2017 Annual Groundwater Monitoring and Corrective Action Report

Zimmer Landfill – CCR Unit ID 122
Zimmer Power Station
1781 Route 52
Moscow, Ohio 45153

Dynegy Zimmer, LLC

January 31, 2018

OBG

JANUARY 31, 2018 | PROJECT #67720

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Zimmer Power Station
Moscow, Ohio

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Dynegy Zimmer, LLC

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ACRONYMS AND ABBREVIATIONS

CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
mg/L	milligrams per liter
NRT/OBG	Natural Resource Technology, an OBG Company
OBG	O'Brien & Gere Engineers, Inc.
SSI	statistically significant increase
STD	standard units

1 INTRODUCTION

1.1 OVERVIEW

This report has been prepared on behalf of Dynegy Zimmer, LLC by O'Brien & Gere Engineers, Inc. (OBG), to provide the information required by 40 CFR 257.90(e) for the Zimmer Landfill located near the Zimmer Power Station in Moscow, Ohio.

In accordance with 40 CFR 257.90(e), the owner or operator of an existing CCR unit must prepare an annual groundwater monitoring and corrective action report, for the preceding calendar year, that documents the status of the groundwater monitoring and corrective action program for the CCR unit, summarizes key actions completed, describes any problems encountered, discusses actions to resolve the problems, and projects key activities for the upcoming year. At a minimum, the annual report must contain the following information, to the extent available:

1. A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit.
2. Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken.
3. In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs.
4. A narrative discussion of any transition between monitoring programs (*e.g.,* the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels).
5. Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.[1]

This report provides the required information for the Zimmer Landfill for calendar year 2017.

1.2 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The final three independent samples of the minimum eight required by 40 CFR 257.94(b) were collected and analyzed from each background and downgradient well in 2017 before October 17. The other five independent samples were collected and analyzed in 2015 and 2016.

The first semi-annual monitoring sample for the Detection Monitoring Program was collected in November 2017 from each well.

Using the last of the minimum eight samples required to be collected by October 17, 2017 to determine whether a statistically significant increase (SSI) of Appendix III parameters over background concentrations has occurred, evaluation of analytical data from the downgradient wells was initiated beginning no later than October 17, 2017 for the initial eight samples. SSI determinations will be completed within 90 days (January 15, 2018). In addition, SSI determinations will be completed within 90 days of completion of analysis for the first semi-annual detection monitoring sample collected on November 14-15, 2017, for which analytical data was received on November 30, 2017.

[1] For calendar year 2017, corrective action and other information required to be included in the annual report as specified in §§ 257.90 through 257.98 is inapplicable.

2 KEY ACTIONS COMPLETED IN 2017

2.1 SUMMARY

Three groundwater sampling events were completed in 2017 as part of an effort initiated in 2015 to collect eight independent samples from background and downgradient monitoring wells in accordance with 40 CFR 257.94(b).

Subsequent to collection of the eight independent samples, an additional sampling event was completed in November 2017 for parameters listed in Appendix III, 40 CFR Part 257, to supplement the background data set and as the first semi-annual monitoring sampling event for the Detection Monitoring Program.

A map showing the groundwater monitoring system, including the CCR unit and all background and downgradient monitoring wells with well identification numbers, for the Zimmer Landfill is presented in Figure 1. No monitoring wells were installed or decommissioned from the monitoring system in 2017.

Samples were collected and analyzed in accordance with the Sampling and Analysis Plan (AECOM, 2017) prepared for the Zimmer Landfill.

All monitoring data obtained under 40 CFR §§ 257.90 through 257.98 (as applicable) in 2017, as well as monitoring data for the previously collected five independent samples are presented in Tables 1 and 2. Sample collection dates in 2017 were April 18-20, June 7, July 12-25, and November 14-15. Sample collection dates for previously collected five independent samples are identified in Tables 1 and 2. One ground water sample was collected from each background and downgradient well in each sampling event.

Statistical evaluation of analytical data from the eight independent samples required to be collected by October 17, 2017 and the first semi-annual detection monitoring event on November 14-15, 2017 was initiated and will be completed within 90 days of October 17, 2017 (January 15, 2018) or 90 days from receipt of the data from the first semi-annual detection monitoring event (February 28, 2018), respectively. Statistical evaluation of analytical data is being performed in accordance with the Statistical Analysis Plan, Zimmer Power Station, Dynegy Zimmer, LLC (NRT/OBG, 2017). Upgradient monitoring wells MW-13S and MW-18 had insufficient water to collect samples during the June, September, and December 2016 sampling events and, as a result, do not yet have eight independent samples.

2.2 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the groundwater monitoring program during 2017. Groundwater samples were collected and analyzed in accordance with the Sampling and Analysis Plan, and all data was accepted.

3 KEY ACTIVITIES PLANNED FOR 2018

3.1 SUMMARY

The following key activities are planned for 2018:

- Continuation of the Detection Monitoring Program with semi-annual sampling scheduled for the 2nd and 4th quarters of 2018.
- Complete evaluation of analytical data from the downgradient wells, using both the eight samples required to be collected by October 17, 2017 and the first semi-annual detection monitoring sample taken in November 2017 to determine whether a SSI of Appendix III parameters over background concentrations has occurred.
- If an SSI is identified, potential alternate sources (*i.e.*, a source other than the CCR unit caused the SSI or that that SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality) will be evaluated. If an alternate source is demonstrated to be the cause of the SSI, a written demonstration will be completed within 90 days of SSI detection and included in the annual groundwater monitoring and corrective action report for 2018.
  - If an alternate source(s) is not identified to be the cause of the SSI, the applicable requirements of 40 CFR §§ 257.94 through 257.98 (*e.g.*, assessment monitoring) as may apply in 2018 will be met, including associated recordkeeping/notifications required by 40 CFR §§ 257.105 through 257.108.

REFERENCES

AECOM, 2017, Sampling and Analysis Plan, CCR Rule Groundwater Monitoring, Zimmer Residual Waste Landfill, Unit 122, Zimmer Power Landfill, Moscow, Ohio, Job Number 60442412, Revision 0, October 17, 2017.

Natural Resource Technology, an OBG Company, 2017, Statistical Analysis Plan, Zimmer Power Station, Dynegy Zimmer, LLC, October 17, 2017.

