HERRERA

TECHNICAL MEMORANDUM

Date: July 31, 2018

To: John Rapp and Margo Gillaspy, Skagit County Public Works

From: Tyson Wright, Herrera Environmental Consultants, Inc.

Subject: Inman Landfill Post-Closure Care Landfill Gas

INTRODUCTION

Herrera Environmental Consultants, Inc. (Herrera) was requested by Skagit County Public Works to assist County personnel in evaluating the current landfill gas (LFG) management system and determine if the aging system should be repaired, modified, replaced, or abandoned based on the current and projected landfill gas generation while protecting human health and the environment. The evaluation was conducted under Skagit County Contract # C20180120 between Herrera and Skagit County Public Works.

BACKGROUND

The LFG management system at Skagit County's Inman Landfill has operated since 1992. To date, County personnel have monitored methane, carbon dioxide, and oxygen levels at gas probes located along the site perimeter on a quarterly basis. The current LFG management system is comprised of a horizontal and vertical well extraction system where the landfill gas is conveyed and destructed using a blower station and utility flare. The current blower station and utility flare are nearing the end of their service life and underperforming due to low subsurface methane concentrations and volume, and aging piping and mechanical control systems.

On November 30, 2017, Herrera's Michael Spillane and Tyson Wright met with the Skagit County Public Works landfill gas operator, John Rapp, to discuss the operational issues of the LFG system and tour the site. The current LFG Flaring system employs two 5 horsepower blowers with a rated capacity of 675 cubic feet per minute (CFM) each. Operational information indicated that the existing flare is unable to run continuously due to declining concentrations of methane and volumes of LFG being collected or generated as the waste mass ages. In other words, the blowers and flare are sized for higher flow rates than are currently generated and collected from the waste mass.

Review of probe monitoring data from the third quarter of 2017 indicated that LFG is not migrating beyond the perimeter gas probes. Prior to the third quarter monitoring data collection, the blower station and utility flare had not been operational for most of the year. The probes are the regulatory point of compliance for determining if the LFG system is functioning to protect the environment. Given that LFG was not detected at the perimeter probes and groundwater monitoring data do not appear to show any LFG impacts while the system was not operating for most of the year, continued operation of the blower station and utility flare may not be necessary or required.

METHODOLOGY AND RESULTS

The following is a summary of the methodology used for assessing the generation and concentrations of landfill gas constituents that were used to determine the need for continued operation or potential abandonment of the LFG blower and utility flare (LFG treatment system).

Step 1 – Model LFG Generation Rates and Calculate Emission Loading Using LandGem

The LFG generation rates were determined using the US Environmental Protection Agency (EPA) LandGem – Landfill Gas Emissions Model, Version 3.02. The LandGem model is a first-order decomposition rate equation for quantifying emission 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. Input data provided by Skagit County including landfill operation dates, waste volume, and annual waste acceptance rates (averaged) were entered into the model. The following model parameters were selected for the model run:

Methane Generation Rate K ($year^{-1}$)	CAA Conventional – 0.05
Potential Methane Generation Capacity, L_o (m3/Mg)	CAA Conventional – 170
NMOC Concentration (ppmv as hexane)	CAA – 4,000
Methane Content (percent by volume)	CAA – 50 percent by volume

The above inputs were modeled to calculate the total landfill gas, methane, carbon dioxide, and NMOC and emission rate for the 46 default air pollutants by year. The model default pollutant concentrations were used for the initial model run. See Appendix A for the LandGem report. The initial model run using the default pollutant concentrations allowed us to compare estimated conservative emission rates in 2018 to the regulatory thresholds. If these conservative emission loading rates were below the small quantity emissions rates (SQER) and *de minimis* rates set by WAC 173-460, there may not be a need to conduct conformational sampling or screening-level dispersion analysis; and the case could be made for potential abandonment of the LFG treatment system. Results from comparing the theoretical emission loading rates to the SQER

and *de minimis* rates did, however, show some exceedances; and therefore confirmation sampling was performed. See Appendix B for the Toxic Air Pollutant Comparison Table. The column titled "LandGem 2018 Emission Rate (lb/averaging period)" indicates which pollutants exceeded the SQER with gray shaded cells and those exceeding the *de minimis* are in bold red font.

Step 2 – Verification of Emission Loading Rates

Running the LandGem model in Step 1 is done using the default landfill gas contaminant of concern concentrations. The model default values are very conservative. Since the results showed exceedances for some contaminants, sampling of the site landfill gas was recommended to more accurately characterize the LFG contaminant concentrations.

On May 18, 2018, Herrera's Michael Spillane and Tyson Wright, with the assistance of the County's John Rapp, collected LFG samples from the monitoring port just downstream of the blowers, while the blowers were collecting LFG from the landfill. LFG samples were collected with two 6-liter summa canisters and four Tedlar bags. The LFG samples were submitted to Fremont Analytical of Seattle, Washington, on May 18, 2018, for analysis of volatile organic compounds (VOCs) and sulfur compounds by EPA Method TO-15 and acrylonitrile by Method 8260. The results of the sampling are shown in Appendix C.

The air pollutant emission loading rates were then calculated using the sampled pollutant concentrations at the current (2018) modeled landfill gas generation rate. This data is summarized in Appendix B in the Toxic Air Pollutant Comparison Table. The column titled "Actual Loading Rate (lb/averaging period)" is a calculated loading rate by use of the actual pollutant concentration and theoretical LandGem flow for 2018. Results from comparing the actual emission loading rates to the SQER and *de minimis* rates showed no exceedances on the SQER but two exceedances on the *de minimis*, shown in bold red font.

Step 3 – Air Dispersion Modeling

The next step in determining emission constraints was to run the EPA screening-level air dispersion model (AERSCREEN), which is set up to evaluate the hypothetical case where LFG was vented to the atmosphere without treatment or destruction. The estimated 2018 LFG generation rate from the LandGem model was used to calculate the emission concentrations at the property boundary.

Results from the air dispersion model are shown in Appendix B as columns titled "Dispersion Conc. North Boundary (µg/m3)" and "Dispersion Conc. South Boundary (µg/m3)." These concentrations are below their respective acceptable source impact level (ASIL) limits.

RECOMMENDATIONS

A case can be made to Ecology for abandoning the existing LFG active collection and treatment system (blower station and utility flare) based on the calculated air pollutant loading rates (at the current modeled LFG generation rates) being below the SQERs **and** results from the AERSCREEN air dispersion modeling (of the two air constituents below the SQER but above the *de minimis* rate) being below the respective ASIL limits; and quarterly monitoring of the perimeter gas probes has consistently shown less than 5 percent methane by volume for extended periods when the blower system and flare have been inoperable.

Herrera offers the following recommendations:

1. Identify system modifications for the abandonment of the flare system and the conversion of the collection system to passively vent. Typical modifications in western Washington include venting the extraction wells to bioberms where passive treatment of landfill gas occurs naturally. Bioberms consist of compost berms over perforated pipe where one or several wells or horizontal collectors passively vent LFG. This is a low-tech and low-cost alternative that provides treatment of methane using natural biological action within the compost material. We are currently providing this type of treatment and passive venting approach at the Cedar Falls Landfill in King County, Washington (Photo 1).

Photo 1: Bioberm at Cedar Falls Landfill.

2. Prepare a letter and report for submittal to Ecology and the Health Department that requests abandonment of the existing blower station and utility flare and proposes retrofits to the LFG management system as a passive venting system. Notification of plan and approval to Clean Air Agency is also recommended.

3. Until the approval is granted, continue to operate the LFG system with monthly exercise of the blower system. Calibrate oxygen sensor to allow correct startup/shutdown process. Monitor and record LFG concentrations on the LFG header at discharge of blower, if blower is running. If blower will not maintain operation for proper LFG monitoring at discharge of blower, concentrations may be recorded at blower inlet. Continue to monitor the perimeter probes at the required reporting frequency.

4. Begin organizing and collecting the following landfill system data to be used for potential complete post-closure termination:

    a. Survey data of the landfill to document settlement trending data to show the landfill has stabilized—usually 3-year intervals of survey showing stable conditions.

    b. Groundwater data monitoring to show *de minimis* impact or to demonstrate the case for natural attenuation.

    c. Leachate monitoring to track the volume of leachate monthly. Looking at leachate volume trending with precipitation data can demonstrate declining trends. Based on discussion of the seasonal variation of leachate flows, it would be good to evaluate the magnitude of the variation and whether it would be cost effective to identify if and where infiltration may be occurring. This is a common issue and addressing leaks in the cover system, usually around LFG wells, culverts or other liner penetrations, can mitigate infiltration and reduce leachate disposal costs. Using the survey to locate large differential settlement areas can assist in locating potential liner failures. Herrera recently completed a similar settlement and infiltration assessment at the Hobart landfill for King County.

APPENDIX A

LandGem Report

Summary Report

Landfill Name or Identifier: Inman Landfill

Date: Monday, June 25, 2018

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

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

Where,

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

i = 1-year time increment

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

j = 0.1-year time increment

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

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

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

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

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

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

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	**1973**	
Landfill Closure Year (with 80-year limit)	**1994**	
Actual Closure Year (without limit)	***1994***	
Have Model Calculate Closure Year?	**No**	
Waste Design Capacity		*megagrams*

MODEL PARAMETERS

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

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	**Total landfill gas**
Gas / Pollutant #2:	**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)*
1973	45,455	50,000	0	0
1974	45,455	50,000	45,455	50,000
1975	45,455	50,000	90,909	100,000
1976	45,455	50,000	136,364	150,000
1977	45,455	50,000	181,818	200,000
1978	45,455	50,000	227,273	250,000
1979	45,455	50,000	272,727	300,000
1980	45,455	50,000	318,182	350,000
1981	45,455	50,000	363,636	400,000
1982	45,455	50,000	409,091	450,000
1983	45,455	50,000	454,545	500,000
1984	45,455	50,000	500,000	550,000
1985	109,091	120,000	545,455	600,000
1986	109,091	120,000	654,545	720,000
1987	63,636	70,000	763,636	840,000
1988	63,636	70,000	827,273	910,000
1989	0	0	890,909	980,000
1990	0	0	890,909	980,000
1991	0	0	890,909	980,000
1992	21,212	23,333	890,909	980,000
1993	21,212	23,333	912,121	1,003,333
1994	21,212	23,333	933,333	1,026,667
1995	0	0	954,545	1,050,000
1996	0	0	954,545	1,050,000
1997	0	0	954,545	1,050,000
1998	0	0	954,545	1,050,000
1999	0	0	954,545	1,050,000
2000	0	0	954,545	1,050,000
2001	0	0	954,545	1,050,000
2002	0	0	954,545	1,050,000
2003	0	0	954,545	1,050,000
2004	0	0	954,545	1,050,000
2005	0	0	954,545	1,050,000
2006	0	0	954,545	1,050,000
2007	0	0	954,545	1,050,000
2008	0	0	954,545	1,050,000
2009	0	0	954,545	1,050,000
2010	0	0	954,545	1,050,000
2011	0	0	954,545	1,050,000
2012	0	0	954,545	1,050,000

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2013	0	0	954,545	1,050,000
2014	0	0	954,545	1,050,000
2015	0	0	954,545	1,050,000
2016	0	0	954,545	1,050,000
2017	0	0	954,545	1,050,000
2018	0	0	954,545	1,050,000
2019	0	0	954,545	1,050,000
2020	0	0	954,545	1,050,000
2021	0	0	954,545	1,050,000
2022	0	0	954,545	1,050,000
2023	0	0	954,545	1,050,000
2024	0	0	954,545	1,050,000
2025	0	0	954,545	1,050,000
2026	0	0	954,545	1,050,000
2027	0	0	954,545	1,050,000
2028	0	0	954,545	1,050,000
2029	0	0	954,545	1,050,000
2030	0	0	954,545	1,050,000
2031	0	0	954,545	1,050,000
2032	0	0	954,545	1,050,000
2033	0	0	954,545	1,050,000
2034	0	0	954,545	1,050,000
2035	0	0	954,545	1,050,000
2036	0	0	954,545	1,050,000
2037	0	0	954,545	1,050,000
2038	0	0	954,545	1,050,000
2039	0	0	954,545	1,050,000
2040	0	0	954,545	1,050,000
2041	0	0	954,545	1,050,000
2042	0	0	954,545	1,050,000
2043	0	0	954,545	1,050,000
2044	0	0	954,545	1,050,000
2045	0	0	954,545	1,050,000
2046	0	0	954,545	1,050,000
2047	0	0	954,545	1,050,000
2048	0	0	954,545	1,050,000
2049	0	0	954,545	1,050,000
2050	0	0	954,545	1,050,000
2051	0	0	954,545	1,050,000
2052	0	0	954,545	1,050,000

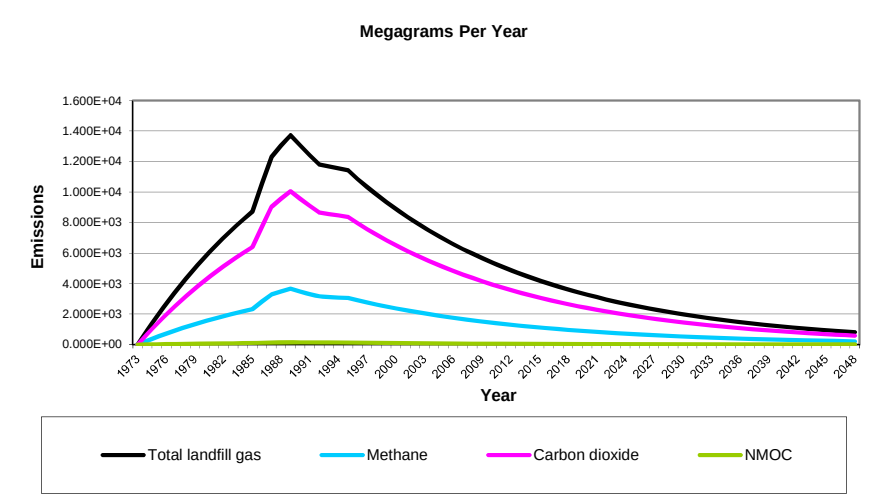
Pollutant Parameters

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

Pollutant Parameters (Continued)

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

Graphs


Megagrams Per Year
Emissions
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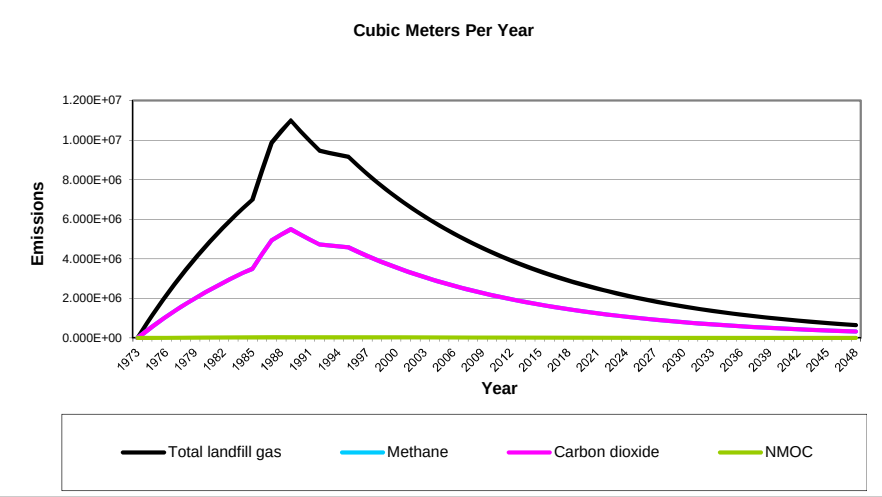
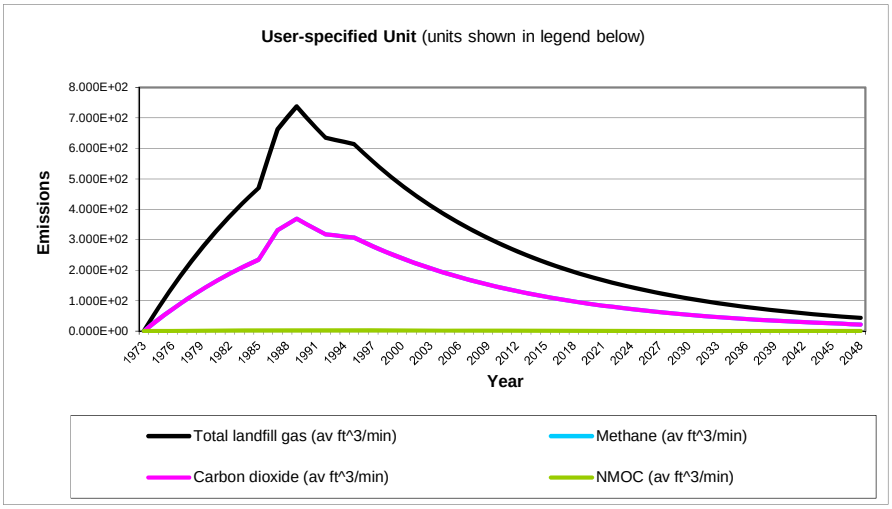
1.400E+04
1.200E+04
1.000E+04
8.000E+03
6.000E+03
4.000E+03
2.000E+03
0.000E+00
1973 1976 1979 1982 1985 1988 1991 1994 1997 2000 2003 2006 2009 2012 2015 2018 2021 2024 2027 2030 2033 2036 2039 2042 2045 2048
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


