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INITIAL ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

**FEDERAL CCR RULE
LOT 15 LANDFILL
BALTIMORE, MARYLAND**

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1. INTRODUCTION

1.1 Purpose

Geosyntec Consultants (Geosyntec) has prepared this *Initial Annual Groundwater Monitoring and Corrective Action Report* (Report) for Fort Armistead Road - Lot 15 Landfill, LLC, a subsidiary of Raven Power (Raven), for the Lot 15 Industrial Landfill Site (Lot 15 or the Site) located at 3601 Fort Armistead Road, Baltimore, Maryland. The purpose of this document is to present the compliance groundwater monitoring results collected at the Site and analyses conducted during the baseline monitoring period (2015-2017) to fulfill requirements of the Federal Coal Combustion Residuals Rule (CCR Rule) codified in Title 40 of the Code of Federal Regulations (CFR) Subpart D Sections 257.90-98 (40 CFR §257.90-98). This Report is required by 40 CFR §257.90(e).

1.2 Site Description

The Site is located in the Curtis Bay area on the southeast quadrant of the intersection of Fort Smallwood Road and Fort Armistead Road in Baltimore, Maryland, as shown on **Figure 1**. It is bounded to the north, east, and west by Fort Armistead Road, CSX railroad tracks, and Fort Smallwood Road, respectively. A Site Plan depicting the approximate limits of the active and future landfill areas, property boundary, and other relevant Site features is provided as **Figure 2**. The existing Site conditions are illustrated on **Figure 3**.

The Site is a CCR disposal facility consisting of 65 acres including a 32-acre landfill area. The Site became operational in 2011 and is currently permitted to receive CCR, and other compatible and approved materials, generated from three energy generating plants in the Baltimore area. All cells constructed at the Site have leachate collection and have a single composite liner consisting of two feet of compacted clay with a maximum permeability of 1×10^{-7} cm/sec overlain by a 60-mil HDPE textured geomembrane.

1.3 Site Hydrogeology

The hydrogeologic framework for the Site was developed from referenced Coastal Plain geologic data, available subsurface investigation data, and geologic maps and reports prepared for the Site (Geosyntec, 2012). The major aquifers in the coastal plain in this portion of Baltimore City occur as sands and gravels in the Patapsco aquifers (upper and lower), and the underlying Patuxent aquifer. Most of the Upper Patapsco Unit (surficial aquifer) was removed from the Site during the construction of the CSX railroad and Key Bridge (Oosterbaan, 1991). The Lower Patapsco Unit, consisting of sand and gravel, is the uppermost identifiable and distinct continuous water bearing strata which is defined as the uppermost aquifer beneath the Site. The Lower Patapsco Unit is overlain by an approximately 100-foot thick hard clay unit with a hydraulic conductivity of approximately 10^{-7} cm/sec or lower, serving as an effective confining unit over the lower Patapsco aquifer. The hydraulic conductivity of the Lower Patapsco Unit was estimated at 2×10^{-3} cm/sec

(Geosyntec, 2012). The elevation of the top of the water bearing sand of the lower Patapsco was estimated at approximately -110 feet mean sea level (ft-msl).

The piezometric heads in the confined Lower Patapsco Unit, as measured in the existing monitoring wells, generally vary between elevation 2 and 4 ft-msl. Those measurements indicate that groundwater flows from the western portion of the Site to the east and northeast toward the Patapsco River.

1.3 CCR Groundwater Monitoring System

As described in the *Groundwater Monitoring Network Certification Report* (Geosyntec, 2017a), the Site's CCR groundwater monitoring system consists of two (2) upgradient background monitoring wells (MW-06 and MW-08) and eight (8) downgradient and/or sidegradient compliance monitoring wells (MW-07, MW-09R, and MW-10 through MW-15). Additional details regarding the monitoring network are provided in the Monitoring Network Certification Report. The location of each monitoring well is illustrated on **Figure 3**.

Prior to 2015, the water quality monitoring network at the Site consisted of six (6) monitoring wells (MW-06 through MW-11). Groundwater quality samples were generally collected from those wells on a semi-annual basis since 1993 to comply with Maryland Department of the Environment (MDE) requirements. To comply with CCR Rule requirements, and as a result of discussions and a Site visit by MDE, four (4) new monitoring wells (MW-12, MW-13, MW-14, and MW-15) were approved by MDE and installed at the Site in November 2015 at locations immediately adjacent to and either hydraulically downgradient or side-gradient of the future landfill limits. While establishing baseline groundwater quality for CCR Rule compliance, a damaged and leaking well casing at monitoring MW-09 was discovered. As a result, MW-09 was permanently abandoned and replaced by MW-09R in February 2017.

1.4 Status of Monitoring Program

In October 2017, the Site transitioned from baseline monitoring to detection monitoring. The Site was in the baseline monitoring program from December 2015 through October 2017.

2. CCR RULE GROUNDWATER MONITORING ACTIVITIES (2015-2017)

2.1 Field Sampling Activities

In accordance with Section 257.94 of the CCR Rule, baseline concentrations of Appendix III and Appendix IV constituents were measured in each Site monitoring well, except MW-09R, during eight (8) quarterly monitoring events conducted from December 2015 to September 2017. MW-09R, which was installed in February 2017 to replace the damaged and leaking well casing discovered at MW-09, was sampled monthly from March 2017 to October 2017. The dates for each baseline monitoring event are summarized on **Table 1**. The sampling frequency met the stipulations in the CCR Rule, which required collection of at least eight (8) independent samples by 17 October 2017 to establish baseline concentrations for both Appendix III and IV constituents at each well.