Tables

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
MW-11D	1/27/2016	0.1970	100.0	7.020	0.2640	7.300	10.70
	3/16/2016	0.1740	76.00	5.840	0.2850	7.240	10.10
	6/13/2016	0.1720	74.00	6.110	<1.000	7.290	13.30
	9/29/2016	0.1470	80.30	6.500	<1.000	7.080	11.40
	12/20/2016	0.2210	78.30	11.90	<1.000	7.200	9.290
	4/18/2017	0.1560	74.10	5.200	<1.000	9.520	11.90
	6/7/2017	0.2050	72.40	5.140	<1.000	7.410	12.10
	7/12/2017	0.1630	70.50	5.010	<1.000	7.060	11.30
	11/14/2017	0.1790	76.60	6.170	<1.000	6.800	8.000
MW-13S	1/28/2016	0.03000	148.0	142.0	0.2780	7.210	34.30
	3/16/2016	0.01220	124.0	128.0	0.7610	6.960	35.10
	4/20/2017	<0.08000	94.20	154.0	<1.000	8.370	37.40
	6/7/2017	<0.08000	105.0	136.0	<1.000	6.890	36.50
	7/12/2017	<0.08000	105.0	125.0	<1.000	6.930	<50.00
	11/14/2017	<0.08000	101.0	141.0	<1.000	7.010	<50.00
MW-16D	1/28/2016	1.010	70.20	62.50	0.5460	7.370	<0.6000
	3/15/2016	1.060	59.90	57.00	0.4560	7.210	0.1800
	6/14/2016	1.110	51.10	56.70	<1.000	7.340	<5.000

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	TDS, mg/L
MW-11D	1/27/2016	369.0
	3/16/2016	364.0
	6/13/2016	364.0
	9/29/2016	363.0
	12/20/2016	402.0
	4/18/2017	360.0
	6/7/2017	361.0
	7/12/2017	355.0
	11/14/2017	381.0
MW-13S	1/28/2016	479.0
	3/16/2016	482.0
	4/20/2017	526.0
	6/7/2017	561.0
	7/12/2017	526.0
	11/14/2017	505.0
MW-16D	1/28/2016	516.0
	3/15/2016	505.0
	6/14/2016	522.0

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
MW-16D	9/29/2016	0.9340	50.90	64.00	<1.000	7.240	<5.000
	12/20/2016	1.280	50.60	57.00	<1.000	7.260	<5.000
	4/18/2017	0.9100	45.90	57.00	<1.000	9.140	<5.000
	6/7/2017	1.110	48.70	53.30	<1.000	6.690	<5.000
	7/12/2017	0.8390	48.00	53.50	<1.000	7.270	<5.000
	11/15/2017	1.020	48.70	61.20	<1.000	7.220	<5.000
MW-18	1/26/2016	0.1010	138.0	19.80	0.2590	7.150	187.0
	3/17/2016	0.08370	128.0	111.0	0.2690	6.820	990.0
	4/20/2017	0.08440	104.0	19.70	<1.000	9.100	176.0
	6/7/2017	0.1060	95.30	<30.00	<1.000	7.220	167.0
	7/12/2017	0.1110	86.50	<30.00	<1.000	7.130	160.0
	11/15/2017	<0.08000	78.90	18.10	<1.000	7.260	132.0
MW-20D	1/28/2016	0.2560	136.0	39.90	0.2730	7.180	17.60
	3/15/2016	0.4460	95.10	34.60	0.2240	7.130	19.40
	6/14/2016	0.2410	71.20	13.70	<1.000	7.260	<25.00
	9/29/2016	0.2250	83.00	24.50	<1.000	7.070	19.60
	12/20/2016	0.3230	84.70	44.00	<1.000	7.130	17.80
	4/18/2017	0.2070	71.70	12.30	<1.000	9.540	20.10

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	TDS, mg/L
MW-16D	9/29/2016	530.0
	12/20/2016	528.0
	4/18/2017	504.0
	6/7/2017	521.0
	7/12/2017	520.0
	11/15/2017	533.0
MW-18	1/26/2016	670.0
	3/17/2016	679.0
	4/20/2017	675.0
	6/7/2017	653.0
	7/12/2017	649.0
	11/15/2017	574.0
MW-20D	1/28/2016	368.0
	3/15/2016	375.0
	6/14/2016	326.0
	9/29/2016	344.0
	12/20/2016	399.0
	4/18/2017	328.0

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
MW-20D	6/7/2017	0.2610	77.20	13.30	<1.000	7.120	19.60
	7/13/2017	0.2210	73.10	17.90	<1.000	6.970	<25.00
	11/15/2017	0.2660	76.50	16.10	<1.000	7.100	20.90
MW-21	1/28/2016	1.360	151.0	170.0	0.5700	6.970	58.90
	3/14/2016	1.410	115.0	114.0	0.4540	6.930	64.10
	6/13/2016	1.450	92.30	122.0	<1.000	7.030	93.70
	9/29/2016	1.230	93.60	134.0	<1.000	7.110	64.80
	12/20/2016	1.650	89.90	125.0	<1.000	6.950	64.30
	4/19/2017	1.340	81.40	148.0	<1.000	6.890	69.80
	6/7/2017	1.880	74.20	153.0	<1.000	6.590	68.80
	7/12/2017	1.230	83.00	152.0	<1.000	7.190	65.90
	11/14/2017	1.720	93.60	168.0	<1.000	6.990	67.60
MW-22	1/26/2016	0.5320	180.0	45.50	<0.06000	7.020	106.0
	3/16/2016	0.4000	107.0	31.90	0.3330	7.040	81.90
	6/13/2016	0.3720	108.0	25.90	<1.000	7.000	79.50
	9/29/2016	0.3640	114.0	35.40	<1.000	7.010	94.00
	12/20/2016	0.5750	112.0	38.70	<1.000	6.900	91.90
	4/19/2017	0.4570	112.0	38.90	<1.000	7.060	94.20

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	TDS, mg/L
MW-20D	6/7/2017	332.0
	7/13/2017	347.0
	11/15/2017	330.0
MW-21	1/28/2016	760.0
	3/14/2016	652.0
	6/13/2016	687.0
	9/29/2016	703.0
	12/20/2016	704.0
	4/19/2017	698.0
	6/7/2017	751.0
	7/12/2017	748.0
	11/14/2017	767.0
MW-22	1/26/2016	621.0
	3/16/2016	550.0
	6/13/2016	531.0
	9/29/2016	557.0
	12/20/2016	601.0
	4/19/2017	584.0

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
MW-22	6/7/2017	0.4430	113.0	<30.00	<1.000	7.190	83.10
	7/25/2017	0.4480	99.70	34.60	<1.000	6.930	92.90
	11/14/2017	0.5220	121.0	39.00	<1.000	6.670	101.0
MW-24	1/27/2016	0.1750	75.60	4.460	0.4180	7.790	17.20
	3/15/2016	0.1780	57.20	5.840	0.3480	7.440	19.00
	6/14/2016	0.1440	45.40	5.890	<1.000	7.520	<25.00
	9/29/2016	0.1500	50.40	6.300	<1.000	7.410	22.30
	12/20/2016	0.2130	49.40	6.610	<1.000	7.470	23.00
	4/18/2017	0.1460	43.30	5.660	<1.000	9.440	21.80
	6/7/2017	0.1640	46.20	5.650	<1.000	7.590	22.80
	7/12/2017	0.1390	47.10	6.220	<1.000	7.590	<25.00
	11/14/2017	0.1830	51.40	6.840	<1.000	7.120	26.50
MW-3	1/27/2016	0.02750	244.0	181.0	0.1270	7.140	47.20
	3/14/2016	0.03970	274.0	185.0	0.1150	6.900	51.60
	6/14/2016	0.01910	168.0	159.0	<1.000	6.880	54.20
	9/29/2016	0.02760	174.0	161.0	<1.000	6.860	56.40
	12/20/2016	0.04530	170.0	201.0	<1.000	6.850	69.40
	4/18/2017	<0.08000	178.0	195.0	<1.000	9.020	53.10

