November 29, 2019

Alexis McKinnon
Solid Waste Specialist
Kitsap County Public Works
Solid Waste Division
604 Division Street, MS-27
Port Orchard, WA 98366

Re: Third Quarter 2019 Environmental Monitoring Report, Hansville Landfill, Kitsap County, Washington
Project No. 160423-05.1

Dear Alexis:

This quarterly report summarizes the results of environmental monitoring conducted at the Hansville Landfill (Site) during the third quarter of 2019, and was prepared by Aspect Consulting, LLC (Aspect) on behalf of Kitsap County Public Works Solid Waste Division and Waste Management of Washington (WMW). Ongoing environmental monitoring at the Site supports the selected remedy of natural attenuation of groundwater with enhanced monitoring and institutional controls that was established under Amended Consent Decree No. 95-2-03005-1 (August 5, 2011). The data sets presented in this letter report were collected in accordance with the Site Cleanup Action Plan (CAP; Ecology, 2011) and the "Compliance Monitoring Plan with Sampling & Analysis Plan and Quality Assurance Plan" (SCS, 2011; herein referred as Compliance Monitoring Plan), except where otherwise noted.

Conditions monitored at the Site during the third quarter of 2019 were consistent with historical trends showing improvements in protection of human health and the environment. This report is organized consistent with quarterly reporting topics listed in the Compliance Monitoring Plan (SCS, 2011), and includes:

- Site monitoring and maintenance activities, along with a discussion of any deviations from the CAP, or required tasks not otherwise documented in project plans
- Landfill gas monitoring results and gas collection system adjustments
- Determination of groundwater flow direction and gradient, including a groundwater surface elevation contour map
- Water quality sampling results, including tabulated field data and laboratory analyses

Also included are time-series plots and projected trends in groundwater concentrations for selected analytes at selected monitoring locations. Finally, this report discusses geochemical parameters as indicators of landfill effects on groundwater and surface water.

Site Activities – Third Quarter 2019

Site activities during the reporting period included environmental monitoring of landfill gas, groundwater, and surface water. Landfill gas monitoring data are presented in Attachment A.

Groundwater elevations, a groundwater contour map, and groundwater and surface water quality analytical results are presented in Attachment B. Summary statistics, time-series graphs, and graphs of projected groundwater concentrations for arsenic and vinyl chloride at selected monitoring wells are presented in Attachment C. Supporting field records, laboratory data reports, and chain-of-custody documentation are presented in Attachment D. A chronology of on-Site monitoring activities performed during the third quarter 2019 is provided below:

- On July 17, 2019, groundwater and surface water sampling was completed by Aspect representatives. Groundwater and surface water samples were collected in accordance with the Compliance Monitoring Plan (SCS, 2011).
- On July 24 and August 15, 2019, Aspect conducted system tuning of the landfill gas system. As necessary, flow rates were adjusted to ensure capture of landfill gasses.
- On September 18 and 23, 2019, Aspect conducted landfill gas monitoring in accordance with the Compliance Monitoring Plan (SCS, 2011), including compliance monitoring at perimeter probes. As necessary, flow rates were adjusted to ensure capture of landfill gasses.

Deviations from the Compliance Monitoring Plan

During the quarterly groundwater and surface water sampling event on July 17, 2019, conditions were dry at surface water location SW-6, thus, a surface water sample could not be collected. Dry conditions were consistent with relatively low precipitation regionally (for example, see the NOAA 2019 summary for Seattle precipitation).

During the quarterly landfill gas compliance monitoring event in September, gas concentrations at native soils wells (NS-1S, NS-1D, NS-2S, NS-2D, NS-3S, NS-3D, NS-4S, NS-4D, NS-5S, and NS-5D) were not measured. Valves at all native soil wells were shut in January 2017 to focus landfill gas collection from locations within the refuse extent. However, several valves at native soil wells could not be reliably closed due to disrepair. During the fourth quarter of 2019, the native soil wells will be disconnected from the landfill gas collection system, and an addendum to the Compliance Monitoring Plan will be prepared to document the end of monitoring at these wells.

There were no other deviations from the Compliance Monitoring Plan (SCS, 2011) during the third quarter 2019 environmental monitoring.

Summary of Landfill Gas Conditions

The following sections provide a discussion of landfill gas monitoring and gas extraction system performance. The layout of the landfill gas extraction system is shown on Figure A-1.

