082	8.415E+04	6.738E+07	9.256E+04	2.248E+04	3.369E+07	2.472E+04
2083	8.248E+04	6.605E+07	9.073E+04	2.203E+04	3.302E+07	2.423E+04
2084	8.085E+04	6.474E+07	8.893E+04	2.160E+04	3.237E+07	2.375E+04
2085	7.925E+04	6.346E+07	8.717E+04	2.117E+04	3.173E+07	2.328E+04
2086	7.768E+04	6.220E+07	8.544E+04	2.075E+04	3.110E+07	2.282E+04
2087	7.614E+04	6.097E+07	8.375E+04	2.034E+04	3.048E+07	2.237E+04
2088	7.463E+04	5.976E+07	8.209E+04	1.993E+04	2.988E+07	2.193E+04
2089	7.315E+04	5.858E+07	8.047E+04	1.954E+04	2.929E+07	2.149E+04
2090	7.171E+04	5.742E+07	7.888E+04	1.915E+04	2.871E+07	2.107E+04
2091	7.029E+04	5.628E+07	7.731E+04	1.877E+04	2.814E+07	2.065E+04
2092	6.889E+04	5.517E+07	7.578E+04	1.840E+04	2.758E+07	2.024E+04
2093	6.753E+04	5.407E+07	7.428E+04	1.804E+04	2.704E+07	1.984E+04
2094	6.619E+04	5.300E+07	7.281E+04	1.768E+04	2.650E+07	1.945E+04
2095	6.488E+04	5.195E+07	7.137E+04	1.733E+04	2.598E+07	1.906E+04
2096	6.360E+04	5.093E+07	6.996E+04	1.699E+04	2.546E+07	1.869E+04
2097	6.234E+04	4.992E+07	6.857E+04	1.665E+04	2.496E+07	1.832E+04
2098	6.110E+04	4.893E+07	6.721E+04	1.632E+04	2.446E+07	1.795E+04
2099	5.989E+04	4.796E+07	6.588E+04	1.600E+04	2.398E+07	1.760E+04
2100	5.871E+04	4.701E+07	6.458E+04	1.568E+04	2.350E+07	1.725E+04
2101	5.754E+04	4.608E+07	6.330E+04	1.537E+04	2.304E+07	1.691E+04
2102	5.641E+04	4.517E+07	6.205E+04	1.507E+04	2.258E+07	1.657E+04
2103	5.529E+04	4.427E+07	6.082E+04	1.477E+04	2.214E+07	1.624E+04
2104	5.419E+04	4.340E+07	5.961E+04	1.448E+04	2.170E+07	1.592E+04
2105	5.312E+04	4.254E+07	5.843E+04	1.419E+04	2.127E+07	1.561E+04

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2106	5.207E+04	4.169E+07	5.728E+04	1.391E+04	2.085E+07	1.530E+04
2107	5.104E+04	4.087E+07	5.614E+04	1.363E+04	2.043E+07	1.500E+04
2108	5.003E+04	4.006E+07	5.503E+04	1.336E+04	2.003E+07	1.470E+04
2109	4.904E+04	3.927E+07	5.394E+04	1.310E+04	1.963E+07	1.441E+04
2110	4.807E+04	3.849E+07	5.287E+04	1.284E+04	1.924E+07	1.412E+04
2111	4.711E+04	3.773E+07	5.182E+04	1.258E+04	1.886E+07	1.384E+04
2112	4.618E+04	3.698E+07	5.080E+04	1.234E+04	1.849E+07	1.357E+04
2113	4.527E+04	3.625E+07	4.979E+04	1.209E+04	1.812E+07	1.330E+04
2114	4.437E+04	3.553E+07	4.881E+04	1.185E+04	1.776E+07	1.304E+04
2115	4.349E+04	3.483E+07	4.784E+04	1.162E+04	1.741E+07	1.278E+04
2116	4.263E+04	3.414E+07	4.689E+04	1.139E+04	1.707E+07	1.253E+04
2117	4.179E+04	3.346E+07	4.596E+04	1.116E+04	1.673E+07	1.228E+04
2118	4.096E+04	3.280E+07	4.505E+04	1.094E+04	1.640E+07	1.203E+04
2119	4.015E+04	3.215E+07	4.416E+04	1.072E+04	1.607E+07	1.180E+04
2120	3.935E+04	3.151E+07	4.329E+04	1.051E+04	1.576E+07	1.156E+04
2121	3.857E+04	3.089E+07	4.243E+04	1.030E+04	1.544E+07	1.133E+04
2122	3.781E+04	3.028E+07	4.159E+04	1.010E+04	1.514E+07	1.111E+04
2123	3.706E+04	2.968E+07	4.077E+04	9.899E+03	1.484E+07	1.089E+04
2124	3.633E+04	2.909E+07	3.996E+04	9.703E+03	1.454E+07	1.067E+04
2125	3.561E+04	2.851E+07	3.917E+04	9.511E+03	1.426E+07	1.046E+04
2126	3.490E+04	2.795E+07	3.839E+04	9.323E+03	1.397E+07	1.026E+04
2127	3.421E+04	2.739E+07	3.763E+04	9.138E+03	1.370E+07	1.005E+04
2128	3.353E+04	2.685E+07	3.689E+04	8.957E+03	1.343E+07	9.853E+03
2129	3.287E+04	2.632E+07	3.616E+04	8.780E+03	1.316E+07	9.658E+03
2130	3.222E+04	2.580E+07	3.544E+04	8.606E+03	1.290E+07	9.467E+03
2131	3.158E+04	2.529E+07	3.474E+04	8.436E+03	1.264E+07	9.279E+03
2132	3.096E+04	2.479E+07	3.405E+04	8.269E+03	1.239E+07	9.096E+03
2133	3.034E+04	2.430E+07	3.338E+04	8.105E+03	1.215E+07	8.915E+03
2134	2.974E+04	2.382E+07	3.272E+04	7.944E+03	1.191E+07	8.739E+03
2135	2.915E+04	2.334E+07	3.207E+04	7.787E+03	1.167E+07	8.566E+03
2136	2.858E+04	2.288E+07	3.143E+04	7.633E+03	1.144E+07	8.396E+03
2137	2.801E+04	2.243E+07	3.081E+04	7.482E+03	1.121E+07	8.230E+03
2138	2.746E+04	2.198E+07	3.020E+04	7.334E+03	1.099E+07	8.067E+03
2139	2.691E+04	2.155E+07	2.960E+04	7.188E+03	1.077E+07	7.907E+03
2140	2.638E+04	2.112E+07	2.902E+04	7.046E+03	1.056E+07	7.751E+03
2141	2.586E+04	2.070E+07	2.844E+04	6.907E+03	1.035E+07	7.597E+03
2142	2.534E+04	2.029E+07	2.788E+04	6.770E+03	1.015E+07	7.447E+03
2143	2.484E+04	1.989E+07	2.733E+04	6.636E+03	9.946E+06	7.299E+03
2144	2.435E+04	1.950E+07	2.679E+04	6.504E+03	9.749E+06	7.155E+03
2145	2.387E+04	1.911E+07	2.626E+04	6.376E+03	9.556E+06	7.013E+03

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2005	0	0	0	0	0	0
2006	5.088E+02	2.780E+05	5.597E+02	1.923E+00	5.365E+02	2.115E+00
2007	1.472E+03	8.039E+05	1.619E+03	5.562E+00	1.552E+03	6.118E+00
2008	2.402E+03	1.312E+06	2.642E+03	9.079E+00	2.533E+03	9.987E+00
2009	3.055E+03	1.669E+06	3.360E+03	1.155E+01	3.221E+03	1.270E+01
2010	3.667E+03	2.004E+06	4.034E+03	1.386E+01	3.867E+03	1.525E+01
2011	4.212E+03	2.301E+06	4.633E+03	1.592E+01	4.441E+03	1.751E+01
2012	4.794E+03	2.619E+06	5.274E+03	1.812E+01	5.055E+03	1.993E+01
2013	5.327E+03	2.910E+06	5.859E+03	2.013E+01	5.616E+03	2.214E+01
2014	5.835E+03	3.187E+06	6.418E+03	2.205E+01	6.152E+03	2.426E+01
2015	6.431E+03	3.513E+06	7.074E+03	2.430E+01	6.780E+03	2.673E+01
2016	6.937E+03	3.790E+06	7.630E+03	2.622E+01	7.314E+03	2.884E+01
2017	1.092E+04	5.963E+06	1.201E+04	4.125E+01	1.151E+04	4.538E+01
2018	1.482E+04	8.094E+06	1.630E+04	5.599E+01	1.562E+04	6.159E+01
2019	1.864E+04	1.018E+07	2.050E+04	7.044E+01	1.965E+04	7.749E+01
2020	2.239E+04	1.223E+07	2.463E+04	8.461E+01	2.360E+04	9.307E+01
2021	2.606E+04	1.424E+07	2.867E+04	9.849E+01	2.748E+04	1.083E+02
2022	2.966E+04	1.620E+07	3.263E+04	1.121E+02	3.127E+04	1.233E+02
2023	3.319E+04	1.813E+07	3.651E+04	1.254E+02	3.499E+04	1.380E+02
2024	3.665E+04	2.002E+07	4.031E+04	1.385E+02	3.864E+04	1.524E+02
2025	4.004E+04	2.187E+07	4.404E+04	1.513E+02	4.222E+04	1.665E+02
2026	4.336E+04	2.369E+07	4.770E+04	1.639E+02	4.572E+04	1.803E+02
2027	4.662E+04	2.547E+07	5.128E+04	1.762E+02	4.915E+04	1.938E+02
2028	4.981E+04	2.721E+07	5.480E+04	1.883E+02	5.252E+04	2.071E+02
2029	5.294E+04	2.892E+07	5.824E+04	2.001E+02	5.582E+04	2.201E+02
2030	5.601E+04	3.060E+07	6.161E+04	2.117E+02	5.906E+04	2.329E+02
2031	5.902E+04	3.224E+07	6.492E+04	2.231E+02	6.223E+04	2.454E+02
2032	6.197E+04	3.385E+07	6.816E+04	2.342E+02	6.534E+04	2.576E+02
2033	6.486E+04	3.543E+07	7.134E+04	2.451E+02	6.838E+04	2.696E+02
2034	6.769E+04	3.698E+07	7.446E+04	2.558E+02	7.137E+04	2.814E+02
2035	7.046E+04	3.849E+07	7.751E+04	2.663E+02	7.429E+04	2.929E+02
2036	7.319E+04	3.998E+07	8.050E+04	2.766E+02	7.716E+04	3.043E+02
2037	7.585E+04	4.144E+07	8.344E+04	2.867E+02	7.998E+04	3.153E+02
2038	7.847E+04	4.287E+07	8.631E+04	2.966E+02	8.273E+04	3.262E+02
2039	8.103E+04	4.427E+07	8.913E+04	3.062E+02	8.543E+04	3.369E+02
2040	8.354E+04	4.564E+07	9.190E+04	3.157E+02	8.808E+04	3.473E+02
2041	8.600E+04	4.698E+07	9.460E+04	3.250E+02	9.068E+04	3.575E+02
2042	8.842E+04	4.830E+07	9.726E+04	3.342E+02	9.322E+04	3.676E+02
2043	9.078E+04	4.959E+07	9.986E+04	3.431E+02	9.572E+04	3.774E+02
2044	9.310E+04	5.086E+07	1.024E+05	3.519E+02	9.816E+04	3.870E+02
2045	9.537E+04	5.210E+07	1.049E+05	3.605E+02	1.006E+05	3.965E+02
2046	9.760E+04	5.332E+07	1.074E+05	3.689E+02	1.029E+05	4.058E+02
2047	9.979E+04	5.451E+07	1.098E+05	3.771E+02	1.052E+05	4.148E+02
2048	1.019E+05	5.568E+07	1.121E+05	3.852E+02	1.075E+05	4.237E+02
2049	1.040E+05	5.683E+07	1.144E+05	3.931E+02	1.097E+05	4.325E+02
2050	1.061E+05	5.795E+07	1.167E+05	4.009E+02	1.118E+05	4.410E+02
2051	1.081E+05	5.905E+07	1.189E+05	4.085E+02	1.140E+05	4.494E+02
2052	1.101E+05	6.013E+07	1.211E+05	4.160E+02	1.161E+05	4.576E+02
2053	1.101E+05	6.017E+07	1.212E+05	4.163E+02	1.161E+05	4.579E+02
2054	1.080E+05	5.898E+07	1.188E+05	4.080E+02	1.138E+05	4.488E+02

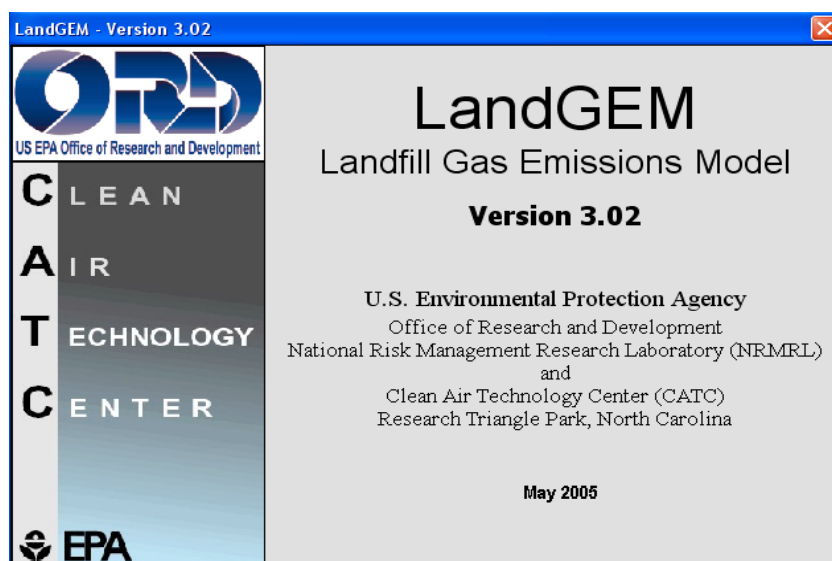
Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2055	1.058E+05	5.781E+07	1.164E+05	4.000E+02	1.116E+05	4.399E+02
2056	1.037E+05	5.667E+07	1.141E+05	3.920E+02	1.094E+05	4.312E+02
2057	1.017E+05	5.555E+07	1.118E+05	3.843E+02	1.072E+05	4.227E+02
2058	9.966E+04	5.445E+07	1.096E+05	3.767E+02	1.051E+05	4.143E+02
2059	9.769E+04	5.337E+07	1.075E+05	3.692E+02	1.030E+05	4.061E+02
2060	9.576E+04	5.231E+07	1.053E+05	3.619E+02	1.010E+05	3.981E+02
2061	9.386E+04	5.128E+07	1.032E+05	3.547E+02	9.896E+04	3.902E+02
2062	9.200E+04	5.026E+07	1.012E+05	3.477E+02	9.700E+04	3.825E+02
2063	9.018E+04	4.926E+07	9.920E+04	3.408E+02	9.508E+04	3.749E+02
2064	8.839E+04	4.829E+07	9.723E+04	3.341E+02	9.320E+04	3.675E+02
2065	8.664E+04	4.733E+07	9.531E+04	3.275E+02	9.135E+04	3.602E+02
2066	8.493E+04	4.640E+07	9.342E+04	3.210E+02	8.954E+04	3.531E+02
2067	8.325E+04	4.548E+07	9.157E+04	3.146E+02	8.777E+04	3.461E+02
2068	8.160E+04	4.458E+07	8.976E+04	3.084E+02	8.603E+04	3.392E+02
2069	7.998E+04	4.369E+07	8.798E+04	3.023E+02	8.433E+04	3.325E+02
2070	7.840E+04	4.283E+07	8.624E+04	2.963E+02	8.266E+04	3.259E+02
2071	7.685E+04	4.198E+07	8.453E+04	2.904E+02	8.102E+04	3.195E+02
2072	7.532E+04	4.115E+07	8.286E+04	2.847E+02	7.942E+04	3.131E+02
2073	7.383E+04	4.033E+07	8.122E+04	2.790E+02	7.785E+04	3.069E+02
2074	7.237E+04	3.954E+07	7.961E+04	2.735E+02	7.630E+04	3.009E+02
2075	7.094E+04	3.875E+07	7.803E+04	2.681E+02	7.479E+04	2.949E+02
2076	6.953E+04	3.799E+07	7.649E+04	2.628E+02	7.331E+04	2.891E+02
2077	6.816E+04	3.723E+07	7.497E+04	2.576E+02	7.186E+04	2.833E+02
2078	6.681E+04	3.650E+07	7.349E+04	2.525E+02	7.044E+04	2.777E+02
2079	6.548E+04	3.577E+07	7.203E+04	2.475E+02	6.904E+04	2.722E+02
2080	6.419E+04	3.507E+07	7.061E+04	2.426E+02	6.768E+04	2.668E+02
2081	6.292E+04	3.437E+07	6.921E+04	2.378E+02	6.634E+04	2.616E+02
2082	6.167E+04	3.369E+07	6.784E+04	2.331E+02	6.502E+04	2.564E+02
2083	6.045E+04	3.302E+07	6.649E+04	2.285E+02	6.373E+04	2.513E+02
2084	5.925E+04	3.237E+07	6.518E+04	2.239E+02	6.247E+04	2.463E+02
2085	5.808E+04	3.173E+07	6.389E+04	2.195E+02	6.124E+04	2.414E+02
2086	5.693E+04	3.110E+07	6.262E+04	2.152E+02	6.002E+04	2.367E+02
2087	5.580E+04	3.048E+07	6.138E+04	2.109E+02	5.883E+04	2.320E+02
2088	5.470E+04	2.988E+07	6.017E+04	2.067E+02	5.767E+04	2.274E+02
2089	5.361E+04	2.929E+07	5.897E+04	2.026E+02	5.653E+04	2.229E+02
2090	5.255E+04	2.871E+07	5.781E+04	1.986E+02	5.541E+04	2.185E+02
2091	5.151E+04	2.814E+07	5.666E+04	1.947E+02	5.431E+04	2.141E+02
2092	5.049E+04	2.758E+07	5.554E+04	1.908E+02	5.324E+04	2.099E+02
2093	4.949E+04	2.704E+07	5.444E+04	1.870E+02	5.218E+04	2.057E+02
2094	4.851E+04	2.650E+07	5.336E+04	1.833E+02	5.115E+04	2.017E+02
2095	4.755E+04	2.598E+07	5.231E+04	1.797E+02	5.014E+04	1.977E+02
2096	4.661E+04	2.546E+07	5.127E+04	1.762E+02	4.914E+04	1.938E+02
2097	4.569E+04	2.496E+07	5.026E+04	1.727E+02	4.817E+04	1.899E+02
2098	4.478E+04	2.446E+07	4.926E+04	1.692E+02	4.722E+04	1.862E+02
2099	4.390E+04	2.398E+07	4.828E+04	1.659E+02	4.628E+04	1.825E+02
2100	4.303E+04	2.350E+07	4.733E+04	1.626E+02	4.536E+04	1.789E+02
2101	4.217E+04	2.304E+07	4.639E+04	1.594E+02	4.447E+04	1.753E+02
2102	4.134E+04	2.258E+07	4.547E+04	1.562E+02	4.359E+04	1.719E+02
2103	4.052E+04	2.214E+07	4.457E+04	1.531E+02	4.272E+04	1.685E+02
2104	3.972E+04	2.170E+07	4.369E+04	1.501E+02	4.188E+04	1.651E+02
2105	3.893E+04	2.127E+07	4.282E+04	1.471E+02	4.105E+04	1.618E+02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2106	3.816E+04	2.085E+07	4.198E+04	1.442E+02	4.023E+04	1.586E+02
2107	3.740E+04	2.043E+07	4.115E+04	1.414E+02	3.944E+04	1.555E+02
2108	3.666E+04	2.003E+07	4.033E+04	1.386E+02	3.866E+04	1.524E+02
2109	3.594E+04	1.963E+07	3.953E+04	1.358E+02	3.789E+04	1.494E+02
2110	3.523E+04	1.924E+07	3.875E+04	1.331E+02	3.714E+04	1.464E+02
2111	3.453E+04	1.886E+07	3.798E+04	1.305E+02	3.641E+04	1.435E+02
2112	3.385E+04	1.849E+07	3.723E+04	1.279E+02	3.569E+04	1.407E+02
2113	3.318E+04	1.812E+07	3.649E+04	1.254E+02	3.498E+04	1.379E+02
2114	3.252E+04	1.776E+07	3.577E+04	1.229E+02	3.429E+04	1.352E+02
2115	3.187E+04	1.741E+07	3.506E+04	1.205E+02	3.361E+04	1.325E+02
2116	3.124E+04	1.707E+07	3.437E+04	1.181E+02	3.294E+04	1.299E+02
2117	3.062E+04	1.673E+07	3.369E+04	1.157E+02	3.229E+04	1.273E+02
2118	3.002E+04	1.640E+07	3.302E+04	1.134E+02	3.165E+04	1.248E+02
2119	2.942E+04	1.607E+07	3.237E+04	1.112E+02	3.102E+04	1.223E+02
2120	2.884E+04	1.576E+07	3.173E+04	1.090E+02	3.041E+04	1.199E+02
2121	2.827E+04	1.544E+07	3.110E+04	1.068E+02	2.981E+04	1.175E+02
2122	2.771E+04	1.514E+07	3.048E+04	1.047E+02	2.922E+04	1.152E+02
2123	2.716E+04	1.484E+07	2.988E+04	1.027E+02	2.864E+04	1.129E+02
2124	2.662E+04	1.454E+07	2.929E+04	1.006E+02	2.807E+04	1.107E+02
2125	2.610E+04	1.426E+07	2.871E+04	9.863E+01	2.752E+04	1.085E+02
2126	2.558E+04	1.397E+07	2.814E+04	9.667E+01	2.697E+04	1.063E+02
2127	2.507E+04	1.370E+07	2.758E+04	9.476E+01	2.644E+04	1.042E+02
2128	2.458E+04	1.343E+07	2.703E+04	9.288E+01	2.591E+04	1.022E+02
2129	2.409E+04	1.316E+07	2.650E+04	9.104E+01	2.540E+04	1.001E+02
2130	2.361E+04	1.290E+07	2.597E+04	8.924E+01	2.490E+04	9.817E+01
2131	2.315E+04	1.264E+07	2.546E+04	8.747E+01	2.440E+04	9.622E+01
2132	2.269E+04	1.239E+07	2.496E+04	8.574E+01	2.392E+04	9.432E+01
2133	2.224E+04	1.215E+07	2.446E+04	8.404E+01	2.345E+04	9.245E+01
2134	2.180E+04	1.191E+07	2.398E+04	8.238E+01	2.298E+04	9.062E+01
2135	2.137E+04	1.167E+07	2.350E+04	8.075E+01	2.253E+04	8.882E+01
2136	2.094E+04	1.144E+07	2.304E+04	7.915E+01	2.208E+04	8.706E+01
2137	2.053E+04	1.121E+07	2.258E+04	7.758E+01	2.164E+04	8.534E+01
2138	2.012E+04	1.099E+07	2.213E+04	7.605E+01	2.122E+04	8.365E+01
2139	1.972E+04	1.077E+07	2.170E+04	7.454E+01	2.080E+04	8.199E+01
2140	1.933E+04	1.056E+07	2.127E+04	7.306E+01	2.038E+04	8.037E+01
2141	1.895E+04	1.035E+07	2.084E+04	7.162E+01	1.998E+04	7.878E+01
2142	1.857E+04	1.015E+07	2.043E+04	7.020E+01	1.958E+04	7.722E+01
2143	1.821E+04	9.946E+06	2.003E+04	6.881E+01	1.920E+04	7.569E+01
2144	1.785E+04	9.749E+06	1.963E+04	6.745E+01	1.882E+04	7.419E+01
2145	1.749E+04	9.556E+06	1.924E+04	6.611E+01	1.844E+04	7.272E+01

AP-42 (Inventory) LandGEM for Maximum Potential Emissions
(Using Default NSPS NMOC concentration)



Summary Report

Landfill Name or Identifier: Tekoi Landfill, Utah

Date: Monday, March 21, 2016

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

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	2005	
Landfill Closure Year (with 80-year limit)	2052	
Actual Closure Year (without limit)	2052	
Have Model Calculate Closure Year?	Yes	
Waste Design Capacity	47,939,986	<i>short tons</i>

MODEL PARAMETERS

Methane Generation Rate, k	0.020	<i>year⁻¹</i>
Potential Methane Generation Capacity, L ₀	100	<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)
2005	140,242	154,266	0	0
2006	268,131	294,944	140,242	154,266
2007	264,525	290,978	408,373	449,210
2008	192,975	212,273	672,898	740,188
2009	185,518	204,070	865,874	952,461
2010	170,159	187,175	1,051,392	1,156,531
2011	183,426	201,769	1,221,551	1,343,706
2012	172,854	190,140	1,404,977	1,545,475
2013	169,091	186,000	1,577,832	1,735,615
2014	196,194	215,814	1,746,922	1,921,615
2015	174,515	191,967	1,943,117	2,137,428
2016	1,134,545	1,248,000	2,117,632	2,329,395
2017	1,134,545	1,248,000	3,252,178	3,577,395
2018	1,134,545	1,248,000	4,386,723	4,825,395
2019	1,134,545	1,248,000	5,521,268	6,073,395
2020	1,134,545	1,248,000	6,655,814	7,321,395
2021	1,134,545	1,248,000	7,790,359	8,569,395
2022	1,134,545	1,248,000	8,924,905	9,817,395
2023	1,134,545	1,248,000	10,059,450	11,065,395
2024	1,134,545	1,248,000	11,193,996	12,313,395
2025	1,134,545	1,248,000	12,328,541	13,561,395
2026	1,134,545	1,248,000	13,463,087	14,809,395
2027	1,134,545	1,248,000	14,597,632	16,057,395
2028	1,134,545	1,248,000	15,732,178	17,305,395
2029	1,134,545	1,248,000	16,866,723	18,553,395
2030	1,134,545	1,248,000	18,001,268	19,801,395
2031	1,134,545	1,248,000	19,135,814	21,049,395
2032	1,134,545	1,248,000	20,270,359	22,297,395
2033	1,134,545	1,248,000	21,404,905	23,545,395
2034	1,134,545	1,248,000	22,539,450	24,793,395
2035	1,134,545	1,248,000	23,673,996	26,041,395
2036	1,134,545	1,248,000	24,808,541	27,289,395
2037	1,134,545	1,248,000	25,943,087	28,537,395
2038	1,134,545	1,248,000	27,077,632	29,785,395
2039	1,134,545	1,248,000	28,212,178	31,033,395
2040	1,134,545	1,248,000	29,346,723	32,281,395
2041	1,134,545	1,248,000	30,481,268	33,529,395
2042	1,134,545	1,248,000	31,615,814	34,777,395
2043	1,134,545	1,248,000	32,750,359	36,025,395
2044	1,134,545	1,248,000	33,884,905	37,273,395

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2045	1,134,545	1,248,000	35,019,450	38,521,395
2046	1,134,545	1,248,000	36,153,996	39,769,395
2047	1,134,545	1,248,000	37,288,541	41,017,395
2048	1,134,545	1,248,000	38,423,087	42,265,395
2049	1,134,545	1,248,000	39,557,632	43,513,395
2050	1,134,545	1,248,000	40,692,178	44,761,395
2051	1,134,545	1,248,000	41,826,723	46,009,395
2052	620,537	682,591	42,961,268	47,257,395
2053	0	0	43,581,805	47,939,986
2054	0	0	43,581,805	47,939,986
2055	0	0	43,581,805	47,939,986
2056	0	0	43,581,805	47,939,986
2057	0	0	43,581,805	47,939,986
2058	0	0	43,581,805	47,939,986
2059	0	0	43,581,805	47,939,986
2060	0	0	43,581,805	47,939,986
2061	0	0	43,581,805	47,939,986
2062	0	0	43,581,805	47,939,986
2063	0	0	43,581,805	47,939,986
2064	0	0	43,581,805	47,939,986
2065	0	0	43,581,805	47,939,986
2066	0	0	43,581,805	47,939,986
2067	0	0	43,581,805	47,939,986
2068	0	0	43,581,805	47,939,986
2069	0	0	43,581,805	47,939,986
2070	0	0	43,581,805	47,939,986
2071	0	0	43,581,805	47,939,986
2072	0	0	43,581,805	47,939,986
2073	0	0	43,581,805	47,939,986
2074	0	0	43,581,805	47,939,986
2075	0	0	43,581,805	47,939,986
2076	0	0	43,581,805	47,939,986
2077	0	0	43,581,805	47,939,986
2078	0	0	43,581,805	47,939,986
2079	0	0	43,581,805	47,939,986
2080	0	0	43,581,805	47,939,986
2081	0	0	43,581,805	47,939,986
2082	0	0	43,581,805	47,939,986
2083	0	0	43,581,805	47,939,986
2084	0	0	43,581,805	47,939,986

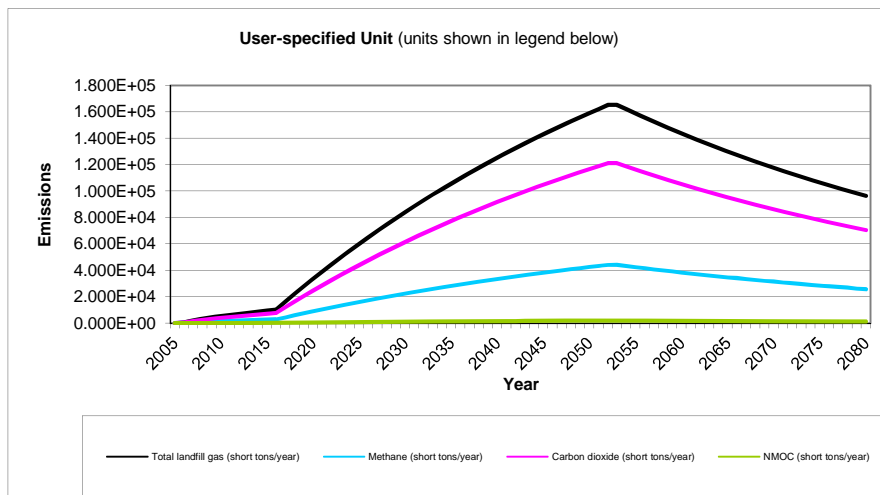
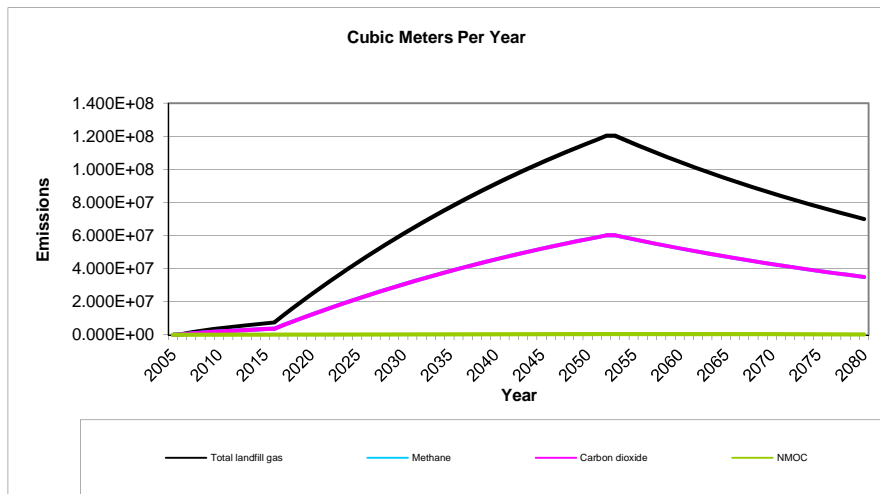
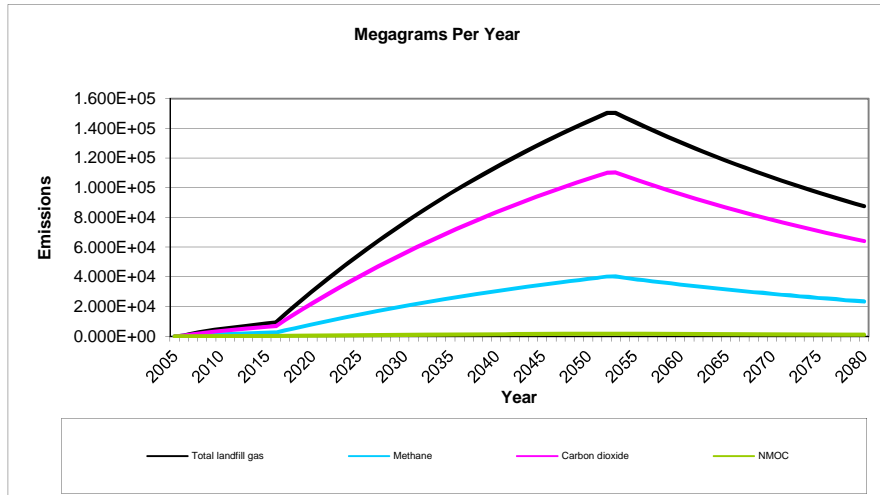
Pollutant Parameters