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	TDS, mg/L
MW-22	6/7/2017	547.0
	7/25/2017	569.0
	11/14/2017	604.0
MW-24	1/27/2016	248.0
	3/15/2016	233.0
	6/14/2016	242.0
	9/29/2016	245.0
	12/20/2016	252.0
	4/18/2017	236.0
	6/7/2017	232.0
	7/12/2017	246.0
	11/14/2017	260.0
MW-3	1/27/2016	777.0
	3/14/2016	689.0
	6/14/2016	771.0
	9/29/2016	698.0
	12/20/2016	739.0
	4/18/2017	792.0

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
MW-3	6/7/2017	<0.08000	185.0	175.0	<1.000	7.330	<100.0
	7/12/2017	0.1150	167.0	167.0	<1.000	6.880	<100.0
	11/15/2017	<0.08000	174.0	213.0	<1.000	6.770	58.70
MW-9D	1/26/2016	0.5760	130.0	197.0	0.2120	7.170	<0.6000
	3/16/2016	0.5840	91.20	237.0	0.2440	7.170	0.4130
	6/13/2016	0.6000	92.50	207.0	<1.000	7.120	<5.000
	9/29/2016	0.5230	93.80	260.0	<1.000	7.170	<5.000
	12/20/2016	0.8100	101.0	270.0	<1.000	7.120	<5.000
	4/19/2017	0.4930	85.90	238.0	<1.000	7.060	<5.000
	6/7/2017	1.290	64.20	384.0	<1.000	6.390	<5.000
	7/12/2017	0.7280	75.30	351.0	<1.000	7.180	<5.000
	11/14/2017	1.050	73.10	638.0	<1.000	6.960	<5.000
MW-D	1/28/2016	4.260	5.100	23.50	2.110	8.680	12.80
	3/15/2016	5.000	5.180	23.90	1.860	8.510	13.80
	6/14/2016	5.990	4.010	25.60	1.820	8.680	13.00
	9/30/2016	4.310	3.510	29.40	1.990	7.240	12.70
	12/21/2016	5.920	8.190	32.10	1.910	8.480	12.90
	4/18/2017	4.720	3.090	39.00	2.110	9.250	13.90

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	TDS, mg/L
MW-3	6/7/2017	912.0
	7/12/2017	798.0
	11/15/2017	747.0
MW-9D	1/26/2016	773.0
	3/16/2016	809.0
	6/13/2016	781.0
	9/29/2016	794.0
	12/20/2016	827.0
	4/19/2017	793.0
	6/7/2017	1080.
	7/12/2017	1080.
	11/14/2017	1020.
MW-D	1/28/2016	532.0
	3/15/2016	528.0
	6/14/2016	518.0
	9/30/2016	524.0
	12/21/2016	562.0
	4/18/2017	565.0

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
MW-D	6/7/2017	5.220	2.750	35.40	2.190	6.920	13.30
	7/12/2017	4.030	2.810	29.90	2.100	8.180	13.20
	11/14/2017	5.690	3.550	26.20	2.630	8.210	14.10
MW-E	1/27/2016	3.800	141.0	338.0	1.250	8.410	78.10
	3/17/2016	3.030	74.90	152.0	0.2800	8.100	96.80
	6/14/2016	2.030	58.80	131.0	<1.000	7.400	<50.00
	9/30/2016	1.900	59.70	96.90	1.030	7.640	34.10
	12/21/2016	3.740	56.60	114.0	<1.000	7.390	36.70
	4/18/2017	0.9990	46.50	21.40	<1.000	9.090	30.00
	6/7/2017	1.080	46.90	<30.00	<1.000	6.870	24.80
	7/25/2017	0.9340	48.20	21.50	<1.000	7.450	25.90
	11/14/2017	2.080	51.00	43.10	<1.000	7.110	27.40
MW-F	1/28/2016	4.110	265.0	515.0	1.020	7.360	164.0
	3/18/2016	4.780	134.0	483.0	0.6740	6.850	165.0
	6/14/2016	8.380	139.0	561.0	<1.000	7.120	159.0
	9/30/2016	4.370	114.0	572.0	1.050	7.180	167.0
	12/21/2016	6.640	133.0	685.0	<1.000	7.090	177.0
	4/18/2017	5.050	106.0	522.0	<1.000	8.870	206.0

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	TDS, mg/L
MW-D	6/7/2017	559.0
	7/12/2017	545.0
	11/14/2017	527.0
MW-E	1/27/2016	978.0
	3/17/2016	819.0
	6/14/2016	572.0
	9/30/2016	475.0
	12/21/2016	596.0
	4/18/2017	376.0
	6/7/2017	372.0
	7/25/2017	385.0
	11/14/2017	448.0
MW-F	1/28/2016	1440.
	3/18/2016	1440.
	6/14/2016	1490.
	9/30/2016	1440.
	12/21/2016	1760.
	4/18/2017	1580.

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
MW-F	6/7/2017	5.360	103.0	582.0	<1.000	6.590	<250.0
	7/25/2017	4.880	100.0	766.0	<1.000	7.150	<250.0
	11/15/2017	5.830	113.0	531.0	<1.000	6.980	185.0
MW-G	1/27/2016	0.7900	97.10	131.0	0.5970	7.290	6.660
	3/15/2016	1.220	88.10	156.0	0.3590	7.170	2.980
	6/14/2016	1.040	65.20	158.0	<1.000	7.290	<5.000
	9/30/2016	0.7380	67.60	155.0	<1.000	7.200	<5.000
	12/14/2016	0.9790	66.90	158.0	<1.000	7.240	<5.000
	4/18/2017	0.9400	65.50	155.0	<1.000	9.060	<5.000
	6/7/2017	1.080	64.70	162.0	<1.000	7.160	<5.000
	7/13/2017	0.8920	63.10	166.0	<1.000	7.080	<5.000
	11/15/2017	1.220	70.60	189.0	<1.000	7.170	<5.000
MW-H	1/27/2016	0.4810	148.0	95.80	0.6790	7.270	25.10
	3/15/2016	0.5630	134.0	124.0	0.3840	7.040	40.10
	6/14/2016	0.6170	129.0	127.0	<1.000	7.000	<50.00
	9/30/2016	0.4690	111.0	119.0	<1.000	6.970	26.00
	12/20/2016	0.6500	107.0	116.0	<1.000	6.990	21.90
	4/18/2017	0.4940	105.0	110.0	<1.000	9.440	25.90