To collect the samples, monitoring wells were purged and sampled with dedicated pumping equipment in general accordance with USEPA low-flow/low-stress sampling methods (Yeskis and Zavala, 2002). Each monitoring well was purged at a rate of less than 500 ml/min while field parameters including water level, pH, specific conductance, oxidation-reduction potential (ORP), dissolved oxygen (DO), turbidity, and temperature, were measured approximately every five (5) minutes during purging until parameters met stabilization criteria. When field parameters met stabilization criteria, groundwater samples were collected by filling laboratory-provided, pre-preserved sample containers directly from the pump discharge tubing. Samples were not field-filtered prior to sampling.

Quality assurance/quality control (QA/QC) samples were also obtained during the quarterly monitoring events and included: (i) field duplicate samples and (ii) matrix spike and matrix spike duplicate (MS/MSD) sets.

2.2 Laboratory Analysis

Following collection, samples were placed immediately on ice and sent under executed chain of custody via laboratory courier to Eurofins Lancaster Laboratories Environmental (Lancaster) in Lancaster, Pennsylvania for laboratory analysis. A detailed listing of the Appendix III and IV constituents that were analyzed for compliance monitoring are presented as **Table 2**. All samples collected were analyzed at Lancaster, except for radium 226 and radium 228 samples, which were analyzed by GEL Laboratories in Charleston, South Carolina. The following standard methods were used to analyze the samples:

- Total metals – USEPA 200.7/200.8;
- Total mercury – USEPA 245.1;
- Chloride, Fluoride, and Sulfate – USEPA 300.0;
- Total Dissolved Solids (TDS) – SM 2510B;
- Radium 228 – EPA 904.0/SW846 9320 Modified; and
- Radium 226 – EPA 903.1 Modified

2.3 Data Quality Assessment

Following receipt of the analytical reports, Geosyntec conducted data quality assessments. The data quality assessment included: (i) an evaluation of the analytical data for the field duplicate, MS/MSD, and laboratory quality control data; and (ii) a review of constituent detection limits, analytical methods, hold-times, and temperature requirements to evaluate whether data were properly qualified.

Data were qualified, as necessary, in accordance with the USEPA National Functional Guidelines (USEPA, 2014). In addition to reviewing field QA/QC results, Geosyntec also qualitatively compared the newly generated data to historical data to identify unusual or anomalous concentrations. Unless otherwise noted, no unusual or anomalous concentrations were identified, and the data were accepted as qualified.

3. MONITORING RESULTS AND STASTICAL EVALUATIONS

3.1 Groundwater Elevation, Flow Direction, and Flow Rates

Synoptic depth to groundwater surveys were completed at Site monitoring wells prior to each monitoring event. A summary of those measurements and the corresponding calculated groundwater elevations are provided in **Table 3**. The piezometric heads in the confined Lower Patapsco Unit generally varied between elevation 2 and 4 ft-msl, which is consistent with historical results at the Site.

The calculated groundwater elevations were used to interpolate potentiometric surface maps, presented in **Figure 4** through **Figure 11**. Consistent with historical results, the potentiometric surface maps for each event indicate that groundwater in the Lower Patapsco Unit flowed from the western portion of the Site to the east and northeast toward the Patapsco River. As a result, monitoring wells M-06 and M-08 remained upgradient of the Site and continued to represent appropriate background monitoring locations.

The potentiometric maps were used to estimate the horizontal hydraulic gradient in the Lower Patapsco Unit during each quarterly monitoring event. Those values are summarized on **Table 4** and were used to estimate horizontal groundwater flow rates in the Lower Patapsco Unit. The estimated flow rates for each event are summarized on **Table 4**.

3.2 Analytical Results

Baseline Appendix III and IV constituent results for each existing monitoring well are summarized on **Table 5** and **Table 6**, respectively.

3.3 Detection Monitoring Statistics

In accordance with 40 CFR 257.93(b)(2), detection monitoring statistics were not required to be evaluated until the first quarter of 2018 (i.e. within 90 days after completion of sampling and analysis) and therefore are not included in this report. Detection monitoring statistics will be calculated in the required timeframe and included in the next annual report. The procedures that will be used to perform the statistical analyses are detailed in the *Detection Monitoring Statistical Methods Certification Report* (Geosyntec, 2017b).

4. PROBLEMS ENCOUNTERED AND RESOLUTIONS

The following section discusses problems encountered during the baseline monitoring period (December 2015 through October 2017). Additionally, this section discusses the resolutions to those problems encountered.

Problem 1: Elevated pH and TDS values were detected at MW-13 during the March 2016 monitoring event. Those values were suspected be a result of grout and/or bentonite seal intrusion into the well during its construction in November 2015.

Resolution 1: MW-13 was redeveloped in July 2016. Grout and/or bentonite effects did not appear to be as significant following those development activities.

Problem 2: A damaged and leaking well casing at monitoring well MW-09 was discovered in July 2016.

Resolution 2: MW-09 was permanently abandoned and replaced by MW-09R in February 2017.

Problem 3: Quarterly sample collection at MW-09R, which was installed in February 2017 to replace MW-09, would not result in the collection of eight (8) baseline samples by 17 October 2017 as required by Section 257.94(b) of the CCR Rule.

Resolution 3: The groundwater sampling schedule for MW-09R was accelerated to monthly sampling from March 2017 through October 2017.

5. PLANNED KEY ACTIVITIES FOR 2018

The following section discusses the groundwater monitoring and reporting activities anticipated in 2018.

January 2018: This *Initial Annual Groundwater Monitoring and Corrective Action Report* will be entered into the facility's operating record.

January 2018: Appendix III sample results collected in September/October 2017 will be evaluated for a statistically significant increase (SSI) over background.

February 2018: This *Initial Annual Groundwater Monitoring and Corrective Action Report* will be posted to the public internet site and a notification will be sent to the Maryland Department of Environment (MDE).

April 2018: The first semi-annual groundwater monitoring event in 2018 will be conducted. Detection monitoring samples (i.e., Appendix III) will be collected during the event, unless a SSI is detected from the statistical evaluation conducted in January 2018 and an alternative source for the SSI is not identified. Assessment monitoring samples (i.e., Appendix III and IV) will be collected if a SSI is detected and an alternative source is not identified.