Gas / Pollutant Default Parameters:				User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas	4,000	0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC		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)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2005	0	0	0	0	0	0
2006	6.943E+02	5.560E+05	7.637E+02	1.855E+02	2.780E+05	2.040E+02
2007	2.008E+03	1.608E+06	2.209E+03	5.363E+02	8.039E+05	5.900E+02
2008	3.278E+03	2.625E+06	3.606E+03	8.755E+02	1.312E+06	9.631E+02
2009	4.168E+03	3.338E+06	4.585E+03	1.113E+03	1.669E+06	1.225E+03
2010	5.004E+03	4.007E+06	5.505E+03	1.337E+03	2.004E+06	1.470E+03
2011	5.747E+03	4.602E+06	6.322E+03	1.535E+03	2.301E+06	1.689E+03
2012	6.542E+03	5.238E+06	7.196E+03	1.747E+03	2.619E+06	1.922E+03
2013	7.268E+03	5.820E+06	7.995E+03	1.941E+03	2.910E+06	2.135E+03
2014	7.961E+03	6.375E+06	8.757E+03	2.126E+03	3.187E+06	2.339E+03
2015	8.775E+03	7.026E+06	9.652E+03	2.344E+03	3.513E+06	2.578E+03
2016	9.465E+03	7.579E+06	1.041E+04	2.528E+03	3.790E+06	2.781E+03
2017	1.489E+04	1.193E+07	1.638E+04	3.978E+03	5.963E+06	4.376E+03
2018	2.022E+04	1.619E+07	2.224E+04	5.400E+03	8.094E+06	5.940E+03
2019	2.543E+04	2.037E+07	2.798E+04	6.793E+03	1.018E+07	7.473E+03
2020	3.055E+04	2.446E+07	3.360E+04	8.159E+03	1.223E+07	8.975E+03
2021	3.556E+04	2.847E+07	3.911E+04	9.498E+03	1.424E+07	1.045E+04
2022	4.047E+04	3.241E+07	4.452E+04	1.081E+04	1.620E+07	1.189E+04
2023	4.529E+04	3.626E+07	4.981E+04	1.210E+04	1.813E+07	1.331E+04
2024	5.001E+04	4.004E+07	5.501E+04	1.336E+04	2.002E+07	1.469E+04
2025	5.463E+04	4.375E+07	6.010E+04	1.459E+04	2.187E+07	1.605E+04
2026	5.917E+04	4.738E+07	6.508E+04	1.580E+04	2.369E+07	1.738E+04
2027	6.361E+04	5.094E+07	6.997E+04	1.699E+04	2.547E+07	1.869E+04
2028	6.797E+04	5.443E+07	7.477E+04	1.816E+04	2.721E+07	1.997E+04
2029	7.224E+04	5.785E+07	7.946E+04	1.930E+04	2.892E+07	2.123E+04
2030	7.643E+04	6.120E+07	8.407E+04	2.041E+04	3.060E+07	2.246E+04
2031	8.053E+04	6.448E+07	8.858E+04	2.151E+04	3.224E+07	2.366E+04
2032	8.455E+04	6.770E+07	9.301E+04	2.258E+04	3.385E+07	2.484E+04
2033	8.849E+04	7.086E+07	9.734E+04	2.364E+04	3.543E+07	2.600E+04
2034	9.236E+04	7.396E+07	1.016E+05	2.467E+04	3.698E+07	2.714E+04
2035	9.615E+04	7.699E+07	1.058E+05	2.568E+04	3.849E+07	2.825E+04
2036	9.986E+04	7.996E+07	1.098E+05	2.667E+04	3.998E+07	2.934E+04
2037	1.035E+05	8.288E+07	1.138E+05	2.765E+04	4.144E+07	3.041E+04
2038	1.071E+05	8.573E+07	1.178E+05	2.860E+04	4.287E+07	3.146E+04
2039	1.106E+05	8.853E+07	1.216E+05	2.953E+04	4.427E+07	3.249E+04
2040	1.140E+05	9.128E+07	1.254E+05	3.045E+04	4.564E+07	3.349E+04
2041	1.173E+05	9.397E+07	1.291E+05	3.135E+04	4.698E+07	3.448E+04
2042	1.206E+05	9.660E+07	1.327E+05	3.222E+04	4.830E+07	3.545E+04
2043	1.239E+05	9.919E+07	1.363E+05	3.309E+04	4.959E+07	3.640E+04
2044	1.270E+05	1.017E+08	1.397E+05	3.393E+04	5.086E+07	3.733E+04
2045	1.301E+05	1.042E+08	1.431E+05	3.476E+04	5.210E+07	3.824E+04
2046	1.332E+05	1.066E+08	1.465E+05	3.557E+04	5.332E+07	3.913E+04
2047	1.362E+05	1.090E+08	1.498E+05	3.637E+04	5.451E+07	4.001E+04
2048	1.391E+05	1.114E+08	1.530E+05	3.715E+04	5.568E+07	4.086E+04
2049	1.419E+05	1.137E+08	1.561E+05	3.791E+04	5.683E+07	4.170E+04
2050	1.447E+05	1.159E+08	1.592E+05	3.866E+04	5.795E+07	4.253E+04
2051	1.475E+05	1.181E+08	1.622E+05	3.940E+04	5.905E+07	4.334E+04
2052	1.502E+05	1.203E+08	1.652E+05	4.012E+04	6.013E+07	4.413E+04
2053	1.503E+05	1.203E+08	1.653E+05	4.014E+04	6.017E+07	4.416E+04
2054	1.473E+05	1.180E+08	1.620E+05	3.935E+04	5.898E+07	4.328E+04

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2055	1.444E+05	1.156E+08	1.588E+05	3.857E+04	5.781E+07	4.243E+04
2056	1.415E+05	1.133E+08	1.557E+05	3.781E+04	5.667E+07	4.159E+04
2057	1.387E+05	1.111E+08	1.526E+05	3.706E+04	5.555E+07	4.076E+04
2058	1.360E+05	1.089E+08	1.496E+05	3.632E+04	5.445E+07	3.996E+04
2059	1.333E+05	1.067E+08	1.466E+05	3.560E+04	5.337E+07	3.916E+04
2060	1.307E+05	1.046E+08	1.437E+05	3.490E+04	5.231E+07	3.839E+04
2061	1.281E+05	1.026E+08	1.409E+05	3.421E+04	5.128E+07	3.763E+04
2062	1.255E+05	1.005E+08	1.381E+05	3.353E+04	5.026E+07	3.688E+04
2063	1.230E+05	9.853E+07	1.354E+05	3.287E+04	4.926E+07	3.615E+04
2064	1.206E+05	9.658E+07	1.327E+05	3.222E+04	4.829E+07	3.544E+04
2065	1.182E+05	9.467E+07	1.300E+05	3.158E+04	4.733E+07	3.474E+04
2066	1.159E+05	9.279E+07	1.275E+05	3.095E+04	4.640E+07	3.405E+04
2067	1.136E+05	9.095E+07	1.249E+05	3.034E+04	4.548E+07	3.337E+04
2068	1.113E+05	8.915E+07	1.225E+05	2.974E+04	4.458E+07	3.271E+04
2069	1.091E+05	8.739E+07	1.200E+05	2.915E+04	4.369E+07	3.207E+04
2070	1.070E+05	8.566E+07	1.177E+05	2.857E+04	4.283E+07	3.143E+04
2071	1.049E+05	8.396E+07	1.153E+05	2.801E+04	4.198E+07	3.081E+04
2072	1.028E+05	8.230E+07	1.131E+05	2.745E+04	4.115E+07	3.020E+04
2073	1.007E+05	8.067E+07	1.108E+05	2.691E+04	4.033E+07	2.960E+04
2074	9.875E+04	7.907E+07	1.086E+05	2.638E+04	3.954E+07	2.901E+04
2075	9.679E+04	7.751E+07	1.065E+05	2.585E+04	3.875E+07	2.844E+04
2076	9.488E+04	7.597E+07	1.044E+05	2.534E+04	3.799E+07	2.788E+04
2077	9.300E+04	7.447E+07	1.023E+05	2.484E+04	3.723E+07	2.732E+04
2078	9.116E+04	7.299E+07	1.003E+05	2.435E+04	3.650E+07	2.678E+04
2079	8.935E+04	7.155E+07	9.829E+04	2.387E+04	3.577E+07	2.625E+04
2080	8.758E+04	7.013E+07	9.634E+04	2.339E+04	3.507E+07	2.573E+04
2081	8.585E+04	6.874E+07	9.443E+04	2.293E+04	3.437E+07	2.522E+04
2082	8.415E+04	6.738E+07	9.256E+04	2.248E+04	3.369E+07	2.472E+04
2083	8.248E+04	6.605E+07	9.073E+04	2.203E+04	3.302E+07	2.423E+04
2084	8.085E+04	6.474E+07	8.893E+04	2.160E+04	3.237E+07	2.375E+04
2085	7.925E+04	6.346E+07	8.717E+04	2.117E+04	3.173E+07	2.328E+04
2086	7.768E+04	6.220E+07	8.544E+04	2.075E+04	3.110E+07	2.282E+04
2087	7.614E+04	6.097E+07	8.375E+04	2.034E+04	3.048E+07	2.237E+04
2088	7.463E+04	5.976E+07	8.209E+04	1.993E+04	2.988E+07	2.193E+04
2089	7.315E+04	5.858E+07	8.047E+04	1.954E+04	2.929E+07	2.149E+04
2090	7.171E+04	5.742E+07	7.888E+04	1.915E+04	2.871E+07	2.107E+04
2091	7.029E+04	5.628E+07	7.731E+04	1.877E+04	2.814E+07	2.065E+04
2092	6.889E+04	5.517E+07	7.578E+04	1.840E+04	2.758E+07	2.024E+04
2093	6.753E+04	5.407E+07	7.428E+04	1.804E+04	2.704E+07	1.984E+04
2094	6.619E+04	5.300E+07	7.281E+04	1.768E+04	2.650E+07	1.945E+04
2095	6.488E+04	5.195E+07	7.137E+04	1.733E+04	2.598E+07	1.906E+04
2096	6.360E+04	5.093E+07	6.996E+04	1.699E+04	2.546E+07	1.869E+04
2097	6.234E+04	4.992E+07	6.857E+04	1.665E+04	2.496E+07	1.832E+04
2098	6.110E+04	4.893E+07	6.721E+04	1.632E+04	2.446E+07	1.795E+04
2099	5.989E+04	4.796E+07	6.588E+04	1.600E+04	2.398E+07	1.760E+04
2100	5.871E+04	4.701E+07	6.458E+04	1.568E+04	2.350E+07	1.725E+04
2101	5.754E+04	4.608E+07	6.330E+04	1.537E+04	2.304E+07	1.691E+04
2102	5.641E+04	4.517E+07	6.205E+04	1.507E+04	2.258E+07	1.657E+04
2103	5.529E+04	4.427E+07	6.082E+04	1.477E+04	2.214E+07	1.624E+04
2104	5.419E+04	4.340E+07	5.961E+04	1.448E+04	2.170E+07	1.592E+04
2105	5.312E+04	4.254E+07	5.843E+04	1.419E+04	2.127E+07	1.561E+04

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2106	5.207E+04	4.169E+07	5.728E+04	1.391E+04	2.085E+07	1.530E+04
2107	5.104E+04	4.087E+07	5.614E+04	1.363E+04	2.043E+07	1.500E+04
2108	5.003E+04	4.006E+07	5.503E+04	1.336E+04	2.003E+07	1.470E+04
2109	4.904E+04	3.927E+07	5.394E+04	1.310E+04	1.963E+07	1.441E+04
2110	4.807E+04	3.849E+07	5.287E+04	1.284E+04	1.924E+07	1.412E+04
2111	4.711E+04	3.773E+07	5.182E+04	1.258E+04	1.886E+07	1.384E+04
2112	4.618E+04	3.698E+07	5.080E+04	1.234E+04	1.849E+07	1.357E+04
2113	4.527E+04	3.625E+07	4.979E+04	1.209E+04	1.812E+07	1.330E+04
2114	4.437E+04	3.553E+07	4.881E+04	1.185E+04	1.776E+07	1.304E+04
2115	4.349E+04	3.483E+07	4.784E+04	1.162E+04	1.741E+07	1.278E+04
2116	4.263E+04	3.414E+07	4.689E+04	1.139E+04	1.707E+07	1.253E+04
2117	4.179E+04	3.346E+07	4.596E+04	1.116E+04	1.673E+07	1.228E+04
2118	4.096E+04	3.280E+07	4.505E+04	1.094E+04	1.640E+07	1.203E+04
2119	4.015E+04	3.215E+07	4.416E+04	1.072E+04	1.607E+07	1.180E+04
2120	3.935E+04	3.151E+07	4.329E+04	1.051E+04	1.576E+07	1.156E+04
2121	3.857E+04	3.089E+07	4.243E+04	1.030E+04	1.544E+07	1.133E+04
2122	3.781E+04	3.028E+07	4.159E+04	1.010E+04	1.514E+07	1.111E+04
2123	3.706E+04	2.968E+07	4.077E+04	9.899E+03	1.484E+07	1.089E+04
2124	3.633E+04	2.909E+07	3.996E+04	9.703E+03	1.454E+07	1.067E+04
2125	3.561E+04	2.851E+07	3.917E+04	9.511E+03	1.426E+07	1.046E+04
2126	3.490E+04	2.795E+07	3.839E+04	9.323E+03	1.397E+07	1.026E+04
2127	3.421E+04	2.739E+07	3.763E+04	9.138E+03	1.370E+07	1.005E+04
2128	3.353E+04	2.685E+07	3.689E+04	8.957E+03	1.343E+07	9.853E+03
2129	3.287E+04	2.632E+07	3.616E+04	8.780E+03	1.316E+07	9.658E+03
2130	3.222E+04	2.580E+07	3.544E+04	8.606E+03	1.290E+07	9.467E+03
2131	3.158E+04	2.529E+07	3.474E+04	8.436E+03	1.264E+07	9.279E+03
2132	3.096E+04	2.479E+07	3.405E+04	8.269E+03	1.239E+07	9.096E+03
2133	3.034E+04	2.430E+07	3.338E+04	8.105E+03	1.215E+07	8.915E+03
2134	2.974E+04	2.382E+07	3.272E+04	7.944E+03	1.191E+07	8.739E+03
2135	2.915E+04	2.334E+07	3.207E+04	7.787E+03	1.167E+07	8.566E+03
2136	2.858E+04	2.288E+07	3.143E+04	7.633E+03	1.144E+07	8.396E+03
2137	2.801E+04	2.243E+07	3.081E+04	7.482E+03	1.121E+07	8.230E+03
2138	2.746E+04	2.198E+07	3.020E+04	7.334E+03	1.099E+07	8.067E+03
2139	2.691E+04	2.155E+07	2.960E+04	7.188E+03	1.077E+07	7.907E+03
2140	2.638E+04	2.112E+07	2.902E+04	7.046E+03	1.056E+07	7.751E+03
2141	2.586E+04	2.070E+07	2.844E+04	6.907E+03	1.035E+07	7.597E+03
2142	2.534E+04	2.029E+07	2.788E+04	6.770E+03	1.015E+07	7.447E+03
2143	2.484E+04	1.989E+07	2.733E+04	6.636E+03	9.946E+06	7.299E+03
2144	2.435E+04	1.950E+07	2.679E+04	6.504E+03	9.749E+06	7.155E+03
2145	2.387E+04	1.911E+07	2.626E+04	6.376E+03	9.556E+06	7.013E+03

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2005	0	0	0	0	0	0
2006	5.088E+02	2.780E+05	5.597E+02	7.971E+00	2.224E+03	8.768E+00
2007	1.472E+03	8.039E+05	1.619E+03	2.305E+01	6.431E+03	2.536E+01
2008	2.402E+03	1.312E+06	2.642E+03	3.763E+01	1.050E+04	4.140E+01
2009	3.055E+03	1.669E+06	3.360E+03	4.786E+01	1.335E+04	5.264E+01
2010	3.667E+03	2.004E+06	4.034E+03	5.745E+01	1.603E+04	6.320E+01
2011	4.212E+03	2.301E+06	4.633E+03	6.599E+01	1.841E+04	7.259E+01
2012	4.794E+03	2.619E+06	5.274E+03	7.511E+01	2.095E+04	8.262E+01
2013	5.327E+03	2.910E+06	5.859E+03	8.344E+01	2.328E+04	9.179E+01
2014	5.835E+03	3.187E+06	6.418E+03	9.140E+01	2.550E+04	1.005E+02
2015	6.431E+03	3.513E+06	7.074E+03	1.007E+02	2.811E+04	1.108E+02
2016	6.937E+03	3.790E+06	7.630E+03	1.087E+02	3.032E+04	1.195E+02
2017	1.092E+04	5.963E+06	1.201E+04	1.710E+02	4.771E+04	1.881E+02
2018	1.482E+04	8.094E+06	1.630E+04	2.321E+02	6.475E+04	2.553E+02
2019	1.864E+04	1.018E+07	2.050E+04	2.920E+02	8.146E+04	3.212E+02
2020	2.239E+04	1.223E+07	2.463E+04	3.507E+02	9.784E+04	3.858E+02
2021	2.606E+04	1.424E+07	2.867E+04	4.082E+02	1.139E+05	4.491E+02
2022	2.966E+04	1.620E+07	3.263E+04	4.646E+02	1.296E+05	5.111E+02
2023	3.319E+04	1.813E+07	3.651E+04	5.199E+02	1.450E+05	5.719E+02
2024	3.665E+04	2.002E+07	4.031E+04	5.741E+02	1.602E+05	6.315E+02
2025	4.004E+04	2.187E+07	4.404E+04	6.272E+02	1.750E+05	6.900E+02
2026	4.336E+04	2.369E+07	4.770E+04	6.793E+02	1.895E+05	7.472E+02
2027	4.662E+04	2.547E+07	5.128E+04	7.303E+02	2.037E+05	8.034E+02
2028	4.981E+04	2.721E+07	5.480E+04	7.804E+02	2.177E+05	8.584E+02
2029	5.294E+04	2.892E+07	5.824E+04	8.294E+02	2.314E+05	9.123E+02
2030	5.601E+04	3.060E+07	6.161E+04	8.775E+02	2.448E+05	9.652E+02
2031	5.902E+04	3.224E+07	6.492E+04	9.246E+02	2.579E+05	1.017E+03
2032	6.197E+04	3.385E+07	6.816E+04	9.707E+02	2.708E+05	1.068E+03
2033	6.486E+04	3.543E+07	7.134E+04	1.016E+03	2.834E+05	1.118E+03
2034	6.769E+04	3.698E+07	7.446E+04	1.060E+03	2.958E+05	1.166E+03
2035	7.046E+04	3.849E+07	7.751E+04	1.104E+03	3.080E+05	1.214E+03
2036	7.319E+04	3.998E+07	8.050E+04	1.146E+03	3.199E+05	1.261E+03
2037	7.585E+04	4.144E+07	8.344E+04	1.188E+03	3.315E+05	1.307E+03
2038	7.847E+04	4.287E+07	8.631E+04	1.229E+03	3.429E+05	1.352E+03
2039	8.103E+04	4.427E+07	8.913E+04	1.269E+03	3.541E+05	1.396E+03
2040	8.354E+04	4.564E+07	9.190E+04	1.309E+03	3.651E+05	1.440E+03
2041	8.600E+04	4.698E+07	9.460E+04	1.347E+03	3.759E+05	1.482E+03
2042	8.842E+04	4.830E+07	9.726E+04	1.385E+03	3.864E+05	1.524E+03
2043	9.078E+04	4.959E+07	9.986E+04	1.422E+03	3.968E+05	1.564E+03
2044	9.310E+04	5.086E+07	1.024E+05	1.458E+03	4.069E+05	1.604E+03
2045	9.537E+04	5.210E+07	1.049E+05	1.494E+03	4.168E+05	1.644E+03
2046	9.760E+04	5.332E+07	1.074E+05	1.529E+03	4.266E+05	1.682E+03
2047	9.979E+04	5.451E+07	1.098E+05	1.563E+03	4.361E+05	1.720E+03
2048	1.019E+05	5.568E+07	1.121E+05	1.597E+03	4.455E+05	1.756E+03
2049	1.040E+05	5.683E+07	1.144E+05	1.630E+03	4.546E+05	1.793E+03
2050	1.061E+05	5.795E+07	1.167E+05	1.662E+03	4.636E+05	1.828E+03
2051	1.081E+05	5.905E+07	1.189E+05	1.693E+03	4.724E+05	1.863E+03
2052	1.101E+05	6.013E+07	1.211E+05	1.724E+03	4.811E+05	1.897E+03
2053	1.101E+05	6.017E+07	1.212E+05	1.725E+03	4.814E+05	1.898E+03
2054	1.080E+05	5.898E+07	1.188E+05	1.691E+03	4.718E+05	1.860E+03

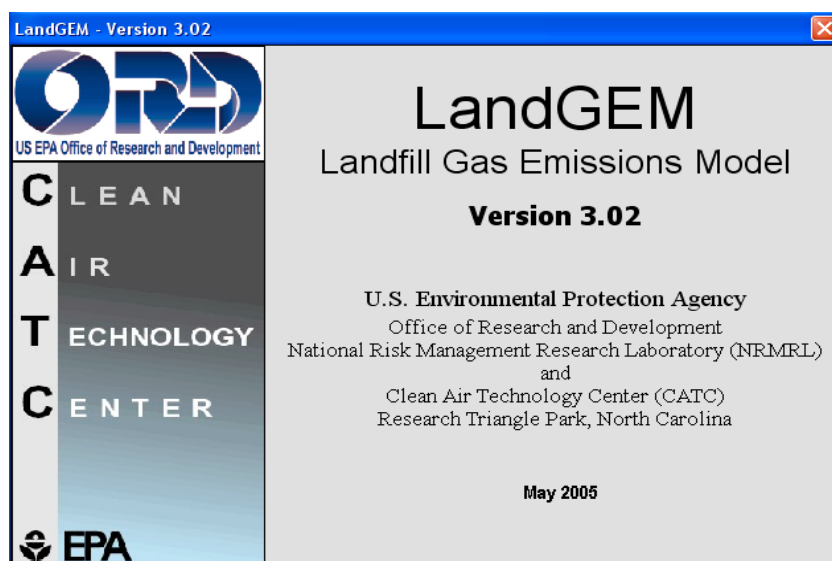
Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2055	1.058E+05	5.781E+07	1.164E+05	1.658E+03	4.625E+05	1.824E+03
2056	1.037E+05	5.667E+07	1.141E+05	1.625E+03	4.533E+05	1.788E+03
2057	1.017E+05	5.555E+07	1.118E+05	1.593E+03	4.444E+05	1.752E+03
2058	9.966E+04	5.445E+07	1.096E+05	1.561E+03	4.356E+05	1.717E+03
2059	9.769E+04	5.337E+07	1.075E+05	1.530E+03	4.269E+05	1.683E+03
2060	9.576E+04	5.231E+07	1.053E+05	1.500E+03	4.185E+05	1.650E+03
2061	9.386E+04	5.128E+07	1.032E+05	1.470E+03	4.102E+05	1.617E+03
2062	9.200E+04	5.026E+07	1.012E+05	1.441E+03	4.021E+05	1.585E+03
2063	9.018E+04	4.926E+07	9.920E+04	1.413E+03	3.941E+05	1.554E+03
2064	8.839E+04	4.829E+07	9.723E+04	1.385E+03	3.863E+05	1.523E+03
2065	8.664E+04	4.733E+07	9.531E+04	1.357E+03	3.787E+05	1.493E+03
2066	8.493E+04	4.640E+07	9.342E+04	1.330E+03	3.712E+05	1.463E+03
2067	8.325E+04	4.548E+07	9.157E+04	1.304E+03	3.638E+05	1.435E+03
2068	8.160E+04	4.458E+07	8.976E+04	1.278E+03	3.566E+05	1.406E+03
2069	7.998E+04	4.369E+07	8.798E+04	1.253E+03	3.496E+05	1.378E+03
2070	7.840E+04	4.283E+07	8.624E+04	1.228E+03	3.426E+05	1.351E+03
2071	7.685E+04	4.198E+07	8.453E+04	1.204E+03	3.358E+05	1.324E+03
2072	7.532E+04	4.115E+07	8.286E+04	1.180E+03	3.292E+05	1.298E+03
2073	7.383E+04	4.033E+07	8.122E+04	1.157E+03	3.227E+05	1.272E+03
2074	7.237E+04	3.954E+07	7.961E+04	1.134E+03	3.163E+05	1.247E+03
2075	7.094E+04	3.875E+07	7.803E+04	1.111E+03	3.100E+05	1.222E+03
2076	6.953E+04	3.799E+07	7.649E+04	1.089E+03	3.039E+05	1.198E+03
2077	6.816E+04	3.723E+07	7.497E+04	1.068E+03	2.979E+05	1.174E+03
2078	6.681E+04	3.650E+07	7.349E+04	1.047E+03	2.920E+05	1.151E+03
2079	6.548E+04	3.577E+07	7.203E+04	1.026E+03	2.862E+05	1.128E+03
2080	6.419E+04	3.507E+07	7.061E+04	1.006E+03	2.805E+05	1.106E+03
2081	6.292E+04	3.437E+07	6.921E+04	9.856E+02	2.750E+05	1.084E+03
2082	6.167E+04	3.369E+07	6.784E+04	9.661E+02	2.695E+05	1.063E+03
2083	6.045E+04	3.302E+07	6.649E+04	9.470E+02	2.642E+05	1.042E+03
2084	5.925E+04	3.237E+07	6.518E+04	9.282E+02	2.590E+05	1.021E+03
2085	5.808E+04	3.173E+07	6.389E+04	9.098E+02	2.538E+05	1.001E+03
2086	5.693E+04	3.110E+07	6.262E+04	8.918E+02	2.488E+05	9.810E+02
2087	5.580E+04	3.048E+07	6.138E+04	8.742E+02	2.439E+05	9.616E+02
2088	5.470E+04	2.988E+07	6.017E+04	8.569E+02	2.390E+05	9.425E+02
2089	5.361E+04	2.929E+07	5.897E+04	8.399E+02	2.343E+05	9.239E+02
2090	5.255E+04	2.871E+07	5.781E+04	8.233E+02	2.297E+05	9.056E+02
2091	5.151E+04	2.814E+07	5.666E+04	8.070E+02	2.251E+05	8.876E+02
2092	5.049E+04	2.758E+07	5.554E+04	7.910E+02	2.207E+05	8.701E+02
2093	4.949E+04	2.704E+07	5.444E+04	7.753E+02	2.163E+05	8.528E+02
2094	4.851E+04	2.650E+07	5.336E+04	7.600E+02	2.120E+05	8.360E+02
2095	4.755E+04	2.598E+07	5.231E+04	7.449E+02	2.078E+05	8.194E+02
2096	4.661E+04	2.546E+07	5.127E+04	7.302E+02	2.037E+05	8.032E+02
2097	4.569E+04	2.496E+07	5.026E+04	7.157E+02	1.997E+05	7.873E+02
2098	4.478E+04	2.446E+07	4.926E+04	7.015E+02	1.957E+05	7.717E+02
2099	4.390E+04	2.398E+07	4.828E+04	6.876E+02	1.918E+05	7.564E+02
2100	4.303E+04	2.350E+07	4.733E+04	6.740E+02	1.880E+05	7.414E+02
2101	4.217E+04	2.304E+07	4.639E+04	6.607E+02	1.843E+05	7.267E+02
2102	4.134E+04	2.258E+07	4.547E+04	6.476E+02	1.807E+05	7.124E+02
2103	4.052E+04	2.214E+07	4.457E+04	6.348E+02	1.771E+05	6.982E+02
2104	3.972E+04	2.170E+07	4.369E+04	6.222E+02	1.736E+05	6.844E+02
2105	3.893E+04	2.127E+07	4.282E+04	6.099E+02	1.701E+05	6.709E+02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2106	3.816E+04	2.085E+07	4.198E+04	5.978E+02	1.668E+05	6.576E+02
2107	3.740E+04	2.043E+07	4.115E+04	5.860E+02	1.635E+05	6.446E+02
2108	3.666E+04	2.003E+07	4.033E+04	5.744E+02	1.602E+05	6.318E+02
2109	3.594E+04	1.963E+07	3.953E+04	5.630E+02	1.571E+05	6.193E+02
2110	3.523E+04	1.924E+07	3.875E+04	5.518E+02	1.540E+05	6.070E+02
2111	3.453E+04	1.886E+07	3.798E+04	5.409E+02	1.509E+05	5.950E+02
2112	3.385E+04	1.849E+07	3.723E+04	5.302E+02	1.479E+05	5.832E+02
2113	3.318E+04	1.812E+07	3.649E+04	5.197E+02	1.450E+05	5.717E+02
2114	3.252E+04	1.776E+07	3.577E+04	5.094E+02	1.421E+05	5.604E+02
2115	3.187E+04	1.741E+07	3.506E+04	4.993E+02	1.393E+05	5.493E+02
2116	3.124E+04	1.707E+07	3.437E+04	4.894E+02	1.365E+05	5.384E+02
2117	3.062E+04	1.673E+07	3.369E+04	4.797E+02	1.338E+05	5.277E+02
2118	3.002E+04	1.640E+07	3.302E+04	4.702E+02	1.312E+05	5.173E+02
2119	2.942E+04	1.607E+07	3.237E+04	4.609E+02	1.286E+05	5.070E+02
2120	2.884E+04	1.576E+07	3.173E+04	4.518E+02	1.260E+05	4.970E+02
2121	2.827E+04	1.544E+07	3.110E+04	4.429E+02	1.236E+05	4.872E+02
2122	2.771E+04	1.514E+07	3.048E+04	4.341E+02	1.211E+05	4.775E+02
2123	2.716E+04	1.484E+07	2.988E+04	4.255E+02	1.187E+05	4.680E+02
2124	2.662E+04	1.454E+07	2.929E+04	4.171E+02	1.164E+05	4.588E+02
2125	2.610E+04	1.426E+07	2.871E+04	4.088E+02	1.141E+05	4.497E+02
2126	2.558E+04	1.397E+07	2.814E+04	4.007E+02	1.118E+05	4.408E+02
2127	2.507E+04	1.370E+07	2.758E+04	3.928E+02	1.096E+05	4.321E+02
2128	2.458E+04	1.343E+07	2.703E+04	3.850E+02	1.074E+05	4.235E+02
2129	2.409E+04	1.316E+07	2.650E+04	3.774E+02	1.053E+05	4.151E+02
2130	2.361E+04	1.290E+07	2.597E+04	3.699E+02	1.032E+05	4.069E+02
2131	2.315E+04	1.264E+07	2.546E+04	3.626E+02	1.012E+05	3.988E+02
2132	2.269E+04	1.239E+07	2.496E+04	3.554E+02	9.915E+04	3.909E+02
2133	2.224E+04	1.215E+07	2.446E+04	3.484E+02	9.719E+04	3.832E+02
2134	2.180E+04	1.191E+07	2.398E+04	3.415E+02	9.526E+04	3.756E+02
2135	2.137E+04	1.167E+07	2.350E+04	3.347E+02	9.338E+04	3.682E+02
2136	2.094E+04	1.144E+07	2.304E+04	3.281E+02	9.153E+04	3.609E+02
2137	2.053E+04	1.121E+07	2.258E+04	3.216E+02	8.972E+04	3.537E+02
2138	2.012E+04	1.099E+07	2.213E+04	3.152E+02	8.794E+04	3.467E+02
2139	1.972E+04	1.077E+07	2.170E+04	3.090E+02	8.620E+04	3.399E+02
2140	1.933E+04	1.056E+07	2.127E+04	3.029E+02	8.449E+04	3.331E+02
2141	1.895E+04	1.035E+07	2.084E+04	2.969E+02	8.282E+04	3.265E+02
2142	1.857E+04	1.015E+07	2.043E+04	2.910E+02	8.118E+04	3.201E+02
2143	1.821E+04	9.946E+06	2.003E+04	2.852E+02	7.957E+04	3.137E+02
2144	1.785E+04	9.749E+06	1.963E+04	2.796E+02	7.800E+04	3.075E+02
2145	1.749E+04	9.556E+06	1.924E+04	2.740E+02	7.645E+04	3.014E+02

NSPS [Regulatory] LandGEM



Summary Report

Landfill Name or Identifier: Tekoi Landfill, Utah

Date: Monday, March 21, 2016

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

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	2005	
Landfill Closure Year (with 80-year limit)	2052	
Actual Closure Year (without limit)	2052	
Have Model Calculate Closure Year?	Yes	
Waste Design Capacity	47,939,986	<i>short tons</i>