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	TDS, mg/L
MW-F	6/7/2017	1610.
	7/25/2017	1500.
	11/15/2017	1420.
MW-G	1/27/2016	671.0
	3/15/2016	659.0
	6/14/2016	674.0
	9/30/2016	672.0
	12/14/2016	685.0
	4/18/2017	699.0
	6/7/2017	707.0
	7/13/2017	719.0
	11/15/2017	712.0
MW-H	1/27/2016	622.0
	3/15/2016	640.0
	6/14/2016	705.0
	9/30/2016	621.0
	12/20/2016	624.0
	4/18/2017	671.0

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
MW-H	6/7/2017	0.5760	103.0	129.0	<1.000	6.790	38.50
	7/25/2017	0.5600	120.0	159.0	<1.000	6.790	37.10
	11/15/2017	0.6780	121.0	138.0	<1.000	6.950	32.80

Table 1. Zimmer Landfill: Appendix III Analytical Results

Location ID	Sample Date	TDS, mg/L
MW-H	6/7/2017	726.0
	7/25/2017	724.0
	11/15/2017	677.0

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	As, tot, mg/L	Ba, tot, mg/L	Be, tot, mg/L	Cd,tot, mg/L	Co, tot, mg/L	Cr, tot, mg/L
MW-11D	1/27/2016	<0.0005000	0.2020	<0.01000	<0.004000	<0.0005000	0.003510
	3/16/2016	0.05770	0.1740	<0.001000	<0.0004000	0.0005050	0.01060
	6/13/2016	0.001900	0.1600	<0.001000	<0.001000	<0.0005000	<0.002000
	9/29/2016	0.001550	0.1810	<0.001000	<0.001000	<0.0005000	<0.002000
	12/20/2016	<0.001000	0.1710	<0.001000	<0.001000	<0.0005000	<0.002000
	4/18/2017	0.002010	0.1490	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	0.001860	0.1640	<0.001000	<0.001000	<0.0005000	<0.002000
	7/12/2017	0.002270	0.1540	<0.001000	<0.001000	<0.0005000	<0.002000
MW-13S	1/28/2016	<0.0005000	<0.0005000	<0.01000	<0.004000	<0.0005000	<0.0005000
	3/16/2016	<0.002950	0.05190	<0.0008750	<0.0002500	<0.0005430	<0.002500
	4/20/2017	<0.001000	0.03440	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	<0.001000	0.03250	<0.001000	<0.001000	<0.0005000	<0.002000
	7/12/2017	<0.001000	0.04470	<0.001000	<0.001000	<0.0005000	<0.002000
MW-16D	1/28/2016	0.005200	<0.0005000	<0.01000	<0.004000	<0.0005000	<0.0005000
	3/15/2016	0.007870	0.1260	<0.001000	<0.0004000	<0.0005000	<0.0005000
	6/14/2016	0.005790	0.1090	<0.001000	<0.001000	<0.0005000	<0.002000
	9/29/2016	0.005390	0.1080	<0.001000	<0.001000	<0.0005000	<0.002000
	12/20/2016	0.005130	0.1040	<0.001000	<0.001000	<0.0005000	<0.002000

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	F, tot, mg/L	Hg, tot, mg/L	Li, tot, mg/L	Mo, tot, mg/L	Pb, tot, mg/L	Ra-226,228, tot, pCi/L
MW-11D	1/27/2016	0.2640	<0.0001000	0.008520	<0.0005000	<0.0002000	0.5190
	3/16/2016	0.2850	<0.0001000	0.007110	<0.0005000	<0.0002000	0.4030
	6/13/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.8230
	9/29/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.2650
	12/20/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.5450
	4/18/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.3760
	6/7/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.3540
	7/12/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.7490
MW-13S	1/28/2016	0.2780	<0.0001000	0.01230	<0.0005000	<0.0002000	0.4210
	3/16/2016	0.7610	<0.0001000	0.01380	<0.002500	<0.0004330	0.8530
	4/20/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.1140
	6/7/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.4010
	7/12/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.3060
MW-16D	1/28/2016	0.5460	<0.0001000	0.03940	<0.0005000	<0.0002000	0.2510
	3/15/2016	0.4560	<0.0001000	0.04390	0.001460	<0.0002000	0.3500
	6/14/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.2540
	9/29/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.5630
	12/20/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.5380

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	Sb, tot, mg/L	Se, tot, mg/L	Tl, tot, mg/L
MW-11D	1/27/2016	<0.005000	<0.0006000	<0.0005000
	3/16/2016	<0.0005000	0.001740	<0.0005000
	6/13/2016	<0.002000	<0.005000	<0.001000
	9/29/2016	<0.002000	<0.005000	<0.001000
	12/20/2016	<0.002000	<0.005000	<0.001000
	4/18/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/12/2017	<0.002000	<0.005000	<0.001000
MW-13S	1/28/2016	<0.005000	<0.0006000	<0.0005000
	3/16/2016	<0.004180	<0.003980	<0.001380
	4/20/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/12/2017	<0.002000	<0.005000	<0.001000
MW-16D	1/28/2016	<0.005000	<0.0006000	<0.0005000
	3/15/2016	<0.0005000	<0.0006000	0.0007310
	6/14/2016	<0.002000	<0.005000	<0.001000
	9/29/2016	<0.002000	<0.005000	<0.001000
	12/20/2016	<0.002000	<0.005000	<0.001000

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	As, tot, mg/L	Ba, tot, mg/L	Be, tot, mg/L	Cd,tot, mg/L	Co, tot, mg/L	Cr, tot, mg/L
MW-16D	4/18/2017	0.008370	0.1050	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	0.008590	0.1210	<0.001000	<0.001000	<0.0005000	<0.002000
	7/12/2017	0.005290	0.1060	<0.001000	<0.001000	<0.0005000	<0.002000
MW-18	1/26/2016	<0.0005000	<0.0005000	<0.01000	<0.004000	<0.0005000	0.007820
	3/17/2016	<0.002950	0.02000	<0.0008750	<0.0002500	0.0006050	<0.002500
	4/20/2017	<0.001000	0.01600	<0.001000	<0.001000	0.001010	<0.002000
	6/7/2017	<0.001000	0.01900	<0.001000	<0.001000	0.003330	0.002630
	7/12/2017	<0.001000	0.01240	<0.001000	<0.001000	0.001030	<0.002000
MW-20D	1/28/2016	<0.0005000	<0.0005000	<0.01000	<0.004000	<0.0005000	<0.0005000
	3/15/2016	0.004320	0.1520	<0.001000	<0.0004000	<0.0005000	0.0005850
	6/14/2016	0.001030	0.1160	<0.001000	<0.001000	<0.0005000	<0.002000
	9/29/2016	<0.001000	0.1420	<0.001000	<0.001000	<0.0005000	<0.002000
	12/20/2016	0.001160	0.1410	<0.001000	<0.001000	<0.0005000	<0.002000
	4/18/2017	0.001110	0.1140	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	0.001130	0.1410	<0.001000	<0.001000	<0.0005000	<0.002000
	7/13/2017	0.001230	0.1280	<0.001000	<0.001000	<0.0005000	<0.002000
MW-21	1/28/2016	<0.0005000	<0.0005000	<0.01000	<0.004000	<0.0005000	<0.0005000