August 2018: Appendix III sample results collected in April 2018 will be evaluated for a statistically significant increase (SSI) over background.

October 2018: The second semi-annual groundwater monitoring event in 2018 will be conducted. Detection monitoring samples (i.e., Appendix III) will be collected during the event, unless a SSI is detected from the statistical evaluation conducted in August 2018 and an alternative source for the SSI is not identified. Assessment monitoring samples (i.e., Appendix III and IV) will be collected if a SSI is detected and an alternative source is not identified.

December 2018: Preparation of the 2018 Annual Groundwater Monitoring and Corrective Action Report will begin.

6. REFERENCES

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TABLES

TABLE 1
SUMMARY OF GROUNDWATER MONITORING EVENTS

Lot 15 Landfill
Baltimore, Maryland

Well ID	Monitoring Purpose	Date												
		Dec-15	Mar-16	Jul-16	Oct-16	Dec-16	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17
MW-06	Background	X	X	X	X	X	X			X			X	
MW-07	Compliance	X	X	X	X	X	X			X			X	
MW-08	Background	X	X	X	X	X	X			X			X	
MW-09R	Compliance						X	X	X	X	X	X	X	X
MW-10	Compliance	X	X	X	X	X	X			X			X	
MW-11	Compliance	X	X	X	X	X	X			X			X	
MW-12	Compliance	X	X	X	X	X	X			X			X	
MW-13	Compliance	X	X	X	X	X	X			X			X	
MW-14	Compliance	X	X	X	X	X	X			X			X	
MW-15	Compliance	X	X	X	X	X	X			X			X	

Notes:

X - indicates groundwater samples collected for laboratory analysis of Appendix III and IV constituents

TABLE 2
APPENDIX III/IV CONSTITUENTS MONITORED

Lot 15 Landfill
Baltimore, Maryland

Constituent	
<i>40 CFR 257 Appendix III Constituents</i>	Boron
	Calcium
	Chloride
	Fluoride
	pH
	Sulfate
	Total Dissolved Solids
<i>40 CFR 257 Appendix IV Constituents</i>	Antimony
	Arsenic
	Barium
	Beryllium
	Cadmium
	Chromium
	Cobalt
	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Fluoride
	Radium 226
Radium 228	

**TABLE 3
GROUNDWATER ELEVATION MEASUREMENTS**

**Lot 15 Landfill
Baltimore, Maryland**

Well ID	MW-6	MW-7	MW-8	MW-9	MW-9R	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15
Reference Elevation ⁽¹⁾	34.30	39.34	33.03	38.23	44.94	56.35	39.68	56.06	53.35	42.37	63.51
Date											
12/15	3.46	2.83	3.39	2.79	-	3.17	2.95	3.14	3.05	2.88	3.01
03/16	4.05	3.46	4.01	3.45	-	3.80	3.61	3.79	3.57	3.56	3.61
07/16	3.73	3.19	3.67	3.12	-	3.44	3.27	3.23	3.27	3.17	3.31
10/16	3.36	2.86	3.28	2.77	-	3.04	2.91	3.04	2.97	2.84	2.97
12/16	3.27	2.74	3.16	2.65	-	2.93	2.77	2.90	2.82	2.64	2.86
03/17	3.05	2.62	2.99	-	2.71	2.82	2.67	2.80	2.77	2.62	2.70
04/17	3.05	2.61	3.01	-	2.71	2.82	2.67	2.80	2.77	2.62	2.70
05/17	3.26	2.76	3.24	-	2.67	2.84	2.70	2.82	2.79	2.67	2.69
06/17	3.28	2.76	3.21	-	2.80	2.98	2.83	2.95	2.90	2.79	2.85
07/17	3.39	2.88	3.29	-	2.84	3.02	2.84	2.99	2.93	2.80	2.91
08/17	3.29	2.77	3.19	-	2.90	3.08	2.90	3.06	3.00	2.86	2.97
09/17	3.44	2.90	3.34	-	2.79	2.95	2.78	2.93	2.86	2.73	2.85
10/17	3.18	2.66	3.09	-	2.90	3.09	2.88	3.06	3.01	2.86	3.01

Notes:

⁽¹⁾ All measurements are in feet mean sea level. The reference elevation point for each monitoring well is the top of PVC casing measured on 3 December 2015 and 22 March 2017 by professional surveyors George Williams Stephens, Jr. and Associates, Inc.

**TABLE 4
GROUNDWATER FLOW RATE**

**Lot 15 Landfill
Baltimore, Maryland**

Event	Hydraulic Conductivity ⁽¹⁾ (cm/sec)	Porosity ⁽²⁾	Hydraulic Gradient	Horizontal Velocity ⁽³⁾	
				(cm/sec)	(ft/year)
Dec-15	0.002	0.225	0.0003	2.7E-06	2.8
Mar-16	0.002	0.225	0.0003	2.7E-06	2.8
Jul-16	0.002	0.225	0.0003	2.7E-06	2.8
Oct-16	0.002	0.225	0.0003	2.7E-06	2.8
Dec-16	0.002	0.225	0.0002	1.8E-06	1.8
Mar-17	0.002	0.225	0.0002	1.8E-06	1.8
Jul-17	0.002	0.225	0.0002	1.8E-06	1.8
Sep-17	0.002	0.225	0.0002	1.8E-06	1.8

Notes:

⁽¹⁾ Lower Patapsco hydraulic conductivity from the Phase II Report: Site Geologic Study (Gesoyntec, 2012).

⁽²⁾ Average porosity calculated from Groundwater and Wells, Driscoll (Driscoll, 1986) range for sand and gravel mixes.