MODEL PARAMETERS

Methane Generation Rate, k	0.020	<i>year⁻¹</i>
Potential Methane Generation Capacity, L ₀	170	<i>m³/Mg</i>
NMOC Concentration	965	<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)
2005	140,242	154,266	0	0
2006	268,131	294,944	140,242	154,266
2007	264,525	290,978	408,373	449,210
2008	192,975	212,273	672,898	740,188
2009	185,518	204,070	865,874	952,461
2010	170,159	187,175	1,051,392	1,156,531
2011	183,426	201,769	1,221,551	1,343,706
2012	172,854	190,140	1,404,977	1,545,475
2013	169,091	186,000	1,577,832	1,735,615
2014	196,194	215,814	1,746,922	1,921,615
2015	174,515	191,967	1,943,117	2,137,428
2016	1,134,545	1,248,000	2,117,632	2,329,395
2017	1,134,545	1,248,000	3,252,178	3,577,395
2018	1,134,545	1,248,000	4,386,723	4,825,395
2019	1,134,545	1,248,000	5,521,268	6,073,395
2020	1,134,545	1,248,000	6,655,814	7,321,395
2021	1,134,545	1,248,000	7,790,359	8,569,395
2022	1,134,545	1,248,000	8,924,905	9,817,395
2023	1,134,545	1,248,000	10,059,450	11,065,395
2024	1,134,545	1,248,000	11,193,996	12,313,395
2025	1,134,545	1,248,000	12,328,541	13,561,395
2026	1,134,545	1,248,000	13,463,087	14,809,395
2027	1,134,545	1,248,000	14,597,632	16,057,395
2028	1,134,545	1,248,000	15,732,178	17,305,395
2029	1,134,545	1,248,000	16,866,723	18,553,395
2030	1,134,545	1,248,000	18,001,268	19,801,395
2031	1,134,545	1,248,000	19,135,814	21,049,395
2032	1,134,545	1,248,000	20,270,359	22,297,395
2033	1,134,545	1,248,000	21,404,905	23,545,395
2034	1,134,545	1,248,000	22,539,450	24,793,395
2035	1,134,545	1,248,000	23,673,996	26,041,395
2036	1,134,545	1,248,000	24,808,541	27,289,395
2037	1,134,545	1,248,000	25,943,087	28,537,395
2038	1,134,545	1,248,000	27,077,632	29,785,395
2039	1,134,545	1,248,000	28,212,178	31,033,395
2040	1,134,545	1,248,000	29,346,723	32,281,395
2041	1,134,545	1,248,000	30,481,268	33,529,395
2042	1,134,545	1,248,000	31,615,814	34,777,395
2043	1,134,545	1,248,000	32,750,359	36,025,395
2044	1,134,545	1,248,000	33,884,905	37,273,395

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2045	1,134,545	1,248,000	35,019,450	38,521,395
2046	1,134,545	1,248,000	36,153,996	39,769,395
2047	1,134,545	1,248,000	37,288,541	41,017,395
2048	1,134,545	1,248,000	38,423,087	42,265,395
2049	1,134,545	1,248,000	39,557,632	43,513,395
2050	1,134,545	1,248,000	40,692,178	44,761,395
2051	1,134,545	1,248,000	41,826,723	46,009,395
2052	620,537	682,591	42,961,268	47,257,395
2053	0	0	43,581,805	47,939,986
2054	0	0	43,581,805	47,939,986
2055	0	0	43,581,805	47,939,986
2056	0	0	43,581,805	47,939,986
2057	0	0	43,581,805	47,939,986
2058	0	0	43,581,805	47,939,986
2059	0	0	43,581,805	47,939,986
2060	0	0	43,581,805	47,939,986
2061	0	0	43,581,805	47,939,986
2062	0	0	43,581,805	47,939,986
2063	0	0	43,581,805	47,939,986
2064	0	0	43,581,805	47,939,986
2065	0	0	43,581,805	47,939,986
2066	0	0	43,581,805	47,939,986
2067	0	0	43,581,805	47,939,986
2068	0	0	43,581,805	47,939,986
2069	0	0	43,581,805	47,939,986
2070	0	0	43,581,805	47,939,986
2071	0	0	43,581,805	47,939,986
2072	0	0	43,581,805	47,939,986
2073	0	0	43,581,805	47,939,986
2074	0	0	43,581,805	47,939,986
2075	0	0	43,581,805	47,939,986
2076	0	0	43,581,805	47,939,986
2077	0	0	43,581,805	47,939,986
2078	0	0	43,581,805	47,939,986
2079	0	0	43,581,805	47,939,986
2080	0	0	43,581,805	47,939,986
2081	0	0	43,581,805	47,939,986
2082	0	0	43,581,805	47,939,986
2083	0	0	43,581,805	47,939,986
2084	0	0	43,581,805	47,939,986

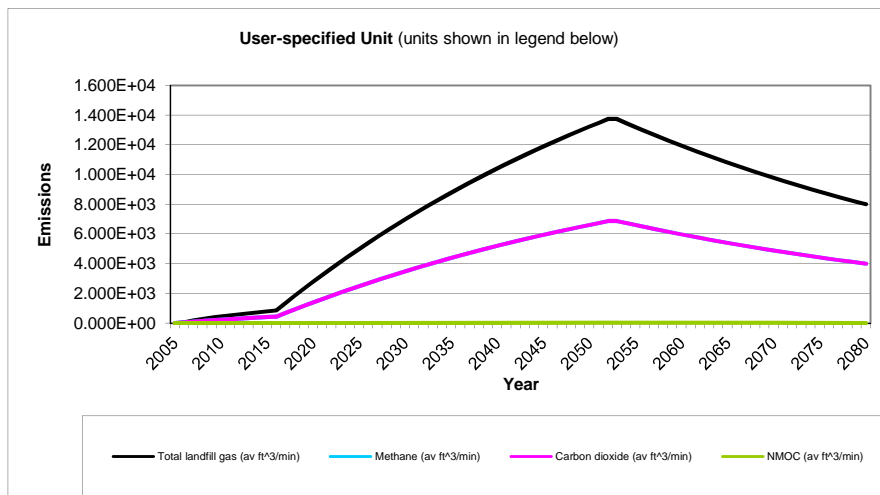
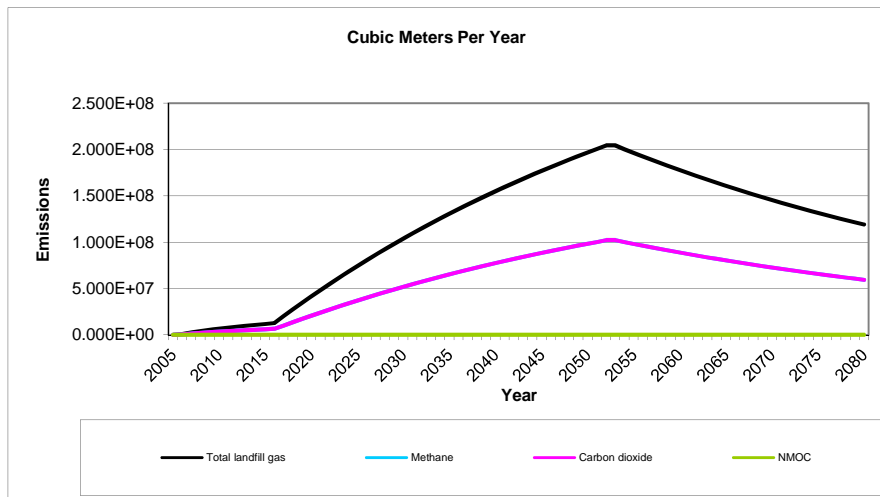
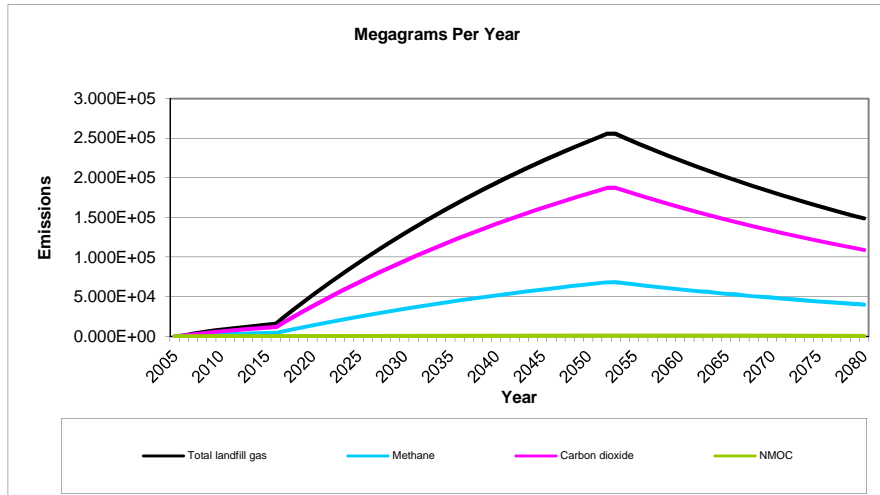
Pollutant Parameters

Gas / Pollutant Default Parameters:				User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas	4,000	0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC		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)
2005	0	0	0	0	0	0
2006	1.180E+03	9.451E+05	6.350E+01	3.153E+02	4.726E+05	3.175E+01
2007	3.414E+03	2.733E+06	1.837E+02	9.118E+02	1.367E+06	9.183E+01
2008	5.572E+03	4.462E+06	2.998E+02	1.488E+03	2.231E+06	1.499E+02
2009	7.086E+03	5.674E+06	3.812E+02	1.893E+03	2.837E+06	1.906E+02
2010	8.507E+03	6.812E+06	4.577E+02	2.272E+03	3.406E+06	2.288E+02
2011	9.771E+03	7.824E+06	5.257E+02	2.610E+03	3.912E+06	2.628E+02
2012	1.112E+04	8.905E+06	5.983E+02	2.970E+03	4.453E+06	2.992E+02
2013	1.236E+04	9.894E+06	6.648E+02	3.300E+03	4.947E+06	3.324E+02
2014	1.353E+04	1.084E+07	7.282E+02	3.615E+03	5.419E+06	3.641E+02
2015	1.492E+04	1.194E+07	8.026E+02	3.984E+03	5.972E+06	4.013E+02
2016	1.609E+04	1.288E+07	8.657E+02	4.298E+03	6.442E+06	4.329E+02
2017	2.532E+04	2.028E+07	1.362E+03	6.763E+03	1.014E+07	6.811E+02
2018	3.437E+04	2.752E+07	1.849E+03	9.180E+03	1.376E+07	9.245E+02
2019	4.324E+04	3.462E+07	2.326E+03	1.155E+04	1.731E+07	1.163E+03
2020	5.193E+04	4.158E+07	2.794E+03	1.387E+04	2.079E+07	1.397E+03
2021	6.045E+04	4.840E+07	3.252E+03	1.615E+04	2.420E+07	1.626E+03
2022	6.880E+04	5.509E+07	3.702E+03	1.838E+04	2.755E+07	1.851E+03
2023	7.699E+04	6.165E+07	4.142E+03	2.056E+04	3.082E+07	2.071E+03
2024	8.501E+04	6.807E+07	4.574E+03	2.271E+04	3.404E+07	2.287E+03
2025	9.287E+04	7.437E+07	4.997E+03	2.481E+04	3.718E+07	2.498E+03
2026	1.006E+05	8.054E+07	5.412E+03	2.687E+04	4.027E+07	2.706E+03
2027	1.081E+05	8.659E+07	5.818E+03	2.889E+04	4.330E+07	2.909E+03
2028	1.155E+05	9.252E+07	6.217E+03	3.086E+04	4.626E+07	3.108E+03
2029	1.228E+05	9.834E+07	6.607E+03	3.280E+04	4.917E+07	3.304E+03
2030	1.299E+05	1.040E+08	6.990E+03	3.470E+04	5.202E+07	3.495E+03
2031	1.369E+05	1.096E+08	7.366E+03	3.657E+04	5.481E+07	3.683E+03
2032	1.437E+05	1.151E+08	7.733E+03	3.839E+04	5.755E+07	3.867E+03
2033	1.504E+05	1.205E+08	8.094E+03	4.018E+04	6.023E+07	4.047E+03
2034	1.570E+05	1.257E+08	8.448E+03	4.194E+04	6.286E+07	4.224E+03
2035	1.634E+05	1.309E+08	8.794E+03	4.366E+04	6.544E+07	4.397E+03
2036	1.698E+05	1.359E+08	9.134E+03	4.534E+04	6.797E+07	4.567E+03
2037	1.759E+05	1.409E+08	9.466E+03	4.700E+04	7.045E+07	4.733E+03
2038	1.820E+05	1.457E+08	9.793E+03	4.862E+04	7.287E+07	4.896E+03
2039	1.880E+05	1.505E+08	1.011E+04	5.021E+04	7.525E+07	5.056E+03
2040	1.938E+05	1.552E+08	1.043E+04	5.176E+04	7.759E+07	5.213E+03
2041	1.995E+05	1.597E+08	1.073E+04	5.329E+04	7.987E+07	5.367E+03
2042	2.051E+05	1.642E+08	1.103E+04	5.478E+04	8.211E+07	5.517E+03
2043	2.106E+05	1.686E+08	1.133E+04	5.625E+04	8.431E+07	5.665E+03
2044	2.160E+05	1.729E+08	1.162E+04	5.768E+04	8.646E+07	5.810E+03
2045	2.212E+05	1.772E+08	1.190E+04	5.909E+04	8.858E+07	5.951E+03
2046	2.264E+05	1.813E+08	1.218E+04	6.047E+04	9.064E+07	6.090E+03
2047	2.315E+05	1.853E+08	1.245E+04	6.183E+04	9.267E+07	6.227E+03
2048	2.364E+05	1.893E+08	1.272E+04	6.315E+04	9.466E+07	6.360E+03
2049	2.413E+05	1.932E+08	1.298E+04	6.445E+04	9.661E+07	6.491E+03
2050	2.461E+05	1.970E+08	1.324E+04	6.573E+04	9.852E+07	6.619E+03
2051	2.507E+05	2.008E+08	1.349E+04	6.698E+04	1.004E+08	6.745E+03
2052	2.553E+05	2.045E+08	1.374E+04	6.820E+04	1.022E+08	6.869E+03
2053	2.555E+05	2.046E+08	1.375E+04	6.824E+04	1.023E+08	6.873E+03
2054	2.504E+05	2.005E+08	1.347E+04	6.689E+04	1.003E+08	6.737E+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)
2055	2.455E+05	1.966E+08	1.321E+04	6.557E+04	9.828E+07	6.604E+03
2056	2.406E+05	1.927E+08	1.295E+04	6.427E+04	9.634E+07	6.473E+03
2057	2.358E+05	1.889E+08	1.269E+04	6.300E+04	9.443E+07	6.345E+03
2058	2.312E+05	1.851E+08	1.244E+04	6.175E+04	9.256E+07	6.219E+03
2059	2.266E+05	1.815E+08	1.219E+04	6.053E+04	9.073E+07	6.096E+03
2060	2.221E+05	1.779E+08	1.195E+04	5.933E+04	8.893E+07	5.975E+03
2061	2.177E+05	1.743E+08	1.171E+04	5.815E+04	8.717E+07	5.857E+03
2062	2.134E+05	1.709E+08	1.148E+04	5.700E+04	8.544E+07	5.741E+03
2063	2.092E+05	1.675E+08	1.125E+04	5.587E+04	8.375E+07	5.627E+03
2064	2.050E+05	1.642E+08	1.103E+04	5.477E+04	8.209E+07	5.516E+03
2065	2.010E+05	1.609E+08	1.081E+04	5.368E+04	8.047E+07	5.407E+03
2066	1.970E+05	1.577E+08	1.060E+04	5.262E+04	7.887E+07	5.299E+03
2067	1.931E+05	1.546E+08	1.039E+04	5.158E+04	7.731E+07	5.195E+03
2068	1.893E+05	1.516E+08	1.018E+04	5.056E+04	7.578E+07	5.092E+03
2069	1.855E+05	1.486E+08	9.982E+03	4.956E+04	7.428E+07	4.991E+03
2070	1.819E+05	1.456E+08	9.784E+03	4.857E+04	7.281E+07	4.892E+03
2071	1.783E+05	1.427E+08	9.590E+03	4.761E+04	7.137E+07	4.795E+03
2072	1.747E+05	1.399E+08	9.400E+03	4.667E+04	6.995E+07	4.700E+03
2073	1.713E+05	1.371E+08	9.214E+03	4.575E+04	6.857E+07	4.607E+03
2074	1.679E+05	1.344E+08	9.032E+03	4.484E+04	6.721E+07	4.516E+03
2075	1.645E+05	1.318E+08	8.853E+03	4.395E+04	6.588E+07	4.426E+03
2076	1.613E+05	1.292E+08	8.678E+03	4.308E+04	6.458E+07	4.339E+03
2077	1.581E+05	1.266E+08	8.506E+03	4.223E+04	6.330E+07	4.253E+03
2078	1.550E+05	1.241E+08	8.337E+03	4.139E+04	6.204E+07	4.169E+03
2079	1.519E+05	1.216E+08	8.172E+03	4.057E+04	6.082E+07	4.086E+03
2080	1.489E+05	1.192E+08	8.011E+03	3.977E+04	5.961E+07	4.005E+03
2081	1.459E+05	1.169E+08	7.852E+03	3.898E+04	5.843E+07	3.926E+03
2082	1.430E+05	1.145E+08	7.696E+03	3.821E+04	5.727E+07	3.848E+03
2083	1.402E+05	1.123E+08	7.544E+03	3.745E+04	5.614E+07	3.772E+03
2084	1.374E+05	1.101E+08	7.395E+03	3.671E+04	5.503E+07	3.697E+03
2085	1.347E+05	1.079E+08	7.248E+03	3.598E+04	5.394E+07	3.624E+03
2086	1.321E+05	1.057E+08	7.105E+03	3.527E+04	5.287E+07	3.552E+03
2087	1.294E+05	1.036E+08	6.964E+03	3.457E+04	5.182E+07	3.482E+03
2088	1.269E+05	1.016E+08	6.826E+03	3.389E+04	5.080E+07	3.413E+03
2089	1.244E+05	9.958E+07	6.691E+03	3.322E+04	4.979E+07	3.345E+03
2090	1.219E+05	9.761E+07	6.558E+03	3.256E+04	4.881E+07	3.279E+03
2091	1.195E+05	9.568E+07	6.429E+03	3.192E+04	4.784E+07	3.214E+03
2092	1.171E+05	9.378E+07	6.301E+03	3.128E+04	4.689E+07	3.151E+03
2093	1.148E+05	9.193E+07	6.177E+03	3.066E+04	4.596E+07	3.088E+03
2094	1.125E+05	9.011E+07	6.054E+03	3.006E+04	4.505E+07	3.027E+03
2095	1.103E+05	8.832E+07	5.934E+03	2.946E+04	4.416E+07	2.967E+03
2096	1.081E+05	8.657E+07	5.817E+03	2.888E+04	4.329E+07	2.908E+03
2097	1.060E+05	8.486E+07	5.702E+03	2.831E+04	4.243E+07	2.851E+03
2098	1.039E+05	8.318E+07	5.589E+03	2.775E+04	4.159E+07	2.794E+03
2099	1.018E+05	8.153E+07	5.478E+03	2.720E+04	4.077E+07	2.739E+03
2100	9.980E+04	7.992E+07	5.370E+03	2.666E+04	3.996E+07	2.685E+03
2101	9.783E+04	7.833E+07	5.263E+03	2.613E+04	3.917E+07	2.632E+03
2102	9.589E+04	7.678E+07	5.159E+03	2.561E+04	3.839E+07	2.580E+03
2103	9.399E+04	7.526E+07	5.057E+03	2.511E+04	3.763E+07	2.528E+03
2104	9.213E+04	7.377E+07	4.957E+03	2.461E+04	3.689E+07	2.478E+03
2105	9.030E+04	7.231E+07	4.859E+03	2.412E+04	3.616E+07	2.429E+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)
2106	8.852E+04	7.088E+07	4.762E+03	2.364E+04	3.544E+07	2.381E+03
2107	8.676E+04	6.948E+07	4.668E+03	2.318E+04	3.474E+07	2.334E+03
2108	8.505E+04	6.810E+07	4.576E+03	2.272E+04	3.405E+07	2.288E+03
2109	8.336E+04	6.675E+07	4.485E+03	2.227E+04	3.338E+07	2.243E+03
2110	8.171E+04	6.543E+07	4.396E+03	2.183E+04	3.272E+07	2.198E+03
2111	8.009E+04	6.413E+07	4.309E+03	2.139E+04	3.207E+07	2.155E+03
2112	7.851E+04	6.286E+07	4.224E+03	2.097E+04	3.143E+07	2.112E+03
2113	7.695E+04	6.162E+07	4.140E+03	2.055E+04	3.081E+07	2.070E+03
2114	7.543E+04	6.040E+07	4.058E+03	2.015E+04	3.020E+07	2.029E+03
2115	7.394E+04	5.920E+07	3.978E+03	1.975E+04	2.960E+07	1.989E+03
2116	7.247E+04	5.803E+07	3.899E+03	1.936E+04	2.902E+07	1.950E+03
2117	7.104E+04	5.688E+07	3.822E+03	1.897E+04	2.844E+07	1.911E+03
2118	6.963E+04	5.576E+07	3.746E+03	1.860E+04	2.788E+07	1.873E+03
2119	6.825E+04	5.465E+07	3.672E+03	1.823E+04	2.733E+07	1.836E+03
2120	6.690E+04	5.357E+07	3.599E+03	1.787E+04	2.678E+07	1.800E+03
2121	6.557E+04	5.251E+07	3.528E+03	1.752E+04	2.625E+07	1.764E+03
2122	6.428E+04	5.147E+07	3.458E+03	1.717E+04	2.573E+07	1.729E+03
2123	6.300E+04	5.045E+07	3.390E+03	1.683E+04	2.523E+07	1.695E+03
2124	6.176E+04	4.945E+07	3.323E+03	1.650E+04	2.473E+07	1.661E+03
2125	6.053E+04	4.847E+07	3.257E+03	1.617E+04	2.424E+07	1.628E+03
2126	5.933E+04	4.751E+07	3.192E+03	1.585E+04	2.376E+07	1.596E+03
2127	5.816E+04	4.657E+07	3.129E+03	1.554E+04	2.329E+07	1.565E+03
2128	5.701E+04	4.565E+07	3.067E+03	1.523E+04	2.282E+07	1.534E+03
2129	5.588E+04	4.475E+07	3.006E+03	1.493E+04	2.237E+07	1.503E+03
2130	5.477E+04	4.386E+07	2.947E+03	1.463E+04	2.193E+07	1.473E+03
2131	5.369E+04	4.299E+07	2.889E+03	1.434E+04	2.150E+07	1.444E+03
2132	5.262E+04	4.214E+07	2.831E+03	1.406E+04	2.107E+07	1.416E+03
2133	5.158E+04	4.131E+07	2.775E+03	1.378E+04	2.065E+07	1.388E+03
2134	5.056E+04	4.049E+07	2.720E+03	1.351E+04	2.024E+07	1.360E+03
2135	4.956E+04	3.969E+07	2.666E+03	1.324E+04	1.984E+07	1.333E+03
2136	4.858E+04	3.890E+07	2.614E+03	1.298E+04	1.945E+07	1.307E+03
2137	4.762E+04	3.813E+07	2.562E+03	1.272E+04	1.906E+07	1.281E+03
2138	4.667E+04	3.737E+07	2.511E+03	1.247E+04	1.869E+07	1.256E+03
2139	4.575E+04	3.663E+07	2.461E+03	1.222E+04	1.832E+07	1.231E+03
2140	4.484E+04	3.591E+07	2.413E+03	1.198E+04	1.795E+07	1.206E+03
2141	4.396E+04	3.520E+07	2.365E+03	1.174E+04	1.760E+07	1.182E+03
2142	4.309E+04	3.450E+07	2.318E+03	1.151E+04	1.725E+07	1.159E+03
2143	4.223E+04	3.382E+07	2.272E+03	1.128E+04	1.691E+07	1.136E+03
2144	4.140E+04	3.315E+07	2.227E+03	1.106E+04	1.657E+07	1.114E+03
2145	4.058E+04	3.249E+07	2.183E+03	1.084E+04	1.625E+07	1.092E+03

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2005	0	0	0	0	0	0
2006	8.650E+02	4.726E+05	3.175E+01	3.269E+00	9.120E+02	6.128E-02
2007	2.502E+03	1.367E+06	9.183E+01	9.455E+00	2.638E+03	1.772E-01
2008	4.084E+03	2.231E+06	1.499E+02	1.543E+01	4.306E+03	2.893E-01
2009	5.193E+03	2.837E+06	1.906E+02	1.963E+01	5.475E+03	3.679E-01
2010	6.235E+03	3.406E+06	2.288E+02	2.356E+01	6.574E+03	4.417E-01
2011	7.161E+03	3.912E+06	2.628E+02	2.706E+01	7.550E+03	5.073E-01
2012	8.150E+03	4.453E+06	2.992E+02	3.080E+01	8.593E+03	5.774E-01
2013	9.055E+03	4.947E+06	3.324E+02	3.422E+01	9.547E+03	6.415E-01
2014	9.919E+03	5.419E+06	3.641E+02	3.749E+01	1.046E+04	7.027E-01
2015	1.093E+04	5.972E+06	4.013E+02	4.132E+01	1.153E+04	7.745E-01
2016	1.179E+04	6.442E+06	4.329E+02	4.457E+01	1.243E+04	8.354E-01
2017	1.856E+04	1.014E+07	6.811E+02	7.013E+01	1.957E+04	1.315E+00
2018	2.519E+04	1.376E+07	9.245E+02	9.519E+01	2.656E+04	1.784E+00
2019	3.169E+04	1.731E+07	1.163E+03	1.198E+02	3.341E+04	2.245E+00
2020	3.806E+04	2.079E+07	1.397E+03	1.438E+02	4.013E+04	2.696E+00
2021	4.430E+04	2.420E+07	1.626E+03	1.674E+02	4.671E+04	3.138E+00
2022	5.042E+04	2.755E+07	1.851E+03	1.906E+02	5.316E+04	3.572E+00
2023	5.642E+04	3.082E+07	2.071E+03	2.132E+02	5.949E+04	3.997E+00
2024	6.230E+04	3.404E+07	2.287E+03	2.355E+02	6.569E+04	4.414E+00
2025	6.807E+04	3.718E+07	2.498E+03	2.572E+02	7.177E+04	4.822E+00
2026	7.372E+04	4.027E+07	2.706E+03	2.786E+02	7.772E+04	5.222E+00
2027	7.925E+04	4.330E+07	2.909E+03	2.995E+02	8.356E+04	5.615E+00
2028	8.468E+04	4.626E+07	3.108E+03	3.200E+02	8.929E+04	5.999E+00
2029	9.000E+04	4.917E+07	3.304E+03	3.402E+02	9.490E+04	6.376E+00
2030	9.522E+04	5.202E+07	3.495E+03	3.599E+02	1.004E+05	6.746E+00
2031	1.003E+05	5.481E+07	3.683E+03	3.792E+02	1.058E+05	7.108E+00
2032	1.053E+05	5.755E+07	3.867E+03	3.981E+02	1.111E+05	7.463E+00
2033	1.103E+05	6.023E+07	4.047E+03	4.167E+02	1.162E+05	7.811E+00
2034	1.151E+05	6.286E+07	4.224E+03	4.349E+02	1.213E+05	8.152E+00
2035	1.198E+05	6.544E+07	4.397E+03	4.527E+02	1.263E+05	8.486E+00
2036	1.244E+05	6.797E+07	4.567E+03	4.702E+02	1.312E+05	8.814E+00
2037	1.290E+05	7.045E+07	4.733E+03	4.873E+02	1.360E+05	9.135E+00
2038	1.334E+05	7.287E+07	4.896E+03	5.041E+02	1.406E+05	9.450E+00
2039	1.378E+05	7.525E+07	5.056E+03	5.206E+02	1.452E+05	9.759E+00
2040	1.420E+05	7.759E+07	5.213E+03	5.367E+02	1.497E+05	1.006E+01
2041	1.462E+05	7.987E+07	5.367E+03	5.526E+02	1.542E+05	1.036E+01
2042	1.503E+05	8.211E+07	5.517E+03	5.681E+02	1.585E+05	1.065E+01
2043	1.543E+05	8.431E+07	5.665E+03	5.833E+02	1.627E+05	1.093E+01
2044	1.583E+05	8.646E+07	5.810E+03	5.982E+02	1.669E+05	1.121E+01
2045	1.621E+05	8.858E+07	5.951E+03	6.128E+02	1.710E+05	1.149E+01
2046	1.659E+05	9.064E+07	6.090E+03	6.271E+02	1.749E+05	1.175E+01
2047	1.696E+05	9.267E+07	6.227E+03	6.411E+02	1.789E+05	1.202E+01
2048	1.733E+05	9.466E+07	6.360E+03	6.549E+02	1.827E+05	1.228E+01
2049	1.768E+05	9.661E+07	6.491E+03	6.683E+02	1.865E+05	1.253E+01
2050	1.803E+05	9.852E+07	6.619E+03	6.816E+02	1.901E+05	1.278E+01
2051	1.838E+05	1.004E+08	6.745E+03	6.945E+02	1.938E+05	1.302E+01
2052	1.871E+05	1.022E+08	6.869E+03	7.072E+02	1.973E+05	1.326E+01
2053	1.872E+05	1.023E+08	6.873E+03	7.077E+02	1.974E+05	1.326E+01
2054	1.835E+05	1.003E+08	6.737E+03	6.937E+02	1.935E+05	1.300E+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)
2055	1.799E+05	9.828E+07	6.604E+03	6.799E+02	1.897E+05	1.274E+01
2056	1.763E+05	9.634E+07	6.473E+03	6.665E+02	1.859E+05	1.249E+01
2057	1.729E+05	9.443E+07	6.345E+03	6.533E+02	1.822E+05	1.225E+01
2058	1.694E+05	9.256E+07	6.219E+03	6.403E+02	1.786E+05	1.200E+01
2059	1.661E+05	9.073E+07	6.096E+03	6.276E+02	1.751E+05	1.176E+01
2060	1.628E+05	8.893E+07	5.975E+03	6.152E+02	1.716E+05	1.153E+01
2061	1.596E+05	8.717E+07	5.857E+03	6.030E+02	1.682E+05	1.130E+01
2062	1.564E+05	8.544E+07	5.741E+03	5.911E+02	1.649E+05	1.108E+01
2063	1.533E+05	8.375E+07	5.627E+03	5.794E+02	1.616E+05	1.086E+01
2064	1.503E+05	8.209E+07	5.516E+03	5.679E+02	1.584E+05	1.065E+01
2065	1.473E+05	8.047E+07	5.407E+03	5.567E+02	1.553E+05	1.043E+01
2066	1.444E+05	7.887E+07	5.299E+03	5.456E+02	1.522E+05	1.023E+01
2067	1.415E+05	7.731E+07	5.195E+03	5.348E+02	1.492E+05	1.003E+01
2068	1.387E+05	7.578E+07	5.092E+03	5.243E+02	1.463E+05	9.827E+00
2069	1.360E+05	7.428E+07	4.991E+03	5.139E+02	1.434E+05	9.632E+00
2070	1.333E+05	7.281E+07	4.892E+03	5.037E+02	1.405E+05	9.442E+00
2071	1.306E+05	7.137E+07	4.795E+03	4.937E+02	1.377E+05	9.255E+00
2072	1.281E+05	6.995E+07	4.700E+03	4.839E+02	1.350E+05	9.071E+00
2073	1.255E+05	6.857E+07	4.607E+03	4.744E+02	1.323E+05	8.892E+00
2074	1.230E+05	6.721E+07	4.516E+03	4.650E+02	1.297E+05	8.716E+00
2075	1.206E+05	6.588E+07	4.426E+03	4.558E+02	1.271E+05	8.543E+00
2076	1.182E+05	6.458E+07	4.339E+03	4.467E+02	1.246E+05	8.374E+00
2077	1.159E+05	6.330E+07	4.253E+03	4.379E+02	1.222E+05	8.208E+00
2078	1.136E+05	6.204E+07	4.169E+03	4.292E+02	1.197E+05	8.046E+00
2079	1.113E+05	6.082E+07	4.086E+03	4.207E+02	1.174E+05	7.886E+00
2080	1.091E+05	5.961E+07	4.005E+03	4.124E+02	1.150E+05	7.730E+00
2081	1.070E+05	5.843E+07	3.926E+03	4.042E+02	1.128E+05	7.577E+00
2082	1.048E+05	5.727E+07	3.848E+03	3.962E+02	1.105E+05	7.427E+00
2083	1.028E+05	5.614E+07	3.772E+03	3.884E+02	1.083E+05	7.280E+00
2084	1.007E+05	5.503E+07	3.697E+03	3.807E+02	1.062E+05	7.136E+00
2085	9.873E+04	5.394E+07	3.624E+03	3.731E+02	1.041E+05	6.995E+00
2086	9.678E+04	5.287E+07	3.552E+03	3.658E+02	1.020E+05	6.856E+00
2087	9.486E+04	5.182E+07	3.482E+03	3.585E+02	1.000E+05	6.720E+00
2088	9.298E+04	5.080E+07	3.413E+03	3.514E+02	9.804E+04	6.587E+00
2089	9.114E+04	4.979E+07	3.345E+03	3.445E+02	9.610E+04	6.457E+00
2090	8.934E+04	4.881E+07	3.279E+03	3.376E+02	9.419E+04	6.329E+00
2091	8.757E+04	4.784E+07	3.214E+03	3.310E+02	9.233E+04	6.204E+00
2092	8.584E+04	4.689E+07	3.151E+03	3.244E+02	9.050E+04	6.081E+00
2093	8.414E+04	4.596E+07	3.088E+03	3.180E+02	8.871E+04	5.960E+00
2094	8.247E+04	4.505E+07	3.027E+03	3.117E+02	8.695E+04	5.842E+00
2095	8.084E+04	4.416E+07	2.967E+03	3.055E+02	8.523E+04	5.727E+00
2096	7.924E+04	4.329E+07	2.908E+03	2.995E+02	8.354E+04	5.613E+00
2097	7.767E+04	4.243E+07	2.851E+03	2.935E+02	8.189E+04	5.502E+00
2098	7.613E+04	4.159E+07	2.794E+03	2.877E+02	8.027E+04	5.393E+00
2099	7.462E+04	4.077E+07	2.739E+03	2.820E+02	7.868E+04	5.286E+00
2100	7.314E+04	3.996E+07	2.685E+03	2.764E+02	7.712E+04	5.182E+00
2101	7.170E+04	3.917E+07	2.632E+03	2.710E+02	7.559E+04	5.079E+00
2102	7.028E+04	3.839E+07	2.580E+03	2.656E+02	7.410E+04	4.979E+00
2103	6.888E+04	3.763E+07	2.528E+03	2.603E+02	7.263E+04	4.880E+00
2104	6.752E+04	3.689E+07	2.478E+03	2.552E+02	7.119E+04	4.783E+00
2105	6.618E+04	3.616E+07	2.429E+03	2.501E+02	6.978E+04	4.689E+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)
2106	6.487E+04	3.544E+07	2.381E+03	2.452E+02	6.840E+04	4.596E+00
2107	6.359E+04	3.474E+07	2.334E+03	2.403E+02	6.704E+04	4.505E+00
2108	6.233E+04	3.405E+07	2.288E+03	2.356E+02	6.572E+04	4.416E+00
2109	6.109E+04	3.338E+07	2.243E+03	2.309E+02	6.442E+04	4.328E+00
2110	5.989E+04	3.272E+07	2.198E+03	2.263E+02	6.314E+04	4.242E+00
2111	5.870E+04	3.207E+07	2.155E+03	2.218E+02	6.189E+04	4.158E+00
2112	5.754E+04	3.143E+07	2.112E+03	2.175E+02	6.066E+04	4.076E+00
2113	5.640E+04	3.081E+07	2.070E+03	2.131E+02	5.946E+04	3.995E+00
2114	5.528E+04	3.020E+07	2.029E+03	2.089E+02	5.829E+04	3.916E+00
2115	5.419E+04	2.960E+07	1.989E+03	2.048E+02	5.713E+04	3.839E+00
2116	5.311E+04	2.902E+07	1.950E+03	2.007E+02	5.600E+04	3.763E+00
2117	5.206E+04	2.844E+07	1.911E+03	1.968E+02	5.489E+04	3.688E+00
2118	5.103E+04	2.788E+07	1.873E+03	1.929E+02	5.380E+04	3.615E+00
2119	5.002E+04	2.733E+07	1.836E+03	1.890E+02	5.274E+04	3.544E+00
2120	4.903E+04	2.678E+07	1.800E+03	1.853E+02	5.170E+04	3.473E+00
2121	4.806E+04	2.625E+07	1.764E+03	1.816E+02	5.067E+04	3.405E+00
2122	4.711E+04	2.573E+07	1.729E+03	1.780E+02	4.967E+04	3.337E+00
2123	4.617E+04	2.523E+07	1.695E+03	1.745E+02	4.868E+04	3.271E+00
2124	4.526E+04	2.473E+07	1.661E+03	1.711E+02	4.772E+04	3.206E+00
2125	4.436E+04	2.424E+07	1.628E+03	1.677E+02	4.678E+04	3.143E+00
2126	4.349E+04	2.376E+07	1.596E+03	1.643E+02	4.585E+04	3.081E+00
2127	4.262E+04	2.329E+07	1.565E+03	1.611E+02	4.494E+04	3.020E+00
2128	4.178E+04	2.282E+07	1.534E+03	1.579E+02	4.405E+04	2.960E+00
2129	4.095E+04	2.237E+07	1.503E+03	1.548E+02	4.318E+04	2.901E+00
2130	4.014E+04	2.193E+07	1.473E+03	1.517E+02	4.232E+04	2.844E+00
2131	3.935E+04	2.150E+07	1.444E+03	1.487E+02	4.149E+04	2.787E+00
2132	3.857E+04	2.107E+07	1.416E+03	1.458E+02	4.066E+04	2.732E+00
2133	3.780E+04	2.065E+07	1.388E+03	1.429E+02	3.986E+04	2.678E+00
2134	3.706E+04	2.024E+07	1.360E+03	1.400E+02	3.907E+04	2.625E+00
2135	3.632E+04	1.984E+07	1.333E+03	1.373E+02	3.830E+04	2.573E+00
2136	3.560E+04	1.945E+07	1.307E+03	1.346E+02	3.754E+04	2.522E+00
2137	3.490E+04	1.906E+07	1.281E+03	1.319E+02	3.679E+04	2.472E+00
2138	3.421E+04	1.869E+07	1.256E+03	1.293E+02	3.607E+04	2.423E+00
2139	3.353E+04	1.832E+07	1.231E+03	1.267E+02	3.535E+04	2.375E+00
2140	3.287E+04	1.795E+07	1.206E+03	1.242E+02	3.465E+04	2.328E+00
2141	3.221E+04	1.760E+07	1.182E+03	1.218E+02	3.397E+04	2.282E+00
2142	3.158E+04	1.725E+07	1.159E+03	1.193E+02	3.329E+04	2.237E+00
2143	3.095E+04	1.691E+07	1.136E+03	1.170E+02	3.263E+04	2.193E+00
2144	3.034E+04	1.657E+07	1.114E+03	1.147E+02	3.199E+04	2.149E+00
2145	2.974E+04	1.625E+07	1.092E+03	1.124E+02	3.135E+04	2.107E+00