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	F, tot, mg/L	Hg, tot, mg/L	Li, tot, mg/L	Mo, tot, mg/L	Pb, tot, mg/L	Ra-226,228, tot, pCi/L
MW-16D	4/18/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.3710
	6/7/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.4920
	7/12/2017	<1.000	<0.0002000	<0.2500	<0.005000	<0.001000	0.4710
MW-18	1/26/2016	0.2590	<0.0001000	0.1010	<0.0005000	<0.0002000	-.02760
	3/17/2016	0.2690	<0.0001000	0.1120	<0.002500	<0.0004330	1.100
	4/20/2017	<1.000	<0.0002000	0.08980	<0.005000	0.001470	0.4660
	6/7/2017	<1.000	<0.0002000	0.08770	<0.005000	0.002240	0.4390
	7/12/2017	<1.000	<0.0002000	0.08860	<0.005000	<0.001000	1.040
MW-20D	1/28/2016	0.2730	<0.0001000	0.01700	<0.0005000	<0.0002000	0.3950
	3/15/2016	0.2240	<0.0001000	0.01690	0.006620	<0.0002000	0.8190
	6/14/2016	<1.000	<0.0002000	<0.05000	<0.005000	0.001000	0.4620
	9/29/2016	<1.000	<0.0002000	<0.05000	0.005730	<0.001000	0.7140
	12/20/2016	<1.000	<0.0002000	<0.05000	0.005200	<0.001000	0.6590
	4/18/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.3500
	6/7/2017	<1.000	<0.0002000	<0.05000	0.005150	<0.001000	0.5050
	7/13/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.4640
MW-21	1/28/2016	0.5700	<0.0001000	0.07730	<0.0005000	<0.0002000	1.390

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	Sb, tot, mg/L	Se, tot, mg/L	Tl, tot, mg/L
MW-16D	4/18/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/12/2017	<0.002000	<0.005000	<0.001000
MW-18	1/26/2016	<0.005000	<0.0006000	<0.0005000
	3/17/2016	<0.004180	<0.003980	<0.001380
	4/20/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/12/2017	0.003090	<0.005000	<0.001000
MW-20D	1/28/2016	<0.005000	<0.0006000	<0.0005000
	3/15/2016	0.0006430	<0.0006000	0.001330
	6/14/2016	<0.002000	<0.005000	<0.001000
	9/29/2016	<0.002000	<0.005000	<0.001000
	12/20/2016	<0.002000	<0.005000	<0.001000
	4/18/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/13/2017	<0.002000	<0.005000	<0.001000
MW-21	1/28/2016	<0.005000	<0.0006000	<0.0005000

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	As, tot, mg/L	Ba, tot, mg/L	Be, tot, mg/L	Cd,tot, mg/L	Co, tot, mg/L	Cr, tot, mg/L
MW-21	3/14/2016	0.003620	0.07170	<0.001000	<0.0004000	<0.0005000	0.001130
	6/13/2016	<0.001000	0.06630	<0.001000	<0.001000	<0.0005000	<0.002000
	9/29/2016	<0.001000	0.06940	<0.001000	<0.001000	<0.0005000	<0.002000
	12/20/2016	<0.001000	0.06120	<0.001000	<0.001000	<0.0005000	<0.002000
	4/19/2017	<0.001000	0.06310	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	<0.001000	0.09090	<0.001000	<0.001000	<0.0005000	<0.002000
	7/12/2017	<0.001000	0.07330	<0.001000	<0.001000	<0.0005000	<0.002000
MW-22	1/26/2016	<0.0005000	<0.0005000	<0.01000	<0.004000	<0.0005000	<0.0005000
	3/16/2016	0.07370	0.05350	<0.001000	<0.0004000	0.0007450	0.01130
	6/13/2016	0.002040	0.04910	<0.001000	<0.001000	<0.0005000	<0.002000
	9/29/2016	0.003480	0.05630	<0.001000	<0.001000	<0.0005000	<0.002000
	12/20/2016	0.003250	0.05490	<0.001000	<0.001000	<0.0005000	<0.002000
	4/19/2017	0.003050	0.04890	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	0.002660	0.04780	<0.001000	<0.001000	<0.0005000	<0.002000
	7/25/2017	0.002830	0.05670	<0.001000	<0.001000	<0.0005000	<0.002000
MW-24	1/27/2016	<0.0005000	<0.0005000	<0.01000	<0.004000	<0.0005000	<0.0005000
	3/15/2016	0.002610	0.04440	<0.001000	<0.0004000	<0.0005000	<0.0005000
	6/14/2016	<0.001000	0.03590	<0.001000	<0.001000	<0.0005000	<0.002000

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	F, tot, mg/L	Hg, tot, mg/L	Li, tot, mg/L	Mo, tot, mg/L	Pb, tot, mg/L	Ra-226,228, tot, pCi/L
MW-21	3/14/2016	0.4540	<0.0001000	0.06260	<0.0005000	<0.0002000	1.180
	6/13/2016	<1.000	<0.0002000	0.06390	<0.005000	<0.001000	1.490
	9/29/2016	<1.000	<0.0002000	0.06690	<0.005000	<0.001000	1.430
	12/20/2016	<1.000	<0.0002000	0.06840	<0.005000	<0.001000	1.090
	4/19/2017	<1.000	<0.0002000	0.07220	<0.005000	<0.001000	1.490
	6/7/2017	<1.000	<0.0002000	0.08950	<0.005000	<0.001000	1.110
	7/12/2017	<1.000	<0.0002000	0.07830	<0.005000	<0.001000	1.780
MW-22	1/26/2016	<0.06000	<0.0001000	0.02750	<0.0005000	<0.0002000	0.9200
	3/16/2016	0.3330	<0.0001000	0.02070	0.0007500	<0.0002000	0.4850
	6/13/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.8490
	9/29/2016	<1.000	<0.0002000	<0.05000	<0.005000	0.003490	0.9200
	12/20/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	1.500
	4/19/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.8060
	6/7/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.4740
	7/25/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	1.210
MW-24	1/27/2016	0.4180	<0.0001000	0.01660	<0.0005000	<0.0002000	0.1660
	3/15/2016	0.3480	<0.0001000	0.01550	<0.0005000	<0.0002000	0.1640
	6/14/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.3480