⁽³⁾ Horizontal velocity was calculated by dividing hydraulic conductivity by porosity and multiplying the quotient by hydraulic gradient
cm/sec - centimeters per second

TABLE 5
SUMMARY OF APPENDIX III BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6
		Date	12/29/2015	3/29/2016	7/11/2016	10/13/2016	12/29/2016	3/23/2017	6/22/2017	9/7/2017
		Units								
General Chemistry	Chloride	mg/L	3.8	4.2	3.5	3.9	4.3	3.8	6.9	3.9
	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U
	pH (Lab)	SU	-	-	5.8	5.9	5.8	6.1J	5.8	6.0
	pH (Field)	SU	5.26	5.29	5.2	5.3	5.64	5.12	4.18	4.76
	Sulfate	mg/L	15.3	13.2	13.0	14.5	14.7	13.3	15.8	12.6
	Total Dissolved Solids	mg/L	47.5J	41.5	55.0	38.0	46.0	52.5	52.5	48.5
Metals	Boron	mg/L	<0.05U	<0.05U	<0.05UJ	<0.05U	<0.05U	<0.05U	<0.05U	<0.05U
	Calcium	mg/L	6.18	5.25	5.66	6.49	7.57	5.74	6.32	5.59

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

SU - standard units

"-" - Not analyzed

TABLE 5
SUMMARY OF APPENDIX III BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7
		Date	12/28/2015	3/28/2016	7/8/2016	10/11/2016	12/28/2016	3/22/2017	6/22/2017	9/7/2017
		Units								
General Chemistry	Chloride	mg/L	3.3	2.7	2.6	3.4	2.8	2.7	2.4	2.7
	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	0.31J	<0.5U	<0.5U	<0.5U	<0.5U
	pH (Lab)	SU	-	-	5.4	4.3	5.2	5.6	5.5J	5.3
	pH (Field)	SU	5.63	5.06	4.74	4.43	4.49	4.32	3.78	3.98
	Sulfate	mg/L	8.0	8.7	7.3	7.1	7.4	7.4	7.4	7.4
	Total Dissolved Solids	mg/L	38.5	20.5J	<30.0U	60.5	26.0J	62.0J	22.5J	25.5J
Metals	Boron	mg/L	<0.05U	<0.05U	0.0137J	0.0119J	0.0108J	<0.05U	<0.05U	<0.05U
	Calcium	mg/L	4.18	1.7	1.23	1.2	0.925J	<0.2J	1.28	0.929

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

SU - standard units

"-" - Not analyzed

TABLE 5
SUMMARY OF APPENDIX III BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8
		Date	12/30/2015	3/29/2016	7/8/2016	10/13/2016	12/27/2016	3/22/2017	6/21/2017	9/7/2017
		Units								
General Chemistry	Chloride	mg/L	3.6	3.2	3.2	2.8	3.0	3.0	2.5	2.5
	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U
	pH (Lab)	SU	-	-	5.7	5.6	5.7	6.1	6.2	5.7
	pH (Field)	SU	5.36	5.46	5.32	4.77	5.35	5.21	4.05	4.44
	Sulfate	mg/L	13.7	12.2	11.8	15.9	13.3	12.8	14.4	12.4
	Total Dissolved Solids	mg/L	36.5	31.5	<30.0U	47.0	34.5	74.0J	53.5	38.0
Metals	Boron	mg/L	0.0127J	0.0088J	0.0205J	0.0193J	0.0162J	0.0112J	0.0141J	0.0101J
	Calcium	mg/L	4.08	3.64	3.63	3.96	3.8J	4.09	4.48	3.71

Notes:

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U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

SU - standard units

"-" - Not analyzed

TABLE 5
SUMMARY OF APPENDIX III BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-9R	MW-9R	MW-9R	MW-9R	MW-9R	MW-9R	MW-9R	MW-9R
		Date	3/21/2017	4/19/2017	5/23/2017	6/22/2017	7/28/2017	8/15/2017	9/6/2017	10/3/2017
		Units								
General Chemistry	Chloride	mg/L	64.8	44.4	46.1	37.7	16.0	13.5	14.0	12.1
	Fluoride	mg/L	0.68	0.77	0.65	<0.5U	1.2	<0.5U	<0.5U	<0.5UJ
	pH (Lab)	SU	7.8	7.6	8.4	7.3J	6.9	6.9	6.4	6.3
	pH (Field)	SU	7.36	7.64	8.63	7.37	7.05	6.98	6.84	7.13
	Sulfate	mg/L	20.8	13.7	5.0J	2.6J	6.3	2.6J	1.7J	2.9J
	Total Dissolved Solids	mg/L	237.0	212.0	205.0	148.0	100.0J	116.0	93.0	94.0
Metals	Boron	mg/L	0.0119J	0.0155J	0.0103J	<0.05U	0.0132J	0.0136J	<0.05U	0.0164J
	Calcium	mg/L	34.5	30.9	24.2	23.9	18.4	16.8	16.5	13.8

Notes:

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U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

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TABLE 5
SUMMARY OF APPENDIX III BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10
		Date	12/29/2015	3/29/2016	7/8/2016	10/13/2016	12/27/2016	3/22/2017	6/21/2017	9/7/2017
		Units								
General Chemistry	Chloride	mg/L	2.7	2.6	2.8	2.9	2.8	2.8	3.2	2.6
	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U
	pH (Lab)	SU	-	-	6.4	6.5	6.0	6.2	6.4	5.9
	pH (Field)	SU	6.02	6.01	5.61	5.68	5.62	5.47	5.5	4.8
	Sulfate	mg/L	5.8	5.5	5.1	10.8	5.2	5.6	5.8	4.8J
	Total Dissolved Solids	mg/L	50.5J	32.5	<30.0U	39.5	28.5	38.0J	32.5	21.5J
Metals	Boron	mg/L	<0.05U	<0.05U	0.0109J	0.0105J	<0.05U	<0.05U	<0.05U	<0.05U
	Calcium	mg/L	9.18	7.43	4.34	6.75	5.3J	4.29	9.93	3.42