Cubic Meters Per Year
Emissions
1.200E+07
1.000E+07
8.000E+06
6.000E+06
4.000E+06
2.000E+06
0.000E+00
1973 1976 1979 1982 1985 1988 1991 1994 1997 2000 2003 2006 2009 2012 2015 2018 2021 2024 2027 2030 2033 2036 2039 2042 2045 2048
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
Emissions
8.000E+02
7.000E+02
6.000E+02
5.000E+02
4.000E+02
3.000E+02
2.000E+02
1.000E+02
0.000E+00
1973 1976 1979 1982 1985 1988 1991 1994 1997 2000 2003 2006 2009 2012 2015 2018 2021 2024 2027 2030 2033 2036 2039 2042 2045 2048
Year
Total landfill gas (av ft^3/min)
Methane (av ft^3/min)
Carbon dioxide (av ft^3/min)
NMOC (av ft^3/min)

Results

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1973	0	0	0	0	0	0
1974	9.436E+02	7.556E+05	5.077E+01	2.521E+02	3.778E+05	2.538E+01
1975	1.841E+03	1.474E+06	9.906E+01	4.918E+02	7.372E+05	4.953E+01
1976	2.695E+03	2.158E+06	1.450E+02	7.199E+02	1.079E+06	7.250E+01
1977	3.507E+03	2.808E+06	1.887E+02	9.368E+02	1.404E+06	9.435E+01
1978	4.280E+03	3.427E+06	2.303E+02	1.143E+03	1.714E+06	1.151E+02
1979	5.015E+03	4.016E+06	2.698E+02	1.339E+03	2.008E+06	1.349E+02
1980	5.714E+03	4.575E+06	3.074E+02	1.526E+03	2.288E+06	1.537E+02
1981	6.379E+03	5.108E+06	3.432E+02	1.704E+03	2.554E+06	1.716E+02
1982	7.011E+03	5.614E+06	3.772E+02	1.873E+03	2.807E+06	1.886E+02
1983	7.613E+03	6.096E+06	4.096E+02	2.034E+03	3.048E+06	2.048E+02
1984	8.185E+03	6.554E+06	4.404E+02	2.186E+03	3.277E+06	2.202E+02
1985	8.730E+03	6.990E+06	4.697E+02	2.332E+03	3.495E+06	2.348E+02
1986	1.057E+04	8.463E+06	5.686E+02	2.823E+03	4.231E+06	2.843E+02
1987	1.232E+04	9.864E+06	6.627E+02	3.290E+03	4.932E+06	3.314E+02
1988	1.304E+04	1.044E+07	7.015E+02	3.483E+03	5.220E+06	3.507E+02
1989	1.372E+04	1.099E+07	7.384E+02	3.666E+03	5.495E+06	3.692E+02
1990	1.305E+04	1.045E+07	7.023E+02	3.487E+03	5.227E+06	3.512E+02
1991	1.242E+04	9.943E+06	6.681E+02	3.317E+03	4.972E+06	3.340E+02
1992	1.181E+04	9.458E+06	6.355E+02	3.155E+03	4.729E+06	3.178E+02
1993	1.168E+04	9.350E+06	6.282E+02	3.119E+03	4.675E+06	3.141E+02
1994	1.155E+04	9.246E+06	6.213E+02	3.084E+03	4.623E+06	3.106E+02
1995	1.142E+04	9.148E+06	6.147E+02	3.052E+03	4.574E+06	3.073E+02
1996	1.087E+04	8.702E+06	5.847E+02	2.903E+03	4.351E+06	2.923E+02
1997	1.034E+04	8.277E+06	5.562E+02	2.761E+03	4.139E+06	2.781E+02
1998	9.833E+03	7.874E+06	5.290E+02	2.626E+03	3.937E+06	2.645E+02
1999	9.353E+03	7.490E+06	5.032E+02	2.498E+03	3.745E+06	2.516E+02
2000	8.897E+03	7.124E+06	4.787E+02	2.377E+03	3.562E+06	2.393E+02
2001	8.463E+03	6.777E+06	4.553E+02	2.261E+03	3.389E+06	2.277E+02
2002	8.051E+03	6.447E+06	4.331E+02	2.150E+03	3.223E+06	2.166E+02
2003	7.658E+03	6.132E+06	4.120E+02	2.046E+03	3.066E+06	2.060E+02
2004	7.284E+03	5.833E+06	3.919E+02	1.946E+03	2.917E+06	1.960E+02
2005	6.929E+03	5.549E+06	3.728E+02	1.851E+03	2.774E+06	1.864E+02
2006	6.591E+03	5.278E+06	3.546E+02	1.761E+03	2.639E+06	1.773E+02
2007	6.270E+03	5.021E+06	3.373E+02	1.675E+03	2.510E+06	1.687E+02
2008	5.964E+03	4.776E+06	3.209E+02	1.593E+03	2.388E+06	1.604E+02
2009	5.673E+03	4.543E+06	3.052E+02	1.515E+03	2.271E+06	1.526E+02
2010	5.396E+03	4.321E+06	2.903E+02	1.441E+03	2.161E+06	1.452E+02
2011	5.133E+03	4.110E+06	2.762E+02	1.371E+03	2.055E+06	1.381E+02
2012	4.883E+03	3.910E+06	2.627E+02	1.304E+03	1.955E+06	1.314E+02
2013	4.645E+03	3.719E+06	2.499E+02	1.241E+03	1.860E+06	1.250E+02
2014	4.418E+03	3.538E+06	2.377E+02	1.180E+03	1.769E+06	1.189E+02
2015	4.203E+03	3.365E+06	2.261E+02	1.123E+03	1.683E+06	1.131E+02
2016	3.998E+03	3.201E+06	2.151E+02	1.068E+03	1.601E+06	1.075E+02
2017	3.803E+03	3.045E+06	2.046E+02	1.016E+03	1.523E+06	1.023E+02
2018	3.617E+03	2.897E+06	1.946E+02	9.662E+02	1.448E+06	9.731E+01
2019	3.441E+03	2.755E+06	1.851E+02	9.191E+02	1.378E+06	9.257E+01
2020	3.273E+03	2.621E+06	1.761E+02	8.743E+02	1.310E+06	8.805E+01
2021	3.113E+03	2.493E+06	1.675E+02	8.316E+02	1.247E+06	8.376E+01
2022	2.962E+03	2.372E+06	1.593E+02	7.911E+02	1.186E+06	7.967E+01

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2023	2.817E+03	2.256E+06	1.516E+02	7.525E+02	1.128E+06	7.579E+01
2024	2.680E+03	2.146E+06	1.442E+02	7.158E+02	1.073E+06	7.209E+01
2025	2.549E+03	2.041E+06	1.371E+02	6.809E+02	1.021E+06	6.857E+01
2026	2.425E+03	1.942E+06	1.305E+02	6.477E+02	9.708E+05	6.523E+01
2027	2.307E+03	1.847E+06	1.241E+02	6.161E+02	9.235E+05	6.205E+01
2028	2.194E+03	1.757E+06	1.180E+02	5.860E+02	8.784E+05	5.902E+01
2029	2.087E+03	1.671E+06	1.123E+02	5.575E+02	8.356E+05	5.614E+01
2030	1.985E+03	1.590E+06	1.068E+02	5.303E+02	7.948E+05	5.341E+01
2031	1.888E+03	1.512E+06	1.016E+02	5.044E+02	7.561E+05	5.080E+01
2032	1.796E+03	1.438E+06	9.665E+01	4.798E+02	7.192E+05	4.832E+01
2033	1.709E+03	1.368E+06	9.193E+01	4.564E+02	6.841E+05	4.597E+01
2034	1.625E+03	1.302E+06	8.745E+01	4.342E+02	6.508E+05	4.372E+01
2035	1.546E+03	1.238E+06	8.318E+01	4.130E+02	6.190E+05	4.159E+01
2036	1.471E+03	1.178E+06	7.913E+01	3.928E+02	5.888E+05	3.956E+01
2037	1.399E+03	1.120E+06	7.527E+01	3.737E+02	5.601E+05	3.763E+01
2038	1.331E+03	1.066E+06	7.160E+01	3.555E+02	5.328E+05	3.580E+01
2039	1.266E+03	1.014E+06	6.811E+01	3.381E+02	5.068E+05	3.405E+01
2040	1.204E+03	9.642E+05	6.478E+01	3.216E+02	4.821E+05	3.239E+01
2041	1.145E+03	9.172E+05	6.162E+01	3.059E+02	4.586E+05	3.081E+01
2042	1.090E+03	8.724E+05	5.862E+01	2.910E+02	4.362E+05	2.931E+01
2043	1.036E+03	8.299E+05	5.576E+01	2.768E+02	4.149E+05	2.788E+01
2044	9.858E+02	7.894E+05	5.304E+01	2.633E+02	3.947E+05	2.652E+01
2045	9.378E+02	7.509E+05	5.045E+01	2.505E+02	3.755E+05	2.523E+01
2046	8.920E+02	7.143E+05	4.799E+01	2.383E+02	3.571E+05	2.400E+01
2047	8.485E+02	6.795E+05	4.565E+01	2.266E+02	3.397E+05	2.283E+01
2048	8.071E+02	6.463E+05	4.343E+01	2.156E+02	3.232E+05	2.171E+01
2049	7.678E+02	6.148E+05	4.131E+01	2.051E+02	3.074E+05	2.065E+01
2050	7.303E+02	5.848E+05	3.929E+01	1.951E+02	2.924E+05	1.965E+01
2051	6.947E+02	5.563E+05	3.738E+01	1.856E+02	2.781E+05	1.869E+01
2052	6.608E+02	5.292E+05	3.555E+01	1.765E+02	2.646E+05	1.778E+01
2053	6.286E+02	5.034E+05	3.382E+01	1.679E+02	2.517E+05	1.691E+01
2054	5.979E+02	4.788E+05	3.217E+01	1.597E+02	2.394E+05	1.609E+01
2055	5.688E+02	4.555E+05	3.060E+01	1.519E+02	2.277E+05	1.530E+01
2056	5.410E+02	4.332E+05	2.911E+01	1.445E+02	2.166E+05	1.455E+01
2057	5.147E+02	4.121E+05	2.769E+01	1.375E+02	2.061E+05	1.384E+01
2058	4.896E+02	3.920E+05	2.634E+01	1.308E+02	1.960E+05	1.317E+01
2059	4.657E+02	3.729E+05	2.505E+01	1.244E+02	1.864E+05	1.253E+01
2060	4.430E+02	3.547E+05	2.383E+01	1.183E+02	1.774E+05	1.192E+01
2061	4.214E+02	3.374E+05	2.267E+01	1.126E+02	1.687E+05	1.134E+01
2062	4.008E+02	3.210E+05	2.156E+01	1.071E+02	1.605E+05	1.078E+01
2063	3.813E+02	3.053E+05	2.051E+01	1.018E+02	1.526E+05	1.026E+01
2064	3.627E+02	2.904E+05	1.951E+01	9.687E+01	1.452E+05	9.756E+00
2065	3.450E+02	2.762E+05	1.856E+01	9.215E+01	1.381E+05	9.280E+00
2066	3.282E+02	2.628E+05	1.766E+01	8.765E+01	1.314E+05	8.828E+00
2067	3.122E+02	2.500E+05	1.679E+01	8.338E+01	1.250E+05	8.397E+00
2068	2.969E+02	2.378E+05	1.598E+01	7.931E+01	1.189E+05	7.988E+00
2069	2.824E+02	2.262E+05	1.520E+01	7.545E+01	1.131E+05	7.598E+00
2070	2.687E+02	2.151E+05	1.446E+01	7.177E+01	1.076E+05	7.228E+00
2071	2.556E+02	2.046E+05	1.375E+01	6.827E+01	1.023E+05	6.875E+00
2072	2.431E+02	1.947E+05	1.308E+01	6.494E+01	9.733E+04	6.540E+00
2073	2.312E+02	1.852E+05	1.244E+01	6.177E+01	9.259E+04	6.221E+00