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	Sb, tot, mg/L	Se, tot, mg/L	Tl, tot, mg/L
MW-21	3/14/2016	<0.0005000	<0.0006000	0.001320
	6/13/2016	<0.002000	<0.005000	<0.001000
	9/29/2016	<0.002000	<0.005000	<0.001000
	12/20/2016	<0.002000	<0.005000	<0.001000
	4/19/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/12/2017	0.002380	<0.005000	<0.001000
MW-22	1/26/2016	<0.005000	<0.0006000	<0.0005000
	3/16/2016	<0.0005000	0.002310	<0.0005000
	6/13/2016	<0.002000	<0.005000	<0.001000
	9/29/2016	<0.002000	<0.005000	<0.001000
	12/20/2016	<0.002000	<0.005000	<0.001000
	4/19/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/25/2017	<0.002000	<0.005000	<0.001000
MW-24	1/27/2016	<0.005000	<0.0006000	<0.0005000
	3/15/2016	<0.0005000	<0.0006000	<0.0005000
	6/14/2016	<0.002000	<0.005000	<0.001000

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	As, tot, mg/L	Ba, tot, mg/L	Be, tot, mg/L	Cd,tot, mg/L	Co, tot, mg/L	Cr, tot, mg/L
MW-24	9/29/2016	<0.001000	0.04070	<0.001000	<0.001000	<0.0005000	<0.002000
	12/20/2016	<0.001000	0.03920	<0.001000	<0.001000	<0.0005000	<0.002000
	4/18/2017	<0.001000	0.03440	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	<0.001000	0.04110	<0.001000	<0.001000	<0.0005000	<0.002000
	7/12/2017	<0.001000	0.03740	<0.001000	<0.001000	<0.0005000	<0.002000
MW-3	1/27/2016	<0.0005000	<0.0005000	<0.01000	<0.004000	<0.0005000	<0.0005000
	3/14/2016	0.005940	0.04640	<0.001000	<0.0004000	<0.0005000	<0.0005000
	6/14/2016	<0.001000	0.04200	<0.001000	<0.001000	<0.0005000	<0.002000
	9/29/2016	<0.001000	0.04550	<0.001000	<0.001000	<0.0005000	<0.002000
	12/20/2016	<0.001000	0.04820	<0.001000	<0.001000	<0.0005000	<0.002000
	4/18/2017	<0.001000	0.04130	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	<0.001000	0.04950	<0.001000	<0.001000	<0.0005000	<0.002000
	7/12/2017	<0.001000	0.04550	<0.001000	<0.001000	<0.0005000	<0.002000
MW-9D	1/26/2016	<0.0005000	0.6220	<0.01000	<0.004000	<0.0005000	<0.0005000
	3/16/2016	0.06350	0.5810	<0.001000	<0.0004000	0.002400	0.01140
	6/13/2016	0.004340	0.5510	<0.001000	<0.001000	0.002090	<0.002000
	9/29/2016	0.004850	0.6000	<0.001000	<0.001000	0.002000	<0.002000
	12/20/2016	0.005060	0.6420	<0.001000	<0.001000	0.008270	0.009360

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	F, tot, mg/L	Hg, tot, mg/L	Li, tot, mg/L	Mo, tot, mg/L	Pb, tot, mg/L	Ra-226,228, tot, pCi/L
MW-24	9/29/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.9050
	12/20/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.2550
	4/18/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.1460
	6/7/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.2450
	7/12/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.6450
MW-3	1/27/2016	0.1270	<0.0001000	0.009300	<0.0005000	<0.0002000	0.3650
	3/14/2016	0.1150	<0.0001000	0.008070	<0.0005000	<0.0002000	0.6320
	6/14/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.4990
	9/29/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.5140
	12/20/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	1.490
	4/18/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.4070
	6/7/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.2700
	7/12/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.3720
MW-9D	1/26/2016	0.2120	<0.0001000	0.04140	<0.0005000	<0.0002000	2.980
	3/16/2016	0.2440	<0.0001000	0.04270	<0.0005000	0.0006380	3.350
	6/13/2016	<1.000	<0.0002000	<0.05000	<0.005000	0.001200	2.470
	9/29/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	2.640
	12/20/2016	<1.000	<0.0002000	0.05850	<0.005000	0.004980	5.020

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	Sb, tot, mg/L	Se, tot, mg/L	Tl, tot, mg/L
MW-24	9/29/2016	<0.002000	<0.005000	<0.001000
	12/20/2016	<0.002000	<0.005000	<0.001000
	4/18/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/12/2017	<0.002000	<0.005000	<0.001000
MW-3	1/27/2016	<0.005000	<0.0006000	<0.0005000
	3/14/2016	0.0007430	<0.0006000	0.001590
	6/14/2016	<0.002000	<0.005000	<0.001000
	9/29/2016	<0.002000	<0.005000	<0.001000
	12/20/2016	<0.002000	<0.005000	<0.001000
	4/18/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/12/2017	<0.002000	<0.005000	<0.001000
MW-9D	1/26/2016	<0.005000	<0.0006000	<0.0005000
	3/16/2016	<0.0005000	0.002620	<0.0005000
	6/13/2016	<0.002000	<0.005000	<0.001000
	9/29/2016	<0.002000	<0.005000	<0.001000
	12/20/2016	<0.002000	<0.005000	<0.001000

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	As, tot, mg/L	Ba, tot, mg/L	Be, tot, mg/L	Cd,tot, mg/L	Co, tot, mg/L	Cr, tot, mg/L
MW-9D	4/19/2017	0.004470	0.5030	<0.001000	<0.001000	0.002560	0.002780
	6/7/2017	0.001640	0.7730	<0.001000	<0.001000	0.003650	0.002100
	7/12/2017	0.001390	0.6130	<0.001000	<0.001000	0.001760	<0.002000
MW-D	1/28/2016	<0.0005000	<0.0005000	<0.01000	<0.004000	<0.0005000	<0.0005000
	3/15/2016	0.002240	0.02470	<0.001000	<0.0004000	<0.0005000	0.0006940
	6/14/2016	<0.001000	0.02250	<0.001000	<0.001000	<0.0005000	<0.002000
	9/30/2016	<0.001000	0.02350	<0.001000	<0.001000	<0.0005000	<0.002000
	12/21/2016	<0.001000	0.02730	<0.001000	<0.001000	0.0009970	0.002920
	4/18/2017	<0.001000	0.02570	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	<0.001000	0.02730	<0.001000	<0.001000	<0.0005000	<0.002000
	7/12/2017	<0.001000	0.02390	<0.001000	<0.001000	<0.0005000	<0.002000
MW-E	1/27/2016	0.005070	0.4620	<0.01000	<0.004000	0.01410	0.02290
	3/17/2016	<0.002950	0.4410	<0.0008750	<0.0002500	0.003310	0.003860
	6/14/2016	0.002240	0.2510	<0.001000	<0.001000	0.004470	0.007280
	9/30/2016	0.001620	0.3530	<0.001000	<0.001000	0.004510	0.003140
	12/21/2016	0.004120	0.4210	<0.001000	<0.001000	0.009580	0.01440
	4/18/2017	<0.001000	0.2140	<0.001000	<0.001000	0.001230	<0.002000
	6/7/2017	<0.001000	0.2710	<0.001000	<0.001000	0.002720	0.002930