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

SU - standard units

"-" - Not analyzed

TABLE 5
SUMMARY OF APPENDIX III BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11
		Date	12/29/2015	3/28/2016	7/8/2016	10/13/2016	12/27/2016	3/22/2017	6/22/2017	9/7/2017
		Units								
General Chemistry	Chloride	mg/L	3.0	3.3	2.8	2.8	3.2	2.9	2.9	2.5
	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U
	pH (Lab)	SU	-	-	6.7	6.7	6.3	6.3	6.7J	6.2
	pH (Field)	SU	6.23	6.57	6.03	6.23	6.15	5.76	5.75	5.59
	Sulfate	mg/L	10.4	10.5	10.2	11.4	10.2	9.2	10.9	9.5
	Total Dissolved Solids	mg/L	53.0J	66.0	<30.0U	45.0	61.0	62.5J	97.5J	49.5
Metals	Boron	mg/L	<0.05U	<0.05U	0.0116J	0.0098J	0.0096J	<0.05U	<0.05U	<0.05U
	Calcium	mg/L	11.3	15.7	13.2	15.3	10.6J	8.43	23.0	11.1

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

SU - standard units

"-" - Not analyzed

TABLE 5
SUMMARY OF APPENDIX III BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12
		Date	12/30/2015	3/29/2016	7/11/2016	10/11/2016	12/28/2016	3/21/2017	6/22/2017	9/8/2017
		Units								
General Chemistry	Chloride	mg/L	3.5	2.8	2.2	2.9	2.7	2.8	2.5	2.8
	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	0.32J	<0.5U	<0.5U
	pH (Lab)	SU	-	-	6.4	6.3	6.0	6.7	6.0J	6.0J
	pH (Field)	SU	6.58	6.25	5.91	5.72	5.67	5.31	4.84	4.64
	Sulfate	mg/L	3.8J	5.4	4.6J	4.1J	5.3	5.1	5.5	5.9
	Total Dissolved Solids	mg/L	64.0	53.0	52.0	28.5J	31.5	61.5	31.5	36.0
Metals	Boron	mg/L	0.0117J	<0.05U	<0.05UJ	0.0142J	<0.05U	<0.05U	<0.05U	<0.05U
	Calcium	mg/L	13.8	7.77	5.44	3.59	3.25J	3.0	2.84	2.34

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

SU - standard units

"-" - Not analyzed

TABLE 5
SUMMARY OF APPENDIX III BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-13	MW-13	MW-13	MW-13	MW-13	MW-13	MW-13	MW-13
		Date	12/28/2015	3/28/2016	7/15/2016	10/11/2016	12/28/2016	3/22/2017	6/22/2017	9/8/2017
		Units								
General Chemistry	Chloride	mg/L	4.9	3.6	3.0	3.0	3.1	2.8	3.5	2.7
	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U
	pH (Lab)	SU	-	-	7.3	6.7	6.4	7.1J	6.5J	6.8
	pH (Field)	SU	6.97	11.34	6.92	6.57	6.54	6.29	5.75	5.68
	Sulfate	mg/L	3.1J	9.1	9.3	6.8	7.2	7.1	12.0	6.9
	Total Dissolved Solids	mg/L	78.0	480.0	70.5	81.0	65.5	105.0J	65.0	56.5
Metals	Boron	mg/L	0.0132J	0.0105J	0.0128J	0.0149J	0.0093J	<0.05U	<0.05U	<0.05U
	Calcium	mg/L	9.14	138.0	18.2	18.4	17.1J	18.0	12.6	10.8

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

SU - standard units

"-" - Not analyzed

TABLE 5
SUMMARY OF APPENDIX III BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14
		Date	12/30/2015	3/28/2016	7/11/2016	10/12/2016	12/27/2016	3/21/2017	6/22/2017	9/6/2017
		Units								
General Chemistry	Chloride	mg/L	4.9	4.8	3.9	3.9	4.1	3.9	3.4	3.3
	Fluoride	mg/L	<0.5U	0.94	<0.5U	<0.5U	0.27J	<0.5U	<0.5U	<0.5U
	pH (Lab)	SU	-	-	6.3	6.2	6.2	6.7	6.1J	6.2
	pH (Field)	SU	6.46	6.76	6.13	5.93	6.41	6.04	5.83	5.65
	Sulfate	mg/L	7.5	4.0J	4.6J	10.2	3.1J	5.1	6.5	5.6
	Total Dissolved Solids	mg/L	60.0	71.5	68.0	48.0	59.5	76.5	43.0	50.0
Metals	Boron	mg/L	0.0181J	0.0103J	0.0092J	0.0176J	0.0226J	0.0098J	0.0112J	0.0116J
	Calcium	mg/L	9.19	8.12	5.2	4.9	5.82J	3.99	3.69	3.4

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

SU - standard units

"-" - Not analyzed

TABLE 5
SUMMARY OF APPENDIX III BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15
		Date	12/29/2015	3/29/2016	7/11/2016	10/12/2016	12/29/2016	3/21/2017	6/21/2017	9/6/2017
		Units								
General Chemistry	Chloride	mg/L	5.2	4.1	2.4	2.7	2.9	2.8	2.3	2.4
	Fluoride	mg/L	1.1	1.4	<0.5U	0.29J	0.42J	<0.5U	<0.5U	<0.5U
	pH (Lab)	SU	-	-	6.7	6.7	6.5	6.5	7.0	6.6
	pH (Field)	SU	6.95	7.19	6.51	6.73	6.78	6.59	6.53	6.31
	Sulfate	mg/L	9.9	4.4J	4.3J	4.7J	4.6J	5.3	3.8J	5.4
	Total Dissolved Solids	mg/L	78.0J	84.5	75.5	76.0	61.0	53.5	45.0	64.5
Metals	Boron	mg/L	<0.05U	0.0111J	0.0086J	0.0144J	0.0131J	0.0094J	0.0094J	<0.05U
	Calcium	mg/L	10.1	11.5	7.68	8.22	8.63	7.71	9.07	7.4