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2074	2.200E+02	1.761E+05	1.184E+01	5.876E+01	8.807E+04	5.918E+00
2075	2.092E+02	1.676E+05	1.126E+01	5.589E+01	8.378E+04	5.629E+00
2076	1.990E+02	1.594E+05	1.071E+01	5.317E+01	7.969E+04	5.354E+00
2077	1.893E+02	1.516E+05	1.019E+01	5.057E+01	7.580E+04	5.093E+00
2078	1.801E+02	1.442E+05	9.690E+00	4.811E+01	7.211E+04	4.845E+00
2079	1.713E+02	1.372E+05	9.217E+00	4.576E+01	6.859E+04	4.609E+00
2080	1.630E+02	1.305E+05	8.768E+00	4.353E+01	6.524E+04	4.384E+00
2081	1.550E+02	1.241E+05	8.340E+00	4.141E+01	6.206E+04	4.170E+00
2082	1.475E+02	1.181E+05	7.933E+00	3.939E+01	5.904E+04	3.967E+00
2083	1.403E+02	1.123E+05	7.546E+00	3.746E+01	5.616E+04	3.773E+00
2084	1.334E+02	1.068E+05	7.178E+00	3.564E+01	5.342E+04	3.589E+00
2085	1.269E+02	1.016E+05	6.828E+00	3.390E+01	5.081E+04	3.414E+00
2086	1.207E+02	9.667E+04	6.495E+00	3.225E+01	4.833E+04	3.248E+00
2087	1.148E+02	9.195E+04	6.178E+00	3.067E+01	4.598E+04	3.089E+00
2088	1.092E+02	8.747E+04	5.877E+00	2.918E+01	4.373E+04	2.939E+00
2089	1.039E+02	8.320E+04	5.590E+00	2.775E+01	4.160E+04	2.795E+00
2090	9.884E+01	7.915E+04	5.318E+00	2.640E+01	3.957E+04	2.659E+00
2091	9.402E+01	7.529E+04	5.058E+00	2.511E+01	3.764E+04	2.529E+00
2092	8.943E+01	7.161E+04	4.812E+00	2.389E+01	3.581E+04	2.406E+00
2093	8.507E+01	6.812E+04	4.577E+00	2.272E+01	3.406E+04	2.289E+00
2094	8.092E+01	6.480E+04	4.354E+00	2.162E+01	3.240E+04	2.177E+00
2095	7.698E+01	6.164E+04	4.142E+00	2.056E+01	3.082E+04	2.071E+00
2096	7.322E+01	5.863E+04	3.940E+00	1.956E+01	2.932E+04	1.970E+00
2097	6.965E+01	5.577E+04	3.747E+00	1.860E+01	2.789E+04	1.874E+00
2098	6.625E+01	5.305E+04	3.565E+00	1.770E+01	2.653E+04	1.782E+00
2099	6.302E+01	5.047E+04	3.391E+00	1.683E+01	2.523E+04	1.695E+00
2100	5.995E+01	4.800E+04	3.225E+00	1.601E+01	2.400E+04	1.613E+00
2101	5.703E+01	4.566E+04	3.068E+00	1.523E+01	2.283E+04	1.534E+00
2102	5.424E+01	4.344E+04	2.918E+00	1.449E+01	2.172E+04	1.459E+00
2103	5.160E+01	4.132E+04	2.776E+00	1.378E+01	2.066E+04	1.388E+00
2104	4.908E+01	3.930E+04	2.641E+00	1.311E+01	1.965E+04	1.320E+00
2105	4.669E+01	3.739E+04	2.512E+00	1.247E+01	1.869E+04	1.256E+00
2106	4.441E+01	3.556E+04	2.389E+00	1.186E+01	1.778E+04	1.195E+00
2107	4.225E+01	3.383E+04	2.273E+00	1.128E+01	1.691E+04	1.136E+00
2108	4.019E+01	3.218E+04	2.162E+00	1.073E+01	1.609E+04	1.081E+00
2109	3.823E+01	3.061E+04	2.057E+00	1.021E+01	1.530E+04	1.028E+00
2110	3.636E+01	2.912E+04	1.956E+00	9.712E+00	1.456E+04	9.782E-01
2111	3.459E+01	2.770E+04	1.861E+00	9.239E+00	1.385E+04	9.305E-01
2112	3.290E+01	2.635E+04	1.770E+00	8.788E+00	1.317E+04	8.851E-01
2113	3.130E+01	2.506E+04	1.684E+00	8.360E+00	1.253E+04	8.419E-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)*
1973	0	0	0	0	0	0
1974	6.916E+02	3.778E+05	2.538E+01	1.083E+01	3.022E+03	2.031E-01
1975	1.349E+03	7.372E+05	4.953E+01	2.114E+01	5.897E+03	3.963E-01
1976	1.975E+03	1.079E+06	7.250E+01	3.094E+01	8.632E+03	5.800E-01
1977	2.570E+03	1.404E+06	9.435E+01	4.027E+01	1.123E+04	7.548E-01
1978	3.137E+03	1.714E+06	1.151E+02	4.914E+01	1.371E+04	9.211E-01
1979	3.675E+03	2.008E+06	1.349E+02	5.757E+01	1.606E+04	1.079E+00
1980	4.188E+03	2.288E+06	1.537E+02	6.560E+01	1.830E+04	1.230E+00
1981	4.675E+03	2.554E+06	1.716E+02	7.323E+01	2.043E+04	1.373E+00
1982	5.138E+03	2.807E+06	1.886E+02	8.050E+01	2.246E+04	1.509E+00
1983	5.579E+03	3.048E+06	2.048E+02	8.741E+01	2.438E+04	1.638E+00
1984	5.999E+03	3.277E+06	2.202E+02	9.398E+01	2.622E+04	1.762E+00
1985	6.398E+03	3.495E+06	2.348E+02	1.002E+02	2.796E+04	1.879E+00
1986	7.746E+03	4.231E+06	2.843E+02	1.213E+02	3.385E+04	2.274E+00
1987	9.028E+03	4.932E+06	3.314E+02	1.414E+02	3.945E+04	2.651E+00
1988	9.556E+03	5.220E+06	3.507E+02	1.497E+02	4.176E+04	2.806E+00
1989	1.006E+04	5.495E+06	3.692E+02	1.576E+02	4.396E+04	2.953E+00
1990	9.567E+03	5.227E+06	3.512E+02	1.499E+02	4.181E+04	2.809E+00
1991	9.101E+03	4.972E+06	3.340E+02	1.426E+02	3.977E+04	2.672E+00
1992	8.657E+03	4.729E+06	3.178E+02	1.356E+02	3.783E+04	2.542E+00
1993	8.557E+03	4.675E+06	3.141E+02	1.341E+02	3.740E+04	2.513E+00
1994	8.463E+03	4.623E+06	3.106E+02	1.326E+02	3.699E+04	2.485E+00
1995	8.373E+03	4.574E+06	3.073E+02	1.312E+02	3.659E+04	2.459E+00
1996	7.964E+03	4.351E+06	2.923E+02	1.248E+02	3.481E+04	2.339E+00
1997	7.576E+03	4.139E+06	2.781E+02	1.187E+02	3.311E+04	2.225E+00
1998	7.206E+03	3.937E+06	2.645E+02	1.129E+02	3.150E+04	2.116E+00
1999	6.855E+03	3.745E+06	2.516E+02	1.074E+02	2.996E+04	2.013E+00
2000	6.521E+03	3.562E+06	2.393E+02	1.022E+02	2.850E+04	1.915E+00
2001	6.203E+03	3.389E+06	2.277E+02	9.717E+01	2.711E+04	1.821E+00
2002	5.900E+03	3.223E+06	2.166E+02	9.243E+01	2.579E+04	1.733E+00
2003	5.612E+03	3.066E+06	2.060E+02	8.792E+01	2.453E+04	1.648E+00
2004	5.339E+03	2.917E+06	1.960E+02	8.363E+01	2.333E+04	1.568E+00
2005	5.078E+03	2.774E+06	1.864E+02	7.955E+01	2.219E+04	1.491E+00
2006	4.831E+03	2.639E+06	1.773E+02	7.567E+01	2.111E+04	1.419E+00
2007	4.595E+03	2.510E+06	1.687E+02	7.198E+01	2.008E+04	1.349E+00
2008	4.371E+03	2.388E+06	1.604E+02	6.847E+01	1.910E+04	1.284E+00
2009	4.158E+03	2.271E+06	1.526E+02	6.513E+01	1.817E+04	1.221E+00
2010	3.955E+03	2.161E+06	1.452E+02	6.196E+01	1.728E+04	1.161E+00
2011	3.762E+03	2.055E+06	1.381E+02	5.894E+01	1.644E+04	1.105E+00
2012	3.579E+03	1.955E+06	1.314E+02	5.606E+01	1.564E+04	1.051E+00
2013	3.404E+03	1.860E+06	1.250E+02	5.333E+01	1.488E+04	9.996E-01
2014	3.238E+03	1.769E+06	1.189E+02	5.073E+01	1.415E+04	9.509E-01
2015	3.080E+03	1.683E+06	1.131E+02	4.825E+01	1.346E+04	9.045E-01
2016	2.930E+03	1.601E+06	1.075E+02	4.590E+01	1.280E+04	8.604E-01
2017	2.787E+03	1.523E+06	1.023E+02	4.366E+01	1.218E+04	8.184E-01
2018	2.651E+03	1.448E+06	9.731E+01	4.153E+01	1.159E+04	7.785E-01
2019	2.522E+03	1.378E+06	9.257E+01	3.951E+01	1.102E+04	7.405E-01
2020	2.399E+03	1.310E+06	8.805E+01	3.758E+01	1.048E+04	7.044E-01
2021	2.282E+03	1.247E+06	8.376E+01	3.575E+01	9.973E+03	6.701E-01
2022	2.171E+03	1.186E+06	7.967E+01	3.400E+01	9.486E+03	6.374E-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)*
2023	2.065E+03	1.128E+06	7.579E+01	3.234E+01	9.024E+03	6.063E-01
2024	1.964E+03	1.073E+06	7.209E+01	3.077E+01	8.583E+03	5.767E-01
2025	1.868E+03	1.021E+06	6.857E+01	2.927E+01	8.165E+03	5.486E-01
2026	1.777E+03	9.708E+05	6.523E+01	2.784E+01	7.767E+03	5.218E-01
2027	1.690E+03	9.235E+05	6.205E+01	2.648E+01	7.388E+03	4.964E-01
2028	1.608E+03	8.784E+05	5.902E+01	2.519E+01	7.028E+03	4.722E-01
2029	1.530E+03	8.356E+05	5.614E+01	2.396E+01	6.685E+03	4.491E-01
2030	1.455E+03	7.948E+05	5.341E+01	2.279E+01	6.359E+03	4.272E-01
2031	1.384E+03	7.561E+05	5.080E+01	2.168E+01	6.049E+03	4.064E-01
2032	1.317E+03	7.192E+05	4.832E+01	2.062E+01	5.754E+03	3.866E-01
2033	1.252E+03	6.841E+05	4.597E+01	1.962E+01	5.473E+03	3.677E-01
2034	1.191E+03	6.508E+05	4.372E+01	1.866E+01	5.206E+03	3.498E-01
2035	1.133E+03	6.190E+05	4.159E+01	1.775E+01	4.952E+03	3.327E-01
2036	1.078E+03	5.888E+05	3.956E+01	1.689E+01	4.711E+03	3.165E-01
2037	1.025E+03	5.601E+05	3.763E+01	1.606E+01	4.481E+03	3.011E-01
2038	9.753E+02	5.328E+05	3.580E+01	1.528E+01	4.262E+03	2.864E-01
2039	9.277E+02	5.068E+05	3.405E+01	1.453E+01	4.055E+03	2.724E-01
2040	8.825E+02	4.821E+05	3.239E+01	1.382E+01	3.857E+03	2.591E-01
2041	8.394E+02	4.586E+05	3.081E+01	1.315E+01	3.669E+03	2.465E-01
2042	7.985E+02	4.362E+05	2.931E+01	1.251E+01	3.490E+03	2.345E-01
2043	7.596E+02	4.149E+05	2.788E+01	1.190E+01	3.320E+03	2.230E-01
2044	7.225E+02	3.947E+05	2.652E+01	1.132E+01	3.158E+03	2.122E-01
2045	6.873E+02	3.755E+05	2.523E+01	1.077E+01	3.004E+03	2.018E-01
2046	6.538E+02	3.571E+05	2.400E+01	1.024E+01	2.857E+03	1.920E-01
2047	6.219E+02	3.397E+05	2.283E+01	9.742E+00	2.718E+03	1.826E-01
2048	5.915E+02	3.232E+05	2.171E+01	9.267E+00	2.585E+03	1.737E-01
2049	5.627E+02	3.074E+05	2.065E+01	8.815E+00	2.459E+03	1.652E-01
2050	5.353E+02	2.924E+05	1.965E+01	8.385E+00	2.339E+03	1.572E-01
2051	5.091E+02	2.781E+05	1.869E+01	7.976E+00	2.225E+03	1.495E-01
2052	4.843E+02	2.646E+05	1.778E+01	7.587E+00	2.117E+03	1.422E-01
2053	4.607E+02	2.517E+05	1.691E+01	7.217E+00	2.013E+03	1.353E-01
2054	4.382E+02	2.394E+05	1.609E+01	6.865E+00	1.915E+03	1.287E-01
2055	4.169E+02	2.277E+05	1.530E+01	6.530E+00	1.822E+03	1.224E-01
2056	3.965E+02	2.166E+05	1.455E+01	6.212E+00	1.733E+03	1.164E-01
2057	3.772E+02	2.061E+05	1.384E+01	5.909E+00	1.648E+03	1.108E-01
2058	3.588E+02	1.960E+05	1.317E+01	5.621E+00	1.568E+03	1.054E-01
2059	3.413E+02	1.864E+05	1.253E+01	5.347E+00	1.492E+03	1.002E-01
2060	3.246E+02	1.774E+05	1.192E+01	5.086E+00	1.419E+03	9.533E-02
2061	3.088E+02	1.687E+05	1.134E+01	4.838E+00	1.350E+03	9.068E-02
2062	2.938E+02	1.605E+05	1.078E+01	4.602E+00	1.284E+03	8.626E-02
2063	2.794E+02	1.526E+05	1.026E+01	4.377E+00	1.221E+03	8.205E-02
2064	2.658E+02	1.452E+05	9.756E+00	4.164E+00	1.162E+03	7.805E-02
2065	2.528E+02	1.381E+05	9.280E+00	3.961E+00	1.105E+03	7.424E-02
2066	2.405E+02	1.314E+05	8.828E+00	3.768E+00	1.051E+03	7.062E-02
2067	2.288E+02	1.250E+05	8.397E+00	3.584E+00	9.998E+02	6.718E-02
2068	2.176E+02	1.189E+05	7.988E+00	3.409E+00	9.511E+02	6.390E-02
2069	2.070E+02	1.131E+05	7.598E+00	3.243E+00	9.047E+02	6.079E-02
2070	1.969E+02	1.076E+05	7.228E+00	3.085E+00	8.606E+02	5.782E-02
2071	1.873E+02	1.023E+05	6.875E+00	2.934E+00	8.186E+02	5.500E-02
2072	1.782E+02	9.733E+04	6.540E+00	2.791E+00	7.787E+02	5.232E-02
2073	1.695E+02	9.259E+04	6.221E+00	2.655E+00	7.407E+02	4.977E-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)*
2074	1.612E+02	8.807E+04	5.918E+00	2.526E+00	7.046E+02	4.734E-02
2075	1.534E+02	8.378E+04	5.629E+00	2.402E+00	6.702E+02	4.503E-02
2076	1.459E+02	7.969E+04	5.354E+00	2.285E+00	6.375E+02	4.284E-02
2077	1.388E+02	7.580E+04	5.093E+00	2.174E+00	6.064E+02	4.075E-02
2078	1.320E+02	7.211E+04	4.845E+00	2.068E+00	5.769E+02	3.876E-02
2079	1.256E+02	6.859E+04	4.609E+00	1.967E+00	5.487E+02	3.687E-02
2080	1.194E+02	6.524E+04	4.384E+00	1.871E+00	5.220E+02	3.507E-02
2081	1.136E+02	6.206E+04	4.170E+00	1.780E+00	4.965E+02	3.336E-02
2082	1.081E+02	5.904E+04	3.967E+00	1.693E+00	4.723E+02	3.173E-02
2083	1.028E+02	5.616E+04	3.773E+00	1.610E+00	4.493E+02	3.019E-02
2084	9.778E+01	5.342E+04	3.589E+00	1.532E+00	4.273E+02	2.871E-02
2085	9.301E+01	5.081E+04	3.414E+00	1.457E+00	4.065E+02	2.731E-02
2086	8.848E+01	4.833E+04	3.248E+00	1.386E+00	3.867E+02	2.598E-02
2087	8.416E+01	4.598E+04	3.089E+00	1.318E+00	3.678E+02	2.471E-02
2088	8.006E+01	4.373E+04	2.939E+00	1.254E+00	3.499E+02	2.351E-02
2089	7.615E+01	4.160E+04	2.795E+00	1.193E+00	3.328E+02	2.236E-02
2090	7.244E+01	3.957E+04	2.659E+00	1.135E+00	3.166E+02	2.127E-02
2091	6.891E+01	3.764E+04	2.529E+00	1.079E+00	3.011E+02	2.023E-02
2092	6.554E+01	3.581E+04	2.406E+00	1.027E+00	2.865E+02	1.925E-02
2093	6.235E+01	3.406E+04	2.289E+00	9.767E-01	2.725E+02	1.831E-02
2094	5.931E+01	3.240E+04	2.177E+00	9.291E-01	2.592E+02	1.742E-02
2095	5.642E+01	3.082E+04	2.071E+00	8.838E-01	2.466E+02	1.657E-02
2096	5.366E+01	2.932E+04	1.970E+00	8.407E-01	2.345E+02	1.576E-02
2097	5.105E+01	2.789E+04	1.874E+00	7.997E-01	2.231E+02	1.499E-02
2098	4.856E+01	2.653E+04	1.782E+00	7.607E-01	2.122E+02	1.426E-02
2099	4.619E+01	2.523E+04	1.695E+00	7.236E-01	2.019E+02	1.356E-02
2100	4.394E+01	2.400E+04	1.613E+00	6.883E-01	1.920E+02	1.290E-02
2101	4.179E+01	2.283E+04	1.534E+00	6.547E-01	1.827E+02	1.227E-02
2102	3.976E+01	2.172E+04	1.459E+00	6.228E-01	1.737E+02	1.167E-02
2103	3.782E+01	2.066E+04	1.388E+00	5.924E-01	1.653E+02	1.110E-02
2104	3.597E+01	1.965E+04	1.320E+00	5.635E-01	1.572E+02	1.056E-02
2105	3.422E+01	1.869E+04	1.256E+00	5.360E-01	1.495E+02	1.005E-02
2106	3.255E+01	1.778E+04	1.195E+00	5.099E-01	1.423E+02	9.558E-03
2107	3.096E+01	1.691E+04	1.136E+00	4.850E-01	1.353E+02	9.092E-03
2108	2.945E+01	1.609E+04	1.081E+00	4.614E-01	1.287E+02	8.648E-03
2109	2.801E+01	1.530E+04	1.028E+00	4.389E-01	1.224E+02	8.226E-03
2110	2.665E+01	1.456E+04	9.782E-01	4.175E-01	1.165E+02	7.825E-03
2111	2.535E+01	1.385E+04	9.305E-01	3.971E-01	1.108E+02	7.444E-03
2112	2.411E+01	1.317E+04	8.851E-01	3.777E-01	1.054E+02	7.081E-03
2113	2.294E+01	1.253E+04	8.419E-01	3.593E-01	1.002E+02	6.735E-03