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	F, tot, mg/L	Hg, tot, mg/L	Li, tot, mg/L	Mo, tot, mg/L	Pb, tot, mg/L	Ra-226,228, tot, pCi/L
MW-9D	4/19/2017	<1.000	<0.0002000	<0.05000	<0.005000	0.001870	2.320
	6/7/2017	<1.000	<0.0002000	0.07500	<0.005000	0.001550	2.320
	7/12/2017	<1.000	<0.0002000	0.05670	<0.005000	<0.001000	3.160
MW-D	1/28/2016	2.110	<0.0001000	0.1200	<0.0005000	<0.0002000	0.1120
	3/15/2016	1.860	<0.0001000	0.1200	0.0006310	<0.0002000	0.2960
	6/14/2016	1.820	<0.0002000	0.1160	<0.005000	<0.001000	0.02470
	9/30/2016	1.990	<0.0002000	0.1180	<0.005000	<0.001000	0.6820
	12/21/2016	1.910	<0.0002000	0.1250	<0.005000	<0.001000	0.5250
	4/18/2017	2.110	<0.0002000	0.1190	<0.005000	<0.001000	0.4240
	6/7/2017	2.190	<0.0002000	0.1130	<0.005000	<0.001000	0.3410
	7/12/2017	2.100	<0.0002000	0.1230	<0.005000	<0.001000	0.3220
MW-E	1/27/2016	1.250	<0.0001000	0.1630	<0.0005000	0.006250	2.490
	3/17/2016	0.2800	<0.0001000	0.1320	0.003670	0.001470	1.790
	6/14/2016	<1.000	<0.0002000	0.06510	0.01170	0.002550	0.6370
	9/30/2016	1.030	<0.0002000	0.06230	0.005150	0.002630	1.390
	12/21/2016	<1.000	<0.0002000	0.1010	0.01010	0.004570	2.420
	4/18/2017	<1.000	<0.0002000	<0.05000	0.01030	<0.001000	0.8420
	6/7/2017	<1.000	<0.0002000	<0.05000	0.006520	0.001150	1.020

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	Sb, tot, mg/L	Se, tot, mg/L	Tl, tot, mg/L
MW-9D	4/19/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/12/2017	<0.002000	<0.005000	<0.001000
MW-D	1/28/2016	<0.02500	<0.0006000	<0.0005000
	3/15/2016	<0.0005000	<0.0006000	<0.0005000
	6/14/2016	<0.002000	<0.005000	<0.001000
	9/30/2016	<0.002000	<0.005000	<0.001000
	12/21/2016	<0.002000	<0.005000	<0.001000
	4/18/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/12/2017	<0.002000	<0.005000	<0.001000
MW-E	1/27/2016	<0.02500	<0.0006000	<0.02500
	3/17/2016	<0.004180	<0.003980	<0.001380
	6/14/2016	<0.002000	<0.005000	<0.001000
	9/30/2016	<0.002000	<0.005000	<0.001000
	12/21/2016	<0.002000	<0.005000	<0.001000
	4/18/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	As, tot, mg/L	Ba, tot, mg/L	Be, tot, mg/L	Cd,tot, mg/L	Co, tot, mg/L	Cr, tot, mg/L
MW-E	7/25/2017	<0.001000	0.1930	<0.001000	<0.001000	0.0006530	<0.002000
MW-F	1/28/2016	0.01060	0.2640	<0.01000	<0.004000	0.02220	0.03370
	3/18/2016	<0.002950	0.1460	<0.0008750	<0.0002500	0.004230	0.006650
	6/14/2016	0.006020	0.09380	<0.001000	<0.001000	0.009440	0.01870
	9/30/2016	0.001180	0.07100	<0.001000	<0.001000	0.002430	0.003070
	12/21/2016	0.008010	0.09010	0.001130	<0.001000	0.01420	0.03010
	4/18/2017	<0.001000	0.03900	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	<0.001000	0.04260	<0.001000	<0.001000	<0.0005000	<0.002000
	7/25/2017	<0.001000	0.04040	<0.001000	<0.001000	0.0006530	<0.002000
MW-G	1/27/2016	0.007470	0.4960	<0.01000	<0.004000	<0.0005000	<0.0005000
	3/15/2016	0.007880	0.4660	<0.001000	<0.0004000	<0.0005000	<0.0005000
	6/14/2016	0.003520	0.4060	<0.001000	<0.001000	<0.0005000	<0.002000
	9/30/2016	0.002950	0.4250	<0.001000	<0.001000	<0.0005000	<0.002000
	12/14/2016	0.003150	0.4380	<0.001000	<0.001000	<0.0005000	<0.002000
	4/18/2017	0.002930	0.3870	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	0.002570	0.4320	<0.001000	<0.001000	<0.0005000	<0.002000
	7/13/2017	0.002760	0.3920	<0.001000	<0.001000	<0.0005000	<0.002000

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	F, tot, mg/L	Hg, tot, mg/L	Li, tot, mg/L	Mo, tot, mg/L	Pb, tot, mg/L	Ra-226,228, tot, pCi/L
MW-E	7/25/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.8450
MW-F	1/28/2016	1.020	<0.0001000	0.2600	<0.0005000	0.02330	1.090
	3/18/2016	0.6740	<0.0001000	0.3280	<0.002500	0.003930	1.060
	6/14/2016	<1.000	<0.0002000	0.2490	<0.005000	0.01030	2.720
	9/30/2016	1.050	<0.0002000	0.2610	<0.005000	0.002530	6.360
	12/21/2016	<1.000	<0.0002000	0.2890	<0.005000	0.01240	4.180
	4/18/2017	<1.000	<0.0002000	0.2320	<0.005000	<0.001000	1.020
	6/7/2017	<1.000	<0.0002000	0.2240	<0.005000	<0.001000	1.050
	7/25/2017	<1.000	<0.0002000	0.2350	<0.005000	<0.001000	1.640
MW-G	1/27/2016	0.5970	<0.0001000	0.03410	<0.0005000	<0.0002000	1.310
	3/15/2016	0.3590	<0.0001000	0.03620	0.002520	<0.0002000	1.070
	6/14/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	1.420
	9/30/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	1.050
	12/14/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	1.910
	4/18/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	1.350
	6/7/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	1.200
	7/13/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	1.590

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	Sb, tot, mg/L	Se, tot, mg/L	Tl, tot, mg/L
MW-E	7/25/2017	<0.002000	<0.005000	<0.001000
MW-F	1/28/2016	<0.02500	<0.0006000	<0.02500
	3/18/2016	<0.004180	<0.003980	<0.001380
	6/14/2016	<0.002000	<0.005000	<0.001000
	9/30/2016	<0.002000	<0.005000	<0.001000
	12/21/2016	<0.002000	<0.005000	<0.001000
	4/18/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/25/2017	<0.002000	<0.005000	<0.001000
MW-G	1/27/2016	<0.005000	<0.0006000	<0.0005000
	3/15/2016	<0.0005000	<0.0006000	0.0005370
	6/14/2016	<0.002000	<0.005000	<0.001000
	9/30/2016	<0.002000	<0.005000	<0.001000
	12/14/2016	<0.002000	<0.005000	<0.001000
	4/18/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/13/2017	<0.002000	<0.005000	<0.001000