Appendix F

5-Year NMOC Emissions Rate Report January 2014 (excerpt)



**FIVE-YEAR NMOC EMISSION ESTIMATE REPORT
TEKOI LANDFILL
SKULL VALLEY INDIAN RESERVATION
TOOELE COUNTY, UTAH**

Presented to:

Waste Management of Utah, Inc.

3683 S. 4975 W.
West Haven, UT 84401
(801) 731-1406

Presented by:

SCS ENGINEERS

3117 Fite Circle, Suite 108
Sacramento, CA 95827
(916) 361-1297

January 2014
File No. 01207310.00 Task 27

Offices Nationwide
www.scsengineers.com

**FIVE-YEAR NMOC EMISSION ESTIMATE REPORT
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3117 Fite Circle, Suite 108
Sacramento, CA 95827
(916) 361-1297

January 2014
File No. 01207310.00, Task 27

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Appendices

- A 2013 Tier 2 NMOC Sampling And Analysis Report, Tekoi Landfill
 - B Landfill Gas Emissions Model Output
-

This NMOC Emission Estimate Report, dated January 2014, for the Tekoi Landfill, located on the Skull Valley Indian Reservation in Utah, has been prepared and reviewed by the following:



John Henkelman
Project Professional
SCS ENGINEERS



Patrick Sullivan, R.E.P.A., C.P.P.
Senior Vice President
SCS ENGINEERS

1 INTRODUCTION

SCS Engineers (SCS) was retained by Waste Management of Utah, Inc. (WMU) to report non-methane organic compound (NMOC) emissions for the Tekoi Landfill (Site), located on the Skull Valley Indian Reservation in Tooele County, Utah. In September and October 2013, SCS obtained a site-specific NMOC concentration using Tier 2 procedures as set forth under the landfill New Source Performance Standards (NSPS), which can be used for up to five years. This report documents the first year using the NMOC concentration obtained in 2013 and can be used for up to five years. The 2013 Tier 2 Sampling and Analysis Report is included as **Appendix A**.

This project was conducted in accordance with the NSPS regulations within 40 Code of Federal Regulations (CFR) Part 60, Standards of Performance for New Stationary Sources, Subpart WWW for municipal solid waste (MSW) landfills.

When five years of NMOC emissions of under 50 megagrams (Mg) per year can be demonstrated using the Tier 2 NMOC analysis, annual NMOC emissions reporting is not required to show compliance with the NSPS. This report fulfills the five-year reporting requirement under the NSPS.

2 ESTIMATE OF NMOC EMISSIONS

Using the site-specific NMOC concentration of 965 parts per million by volume (ppmv) as hexane obtained through Tier 2 testing activities described in **Appendix A**. NMOC emission estimates were calculated using the United States Environmental Protection Agency (U.S. EPA) Landfill Gas Emissions Model (LandGEM). A copy of the LandGEM output is provided in **Appendix B**. Model input parameters are summarized below:

- Potential methane generation capacity (L_0) = 170 cubic meters per Mg of waste. This value represents the default NSPS value for estimating NMOC emissions.
- Methane generation decay rate (k) = 0.02. Per the NSPS, the k -value of 0.02 represents the methane generation decay rate for landfills in arid regions of the U.S., and is defined as an average annual rainfall of less than 25 inches of rain.
- Site-specific NMOC concentration (C_{NMOC}) = 965 ppmv as hexane, per Tier 2 testing activities described in **Appendix A**. This site-specific NMOC concentration is used in lieu of the Tier 1 default NSPS value of 4,000 ppmv.

NMOC emissions were estimated using the input parameters summarized above and the expected annual waste receipts provided by the landfill operator, as shown in **Appendix B**. These data were prepared using the actual waste receipts through 2012 and estimates of waste disposal for 2013 forward. Based on LandGEM estimates, the Site does not exceed NMOC emissions of 50 Mg per year in from 2013 to 2017. The NMOC concentration is valid for five years, so sampling must be conducted for the 2018 NMOC report. WMU will conduct another Tier 2 study, complete a Tier 3 study or begin the time schedule for full NSPS compliance

through design, installation, and operation of a gas collection and control system (GCCS) in 2018. NMOC emissions estimates for 2013 through 2017 are provided in **Table 1**. NMOC emissions for each year are also provided in **Appendix B**.

Table 1 - NMOC Emissions

YEAR	NMOC EMISSIONS (Mg/year)
2013	34.2
2014	37.5
2015	40.7
2016	43.7
2017	46.7

3 CONCLUSION

This five-year NMOC emission report has been prepared in accordance with the requirements in NSPS 40 CFR Part 60, Subpart WWW. This Tier 2 report indicates that a GCCS installation timeline will not be triggered in until after 2017. The NMOC concentration determined during the 2013 Tier 2 can be used for up to five years unless a subsequent Tier 2 study is conducted. This report demonstrates that NMOC emissions are less than 50 Mg per year for the five years the NMOC value may be used and annual NMOC reports will not be required through 2017.

Appendix G

Annual Compliance Certification (March 2015)



OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

ANNUAL COMPLIANCE CERTIFICATION (A-COMP)

A. GENERAL INFORMATION

Permit No. V-SV-00001-2010.00

Reporting Period: Beg. 3 / 1 / 2014 End. 2 / 28 / 2015

Source / Company Name Tekoi Landfill

Mailing Address: Street or P.O. Box 6976 West California Avenue

City Salt Lake City State UT ZIP 84104 -

Contact person Brad Kloos Title District Manager

Telephone (801) 731 - 5542 Ext.

Continued on next page

B. COMPLIANCE STATUS

Describe the compliance status of each permit term for the reporting period. Copy this page as many times as necessary to cover all permit terms and conditions.

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.A. 40 CFR Part 60, Subpart A- General Provisions

This facility is subject to the requirements of 40 CFR part 60, subpart A as stated in §60.1. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 60, subpart A.

Compliance Methods for the Above (Description and Citation):

-Permittee complies with all applicable requirements of 40 CFR part 60, subpart A.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.B. 40 CFR Part 60, Subpart WWW – Standards

1. This facility is subject to the requirements of 40 CFR part 60, subpart WWW. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 60, subpart WWW.

Compliance Methods for the Above (Description and Citation):

-Permittee complies with all applicable requirements of 40 CFR part 60, subpart WWW

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.B. 40 CFR Part 60, Subpart WWW – Standards

2. 40 CFR 60, Subpart WWW applies as follows:
 - (a) §60.750(a) - This facility is a MSW landfill that was constructed, reconstructed or modified on or after May 30, 1991; and
 - (b) §60.752(b) - This facility has a design capacity greater than 2.5 million megagrams

Compliance Methods for the Above (Description and Citation):

-Permittee complies with all applicable requirements of 40 CFR part 60, subpart WWW

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.C. Standards for Air Emissions

1. The permittee shall calculate an NMOC emission rate for the landfill using the procedure and default values specified in §60.754(a)(I).

Compliance Methods for the Above (Description and Citation):

-Permittee calculated an NMOC emission rate for the landfill using the procedure and default values specified in §60.754(a)(I).

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.C. Standards for Air Emissions

2. Tier 1: The permittee shall compare the calculated NMOC mass emission rate to the standard of 50 megagrams per year as required by §60.754(a)(2).
 - (a) If the calculated NMOC emission rate is less than 50 megagrams per year using Tier 1, the permittee shall:
 - (i) Submit an emission rate report as provided in 60.757(b)(I);
and
 - (ii) Recalculate the NMOC mass emission rate annually using the procedure and default values specified in §60.754(a)(I) and using Tier 1 as specified in §60.754(a)(2) until such time as the calculated emission rate is equal to or greater than 50 megagrams per year or the landfill is closed.

Compliance Methods for the Above (Description and Citation):

-NMOC emission rate is greater 50 megagrams per year using Tier 1, Tier 2 testing was completed

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.C. Standards for Air Emissions

- (b) If the calculated NMOC emission rate using the default values of §60.754(a)(I) is equal to or greater than 50 megagrams per year using Tier 1, the permittee shall either:

- (i) Comply with §60.752(b)(2) as follows:
 - (A) Submit a collection and control system design plan prepared by a professional engineer within 1 year; and
 - (B) Install a collection and control system, as specified in §60.752(b)(2)(ii)(A) or (B) and §60.752(b)(2)(iii), within 30 months after the first annual report in which the rate equals or exceeds 50 megagram per year; and
 - (C) Comply with the specifications for active collection systems as specified in §60.759; or
- (ii) Determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the procedures provided in paragraph §60.754(a)(3) and identified as Tier 2.

Compliance Methods for the Above (Description and Citation):

- Tier 2 study was completed in September 30 and October 1, 2013 and NMOC calculated using Tier 2 specifications.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.C. Standards for Air Emissions

3. Tier 2: The permittee shall calculate a site-specific NMOC concentration as required by §60.754(a)(3) and recalculate the NMOC mass emission rate using the equations provided in §60.754(a)(I) using the average NMOC concentration from the collected samples instead of the default value in the equation in §60.754(a)(I).

(a) If the resulting NMOC mass emission rate is less than 50 megagrams per year using Tier 2, the permittee shall:

(i) Submit a periodic estimate of the emission rate report as provided in §60.757(b)(I); and

(ii) Retest the site-specific NMOC concentration every 5 years using Tier 2.

Compliance Methods for the Above (Description and Citation):

- <50 megagrams. NMOC emission rate calculated and reported annually; Tier 2 submitted on 2/11/14. Tier 2 is a 5-year report. 5-year NMOC emissions report includes this reporting period. Tier 2 sampling is due in 2018.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.C. Standards for Air Emissions

- b) If the resulting NMOC mass emission rate is equal to or greater than 50 megagrams per year using Tier 2, the permittee shall either:
- (i) Comply with §60.752(b)(2) as follows:
 - (A) Submit a collection and control system design plan prepared by a professional engineer within 1 year; and
 - (B) Install a collection and control system, as specified in §60.752(b)(2)(ii)(A) or (B) and §60.752(b)(2)(iii), within 30 months after the first annual report in which the rate equals or exceeds 50 megagram per year; ; and
 - (C) Comply with the specifications for active collection systems as specified in §60.759.
 - (ii) Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the procedures specified in paragraph §60.754(a)(4) and identified as Tier 3.

Compliance Methods for the Above (Description and Citation):

- <50 megagrams. NMOC emission rate calculated and reported annually; Tier 2 submitted on 2/11/14. Tier 2 is a 5-year report. 5-year NMOC emissions report includes this reporting period. Tier 2 sampling is due in 2018.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.C. Standards for Air Emissions

Tier 3: The permittee shall determine the site-specific methane generation rate constant as required by §60.754(a)(4) and recalculate the NMOC mass emission rate using the site-specific methane generation rate constant, the NMOC concentration previously determined by Tier 2, and the equations provided in §60.754(a)(I).

(a) If the resulting NMOC mass emission rate is less than 50 megagrams per year using Tier 3, the permittee shall:

- (i) Submit a periodic emission rate report as provided in §60.757(b)(I); and

- (ii) Recalculate the NMOC emission rate annually as provided in §60.757(b)(I) using the equations in paragraph §60.754(a)(I), the site-specific methane generation rate constant, and NMOC concentration rate obtained by Tier 2 every 5 years. The site-specific methane generation rate constant is performed only once, and the value obtained from this test shall be used in all subsequent annual NMOC emission rate calculations.

Compliance Methods for the Above (Description and Citation):

- <50 megagrams. NMOC emission rate calculated and reported annually; Tier 2 submitted on 2/11/14. Tier 2 is a 5-year report. 5-year NMOC emissions report includes this reporting period. Tier 2 sampling is due in 2018. Tier 3 not applicable at this time.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II II.C. Standards for Air Emissions

- (b) If the resulting NMOC mass emission rate is equal to or greater than 50 megagrams per year using Tier 3, the permittee shall comply with §60.752(b)(2) as follows:
- (A) Submit a collection and control system design plan prepared by a professional engineer within 1 year; and
 - (B) Install a collection and control system, as specified in §60.752(b)(2)(ii)(A) or (B) and §60.752(b)(2)(iii), within 30 months after the first annual report in which the rate equals or exceeds 50 megagram per year; and
 - (C) Comply with the specifications for active collection systems as specified in §60.759.

Compliance Methods for the Above (Description and Citation):

- <50 megagrams. NMOC emission rate calculated and reported annually; Tier 2 submitted on 2/11/14. Tier 2 is a 5-year report. 5-year NMOC emissions report includes this reporting period. Tier 2 sampling is due in 2018. Tier 3 not applicable at this time.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

Compliance Provisions [40 CFR 60.755]

The specified methods in §60.755(a)(I)- (a)(6) shall be used to determine whether the gas collection and control system is in compliance with §60.752(b)(2)(ii).

Compliance Methods for the Above (Description and Citation):

-- Not applicable. Owner/operator will comply with above procedures for determining compliance with the gas collection system once system is required to be installed.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.E. Monitoring of Operations [40 CFR 60.756]

The requirements of §60.756(a)- (f) shall be used to monitor the capture and control system requirements of §60.752(b)(2).

Compliance Methods for the Above (Description and Citation):

-- Not applicable. Owner/operator will comply with above procedures for determining compliance with the gas collection system once system is required to be installed.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.F. Reporting Requirements [40 CFR 60.757]

If the NMOC emission rate equals or exceeds 50 megagrams per year, the permittee shall meet the applicable reporting requirements of §60.757(a)- (g).

Compliance Methods for the Above (Description and Citation):

- <50 megagrams. NMOC emission rate calculated and reported annually; Tier 2 submitted on 2/11/14. Tier 2 is a 5-year report. 5-year NMOC emissions report includes this reporting period. Tier 2 sampling is due in 2018.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

II.G. Recordkeeping Requirements [40 CFR 60.758]

The permittee shall meet the applicable recordkeeping requirements of §60.758(a)- (f).

Compliance Methods for the Above (Description and Citation):

-Owner/operator maintains for at least 5-years, up-to-date readily accessible records of the design capacity report, current amount of waste in-place and year-by-year waste acceptance rate.

- Owner/operator acknowledges requirements and will comply with the above procedures once system is required to be installed.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

III.A. 40 CFR Part 63, Subpart A - General Provisions

This facility is subject to the requirements of 40 CFR part 63, subpart A as stated in Table 1 of 40 CFR part 63, subpart AAAA and §§63.1960 through 63.1985. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 63, subpart A.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges requirements and will comply with the above procedures once system is required to be installed.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

III.B. 40 CFR 63, Subpart AAAA - Standards

1. This facility is subject to the requirements of 40 CFR part 63, subpart AAAA. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 63, subpart AAAA.
2. 40 CFR 63, Subpart AAAA applies as follows:
 - (a) §63.1935(a)- This facility is a MSW landfill that has accepted waste since November 8, 1987 or has additional capacity for waste deposition; and
 - (b) §63.1935(a)(3) -This facility has a design capacity greater than 2.5 million megagrams and is an area source MSW landfill.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges requirements and will comply with the above procedures once system is required to be installed.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): LF-1

Permit Term (Describe requirements and cross-reference)

III.C. Non-Methane Organic Compound Emission Rate <50 Mg/year

If the uncontrolled non-methane organic compound (NMOC) emission rate is less than 50 megagrams per year, as calculated according to §60.754(a) of the MSW landfills new source performance standards in 40 CFR part 60, subpart WWW, the permittee shall recalculate the NMOC emission rate annually as specified in 40 CFR 60.752(b)(1) using the procedures specified in 40 CFR 60.754(a)(1) until such time as the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, or the landfill is closed.

Compliance Methods for the Above (Description and Citation):

-Tier 2 reported submitted within 180 days of Tier 1 calculated exceedance of 50 megagrams per year. <50 megagrams. NMOC emission rate calculated and reported annually; Tier 2 submitted on 2/11/14. Tier 2 is a 5-year report. 5-year NMOC emissions report includes this reporting period. Tier 2 sampling is due in 2018.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

III.D. Non-Methane Organic Compound Emission Rate \geq 50 Mg/year

If the uncontrolled non-methane organic compound (NMOC) emission rate is equal to or greater than 50 megagrams per year, as calculated according to §.60.754(a) of the MSW landfills new source performance standards in 40 CFR part 60, subpart WWW, the permittee shall comply with 40 CFR part 63, subpart AAAA by meeting the standards, monitoring, recordkeeping and reporting requirements as specified in 40 CFR part 60, subpart WWW in addition to the following standards, monitoring, recordkeeping and reporting requirements that apply to the facility.

1. Standards for Air Emissions
 - (a) The permittee shall comply with the requirements of 40 CFR part 60, subpart WWW.
 - (b) If the permittee is required by 40 CFR 60.752(b)(2) of 40 CFR part 60, subpart WWW to install a collection and control system, the permittee must comply with the requirements in §§63.1960 through 63.1985, and with the general provisions as specified in Table 1 of 40 CFR part 63, subpart AAAA.
 - (c) For approval of collection and control systems that include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions, the permittee must follow the procedures in 40 CFR 60.752(b)(2). If alternatives have already been approved under 40 CFR part 60, subpart WWW, these alternatives can be used to comply with 40 CFR 63, subpart AAAA, except as specified in 63.1955(c).

Compliance Methods for the Above (Description and Citation):

- Not applicable. Owner/operator will comply with above regulations once system

is required to be installed.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

III.D. Non-Methane Organic Compound Emission Rate \geq 50 Mg/year

2. Compliance Provisions [40 CFR 63.1960]

Compliance shall be determined by the requirements of §63.1960.

Compliance Methods for the Above (Description and Citation):

-<50 megagrams. NMOC emission rate calculated and reported annually; Tier 2 submitted on 2/11/14. Tier 2 is a 5-year report. 5-year NMOC emissions report includes this reporting period. Tier 2 sampling is due in 2018.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

III.D. Non-Methane Organic Compound Emission Rate \geq 50 Mg/year

3. Monitoring and Testing [40 CFR 63.1980(g)]

If the permittee adds any liquids other than leachate in a controlled fashion to the waste mass and does not comply with the bioreactor requirements in §§63.1947, 63.1955(c) and 63.1980(c) through (f) of 40 CFR part 63, subpart AAAA, the permittee must keep a record of calculations as specified in §63.1980(g).

Compliance Methods for the Above (Description and Citation):

-Not applicable. No GCCS installed. Landfill is not a bioreactor.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): E1

Permit Term (Describe requirements and cross-reference)

III.D. Non-Methane Organic Compound Emission Rate \geq 50 Mg/year

4. Recordkeeping and Reporting Requirements

(a) The permittee must comply with the recordkeeping requirements as specified in

§60.758(a) of 40 CFR part 60, subpart WWW, except that the annual report described in 40 CFR §60.757(f) must be submitted every 6 months. [40 CFR 63.1980(a)]

(b) The permittee must keep records and reports as specified in the general provisions of 40 CFR part 60 and in Table 1 of 40 CFR part 63, subpart AAAA. Applicable records in the general provisions include items such as startup, shutdown and malfunction (SSM) plans and the SSM plan reports.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements.
NMOC is <50 megagrams, so no GCCS is installed.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE1, IE2, and IE3

Permit Term (Describe requirements and cross-reference)

IV.A. 40 CFR Part 63, Subpart A- General Provisions [40 CFR 63.1 - 63.16]

This facility is subject to the requirements of 40 CFR part 63, subpart A as outlined in Table 8 of 40 CFR part 63, subpart ZZZZ. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 63, subpart A.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE1, IE2, and IE3

Permit Term (Describe requirements and cross-reference)

IV.B. 40 CFR Part 63, Subpart ZZZZ-Standards

1. This facility is subject to the requirements of 40 CFR part 63, subpart ZZZZ for stationary reciprocating internal combustion engines (RICE). Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 63, subpart ZZZZ.
2. 40 CFR part 63, subpart ZZZZ applies to the following stationary
 - IE1: Isuzu; 55.2 hp diesel-fired compression ignition engine.
Construction Date: Pre June 12, 2006; Manufactured 2000.
Compliance Date: May 3, 2013.
 - IE2: John Deere (6.8L); 150 hp diesel-fired compression ignition engine.
Construction Date: Pre June 12, 2006;
Manufactured 2002. Compliance Date: May 3, 2013.

IE3: Subaru-Robin; 11 hp diesel-fired compression ignition engine.
Construction Date: Post June 12, 2006; Manufactured 2007. Compliance
Date: Upon Start-up.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE3

Permit Term (Describe requirements and cross-reference)

IV.C. Requirements for Engine IE3

1. The permittee must meet the requirements of 40 CFR part 63, subpart ZZZZ by meeting the requirements of 40 CFR part 60, subpart IIII, for stationary CI engines. No further requirements apply to engine unit IE3 under 40 CFR part 63.

2. Pursuant to 40 CFR part 60, subpart IIII, this engine is subject to 40 CFR part 60, subpart IIII, as it was manufactured after April 1, 2006.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE1 and IE2

Permit Term (Describe requirements and cross-reference)

IV.D. Requirements for Engines IE1 and IE2

1. Emission and Operating Limitations

a. Except during periods of startup, the permittee shall:

- i. Change oil and filter every 1,000 hours of operation or annually, whichever comes first;
- ii. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first;
- iii. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

b. During periods of startup the permittee shall minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE1 and IE2

Permit Term (Describe requirements and cross-reference)

IV.D. Requirements for Engines IE1 and IE2

2. Operation and Maintenance

The permittee must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop a maintenance plan which must provide, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practices for minimizing emissions.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE1 and IE2

Permit Term (Describe requirements and cross-reference)

IV.D. Requirements for Engines IE1 and IE2

3. Compliance Requirements

a. The permittee must:

- i. Be in compliance with the emission limitations and operating limitations, which apply, at all times.
- ii. Operate and maintain the engines, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions, at all times.
- iii. Demonstrate continuous compliance with each emission limitation and operating limitation that apply.

b. For new, reconstructed, and rebuilt stationary RICE, deviations from the emission or operating limitations that occur during the first 200 hours of operation from engine startup (engine burn-in period) are not violations. Rebuilt stationary RICE means a stationary RICE that has been rebuilt as that term is defined in 40 CFR 94.11(a).

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE1 and IE2

Permit Term (Describe requirements and cross-reference)

IV.D. Requirements for Engines IE1 and IE2

4. Recordkeeping

a. The permittee must keep records of operation and maintenance to show continuous compliance with each emission or operating limitation and to demonstrate that the engine was operated and maintained according to the required maintenance plan.

b. Records must be in a form suitable and readily available for expeditious review according to §63.10(b)(1).

c. Each record must be kept for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

d. Each record must be readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1).

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE1, IE2, and IE3

Permit Term (Describe requirements and cross-reference)

V. 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

V.A. 40 CFR 60, Subpart A- General Provisions [40 CFR 60.1 - 60.19]

This facility is subject to the requirements of 40 CFR part 60, subpart A as outlined in Table 8 of 40 CFR 60, subpart IIII Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 60, subpart A.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE1, IE2, and IE3

Permit Term (Describe requirements and cross-reference)

V.B. 40 CFR 60, Subpart IIII-Standards

1. This facility is subject to the requirements of 40 CFR part 60, subpart IIII. Notwithstanding conditions in this permit, the permittee shall comply with all applicable requirements of 40 CFR part 60, subpart IIII.

2. 40 CFR part 60, subpart IIII applies to the following engines:

1E1: Isuzu; 55.2 hp diesel-fired compression ignition engine. Model Year: Pre 2007; Manufactured 2000. Compliance Date: May 3, 2013.

IE2: John Deere (6.8L); 150 hp diesel-fired compression ignition engine; EPA Tier 2 Certified for NOx. Model Year: Pre 2007; Manufactured 2002. Compliance Date: May 3, 2013.

IE3: Subaru-Robin; 11 hp diesel-fired compression ignition engine. Model Year: 2007; Manufactured 2007. Compliance Date: Upon Start-up.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE1, IE2, and IE3

Permit Term (Describe requirements and cross-reference)-

V.C. Requirements for Engines IE1 and IE2

1. Emission Standards

The permittee, as an owner or operator of pre-2007 model year non-emergency stationary compression ignition internal combustion engines (CI ICE) with a displacement of less than 10 liters per cylinder, must comply with the emission standards in the permit.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE1, IE2, and IE3

Permit Term (Describe requirements and cross-reference)

Compliance Requirements

a. The permittee, as the owner or operator of the CI ICE, must

i. Comply with the emission standards;

ii. Operate and maintain the stationary CI internal combustion engine and control

device according to the manufacturer's written instructions or procedures developed and approved by the engine manufacturer;

iii. Only change those settings that are permitted by the manufacturer; and

iv. Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply.

b. The permittee, as the owner or operator of a pre-2007 model year stationary CI ICE who must comply with the emission standards specified in §60.4204(a), must demonstrate compliance according to one of the following methods:

i. Purchase an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications;

ii. Keep records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in 40 CFR part 60, subpart IIII and these methods must have been followed correctly;

iii. Keep records of engine manufacturer data indicating compliance with the standards;

iv. Keep records of control device vendor data indicating compliance with the standards; or

v. Conduct an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID IE3

Permit Term (Describe requirements and cross-reference)

V.D. Requirements for Engine IE3

1. Emission Standards

a. The permittee, as the owner or operator of 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder, must comply with the manufacturer certification emission standards for new CI ICE in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable.

b. Stationary CI ICE manufacturers must certify their 2007 model year and later non-emergency stationary CI ICE with a maximum engine power less than or equal to 3,000 hp and a displacement of less than 10 liters per cylinder to the certification emission standards for new non-road CI engines in 40 CFR 89.112, 40 CFR 89.113, 40 CFR 1039.101, 40 CFR 1039.102, 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR

1039.107, and 40 CFR I 039. I 15, as applicable, for all pollutants, for the same model year and maximum engine power.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE3

Permit Term (Describe requirements and cross-reference)

V.D. Requirements for Engine IE3

2.Fuel Usage Requirements

Beginning October 1, 2010, the permittee, as an owner or operator of stationary CI ICE subject to 40 CFR part 60, subpart IIII with a displacement of less than 30 liters per cylinder that use diesel fuel, must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for non-road diesel fuel.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): IE3

Permit Term (Describe requirements and cross-reference)

V.D. Requirements for Engine IE3

Compliance Requirements

a. The permittee, as an owner or operator of stationary CI ICE subject to 40 CFR part 60. subpart III, must meet the following compliance requirements:

- i. Comply with the emission standards;
- ii. Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed and approved by the engine manufacturer;
- iii. Only change those settings that are permitted by the manufacturer; and
- iv. Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply.

b. The permittee, as an owner or operator of a 2007 model year and later stationary CI internal combustion engine, must comply by purchasing an engine certified to the emission standards in §60.4204(b), as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VI.A. General Recordkeeping Requirements [40 CFR 71.6(a)(3)(ii) and 63.10(b)(3)]

The permittee shall comply with the following generally applicable recordkeeping requirements:

1. If the permittee determines that his or her stationary source that emits (or has the potential to emit, without federally recognized controls) one or more hazardous air pollutants that is not subject to a relevant standard or other requirement established under 40 CFR part 63, the permittee shall keep a record of the applicability determination on site at the source for a period of five (5) years after the determination, or until the source changes its operations to become an affected source, whichever comes first. The record of the applicability determination shall include an analysis (or other information) that demonstrates why the permittee believes the source is unaffected (e.g., because the source is an area source)

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VI.B. General Reporting Requirements [40 CFR 71.6(a)(3)(iii)]

I. The permittee shall submit to the EPA Regional Office all reports of any required monitoring under this permit semi-annually. Reports shall be submitted by April 1st and October 1st of each year. The report due on April 1st shall cover the six-month period ending on the last day of February before the report is due. The report due on October 1st shall cover the six-month period ending on the last day of August before the report is due. All instances of deviations from permit requirements shall be clearly identified in such reports.