APPENDIX B

Toxic Air Pollutant Comparison Table

Common Name	CAS #	Averaging Period	ASIL (µg/m3)	SQER (lb/averaging period)	De Minimis (lb/averaging period)	LandGem 2018 Emission Rate (tons/year)	LandGem 2018 Emission Rate (lb/averaging period)		LandGem 2018 LFG Flow Rate (scfm)	Uptime	Total Volume (scf)	Sampling Result (ug/m3)	Actual Loading Rate (lb/averaging period)	Actual Loading Rate (lb/hr)	Dispersion Conc. North Boundary (µg/m3)*	Dispersion Conc. South Boundary (µg/m3)*	Sample #239		Sample #669			
1,1,1-Trichloroethane	71-55-6	24-hr	1000	131	6.57	8.49E-03	0.04650		195	100%	2.80E+05	1.36	2.38E-05				1.36	U	1.36	U	1,1,1-Trichloroethane	71-55-6
1,1,2,2-Tetrachloroethane	79-34-5	year	0.0172	3.3	0.165	2.45E-02	***48.93776***		195	100%	1.02E+08	1.29	8.24E-03				1.29	U	1.29	U	1,1,2,2-Tetrachloroethane	79-34-5
1,1,2-Trichloroethane	79-00-5	year	0.0625	12	0.6				195	100%	1.02E+08	1.71	1.09E-02				1.71	U	1.71	U	1,1,2-Trichloroethane	79-00-5
1,1-Dichloroethane	75-34-3	year	0.625	120	6	3.15E-02	***62.95712***		195	100%	1.02E+08	0.506	3.23E-03				0.506	U	0.506	U	1,1-Dichloroethane	75-34-3
1,1-Dichloroethylene	75-35-4	24-hr	200	26.3	1.31	2.57E-03	0.01408	1	195	100%	2.80E+05	2.4	4.20E-05				0.991	U	2.4		1,1-Dichloroethene	75-35-4
1,1-Difluoroethane	75-37-6	24-hr	4.00E+04	5260	263				195	100%	2.80E+05						1.39	U	1.39	U	1,2,4-Trichlorobenzene	120-82-1
1,1-Dimethylhydrazine	57-14-7	24-hr	0.5	0.0657	0.00329				195	100%	2.80E+05						45.3		310		1,2,4-Trimethylbenzene	95-63-6
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	year	0.000263	0.0505	0.00252				195	100%	1.02E+08						1.5	U	9.07		1,2-Dichlorobenzene	95-50-1
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-Dioxin	3268-87-9	year	0.000263	0.0505	0.00252				195	100%	1.02E+08						0.506	U	0.506	U	1,2-Dichloroethane	107-06-2
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	year	2.63E-06	0.000505	2.52E-05				195	100%	1.02E+08						1.44	U	1.44	U	1,2-Dichloropropane	78-87-5
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	year	2.63E-06	0.000505	2.52E-05				195	100%	1.02E+08						41.7		271		1,3,5-Trimethylbenzene	108-67-8
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	year	2.63E-06	0.000505	2.52E-05				195	100%	1.02E+08						0.691	U	0.691	U	1,3-Butadiene	106-99-0
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	year	2.63E-07	5.05E-05	2.52E-06				195	100%	1.02E+08						1.13	U	1.13	U	1,3-Dichlorobenzene	541-73-1
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	year	2.63E-07	5.05E-05	2.52E-06				195	100%	1.02E+08						18		101		1,4-Dichlorobenzene	106-46-7
1,2,3,6,7,8Hexachlorodibenzo-p-dioxin	57653-85-7	year	2.63E-07	5.05E-05	2.52E-06				195	100%	1.02E+08						0.43	U	0.43	U	1-Propene	115-07-1
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	year	2.63E-07	5.05E-05	2.52E-06				195	100%	1.02E+08						3.19		17.6		2-Butanone	78-93-3
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	year	2.63E-07	5.05E-05	2.52E-06				195	100%	1.02E+08						2.56	U	2.56	U	2-Hexanone	591-78-6
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	year	2.63E-07	5.05E-05	2.52E-06				195	100%	1.02E+08						35.2		112		Acetone	67-64-1
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	year	5.26E-07	0.000101	5.05E-06				195	100%	1.02E+08						0.717	U	0.717	U	Acrolein	107-02-8
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	year	2.63E-08	5.05E-06	2.52E-07				195	100%	1.02E+08						0.0037	U	0.0037	U	Acrylonitrile	107-13-1
1,2,3-Trichloropropane	96-18-4	24-hr	1.84	0.242	0.0121				195	100%	2.80E+05						85		338		Benzene	71-43-2
1,2-Dibromo-3-chloropropane	96-12-8	year	0.000526	0.101	0.00505				195	100%	1.02E+08						1.23	U	1.23	U	Benzene, 1-Ethyl-4-Methyl-	622-96-8
1,2-Dibromoethane	106-93-4	year	0.0141	2.71	0.135				195	100%	1.02E+08	0.96	6.13E-03				1.29	U	1.29	U	Bromoform	75-25-2
1,2-Dichloroethane	107-06-2	year	0.0385	7.39	0.369	5.38E-03	***10.75409***		195	100%	1.02E+08	0.506	3.23E-03				1.21	U	1.21	U	Bromomethane	74-83-9
1,2-Dichloropropane	78-87-5	year	0.1	19.2	0.959	2.70E-03	***5.39067***		195	100%	1.02E+08	1.44	9.20E-03				353		690		Carbon Disulfide	75-15-0
1,2-Dimethylhydrazine	540-73-8	year	6.25E-06	0.0012	6.00E-05				195	100%	1.02E+08						466	J	1100	J	Carbon Disulfide	75-15-0
1,2-Diphenylhydrazine	122-66-7	year	0.004	0.768	0.0384				195	100%	1.02E+08						24.6	U	24.6	U	Carbon Oxide Sulfide (Cos)	463-58-1
1,2-Epoxybutane	106-88-7	24-hr	20	2.63	0.131				195	100%	2.80E+05						0.258	U	0.258	U	Carbon Tetrachloride	56-23-5
1,3-Butadiene	106-99-0	year	0.00588	1.13	0.0564				195	100%	1.02E+08	0.691	4.42E-03				107		268		CFC-11	75-69-4
1,3-Dichloropropene	542-75-6	year	0.0625	12	0.6				195	100%	1.02E+08						1.92	U	1.92	U	CFC-113	76-13-1
1,3-PropaneSultone	1120-71-4	year	0.00145	0.278	0.0139				195	100%	1.02E+08						113		446		CFC-114	76-14-2
1,4-Dichlorobenzene	106-46-7	year	0.0909	17.4	0.872				195	100%	1.02E+08	101	6.45E-01				225		453	J	CFC-12	75-71-8
1,4-Dioxane	123-91-1	year	0.13	24.9	1.25				195	100%	1.02E+08	0.901	5.76E-03				0.575	U	0.575	U	Chlorobenzene	108-90-7
1,6-Dinitropyrene	42397-64-8	year	9.09E-05	0.0174	0.000872				195	100%	1.02E+08						2.66	U	2.66	U	Chlorodibromomethane	124-48-1
1,6-Hexamethylenediisocyanate	822-06-0	24-hr	0.07	0.0092	0.00046				195	100%	2.80E+05						0.66	U	0.66	U	Chloroethane	75-00-3
1,8-Dinitropyrene	42397-65-9	year	0.000909	0.174	0.00872				195	100%	1.02E+08						0.61	U	0.61	U	Chloroform	67-66-3
1-[(5-Nitrofurfurylidene)-amino]-2-imidazolidinc	555-84-0	year	0.00196	0.376	0.0188				195	100%	1.02E+08						0.645	U	0.645	U	Chloromethane	74-87-3
1-Amino-2-methylanthraquinone	82-28-0	year	0.0233	4.47	0.224				195	100%	1.02E+08						18.5		60.4		Cis-1,2-Dichloroethene	156-59-2
1-Chloro-1,1-difluoroethane	75-68-3	24-hr	5.00E+04	6570	329				195	100%	2.80E+05						1.13	U	1.13	U	Cis-1,3-Dichloropropene	10061-01-5
1-Nitropyrene	5522-43-0	year	0.00909	1.74	0.0872				195	100%	1.02E+08						373		993		Cyclohexane	110-82-7
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	year	5.26E-05	0.0101	0.000505				195	100%	1.02E+08						1.26	U	1.26	U	Dichlorobromomethane	75-27-4
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	year	5.26E-05	0.0101	0.000505				195	100%	1.02E+08						38.4	U	38.4	U	Dimethyl disulfide	624-92-0
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	year	0.000263	0.0505	0.00252				195	100%	1.02E+08						0.901	U	0.901	U	Dioxane, 1,4-	123-91-1
2,3,3',4,4',5,5'-Heptachlorobiphenyl	39635-31-9	year	0.000263	0.0505	0.00252				195	100%	1.02E+08						2.25	U	2.25	U	Ethyl Acetate	141-78-6
2',3,4,4',5-Pentachlorobiphenyl	65510-44-3	year	0.000263	0.0505	0.00252				195	100%	1.02E+08						25.4	U	25.4	U	Ethyl mercaptan	75-08-1
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	year	0.000263	0.0505	0.00252				195	100%	1.02E+08						313		2040	J	Ethylbenzene	100-41-4
2,3,4,4',5-Pentachlorobiphenyl	74472-37-0	year	5.26E-05	0.0101	0.000505				195	100%	1.02E+08						0.96	U	0.96	U	Ethylene dibromide	106-93-4
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	year	2.63E-07	5.05E-05	2.52E-06				195	100%	1.02E+08						610		1750	J	Heptane	142-82-5
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	year	5.26E-08	1.01E-05	5.05E-07				195	100%	1.02E+08						6.67	U	6.67	U	Hexachlorobutadiene	87-68-3
2,3,7,8-Tetrachlorodibenzo-p-dioxin&RelatedC	----	year	2.63E-08	5.05E-06	2.52E-07				195	100%	1.02E+08						1250		2850		Hexane	110-54-3
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	year	2.63E-08	5.05E-06	2.52E-07				195	100%	1.02E+08						13.9	U	13.9	U	Hydrogen Sulfide	7783-06-4
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	year	0.000263	0.0505	0.00252				195	100%	1.02E+08						36.8	U	36.8	U	Isobutyl Mercaptan	513-44-0
2,4-Diaminoanisole	615-05-4	year	0.152	29.2	1.46				195	100%	1.02E+08						1.54	U	1.54	U	Isopropyl Alcohol	67-63-0
2,4-DiaminoanisoleSulfate	39156-41-7	year	0.27	51.8	2.59				195	100%	1.02E+08						31.1	U	31.1	U	Isopropyl Mercaptan	75-33-2
2,4-Diaminotoluene	95-80-7	year	0.000909	0.174	0.00872				195	100%	1.02E+08						197		1420		m, p-Xylene	179601-23-1
2-Acetylaminofluorene	53-96-3	year	0.000769	0.148	0.00738				195	100%	1.02E+08						25.4	U	25.4	U	Methane, Thiobis	75-18-3
2-Amino-3-methyl-9Hpyrido[2,3-b]indole	68006-83-7	year	0.00294	0.564	0.0282				195	100%	1.02E+08						10		45.7		Methyl isobutyl ketone	108-10-1
2-Amino-5-(5-Nitro-2-Furyl)-1,3,4-Thiadiazol	712-68-5	year	0.000217	0.0416	0.00208				195	100%	1.02E+08						19.6	U	19.6	U	Methyl Mercaptan	74-93-1
2-Aminoanthraquinone	117-79-3	year	0.106	20.3	1.02				195	100%	1.02E+08						1.02	U	1.02	U	Methyl Methacrylate	80-62-6
2-Chloroacetophenone	532-27-4	24-hr	0.03	0.00394	0.000197				195	100%	2.80E+05						3.58		11.4		Methyl t-butyl ether	1634-04-4
2-Ethoxyethanol	110-80-5	24-hr	70	9.2	0.46				195	100%	2.80E+05						77.3		27.5		Methylene Chloride	75-09-2
2-Methoxyethanol	109-86-4	24-hr	60	7.89	0.394				195	100%	2.80E+05						7.6		14.5		Naphthalene	91-20-3
2-Methyl-1-nitroanthraquinone	129-15-7	year	0.000833	0.16	0.00799				195	100%	1.02E+08						36.9	U	36.9	U	n-butyl Mercaptan	109-79-5
2-Methylphenol	95-48-7	24-hr	600	78.9	3.94				195	100%	2.80E+05						31.1	U	31.1	U	n-Propyl Mercaptan	107-03-9
2-Nitrofluorene	607-57-8	year	0.0909	17.4	0.872				195	100%	1.02E+08						106		694		o-Xylene	95-47-6
2-Nitropropane	79-46-9	24-hr	20	2.63	0.131				195	100%	2.80E+05						1.73		13.7		Styrene	100-42-5
3,3',4,4',5,5'-Hexachlorobiphenyl	32774-16-6	year	0.000263	0.0505	0.00252				195	100%	1.02E+08						36.8	U	36.8	U	t-Butyl Mercaptan	75-66-1

Common Name	CAS #	Averaging Period	ASIL (µg/m3)	SQER (lb/averaging period)	De Minimis (lb/averaging period)	LandGem 2018 Emission Rate (tons/year)	LandGem 2018 Emission Rate (lb/averaging period)		LandGem 2018 LFG Flow Rate (scfm)	Uptime	Total Volume (scf)	Sampling Result (ug/m3)	Actual Loading Rate (lb/averaging period)	Actual Loading Rate (lb/hr)	Dispersion Conc. North Boundary (µg/m3)*	Dispersion Conc. South Boundary (µg/m3)*
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	year	0.000263	0.0505	0.00252				195	100%	1.02E+08					
3,3'-Dichlorobenzidine	91-94-1	year	0.00294	0.564	0.0282				195	100%	1.02E+08					
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	year	0.000263	0.0505	0.00252				195	100%	1.02E+08					
3-Amino-9-ethylcarbazolehydrochloride	6109-97-3	year	0.0455	8.73	0.437				195	100%	1.02E+08					
3-Chloro-2-methyl-propene	563-47-3	year	0.025	4.8	0.24				195	100%	1.02E+08					
3-Methylcholanthrene	56-49-5	year	0.000159	0.0305	0.00153				195	100%	1.02E+08					
3-Methylphenol	108-39-4	24-hr	600	78.9	3.94				195	100%	2.80E+05					
4,4'-DiaminodiphenylEther	101-80-4	year	0.025	4.8	0.24				195	100%	1.02E+08					
4,4-Methylenebis(2-chloroaniline)	101-14-4	year	0.00233	0.447	0.0224				195	100%	1.02E+08					
Acrolein	107-02-8	24-hr	0.06	0.00789	0.000394				195	100%	2.80E+05	0.717	1.25E-05			
Acrylonitrile	107-13-1	year	0.00345	0.662	0.0331	4.43E-02	***88.60084***		195	100%	1.02E+08	0.00374	2.39E-05			
Benzene	71-43-2	year	0.0345	6.62	0.331	1.14E-01	***227.73479***	tv	195	100%	1.02E+08	338	***2.16E+00***	2.47E-04	0.0062	0.0014
BenzylChloride	100-44-7	year	0.0204	3.91	0.196				195	100%	1.02E+08	1.62	1.04E-02			
Bromodichloromethane	75-27-4	year	0.027	5.18	0.259	6.73E-02	***134.61244***		195	100%	1.02E+08	1.26	8.05E-03			
Bromoform	75-25-2	year	0.909	174	8.72				195	100%	1.02E+08	1.29	8.24E-03			
Carbondisulfide	75-15-0	24-hr	800	105	5.26	5.85E-03	0.03206		195	100%	2.80E+05	690	1.21E-02			
CarbonTetrachloride	56-23-5	year	0.0238	4.57	0.228	8.16E-05	0.16310		195	100%	1.02E+08	0.258	1.65E-03			
Chlorobenzene	108-90-7	24-hr	1000	131	6.57	3.73E-03	0.02043		195	100%	2.80E+05	0.575	1.01E-05			
Chlorodifluoromethane	75-45-6	24-hr	5.00E+04	6570	328	1.49E-02	0.08163		195	100%	2.80E+05					
Chloroform	67-66-3	year	0.0435	8.35	0.417	4.75E-04	***0.94933***		195	100%	1.02E+08	0.61	3.90E-03			
Cyclohexane	110-82-7	24-hr	6000	789	39.4				195	100%	2.80E+05	993	1.74E-02			
Dibromochloromethane	124-48-1	year	0.037	7.1	0.355				195	100%	1.02E+08	2.66	1.70E-02			
Dichloromethane	75-09-2	year	1	192	9.59	1.58E-01	***315.18849***		195	100%	1.02E+08	77.3	4.94E-01			
EthylChloride	75-00-3	24-hr	3.00E+04	3940	197				195	100%	2.80E+05	0.66	1.15E-05			
Ethylbenzene	100-41-4	year	0.4	76.8	3.84	6.47E-02	***129.43413***		195	100%	1.02E+08	2040	***1.30E+01***	1.49E-03	0.0371	0.008
Hexachlorobutadiene	87-68-3	year	0.0455	8.73	0.437				195	100%	1.02E+08	6.67	4.26E-02			
HydrogenSulfide	7783-06-4	24-hr	2	0.263	0.0131	1.63E-01	***0.89092***		195	100%	2.80E+05	13.9	2.43E-04			
IsopropylAlcohol	67-63-0	1-hr	3200	7.01	0.35		0.00000		195	100%	1.17E+04	1.54	1.12E-06			
MethylBromide	74-83-9	24-hr	5	0.657	0.0629		0.00000		195	100%	2.80E+05	1.21	2.12E-05			
MethylChloride	74-87-3	24-hr	90	11.8	0.591		0.00000		195	100%	2.80E+05	0.645	1.13E-05			
MethylEthylKetone	78-93-3	24-hr	5000	657	32.9	6.79E-02	0.37178		195	100%	2.80E+05	17.6	3.08E-04			
MethylIsobutylKetone	108-10-1	24-hr	3000	394	19.7	2.52E-02	0.13819		195	100%	2.80E+05	45.7	7.99E-04			
Methylmethacrylate	80-62-6	24-hr	700	92	4.6				195	100%	2.80E+05	1.02	1.78E-05			
MethylTertiaryButylEther	1634-04-4	year	3.85	739	36.9				195	100%	1.02E+08	11.4	7.28E-02			
Naphthalene	91-20-3	year	0.0294	5.64	0.282				195	100%	1.02E+08	14.5	9.26E-02			
n-Hexane	110-54-3	24-hr	700	92	4.6				195	100%	2.80E+05	2850	4.99E-02			
o-Xylene	95-47-6	24-hr	221	29	1.45				195	100%	2.80E+05	694	1.21E-02			
Tetrachloroethylene	127-18-4	year	0.169	32.4	1.62	8.13E-02	***162.62783***		195	100%	1.02E+08	0.848	5.42E-03			
Propylene	115-07-1	24-hr	3000	394	19.7				195	100%	2.80E+05	0.43	7.52E-06			
Styrene	100-42-5	24-hr	900	118	5.91				195	100%	2.80E+05	13.7	2.40E-04			
Toluene	108-88-3	24-hr	5000	657	32.9	2.08E+00	11.37332	tv	195	100%	2.80E+05	607	1.06E-02			
Trans-1,2-dichloroethene	156-60-5	24-hr	807	106	5.3	3.60E-02	0.19711		195	100%	2.80E+05	0.496	8.68E-06			
Trichloroethylene	79-01-6	year	0.5	95.9	4.8	4.88E-02	***97.51770***		195	100%	1.02E+08	0.218	1.39E-03			
Vinylacetate	108-05-4	24-hr	200	26.3	1.31				195	100%	2.80E+05	2.2	3.85E-05			
VinylChloride	75-01-4	year	0.0128	2.46	0.123	6.05E-02	***120.92969***		195	100%	1.02E+08	0.171	1.09E-03			

Sample #239		Sample #669			
0.848	U	0.848	U	Tetrachloroethene	127-18-4
27.2		162		Tetrahydrofuran	109-99-9
115		607		Toluene	108-88-3
1.62	U	1.62	U	Toluene, Alpha-Chloro-	100-44-7
0.496	U	0.496	U	Trans-1,2-Dichloroethene	156-60-5
1.42	U	1.42	U	Trans-1,3-Dichloropropene	10061-02-6
0.218	U	0.218	U	Trichloroethene	79-01-6
2.2	U	2.2	U	Vinyl Acetate	108-05-4
0.171	U	0.171	U	Vinyl Chloride	75-01-4

Shading indicates calculated loading rate exceeds SQER (WAC 173-460-150).
Bold indicates calculated loading rate exceeds De Minimis Rate (WAC 173-460-150).
Flow from blower on 5/18/2018 (CFM) was 367.9
*Dispersion Concentration at Boundary must be greater than ASIL

APPENDIX C

Laboratory Report

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Herrera Environmental
Tyson Wright
2200 Sixth Ave, Ste 1100
Seattle, WA 98121

RE: Inman Landfill
Work Order Number: 1805273

May 31, 2018

Attention Tyson Wright:

Fremont Analytical, Inc. received 2 sample(s) on 5/18/2018 for the analyses presented in the following report.