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	As, tot, mg/L	Ba, tot, mg/L	Be, tot, mg/L	Cd,tot, mg/L	Co, tot, mg/L	Cr, tot, mg/L
MW-H	1/27/2016	<0.0005000	<0.0005000	<0.01000	<0.004000	<0.005000	<0.0005000
	3/15/2016	0.005480	0.1270	<0.001000	<0.0004000	<0.0005000	0.0009660
	6/14/2016	0.001290	0.1260	<0.001000	<0.001000	<0.0005000	<0.002000
	9/30/2016	0.001320	0.1030	<0.001000	<0.001000	<0.0005000	<0.002000
	12/20/2016	0.001310	0.09740	<0.001000	<0.001000	<0.0005000	<0.002000
	4/18/2017	0.001260	0.08370	<0.001000	<0.001000	<0.0005000	<0.002000
	6/7/2017	<0.001000	0.1100	<0.001000	<0.001000	<0.0005000	<0.002000
	7/25/2017	0.001010	0.1210	<0.001000	<0.001000	<0.0005000	<0.002000

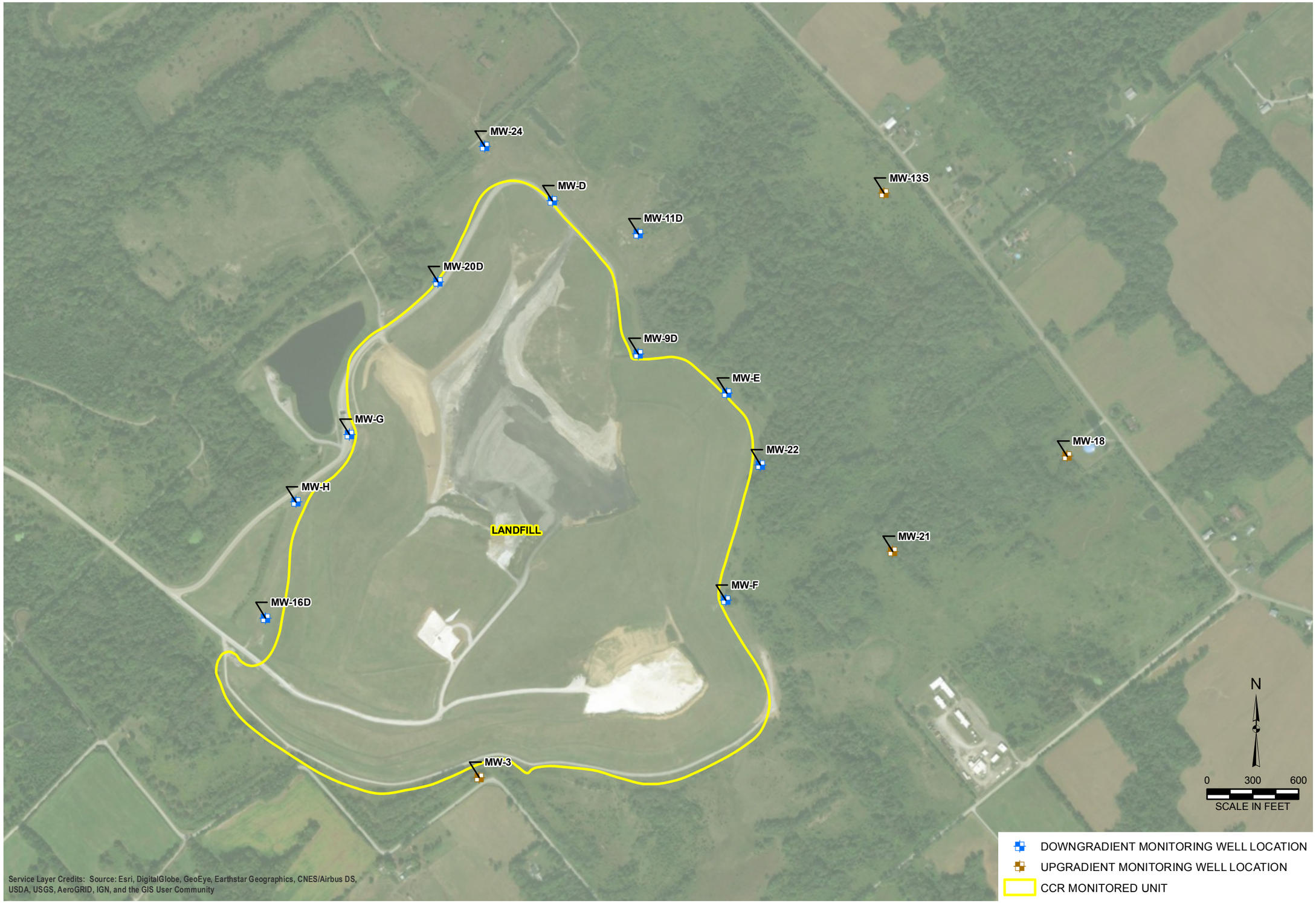
Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	F, tot, mg/L	Hg, tot, mg/L	Li, tot, mg/L	Mo, tot, mg/L	Pb, tot, mg/L	Ra-226,228, tot, pCi/L
MW-H	1/27/2016	0.6790	<0.0001000	0.03000	<0.0005000	<0.0002000	0.4540
	3/15/2016	0.3840	<0.0001000	0.03030	<0.0005000	<0.0002000	0.6220
	6/14/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.5990
	9/30/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.6010
	12/20/2016	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.4230
	4/18/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.5400
	6/7/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.4110
	7/25/2017	<1.000	<0.0002000	<0.05000	<0.005000	<0.001000	0.5380

Table 2. Zimmer Landfill: Appendix IV Analytical Results

Location ID	Sample Date	Sb, tot, mg/L	Se, tot, mg/L	Tl, tot, mg/L
MW-H	1/27/2016	<0.005000	<0.0006000	<0.0005000
	3/15/2016	<0.0005000	<0.0006000	<0.0005000
	6/14/2016	<0.002000	<0.005000	<0.001000
	9/30/2016	<0.002000	<0.005000	<0.001000
	12/20/2016	<0.002000	<0.005000	<0.001000
	4/18/2017	<0.002000	<0.005000	<0.001000
	6/7/2017	<0.002000	<0.005000	<0.001000
	7/25/2017	<0.002000	<0.005000	<0.001000

Figures



GROUNDWATER SAMPLING WELL LOCATION MAP
ZIMMER LANDFILL
UNIT ID: 122

2017 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
DYNEGY CCR RULE GROUNDWATER MONITORING
ZIMMER POWER STATION
MOSCOW, OHIO

DRAWN BY/DATE:
SDS 12/21/17
REVIEWED BY/DATE:
KLT 12/21/17
APPROVED BY/DATE:
SJC 1/25/18

PROJECT NO: 67720

FIGURE NO: 1

OBG

THERE'S A WAY