Compliance Methods for the Above (Description and Citation):

-Owner operator submits reports of required monitoring in accordance with general reporting requirements outlined above.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VI.A. General Recordkeeping Requirements [40 CFR 71.6(a)(3)(ii) and 63.10(b)(3)]

3. The permittee shall promptly report to the EPA Regional Office any deviations from permit requirements, including those attributable to upset conditions as defined in this permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. "Prompt" is defined as follows:

(a) Any definition of "prompt" or a specific timeframe for reporting deviations provided in an underlying applicable requirement as identified in this permit; or

(b) Where the underlying applicable requirement fails to address the time frame for reporting deviations, reports of deviations will be submitted based on the following schedule:

(i) For emissions of a hazardous air pollutant or a toxic air pollutant (as identified in the applicable regulation) that continue for more than an hour in excess of permit requirements, the report shall be made within 24 hours of the occurrence;

(ii) For emissions of any regulated air pollutant, excluding a hazardous air pollutant or a toxic air pollutant that continue for more than two (2) hours in excess of permit requirements, the report shall be made within 48 hours; and

(iii) For all other deviations from permit requirements, the report shall be submitted with the semi-annual monitoring.

(c) If either of the conditions in (i) and (ii) above is met, the source shall notify EPA by telephone (1-800-227-8917) or facsimile (303-312-6064) based on the timetables listed above. All deviations reported under this section must also be identified in the 6-month report.

Compliance Methods for the Above (Description and Citation):

-No deviations occurred during the reporting period and owner/operator acknowledges and complies with the applicable requirements.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VI.C. Permit Shield [40 CFR 71.6(f)(3)]

1. Nothing in this permit shall alter or affect the following:

(a) The liability of a permittee for any violation of applicable requirements prior to or at the time of permit issuance;

(b) The ability of the EPA to obtain information under Section 114 of the CAA; or

(c) The provisions of Section 303 of the CAA (emergency orders), including the authority of the Administrator under that section.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference) –

VII.A. Annual Fee Payment [40 CFR 71.6(a)(7) and 40 CFR 71.9]

1. The permittee shall pay an annual permit fee in accordance with the procedures outlined below.
2. The permittee shall pay the annual permit fee each year no later than April 1. The annual fee shall be based on the previous calendar year (January 1 - December 31).
3. The fee payment shall be in United States currency and shall be paid by money order, bank draft, certified check, corporate check, or electronic funds transfer payable to the order of the U.S. Environmental Protection Agency.
4. The permittee shall send fee payment and a co completed fee filing form to address included in permit
5. The permittee shall send an updated fee calculation worksheet form and a photocopy of each fee payment check (or other confirmation of actual fee paid) submitted annually by the same deadline as required for fee payment.

Compliance Methods for the Above (Description and Citation):

-Owner/operator paid 2014 fees in accordance with the procedures outlined above

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.A. Annual Fee Payment [40 CFR 71.6(a)(7) and 40 CFR 71.9]

6. Basis for calculating annual fee

(a) The annual emissions fee shall be calculated by multiplying the total tons of actual emissions of all "regulated pollutants (for fee calculation" emitted from the source by the presumptive emissions fee (in dollars/ton) in effect at the time of calculation.

(i) "Actual emissions" means the actual rate of emissions in tpy of any regulated pollutant (for fee calculation) emitted from a part 71 source over the preceding

calendar year. Actual emissions shall be calculated using each emissions units actual operating hours, production rates, in-place control equipment, and types of materials processed, stored, or com busted during the preceding calendar year.

(ii) Actual emissions shall be computed using methods required by the permit for determining compliance, such as monitoring or source testing data.

(iii) If actual emissions cannot be determined using the compliance methods in the permit, the permittee shall use other federally recognized procedures.

(b) The permittee shall exclude the following emissions from the calculation of fees:

(i) The amount of actual emissions of each regulated pollutant (for fee calculation) that the source emits in excess of 4,000 tons per year (tpy);

(ii) Actual emissions of any regulated pollutant (for fee calculation) already included in the fee calculation; and

(iii) The quantity of actual emissions (for fee calculation) of insignificant activities [defined in §71.5(c)(11)(i)] or of insignificant emissions levels from emissions units identified in the permittee's application pursuant to §71.5(c)(II)(ii).

Compliance Methods for the Above (Description and Citation):

- Annual emissions fee calculated in accordance with the above procedures

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.A. Annual Fee Payment [40 CFR 71.6(a)(7) and 40 CFR 71.9]

7. Fee calculation worksheets shall be certified as to truth, accuracy, and completeness by a responsible official.

Compliance Methods for the Above (Description and Citation):

-Owner/operator provided a certification as to truth, accuracy, and completeness, which was completed by a responsible official.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.A. Annual Fee Payment [40 CFR 71.6(a)(7) and 40 CFR 71.9]

8. The permittee shall retain fee calculation worksheets and other emissions-related data used to determine fee payment for 5 years following submittal of fee payment.

[Emission-related data include, for example, emissions-related forms provided by EPA and used by the permittee for fee calculation purposes, emissions-related spreadsheets, and emissions-related data, such as records of emissions monitoring data and related support information required to be kept in accordance with §71.6(a)(3)(ii).

Compliance Methods for the Above (Description and Citation):

-Owner/operator maintains documentation associated with the calculation and payment of the annual fees for 5 years and in accordance with §71.6(a)(3)(ii)

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.A. Annual Fee Payment [40 CFR 71.6(a)(7) and 40 CFR 71.9]

9. Failure of the permittee to pay fees in a timely manner shall subject the permittee to assessment of penalties and interest in accordance with §71.9(1).

Compliance Methods for the Above (Description and Citation):

-Owner/operator paid 2014 fees on time.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.A. Annual Fee Payment [40 CFR 71.6(a)(7) and 40 CFR 71.9]

10. When notified by EPA of underpayment of fees, the permittee shall remit full payment within 30 days of receipt of notification.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and will comply with the requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.A. Annual Fee Payment [40 CFR 71.6(a)(7) and 40 CFR 71.9]

11. A permittee who thinks an EPA assessed fee is in error and who wishes to challenge such fee, shall provide a written explanation of the alleged error to EPA

along with full payment of the EPA assessed fee.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and will comply with the requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.B. Annual Emissions Inventory [40 CFR 71.9(h)(I)and (2)]

The permittee shall submit an annual emissions report of its actual emissions for both criteria pollutants and regulated HAPs for this facility for the preceding calendar year for fee assessment purposes. The annual emissions report shall be certified by a responsible official and shall be submitted each year to EPA by April 1st.

Compliance Methods for the Above (Description and Citation):

- Owner/operator submitted an annual emissions report for applicable criteria pollutants and regulated HAPs prior to April 2014 for 2013 emissions; an emissions inventory will be submitted in by April 1st 2015 for 2014 emissions. The emissions report included a CTAC signed by responsible official.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.C. Compliance Requirements

1. Compliance with the Permit

- (a) The permittee must comply with all conditions of this part 71 permit. Any permit noncompliance constitutes a violation of the CAA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
- (b) It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- (c) For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any requirement of

this permit, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

2. Compliance Schedule

(a) For applicable requirements with which the source is in compliance, the source will continue to comply with such requirements.

(b) For applicable requirements that will become effective during the permit term, the source shall meet such requirements on a timely basis.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

3. Compliance Certifications

- (a) The permittee shall submit to EPA a certification of compliance with permit terms and conditions, including emission limitations, standards, or work practices annually on April 1st. The certification of compliance shall cover the previous calendar year.
- (b) The compliance certification shall be certified as to truth, accuracy, and completeness by a responsible official consistent with §71.5(d).
- (c) The certification shall include the following:
 - (i) Identification of each permit term or condition that is the basis of the certification;
 - (ii) The identification of the method(s) or other means used for determining the compliance status of each term and condition during the certification period,

and whether such methods or other means provide continuous or intermittent data. Such methods and other means shall include, at a minimum, the methods and means required in this permit. If necessary, the permittee also shall identify any other material information that must be included in the certification to comply with Section 113(c)(2) of the CAA, which prohibits knowingly making a false certification or omitting material information;

(iii) The status of compliance with each term and condition of the permit for the period covered by the certification shall be based on the method or means designated above. The certification shall identify each deviation and take it into account in the compliance certification;

(iv) Such other facts as the EPA may require to determine the compliance status of the source; and

(v) Whether compliance with each permit term was continuous or intermittent.

Compliance Methods for the Above (Description and Citation):

-Owner/operator has submitted a certification of compliance with permit terms and conditions, on April 1st for the reporting of March 1, 2013 through February 28, 2014. A certification by a responsible official has been included.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.D. Duty to Provide and Supplement Information

1 . The permittee shall furnish to EPA, within a reasonable time, any information that EPA may request in writing to determine whether cause exists for modifying, revoking, and reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, the permittee shall also furnish to the EPA copies of records that are required to be kept pursuant to the terms of the permit, including information claimed to be confidential. Information claimed to be confidential must be accompanied by a claim of confidentiality according to the provisions of 40 CFR part 2, subpart B.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.D. Duty to Provide and Supplement Information

2. The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information. In addition, a permittee shall provide additional information as necessary to address any requirements that become applicable after the date a complete application is filed, but prior to release of a draft permit.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.E. Submissions [40 CFR 71.5(d), 71.6(c)(I) and 71.9(h)(2)]

1. Any document (application form, report, compliance certification, etc.) required to be submitted under this permit shall be certified by a responsible official as to truth, accuracy, and completeness. Such certifications shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Compliance Methods for the Above (Description and Citation):

- Owner/operator will provide a certification as to truth, accuracy and completeness with each document required to be submitted by this permit.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.F. Severability Clause [40 CFR 71.6(a)(5)]

The provisions of this permit are severable, and in the event of any challenge to any portion of this permit, or if any portion is held invalid, the remaining permit conditions shall remain valid and in force.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.G. Permit Actions [40 CFR 71.6(a)(6)(iii)]

This permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.H. Administrative Permit Amendments [40 CFR 71.7(d)]

1. The permittee may request the use of administrative permit amendment procedures for a permit revision that:

(a) Corrects typographical errors;

(b) Identifies a change in the name, address, or phone number of any person identified in the permit, or provides a similar minor administrative change at the source;

(c) Requires more frequent monitoring or reporting by the permittee;

(d) Allows for a change in ownership or operational control of a source where the EPA determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee has been submitted to the EPA;

(e) Incorporates into the part 71 permit the requirements from preconstruction review permits authorized under an EPA-approved program, provided that such a program meets procedural requirements substantially equivalent to the requirements of §§71.7 and 71.8 that would be applicable to the change if it were subject to review as a permit modification, and compliance requirements substantially equivalent to those contained in §71.6; or

(f) Incorporates any other type of change which EPA has determined to be similar to those listed above in subparagraphs (a) through (e) above.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.I. Minor Permit Modifications [40 CFR 71.7(e)(I)]

1. The permittee may request the use of minor permit modification procedures only for those modifications that:

- (a) Do not violate any applicable requirement;
- (b) Do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
- (c) Do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis;
- (d) Do not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:
 - (i) A federally enforceable emissions cap assumed to avoid classification as a modification under any provision of Title V; and (ii) An alternative emissions limit approved pursuant to regulations promulgated under Section 112(i)(5) of the CAA;
- (e) Are not modifications under any provision of title I of the CAA; and
- (f) Are not required to be processed as a significant modification.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.I. Minor Permit Modifications [40 CFR 71.7(e)(I)]

2. Notwithstanding the list of changes ineligible for minor permit modification procedures above, minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in an applicable implementation plan or in applicable requirements promulgated by EPA.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

VII.I. Minor Permit Modifications [40 CFR 71.7(e)(I)]

Permit Term (Describe requirements and cross-reference)

3. An application requesting the use of minor permit modification procedures shall meet the requirements of §71.5(c) and shall include the following:

- (a) A description of the change, the emissions resulting from the change, and any new applicable requirements that will apply if the change occurs;
- (b) The source's suggested draft permit;
- (c) Certification by a responsible official, consistent with §71.5(d), that the proposed modification meets the criteria for use of minor permit modification procedures and a request that such procedures be used and
- (d) Completed forms for the permitting authority to use to notify affected States as required under §71.8.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility-Wide

Permit Term (Describe requirements and cross-reference)

VII.I. Minor Permit Modifications [40 CFR 71.7(e)(I)]

4. The source may make the change proposed in its minor permit modification application immediately after it files such application. After the source makes the change allowed by the preceding sentence, and until the permitting authority takes any of the actions authorized by §71.7(e)(I)(iv)(A) through (C), the source must comply with both the applicable requirements governing the change and the proposed permit terms and conditions. During this time period, the source need not comply with the existing permit terms and conditions it seeks to modify. However, if the source fails to comply with its proposed permit terms and conditions during this time period, the existing permit terms and conditions it seeks to modify may be enforced against it.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.I. Minor Permit Modifications [40 CFR 71.7(e)(I)]

5. The permit shield under §71.6(f) may not extend to minor permit modifications.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.J. Group Processing of Minor Permit Modifications. [40 CFR 71.7(e)(2)]

1. Group processing of modifications by EPA may be used only for those permit modifications:

(a) That meet the criteria for minor permit modification procedures under this permit and

(b) That collectively are below the threshold level of 10 percent of the emissions allowed by the permit for the emissions unit for which the change is requested, 20 percent of the applicable definition of major source in §71.2, or 5 tpy per year, whichever is least.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.J. Group Processing of Minor Permit Modifications. [40 CFR 71.7(e)(2)]

2. An application requesting the use of group processing procedures shall be submitted to EPA, shall meet the requirements of §71.5(c), and shall include the following:

(a) A description of the change, the emissions resulting from the change, and any new applicable requirements that will apply if the change occurs

(b) The source's suggested draft permit

(c) Certification by a responsible official, consistent with §71.5(d), that the

proposed modification meets the criteria for use of group processing procedures and a request that such procedures be used

(d) A list of the source's other pending applications awaiting group processing, and a determination of whether the requested modification, aggregated with these other applications, equals or exceeds the threshold set under the subparagraph above; and

(e) Completed forms for the permitting authority to use to notify affected States as required under §71.8.

Compliance Methods for Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.J. Group Processing of Minor Permit Modifications. [40 CFR 71.7(e)(2)]

3. The source may make the change proposed in its minor permit modification application immediately after it files such application. After the source makes the change allowed by the preceding sentence, and until the permitting authority takes any of the actions authorized by §71.7(e)(l)(iv)(A) through (C), the source must comply with both the applicable requirements governing the change and the proposed permit terms and conditions. During this time period, the source need not comply with the existing permit terms and conditions it seeks to modify. However, if the source fails to comply with its proposed permit terms and conditions during this time period, the existing permit terms and conditions it seeks to modify may be enforced against it.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.J. Group Processing of Minor Permit Modifications. [40 CFR 71.7(e)(2)]

4. The permit shield under §71.6(f) may not extend to group processing of minor permit modifications.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.K. Significant Permit Modifications

1. The permittee must request the use of significant permit modification procedures for those modifications that:

- (a) Do not qualify as minor permit modifications or as administrative amendments;
- (b) Are significant changes in existing monitoring permit terms or conditions; or
- (c) Are relaxations of reporting or recordkeeping permit terms or conditions.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.K. Significant Permit Modifications

2. Nothing herein shall be construed to preclude the permittee from making changes consistent with part 71 that would render existing permit compliance terms and conditions irrelevant.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.K. Significant Permit Modifications [40 CFR 71.7(e)(3)]

3. Permittees must meet all requirements of part 71 for applications, public participation, and review by affected states and tribes for significant permit modifications. For the application to be determined complete, the permittee must supply all information that is required by §71.5(c) for permit issuance and renewal, but only that information that is related to the proposed change.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.L. Reopening for Cause [(40 CFR 71.7(f))]

The permit may be reopened and revised prior to expiration under any of the following circumstances:

(a) Additional applicable requirements under the Act become applicable to a major part 71 source with a remaining permit term of 3 or more years. Such a reopening shall be completed no later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions have been extended pursuant to §71.7(c)(3);

(b) Additional requirements (including excess emissions requirements) become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit;

(c) EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit; or

(d) EPA determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.M. Property Rights [40 CFR 71.6(a)(6)(iv)]

This permit does not convey any property rights of any sort, or any exclusive privilege.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.N. Inspection and Entry [(40 CFR 71.6(c)(2))]

Upon presentation of credentials and other documents as may be required by law, the permittee shall allow EPA or an authorized representative to perform the following:

1. Enter upon the permittee's premises where a part 71 source is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
4. As authorized by the CAA, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.O. Emergency Provisions [40 CFR 71.6(g)]

1. In addition to any emergency or upset provision contained in any applicable requirement, the permittee may seek to establish that noncompliance with a technology-based emission limitation under this permit was due to an emergency. To do so, the permittee shall demonstrate the affirmative defense of emergency through properly signed, contemporaneous operating logs, or other relevant evidence that:

- (a) An emergency occurred and that the permittee can identify the cause(s) of the emergency;
- (b) The permitted facility was at the time being properly operated;
- (c) During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards, or other requirements in this permit; and
- (d) The permittee submitted notice of the emergency to EPA within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. This notice fulfills the requirements for prompt notification of deviations.

2. In any enforcement proceeding the permittee attempting to establish the occurrence

of an emergency has the burden of proof.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.P. Transfer of Ownership or Operation [40 CFR 71.7(d)(I)(iv)]

A change in ownership or operational control of this facility may be treated as an administrative permit amendment if the EPA determines no other change in this permit is necessary and provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee has been submitted to EPA.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.Q. Off Permit Changes [40 CFR 71.6(a)(I2) and 40 CFR 71.6(a)(3)(ii)]

The permittee is allowed to make certain changes without a permit revision, provided that the following requirements are met:

1. Each change is not addressed or prohibited by this permit;
2. Each change shall meet with all applicable requirements and shall not violate any existing permit term or condition:
3. Changes under this provision may not include changes subject to any requirement of 40 CFR parts 72 through 78 or modifications under any provision of Title I of the CAA;
4. The permittee must provide contemporaneous written notice to EPA of each change, except for changes that qualify as insignificant activities under §71.5(c)(I1). The written notice must describe each change, the date of the change, any change in emissions, pollutants emitted, and any applicable requirements that would apply as a result of the change;
5. The permit shield does not apply to changes made under this provision; and
6. The permittee must keep a record describing all changes that result in emissions of any regulated air pollutant subject to any applicable requirement not otherwise regulated under this permit, and the emissions resulting from those changes.

7. The notice shall be kept on site and made available to EPA on request, in accordance with the general record keeping provision of this permit.

8. Submittal of the written notice required above shall not constitute a waiver, exemption, or shield from applicability of any applicable standard or PSD permitting requirements under 40 CFR 52.21 that would be triggered by the replacement of any one emission unit, or by replacement of multiple emission units.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and complies with the applicable requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.R. Permit Expiration and Renewal [40 CFR 71.5(a)(I)(iii), 71.5(a)(2), 71.5(c)(5), 71.6(a)(II), 71.7(b), 71.7(c)(I), and 71.7(c)(3)]

1. This permit shall expire upon the earlier occurrence of the following events:

(a) Five (5) years elapse from the date of issuance; or

(b) The source is issued a part 70 or part 71 permit under an EPA approved or delegated permit program.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges the requirements

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.R. Permit Expiration and Renewal [40 CFR 71.5(a)(I)(iii), 71.5(a)(2), 71.5(c)(5), 71.6(a)(II), 71.7(b), 71.7(c)(I), and 71.7(c)(3)]

2. Expiration of this permit terminates the permittee's right to operate unless a timely and complete permit renewal application has been submitted at least 6 months but not more than 18 months prior to the date of expiration of this permit.

Compliance Methods for the Above (Description and Citation):

-Owner/operator will submit a renewal application in accordance with the timeline outlined above.

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.R. Permit Expiration and Renewal [40 CFR 71.5(a)(I)(iii), 71.5(a)(2), 71.5(c)(5), 71.6(a)(II), 71.7(b), 71.7(c)(I), and 71.7(c)(3)]

3. If the permittee submits a timely and complete permit application for renewal, consistent with §71.5(a)(2), but EPA has failed to issue or deny the renewal permit, then all the terms and conditions of the permit, including any permit shield granted pursuant to §71.6(±) shall remain in effect until the renewal permit has been issued or denied.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.R. Permit Expiration and Renewal [40 CFR 71.5(a)(I)(iii), 71.5(a)(2), 71.5(c)(5), 71.6(a)(II), 71.7(b), 71.7(c)(I), and 71.7(c)(3)]

4. The permittee's failure to have a part 71 permit is not a violation of this part until EPA takes final action on the permit renewal application. Thus protection shall cease to apply if, subsequent to the completeness determination, the permittee fails to submit any additional information identified as being needed to process the application by the deadline specified in writing by EPA.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and will comply with the requirement

Status (Check one): ☐ Intermittent Compliance ☒ Continuous Compliance

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

VII.R. Permit Expiration and Renewal [40 CFR 71.5(a)(I)(iii), 71.5(a)(2), 71.5(c)(5), 71.6(a)(II), 71.7(b), 71.7(c)(I), and 71.7(c)(3)]

5. Renewal of this permit is subject to the same procedural requirements that apply to initial permit issuance, including those for public participation, affected State, and tribal review.

Compliance Methods for the Above (Description and Citation):

- Owner/operator acknowledges and will comply with the requirement

Status (Check one): <input type="checkbox"/> Intermittent Compliance <input checked="" type="checkbox"/> Continuous Compliance
Emission Unit ID(s): Facility Wide
Permit Term (Describe requirements and cross-reference)
VII.R. Permit Expiration and Renewal [40 CFR 71.5(a)(I)(iii), 71.5(a)(2), 71.5(c)(5), 71.6(a)(II), 71.7(b), 71.7(c)(I), and 71.7(c)(3)]
6. The application for renewal shall include the current permit number, description of permit revisions and of permit changes that occurred during the permit term, any applicable requirements that were promulgated and not incorporated into the permit during the permit term, and other information required by the application form.
Compliance Methods for the Above (Description and Citation): -Owner/operator will provide the required information in the permit renewal application
Status (Check one): <input type="checkbox"/> Intermittent Compliance <input checked="" type="checkbox"/> Continuous Compliance

C. DEVIATIONS FROM PERMIT TERMS AND CONDITIONS

Report all deviations from permit terms (whether reported previously or not) that occurred during the permit term. Cross-reference deviations already reported in the six-month report. Indicate whether each deviation is a possible exception to compliance. Start and end period of each deviation should be in mo/day/yr, hr:min format (24-hour clock). Also specify the date when the written deviation report was submitted (If written report required, but not submitted, leave the date field blank).

Permit Term for Which There was a Deviation: **NA**

Emission Units (unit IDs):

Deviation Start ____/____/____ ____:____ End:____/____/____ ____:____

Date Written Report Submitted ____/____/____

Permit Term for Which There was a Deviation:

Emission Units (unit IDs):

Deviation Start ____/____/____ ____:____ End:____/____/____ ____:____

Date Written Report Submitted ____/____/____

Permit Term for Which There was a Deviation:

Emission Units (unit IDs):

Deviation Start ____/____/____ ____:____ End:____/____/____ ____:____

Date Written Report Submitted ____/____/____

Permit Term for Which There was a Deviation:

Emission Units (unit IDs):

Deviation Start ____/____/____ ____:____ End:____/____/____ ____:____

Date Written Report Submitted ____/____/____

INSTRUCTIONS FOR A-COMP ANNUAL COMPLIANCE CERTIFICATION

Information Collection Burden Estimates

The public reporting and recordkeeping burden for this collection of information is estimated to average 221 hours per respondent per year. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

DETAILED INSTRUCTIONS

Submit this form along with a certification of truth, accuracy and completeness by a responsible official on an annual basis.

Section A (General Information)

Name and address should be consistent with information provided previously. The contact person should be a person familiar with the day-to-day operation of the facility, such as a plant site manager or other individual, who should be available to be contacted by the permitting authority. If there is more than one contact person, list the others on an attachment.

The reporting period must be at least every 12 months, but your permit may require this more frequently.

Section B (Compliance Status)

Description of Permit Term: Include each permit terms that imposes a requirement or action (emission limitations, standards, monitoring, recordkeeping, reporting, and other requirements on one or more emission units or on the facility. You will likely have to complete this section numerous times to include all requirements in the permit.

The emissions unit ID(s) should be those defined in the permit or in section I of form GIS. If the requirements, including compliance methods, apply in the same way to multiple emission units, you may list multiple units for a particular requirement. Emission units and requirements may be grouped if they apply the same way at all units in the group, the same compliance methods apply to all, and all units have the same compliance status.

Citations to the requirements should unambiguously identify the permit term to the lowest level.

Compliance Methods: List all compliance methods (monitoring, recordkeeping and reporting) you used to determine compliance with the permit term described above. Also describe and cross-reference these compliance methods.

To describe monitoring, indicate the monitoring device, what is being monitored, averaging time, frequency, and cross-reference the permit term. To describe recordkeeping, describe the records kept, collection frequency, and cross-reference the permit term. Please indicate whether monitoring data, results, or if compliance records are kept on-site rather than reported. To describe reporting requirements, describe what is reported, when it is reported, and cross-reference the permit term.

The citation or cross-reference here must unambiguously identify the requirement to the lowest level.

Compliance Status: For each permit requirement and its associated compliance methods, indicate whether there was intermittent or continuous compliance (check one) during the reporting period. You should consider all available information or knowledge that you have when evaluating this, including compliance methods required by the permit and **credible evidence** (e.g., non-reference test methods and information readily available to you). You are always free to include written explanations and other information to clarify your conclusion regarding compliance status.

You must include permit terms that were not effective or not applicable (e.g., future-effective requirements, compliance options, and alternative scenarios). You may certify to continuous compliance for these if there is no evidence of noncompliance.

Absent evidence to the contrary, you may certify continuous compliance based on the data provided by the compliance methods, provided you did not fail to perform them and there were no unexcused deviations. Any failure to meet any permit term for any period of time indicates intermittent compliance. You may also indicate “undetermined compliance,” if you include the reason.

Section C (Deviations From Permit Terms and Conditions)

Summarize all deviations from permit terms that occurred since the last compliance certification. They may have been reported previously in-writing or they may be reported concurrently with this certification. Also include any deviations but have not yet been reported in writing.

Copy this page as many times as necessary to include all deviations that occurred during the reporting period for this compliance certification.

Deviations occur when any permit term is not met, including emission limitations, standards, monitoring, recordkeeping, reporting and other requirements. For a more detailed explanation of the term **deviation**, see the instructions for Form **SIXMON**. A deviation is not necessarily a violation. Violations are determined by EPA (or its delegate Agency).

You may cross-reference deviations previously reported (e.g., in 6-month monitoring reports).

You must indicate whether each deviation is a **possible exception to compliance**. This is a deviation that occurs when compliance is required. A deviation that is not a “possible exception to compliance” is one that occurs when compliance is not required or it is excused by another permit term. If you indicate that a deviation is not a possible exception to compliance, briefly explain and cross-reference the permit term that allows or excuses it. Also, deviations for which the permit provides an affirmative defense (e.g., emergencies) must be identified as “possible exception to compliance” because only the permitting authority may determine if the affirmative defense applies.

If the cross-reference a deviation report that does not contain all the information requested here, you must supplement it accordingly.

You may list multiple emission units if they all had the same deviation during the same time periods. In addition, for deviations that impose requirements to the permitted facility as a whole or to all units at your facility, you may enter **facility-wide** in the emissions unit column.

You may indicate continuous periods of deviation that span multiple days in a single entry. Use the 24-hour clock (equivalent to military time) for reporting these times (e.g., the day starts and ends at midnight, 12 a.m., or 00:00 in military time).

Specify the date when the written deviation report was submitted to the permitting authority. Leave the date field blank if you did not submit a written deviation report during the reporting period covered by the six-month monitoring report (whether required to do so or not). It is a deviation to fail to submit a required

deviation report.

Form CTAC (Certification of Truth, Accuracy, and Completeness by Responsible Official)

You must complete form **CTAC** and attach it to this annual compliance certification.

Appendix H

Six-Month Monitoring Report (September 2015)



OMB No. 2060-0336, Approval Expires 6/30/2015

Federal Operating Permit Program (40 CFR Part 71)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible Official

Name: (Last) Bradley (First) Scott (MI) _____

Title Area Vice President

Street or P.O. Box 222 South Mill Avenue, Suite 333

City Tempe State AZ ZIP 85281 - _____

Telephone (480) 457 - 4810 Ext. _____ Facsimile (866) 404 - 8396

B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) 

Name (typed) Scott Bradley Date: 9 / 28 / 15



OMB No. 2060-0336, Approval Expires 6/30/2015

Federal Operating Permit Program (40 CFR Part 71)

6-MONTH MONITORING REPORT (SIXMON)

Section A (General Information)

Permit No. V-SV-00001-2010.00

Reporting Period: Beg. 3 / 1 / 2015 End. 8 / 31 / 2015

Source / Company Name Tekoi Landfill

Mailing Address: Street or P.O. Box 6976 West California Avenue

City Salt Lake City State CA ZIP 84104 -

Contact person Brad Kloos Title District Manager

Telephone (801) 731 - 5542 Ext.

Continued on next page

Section B (Monitoring Report)

Summarize all required monitoring, data, or analyses required by the permit for the reporting period. Describe and cross-reference the permit term and list the emission units (Unit IDs) where the monitoring was performed. Indicate whether a separate monitoring report is required, and if required, enter the date submitted. If submitted for the first time as an attachment to this form, assign an attachment ID, mark the attachment with that ID, and attach the report to this form.

Monitoring, Data, or Analysis (describe and cite):

II.C. Standards for Air Emissions

1. The permittee shall calculate an NMOC emission rate for the landfill using the procedure and default values specified in §60.754(a)(I).

-Permittee calculated an NMOC emission rate for the landfill using the procedure and default values specified in §60.754(a)(I).

Emission Units (Unit IDs): E1

Separate Report? X Yes ___ No Date 3 / 10 / 2008 Attachment ID NA

Monitoring, Data, or Analysis (describe and cite):

II.C. Standards for Air Emissions

- (b) If the calculated NMOC emission rate using the default values of §60.754(a)(I) is equal to or greater than 50 megagrams per year using Tier 1 , the permittee shall either:

- (ii) Determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the procedures provided in paragraph §60.754(a)(3) and identified as Tier 2.

- Tier 2 study was completed and NMOC calculated using Tier 2 specifications.

Emission Units (Unit IDs):EI

Separate Report? X Yes ___ No Date 2 / 11 / 2014 Attachment ID NA

Monitoring, Data, or Analysis (describe and cite):

II.C. Standards for Air Emissions

3. Tier 2: The permittee shall calculate a site-specific NMOC concentration as required by §60.754(a)(3) and recalculate the NMOC mass emission rate using the equations provided in §60.754(a)(I) using the average NMOC concentration from the collected samples instead of the default value in the equation in §60.754(a)(I).

- (a) If the resulting NMOC mass emission rate is less than 50 megagrams per year using Tier 2, the permittee shall:

- (i) Submit a periodic estimate of the emission rate report as provided in §60.757(b)(I); and
- (ii) Retest the site-specific NMOC concentration every 5 years using Tier 2.

- <50 megagrams. NMOC emission rate calculated and reported annually; Tier 2 is a 5-year report. 5-year NMOC emissions report includes this reporting period. Tier 2 sampling is due in 2018.

Emission Units (Unit IDs):EI

Separate Report? X Yes ___ No Date 2 / 11 / 2014 Attachment ID NA

Monitoring, Data, or Analysis (describe and cite):

II.E. Monitoring of Operations

The requirements of §60.756(a)- (f) shall be used to monitor the capture and control system requirements of §60.752(b)(2).

-- Not applicable. Owner/operator will comply with above procedures for determining compliance with the gas collection system once system is required to be installed.

Emission Units (Unit IDs): E1

Separate Report? _____ Yes X No Date ____/____/____ Attachment ID ____

Monitoring, Data, or Analysis (describe and cite):

II.F. Reporting Requirements

If the NMOC emission rate equals or exceeds 50 megagrams per year, the permittee shall meet the applicable reporting requirements of §60.757(a)- (g).

- NMOC emission rate calculated and reported annually, <50 megagrams. Tier 2 is a 5-year report. 5-year NMOC emissions report includes this reporting period.

Emission Units (Unit IDs): E1

Separate Report? X Yes ___ No Date 2 / 11 / 14 Attachment ID _____

Monitoring, Data, or Analysis (describe and cite):

III.C. Non-Methane Organic Compound Emission Rate <50 Mg/year

If the uncontrolled non-methane organic compound (NMOC) emission rate is less than 50 megagrams per year, as calculated according to §60.754(a) of the MSW landfills new source performance standards in 40 CFR part 60, subpart WWW, the permittee shall recalculate the NMOC emission rate annually as specified in 40 CFR 60.752(b)(I) using the procedures specified in 40 CFR 60.754(a)(I) until such time as the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, or the landfill is closed.

-Tier 2 reported submitted within 180 days of Tier 1 calculated exceedance of 50 megagrams per year. NMOC emission rate calculated and reported annually, <50 megagrams. Tier 2 is a 5-year report. 5-year NMOC emissions report includes this reporting period.