Sulfur Compounds by EPA Method TO-15
Volatile Organic Compounds by EPA Method 8260C
Volatile Organic Compounds by EPA Method TO-15

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward
Project Manager

Date: *05/31/2018*

CLIENT: Herrera Environmental
Project: Inman Landfill
Work Order: 1805273

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1805273-001	669	05/18/2018 2:35 PM	05/18/2018 4:43 PM
1805273-002	239	05/18/2018 11:41 AM	05/18/2018 4:43 PM

Case Narrative

WO#: **1805273**
Date: **5/31/2018**

CLIENT: Herrera Environmental
Project: Inman Landfill

WorkOrder Narrative:
I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Air samples are reported in ppbv and ug/m3 for TO15 analysis and ug/L for EPA 8260.

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Standard temperature and pressure assumes 24.45 = (25C and 1 atm).

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Client: Herrera Environmental
WorkOrder: 1805273
Project: Inman Landfill

Client Sample ID: 669
Lab ID: 1805273-001A
Sample Type: Summa Canister

Date Sampled: 5/18/2018
Date Received: 5/18/2018

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Sulfur Compounds by EPA Method TO-15								
	(ppbv)	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
Carbon Disulfide	352	1,100	10.0	31.1		EPA-TO-15	05/19/2018	BT
Carbonyl Sulfide	<10.0	<24.6	10.0	24.6		EPA-TO-15	05/19/2018	BT
Dimethyl Disulfide	<10.0	<38.4	10.0	38.4		EPA-TO-15	05/19/2018	BT
Dimethyl Sulfide	<100	<254	100	254	H	EPA-TO-15	05/22/2018	BT
Dimethyl Sulfide	<10.0	<25.4	10.0	25.4		EPA-TO-15	05/19/2018	BT
Ethyl Mercaptan	<10.0	<25.4	10.0	25.4		EPA-TO-15	05/19/2018	BT
Hydrogen Sulfide	<10.0	<13.9	10.0	13.9		EPA-TO-15	05/19/2018	BT
Hydrogen Sulfide	<100	<139	100	139	H	EPA-TO-15	05/22/2018	BT
Isobutyl Mercaptan	<100	<368	100	368	H	EPA-TO-15	05/22/2018	BT
Isobutyl Mercaptan	<10.0	<36.8	10.0	36.8		EPA-TO-15	05/19/2018	BT
Isopropyl Mercaptan	<10.0	<31.1	10.0	31.1		EPA-TO-15	05/19/2018	BT
Methyl Mercaptan	<100	<196	100	196	*H	EPA-TO-15	05/22/2018	BT
Methyl Mercaptan	<10.0	<19.6	10.0	19.6		EPA-TO-15	05/19/2018	BT
n-Butyl Mercaptan	<10.0	<36.9	10.0	36.9		EPA-TO-15	05/19/2018	BT
n-Propyl Mercaptan	<100	<311	100	311	H	EPA-TO-15	05/22/2018	BT
n-Propyl Mercaptan	<10.0	<31.1	10.0	31.1		EPA-TO-15	05/19/2018	BT
t-Butyl Mercaptan	<10.0	<36.8	10.0	36.8		EPA-TO-15	05/19/2018	BT
t-Butyl Mercaptan	<100	<368	100	368	H	EPA-TO-15	05/22/2018	BT
Surr: 4-Bromofluorobenzene	397 %Rec	--	70-130	--	S	EPA-TO-15	05/19/2018	BT
Surr: 4-Bromofluorobenzene	98.6 %Rec	--	70-130	--	H	EPA-TO-15	05/22/2018	BT

NOTES:
S - Outlying surrogate recovery(ies) observed.
* - Flagged value is not within established control limits.

Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	**(ug/m³)**	**(ppbv)**	**(ug/m³)**				
1,1,1-Trichloroethane	<0.250	<1.36	0.250	1.36		EPA-TO-15	05/19/2018	BT
1,1,2,2-Tetrachloroethane	<0.188	<1.29	0.188	1.29		EPA-TO-15	05/19/2018	BT
CFC-113	<0.250	<1.92	0.250	1.92		EPA-TO-15	05/19/2018	BT
1,1,2-Trichloroethane (TCA)	<0.312	<1.71	0.312	1.71		EPA-TO-15	05/19/2018	BT
1,1-Dichloroethane	<0.125	<0.506	0.125	0.506		EPA-TO-15	05/19/2018	BT
1,1-Dichloroethene (DCE)	0.605	2.40	0.250	0.991		EPA-TO-15	05/19/2018	BT

Client: Herrera Environmental
WorkOrder: 1805273
Project: Inman Landfill

Client Sample ID: 669
Lab ID: 1805273-001A
Sample Type: Summa Canister

Date Sampled: 5/18/2018
Date Received: 5/18/2018

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,2,4-Trichlorobenzene	<0.188	<1.39	0.188	1.39		EPA-TO-15	05/19/2018	BT
1,2,4-Trimethylbenzene	63.2	310	0.750	3.69		EPA-TO-15	05/19/2018	BT
1,2-Dibromoethane (EDB)	<0.125	<0.960	0.125	0.960		EPA-TO-15	05/19/2018	BT
1,2-Dichlorobenzene	1.51	9.07	0.250	1.50		EPA-TO-15	05/19/2018	BT
1,2-Dichloroethane	<0.125	<0.506	0.125	0.506		EPA-TO-15	05/19/2018	BT
1,2-Dichloropropane	<0.312	<1.44	0.312	1.44		EPA-TO-15	05/19/2018	BT
1,3,5-Trimethylbenzene	55.0	271	0.750	3.69		EPA-TO-15	05/19/2018	BT
1,3-Butadiene	<0.312	<0.691	0.312	0.691		EPA-TO-15	05/19/2018	BT
1,3-Dichlorobenzene	<0.188	<1.13	0.188	1.13		EPA-TO-15	05/19/2018	BT
1,4-Dichlorobenzene	16.7	101	0.188	1.13		EPA-TO-15	05/19/2018	BT
1,4-Dioxane	<0.250	<0.901	0.250	0.901		EPA-TO-15	05/19/2018	BT
(MEK) 2-Butanone	5.96	17.6	0.625	1.84		EPA-TO-15	05/19/2018	BT
2-Hexanone	<0.625	<2.56	0.625	2.56		EPA-TO-15	05/19/2018	BT
Isopropyl Alcohol	<0.625	<1.54	0.625	1.54		EPA-TO-15	05/19/2018	BT
4-Methyl-2-pentanone (MIBK)	11.2	45.7	0.625	2.56		EPA-TO-15	05/19/2018	BT
Acetone	47.0	112	2.50	5.94		EPA-TO-15	05/19/2018	BT
Acrolein	<0.312	<0.717	0.312	0.717		EPA-TO-15	05/19/2018	BT
Benzene	106	338	1.12	3.58		EPA-TO-15	05/24/2018	BT
Benzyl chloride	<0.312	<1.62	0.312	1.62		EPA-TO-15	05/19/2018	BT
Dichlorobromomethane	<0.188	<1.26	0.188	1.26		EPA-TO-15	05/19/2018	BT
Bromoform	<0.125	<1.29	0.125	1.29		EPA-TO-15	05/19/2018	BT
Bromomethane	<0.312	<1.21	0.312	1.21		EPA-TO-15	05/19/2018	BT
Carbon disulfide	221	690	18.8	58.4		EPA-TO-15	05/24/2018	BT
Carbon tetrachloride	<0.0411	<0.258	0.0411	0.258		EPA-TO-15	05/19/2018	BT
Chlorobenzene	<0.125	<0.575	0.125	0.575		EPA-TO-15	05/19/2018	BT
Dibromochloromethane	<0.312	<2.66	0.312	2.66		EPA-TO-15	05/19/2018	BT
Chloroethane	<0.250	<0.660	0.250	0.660		EPA-TO-15	05/19/2018	BT
Chloroform	<0.125	<0.610	0.125	0.610		EPA-TO-15	05/19/2018	BT
Chloromethane	<0.312	<0.645	0.312	0.645		EPA-TO-15	05/19/2018	BT
cis-1,2-Dichloroethene	15.2	60.4	0.125	0.496		EPA-TO-15	05/19/2018	BT

Client: **Herrera Environmental**
WorkOrder: 1805273
Project: Inman Landfill

Client Sample ID: 669
Lab ID: 1805273-001A
Sample Type: Summa Canister

Date Sampled: 5/18/2018
Date Received: 5/18/2018

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
cis-1,3-dichloropropene	<0.250	<1.13	0.250	1.13		EPA-TO-15	05/19/2018	BT
Cyclohexane	289	993	5.00	17.2		EPA-TO-15	05/24/2018	BT
Dichlorodifluoromethane (CFC-12)	91.5	453	1.00	4.95	E	EPA-TO-15	05/19/2018	BT
Dichlorotetrafluoroethane (CFC-114)	63.8	446	1.00	6.99		EPA-TO-15	05/19/2018	BT
Ethyl acetate	<0.625	<2.25	0.625	2.25		EPA-TO-15	05/19/2018	BT
Ethylbenzene	471	2,040	5.00	21.7	E	EPA-TO-15	05/24/2018	BT
Heptane	436	1,750	5.00	20.1	E	EPA-TO-15	05/24/2018	BT
Hexachlorobutadiene	<0.625	<6.67	0.625	6.67		EPA-TO-15	05/19/2018	BT
m,p-Xylene	328	1,420	10.0	43.4		EPA-TO-15	05/24/2018	BT
Methyl methacrylate	<0.250	<1.02	0.250	1.02		EPA-TO-15	05/19/2018	BT
Methylene chloride	7.91	27.5	1.25	4.34	*	EPA-TO-15	05/19/2018	BT
Naphthalene	2.77	14.5	0.0625	0.328		EPA-TO-15	05/19/2018	BT
n-Hexane	809	2,850	5.00	17.6		EPA-TO-15	05/24/2018	BT
o-Xylene	160	694	5.00	21.7		EPA-TO-15	05/24/2018	BT
4-Ethyltoluene	<0.250	<1.23	0.250	1.23		EPA-TO-15	05/19/2018	BT
Propylene	<0.250	<0.430	0.250	0.430		EPA-TO-15	05/19/2018	BT
Styrene	3.21	13.7	0.250	1.06		EPA-TO-15	05/19/2018	BT
Methyl tert-butyl ether (MTBE)	3.16	11.4	0.250	0.901		EPA-TO-15	05/19/2018	BT
Tetrachloroethene (PCE)	<0.125	<0.848	0.125	0.848		EPA-TO-15	05/19/2018	BT
Tetrahydrofuran	55.1	162	1.00	2.95		EPA-TO-15	05/19/2018	BT
Toluene	161	607	5.00	18.8		EPA-TO-15	05/24/2018	BT
trans-1,2-Dichloroethene	<0.125	<0.496	0.125	0.496		EPA-TO-15	05/19/2018	BT
trans-1,3-dichloropropene	<0.312	<1.42	0.312	1.42		EPA-TO-15	05/19/2018	BT
Trichloroethene (TCE)	<0.0406	<0.218	0.0406	0.218		EPA-TO-15	05/19/2018	BT
Trichlorofluoromethane (CFC-11)	47.7	268	1.00	5.62		EPA-TO-15	05/19/2018	BT
Vinyl acetate	<0.625	<2.20	0.625	2.20		EPA-TO-15	05/19/2018	BT
Vinyl chloride	<0.0670	<0.171	0.0670	0.171		EPA-TO-15	05/19/2018	BT
Surr: 4-Bromofluorobenzene	97.8 %Rec	--	70-130	--		EPA-TO-15	05/22/2018	BT

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.
* - Flagged value is not within established control limits.

Client: **Herrera Environmental**
WorkOrder: 1805273
Project: Inman Landfill

Client Sample ID: 669
Lab ID: 1805273-001A
Sample Type: Summa Canister

Date Sampled: 5/18/2018
Date Received: 5/18/2018

Analyte	Concentration	Reporting Limit	Qual	Method	Date/Analyst

Client: **Herrera Environmental**
WorkOrder: 1805273
Project: Inman Landfill

Client Sample ID: 239
Lab ID: 1805273-002A
Sample Type: Summa Canister

Date Sampled: 5/18/2018
Date Received: 5/18/2018

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Sulfur Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Carbon Disulfide	150	466	10.0	31.1		EPA-TO-15	05/19/2018	BT
Carbonyl Sulfide	<10.0	<24.6	10.0	24.6		EPA-TO-15	05/19/2018	BT
Dimethyl Disulfide	<10.0	<38.4	10.0	38.4		EPA-TO-15	05/19/2018	BT
Dimethyl Sulfide	<10.0	<25.4	10.0	25.4		EPA-TO-15	05/19/2018	BT
Dimethyl Sulfide	<100	<254	100	254	H	EPA-TO-15	05/22/2018	BT
Ethyl Mercaptan	<10.0	<25.4	10.0	25.4		EPA-TO-15	05/19/2018	BT
Hydrogen Sulfide	<10.0	<13.9	10.0	13.9		EPA-TO-15	05/19/2018	BT
Hydrogen Sulfide	<100	<139	100	139	H	EPA-TO-15	05/22/2018	BT
Isobutyl Mercaptan	<100	<368	100	368	H	EPA-TO-15	05/22/2018	BT
Isobutyl Mercaptan	<10.0	<36.8	10.0	36.8		EPA-TO-15	05/19/2018	BT
Isopropyl Mercaptan	<10.0	<31.1	10.0	31.1		EPA-TO-15	05/19/2018	BT
Methyl Mercaptan	<10.0	<19.6	10.0	19.6		EPA-TO-15	05/19/2018	BT
Methyl Mercaptan	<100	<196	100	196	*H	EPA-TO-15	05/22/2018	BT
n-Butyl Mercaptan	<10.0	<36.9	10.0	36.9		EPA-TO-15	05/19/2018	BT
n-Propyl Mercaptan	<10.0	<31.1	10.0	31.1		EPA-TO-15	05/19/2018	BT
n-Propyl Mercaptan	<100	<311	100	311	H	EPA-TO-15	05/22/2018	BT
t-Butyl Mercaptan	<10.0	<36.8	10.0	36.8		EPA-TO-15	05/19/2018	BT
t-Butyl Mercaptan	<100	<368	100	368	H	EPA-TO-15	05/22/2018	BT
Surr: 4-Bromofluorobenzene	166 %Rec	--	70-130	--	S	EPA-TO-15	05/19/2018	BT
Surr: 4-Bromofluorobenzene	108 %Rec	--	70-130	--	H	EPA-TO-15	05/22/2018	BT

NOTES:
S - Outlying surrogate recovery(ies) observed.
* - Flagged value is not within established control limits.