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

SU - standard units

"-" - Not analyzed

TABLE 6
SUMMARY OF APPENDIX IV BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6	MW-6
		Date	12/29/2015	3/29/2016	7/11/2016	10/13/2016	12/29/2016	3/23/2017	6/22/2017	9/7/2017
		Units								
General Chemistry	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U
Metals	Antimony	mg/L	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Arsenic	mg/L	0.00088J	0.00074J	0.00073J	0.00053J	0.00048	<0.002U	0.00079J	<0.002U
	Barium	mg/L	0.0083	0.0085	0.0062	0.006	0.0064	0.0058	0.0071	0.0076
	Beryllium	mg/L	0.00025J	0.00037J	0.00033J	0.00018J	0.00016J	0.00024J	0.00022J	0.00023J
	Cadmium	mg/L	0.0014	0.00061	0.00041J	0.00056	0.00042J	0.00034	0.00046J	0.00068
	Chromium (III+VI)	mg/L	0.0034	0.0035	0.002J	<0.002U	0.00081J	0.0011	0.0013J	0.0014J
	Cobalt	mg/L	0.0077	0.0103	0.0062	0.0065	0.0064	0.0062	0.0068	0.0084
	Lead	mg/L	0.0017	0.0018	0.00098J	0.00057J	0.0006J	0.001	0.00098J	0.0011
	Lithium	mg/L	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U
	Mercury	mg/L	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U
	Molybdenum	mg/L	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	0.0022	<0.01U	<0.01U
	Selenium	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
Thallium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	
Radionuclides	Radium-226	pCi/L	1.54	3.42	1.64	1.56	2.56	0.933	0.646	1.33
	Radium-228	pCi/L	2.95	5.89	2.81	3.64	4.34	4.45	3.46	3.03

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

pCi/L - picocuries per liter

TABLE 6
SUMMARY OF APPENDIX IV BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7
		Date	12/28/2015	3/28/2016	7/8/2016	10/11/2016	12/28/2016	3/22/2017	6/22/2017	9/7/2017
		Units								
General Chemistry	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	0.31J	<0.5U	<0.5U	<0.5U	<0.5U
Metals	Antimony	mg/L	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Arsenic	mg/L	0.002J	0.0016J	0.0013J	0.0012J	0.0014J	0.0016	0.0011J	0.0014J
	Barium	mg/L	0.026	0.0137	0.0111	0.0113	0.0097	0.0092	0.0138	0.0102
	Beryllium	mg/L	0.0006	0.00097	0.0011	0.00096	0.001	0.0011	0.00085	0.00097
	Cadmium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
	Chromium (III+VI)	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
	Cobalt	mg/L	0.0064	0.0065J	0.0055	0.0062	0.007	0.0063	0.0067	0.0056
	Lead	mg/L	0.00024J	0.00018J	0.00011J	0.000094J	0.00012J	<0.001U	0.00011J	0.00019J
	Lithium	mg/L	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U
	Mercury	mg/L	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U
	Molybdenum	mg/L	<0.01U	0.0085J	<0.01U	<0.01U	0.0028	<0.01U	<0.01U	<0.01U
	Selenium	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
	Thallium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
Radionuclides	Radium-226	pCi/L	<1.0U	0.629	0.632	0.693	0.822	<1.0U	0.511	0.289
	Radium-228	pCi/L	<3.0U	<3.0U	<3.0U	<3.0U	2.37	<3.0U	<3.0U	<3.0U

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

pCi/L - picocuries per liter

TABLE 6
SUMMARY OF APPENDIX IV BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8
		Date	12/30/2015	3/29/2016	7/8/2016	10/13/2016	12/27/2016	3/22/2017	6/21/2017	9/7/2017
		Units								
General Chemistry	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U
Metals	Antimony	mg/L	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Arsenic	mg/L	0.00054J	0.0015J	0.0019J	0.0012J	0.0014J	0.0014	0.00046J	0.0013J
	Barium	mg/L	0.0091	0.0113	0.0099	0.0089	0.0133	0.0102	0.0089	0.0139
	Beryllium	mg/L	0.001	0.001	0.00099	0.00086	0.00089	0.001	0.001	0.001
	Cadmium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
	Chromium (III+VI)	mg/L	0.0017J	0.0049	0.0059	0.0014J	0.0038	0.0025	<0.002U	0.0034
	Cobalt	mg/L	<0.005U	0.0044J	<0.005U	<0.005U	0.0037J	0.0023J	<0.005U	<0.005U
	Lead	mg/L	0.00044J	0.0014	0.0015	0.00056J	0.0012	<0.001U	<0.001U	0.0015
	Lithium	mg/L	0.0178J	0.0116J	0.0072J	0.0149J	0.0119	0.0151J	0.0154J	0.0131J
	Mercury	mg/L	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U
	Molybdenum	mg/L	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U
	Selenium	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
Thallium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	
Radionuclides	Radium-226	pCi/L	0.467	2.03	1.12	0.838	0.6	<1.0U	<1.0U	0.361
	Radium-228	pCi/L	<3.0U	2.42	<3.0U	<3.0U	<3.0U	<3.0U	2.05	<3.0U