Emission Units (Unit IDs): LF-1

Separate Report? ☒ Yes ☐ No Date 2/11/14 Attachment ID _____

Monitoring, Data, or Analysis (describe and cite):

III.D. Non-Methane Organic Compound Emission Rate \geq 50 Mg/year

3. Monitoring and Testing [40 CFR 63.1980(g)]

If the permittee adds any liquids other than leachate in a controlled fashion to the waste mass and does not comply with the bioreactor requirements in §§63.1947, 63.1955(c) and 63.1980(c) through (f) of 40 CFR part 63, subpart AAAA, the permittee must keep a record of calculations as specified in §63.1980(g).

-Not applicable. No GCCS installed. Landfill is not a bioreactor.

Emission Units (Unit IDs): EI

Separate Report? ☐ Yes ☒ No Date ____/____/____ Attachment ID _____

Monitoring, Data, or Analysis (describe and cite):

III.D. Non-Methane Organic Compound Emission Rate \geq 50 Mg/year

4. Recordkeeping and Reporting Requirements

- (a) The permittee must comply with the recordkeeping requirements as specified in §60.758(a) of 40 CFR part 60, subpart WWW, except that the annual report described in 40 CFR §60.757(f) must be submitted every 6 months.
- (b) The permittee must keep records and reports as specified in the general provisions of 40 CFR part 60 and in Table 1 of 40 CFR part 63, subpart AAAA. Applicable records in the general provisions include items such as startup, shutdown and malfunction (SSM) plans and the SSM plan reports.

- Owner/operator maintains applicable records. No GCCS has been installed because NMOC is <50 megagrams.

Emission Units (Unit IDs): EI

Separate Report? ☐ Yes ☒ No Date ____/____/____ Attachment ID _____

Monitoring, Data, or Analysis (describe and cite):

IV.D. Requirements for Engines IE1 and IE2

1. Emission and Operating Limitations

- a. Except during periods of startup, the permittee shall:
 - i. Change oil and filter every 1,000 hours of operation or annually, whichever comes first;
 - ii. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first;
 - iii. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.
- b. During periods of startup the permittee shall minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply.

-Maintenance requirements listed above were not implemented for IE1 and IE2 during this reporting period.

Emission Units (Unit IDs): IE1 and IE2

Separate Report? ___ Yes X No Date ___/___/___ Attachment ID _____

Monitoring, Data, or Analysis (describe and cite):

IV.D. Requirements for Engines IE1 and IE2

2. Operation and Maintenance

The permittee must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop a maintenance plan which must provide, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practices for minimizing emissions.

-Records of operation are maintained for IE1 and IE2.

Emission Units (Unit IDs): IE1 and IE2

Separate Report? ___ Yes X No Date ___/___/___ Attachment ID _____

Monitoring, Data, or Analysis (describe and cite):

IV.D. Requirements for Engines IE1 and IE2

4. Recordkeeping

- a. The permittee must keep records of operation and maintenance to show continuous compliance with each emission or operating limitation and to demonstrate that the engine was operated and maintained according to the required maintenance plan.
- b. Records must be in a form suitable and readily available for expeditious review according to §63.10(b)(l).
- c. Each record must be kept for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.
- d. Each record must be readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1).

-Records of operation and maintenance are kept for IE1 and IE2.

Emission Units (Unit IDs): IE1 and IE2

Separate Report? ___ Yes X No Date ___/___/___ Attachment ID _____

Monitoring, Data, or Analysis (describe and cite):

V.C. Compliance Requirements

- a. The permittee, as the owner or operator of the CI ICE, must
 - I. Comply with the emission standards;
 - II. Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed and approved by the engine manufacturer;
 - III. Only change those settings that are permitted by the manufacturer; and
 - IV. Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply.
- b. The permittee, as the owner or operator of a pre-2007 model year stationary CI ICE who must comply with the emission standards specified in §60.4204(a), must demonstrate compliance according to one of the following methods:

- i. Purchase an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications;
- ii. Keep records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in 40 CFR part 60, subpart IIII and these methods must have been followed correctly;
- iii. Keep records of engine manufacturer data indicating compliance with the standards;
- iv. Keep records of control device vendor data indicating compliance with the standards; or
- v. Conduct an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

- Owner/operator maintains appropriate records of manufacturer data indicating compliance with the standards.

Emission Units (Unit IDs): IE1, IE2, and IE3

Separate Report? ___ Yes ___ X No Date ___/___/___ Attachment ID _____

Monitoring, Data, or Analysis (describe and cite):

V.D. Requirements for Engine IE3

Compliance Requirements

- a. The permittee, as an owner or operator of stationary CI ICE subject to 40 CFR part 60. Subpart III, must meet the following compliance requirements:
 - i. Comply with the emission standards;
 - ii. Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed and approved by the engine manufacturer;
 - iii. Only change those settings that are permitted by the manufacturer; and
 - iv. Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply.
- b. The permittee, as an owner or operator of a 2007 model year and later stationary CI internal combustion engine, must comply by purchasing an engine certified to the emission standards in §60.4204(b), as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

- Owner/operator complies with all applicable emission standards and operational requirements; and maintains appropriate records.

Emission Units (Unit IDs): IE3

Separate Report? ___ Yes ☒ No Date____/____/____ Attachment ID _____

Monitoring, Data, or Analysis (describe and cite):

VI.A. General Recordkeeping Requirements

The permittee shall comply with the following generally applicable recordkeeping requirements:

1. If the permittee determines that his or her stationary source that emits (or has the potential to emit, without federally recognized controls) one or more hazardous air pollutants that is not subject to a relevant standard or other requirement established under 40 CFR part 63, the permittee shall keep a record of the applicability determination on site at the source for a period of five (5) years after the determination, or until the source changes its operations to become an affected source, whichever comes first. The record of the applicability determination shall include an analysis (or other information) that demonstrates why the permittee believes the source is unaffected (e.g., because the source is an area source)

- Owner/operator maintains applicable appropriate records.

Emission Units (Unit IDs): Facility Wide

Separate Report? ___ Yes ☒ No Date____/____/____ Attachment ID _____

Monitoring, Data, or Analysis (describe and cite):

VI.A. General Recordkeeping Requirements

3. The permittee shall promptly report to the EPA Regional Office any deviations from permit requirements, including those attributable to upset conditions as defined in this permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. "Prompt" is defined as follows:

- (a) Any definition of "prompt" or a specific timeframe for reporting deviations provided in an underlying applicable requirement as identified in this permit; or
- (b) Where the underlying applicable requirement fails to address the time frame for reporting deviations, reports of deviations will be submitted based on the following schedule:
 - (i) For emissions of a hazardous air pollutant or a toxic air pollutant (as identified in the applicable regulation) that continue for more than an hour in excess of permit requirements, the report shall be made within 24 hours of the occurrence;
 - (ii) For emissions of any regulated air pollutant, excluding a hazardous air

- pollutant or a toxic air pollutant that continue for more than two (2) hours in excess of permit requirements, the report shall be made within 48 hours; and
- (iii) For all other deviations from permit requirements, the report shall be submitted with the semi-annual monitoring.

- (c) If either of the conditions in (i) and (ii) above is met, the source shall notify EPA by telephone (1-800-227-8917) or facsimile (303-312-6064) based on the timetables listed above. [Explanatory note: Notification by telephone or facsimile must specify that this notification is a deviation report for a part 71 permit. A written notice, certified consistent with the requirements of this permit must be submitted within ten (10) working days of the occurrence. All deviations reported under this section must also be identified in the 6-month report.

- No deviations occurred during the reporting period and owner/operator acknowledges and complies with the applicable requirements.

Emission Units (Unit IDs): Facility Wide

Separate Report? ___ Yes ___ X No Date ___/___/___ Attachment ID _____

Section C (Deviations Already “Promptly” Reported)

Summarize all deviations from permit terms already reported on form **PDR** during the reporting period. Copy this page as many times as necessary to include all such deviations. Describe and cross-reference the permit terms and report the start and end dates and times of the deviations (mo/day/yr, hr:min). Use the 24-hour clock. Also specify the date when the written deviation report was submitted to the permitting authority (If written report required, but not submitted, leave the date field blank). Note that failure to submit a deviation report, or late submittal, is a deviation that must be reported in the Section D.

<p>Permit Term for Which There was a Deviation: NA</p> <p>Emission Units (unit IDs):</p> <p>Deviation Start ____/____/____ ____:____ End:____/____/____ ____:____</p> <p>Date Written Report Submitted ____/____/____</p>
<p>Permit Term for Which There was a Deviation:</p> <p>Emission Units (unit IDs):</p> <p>Deviation Start ____/____/____ ____:____ End:____/____/____ ____:____</p> <p>Date Written Report Submitted ____/____/____</p>
<p>Permit Term for Which There was a Deviation:</p> <p>Emission Units (unit IDs):</p> <p>Deviation Start ____/____/____ ____:____ End:____/____/____ ____:____</p> <p>Date Written Report Submitted ____/____/____</p>
<p>Permit Term for Which There was a Deviation:</p> <p>Emission Units (unit IDs):</p> <p>Deviation Start ____/____/____ ____:____ End:____/____/____ ____:____</p> <p>Date Written Report Submitted ____/____/____</p>

Section D (Deviations Reported Semiannually)

This section is for deviations reported for the first time in this six-month monitoring report. Describe and cross-reference the permit terms and emission units that apply to the deviation. Copy this page as many times as necessary to include all such deviations. Report the beginning and ending times (mo/day/yr, hr:min) for each deviation. Use the 24-hour clock. Briefly explain (if known) the probable cause of each deviation. If any corrective actions or preventative measures have been taken to avoid these in the future, briefly describe the measures, including when they occurred.

Permit Term (for Which There is a Deviation): NA

Emission Units (unit IDs)

Deviation Start: ____/____/____ ____:____ End: ____/____/____ ____:____

Probable Cause of Deviation: Maintenance was not performed in accordance with the requirements of Condition IV.D.1.a

Corrective Actions or Preventative Measures Taken: Upon discovery of the deviation, Tekoi immediately took action and has instituted a more thorough tracking and scheduling program to ensure the monitoring requirements are implemented as required going forward.

Permit Term (for Which There is a Deviation):

Emission Units (unit IDs)

Deviation Start: ____/____/____ ____:____ End: ____/____/____ ____:____

Probable Cause of Deviation:

Corrective Actions or Preventative Measures Taken:

Permit Term (for Which There is a Deviation):

Emission Units (unit IDs)

Deviation Start: ____/____/____ ____:____ End: ____/____/____ ____:____

Probable Cause of Deviation:

Corrective Actions or Preventative Measures Taken:

INSTRUCTIONS FOR SIXMON 6-MONTH MONITORING REPORT

Information Collection Burden Estimates

The public reporting and recordkeeping burden for this collection of information is estimated to average 221 hours per respondent per year. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

DETAILED INSTRUCTIONS

Section A (General Information)

The contact person should be a person familiar with the day-to-day operation of the facility, such as a plant site manager, who should be available to be contacted by the permitting authority. If there is more than one contact person, list the others on an attachment.

Section B (Monitoring Report)

Summarize all monitoring required during the reporting period and provide information on any separate monitoring reports submitted at this time or any time during the reporting period. Each individual monitoring requirement should be included in a separate row of the table. Copy section C of this form as many times as necessary to address all monitoring requirements.

Describe and cross-reference the relevant permit term that requires monitoring, data collection or analysis. Be specific with regard to test methods or analytical techniques used, and the air pollutant or parameter monitored. The cross-reference to the permit term should be as precise as possible.

Monitoring is a method of assuring compliance with permit terms. Monitoring may include instrumental or non-instrumental methods, including continuous emissions monitoring, periodic readings of parameters related to operating conditions, stack tests using EPA reference test methods, vendor or laboratory analytical testing, manual inspections, visual observations, work practice checks, and recordkeeping that confirms a requirement has been met.

You may list multiple units if all are subject to the same monitoring requirements. In addition, for monitoring that applies to the permitted facility as a whole or to all units at your source, you may enter Afacility-wide@ in the emissions unit column.

Indicate whether a separate report is required for the monitoring described above. If a separate report was submitted prior to the submittal of this form, indicate the date; if it is being submitted for the first time with this form, assign an attachment ID in the space provided, mark the attachment accordingly, and attach the separate monitoring report to this form.

Section C (Deviations Already “Promptly” Reported)

Summarize all deviations from permit terms reported in writing prior to the submittal of this monitoring report, such as those reported using **PDR**. Include all deviations that were required to be reported, but not reported or not reported by the deadline. Note that all deviations that occurred during the reporting period should either be reported in this section or in section D.

Deviations from permit terms occur when any permit term is not met, including emission control requirements and compliance assurance methods (monitoring, recordkeeping, and reporting). For example, the following are examples of deviations: (1) emissions that exceed an emission limit; (2) parameter value that indicates that an emission limit has not been met; (3) observations or data that show noncompliance with a limitation or other requirement; (4) an exceedance or excursion as defined in 40 CFR part 64 (CAM); (5) required monitoring that is not performed; and (6) failure to submit a report. You also must include deviations from permit terms that occur during startup, shutdown, malfunction, and upset conditions. A deviation is not necessarily a violation; violations will be determined by EPA (or its delegate Agency).

You may list multiple emission units here if they all had deviations of this permit term and they all occurred during the same time periods. In addition, you may enter Afacility-wide@ in the emissions unit column, if appropriate.

You may indicate continuous periods of deviation that span multiple days in a single entry. Use the 24-hour clock (equivalent to military time) for reporting these times (e.g., the day starts and ends at midnight, 12 a.m., or 00:00 in military time).

Specify the date when the written deviation report was submitted to the permitting authority. Leave the date field blank if you did not submit a written report during the reporting period.

It is a deviation to submit a required deviation report (whether required by telephone, fax, or in writing within 24 or 48 hours) after the deadline or to neglect to submit it at. Such deviations must be reported in Section D.

“Emergencies” (as defined in part 71) are also considered deviations. However if the reporting requirements of part 71 for emergencies are met, they may not necessarily result in noncompliance. Note that although the terms Aupset,@ Astartup,@ Ashutdown,@ and Amalfunction@ refer to conditions that are not defined in part 71, the applicable requirements may define these terms, and all deviations during such conditions are deviations. Also note that the applicable requirement itself may define the term Adeviation@ or refer to Aexcess emissions;@ and any such occurrences should also be reported as deviations on this form.

Section D (Deviations Reported Semiannually)

Report those deviations required to be reported for the first time in this 6-month monitoring report. Note that all deviations not included in section C should be included here. Copy this page as many times as necessary to report all such deviations.

Cross-reference the permit term for which there is a deviation and describe the requirement.

List the emission units (Unit IDs) where this deviation occurred. You may list multiple units here if they all had deviations of this permit term and they all occurred during the same time periods. In addition, for deviations of permit terms that impose requirements to the permitted facility as a whole or to all units at your facility, you may enter Afacility- wide@ in the emissions unit column.

Identify the time period (beginning and ending) over which the deviation occurred. You may indicate continuous periods of deviation that span multiple days in a single entry. Use the 24-hour clock (equivalent to military time) for reporting these times (e.g., the day starts and ends at midnight, or 00:00 in military time).

Briefly explain the probable cause of the deviation from permit terms, if known. Examples of possible answers to this question include Aoperator error@ or Amechanical failure.@ Be as specific as possible.

If any corrective actions or preventative measures were taken to avoid similar deviations at the same emissions units, briefly explain them. Examples of possible answers to this question include Atrained operator on proper operation of control devices@ or Arepaired defective equipment and will perform routine maintenance on an accelerated schedule.@ If known, include dates when such actions or measures were taken or will be taken in the future.

Form CTAC (Certification of Truth, Accuracy, and Completeness by Responsible Official)

You must complete form **CTAC** and attach it to this monitoring report.

Appendix I

2014 Annual Fee Emission Calculations (March 2015)

SCS ENGINEERS

March 27, 2015
File No. 01207310.00, Task 34

Part 71 Contact
c/o Claudia Smith
Air Permitting, Monitoring and Modeling Unit
EPA Region 8
1595 Wynkoop Street (8P-AR)
Denver, CO 80202-1129
Ph: 303-312-6520

**SUBJECT: TITLE V 2014 ANNUAL EMISSION FEE CALCULATION
TEKOI LANDFILL, TOOELE COUNTY, UTAH
PERMIT NO. (V-SV-00001-2010.00)**

Dear Ms. Smith:

On behalf of Waste Management of Utah, Inc. (WM), SCS Engineers (SCS) is submitting the required forms and supporting documentation for payment of the 2014 Title V annual fees for the Tekoi Landfill located in Tooele County, Utah. This submittal is intended to satisfy the applicable requirement of the Clean Air Act (CAA) Title V regulations (40 Code of Federal Regulations (CFR), Part 71).

SCS has completed the enclosed U.S. Environmental Protection Agency (EPA) Fee Calculation Worksheet (Form FEE) to determine the facility's annual fee of \$998.60 for calendar year 2014. We have used the 2015 fee rate of \$49.93 per ton to determine the 2015 fees. Per Instructions for Form FEE, tables with emissions calculations are attached to Form FEE (Attachment A).

A Certification of Truth, Accuracy, and Completeness form is included in this submittal, and has been signed by a responsible official from WM. A check for the fee amount has been submitted, along with a completed EPA Fee Filing Form (Form FF), to the address indicated in the Form FF instructions. A copy of the completed Form FF, as well as a photocopy of the check, is attached per Instructions for Form FEE (Attachment B).

If you have any questions regarding this submittal or require any additional information, please contact the undersigned at (707) 546-9461.

Sincerely,



Leslie M. Bove
Project Professional
SCS ENGINEERS



Michael O'Connor
Senior Project Professional
SCS ENGINEERS

Attachments A – Form FEE and Emissions Calculations
B – Form FF and Check Copy

cc: U.S. Bank
Government Lockbox 979078
US EPA FOIA & Misc. Payments
1005 Convention Plaza
Mail Station SL-MO-C2-GL
St. Louis, MO 63101
Contact: Natalie Pearson (U.S. Bank)
314-418-4087

Mark Franc, WM – electronic copy
Bruce Clabaugh, WM – electronic copy

ATTACHMENT A

FORM FEE AND EMISSIONS CALCULATIONS

Federal Operating Permit Program (40 CFR Part 71)**FEE CALCULATION WORKSHEET (FEE)**

Use this form initially, or thereafter on an annual basis, to calculate part 71 fees.

A. General Information

Type of fee (Check one): ☐ Initial ☒ Annual

Deadline for submitting fee calculation worksheet 4 / 1 / 15

For initial fees, emissions are based on (Check one): NA

☐ Actual emissions for the preceding calendar year. (Required in most circumstances.)

☐ Estimates of actual emissions for the current calendar year. (Required when operations commenced during the preceding calendar year.)

Date commenced operations ____/____/____

☐ Estimates of actual emissions for the preceding calendar year. (Optional after a part 71 permit was issued to replace a part 70 permit, but only if initial fee payment is due between January 1 and March 31; otherwise use actual emissions for the preceding calendar year.)

For annual fee payment, you are required to use actual emissions for the preceding calendar year.

B. Source Information: Complete this section only if you are paying fees but not applying for a permit.

Source or facility name Tekoi Landfill

Mailing address: Street or P.O. Box 6976 West California Avenue

City Salt Lake City State UT ZIP 84104 - _____

Contact person Brad Kloos Title District Manager

Telephone (801) 731 - 5542 Ext _____ Part 71 permit no. V-SV-00001-2010.00

C. Certification of Truth, Accuracy and Completeness: Only needed if not submitting a separate form CTAC.

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in this submittal (form and attachments) are true, accurate and complete.

Name (signed) SEE ATTACHED CTAC FORM

Name (typed) _____ Date: ____/____/____

You may use this to report actual emissions (tons per year) of regulated pollutants (for fee calculation) on a calendar-year basis for both initial and annual fee calculation purposes. Section E is designed to report HAP emissions. Quantify all actual emissions, including fugitives, but do not include insignificant emissions and certain regulated air pollutants that are not counted for fee purposes, such as CO (see instructions). You may round to the nearest tenth of a ton on this form. Sum the emissions in each column and enter a subtotal at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000 for that column.

This data is for 2014 (year)

[illegible]

SUBTOTALS

E. Annual Emissions Report for Fee Calculation Purposes -- HAP

HAP Identification. Identify individual HAP emitted at the facility, identify the CAS number, and assign a unique identifier for use in the second table in this section. Whenever assigning identifier codes, use "HAP1" for the first, "HAP2" for the second, and so on.

Name of HAP	CAS No	Identifier
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	HAP1
1,1,2,2-Tetrachloroethane	79-34-5	HAP2
1,1-Dichloroethane (ethylidene dichloride)	75-34-3	HAP3
1,1-Dichloroethene (vinylidene chloride)	75-35-4	HAP4
1,2-Dichloroethane (ethylene dichloride)	107-06-2	HAP5
1,2-Dichloropropane (propylene dichloride)	78-87-5	HAP6
1,3-Butadiene	106-99-0	HAP7
Acetaldehyde	75-07-0	HAP8
Acrolein	107-02-8	HAP9
Acrylonitrile	107-13-1	HAP10
Benzene	71-43-2	HAP11
Carbon disulfide	75-15-0	HAP12
Carbon tetrachloride	56-23-5	HAP13
Carbonyl sulfide	463-58-1	HAP14
Chlorobenzene	108-90-7	HAP15
Chloroethane (ethyl chloride)	75-00-3	HAP16
Chloroform	67-66-3	HAP17
Chloromethane (methyl chloride)	74-87-3	HAP18
Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	HAP19
Dichloromethane (Methylene Chloride)	75-09-2	HAP20
Ethylbenzene	100-41-4	HAP21
Ethylene dibromide (1,2-Dibromoethane)	106-93-4	HAP22
Formaldehyde	60-00-0	HAP23
Hexane	110-54-3	HAP24
Mercury (total)	7439-97-6	HAP25
Methyl ethyl ketone	78-93-3	HAP26
Methyl isobutyl ketone	108-10-1	HAP27
Naphthalene	91-20-3	HAP28
Perchloroethylene (tetrachloroethylene)	127-18-4	HAP29
Toluene	108-88-3	HAP30
Trichloroethylene (trichloroethene)	79-01-6	HAP31
Vinyl chloride	75-01-4	HAP32
Xylenes	1330-20-7	HAP33

HAP Emissions. Report the actual emissions of individual HAP identified above. Use the identifiers assigned in the table above. Include all emissions, including fugitives, and do not include insignificant emissions. You may round to the nearest tenth of a ton. Sum the emissions in each column and enter a subtotal at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000.

This data is for 2014 (year)

Emissions Unit ID	Actual Emissions (Tons/Year)							
	HAP_30	HAP_33	HAP__	HAP__	HAP__	HAP__	HAP__	HAP__
EI1	0.7	0.5						
SUBTOTALS	0.7	0.5						

F. Fee Calculation Worksheet

This section is used to calculate the total fee owed for both initial and annual fee payment purposes. Reconciliation is only for cases where you are paying the annual fee and you used any type of estimate of actual emissions when you calculated the initial fee. If you do not need to reconcile fees, only complete line 1-5 and then skip down to lines 21 – 26. See instructions for more detailed explanation.

1. Sum the emissions from section D of this form (non-HAP) and enter the total (tons).	18
2. Sum the emissions from section E of this form (HAP) and enter the total (tons).	2
3. Sum lines 1 and 2.	20
4. Enter the emissions that were counted twice. If none, enter "0."	0
5. Subtract line 4 from line 3, round to the nearest ton, and enter the result here.	20
<p style="text-align: center;">RECONCILIATION (WHEN INITIAL FEES WERE BASED ON ESTIMATES FOR THE "CURRENT" CALENDAR YEAR)</p> <p>Only complete lines 6-10 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year in which you paid initial fees; otherwise skip to line 11 or to line 21.</p>	
6. Enter the total estimated actual emissions for the year the initial fee was paid (previously reported on line 5 of the initial fee form).	
7. If line 5 is greater than line 6, subtract line 6 from line 5, and enter the result. Otherwise enter "0."	
8. If line 6 is greater than line 5, subtract line 5 from line 6, and enter the result. Otherwise enter "0."	
9. If line 7 is greater than 0, multiply line 7 by last year's fee rate (\$/ton) and enter the result here. This is the underpayment. Go to line 21.	
10. If line 8 is greater than 0, multiply line 8 by last year's fee rate (\$/ton) and enter the result here. This is the overpayment. Go to line 21.	
<p style="text-align: center;">RECONCILIATION (WHEN INITIAL FEES WERE BASED ON ESTIMATES FOR THE "PRECEDING" CALENDAR YEAR)</p> <p>Only complete lines 11-20 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year preceding initial fee payment; otherwise skip to line 21. If completing this section, you will also need to complete sections D and E to report actual emissions for the calendar year preceding initial fee payment.</p>	
11. Sum the actual emissions from section D (non-HAP) for the calendar year preceding initial fee payment and enter the result here.	
12. Sum the actual emissions from section E (HAP) for the calendar year preceding initial fee payment and enter the result here.	
13. Add lines 11 and 12 and enter the total here. These are total actual emissions for the calendar year preceding initial fee payment.	
14. Enter double counted emission from line 13 here. If none, enter "0."	
15. Subtract line 14 from line 13, round to the nearest ton, and enter the result here.	

16. Enter the total estimated actual emissions previously reported on line 5 of the initial fee form. These are estimated actual emissions for the calendar year preceding initial fee payment.	
17. If line 15 is greater than line 16, subtract line 16 from line 15, and enter the result here. Otherwise enter "0."	
18. If line 16 is greater than line 15, subtract line 15 from line 16, and enter the result here. Otherwise enter "0."	
19. If line 17 is greater than 0, multiply line 17 by last year's fee rate (\$/ton) and enter the result here. This is the underpayment.	
20. If line 18 is greater than 0, multiply line 18 by last year's fee rate (\$/ton) and enter the result on this line. This is the overpayment.	
FEE CALCULATION	
21. Multiply line 5 (tons) by the current fee rate (\$/ton) and enter the result here.	\$998.60
22. Enter any underpayment from line 9 or 19 here. Otherwise enter "0."	0
23. Enter any overpayment from line 10 or 20 here. Otherwise enter "0."	0
24. If line 22 is greater than "0," add it to line 21 and enter the result here. If line 23 is greater than "0," subtract this from line 21 and enter the result here. Otherwise enter the amount on line 21 here. This is the fee adjusted for reconciliation.	\$998.60
25. If your account was credited for fee assessment error since the last time you paid fees, enter the amount of the credit here. Otherwise enter "0."	0
26. Subtract line 25 from line 24 and enter the result here. Stop here. This is the total fee amount that you must remit to EPA.	\$998.60



OMB No. 2060-0336, Approval Expires 6/30/2015

Federal Operating Permit Program (40 CFR Part 71)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible OfficialName: (Last) Bradley (First) Scott (MI) _____Title Area Vice PresidentStreet or P.O. Box 5500 S. Quebec St., Suite 250City Greenwood Village State CO ZIP 80111 - _____Telephone (303) 486 - 6013 Ext. _____ Facsimile (303) 797 - 4661**B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)**

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) Name (typed) Scott Bradley Date: 03 / 18 / 2015

**TABLE 1. PART 71 ANNUAL SIGNIFICANT EMISSIONS FEE CALCULATIONS SUMMARY
TEKOI LANDFILL**

Emission Source	NOx	VOC	SOx	PM10
	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)
E1	NA	9.474	NA	NA
E2	NA	NA	NA	8.276
Total	0.000	9.474	0.000	8.276

E1= Emission unit ID

TABLE 2
LANDFILL GAS FUGITIVE EMISSIONS (E1)
TEKOI LANDFILL

CAS Number	Pollutant	Molecular Weight	Default Concentration In LFG ⁽¹⁾	Pollutants Generated in LFG ⁽²⁾
		(g/mol)	(ppmv)	(tons/year)
Hazardous Air Pollutants (HAPs) ⁽¹⁾				
71-55-6	1,1,1-Trichloroethane (methyl chloroform)	133.41	0.168	6.55E-03
79-34-5	1,1,2,2-Tetrachloroethane	167.85	0.070	3.43E-03
75-34-3	1,1-Dichloroethane (ethylidene dichloride)	98.97	0.741	2.14E-02
75-35-4	1,1-Dichloroethene (vinylidene chloride)	96.94	0.092	2.61E-03
107-06-2	1,2-Dichloroethane (ethylene dichloride)	98.96	0.120	3.47E-03
78-87-5	1,2-Dichloropropane (propylene dichloride)	112.99	0.023	7.59E-04
107-13-1	Acrylonitrile ⁽³⁾	53.06	0.036	5.58E-04
71-43-2	Benzene ⁽⁴⁾	78.11	0.972	2.22E-02
75-15-0	Carbon disulfide	76.13	0.320	7.12E-03
56-23-5	Carbon tetrachloride ⁽³⁾	153.84	0.007	3.15E-04
463-58-1	Carbonyl sulfide	60.07	0.183	3.21E-03
108-90-7	Chlorobenzene	112.56	0.227	7.46E-03
75-00-3	Chloroethane (ethyl chloride)	64.52	0.239	4.50E-03
67-66-3	Chloroform	119.39	0.021	7.32E-04
74-87-3	Chloromethane (methyl chloride)	50.49	0.249	3.67E-03
106-46-7	Dichlorobenzene (1,4-Dichlorobenzene)	147	1.607	6.90E-02
75-09-2	Dichloromethane (Methylene Chloride)	84.94	3.395	8.42E-02
100-41-4	Ethylbenzene	106.16	6.789	2.11E-01
106-93-4	Ethylene dibromide (1,2-Dibromoethane) ⁽³⁾	187.88	0.046	2.52E-03
110-54-3	Hexane	86.18	2.324	5.85E-02
7439-97-6	Mercury (total)	200.61	2.92E-04	1.71E-05
78-93-3	Methyl ethyl ketone	72.11	10.557	2.22E-01
108-10-1	Methyl isobutyl ketone	100.16	0.75	2.19E-02
127-18-4	Perchloroethylene (tetrachloroethylene)	165.83	1.193	5.78E-02
108-88-3	Toluene ⁽⁴⁾	92.13	25.405	6.84E-01
79-01-6	Trichloroethylene (trichloroethene)	131.40	0.681	2.61E-02
75-01-4	Vinyl chloride	62.5	1.077	1.97E-02
1330-20-7	Xylenes	106.16	16.582	5.14E-01
	Total HAPs			2.06E+00
	Criteria Air Pollutants			
	Volatile Organic Compounds (VOCs) as Hexane ⁽⁵⁾	86.18	376	9.47E+00
	Total Non-Methane Organics (NMOCs) as Hexane ⁽⁶⁾	86.18	965	2.43E+01

Notes:

- (1) List is from AP-42, Section 2.4; Values obtained from WIAC, 2001, except for value for mercury, which was obtained from Table 2.4-1 of AP-42.
- (2) Actual emissions are based on LFG generation from the landfill for 2014 with no gas collection.
- (3) The value shown is the minimum detection limit. These compounds were not detected in MSW-only sites monitored in WIAC study.
- (4) Default concentrations for benzene and toluene are based on WIAC values for site with no co-disposal.
- (5) For VOCs, 39% by weight of NMOC concentrations assumed per AP-42.
- (6) NMOC concentration based on 2013 site-specific Tier 2 test results (965 ppmv as hexane)
- (7) scfm based upon USEPA LandGEM estimate using region specific k=(0.020) and L₀=(100).

MODEL INPUT VARIABLES

NMOC concentration in landfill gas ⁶	965 ppmv as hexane
Methane Content of LFG adjusted to:	50%
Landfill Gas Generation Rate for 2014 ⁷	4.280E+02 scfm LFG generation in 2014, from LandGEM model)

TABLE 3
FUGITIVE DUST EMISSIONS FROM ROADWAY (E2)
PAVED ROAD EMISSIONS
TEKOI LANDFILL

Emission Source: Paved Roadway PRD-1

Length of Road: 7,920 feet

Round Trip Road Length = 3.00 miles

Calculation of Average Vehicle Miles Traveled (VMT)

Type of Vehicle	Average Number of Vehicles/Day	Number of Trips of Trips Per day	Average VMT		
			(per day) Actual	Operational Days/yr ¹	(per year) Actual
Transfer Trucks					
Transfer Trucks and Trailers	8	2.8	67.2	260	17,472
Other Trucks					
Diesel Fuel Truck ²	0.04	1.0	0.12	260	31
Service Truck	0.20	1.0	0.60	260	156
2007 Dodge Dakota	1.00	0.5	1.50	260	390
2008 F150	1.00	2.0	6.00	260	1,560
Private Vehicles					
Private (Employee Vehicles)	2	1.0	6.0	260	1,560
TOTALS	12	8.3	81.4		21,169

¹ 260 days/yr reflects 5 day work week

² Assumes approximately 16 fuel deliveries per year.