Volatile Organic Compounds by EPA Method TO-15

	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
1,1,1-Trichloroethane	<0.250	<1.36	0.250	1.36		EPA-TO-15	05/19/2018	BT
1,1,2,2-Tetrachloroethane	<0.188	<1.29	0.188	1.29		EPA-TO-15	05/19/2018	BT
CFC-113	<0.250	<1.92	0.250	1.92		EPA-TO-15	05/19/2018	BT
1,1,2-Trichloroethane (TCA)	<0.312	<1.71	0.312	1.71		EPA-TO-15	05/19/2018	BT
1,1-Dichloroethane	<0.125	<0.506	0.125	0.506		EPA-TO-15	05/19/2018	BT
1,1-Dichloroethene (DCE)	<0.250	<0.991	0.250	0.991		EPA-TO-15	05/19/2018	BT

Client: Herrera Environmental
WorkOrder: 1805273
Project: Inman Landfill

Client Sample ID: 239
Lab ID: 1805273-002A
Sample Type: Summa Canister

Date Sampled: 5/18/2018
Date Received: 5/18/2018

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,2,4-Trichlorobenzene	<0.188	<1.39	0.188	1.39		EPA-TO-15	05/19/2018	BT
1,2,4-Trimethylbenzene	9.21	45.3	0.188	0.922		EPA-TO-15	05/19/2018	BT
1,2-Dibromoethane (EDB)	<0.125	<0.960	0.125	0.960		EPA-TO-15	05/19/2018	BT
1,2-Dichlorobenzene	<0.250	<1.50	0.250	1.50		EPA-TO-15	05/19/2018	BT
1,2-Dichloroethane	<0.125	<0.506	0.125	0.506		EPA-TO-15	05/19/2018	BT
1,2-Dichloropropane	<0.312	<1.44	0.312	1.44		EPA-TO-15	05/19/2018	BT
1,3,5-Trimethylbenzene	8.48	41.7	0.188	0.922		EPA-TO-15	05/19/2018	BT
1,3-Butadiene	<0.312	<0.691	0.312	0.691		EPA-TO-15	05/19/2018	BT
1,3-Dichlorobenzene	<0.188	<1.13	0.188	1.13		EPA-TO-15	05/19/2018	BT
1,4-Dichlorobenzene	2.99	18.0	0.188	1.13		EPA-TO-15	05/19/2018	BT
1,4-Dioxane	<0.250	<0.901	0.250	0.901		EPA-TO-15	05/19/2018	BT
(MEK) 2-Butanone	1.08	3.19	0.625	1.84		EPA-TO-15	05/19/2018	BT
2-Hexanone	<0.625	<2.56	0.625	2.56		EPA-TO-15	05/19/2018	BT
Isopropyl Alcohol	<0.625	<1.54	0.625	1.54		EPA-TO-15	05/19/2018	BT
4-Methyl-2-pentanone (MIBK)	2.45	10.0	0.625	2.56		EPA-TO-15	05/19/2018	BT
Acetone	14.8	35.2	0.625	1.48		EPA-TO-15	05/19/2018	BT
Acrolein	<0.312	<0.717	0.312	0.717		EPA-TO-15	05/19/2018	BT
Benzene	26.6	85.0	0.224	0.715		EPA-TO-15	05/19/2018	BT
Benzyl chloride	<0.312	<1.62	0.312	1.62		EPA-TO-15	05/19/2018	BT
Dichlorobromomethane	<0.188	<1.26	0.188	1.26		EPA-TO-15	05/19/2018	BT
Bromoform	<0.125	<1.29	0.125	1.29		EPA-TO-15	05/19/2018	BT
Bromomethane	<0.312	<1.21	0.312	1.21		EPA-TO-15	05/19/2018	BT
Carbon disulfide	113	353	37.5	117		EPA-TO-15	05/22/2018	BT
Carbon tetrachloride	<0.0411	<0.258	0.0411	0.258		EPA-TO-15	05/19/2018	BT
Chlorobenzene	<0.125	<0.575	0.125	0.575		EPA-TO-15	05/19/2018	BT
Dibromochloromethane	<0.312	<2.66	0.312	2.66		EPA-TO-15	05/19/2018	BT
Chloroethane	<0.250	<0.660	0.250	0.660		EPA-TO-15	05/19/2018	BT
Chloroform	<0.125	<0.610	0.125	0.610		EPA-TO-15	05/19/2018	BT
Chloromethane	<0.312	<0.645	0.312	0.645		EPA-TO-15	05/19/2018	BT
cis-1,2-Dichloroethene	4.68	18.5	0.125	0.496		EPA-TO-15	05/19/2018	BT

Client: **Herrera Environmental**
WorkOrder: 1805273
Project: Inman Landfill

Client Sample ID: 239
Lab ID: 1805273-002A
Sample Type: Summa Canister

Date Sampled: 5/18/2018
Date Received: 5/18/2018

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
cis-1,3-dichloropropene	<0.250	<1.13	0.250	1.13		EPA-TO-15	05/19/2018	BT
Cyclohexane	108	373	10.0	34.4		EPA-TO-15	05/22/2018	BT
Dichlorodifluoromethane (CFC-12)	45.5	225	1.00	4.95		EPA-TO-15	05/19/2018	BT
Dichlorotetrafluoroethane (CFC-114)	16.2	113	0.250	1.75		EPA-TO-15	05/19/2018	BT
Ethyl acetate	<0.625	<2.25	0.625	2.25		EPA-TO-15	05/19/2018	BT
Ethylbenzene	72.1	313	1.00	4.34		EPA-TO-15	05/19/2018	BT
Heptane	152	610	10.0	40.2		EPA-TO-15	05/22/2018	BT
Hexachlorobutadiene	<0.625	<6.67	0.625	6.67		EPA-TO-15	05/19/2018	BT
m,p-Xylene	45.4	197	2.00	8.68		EPA-TO-15	05/19/2018	BT
Methyl methacrylate	<0.250	<1.02	0.250	1.02		EPA-TO-15	05/19/2018	BT
Methylene chloride	22.2	77.3	10.0	34.7		EPA-TO-15	05/22/2018	BT
Naphthalene	1.45	7.60	0.0625	0.328		EPA-TO-15	05/19/2018	BT
n-Hexane	354	1,250	10.0	35.2		EPA-TO-15	05/22/2018	BT
o-Xylene	24.4	106	1.00	4.34		EPA-TO-15	05/19/2018	BT
4-Ethyltoluene	<0.250	<1.23	0.250	1.23		EPA-TO-15	05/19/2018	BT
Propylene	<0.250	<0.430	0.250	0.430		EPA-TO-15	05/19/2018	BT
Styrene	0.406	1.73	0.250	1.06		EPA-TO-15	05/19/2018	BT
Methyl tert-butyl ether (MTBE)	0.992	3.58	0.250	0.901		EPA-TO-15	05/19/2018	BT
Tetrachloroethene (PCE)	<0.125	<0.848	0.125	0.848		EPA-TO-15	05/19/2018	BT
Tetrahydrofuran	9.23	27.2	0.250	0.737		EPA-TO-15	05/19/2018	BT
Toluene	30.4	115	1.00	3.77		EPA-TO-15	05/19/2018	BT
trans-1,2-Dichloroethene	<0.125	<0.496	0.125	0.496		EPA-TO-15	05/19/2018	BT
trans-1,3-dichloropropene	<0.312	<1.42	0.312	1.42		EPA-TO-15	05/19/2018	BT
Trichloroethene (TCE)	<0.0406	<0.218	0.0406	0.218		EPA-TO-15	05/19/2018	BT
Trichlorofluoromethane (CFC-11)	19.1	107	0.250	1.40		EPA-TO-15	05/19/2018	BT
Vinyl acetate	<0.625	<2.20	0.625	2.20		EPA-TO-15	05/19/2018	BT
Vinyl chloride	<0.0670	<0.171	0.0670	0.171		EPA-TO-15	05/19/2018	BT
Surr: 4-Bromofluorobenzene	107 %Rec	--	70-130	--		EPA-TO-15	05/22/2018	BT

Analytical Report

Work Order: **1805273**
Date Reported: **5/31/2018**

Client: Herrera Environmental
Collection Date: 5/18/2018 2:35:00 PM
Project: Inman Landfill
Lab ID: 1805273-001
Matrix: Air
Client Sample ID: **669**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 20733		Analyst: TN
Acrylonitrile	ND	0.00374	MDL	µg/L	1	5/19/2018 11:27:50 AM
Surr: Dibromofluoromethane	103	56.4 - 141		%Rec	1	5/19/2018 11:27:50 AM
Surr: Toluene-d8	108	66 - 138		%Rec	1	5/19/2018 11:27:50 AM
Surr: 1-Bromo-4-fluorobenzene-BFB	114	64.7 - 128		%Rec	1	5/19/2018 11:27:50 AM

NOTES:
MDL - Sample reported to Method Detection Limit (MDL)

Analytical Report

Work Order: **1805273**
Date Reported: **5/31/2018**

Client: Herrera Environmental
Collection Date: 5/18/2018 11:41:00 AM
Project: Inman Landfill
Lab ID: 1805273-002
Matrix: Air
Client Sample ID: **239**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 20733		Analyst: TN
Acrylonitrile	ND	0.00374	MDL	µg/L	1	5/19/2018 11:58:05 AM
Surr: Dibromofluoromethane	102	56.4 - 141		%Rec	1	5/19/2018 11:58:05 AM
Surr: Toluene-d8	104	66 - 138		%Rec	1	5/19/2018 11:58:05 AM
Surr: 1-Bromo-4-fluorobenzene-BFB	112	64.7 - 128		%Rec	1	5/19/2018 11:58:05 AM

NOTES:
MDL - Sample reported to Method Detection Limit (MDL)

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Sulfur Compounds by EPA Method TO-15

Sample ID **LCS SULF2-R43708** SampType: **LCS** Units: **ppbv** Prep Date: **5/18/2018** RunNo: **43708**
Client ID: **LCSW** Batch ID: **R43708** Analysis Date: **5/18/2018** SeqNo: **845795**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Disulfide	133	10.0	103.0	0	129	70	130				
Ethyl Mercaptan	79.8	10.0	63.00	0	127	70	130				
Carbonyl Sulfide	131	10.0	112.0	0	117	70	130				
Isopropyl Mercaptan	74.0	10.0	62.00	0	119	70	130				
n-Butyl Mercaptan	104	10.0	78.00	0	133	70	130				S
Dimethyl Disulfide	32.5	10.0	26.00	0	125	70	130				
Surr: 4-Bromofluorobenzene	4.01		4.000		100	70	130				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect for this analyte; no further action required.

Sample ID **MBLK-R43708** SampType: **MBLK** Units: **ppbv** Prep Date: **5/18/2018** RunNo: **43708**
Client ID: **MBLKW** Batch ID: **R43708** Analysis Date: **5/18/2018** SeqNo: **845796**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Disulfide	ND	10.0									
Ethyl Mercaptan	ND	10.0									
Carbonyl Sulfide	ND	10.0									
Isopropyl Mercaptan	ND	10.0									
n-Butyl Mercaptan	ND	10.0									
Dimethyl Disulfide	ND	10.0									
Surr: 4-Bromofluorobenzene	3.90		4.000		97.6	70	130				

Sample ID **1805273-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/19/2018** RunNo: **43708**
Client ID: **669** Batch ID: **R43708** Analysis Date: **5/19/2018** SeqNo: **845798**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Disulfide	333	10.0						352.5	5.53	30	
Ethyl Mercaptan	ND	10.0						0		30	
Carbonyl Sulfide	ND	10.0						0		30	
Isopropyl Mercaptan	ND	10.0						0		30	
n-Butyl Mercaptan	ND	10.0						0		30	

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Sulfur Compounds by EPA Method TO-15

Sample ID **1805273-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/19/2018** RunNo: **43708**
Client ID: **669** Batch ID: **R43708** Analysis Date: **5/19/2018** SeqNo: **845798**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dimethyl Disulfide	ND	10.0						0		30	
Surr: 4-Bromofluorobenzene	15.1		4.000		377	70	130		0		S

NOTES:
S - Outlying surrogate recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID **1805256-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/19/2018** RunNo: **43708**
Client ID: **BATCH** Batch ID: **R43708** Analysis Date: **5/19/2018** SeqNo: **845802**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Disulfide	ND	8,000						0		30	DH
Ethyl Mercaptan	ND	8,000						0		30	DH
Carbonyl Sulfide	ND	8,000						0		30	DH
Isopropyl Mercaptan	ND	8,000						0		30	DH
n-Butyl Mercaptan	ND	8,000						0		30	DH
Dimethyl Disulfide	ND	8,000						0		30	DH
Surr: 4-Bromofluorobenzene	3,210		3,200		100	70	130		0		DH

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Sulfur Compounds by EPA Method TO-15

Sample ID **SULF1 LCS1-R43704** SampType: **LCS** Units: **ppbv** Prep Date: **5/18/2018** RunNo: **43704**
Client ID: **LCSW** Batch ID: **R43704** Analysis Date: **5/18/2018** SeqNo: **845749**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Sulfide	165	10.0	110.0	0	150	70	130				S
Methyl Mercaptan	161	10.0	103.0	0	157	70	130				S
Dimethyl Sulfide	201	10.0	144.0	0	140	70	130				S
t-Butyl Mercaptan	121	10.0	95.00	0	128	70	130				
n-Propyl Mercaptan	145	10.0	97.00	0	149	70	130				S
Isobutyl Mercaptan	148	10.0	92.00	0	161	70	130				S
Surr: 4-Bromofluorobenzene	4.15		4.000		104	70	130				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect for this analyte; no further action required.

Sample ID **MBLK1-R43704** SampType: **MBLK** Units: **ppbv** Prep Date: **5/18/2018** RunNo: **43704**
Client ID: **MBLKW** Batch ID: **R43704** Analysis Date: **5/18/2018** SeqNo: **845750**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Sulfide	ND	10.0									
Methyl Mercaptan	ND	10.0									
Dimethyl Sulfide	ND	10.0									
t-Butyl Mercaptan	ND	10.0									
n-Propyl Mercaptan	ND	10.0									
Isobutyl Mercaptan	ND	10.0									
Surr: 4-Bromofluorobenzene	4.05		4.000		101	70	130				

Sample ID **1805273-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/19/2018** RunNo: **43704**
Client ID: **669** Batch ID: **R43704** Analysis Date: **5/19/2018** SeqNo: **845752**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Sulfide	ND	10.0						0		30	
Methyl Mercaptan	ND	10.0						0		30	
Dimethyl Sulfide	ND	10.0						0		30	
t-Butyl Mercaptan	ND	10.0						0		30	
n-Propyl Mercaptan	ND	10.0						0		30	

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Sulfur Compounds by EPA Method TO-15

Sample ID **1805273-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/19/2018** RunNo: **43704**
Client ID: **669** Batch ID: **R43704** Analysis Date: **5/19/2018** SeqNo: **845752**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Isobutyl Mercaptan	ND	10.0						0		30	
Surr: 4-Bromofluorobenzene	15.6		4.000		391	70	130		0		S

NOTES:
S - Outlying surrogate recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID **SULF1 LCS2-R43704** SampType: **LCS** Units: **ppbv** Prep Date: **5/21/2018** RunNo: **43704**
Client ID: **LCSW** Batch ID: **R43704** Analysis Date: **5/21/2018** SeqNo: **845997**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Sulfide	85.8	10.0	110.0	0	78.0	70	130				
Methyl Mercaptan	66.0	10.0	103.0	0	64.1	70	130				S
Dimethyl Sulfide	172	10.0	144.0	0	119	70	130				
t-Butyl Mercaptan	90.3	10.0	95.00	0	95.0	70	130				
n-Propyl Mercaptan	90.6	10.0	97.00	0	93.4	70	130				
Isobutyl Mercaptan	94.6	10.0	92.00	0	103	70	130				
Surr: 4-Bromofluorobenzene	4.14		4.000		103	70	130				

NOTES:
S - Outlying spike recovery observed (low bias). Samples will be qualified with a *.

Sample ID **MBLK2-R43704** SampType: **MBLK** Units: **ppbv** Prep Date: **5/22/2018** RunNo: **43704**
Client ID: **MBLKW** Batch ID: **R43704** Analysis Date: **5/22/2018** SeqNo: **845998**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Sulfide	ND	10.0									
Methyl Mercaptan	ND	10.0									*
Dimethyl Sulfide	ND	10.0									
t-Butyl Mercaptan	ND	10.0									
n-Propyl Mercaptan	ND	10.0									
Isobutyl Mercaptan	ND	10.0									
Surr: 4-Bromofluorobenzene	3.99		4.000		99.9	70	130				

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Sulfur Compounds by EPA Method TO-15

Sample ID **MBLK2-R43704** SampType: **MBLK** Units: **ppbv** Prep Date: **5/22/2018** RunNo: **43704**
Client ID: **MBLKW** Batch ID: **R43704** Analysis Date: **5/22/2018** SeqNo: **845998**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
* - Flagged value is not within established control limits.

Sample ID **1805273-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/22/2018** RunNo: **43704**
Client ID: **669** Batch ID: **R43704** Analysis Date: **5/22/2018** SeqNo: **846000**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Sulfide	ND	100						0		30	H
Methyl Mercaptan	ND	100						0		30	*H
Dimethyl Sulfide	ND	100						0		30	H
t-Butyl Mercaptan	ND	100						0		30	H
n-Propyl Mercaptan	ND	100						0		30	H
Isobutyl Mercaptan	ND	100						0		30	H
Surr: 4-Bromofluorobenzene	39.2		40.00		98.0	70	130		0		H

NOTES:
* - Flagged value is not within established control limits.