Landfill Gas Monitoring

The landfill gas collection system was tuned on July 24 and August 15, 2019, and compliance monitoring of the landfill gas collection system occurred on September 18 and 23, 2019.

Measurements were made with a calibrated GEM-5000 multigas meter. Landfill gas monitoring parameters collected for the compliance monitoring event are summarized in Table A-1, and listed below:

- Landfill gas composition measurements included methane (CH_4), carbon dioxide (CO_2), oxygen (O_2), and balance gas (Balance) concentrations.
- Collection system pressure measurements included the static pressure measured before and after any valve adjustments, reported as "initial" and "adjusted," respectively.
- Collection system flow-rate measurements were obtained at all locations via orifice plates. The differential pressure and gas temperature were measured to calculate flow. Table A-1 presents flow rates measured after valve adjustments, reported as "adjusted."

Landfill Gas System Performance

During the compliance monitoring event on September 18 and 23, 2019, the flow at the blower inlet was approximately 50 standard cubic feet per minute (scfm). Methane and carbon dioxide concentrations at the blower inlet were approximately 3.6 percent by volume and 15.8 percent by volume, respectively. Oxygen concentration was approximately 2.8 percent by volume. Well-field optimization will continue to focus on maximizing methane and carbon dioxide collection rates. The 2,000-gallon condensate storage tank contained approximately 400 gallons.

Explosive Gas Control

Methane was not detected in any of the compliance gas probes during the compliance monitoring event on September 18 and 23, 2019. Locations of on-property compliance probes GP-1, GP-2S, GP-2M, GP-2D, GP-3, GP-4, GP-5, and GP-6 are shown on Figure A-1, and the location of off-property compliance probe GP-7 is shown on Figure B-1. Carbon dioxide concentrations ranged from 0.1 to 3.5 percent by volume, reflecting natural conditions.

Summary of Groundwater and Surface Water Conditions

This section addresses groundwater and surface water conditions based on the monitoring event on July 17, 2019. Samples were collected from six groundwater monitoring wells and from four surface water monitoring locations (see Figure B-1) for laboratory analysis.

Groundwater Flow

Groundwater surface elevations were calculated using water levels measured July 17, 2019, and are presented in Table B-1. Groundwater elevations ranged from 238.7 feet North American Vertical Datum of 1988 (NAVD88) in MW-12I to 267.8 feet NAVD88 in the upgradient, background monitoring well MW-5. The direction of groundwater flow at the Site was to the southwest. Groundwater gradients ranged from 0.008 feet over feet (feet/feet) in the upgradient areas, to 0.016 feet/feet further downgradient, with the gradient steepening near the groundwater discharge area (Figure B-1). Groundwater flow conditions were consistent with those observed during previous monitoring events.

Groundwater and Surface Water Quality

Groundwater quality results from the third quarter 2019 are presented in Table B-2, including field parameters, conventional parameters, dissolved metals, and volatile organic compounds. During the reporting period, arsenic concentrations in groundwater were below the Site-specific cleanup level of 0.005 milligrams per liter (mg/L) at all monitoring wells except MW-13D (0.00512 mg/L) and

MW-14 (0.0115 mg/L). Dissolved manganese concentrations were below the Site-specific cleanup level of 2.24 mg/L. Vinyl chloride concentrations in groundwater were below the Site-specific groundwater cleanup level of 0.025 micrograms per liter (µg/L) at all monitoring wells except MW-6 (0.061 µg/L) and MW-12I (0.082 µg/L).

Surface water quality results from the third quarter 2019 are presented in Table B-3, including field parameters, conventional parameters, dissolved metals, and volatile organic compounds. During the reporting period, dissolved arsenic concentrations in surface water were below the Site-specific cleanup level of 0.005 mg/L. Dissolved manganese concentrations were below the Site-specific cleanup level of 2.24 mg/L. Vinyl chloride concentrations in surface water were not detected at a reporting limit below the Site-specific cleanup level of 0.025 µg/L. As previously noted, conditions were dry at location SW-6 making it infeasible to collect a surface water sample during this monitoring event.

Time-Series Plots and Projected Trends

Groundwater sampling results since 2007 are shown on time-series plots for dissolved arsenic (Figure C-1) and vinyl chloride (Figure C-2) at all compliance monitoring locations. Figure C-1 shows that dissolved arsenic concentrations in groundwater have been less than the cleanup level of 0.005 mg/L at MW-5 (background well), MW-6, MW-7, and MW-12I. Dissolved arsenic concentrations have historically been below the cleanup level at MW-13D except during the third quarter 2018 and the second and third quarters of 2019. Dissolved arsenic concentrations at MW-14 have historically exceeded the Site-specific cleanup level and have been decreasing over time.