Vehicle Type	Average Weight (tons)	Average Number of Vehicles/Day	Weight times # of vehicles (tons)
Transfer Trucks and Trailers	39.5	8	316
Diesel Fuel Truck	19.2	0.04	1
Service Truck	16.5	0.20	3
2008 F150	2.5	1.00	3
2007 Dodge Dakota	2.5	1.00	3
Private (Employee Vehicles)	2.5	2	5
TOTAL		12.2	330
Average Vehicle Weight (tons)			26.97

Methodologies:

AP-42, Section 13.2.1-3, Equation (2), for Paved Roads.

$$E = [k(sL)^{0.91} * (W)^{1.02}] * (1-P/4N)$$

E = Emission factor in pounds per vehicle mile traveled (lb/VMT)
k = Particle size multiplier (lb/VMT)
sL = Road surface silt loading factor (g/m²)
W = Average Vehicle weight in tons
P = Number of days with rain > 0.01 inches
N = Averaging period

Fugitive Dust Control Measures: Control Efficiency

Methodologies:

EPA: Fugitive Dust Background Document and Technical Information Document for BACM, Sept. 1992, Table 3-1 Measure Efficiency Values for Paved Road Controls

Fugitive Dust Control Measures: Control Efficiency

Watering Roads as needed: None 0%

Street Sweeping as needed: None 0%

TABLE 3
FUGITIVE DUST EMISSIONS FROM ROADWAY (E2)
PAVED ROAD EMISSIONS
TEKOI LANDFILL

Cumulative Total Control:

0%

Variables:	k factor¹	Silt loading² (sL)	W	P³	N (Long Term)
Pollutant	lb/VMT	g/m ²	Tons	days	days
PM-10	0.0022	7.4	26.97	90	365

¹ From AP-42, Table 13.2-1.1

² From AP-42, Table 13.2.1-4

³ From AP-42, Figure 13.2.1-2

Summary of PM10 Emissions From Roadway Segment PRD-1

	Emission Factor	Actual Emissions	
	lb/VMT (daily)	lbs/day	tons/yr
Pollutant			
PM-10	0.3675	29.92	3.89

TABLE 4
CONTROLLED FUGITIVE DUST EMISSIONS FROM ROADWAY (E2)
UNPAVED ROAD EMISSIONS
TEKOI LANDFILL

Emission Source: Unpaved Roadway UPR-1 (Main Haul Road)

Length of Road: feet 2,600

Round Trip Road Length = 0.98 miles

Calculation of Average Vehicle Miles Traveled (VMT)

Type of Vehicle	Average Number of Vehicles/Day	Number of Trips Per day	Average VMT		
			(per day) Actual	Operational Days/yr ¹	(per year) Actual
Dozers					
CAT D5 Dozer ²	1	1	0.05	260	13
CAT D8R1 ²	1	1	0.05	260	13
Loaders					
CAT 950G ³	2	3	1.5	260	384
Komatsu 250 Loader ³	1	5	1.2	260	320
Water Trucks					
Diesel Water Truck ⁴	1	2	2.0	260	0
Compactor					
826H CAT Compactor ⁸	0	0	0.0	260	0
Transfer Trucks					
Off-Site Transfer Trucks and Trailers ⁶	8	24	32.1	260	8,358
Other Trucks					
Site Fuel Truck ⁵	1	2	0.4	260	102
Yard Truck AM Generator ⁵	1	24	4.7	260	1,229
Yard Truck (Mack MR6885 - spare)	1	0	0.0	260	0
Ford F150 (2008) ⁵	1	3	0.6	260	154
Service Truck ⁷	1	2	0.8	260	215
Private Vehicles					
Private (Employee Vehicles) ⁶	1	2	0.3	260	87
TOTALS	20	69	43.8		10,875

¹ 260 days/yr reflects 5 day work week

² Stays in active fill area, except to do road work periodically. Average VMT has been reduced by 95% because equipment travels only 5% of main haul road length.

³ Average VMT has been reduced by 75% since equipment only travels 25% of main haul road length

⁴ Due to water activates, the water truck is assumed to create no dust emissions

⁵ Average VMT has been reduced by 80% since truck only travels 20% of main haul road length

⁶ Average VMT has been reduced by 83% since truck only travels 17% of main haul road length

TABLE 4
CONTROLLED FUGITIVE DUST EMISSIONS FROM ROADWAY (E2)
UNPAVED ROAD EMISSIONS
TEKOI LANDFILL

⁷ Average VMT has been reduced by 58% since truck only travels 42% of main haul road length

⁸ Remains in trash area.

	Average Weight	Average Number of	Weight times # of vehicles
Vehicle Type	(tons)	Vehicles/Day	
CAT D5 Dozer	14.4	1	14
CAT D8R1	42.0	1	42
CAT 950G	8.7	2	17
Komatsu 250 Loader	8.0	1	8
Diesel Water Truck	12.0	1	12
CAT 826H Compactor	41.0	1	41
Off-Site Transfer Trucks and Trailers	39.5	8	316
Site Fuel Truck	14.0	1	14
Yard Truck AM Generator	4.4	1	4
Yard Truck (Mack MR6885 - spare)	4.4	0	0
Ford F150 (2008)	3.2	1	3
Service Truck	4.4	1	4
Private (Employee Vehicles)	2.5	1	3
TOTAL		18	462
Average Vehicle Weight (tons)			25.69

Methodologies:

AP-42, Section 13.2.2.2, Equation (1a), for Unpaved Roads at Industrial Sites.

$$E = k(s/12)^a(W/3)^b * [(365-P)/365]$$

E	=	Emission factor in pounds per vehicle mile traveled (lb/VMT)
k	=	Particle size multiplier (lb/VMT)
a	=	Empirical Constant from Table 13.2.2-2
b	=	Empirical Constant from Table 13.2.2-2
s	=	Surface material silt content (%)
W	=	Average Vehicle weight in tons
P	=	Number of days with rain > 0.01 inches

Fugitive Dust Control Measures:

Watering Roads as needed:	Control Efficiency
Chemical Dust Suppressants: None	80%
Cumulative Total Control:	0%
	80%

Source:

EPA: AP-42, Section 13.2.2.3

Variables:	k factor ¹	a	b	Surface Silt Content ² (%)	W	P ³
Pollutant	lb/VMT			(%)	Tons	days
PM-10	1.5	0.9	0.45	6.4	25.69	90
PM-2.5	0.15	0.9	0.45	6.4	25.69	90
TSP	4.9	0.7	0.45	6.4	25.69	90

¹ From AP-42, Section 13.2.1.3

² AP-42 (Table 13.2.2-1) mean silt content for municipal solid waste landfills

³ From AP-42, Figure 13.2.1-2

Summary of PM10 Emissions From Roadway Segment UPR-2

Pollutant	Emission Factor lb/VMT (daily)	Actual Emissions	
		lbs/day	tons/yr
PM-10	1.6870	14.78	1.83

TABLE 5 **FUGITIVE DUST FROM MATERIAL HANDLING (E2)** **TEKOI LANDFILL**

According to AP-42, Section 13.2.4, Aggregate Handling and Storage Piles:

AP-42, Section 13.2.4.3 Predictive Emission Factor Equations (11/06)

Total dust emissions from aggregate storage piles result from several distinct source activities within the storage cycle:

1. Loading of aggregate onto storage piles (batch or continuous drop operations).
2. Equipment traffic in storage area.
3. Wind erosion of pile surfaces and ground areas around piles.
4. Loadout of aggregate for shipment or for return to the process stream (batch or continuous).

Either adding aggregate material to a storage pile or removing it usually involves dropping the material onto a receiving surface. Truck dumping on the pile or loading out from the pile to a truck with a front-end loader are examples of batch drop operations. Adding material to the pile by a conveyor stacker is an example of a continuous drop operation.

The quantity of particulate matter emissions generated by either type of drop operation may be estimated using equation 1.

$$E = k(0.0032) [(G/5)^{1.3}]/[(H/2)^{1.4}]$$

E = Emission Factor, lb/ton

k = particle size multiplier (dimensionless) (Section 13.2.4.3)

G = mean wind speed, miles per hour (mph)

H = Material moisture content (%) (Table 13.2.4-1)

Particle Size Multiplier, k

Particle Size	k
PM-10	0.35
PM-2.5	0.053
PM-30 (TSP)	0.74

Mean Wind Speed, U

Based on Meteorological Data from Salt Lake City International Airport

	Wind Speed
	(mph)
Average	5.00

Material Moisture Content, %

For municipal Solid Waste Landfills (cover material)

M = 12% (mean)

Emission Factor Calculation

For PM-10: $E = [(0.35) * (0.0032) * [(8.60/5)^{1.3} / (0.12/2)^{1.4}]$
 $E = 0.0575$ lb/ton

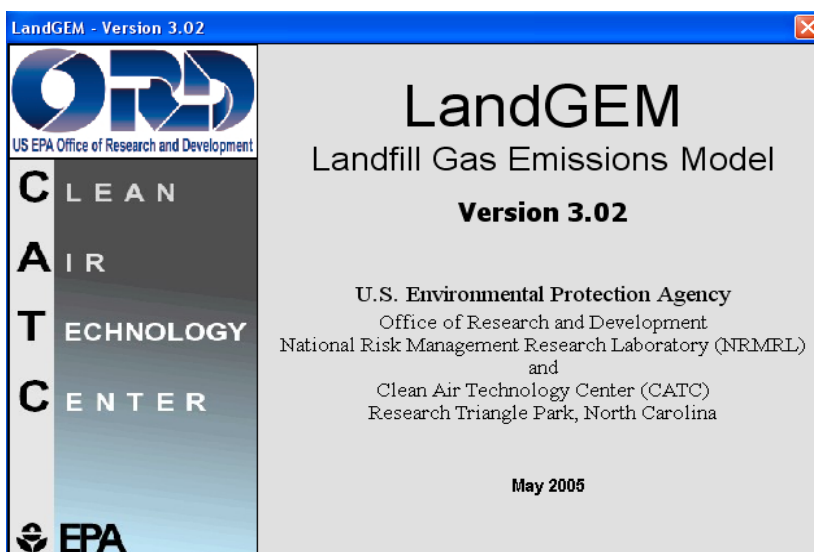
For PM-2.5 $E = [(0.053) * (0.0032) * [(8.60/5)^{1.3} / (0.12/2)^{1.4}]$
 $E = 0.0087$ lb/ton

For PM-30 (TSP): $E = [(0.74) * (0.0032) * [(8.60/5)^{1.3} / (0.12/2)^{1.4}]$
 $E = 0.1216$ lb/ton

Fugitive Dust from Material Handling

Actual	
Estimated Density of Soil Cover:	2,400 lbs/yd ³
Estimated Density of ADC:	1,080 lb/yd ³
Percent of soil/ADC to refuse:	35%
Current Average Disposal Rate:	705 tpd
Estimated Density of Refuse:	1,465 lb/yd ³
Volume of Refuse Disposed:	962 yd ³ /day
Amount of Cover Used =	337 yd ³ of soil/ADC cover used 100 tons/day ADC cover used 284 tons/day soil cover used 73,932 ton/yr soil cover used 20 transfers per day assuming each scraper is 17 cubic yards

Actual	
PM-10 Emissions =	5,102.90 lb/yr 16.36 lb/day 2.55 ton/yr



Summary Report

Landfill Name or Identifier: Tekoi Landfill, Utah

Date: Monday, March 23, 2015

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

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	2005	
Landfill Closure Year (with 80-year limit)	2084	
Actual Closure Year (without limit)	2084	
Have Model Calculate Closure Year?	No	
Waste Design Capacity		<i>short tons</i>

MODEL PARAMETERS

Methane Generation Rate, k	0.020	<i>year⁻¹</i>
Potential Methane Generation Capacity, L ₀	100	<i>m³/Mg</i>
NMOC Concentration	965	<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)
2005	140,242	154,266	0	0
2006	268,131	294,944	140,242	154,266
2007	264,525	290,978	408,373	449,210
2008	192,975	212,273	672,898	740,188
2009	185,518	204,070	865,874	952,461
2010	170,159	187,175	1,051,392	1,156,531
2011	183,426	201,769	1,221,551	1,343,706
2012	172,854	190,140	1,404,977	1,545,475
2013	169,091	186,000	1,577,832	1,735,615
2014	196,194	215,814	1,746,922	1,921,615
2015	165,726	182,299	1,943,117	2,137,428
2016	164,069	180,476	2,108,843	2,319,727
2017	162,428	178,671	2,272,912	2,500,203
2018	159,195	175,115	2,435,340	2,678,874
2019	159,195	175,115	2,594,536	2,853,989
2020	159,195	175,115	2,753,731	3,029,104
2021	159,195	175,115	2,912,927	3,204,219
2022	159,195	175,115	3,072,122	3,379,334
2023	159,195	175,115	3,231,318	3,554,449
2024	159,195	175,115	3,390,513	3,729,564
2025	159,195	175,115	3,549,708	3,904,679
2026	159,195	175,115	3,708,904	4,079,794
2027	159,195	175,115	3,868,099	4,254,909
2028	159,195	175,115	4,027,295	4,430,024
2029	159,195	175,115	4,186,490	4,605,139
2030	159,195	175,115	4,345,686	4,780,254
2031	159,195	175,115	4,504,881	4,955,369
2032	159,195	175,115	4,664,077	5,130,484
2033	159,195	175,115	4,823,272	5,305,599
2034	159,195	175,115	4,982,468	5,480,714
2035	159,195	175,115	5,141,663	5,655,829
2036	159,195	175,115	5,300,858	5,830,944
2037	159,195	175,115	5,460,054	6,006,059
2038	159,195	175,115	5,619,249	6,181,174
2039	159,195	175,115	5,778,445	6,356,289
2040	159,195	175,115	5,937,640	6,531,404
2041	159,195	175,115	6,096,836	6,706,519
2042	159,195	175,115	6,256,031	6,881,634
2043	159,195	175,115	6,415,227	7,056,749
2044	159,195	175,115	6,574,422	7,231,864

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2045	159,195	175,115	6,733,618	7,406,979
2046	159,195	175,115	6,892,813	7,582,094
2047	159,195	175,115	7,052,008	7,757,209
2048	159,195	175,115	7,211,204	7,932,324
2049	159,195	175,115	7,370,399	8,107,439
2050	159,195	175,115	7,529,595	8,282,554
2051	159,195	175,115	7,688,790	8,457,669
2052	159,195	175,115	7,847,986	8,632,784
2053	159,195	175,115	8,007,181	8,807,899
2054	152,167	167,384	8,166,377	8,983,014
2055	239,455	263,400	8,318,544	9,150,398
2056	246,638	271,302	8,557,998	9,413,798
2057	254,037	279,441	8,804,637	9,685,100
2058	261,658	287,824	9,058,674	9,964,541
2059	269,508	296,459	9,320,332	10,252,366
2060	277,593	305,353	9,589,841	10,548,825
2061	285,921	314,513	9,867,434	10,854,177
2062	294,499	323,949	10,153,355	11,168,691
2063	303,334	333,667	10,447,854	11,492,640
2064	312,434	343,677	10,751,188	11,826,307
2065	321,807	353,988	11,063,622	12,169,984
2066	331,461	364,607	11,385,429	12,523,972
2067	341,405	375,545	11,716,890	12,888,579
2068	351,647	386,812	12,058,295	13,264,124
2069	362,196	398,416	12,409,942	13,650,936
2070	373,062	410,369	12,772,138	14,049,352
2071	384,254	422,680	13,145,201	14,459,721
2072	395,782	435,360	13,529,455	14,882,401
2073	407,655	448,421	13,925,237	15,317,761
2074	419,885	461,873	14,332,892	15,766,181
2075	432,482	475,730	14,752,777	16,228,055
2076	445,456	490,002	15,185,259	16,703,785
2077	458,820	504,702	15,630,715	17,193,786
2078	472,584	519,843	16,089,534	17,698,488
2079	486,762	535,438	16,562,119	18,218,331
2080	501,365	551,501	17,048,880	18,753,769
2081	516,406	568,046	17,550,245	19,305,270
2082	531,898	585,088	18,066,651	19,873,316
2083	547,855	602,640	18,598,548	20,458,403
2084	564,290	620,719	19,146,403	21,061,043

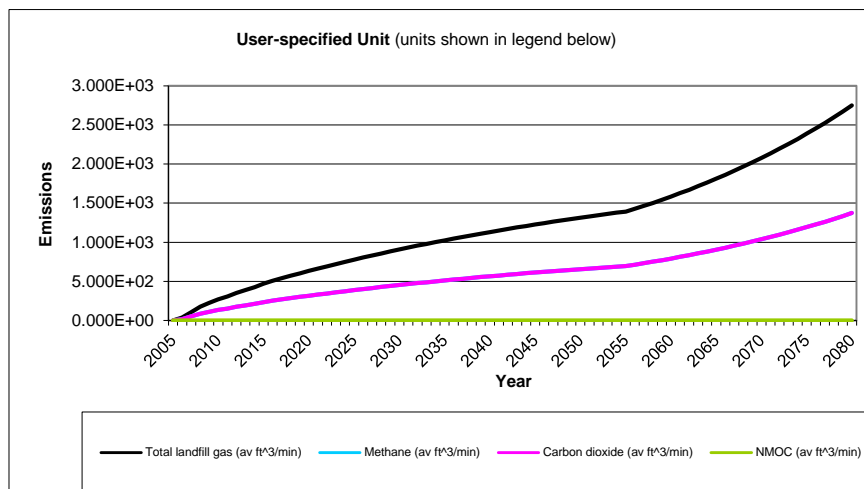
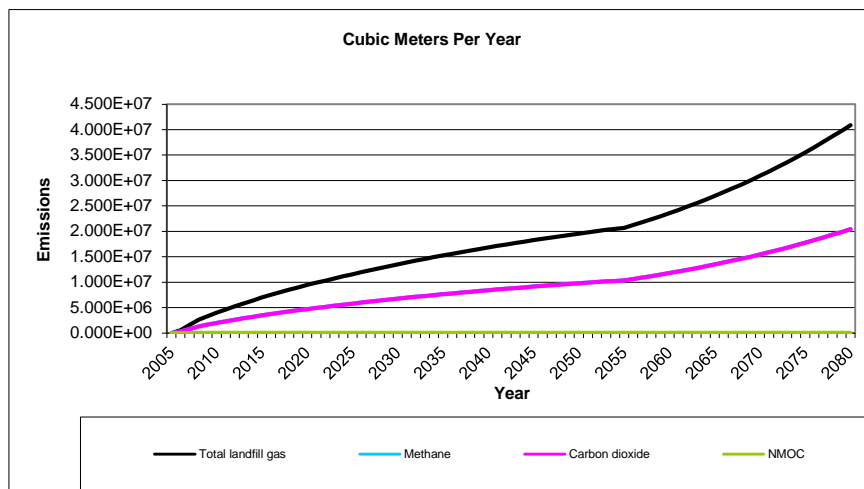
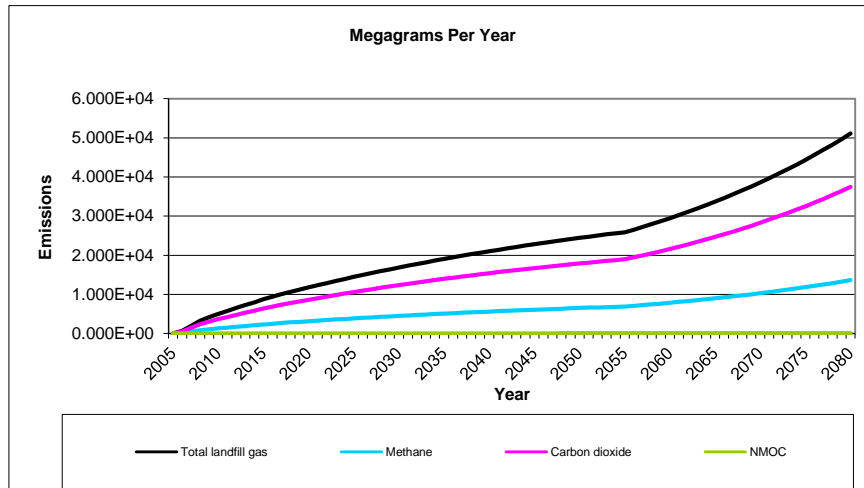
Pollutant Parameters