Sample ID **SULF1 LCS3-43704** SampType: **LCS** Units: **ppbv** Prep Date: **5/25/2018** RunNo: **43704**
Client ID: **LCSW** Batch ID: **R43704** Analysis Date: **5/25/2018** SeqNo: **847449**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Sulfide	124	10.0	110.0	0	113	70	130				
Surr: 4-Bromofluorobenzene	4.29		4.000		107	70	130				

Sample ID **MBLK3-R43704** SampType: **MBLK** Units: **ppbv** Prep Date: **5/25/2018** RunNo: **43704**
Client ID: **MBLKW** Batch ID: **R43704** Analysis Date: **5/25/2018** SeqNo: **847450**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Sulfide	ND	10.0									
Surr: 4-Bromofluorobenzene	4.08		4.000		102	70	130				

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	**1805273-001BREP**	SampType:	**REP**	Units:	**µg/L**	Prep Date:	**5/19/2018**	RunNo:	**43595**
Client ID:	**669**	Batch ID:	**20733**			Analysis Date:	**5/19/2018**	SeqNo:	**842911**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acrylonitrile	ND	0.100						0		30	
Surr: Dibromofluoromethane	2.63		2.500		105	61.1	128		0		
Surr: Toluene-d8	2.67		2.500		107	68.2	129		0		
Surr: 1-Bromo-4-fluorobenzene-BFB	2.86		2.500		114	64.7	128		0		

Sample ID	**LCS-20733**	SampType:	**LCS**	Units:	**µg/L**	Prep Date:	**5/19/2018**	RunNo:	**43595**
Client ID:	**LCSW**	Batch ID:	**20733**			Analysis Date:	**5/19/2018**	SeqNo:	**842915**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acrylonitrile	2.05	0.100	2.000	0	103	70	130				
Surr: Dibromofluoromethane	2.64		2.500		106	56.4	141				
Surr: Toluene-d8	2.55		2.500		102	66	138				
Surr: 1-Bromo-4-fluorobenzene-BFB	2.61		2.500		104	64.7	128				

Sample ID	**MB-20733**	SampType:	**MBLK**	Units:	**µg/L**	Prep Date:	**5/19/2018**	RunNo:	**43595**
Client ID:	**MBLKW**	Batch ID:	**20733**			Analysis Date:	**5/19/2018**	SeqNo:	**842916**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acrylonitrile	ND	0.100									
Surr: Dibromofluoromethane	2.48		2.500		99.3	56.4	141				
Surr: Toluene-d8	2.63		2.500		105	66	138				
Surr: 1-Bromo-4-fluorobenzene-BFB	2.67		2.500		107	64.7	128				

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **LCS1-R43674** SampType: **LCS** Units: **ppbv** Prep Date: **5/18/2018** RunNo: **43674**
Client ID: **LCSW** Batch ID: **R43674** Analysis Date: **5/18/2018** SeqNo: **845164**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	98.8	1.00	72.00	0	137	70	130				S
Propylene	2.24	0.400	2.000	0	112	70	130				
Dichlorodifluoromethane (CFC-12)	1.79	0.400	2.000	0	89.4	70	130				
Chloromethane	1.61	0.500	2.000	0	80.3	70	130				
Dichlorotetrafluoroethane (CFC-114)	1.63	0.400	2.000	0	81.4	70	130				
Vinyl chloride	1.55	0.107	2.000	0	77.4	70	130				
1,3-Butadiene	1.61	0.500	2.000	0	80.3	70	130				
Bromomethane	1.61	0.500	2.000	0	80.5	70	130				
Trichlorofluoromethane (CFC-11)	2.11	0.400	2.000	0	106	70	130				
Chloroethane	2.22	0.400	2.000	0	111	70	130				
Acrolein	2.34	0.500	2.000	0	117	70	130				
1,1-Dichloroethene (DCE)	2.16	0.400	2.000	0	108	70	130				
Acetone	2.43	1.00	2.000	0	121	70	130				
Isopropyl Alcohol	2.74	1.00	2.000	0	137	70	130				S
Methylene chloride	3.04	2.00	2.000	0	152	70	130				S
Carbon disulfide	2.26	1.50	2.000	0	113	70	130				
trans-1,2-Dichloroethene	2.16	0.200	2.000	0	108	70	130				
Methyl tert-butyl ether (MTBE)	2.16	0.400	2.000	0	108	70	130				
n-Hexane	2.31	0.400	2.000	0	116	70	130				
1,1-Dichloroethane	2.29	0.200	2.000	0	114	70	130				
Vinyl acetate	2.28	1.00	2.000	0	114	70	130				
cis-1,2-Dichloroethene	2.12	0.200	2.000	0	106	70	130				
(MEK) 2-Butanone	2.10	1.00	2.000	0	105	70	130				
Ethyl acetate	2.34	1.00	2.000	0	117	70	130				
Chloroform	2.33	0.200	2.000	0	117	70	130				
Tetrahydrofuran	2.18	0.400	2.000	0	109	70	130				
1,1,1-Trichloroethane	2.08	0.400	2.000	0	104	70	130				
Carbon tetrachloride	2.06	0.0657	2.000	0	103	70	130				
1,2-Dichloroethane	2.19	0.200	2.000	0	109	70	130				
Benzene	2.20	0.0895	2.000	0	110	70	130				
Cyclohexane	2.18	0.400	2.000	0	109	70	130				

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **LCS1-R43674** SampType: **LCS** Units: **ppbv** Prep Date: **5/18/2018** RunNo: **43674**
Client ID: **LCSW** Batch ID: **R43674** Analysis Date: **5/18/2018** SeqNo: **845164**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	2.11	0.0649	2.000	0	105	70	130				
1,2-Dichloropropane	2.22	0.500	2.000	0	111	70	130				
Methyl methacrylate	2.27	0.400	2.000	0	114	70	130				
Dichlorobromomethane	2.13	0.300	2.000	0	106	70	130				
1,4-Dioxane	2.21	0.400	2.000	0	110	70	130				
cis-1,3-dichloropropene	2.18	0.400	2.000	0	109	70	130				
Toluene	1.99	0.400	2.000	0	99.6	70	130				
trans-1,3-dichloropropene	2.16	0.500	2.000	0	108	70	130				
1,1,2-Trichloroethane (TCA)	2.14	0.500	2.000	0	107	70	130				
Tetrachloroethene (PCE)	1.94	0.200	2.000	0	97.0	70	130				
Dibromochloromethane	2.03	0.500	2.000	0	102	70	130				
1,2-Dibromoethane (EDB)	2.11	0.200	2.000	0	106	70	130				
Chlorobenzene	2.11	0.200	2.000	0	105	70	130				
Ethylbenzene	2.02	0.400	2.000	0	101	70	130				
m,p-Xylene	4.16	0.800	4.000	0	104	70	130				
o-Xylene	2.14	0.400	2.000	0	107	70	130				
Styrene	2.14	0.400	2.000	0	107	70	130				
Bromoform	2.03	0.200	2.000	0	102	70	130				
1,1,2,2-Tetrachloroethane	2.32	0.300	2.000	0	116	70	130				
1,3,5-Trimethylbenzene	2.23	0.300	2.000	0	112	70	130				
1,2,4-Trimethylbenzene	2.15	0.300	2.000	0	107	70	130				
Benzyl chloride	1.96	0.500	2.000	0	98.1	70	130				
4-Ethyltoluene	2.29	0.400	2.000	0	114	70	130				
1,3-Dichlorobenzene	2.13	0.300	2.000	0	107	70	130				
1,4-Dichlorobenzene	2.33	0.300	2.000	0	116	70	130				
1,2-Dichlorobenzene	2.08	0.400	2.000	0	104	70	130				
1,2,4-Trichlorobenzene	1.85	0.300	2.000	0	92.6	70	130				
Hexachlorobutadiene	2.02	1.00	2.000	0	101	70	130				
Naphthalene	2.23	0.100	2.000	0	111	70	130				
2-Hexanone	2.44	1.00	2.000	0	122	70	130				
4-Methyl-2-pentanone (MIBK)	2.35	1.00	2.000	0	117	70	130				

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **LCS1-R43674** SampType: **LCS** Units: **ppbv** Prep Date: **5/18/2018** RunNo: **43674**
Client ID: **LCSW** Batch ID: **R43674** Analysis Date: **5/18/2018** SeqNo: **845164**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
CFC-113	2.16	0.400	2.000	0	108	70	130				
Heptane	2.13	0.400	2.000	0	107	70	130				
Surr: 4-Bromofluorobenzene	4.06		4.000		101	70	130				

NOTES:
S - Outlying spike recovery observed (high bias). Detections will be qualified with a *.

Sample ID **MBLK1-R43674** SampType: **MBLK** Units: **ppbv** Prep Date: **5/19/2018** RunNo: **43674**
Client ID: **MBLKW** Batch ID: **R43674** Analysis Date: **5/19/2018** SeqNo: **845165**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	ND	0.625									
Propylene	ND	0.250									
Dichlorodifluoromethane (CFC-12)	ND	0.250									
Chloromethane	ND	0.312									
Dichlorotetrafluoroethane (CFC-114)	ND	0.250									
Vinyl chloride	ND	0.0670									
1,3-Butadiene	ND	0.312									
Bromomethane	ND	0.312									
Trichlorofluoromethane (CFC-11)	ND	0.250									
Chloroethane	ND	0.250									
Acrolein	ND	0.312									
1,1-Dichloroethene (DCE)	ND	0.250									
Acetone	ND	0.625									
Isopropyl Alcohol	ND	0.625									
Methylene chloride	ND	1.25									
Carbon disulfide	ND	0.938									
trans-1,2-Dichloroethene	ND	0.125									
Methyl tert-butyl ether (MTBE)	ND	0.250									
n-Hexane	ND	0.250									
1,1-Dichloroethane	ND	0.125									
Vinyl acetate	ND	0.625									

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **MBLK1-R43674** SampType: **MBLK** Units: **ppbv** Prep Date: **5/19/2018** RunNo: **43674**
Client ID: **MBLKW** Batch ID: **R43674** Analysis Date: **5/19/2018** SeqNo: **845165**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	0.125									
(MEK) 2-Butanone	ND	0.625									
Ethyl acetate	ND	0.625									
Chloroform	ND	0.125									
Tetrahydrofuran	ND	0.250									
1,1,1-Trichloroethane	ND	0.250									
Carbon tetrachloride	ND	0.0411									
1,2-Dichloroethane	ND	0.125									
Benzene	ND	0.0560									
Cyclohexane	ND	0.250									
Trichloroethene (TCE)	ND	0.0406									
1,2-Dichloropropane	ND	0.312									
Methyl methacrylate	ND	0.250									
Dichlorobromomethane	ND	0.188									
1,4-Dioxane	ND	0.250									
cis-1,3-dichloropropene	ND	0.250									
Toluene	ND	0.250									
trans-1,3-dichloropropene	ND	0.312									
1,1,2-Trichloroethane (TCA)	ND	0.312									
Tetrachloroethene (PCE)	ND	0.125									
Dibromochloromethane	ND	0.312									
1,2-Dibromoethane (EDB)	ND	0.125									
Chlorobenzene	ND	0.125									
Ethylbenzene	ND	0.250									
m,p-Xylene	ND	0.500									
o-Xylene	ND	0.250									
Styrene	ND	0.250									
Bromoform	ND	0.125									
1,1,2,2-Tetrachloroethane	ND	0.188									
1,3,5-Trimethylbenzene	ND	0.188									
1,2,4-Trimethylbenzene	ND	0.188									

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **MBLK1-R43674** SampType: **MBLK** Units: **ppbv** Prep Date: **5/19/2018** RunNo: **43674**
Client ID: **MBLKW** Batch ID: **R43674** Analysis Date: **5/19/2018** SeqNo: **845165**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzyl chloride	ND	0.312									
4-Ethyltoluene	ND	0.250									
1,3-Dichlorobenzene	ND	0.188									
1,4-Dichlorobenzene	ND	0.188									
1,2-Dichlorobenzene	ND	0.250									
1,2,4-Trichlorobenzene	ND	0.188									
Hexachlorobutadiene	ND	0.625									
Naphthalene	ND	0.0625									
2-Hexanone	ND	0.625									
4-Methyl-2-pentanone (MIBK)	ND	0.625									
CFC-113	ND	0.250									
Heptane	ND	0.250									
Surr: 4-Bromofluorobenzene	2.47		2.500		98.7	70	130				

Sample ID **1805273-002AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/19/2018** RunNo: **43674**
Client ID: **239** Batch ID: **R43674** Analysis Date: **5/19/2018** SeqNo: **845171**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	ND	0.250						0		30	
Dichlorodifluoromethane (CFC-12)	23.4	0.250						23.87	2.10	30	E
Chloromethane	ND	0.312						0		30	
Dichlorotetrafluoroethane (CFC-114)	16.3	0.250						16.15	1.10	30	
Vinyl chloride	ND	0.0670						0		30	
1,3-Butadiene	ND	0.312						0		30	
Bromomethane	ND	0.312						0		30	
Trichlorofluoromethane (CFC-11)	19.3	0.250						19.05	1.27	30	
Chloroethane	ND	0.250						0		30	
Acrolein	ND	0.312						0		30	
1,1-Dichloroethene (DCE)	ND	0.250						0		30	
Acetone	14.9	0.625						14.83	0.360	30	

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **1805273-002AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/19/2018** RunNo: **43674**
Client ID: **239** Batch ID: **R43674** Analysis Date: **5/19/2018** SeqNo: **845171**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Isopropyl Alcohol	ND	0.625						0		30	
Methylene chloride	15.7	1.25						15.54	0.737	30	*
Carbon disulfide	67.2	0.938						66.51	0.965	30	E
trans-1,2-Dichloroethene	ND	0.125						0		30	
Methyl tert-butyl ether (MTBE)	0.987	0.250						0.9916	0.462	30	
n-Hexane	156	0.250						154.5	0.817	30	E
1,1-Dichloroethane	ND	0.125						0		30	
Vinyl acetate	ND	0.625						0		30	
cis-1,2-Dichloroethene	4.73	0.125						4.675	1.21	30	
(MEK) 2-Butanone	1.09	0.625						1.082	0.656	30	
Ethyl acetate	ND	0.625						0		30	
Chloroform	ND	0.125						0		30	
Tetrahydrofuran	9.31	0.250						9.234	0.869	30	
1,1,1-Trichloroethane	ND	0.250						0		30	
Carbon tetrachloride	ND	0.0411						0		30	
1,2-Dichloroethane	ND	0.125						0		30	
Benzene	24.2	0.0560						23.86	1.35	30	E
Cyclohexane	71.3	0.250						70.86	0.612	30	E
Trichloroethene (TCE)	ND	0.0406						0		30	
1,2-Dichloropropane	ND	0.312						0		30	
Methyl methacrylate	ND	0.250						0		30	
Dichlorobromomethane	ND	0.188						0		30	
1,4-Dioxane	ND	0.250						0		30	
cis-1,3-dichloropropene	ND	0.250						0		30	
Toluene	28.9	0.250						28.70	0.751	30	E
trans-1,3-dichloropropene	ND	0.312						0		30	
1,1,2-Trichloroethane (TCA)	ND	0.312						0		30	
Tetrachloroethene (PCE)	ND	0.125						0		30	
Dibromochloromethane	ND	0.312						0		30	
1,2-Dibromoethane (EDB)	ND	0.125						0		30	
Chlorobenzene	ND	0.125						0		30	

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **1805273-002AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/19/2018** RunNo: **43674**
Client ID: **239** Batch ID: **R43674** Analysis Date: **5/19/2018** SeqNo: **845171**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	45.7	0.250						45.35	0.693	30	E
m,p-Xylene	40.2	0.500						40.01	0.426	30	E
o-Xylene	22.0	0.250						21.89	0.660	30	
Styrene	0.415	0.250						0.4058	2.27	30	
Bromoform	ND	0.125						0		30	
1,1,2,2-Tetrachloroethane	ND	0.188						0		30	
1,3,5-Trimethylbenzene	8.51	0.188						8.482	0.300	30	
1,2,4-Trimethylbenzene	9.21	0.188						9.212	0.0675	30	
Benzyl chloride	ND	0.312						0		30	
4-Ethyltoluene	ND	0.250						0		30	
1,3-Dichlorobenzene	ND	0.188						0		30	
1,4-Dichlorobenzene	3.01	0.188						2.994	0.462	30	
1,2-Dichlorobenzene	ND	0.250						0		30	
1,2,4-Trichlorobenzene	ND	0.188						0		30	
Hexachlorobutadiene	ND	0.625						0		30	
Naphthalene	1.38	0.0625						1.450	4.87	30	
2-Hexanone	ND	0.625						0		30	
4-Methyl-2-pentanone (MIBK)	2.40	0.625						2.448	1.88	30	
CFC-113	ND	0.250						0		30	
Heptane	89.7	0.250						89.05	0.731	30	E
Surr: 4-Bromofluorobenzene	8.75		2.500		350	70	130		0		S

NOTES:
S - Outlying surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).
E - Estimated value. The amount exceeds the linear working range of the instrument.
* - Flagged value is not within established control limits.