Figure C-2 shows vinyl chloride concentrations in groundwater have been less than the cleanup level of 0.025 µg/L at MW-5 (background well), MW-7, and MW-13D. The concentrations of vinyl chloride at MW-6, MW-12I, and MW-14 have historically exceeded the Site-specific cleanup level and have been decreasing over time. For the first time since monitoring began, vinyl chloride concentrations at MW-14 were below the Site-specific cleanup level during the third quarter 2018, and have not been detected since the first quarter 2019 at MW-14.

Figure C-3 shows time-series plots of historical and 10-year projected groundwater concentrations for MW-6 (vinyl chloride), MW-12I (vinyl chloride), and MW-14 (arsenic and vinyl chloride). The projected restoration time frames for vinyl chloride concentrations range from approximately 4 to 10 years. The projected restoration time frame for arsenic in groundwater at MW-14 is more than 10 years. Increasing the rate of landfill gas collection system may achieve groundwater cleanup levels within a shorter time frame than shown on Figure C-3.

Statistical Evaluation of Groundwater Trends

There are statistically significant decreasing trends in concentrations where dissolved arsenic and/or vinyl chloride have been detected above Site-specific cleanup levels (at monitoring wells MW-6, MW-12I, and MW-14). Table C-1 provides results of statistical analysis for arsenic and vinyl chloride for monitoring wells MW-6, MW-12I, and MW-14. The trends are defined as “statistically significant” because the magnitude of the Mann-Kendall Test Value (Z) was greater than the Critical Value (which is based on the number of data points and alpha). The trends are defined as

decreasing because the Sen's Slopes are negative.[1] These statistics confirm what is visually apparent on Figure C-3 showing historical groundwater concentrations.

The statistical analysis of groundwater data was performed in accordance with the Compliance Monitoring Plan (SCS, 2011) for historical data collected since January 23, 2007. The program Sanitas WQStat (ver. 9.0.34) was used to evaluate the Mann-Kendall Test and Sen's Slope. Mann-Kendall testing was performed to assess whether there were statistically significant trends in groundwater concentrations using the two-tailed test (alpha = 0.05). Mann-Kendall results are reported as an approximated normal distribution Test Value "Z" (where the number of data points was greater than 40). Sen's slope analysis was performed to identify the trend direction for statistically significant trends and reflects the median of the slopes of all pairs of historical data.

Geochemical Parameters

Geochemical parameters in groundwater and surface water serve as indicators of landfill effects and can distinguish leachate impacts from gas-to-groundwater impacts. As shown in Tables B-2 and B-3, geochemical parameters collected at the Site include field parameters (dissolved oxygen, pH, Redox [reduction-oxidation potential], specific conductivity, and temperature), alkalinity/carbonate/bicarbonate, chloride, nitrate/nitrite/ammonia, sulfate, and total organic carbon.

Based on low concentrations of geochemical parameters identified as leachate indicators (such as chloride, sulfate, alkalinity, and bicarbonate) across the Site, there appears to be little if any leachate effect on groundwater and surface water quality. However, the downgradient monitoring wells show lower dissolved oxygen concentrations than the upgradient well (MW-5), which is likely caused by carbon dioxide in landfill gas coming in contact with groundwater directly beneath the landfill. Increasing the rate of landfill gas collection may prevent carbon dioxide from contacting groundwater, maintain background dissolved oxygen levels, and support geochemical conditions that keep naturally occurring arsenic and manganese from dissolving into groundwater.

References

SCS Engineers (SCS), 2011, Compliance Monitoring Plan with Sampling & Analysis Plan and Quality Assurance Plan – Remedial Action at the Hansville Landfill, September 15, 2011.

Washington State Department of Ecology (Ecology), 2011, Cleanup Action Plan Hansville Landfill, Kitsap County, Washington, Ecology Facility Site Identification Number: 2605, June 2011.