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

pCi/L - picocuries per liter

TABLE 6
SUMMARY OF APPENDIX IV BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-9R	MW-9R	MW-9R	MW-9R	MW-9R	MW-9R	MW-9R	MW-9R
		Date	3/21/2017	4/19/2017	5/23/2017	6/22/2017	7/28/2017	8/15/2017	9/6/2017	10/3/2017
		Units								
General Chemistry	Fluoride	mg/L	0.68	0.77	0.65	<0.5U	1.2	<0.5U	<0.5U	<0.5UJ
Metals	Antimony	mg/L	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Arsenic	mg/L	0.00078	0.00072J	<0.002U	0.0013J	0.002	0.0012J	0.00067J	0.0011J
	Barium	mg/L	0.0657	0.0565J	0.0508	0.0562	0.0429	0.0429	0.0427	0.0392
	Beryllium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
	Cadmium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
	Chromium (III+VI)	mg/L	0.0012J	0.0019J	0.001J	0.0012J	<0.002U	<0.002U	<0.002U	<0.002U
	Cobalt	mg/L	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
	Lead	mg/L	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Lithium	mg/L	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	0.0104J	<0.02U	<0.02U
	Mercury	mg/L	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U
	Molybdenum	mg/L	0.0086J	0.008J	0.0057J	0.0051J	<0.01U	0.0048J	<0.01U	0.0053J
	Selenium	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
	Thallium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
Radionuclides	Radium-226	pCi/L	0.726	0.301	<1.0U	<1.0U	0.52	<1.0U	<1.0U	<1.0U
	Radium-228	pCi/L	<3.0U	<3.0U	<3.0U	<3.0U	1.45	<3.0U	1.58	<3.0U

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

pCi/L - picocuries per liter

TABLE 6
SUMMARY OF APPENDIX IV BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10
		Date	12/29/2015	3/29/2016	7/8/2016	10/13/2016	12/27/2016	3/22/2017	6/21/2017	9/7/2017
		Units								
General Chemistry	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U
Metals	Antimony	mg/L	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Arsenic	mg/L	0.00041J	<0.002U	<0.002U	<0.002U	<0.002U	0.00047	<0.002U	<0.002U
	Barium	mg/L	0.0428	0.036	0.023	0.0062	0.0301	0.0253	0.0542	0.0197
	Beryllium	mg/L	0.00034J	0.00026J	0.0003J	0.00024J	0.00029J	0.0003J	0.00017J	0.00034J
	Cadmium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
	Chromium (III+VI)	mg/L	0.0025	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
	Cobalt	mg/L	0.006	0.0061	0.0051	0.0066	0.0065	0.0058	0.0053	0.005
	Lead	mg/L	0.00041J	<0.001U	0.0001J	<0.001U	0.000094J	<0.001U	<0.001U	<0.001U
	Lithium	mg/L	0.0093J	0.0082J	<0.02U	<0.02U	0.0063	0.0065J	0.0101J	<0.02U
	Mercury	mg/L	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U
	Molybdenum	mg/L	<0.01U	<0.01U	0.0075 J	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U
	Selenium	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
	Thallium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
Radionuclides	Radium-226	pCi/L	1.12	<1.0U	1.07	1.14	<1.0U	<1.0U	<1.0U	<1.0U
	Radium-228	pCi/L	<3.0U	<3.0U	2.66	<3.0U	1.57	<3.0U	<3.0U	<3.0U

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

pCi/L - picocuries per liter

TABLE 6
SUMMARY OF APPENDIX IV BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11
		Date	12/29/2015	3/28/2016	7/8/2016	10/13/2016	12/27/2016	3/22/2017	6/22/2017	9/7/2017
		Units								
General Chemistry	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U
Metals	Antimony	mg/L	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Arsenic	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
	Barium	mg/L	0.0524	0.0672	0.062	0.0699	0.0523	0.0448	0.1	0.0542
	Beryllium	mg/L	0.00031J	0.00011J	0.00017J	0.00012J	0.00018J	0.0002J	<0.0005U	0.00018J
	Cadmium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
	Chromium (III+VI)	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
	Cobalt	mg/L	0.0063	0.0035J	0.0023J	<0.005U	0.0034J	0.0038J	<0.005U	0.003J
	Lead	mg/L	0.00023J	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Lithium	mg/L	0.0105J	<0.02U	<0.02U	0.0096J	0.005	0.007J	<0.02U	<0.02U
	Mercury	mg/L	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U
	Molybdenum	mg/L	<0.01U	<0.01U	<0.01U	<0.01U	0.0031	<0.01U	<0.01U	<0.01U
	Selenium	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
	Thallium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
Radionuclides	Radium-226	pCi/L	0.465	1.29	2.21	1.22	1.12	1.45	0.992	1.01
	Radium-228	pCi/L	<3.0U	2.43	<3.0U	4.02	2.63	1.89	1.09	<3.0U

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

pCi/L - picocuries per liter

TABLE 6
SUMMARY OF APPENDIX IV BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12
		Date	12/30/2015	3/29/2016	7/11/2016	10/11/2016	12/28/2016	3/21/2017	6/22/2017	9/8/2017
		Units								
General Chemistry	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	0.32J	<0.5U	<0.5U
Metals	Antimony	mg/L	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Arsenic	mg/L	0.00066J	0.0006J	0.00065J	0.00081J	0.0006J	0.0009	<0.002U	<0.002U
	Barium	mg/L	0.0265	0.0311	0.03	0.0235	0.0208	0.0203	0.019	0.0162
	Beryllium	mg/L	<0.0005U	<0.0005U	0.00018J	0.00031J	0.0003J	0.00032J	0.0003J	0.00034J
	Cadmium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
	Chromium (III+VI)	mg/L	<0.002U	0.00099J	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
	Cobalt	mg/L	<0.005U	0.0024J	0.0022J	0.0026J	0.0031J	0.0037J	0.0032J	0.0048J
	Lead	mg/L	0.00014J	0.00018J	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Lithium	mg/L	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U
	Mercury	mg/L	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U
	Molybdenum	mg/L	0.0031J	0.0026J	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U
	Selenium	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
Thallium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	
Radionuclides	Radium-226	pCi/L	0.675	<1.0U	<1.0U	0.465	1.16	0.518	<1.0U	<1.0U
	Radium-228	pCi/L	<3.0U	1.74	<3.0U	<3.0U	3.22	<3.0U	<3.0U	<3.0U