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)
2005	0	0	0	0	0	0
2006	6.943E+02	5.560E+05	3.735E+01	1.855E+02	2.780E+05	1.868E+01
2007	2.008E+03	1.608E+06	1.080E+02	5.363E+02	8.039E+05	5.402E+01
2008	3.278E+03	2.625E+06	1.764E+02	8.755E+02	1.312E+06	8.818E+01
2009	4.168E+03	3.338E+06	2.243E+02	1.113E+03	1.669E+06	1.121E+02
2010	5.004E+03	4.007E+06	2.692E+02	1.337E+03	2.004E+06	1.346E+02
2011	5.747E+03	4.602E+06	3.092E+02	1.535E+03	2.301E+06	1.546E+02
2012	6.542E+03	5.238E+06	3.520E+02	1.747E+03	2.619E+06	1.760E+02
2013	7.268E+03	5.820E+06	3.910E+02	1.941E+03	2.910E+06	1.955E+02
2014	7.961E+03	6.375E+06	4.283E+02	2.126E+03	3.187E+06	2.142E+02
2015	8.775E+03	7.026E+06	4.721E+02	2.344E+03	3.513E+06	2.361E+02
2016	9.421E+03	7.544E+06	5.069E+02	2.517E+03	3.772E+06	2.534E+02
2017	1.005E+04	8.045E+06	5.406E+02	2.684E+03	4.023E+06	2.703E+02
2018	1.065E+04	8.530E+06	5.731E+02	2.845E+03	4.265E+06	2.866E+02
2019	1.123E+04	8.992E+06	6.042E+02	3.000E+03	4.496E+06	3.021E+02
2020	1.180E+04	9.445E+06	6.346E+02	3.151E+03	4.723E+06	3.173E+02
2021	1.235E+04	9.889E+06	6.644E+02	3.299E+03	4.945E+06	3.322E+02
2022	1.289E+04	1.032E+07	6.937E+02	3.444E+03	5.162E+06	3.468E+02
2023	1.343E+04	1.075E+07	7.224E+02	3.586E+03	5.376E+06	3.612E+02
2024	1.395E+04	1.117E+07	7.505E+02	3.726E+03	5.585E+06	3.752E+02
2025	1.446E+04	1.158E+07	7.780E+02	3.863E+03	5.790E+06	3.890E+02
2026	1.496E+04	1.198E+07	8.050E+02	3.997E+03	5.990E+06	4.025E+02
2027	1.545E+04	1.237E+07	8.315E+02	4.128E+03	6.187E+06	4.157E+02
2028	1.594E+04	1.276E+07	8.574E+02	4.257E+03	6.380E+06	4.287E+02
2029	1.641E+04	1.314E+07	8.828E+02	4.383E+03	6.570E+06	4.414E+02
2030	1.687E+04	1.351E+07	9.077E+02	4.507E+03	6.755E+06	4.539E+02
2031	1.733E+04	1.387E+07	9.322E+02	4.628E+03	6.937E+06	4.661E+02
2032	1.777E+04	1.423E+07	9.561E+02	4.747E+03	7.115E+06	4.781E+02
2033	1.821E+04	1.458E+07	9.796E+02	4.863E+03	7.290E+06	4.898E+02
2034	1.863E+04	1.492E+07	1.003E+03	4.978E+03	7.461E+06	5.013E+02
2035	1.905E+04	1.526E+07	1.025E+03	5.089E+03	7.629E+06	5.126E+02
2036	1.946E+04	1.559E+07	1.047E+03	5.199E+03	7.793E+06	5.236E+02
2037	1.987E+04	1.591E+07	1.069E+03	5.307E+03	7.954E+06	5.345E+02
2038	2.026E+04	1.622E+07	1.090E+03	5.412E+03	8.112E+06	5.451E+02
2039	2.065E+04	1.653E+07	1.111E+03	5.516E+03	8.267E+06	5.555E+02
2040	2.103E+04	1.684E+07	1.131E+03	5.617E+03	8.419E+06	5.657E+02
2041	2.140E+04	1.714E+07	1.151E+03	5.716E+03	8.568E+06	5.757E+02
2042	2.176E+04	1.743E+07	1.171E+03	5.813E+03	8.714E+06	5.855E+02
2043	2.212E+04	1.771E+07	1.190E+03	5.909E+03	8.857E+06	5.951E+02
2044	2.247E+04	1.799E+07	1.209E+03	6.002E+03	8.997E+06	6.045E+02
2045	2.281E+04	1.827E+07	1.227E+03	6.094E+03	9.134E+06	6.137E+02
2046	2.315E+04	1.854E+07	1.246E+03	6.184E+03	9.269E+06	6.228E+02
2047	2.348E+04	1.880E+07	1.263E+03	6.272E+03	9.401E+06	6.317E+02
2048	2.380E+04	1.906E+07	1.281E+03	6.358E+03	9.531E+06	6.404E+02
2049	2.412E+04	1.931E+07	1.298E+03	6.443E+03	9.657E+06	6.489E+02
2050	2.443E+04	1.956E+07	1.314E+03	6.526E+03	9.782E+06	6.572E+02
2051	2.474E+04	1.981E+07	1.331E+03	6.607E+03	9.904E+06	6.654E+02
2052	2.503E+04	2.005E+07	1.347E+03	6.687E+03	1.002E+07	6.734E+02
2053	2.533E+04	2.028E+07	1.363E+03	6.765E+03	1.014E+07	6.813E+02
2054	2.561E+04	2.051E+07	1.378E+03	6.841E+03	1.025E+07	6.890E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2055	2.586E+04	2.071E+07	1.391E+03	6.907E+03	1.035E+07	6.956E+02
2056	2.653E+04	2.125E+07	1.428E+03	7.087E+03	1.062E+07	7.138E+02
2057	2.723E+04	2.180E+07	1.465E+03	7.273E+03	1.090E+07	7.325E+02
2058	2.795E+04	2.238E+07	1.504E+03	7.465E+03	1.119E+07	7.518E+02
2059	2.869E+04	2.297E+07	1.544E+03	7.663E+03	1.149E+07	7.718E+02
2060	2.945E+04	2.359E+07	1.585E+03	7.868E+03	1.179E+07	7.924E+02
2061	3.025E+04	2.422E+07	1.627E+03	8.079E+03	1.211E+07	8.136E+02
2062	3.106E+04	2.487E+07	1.671E+03	8.297E+03	1.244E+07	8.356E+02
2063	3.191E+04	2.555E+07	1.717E+03	8.522E+03	1.277E+07	8.583E+02
2064	3.278E+04	2.624E+07	1.763E+03	8.755E+03	1.312E+07	8.817E+02
2065	3.367E+04	2.696E+07	1.812E+03	8.994E+03	1.348E+07	9.058E+02
2066	3.460E+04	2.771E+07	1.862E+03	9.242E+03	1.385E+07	9.308E+02
2067	3.556E+04	2.847E+07	1.913E+03	9.497E+03	1.424E+07	9.565E+02
2068	3.654E+04	2.926E+07	1.966E+03	9.761E+03	1.463E+07	9.830E+02
2069	3.756E+04	3.008E+07	2.021E+03	1.003E+04	1.504E+07	1.010E+03
2070	3.861E+04	3.092E+07	2.077E+03	1.031E+04	1.546E+07	1.039E+03
2071	3.969E+04	3.178E+07	2.135E+03	1.060E+04	1.589E+07	1.068E+03
2072	4.081E+04	3.268E+07	2.196E+03	1.090E+04	1.634E+07	1.098E+03
2073	4.196E+04	3.360E+07	2.257E+03	1.121E+04	1.680E+07	1.129E+03
2074	4.315E+04	3.455E+07	2.321E+03	1.152E+04	1.727E+07	1.161E+03
2075	4.437E+04	3.553E+07	2.387E+03	1.185E+04	1.776E+07	1.194E+03
2076	4.563E+04	3.654E+07	2.455E+03	1.219E+04	1.827E+07	1.228E+03
2077	4.693E+04	3.758E+07	2.525E+03	1.254E+04	1.879E+07	1.263E+03
2078	4.828E+04	3.866E+07	2.597E+03	1.290E+04	1.933E+07	1.299E+03
2079	4.966E+04	3.977E+07	2.672E+03	1.326E+04	1.988E+07	1.336E+03
2080	5.109E+04	4.091E+07	2.749E+03	1.365E+04	2.045E+07	1.374E+03
2081	5.256E+04	4.208E+07	2.828E+03	1.404E+04	2.104E+07	1.414E+03
2082	5.407E+04	4.330E+07	2.909E+03	1.444E+04	2.165E+07	1.455E+03
2083	5.563E+04	4.455E+07	2.993E+03	1.486E+04	2.227E+07	1.497E+03
2084	5.725E+04	4.584E+07	3.080E+03	1.529E+04	2.292E+07	1.540E+03
2085	5.891E+04	4.717E+07	3.169E+03	1.573E+04	2.358E+07	1.585E+03
2086	5.774E+04	4.623E+07	3.107E+03	1.542E+04	2.312E+07	1.553E+03
2087	5.660E+04	4.532E+07	3.045E+03	1.512E+04	2.266E+07	1.522E+03
2088	5.548E+04	4.442E+07	2.985E+03	1.482E+04	2.221E+07	1.492E+03
2089	5.438E+04	4.354E+07	2.926E+03	1.452E+04	2.177E+07	1.463E+03
2090	5.330E+04	4.268E+07	2.868E+03	1.424E+04	2.134E+07	1.434E+03
2091	5.224E+04	4.183E+07	2.811E+03	1.396E+04	2.092E+07	1.405E+03
2092	5.121E+04	4.101E+07	2.755E+03	1.368E+04	2.050E+07	1.378E+03
2093	5.020E+04	4.019E+07	2.701E+03	1.341E+04	2.010E+07	1.350E+03
2094	4.920E+04	3.940E+07	2.647E+03	1.314E+04	1.970E+07	1.324E+03
2095	4.823E+04	3.862E+07	2.595E+03	1.288E+04	1.931E+07	1.297E+03
2096	4.727E+04	3.785E+07	2.543E+03	1.263E+04	1.893E+07	1.272E+03
2097	4.634E+04	3.710E+07	2.493E+03	1.238E+04	1.855E+07	1.247E+03
2098	4.542E+04	3.637E+07	2.444E+03	1.213E+04	1.818E+07	1.222E+03
2099	4.452E+04	3.565E+07	2.395E+03	1.189E+04	1.782E+07	1.198E+03
2100	4.364E+04	3.494E+07	2.348E+03	1.166E+04	1.747E+07	1.174E+03
2101	4.277E+04	3.425E+07	2.301E+03	1.143E+04	1.713E+07	1.151E+03
2102	4.193E+04	3.357E+07	2.256E+03	1.120E+04	1.679E+07	1.128E+03
2103	4.110E+04	3.291E+07	2.211E+03	1.098E+04	1.645E+07	1.106E+03
2104	4.028E+04	3.226E+07	2.167E+03	1.076E+04	1.613E+07	1.084E+03
2105	3.949E+04	3.162E+07	2.124E+03	1.055E+04	1.581E+07	1.062E+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)
2106	3.870E+04	3.099E+07	2.082E+03	1.034E+04	1.550E+07	1.041E+03
2107	3.794E+04	3.038E+07	2.041E+03	1.013E+04	1.519E+07	1.021E+03
2108	3.719E+04	2.978E+07	2.001E+03	9.933E+03	1.489E+07	1.000E+03
2109	3.645E+04	2.919E+07	1.961E+03	9.736E+03	1.459E+07	9.805E+02
2110	3.573E+04	2.861E+07	1.922E+03	9.543E+03	1.430E+07	9.611E+02
2111	3.502E+04	2.804E+07	1.884E+03	9.354E+03	1.402E+07	9.421E+02
2112	3.433E+04	2.749E+07	1.847E+03	9.169E+03	1.374E+07	9.234E+02
2113	3.365E+04	2.694E+07	1.810E+03	8.988E+03	1.347E+07	9.052E+02
2114	3.298E+04	2.641E+07	1.774E+03	8.810E+03	1.320E+07	8.872E+02
2115	3.233E+04	2.589E+07	1.739E+03	8.635E+03	1.294E+07	8.697E+02
2116	3.169E+04	2.537E+07	1.705E+03	8.464E+03	1.269E+07	8.524E+02
2117	3.106E+04	2.487E+07	1.671E+03	8.297E+03	1.244E+07	8.356E+02
2118	3.045E+04	2.438E+07	1.638E+03	8.132E+03	1.219E+07	8.190E+02
2119	2.984E+04	2.390E+07	1.606E+03	7.971E+03	1.195E+07	8.028E+02
2120	2.925E+04	2.342E+07	1.574E+03	7.813E+03	1.171E+07	7.869E+02
2121	2.867E+04	2.296E+07	1.543E+03	7.659E+03	1.148E+07	7.713E+02
2122	2.810E+04	2.250E+07	1.512E+03	7.507E+03	1.125E+07	7.561E+02
2123	2.755E+04	2.206E+07	1.482E+03	7.358E+03	1.103E+07	7.411E+02
2124	2.700E+04	2.162E+07	1.453E+03	7.213E+03	1.081E+07	7.264E+02
2125	2.647E+04	2.119E+07	1.424E+03	7.070E+03	1.060E+07	7.120E+02
2126	2.594E+04	2.077E+07	1.396E+03	6.930E+03	1.039E+07	6.979E+02
2127	2.543E+04	2.036E+07	1.368E+03	6.793E+03	1.018E+07	6.841E+02
2128	2.493E+04	1.996E+07	1.341E+03	6.658E+03	9.980E+06	6.706E+02
2129	2.443E+04	1.956E+07	1.315E+03	6.526E+03	9.782E+06	6.573E+02
2130	2.395E+04	1.918E+07	1.289E+03	6.397E+03	9.589E+06	6.443E+02
2131	2.347E+04	1.880E+07	1.263E+03	6.270E+03	9.399E+06	6.315E+02
2132	2.301E+04	1.843E+07	1.238E+03	6.146E+03	9.213E+06	6.190E+02
2133	2.255E+04	1.806E+07	1.213E+03	6.025E+03	9.030E+06	6.067E+02
2134	2.211E+04	1.770E+07	1.189E+03	5.905E+03	8.851E+06	5.947E+02
2135	2.167E+04	1.735E+07	1.166E+03	5.788E+03	8.676E+06	5.830E+02
2136	2.124E+04	1.701E+07	1.143E+03	5.674E+03	8.504E+06	5.714E+02
2137	2.082E+04	1.667E+07	1.120E+03	5.561E+03	8.336E+06	5.601E+02
2138	2.041E+04	1.634E+07	1.098E+03	5.451E+03	8.171E+06	5.490E+02
2139	2.000E+04	1.602E+07	1.076E+03	5.343E+03	8.009E+06	5.381E+02
2140	1.961E+04	1.570E+07	1.055E+03	5.237E+03	7.851E+06	5.275E+02
2141	1.922E+04	1.539E+07	1.034E+03	5.134E+03	7.695E+06	5.170E+02
2142	1.884E+04	1.509E+07	1.014E+03	5.032E+03	7.543E+06	5.068E+02
2143	1.847E+04	1.479E+07	9.935E+02	4.932E+03	7.393E+06	4.968E+02
2144	1.810E+04	1.449E+07	9.738E+02	4.835E+03	7.247E+06	4.869E+02
2145	1.774E+04	1.421E+07	9.546E+02	4.739E+03	7.103E+06	4.773E+02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2005	0	0	0	0	0	0
2006	5.088E+02	2.780E+05	1.868E+01	1.923E+00	5.365E+02	3.605E-02
2007	1.472E+03	8.039E+05	5.402E+01	5.562E+00	1.552E+03	1.043E-01
2008	2.402E+03	1.312E+06	8.818E+01	9.079E+00	2.533E+03	1.702E-01
2009	3.055E+03	1.669E+06	1.121E+02	1.155E+01	3.221E+03	2.164E-01
2010	3.667E+03	2.004E+06	1.346E+02	1.386E+01	3.867E+03	2.598E-01
2011	4.212E+03	2.301E+06	1.546E+02	1.592E+01	4.441E+03	2.984E-01
2012	4.794E+03	2.619E+06	1.760E+02	1.812E+01	5.055E+03	3.396E-01
2013	5.327E+03	2.910E+06	1.955E+02	2.013E+01	5.616E+03	3.773E-01
2014	5.835E+03	3.187E+06	2.142E+02	2.205E+01	6.152E+03	4.133E-01
2015	6.431E+03	3.513E+06	2.361E+02	2.430E+01	6.780E+03	4.556E-01
2016	6.905E+03	3.772E+06	2.534E+02	2.610E+01	7.280E+03	4.892E-01
2017	7.363E+03	4.023E+06	2.703E+02	2.783E+01	7.764E+03	5.216E-01
2018	7.807E+03	4.265E+06	2.866E+02	2.950E+01	8.231E+03	5.531E-01
2019	8.230E+03	4.496E+06	3.021E+02	3.110E+01	8.677E+03	5.830E-01
2020	8.645E+03	4.723E+06	3.173E+02	3.267E+01	9.114E+03	6.124E-01
2021	9.051E+03	4.945E+06	3.322E+02	3.421E+01	9.543E+03	6.412E-01
2022	9.449E+03	5.162E+06	3.468E+02	3.571E+01	9.963E+03	6.694E-01
2023	9.840E+03	5.376E+06	3.612E+02	3.719E+01	1.037E+04	6.971E-01
2024	1.022E+04	5.585E+06	3.752E+02	3.863E+01	1.078E+04	7.242E-01
2025	1.060E+04	5.790E+06	3.890E+02	4.005E+01	1.117E+04	7.508E-01
2026	1.097E+04	5.990E+06	4.025E+02	4.144E+01	1.156E+04	7.768E-01
2027	1.133E+04	6.187E+06	4.157E+02	4.280E+01	1.194E+04	8.024E-01
2028	1.168E+04	6.380E+06	4.287E+02	4.414E+01	1.231E+04	8.274E-01
2029	1.203E+04	6.570E+06	4.414E+02	4.545E+01	1.268E+04	8.519E-01
2030	1.237E+04	6.755E+06	4.539E+02	4.673E+01	1.304E+04	8.760E-01
2031	1.270E+04	6.937E+06	4.661E+02	4.799E+01	1.339E+04	8.995E-01
2032	1.302E+04	7.115E+06	4.781E+02	4.922E+01	1.373E+04	9.227E-01
2033	1.334E+04	7.290E+06	4.898E+02	5.043E+01	1.407E+04	9.453E-01
2034	1.366E+04	7.461E+06	5.013E+02	5.161E+01	1.440E+04	9.675E-01
2035	1.396E+04	7.629E+06	5.126E+02	5.278E+01	1.472E+04	9.893E-01
2036	1.427E+04	7.793E+06	5.236E+02	5.391E+01	1.504E+04	1.011E+00
2037	1.456E+04	7.954E+06	5.345E+02	5.503E+01	1.535E+04	1.032E+00
2038	1.485E+04	8.112E+06	5.451E+02	5.612E+01	1.566E+04	1.052E+00
2039	1.513E+04	8.267E+06	5.555E+02	5.719E+01	1.596E+04	1.072E+00
2040	1.541E+04	8.419E+06	5.657E+02	5.824E+01	1.625E+04	1.092E+00
2041	1.568E+04	8.568E+06	5.757E+02	5.927E+01	1.654E+04	1.111E+00
2042	1.595E+04	8.714E+06	5.855E+02	6.028E+01	1.682E+04	1.130E+00
2043	1.621E+04	8.857E+06	5.951E+02	6.127E+01	1.709E+04	1.149E+00
2044	1.647E+04	8.997E+06	6.045E+02	6.224E+01	1.736E+04	1.167E+00
2045	1.672E+04	9.134E+06	6.137E+02	6.319E+01	1.763E+04	1.185E+00
2046	1.697E+04	9.269E+06	6.228E+02	6.412E+01	1.789E+04	1.202E+00
2047	1.721E+04	9.401E+06	6.317E+02	6.504E+01	1.814E+04	1.219E+00
2048	1.745E+04	9.531E+06	6.404E+02	6.593E+01	1.839E+04	1.236E+00
2049	1.768E+04	9.657E+06	6.489E+02	6.681E+01	1.864E+04	1.252E+00
2050	1.791E+04	9.782E+06	6.572E+02	6.767E+01	1.888E+04	1.268E+00
2051	1.813E+04	9.904E+06	6.654E+02	6.851E+01	1.911E+04	1.284E+00
2052	1.835E+04	1.002E+07	6.734E+02	6.934E+01	1.934E+04	1.300E+00
2053	1.856E+04	1.014E+07	6.813E+02	7.015E+01	1.957E+04	1.315E+00
2054	1.877E+04	1.025E+07	6.890E+02	7.094E+01	1.979E+04	1.330E+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)
2055	1.895E+04	1.035E+07	6.956E+02	7.162E+01	1.998E+04	1.343E+00
2056	1.945E+04	1.062E+07	7.138E+02	7.349E+01	2.050E+04	1.378E+00
2057	1.996E+04	1.090E+07	7.325E+02	7.542E+01	2.104E+04	1.414E+00
2058	2.048E+04	1.119E+07	7.518E+02	7.741E+01	2.160E+04	1.451E+00
2059	2.103E+04	1.149E+07	7.718E+02	7.946E+01	2.217E+04	1.489E+00
2060	2.159E+04	1.179E+07	7.924E+02	8.158E+01	2.276E+04	1.529E+00
2061	2.217E+04	1.211E+07	8.136E+02	8.378E+01	2.337E+04	1.570E+00
2062	2.277E+04	1.244E+07	8.356E+02	8.604E+01	2.400E+04	1.613E+00
2063	2.338E+04	1.277E+07	8.583E+02	8.837E+01	2.465E+04	1.657E+00
2064	2.402E+04	1.312E+07	8.817E+02	9.078E+01	2.533E+04	1.702E+00
2065	2.468E+04	1.348E+07	9.058E+02	9.327E+01	2.602E+04	1.748E+00
2066	2.536E+04	1.385E+07	9.308E+02	9.583E+01	2.674E+04	1.796E+00
2067	2.606E+04	1.424E+07	9.565E+02	9.848E+01	2.747E+04	1.846E+00
2068	2.678E+04	1.463E+07	9.830E+02	1.012E+02	2.824E+04	1.897E+00
2069	2.753E+04	1.504E+07	1.010E+03	1.040E+02	2.902E+04	1.950E+00
2070	2.830E+04	1.546E+07	1.039E+03	1.069E+02	2.983E+04	2.005E+00
2071	2.909E+04	1.589E+07	1.068E+03	1.099E+02	3.067E+04	2.061E+00
2072	2.991E+04	1.634E+07	1.098E+03	1.130E+02	3.153E+04	2.119E+00
2073	3.075E+04	1.680E+07	1.129E+03	1.162E+02	3.242E+04	2.178E+00
2074	3.162E+04	1.727E+07	1.161E+03	1.195E+02	3.334E+04	2.240E+00
2075	3.252E+04	1.776E+07	1.194E+03	1.229E+02	3.429E+04	2.304E+00
2076	3.344E+04	1.827E+07	1.228E+03	1.264E+02	3.526E+04	2.369E+00
2077	3.440E+04	1.879E+07	1.263E+03	1.300E+02	3.627E+04	2.437E+00
2078	3.538E+04	1.933E+07	1.299E+03	1.337E+02	3.730E+04	2.506E+00
2079	3.640E+04	1.988E+07	1.336E+03	1.375E+02	3.837E+04	2.578E+00
2080	3.744E+04	2.045E+07	1.374E+03	1.415E+02	3.948E+04	2.652E+00
2081	3.852E+04	2.104E+07	1.414E+03	1.456E+02	4.061E+04	2.729E+00
2082	3.963E+04	2.165E+07	1.455E+03	1.498E+02	4.178E+04	2.807E+00
2083	4.077E+04	2.227E+07	1.497E+03	1.541E+02	4.299E+04	2.889E+00
2084	4.195E+04	2.292E+07	1.540E+03	1.586E+02	4.424E+04	2.972E+00
2085	4.317E+04	2.358E+07	1.585E+03	1.632E+02	4.552E+04	3.058E+00
2086	4.232E+04	2.312E+07	1.553E+03	1.599E+02	4.462E+04	2.998E+00
2087	4.148E+04	2.266E+07	1.522E+03	1.568E+02	4.373E+04	2.938E+00
2088	4.066E+04	2.221E+07	1.492E+03	1.537E+02	4.287E+04	2.880E+00
2089	3.985E+04	2.177E+07	1.463E+03	1.506E+02	4.202E+04	2.823E+00
2090	3.906E+04	2.134E+07	1.434E+03	1.476E+02	4.119E+04	2.767E+00
2091	3.829E+04	2.092E+07	1.405E+03	1.447E+02	4.037E+04	2.713E+00
2092	3.753E+04	2.050E+07	1.378E+03	1.418E+02	3.957E+04	2.659E+00
2093	3.679E+04	2.010E+07	1.350E+03	1.390E+02	3.879E+04	2.606E+00
2094	3.606E+04	1.970E+07	1.324E+03	1.363E+02	3.802E+04	2.555E+00
2095	3.535E+04	1.931E+07	1.297E+03	1.336E+02	3.727E+04	2.504E+00
2096	3.465E+04	1.893E+07	1.272E+03	1.309E+02	3.653E+04	2.454E+00
2097	3.396E+04	1.855E+07	1.247E+03	1.283E+02	3.581E+04	2.406E+00
2098	3.329E+04	1.818E+07	1.222E+03	1.258E+02	3.510E+04	2.358E+00
2099	3.263E+04	1.782E+07	1.198E+03	1.233E+02	3.440E+04	2.311E+00
2100	3.198E+04	1.747E+07	1.174E+03	1.209E+02	3.372E+04	2.266E+00
2101	3.135E+04	1.713E+07	1.151E+03	1.185E+02	3.305E+04	2.221E+00
2102	3.073E+04	1.679E+07	1.128E+03	1.161E+02	3.240E+04	2.177E+00
2103	3.012E+04	1.645E+07	1.106E+03	1.138E+02	3.176E+04	2.134E+00
2104	2.952E+04	1.613E+07	1.084E+03	1.116E+02	3.113E+04	2.091E+00
2105	2.894E+04	1.581E+07	1.062E+03	1.094E+02	3.051E+04	2.050E+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)
2106	2.837E+04	1.550E+07	1.041E+03	1.072E+02	2.991E+04	2.009E+00
2107	2.780E+04	1.519E+07	1.021E+03	1.051E+02	2.932E+04	1.970E+00
2108	2.725E+04	1.489E+07	1.000E+03	1.030E+02	2.873E+04	1.931E+00
2109	2.671E+04	1.459E+07	9.805E+02	1.010E+02	2.817E+04	1.892E+00
2110	2.618E+04	1.430E+07	9.611E+02	9.896E+01	2.761E+04	1.855E+00
2111	2.567E+04	1.402E+07	9.421E+02	9.700E+01	2.706E+04	1.818E+00
2112	2.516E+04	1.374E+07	9.234E+02	9.508E+01	2.653E+04	1.782E+00
2113	2.466E+04	1.347E+07	9.052E+02	9.320E+01	2.600E+04	1.747E+00
2114	2.417E+04	1.320E+07	8.872E+02	9.135E+01	2.549E+04	1.712E+00
2115	2.369E+04	1.294E+07	8.697E+02	8.954E+01	2.498E+04	1.678E+00
2116	2.322E+04	1.269E+07	8.524E+02	8.777E+01	2.449E+04	1.645E+00
2117	2.276E+04	1.244E+07	8.356E+02	8.603E+01	2.400E+04	1.613E+00
2118	2.231E+04	1.219E+07	8.190E+02	8.433E+01	2.353E+04	1.581E+00
2119	2.187E+04	1.195E+07	8.028E+02	8.266E+01	2.306E+04	1.549E+00
2120	2.144E+04	1.171E+07	7.869E+02	8.102E+01	2.260E+04	1.519E+00
2121	2.101E+04	1.148E+07	7.713E+02	7.942E+01	2.216E+04	1.489E+00
2122	2.060E+04	1.125E+07	7.561E+02	7.784E+01	2.172E+04	1.459E+00
2123	2.019E+04	1.103E+07	7.411E+02	7.630E+01	2.129E+04	1.430E+00
2124	1.979E+04	1.081E+07	7.264E+02	7.479E+01	2.087E+04	1.402E+00
2125	1.940E+04	1.060E+07	7.120E+02	7.331E+01	2.045E+04	1.374E+00
2126	1.901E+04	1.039E+07	6.979E+02	7.186E+01	2.005E+04	1.347E+00
2127	1.864E+04	1.018E+07	6.841E+02	7.044E+01	1.965E+04	1.320E+00
2128	1.827E+04	9.980E+06	6.706E+02	6.904E+01	1.926E+04	1.294E+00
2129	1.791E+04	9.782E+06	6.573E+02	6.767E+01	1.888E+04	1.269E+00
2130	1.755E+04	9.589E+06	6.443E+02	6.633E+01	1.851E+04	1.243E+00
2131	1.720E+04	9.399E+06	6.315E+02	6.502E+01	1.814E+04	1.219E+00
2132	1.686E+04	9.213E+06	6.190E+02	6.373E+01	1.778E+04	1.195E+00
2133	1.653E+04	9.030E+06	6.067E+02	6.247E+01	1.743E+04	1.171E+00
2134	1.620E+04	8.851E+06	5.947E+02	6.123E+01	1.708E+04	1.148E+00
2135	1.588E+04	8.676E+06	5.830E+02	6.002E+01	1.675E+04	1.125E+00
2136	1.557E+04	8.504E+06	5.714E+02	5.883E+01	1.641E+04	1.103E+00
2137	1.526E+04	8.336E+06	5.601E+02	5.767E+01	1.609E+04	1.081E+00
2138	1.496E+04	8.171E+06	5.490E+02	5.653E+01	1.577E+04	1.060E+00
2139	1.466E+04	8.009E+06	5.381E+02	5.541E+01	1.546E+04	1.039E+00
2140	1.437E+04	7.851E+06	5.275E+02	5.431E+01	1.515E+04	1.018E+00
2141	1.409E+04	7.695E+06	5.170E+02	5.323E+01	1.485E+04	9.979E-01
2142	1.381E+04	7.543E+06	5.068E+02	5.218E+01	1.456E+04	9.781E-01
2143	1.353E+04	7.393E+06	4.968E+02	5.115E+01	1.427E+04	9.587E-01
2144	1.327E+04	7.247E+06	4.869E+02	5.013E+01	1.399E+04	9.398E-01
2145	1.300E+04	7.103E+06	4.773E+02	4.914E+01	1.371E+04	9.212E-01

ATTACHMENT B

FORM FF AND CHECK COPY

Federal Operating Permit Program (40 CFR Part 71)**FEE FILING FORM (FF)**

Complete this form each time you prepare form FEE and send this form to the appropriate lockbox bank address, along with full payment. This form required at time of initial fee payment, and thereafter, when paying annual fees.

Source or Facility Name Tekoi LandfillSource Location Skull Valley Indian Reservation, Toole County, UtahEPA Region where Source Located Region 8

Mailing Address:

Street/P.O. Box 6976 West California Avenue City Salt Lake CityState UT ZIP 84104 - Contact Person: Brad Kloos Title District ManagerTelephone (801) 731 - 5542 Ext. Total Fee Payment Remitted: \$ 998.60

SCS ENGINEERS

Environmental Consultants

3900 Kilroy Airport Way, Suite 100
Long Beach, CA 90806-6816
562 426-9544
FIN 54-0913440

MUFG UNION BANK, N.A.

445 Figueroa Street
Los Angeles, CA 90071

16-49
1220

272699

CHECK DATE

March 24, 2015

PAY

Nine Hundred Ninety Eight and 60/100 Dollars

TO

EPA REGION 8 - AIR PERMITTING

1595 Wynkoop Street (8P-AR)
Denver, CO 80202-1129

AMOUNT

998.60

TWO SIGNATURES REQUIRED OVER FIVE THOUSAND DOLLARS
VOID IF NOT CASHED IN 90 DAYS

Nada Harlow

⑈ 272699 ⑈ ⑆ 122000496 ⑆ 5320121487 ⑈

Bove, Leslie

From: trackingupdates@fedex.com
Sent: Tuesday, March 31, 2015 8:21 AM
To: Bove, Leslie
Subject: FedEx Shipment 773245224866 Delivered

 fedex.com | Ship | Track | Manage | Learn | Office/Print Services

Your package has been delivered

Tracking # 773245224866

Ship (P/U) date:
Monday, 3/30/15

Michael Newman
SCS ENGINEERS
SANTA ROSA, CA 95403
US



Delivered

Delivery date:
Tuesday, 3/31/15 10:16 AM

Government Lockbox 979078
US
U.S. Bank
1005 CONVENTION PLZ MAIL
STATION SL-MO-C2GL
SAINT LOUIS, MO 63101
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number: [773245224866](#)

Status: Delivered: 03/31/2015 10:16 AM
Signed for By: M.EBEL

Reference: 01207310.00 T34

Signed for by: M.EBEL

Delivery location: SAINT LOUIS, MO

Delivered to: Mailroom


Service type: FedEx Priority Overnight

Packaging type: FedEx Pak

Number of pieces: 1

Weight: 1.00 lb.

Special handling/Services: Deliver Weekday

 Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 10:21 AM CDT on 03/31/2015.

To learn more about FedEx Express, please go to fedex.com.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above, or go to fedex.com.

This tracking update has been sent to you by FedEx at your request. FedEx does not validate the authenticity of the requestor and does not validate, guarantee or warrant the authenticity of the request, the requestor's message, or the accuracy of this tracking update. For tracking results and terms of use, go to fedex.com.

Thank you for your business.

Bove, Leslie

From: trackingupdates@fedex.com
Sent: Tuesday, March 31, 2015 8:45 AM
To: Bove, Leslie
Subject: FedEx Shipment 773245266840 Delivered

fedex.com | Ship | Track | Manage | Learn | Office/Print Services

Your package has been delivered

Tracking # 773245266840

Ship (P/U) date:
Monday, 3/30/15

Michael Newman
SCS ENGINEERS
SANTA ROSA, CA 95403
US



Delivered

Delivery date:
Tuesday, 3/31/15 9:38 AM

co Claudia Smith
EPA, Region VIII
1595 WYNKOOP ST AIR
PERMITTING
DENVER, CO 80202
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number: [773245266840](#)

Status: Delivered: 03/31/2015 09:38 AM
Signed for By: .THOMAS

Reference: 01207310.00 T34

Signed for by: .THOMAS

Delivery location: DENVER, CO

Delivered to: Receptionist/Front Desk

Service type: FedEx Priority Overnight

Packaging type: FedEx Pak

Number of pieces: 1

Weight: 1.00 lb.

Special handling/Services: Deliver Weekday

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 10:44 AM CDT on 03/31/2015.

To learn more about FedEx Express, please go to fedex.com.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above, or go to fedex.com.

This tracking update has been sent to you by FedEx at your request. FedEx does not validate the authenticity of the requestor and does not validate, guarantee or warrant the authenticity of the request, the requestor's message, or the accuracy of this tracking update. For tracking results and terms of use, go to fedex.com.

Thank you for your business.

Appendix J

GHG Fee Adjustment Payment Letter (March 2016)

SCS ENGINEERS

March 22, 2016
File No. 01207310.00, Task 34

Part 71 Contact
c/o Noreen Okubo
Air Permitting, Monitoring and Modeling Unit
EPA Region 8
1595 Wynkoop Street (8P-AR)
Denver, CO 80202-1129
Ph: 303-312-6520

**SUBJECT: TITLE V FEE PAYMENT
TEKOI LANDFILL, TOOELE COUNTY, UTAH
PERMIT NO. (V-SV-00001-2010.00)**

Dear Ms. Okubo:

On behalf of Waste Management of Utah, Inc. (WM), SCS Engineers (SCS) is submitting the required form for payment of the GHG Fee Adjustment, as you advised in our March 21, 2016 telephone communication. We are submitting this one-time fee payment outside the normal annual fee calculation and payment process, and including it in the Title V permit renewal application process, for the Tekoi Landfill located in Tooele County, Utah. A copy of this submittal has been included in the application.

SCS has completed the enclosed Fee Calculation Worksheet (Form FEE) showing the \$520 GHG Fee Adjustment and a check for that amount is enclosed.

A Certification of Truth, Accuracy, and Completeness (CTAC) form signed by a responsible official from WM is also enclosed.

If you have any questions regarding this submittal or require any additional information, please contact the undersigned at (707) 546-9461.

Sincerely,



Michael O'Connor
Senior Project Professional
SCS ENGINEERS

Enclosures: Form FEE, CTAC Form, Check

cc: U.S. Bank
Government Lockbox 979078
US EPA FOIA & Misc. Payments
1005 Convention Plaza
Mail Station SL-MO-C2-GL
St. Louis, MO 63101
Contact: Natalie Pearson (U.S. Bank)
314-418-4087

Mark Franc, WM – electronic copy
Doc Nyiro, WM – electronic copy



OMB No. 2060-0336, Expires 06/30/2015
(Approval extended during OMB review)

Federal Operating Permit Program (40 CFR Part 71)

FEE CALCULATION WORKSHEET (FEE)

Use this form initially, or thereafter on an annual basis, to calculate part 71 fees.

A. General Information

Type of fee (Check one): ☒ Initial ☐ Annual **(GHG Adjustment Fee only)**

Deadline for submitting fee calculation worksheet ____/____/____ (submitted as part of Title V renewal application)

For initial fees, emissions are based on (Check one): NA (GHG Adjustment fee only)

☐ Actual emissions for the preceding calendar year. (Required in most circumstances.)

☐ Estimates of actual emissions for the current calendar year. (Required when operations commenced during the preceding calendar year.)

Date commenced operations ____/____/____

☐ Estimates of actual emissions for the preceding calendar year. (Optional after a part 71 permit was issued to replace a part 70 permit, but only if initial fee payment is due between January 1 and March 31; otherwise use actual emissions for the preceding calendar year.)

For annual fee payment, you are required to use actual emissions for the preceding calendar year.

B. Source Information: Complete this section only if you are paying fees but not applying for a permit.

Source or facility name Tekoi Landfill

Mailing address: Street or P.O. Box 6976 West California Avenue

City Salt Lake City State Utah ZIP 84104 -

Contact person Brad Kloos Title Senior District Manager

Telephone (801) 605 - 1954 Ext Part 71 permit no.

C. Certification of Truth, Accuracy and Completeness: Only needed if not submitting a separate form CTAC.
(Form CTAC attached)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in this submittal (form and attachments) are true, accurate and complete.

Name (signed) _____

Name (typed) _____ Date: ____ / ____ / ____

D. Annual Emissions Report for Fee Calculation Purposes -- Non-HAP (NA – GHG Adjust. Fee only)

You may use this to report actual emissions (tons per year) of regulated pollutants (for fee calculation) on a calendar-year basis for both initial and annual fee calculation purposes. Section E is designed to report HAP emissions. Quantify all actual emissions, including fugitives, but do not include insignificant emissions and certain regulated air pollutants that are not counted for fee purposes, such as CO and GHGs (see instructions). Sum the emissions in each column to calculate subtotals. Subtotals should be reported to the nearest tenth (0.1) of a ton at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000 for that column.

This data is for _____ (year)

Emission Unit ID	NOx	VOC	SO2	PM10	Lead	Other
SUBTOTALS:						

E. Annual Emissions Report for Fee Calculation Purposes – HAP (NA – GHG Adjust. Fee only)

HAP Identification. Identify individual HAP emitted at the facility, identify the CAS number, and assign a unique identifier for use in the second table in this section. Whenever assigning identifier codes, use "HAP1" for the first, "HAP2" for the second, and so on.

Name of HAP	CAS No	Identifier

HAP Emissions. Report the actual emissions of individual HAP identified above. Use the identifiers assigned in the table above. Include all emissions, including fugitives, and do not include insignificant emissions. Sum the emissions in each column to calculate subtotals. Report subtotals to the nearest tenth (0.1) of a ton at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000.

This data is for _____ (year)

Emissions Unit ID	Actual Emissions (Tons/Year)							
	HAP__	HAP__	HAP__	HAP__	HAP__	HAP__	HAP__	HAP__
SUBTOTALS:								

F. Fee Calculation Worksheet

This worksheet is used to calculate the total fee owed (including the emissions-based fee and the GHG fee adjustment) for both initial and annual fee payment purposes. Reconciliation is only for cases where you are paying the annual fee and you used any type of estimate of actual emissions when you calculated the initial fee. If you do not need to reconcile fees, complete line 1-5 (emissions summary) and then skip down to line 21 (emission calculation). See instructions for more detailed explanation.

EMISSIONS SUMMARY (GHG Adjustment Fee only, Title V Renewal application; annual fee calculation will be provided as a separate submittal)

1. Sum the subtotals from section D of this form (non-HAP) and enter the total, rounded to the nearest tenth (0.1) of a ton.	0.0
2. Sum the subtotals from section E of this form (HAP) and enter the total, rounded to the nearest tenth (0.1) of a ton.	0.0
3. Sum lines 1 and 2.	0.0
4. Enter the emissions that were counted twice. If none, enter "0."	
5. Subtract line 4 from line 3, round to the nearest ton, and enter the result here. This is the total emissions that count for fees purposes.	
<p style="text-align: center;">RECONCILIATION (WHEN INITIAL FEES WERE BASED ON ESTIMATES FOR THE "CURRENT" CALENDAR YEAR)</p> <p>Only complete lines 6-10 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year in which you paid initial fees; otherwise skip to line 11 or to line 21.</p>	
6. Enter the total estimated actual emissions for the year the initial fee was paid (previously reported on line 5 of the initial fee form).	
7. If line 5 is greater than line 6, subtract line 6 from line 5, and enter the result. Otherwise enter "0."	
8. If line 6 is greater than line 5, subtract line 5 from line 6, and enter the result. Otherwise enter "0."	
9. If line 7 is greater than 0, multiply line 7 by last year's fee rate (\$/ton) and enter the result here. This is the underpayment. Go to line 21.	
10. If line 8 is greater than 0, multiply line 8 by last year's fee rate (\$/ton) and enter the result here. This is the overpayment. Go to line 21.	
<p style="text-align: center;">RECONCILIATION (WHEN INITIAL FEES WERE BASED ON ESTIMATES FOR THE "PRECEDING" CALENDAR YEAR)</p> <p>Only complete lines 11-20 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year preceding initial fee payment; otherwise skip to line 21. If completing this section, you will also need to complete sections D and E to report actual emissions for the calendar year preceding initial fee payment.</p>	
11. Sum the actual emissions from section D (non-HAP) for the calendar year preceding initial fee payment and enter the result here.	
12. Sum the actual emissions from section E (HAP) for the calendar year preceding initial fee payment and enter the result here.	

13. Add lines 11 and 12 and enter the total here. These are total actual emissions for the calendar year preceding initial fee payment.	
14. Enter double counted emission from line 13 here. If none, enter "0."	
15. Subtract line 14 from line 13, round to the nearest ton, and enter the result here.	
16. Enter the total estimated actual emissions previously reported on line 5 of the initial fee form. These are estimated actual emissions for the calendar year preceding initial fee payment.	
17. If line 15 is greater than line 16, subtract line 16 from line 15, and enter the result here. Otherwise enter "0."	
18. If line 16 is greater than line 15, subtract line 15 from line 16, and enter the result here. Otherwise enter "0."	
19. If line 17 is greater than 0, multiply line 17 by last year's fee rate (\$/ton) and enter the result here. This is the underpayment.	
20. If line 18 is greater than 0, multiply line 18 by last year's fee rate (\$/ton) and enter the result on this line. This is the overpayment.	
EMISSION FEE CALCULATION	
21. Multiply line 5 (tons) by the current fee rate (\$/ton) and enter the result here. This is the unadjusted emissions fee. Continue on to line 23.	0.0
GHG FEE ADJUSTMENT	
23. If you are submitting an initial permit application and this is the first time you are paying fees, enter \$2,236, otherwise enter "0". [Note that any updates to the initial application are covered under this one-time charge.]	
24. Enter the number of permit modifications (or related permit actions) you have submitted to the permitting authority since you last paid fees. If none, skip to line 26.	
25. Multiply the number in line 24 by \$365 and enter the result.	
26. If you have submitted a permit renewal application since the last time you paid fees enter \$520, otherwise enter "0"	\$520
27. Sum line 23, 25, and 26 and enter the result. This is the GHG fee adjustment	\$520
OTHER ADJUSTMENTS	
28. Add the total on line 21 and the total on line 27 and enter the result.	
29. Enter any underpayment from line 9 or 19 here. Otherwise enter "0."	
30. Enter any overpayment from line 10 or 20 here. Otherwise enter "0."	
31. If line 29 is greater than "0," add it to line 28 and enter the result here. If line 30 is greater than "0," subtract this from line 28 and enter the result here. Otherwise enter the amount on line 28 here. This is the fee adjusted for over/underpayment.	
32. Enter any credit for fee assessment error here. Otherwise, enter "0."	
33. Subtract line 32 from line 31 and enter the result here. Stop here. This is the TOTAL FEE (AFTER ADJUSTMENTS) that you must remit to EPA.	\$520



OMB No. 2060-0336, Expires 6/30/2015
(Approval extended during OMB review)

Federal Operating Permit Program (40 CFR Part 71)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible Official

Name: (Last) Bradley (First) Scott (MI) _____

Title Area Vice President

Street or P.O. Box 222 S. Mill Avenue, Suite 333

City Tempe State AZ ZIP 85281 - _____

Telephone (480) 457-4810 Ext. _____ Facsimile (866) 404-8396

B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) 

Name (typed) Scott Bradley Date: 3 / 18 / 16

SCS ENGINEERS

Environmental Consultants

3900 Kilroy Airport Way, Suite 100
 Long Beach, CA 90806-6816
 562 426-9544
 FIN 54-0913440

MUFG UNION BANK, N.A.

445 Figueroa Street
 Los Angeles, CA 90071

16-49
 1220

286294

CHECK DATE
 March 21, 2016

PAY

Five Hundred Twenty and 00/100 Dollars

TO

EPA-REGION 7

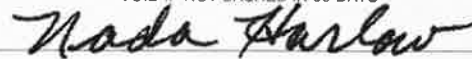
PO Box 360748M

Pittsburgh, PA 15251

520.00

AMOUNT

TWO SIGNATURES REQUIRED OVER FIVE THOUSAND DOLLARS
 VOID IF NOT CASHED IN 90 DAYS



⑈ 286294 ⑆ ⑆ 122000496 ⑆ 5320121487 ⑈

S C S ENGINEERS

Check Date: 3/21/2016

286294

FIN- 54-0913440

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
Permit0120731000	3/21/2016	0164537	520.00			520.00
EPA-REGION 7		TOTAL	520.00			520.00
Union Bank-Accts Payable 2		0133800				