Sample ID **LCS2-R3474** SampType: **LCS** Units: **ppbv** Prep Date: **5/21/2018** RunNo: **43674**
Client ID: **LCSW** Batch ID: **R43674** Analysis Date: **5/21/2018** SeqNo: **845172**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	84.4	1.00	72.00	0	117	70	130				

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **LCS2-R3474** SampType: **LCS** Units: **ppbv** Prep Date: **5/21/2018** RunNo: **43674**
Client ID: **LCSW** Batch ID: **R43674** Analysis Date: **5/21/2018** SeqNo: **845172**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	1.92	0.400	2.000	0	96.2	70	130				
Dichlorodifluoromethane (CFC-12)	1.61	0.400	2.000	0	80.5	70	130				
Chloromethane	1.54	0.500	2.000	0	77.0	70	130				
Dichlorotetrafluoroethane (CFC-114)	1.61	0.400	2.000	0	80.7	70	130				
Vinyl chloride	1.57	0.107	2.000	0	78.4	70	130				
1,3-Butadiene	1.57	0.500	2.000	0	78.3	70	130				
Bromomethane	1.56	0.500	2.000	0	78.1	70	130				
Trichlorofluoromethane (CFC-11)	2.08	0.400	2.000	0	104	70	130				
Chloroethane	2.16	0.400	2.000	0	108	70	130				
Acrolein	2.28	0.500	2.000	0	114	70	130				
1,1-Dichloroethene (DCE)	2.13	0.400	2.000	0	107	70	130				
Acetone	2.37	1.00	2.000	0	118	70	130				
Isopropyl Alcohol	2.70	1.00	2.000	0	135	70	130				S
Methylene chloride	2.39	2.00	2.000	0	120	70	130				
Carbon disulfide	2.18	1.50	2.000	0	109	70	130				
trans-1,2-Dichloroethene	2.11	0.200	2.000	0	105	70	130				
Methyl tert-butyl ether (MTBE)	2.18	0.400	2.000	0	109	70	130				
n-Hexane	2.27	0.400	2.000	0	114	70	130				
1,1-Dichloroethane	2.24	0.200	2.000	0	112	70	130				
Vinyl acetate	2.24	1.00	2.000	0	112	70	130				
cis-1,2-Dichloroethene	2.13	0.200	2.000	0	107	70	130				
(MEK) 2-Butanone	2.04	1.00	2.000	0	102	70	130				
Ethyl acetate	2.30	1.00	2.000	0	115	70	130				
Chloroform	2.14	0.200	2.000	0	107	70	130				
Tetrahydrofuran	2.21	0.400	2.000	0	111	70	130				
1,1,1-Trichloroethane	2.07	0.400	2.000	0	104	70	130				
Carbon tetrachloride	2.01	0.0657	2.000	0	100	70	130				
1,2-Dichloroethane	2.13	0.200	2.000	0	107	70	130				
Benzene	2.18	0.0895	2.000	0	109	70	130				
Cyclohexane	2.16	0.400	2.000	0	108	70	130				
Trichloroethene (TCE)	2.05	0.0649	2.000	0	102	70	130				

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **LCS2-R3474** SampType: **LCS** Units: **ppbv** Prep Date: **5/21/2018** RunNo: **43674**
Client ID: **LCSW** Batch ID: **R43674** Analysis Date: **5/21/2018** SeqNo: **845172**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichloropropane	2.12	0.500	2.000	0	106	70	130				
Methyl methacrylate	2.18	0.400	2.000	0	109	70	130				
Dichlorobromomethane	2.02	0.300	2.000	0	101	70	130				
1,4-Dioxane	2.21	0.400	2.000	0	110	70	130				
cis-1,3-dichloropropene	2.09	0.400	2.000	0	104	70	130				
Toluene	1.97	0.400	2.000	0	98.7	70	130				
trans-1,3-dichloropropene	2.09	0.500	2.000	0	105	70	130				
1,1,2-Trichloroethane (TCA)	2.04	0.500	2.000	0	102	70	130				
Tetrachloroethene (PCE)	1.91	0.200	2.000	0	95.7	70	130				
Dibromochloromethane	1.93	0.500	2.000	0	96.5	70	130				
1,2-Dibromoethane (EDB)	2.03	0.200	2.000	0	101	70	130				
Chlorobenzene	2.08	0.200	2.000	0	104	70	130				
Ethylbenzene	1.99	0.400	2.000	0	99.7	70	130				
m,p-Xylene	4.07	0.800	4.000	0	102	70	130				
o-Xylene	2.11	0.400	2.000	0	105	70	130				
Styrene	2.12	0.400	2.000	0	106	70	130				
Bromoform	1.96	0.200	2.000	0	97.8	70	130				
1,1,2,2-Tetrachloroethane	2.17	0.300	2.000	0	109	70	130				
1,3,5-Trimethylbenzene	2.20	0.300	2.000	0	110	70	130				
1,2,4-Trimethylbenzene	2.13	0.300	2.000	0	106	70	130				
Benzyl chloride	1.90	0.500	2.000	0	95.2	70	130				
4-Ethyltoluene	2.22	0.400	2.000	0	111	70	130				
1,3-Dichlorobenzene	2.08	0.300	2.000	0	104	70	130				
1,4-Dichlorobenzene	2.28	0.300	2.000	0	114	70	130				
1,2-Dichlorobenzene	2.04	0.400	2.000	0	102	70	130				
1,2,4-Trichlorobenzene	1.83	0.300	2.000	0	91.6	70	130				
Hexachlorobutadiene	1.98	1.00	2.000	0	98.8	70	130				
Naphthalene	2.18	0.100	2.000	0	109	70	130				
2-Hexanone	2.27	1.00	2.000	0	113	70	130				
4-Methyl-2-pentanone (MIBK)	2.24	1.00	2.000	0	112	70	130				
CFC-113	2.11	0.400	2.000	0	105	70	130				

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **LCS2-R3474** SampType: **LCS** Units: **ppbv** Prep Date: **5/21/2018** RunNo: **43674**
Client ID: **LCSW** Batch ID: **R43674** Analysis Date: **5/21/2018** SeqNo: **845172**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Heptane	2.10	0.400	2.000	0	105	70	130				
Surr: 4-Bromofluorobenzene	4.06		4.000		101	70	130				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect for this analyte; no further action required.

Sample ID **MBLK2-R43474** SampType: **MBLK** Units: **ppbv** Prep Date: **5/22/2018** RunNo: **43674**
Client ID: **MBLKW** Batch ID: **R43674** Analysis Date: **5/22/2018** SeqNo: **845173**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	ND	0.625									
Propylene	ND	0.250									
Dichlorodifluoromethane (CFC-12)	ND	0.250									
Chloromethane	ND	0.312									
Dichlorotetrafluoroethane (CFC-114)	ND	0.250									
Vinyl chloride	ND	0.0670									
1,3-Butadiene	ND	0.312									
Bromomethane	ND	0.312									
Trichlorofluoromethane (CFC-11)	ND	0.250									
Chloroethane	ND	0.250									
Acrolein	ND	0.312									
1,1-Dichloroethene (DCE)	ND	0.250									
Acetone	ND	0.625									
Isopropyl Alcohol	ND	0.625									
Methylene chloride	ND	1.25									
Carbon disulfide	ND	0.938									
trans-1,2-Dichloroethene	ND	0.125									
Methyl tert-butyl ether (MTBE)	ND	0.250									
n-Hexane	ND	0.250									
1,1-Dichloroethane	ND	0.125									
Vinyl acetate	ND	0.625									
cis-1,2-Dichloroethene	ND	0.125									

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **MBLK2-R43474** SampType: **MBLK** Units: **ppbv** Prep Date: **5/22/2018** RunNo: **43674**
Client ID: **MBLKW** Batch ID: **R43674** Analysis Date: **5/22/2018** SeqNo: **845173**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
(MEK) 2-Butanone	ND	0.625									
Ethyl acetate	ND	0.625									
Chloroform	ND	0.125									
Tetrahydrofuran	ND	0.250									
1,1,1-Trichloroethane	ND	0.250									
Carbon tetrachloride	ND	0.0411									
1,2-Dichloroethane	ND	0.125									
Benzene	ND	0.0560									
Cyclohexane	ND	0.250									
Trichloroethene (TCE)	ND	0.0406									
1,2-Dichloropropane	ND	0.312									
Methyl methacrylate	ND	0.250									
Dichlorobromomethane	ND	0.188									
1,4-Dioxane	ND	0.250									
cis-1,3-dichloropropene	ND	0.250									
Toluene	ND	0.250									
trans-1,3-dichloropropene	ND	0.312									
1,1,2-Trichloroethane (TCA)	ND	0.312									
Tetrachloroethene (PCE)	ND	0.125									
Dibromochloromethane	ND	0.312									
1,2-Dibromoethane (EDB)	ND	0.125									
Chlorobenzene	ND	0.125									
Ethylbenzene	ND	0.250									
m,p-Xylene	ND	0.500									
o-Xylene	ND	0.250									
Styrene	ND	0.250									
Bromoform	ND	0.125									
1,1,2,2-Tetrachloroethane	ND	0.188									
1,3,5-Trimethylbenzene	ND	0.188									
1,2,4-Trimethylbenzene	ND	0.188									
Benzyl chloride	ND	0.312									

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **MBLK2-R43474** SampType: **MBLK** Units: **ppbv** Prep Date: **5/22/2018** RunNo: **43674**
Client ID: **MBLKW** Batch ID: **R43674** Analysis Date: **5/22/2018** SeqNo: **845173**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Ethyltoluene	ND	0.250									
1,3-Dichlorobenzene	ND	0.188									
1,4-Dichlorobenzene	ND	0.188									
1,2-Dichlorobenzene	ND	0.250									
1,2,4-Trichlorobenzene	ND	0.188									
Hexachlorobutadiene	ND	0.625									
Naphthalene	ND	0.0625									
2-Hexanone	ND	0.625									
4-Methyl-2-pentanone (MIBK)	ND	0.625									
CFC-113	ND	0.250									
Heptane	ND	0.250									
Surr: 4-Bromofluorobenzene	2.51		2.500		100	70	130				

Sample ID **1805265-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/22/2018** RunNo: **43674**
Client ID: **BATCH** Batch ID: **R43674** Analysis Date: **5/22/2018** SeqNo: **845175**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	34.7	0.625						33.78	2.74	30	
Propylene	ND	0.250						0		30	
Dichlorodifluoromethane (CFC-12)	0.277	0.250						0.2830	2.31	30	
Chloromethane	ND	0.312						0		30	
Dichlorotetrafluoroethane (CFC-114)	ND	0.250						0		30	
Vinyl chloride	ND	0.0670						0		30	
1,3-Butadiene	ND	0.312						0		30	
Bromomethane	ND	0.312						0		30	
Trichlorofluoromethane (CFC-11)	ND	0.250						0		30	
Chloroethane	ND	0.250						0		30	
Acrolein	ND	0.312						0		30	
1,1-Dichloroethene (DCE)	ND	0.250						0		30	
Acetone	9.12	0.625						8.827	3.26	30	

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **1805265-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/22/2018** RunNo: **43674**
Client ID: **BATCH** Batch ID: **R43674** Analysis Date: **5/22/2018** SeqNo: **845175**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Isopropyl Alcohol	ND	0.625						0		30	
Methylene chloride	ND	1.25						0		30	
Carbon disulfide	ND	0.938						0		30	
trans-1,2-Dichloroethene	ND	0.125						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.250						0		30	
n-Hexane	ND	0.250						0		30	
1,1-Dichloroethane	ND	0.125						0		30	
Vinyl acetate	ND	0.625						0		30	
cis-1,2-Dichloroethene	ND	0.125						0		30	
(MEK) 2-Butanone	ND	0.625						0		30	
Ethyl acetate	ND	0.625						0		30	
Chloroform	ND	0.125						0		30	
Tetrahydrofuran	ND	0.250						0		30	
1,1,1-Trichloroethane	ND	0.250						0		30	
Carbon tetrachloride	0.0483	0.0411						0.04881	0.991	30	
1,2-Dichloroethane	ND	0.125						0		30	
Benzene	ND	0.0560						0		30	
Cyclohexane	ND	0.250						0		30	
Trichloroethene (TCE)	ND	0.0406						0		30	
1,2-Dichloropropane	ND	0.312						0		30	
Methyl methacrylate	ND	0.250						0		30	
Dichlorobromomethane	ND	0.188						0		30	
1,4-Dioxane	ND	0.250						0		30	
cis-1,3-dichloropropene	ND	0.250						0		30	
Toluene	ND	0.250						0		30	
trans-1,3-dichloropropene	ND	0.312						0		30	
1,1,2-Trichloroethane (TCA)	ND	0.312						0		30	
Tetrachloroethene (PCE)	ND	0.125						0		30	
Dibromochloromethane	ND	0.312						0		30	
1,2-Dibromoethane (EDB)	ND	0.125						0		30	
Chlorobenzene	ND	0.125						0		30	

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **1805265-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **5/22/2018** RunNo: **43674**
Client ID: **BATCH** Batch ID: **R43674** Analysis Date: **5/22/2018** SeqNo: **845175**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	ND	0.250						0		30	
m,p-Xylene	ND	0.500						0		30	
o-Xylene	ND	0.250						0		30	
Styrene	ND	0.250						0		30	
Bromoform	ND	0.125						0		30	
1,1,2,2-Tetrachloroethane	ND	0.188						0		30	
1,3,5-Trimethylbenzene	ND	0.188						0		30	
1,2,4-Trimethylbenzene	ND	0.188						0		30	
Benzyl chloride	ND	0.312						0		30	
4-Ethyltoluene	ND	0.250						0		30	
1,3-Dichlorobenzene	ND	0.188						0		30	
1,4-Dichlorobenzene	3.28	0.188						3.297	0.466	30	
1,2-Dichlorobenzene	ND	0.250						0		30	
1,2,4-Trichlorobenzene	ND	0.188						0		30	
Hexachlorobutadiene	ND	0.625						0		30	
Naphthalene	6.56	0.0625						6.542	0.263	30	
2-Hexanone	ND	0.625						0		30	
4-Methyl-2-pentanone (MIBK)	ND	0.625						0		30	
CFC-113	ND	0.250						0		30	
Heptane	ND	0.250						0		30	
Surr: 4-Bromofluorobenzene	2.55		2.500		102	70	130		0		

Sample ID **LCS3-R43674** SampType: **LCS** Units: **ppbv** Prep Date: **5/24/2018** RunNo: **43674**
Client ID: **LCSW** Batch ID: **R43674** Analysis Date: **5/24/2018** SeqNo: **847471**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon disulfide	2.13	1.50	2.000	0	107	70	130				
n-Hexane	2.21	0.400	2.000	0	111	70	130				
Benzene	2.14	0.0895	2.000	0	107	70	130				
Cyclohexane	2.14	0.400	2.000	0	107	70	130				

Work Order: 1805273
CLIENT: Herrera Environmental
Project: Inman Landfill

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **LCS3-R43674** SampType: **LCS** Units: **ppbv** Prep Date: **5/24/2018** RunNo: **43674**
Client ID: **LCSW** Batch ID: **R43674** Analysis Date: **5/24/2018** SeqNo: **847471**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	1.94	0.400	2.000	0	96.9	70	130				
Ethylbenzene	2.12	0.400	2.000	0	106	70	130				
m,p-Xylene	4.33	0.800	4.000	0	108	70	130				
o-Xylene	2.25	0.400	2.000	0	112	70	130				
Heptane	2.15	0.400	2.000	0	108	70	130				
Surr: 4-Bromofluorobenzene	4.06		4.000		101	70	130				

Sample ID **MBLK3-R43674** SampType: **MBLK** Units: **ppbv** Prep Date: **5/24/2018** RunNo: **43674**
Client ID: **MBLKW** Batch ID: **R43674** Analysis Date: **5/24/2018** SeqNo: **847476**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon disulfide	ND	0.938									
n-Hexane	ND	0.250									
Benzene	ND	0.0560									
Cyclohexane	ND	0.250									
Toluene	ND	0.250									
Ethylbenzene	ND	0.250									
m,p-Xylene	ND	0.500									
o-Xylene	ND	0.250									
Heptane	ND	0.250									
Surr: 4-Bromofluorobenzene	2.47		2.500		98.7	70	130				

Sample Log-In Check List

Client Name:	**HERRERA**	Work Order Number:	**1805273**
Logged by:	**Brianna Barnes**	Date Received:	**5/18/2018 4:43:00 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Coolers are present?	Yes ☐	No ☑	NA ☐
		Air Samples.		
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Required ☑
6.	Was an attempt made to cool the samples?	Yes ☐	No ☐	NA ☑
7.	Were all items received at a temperature of >0°C to 10.0°C*	Yes ☐	No ☐	NA ☑
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Air Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 5/18/18 Page: 1 of: 1

Laboratory Project No (Internal): 19005273

Project Name: INMAN LANDFILL

Special Remarks:

Client: Herrera

Project No:

Address:

Location: BOW, WA

City, State, Zip:

Collected by: TYSON WRIGHT

Telephone: 206-805-9216

Reports to (PM):

Air samples are disposed of one week after report is submitted to client unless otherwise requested. ☐ OK to Dispose ☐ Hold (fees may apply)

Fax:

Email (PM): twright@herrerainc.com

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure (" Hg)	Field Final Sample Pressure (" Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL ✓	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15 ✓	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C	Acrylonitrile ✓	Comments	Internal: Final Pressure ("Hg)
1	669 CAN	12669 Canister / Flow Reg	5/18 Date 2:35 PM Time	L	6L	Grab	10mtorr Pressure 5/14/2018 Date	-28 Pressure Date	-2 Pressure Date		X			X							-2
2	239 CAN	17239 Canister / Flow Reg	5/18 Date 11:41 am Time	L	6L	Grab	10mtorr Pressure 5/14/2018 Date	-16 Pressure Date	-2 Pressure Date		X			X							-2
3	11:46 BAG 11:48 BAG	Canister / Flow Reg	5/18 Date Time	L	2 TBs	GRAB	Pressure Date	Pressure Date	Pressure Date										X		
4	2:42 BAG 2:44 BAG	Canister / Flow Reg	5/18 Date Time	L	2 TBs	GRAB	Pressure Date	Pressure Date	Pressure Date										X		
5		Canister / Flow Reg	Date Time				Pressure Date	Pressure Date	Pressure Date												

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x [signature]	5/18/18 4:43	x [signature]	5/18/18 1643
Relinquished	Date/Time	Received	Date/Time
x		x	

Turn-Around Time:

- ☒ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day _____ (specify)