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

pCi/L - picocuries per liter

TABLE 6
SUMMARY OF APPENDIX IV BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-13	MW-13	MW-13	MW-13	MW-13	MW-13	MW-13	MW-13
		Date	12/28/2015	3/28/2016	7/15/2016	10/11/2016	12/28/2016	3/22/2017	6/22/2017	9/8/2017
		Units								
General Chemistry	Fluoride	mg/L	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U	<0.5U
Metals	Antimony	mg/L	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Arsenic	mg/L	0.0026	0.0027	0.0016J	0.0015J	0.0012J	0.00067J	0.00061J	<0.002U
	Barium	mg/L	0.0382	0.616	0.0973	0.109	0.093	0.0895	0.0785	0.0829
	Beryllium	mg/L	0.00032J	0.000095J	0.00019J	<0.0005U	0.00014J	0.00017J	0.00019J	0.00016J
	Cadmium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
	Chromium (III+VI)	mg/L	0.006	0.004	0.0018J	<0.002U	<0.002U	0.00061	<0.002U	<0.002U
	Cobalt	mg/L	0.0018J	0.0021J	0.0028J	0.003J	0.0049J	0.0051	0.0051	0.0054
	Lead	mg/L	0.0021	0.0013	<0.001U	0.00014J	0.00013J	0.000096J	<0.001U	<0.001U
	Lithium	mg/L	<0.02U	0.0243	0.01J	0.0106J	0.0092	0.0086J	<0.02U	<0.02U
	Mercury	mg/L	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U
	Molybdenum	mg/L	0.0045J	0.0077J	0.002J	0.0048J	<0.01U	0.0076	<0.01U	<0.01U
	Selenium	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
Thallium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	
Radionuclides	Radium-226	pCi/L	0.988	1.1	1.14	<1.0U	0.347	<1.0U	0.571	0.79
	Radium-228	pCi/L	<3.0U	1.85	<3.0U	<3.0U	<3.0U	<3.0U	<3.0U	1.83

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

pCi/L - picocuries per liter

TABLE 6
SUMMARY OF APPENDIX IV BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14	MW-14
		Date	12/30/2015	3/28/2016	7/11/2016	10/12/2016	12/27/2016	3/21/2017	6/22/2017	9/6/2017
		Units								
General Chemistry	Fluoride	mg/L	<0.5U	0.94	<0.5U	<0.5U	0.27J	<0.5U	<0.5U	<0.5U
Metals	Antimony	mg/L	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Arsenic	mg/L	0.00054J	0.00043J	0.00048J	0.0005J	0.00047J	0.00087	<0.002U	<0.002U
	Barium	mg/L	0.0326	0.0392	0.031	0.0308	0.0438	0.0277	0.0318	0.0331
	Beryllium	mg/L	0.00011J	0.00014J	0.00013J	<0.0005U	<0.0005U	<0.0005U	0.000078J	0.00009J
	Cadmium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
	Chromium (III+VI)	mg/L	0.0018J	0.0042	0.0046	0.002	0.002J	0.0019J	0.0021	0.0033
	Cobalt	mg/L	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
	Lead	mg/L	0.0002J	0.00075J	0.00081J	0.00035J	0.00033J	<0.001U	0.00028J	0.00054J
	Lithium	mg/L	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U
	Mercury	mg/L	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U
	Molybdenum	mg/L	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U	<0.01U
	Selenium	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
	Thallium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
Radionuclides	Radium-226	pCi/L	<1.0U	0.483	0.597	0.643	0.527	<1.0U	<1.0U	0.213
	Radium-228	pCi/L	<3.0U	3.61	<3.0U	1.98	<3.0U	<3.0U	<3.0U	<3.0U

Notes:

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U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

pCi/L - picocuries per liter

TABLE 6
SUMMARY OF APPENDIX IV BASELINE ANALYTICAL DATA

Lot 15 Landfill
Baltimore, Maryland

Analyte Group	Analyte	Well ID	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15	MW-15
		Date	12/29/2015	3/29/2016	7/11/2016	10/12/2016	12/29/2016	3/21/2017	6/21/2017	9/6/2017
		Units								
General Chemistry	Fluoride	mg/L	1.1	1.4	<0.5U	0.29J	0.42J	<0.5U	<0.5U	<0.5U
Metals	Antimony	mg/L	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U	<0.001U
	Arsenic	mg/L	0.00052J	0.0012J	0.00094J	0.0011J	0.00062	0.00078	0.0009J	0.0006J
	Barium	mg/L	0.0355	0.0333	0.0347	0.0345	0.0361	0.0347	0.0403	0.0368
	Beryllium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
	Cadmium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U
	Chromium (III+VI)	mg/L	<0.002U	0.0016J	0.0013J	0.00074J	<0.002U	<0.002U	<0.002U	<0.002U
	Cobalt	mg/L	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
	Lead	mg/L	<0.001U	0.00022J	0.000092J	0.00022J	<0.001U	<0.001U	<0.001U	<0.001U
	Lithium	mg/L	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U	<0.02U
	Mercury	mg/L	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U	<0.0002U
	Molybdenum	mg/L	0.0044J	0.0108	0.0044J	<0.01U	0.0031J	0.0029J	<0.01U	<0.01U
	Selenium	mg/L	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U	<0.002U
Thallium	mg/L	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	<0.0005U	
Radionuclides	Radium-226	pCi/L	1.11	1.57	0.616	0.618	2.04	<1.0U	<1.0U	<1.0U
	Radium-228	pCi/L	1.81	<3.0U	1.37	<3.0U	3.76	<3.0U	<3.0U	<3.0U

Notes:

J - The constituent was detected and the associated numerical value is estimated.

U- The constituent was analyzed for, but was not detected at a level greater than or equal to the method detection limit (MDL).

Analytes not detected shown as < Reporting Limit

mg/L - milligrams per liter

pCi/L - picocuries per liter

FIGURE