NOAA website: https://www.wrh.noaa.gov/climate/yeardisp.php?wfo=sew&stn=KSEW&span=Calendar+Year&submit=Calendar+Year+Charts

[1] Sen's slope values reflect the median of the slopes of historical data pairs, and were provided in units of µg/L per day in reports by SCS through 2016. Starting in 2017, Sen's slope values will be provided in units of µg/L per year, to support interpretation. For comparison, Table C-1 provides Sen's slope values for both units.

Limitations

Work for this project was performed for the Kitsap County Public Works (Client), and this letter was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This letter does not represent a legal opinion. No other warranty, expressed or implied, is made.

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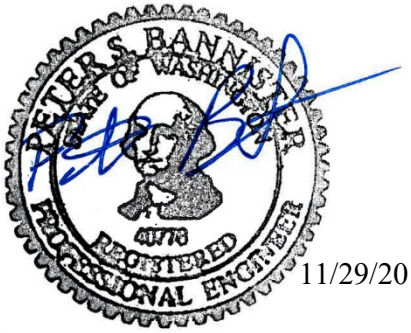
Sincerely,

Aspect consulting, LLC



11/29/2019

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Attachments:
A – Landfill Gas Data
B – Water Quality Results
C – Groundwater Statistics and Time-Series Plots
D – Field Forms and Laboratory Reports

cc: Phil Perley, Waste Management of Washington
Patrick Hamel, Kitsap Public Health District
Ron Timm, Washington State Department of Ecology
Sam Phillips, Port Gamble S'Klallam Tribe

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ATTACHMENT A

Landfill Gas Data

Table A-1. Landfill Gas Data, Third Quarter, 2019

Project No. 160423, Hansville Landfill, Hansville, WA

Location	Device ID	Date/Time	Methane CH4 (% by vol)	Carbon Dioxide CO2 (% by vol)	Oxygen O2 (% by vol)	Balance Bal (% by vol)	Static Pressure (inches H2O)		Gas Temperature (degrees F)		Flow Rate (SCFM)	
							Initial	Adjusted	Initial	Adjusted	Initial	Adjusted
Blower Inlet	HANSBLIN	9/18/2019 10:11	3.6	15.8	2.8	77.8	-21.11	-21.21	57	57	49.3	53.1
Blower Outlet	HANSBLOT	9/18/2019 10:13	3.6	15.8	2.8	77.8	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 001	HANSR001	9/18/2019 11:25	6.4	15.1	0.3	78.2	-1.14	-1.13	58	58	0.9	1
Extraction Well 002	HANSR002	9/18/2019 11:29	1.7	14.9	3.8	79.6	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 003	HANSR003	9/18/2019 11:34	6.9	14.5	0	78.6	-1.67	-1.67	58	58	2.9	2.9
Extraction Well 004	HANSR004	9/18/2019 11:43	3.1	17.9	0	79	-1.86	-1.85	58	58	1.9	1.7
Extraction Well 005	HANSR005	9/18/2019 11:53	3.3	18.6	0.1	78	-1.29	-1.29	58	58	1.7	1.9
Extraction Well 006	HANSR006	9/18/2019 12:06	3	18.5	1.7	76.8	-1.67	-1.85	58	58	1.1	0.5
Extraction Well 007	HANSR007	9/18/2019 12:11	0.2	16.1	0.1	83.6	-1.16	-1.18	58	58	2	2
Extraction Well 008	HANSR008	9/18/2019 11:01	5	17.9	1	76.1	-1.16	-1.16	57.5	57.5	1	1
Extraction Well 009	HANSR009	9/18/2019 11:08	1.4	15.8	2.1	80.7	-1.5	-1.5	57.5	57.5	0	0
Extraction Well 010	HANSR010	9/18/2019 11:13	5.5	10.8	3.9	79.8	-1.22	-1.21	57.5	57.5	0.4	0.5
Extraction Well 011	HANSR011	9/18/2019 11:17	2.6	9.1	0	88.3	-1.24	-1.25	57.5	57.5	1	1.1
Extraction Well 012	HANSR012	9/18/2019 12:30	8.3	5.1	0	86.6	-1.28	-1.28	58	58	1.1	0.3
Extraction Well 013	HANSR013	9/18/2019 12:16	2.9	14.1	1.3	81.7	-2.01	-2	58	58	0	0
Trench Collector TD-1	HANSTD01	9/18/2019 9:52	2.5	22.5	0	75	-0.24	-0.24	57	57	13.3	12.6
Trench Collector TR-1	HANSTR01	9/18/2019 11:58	0	16.2	2.9	80.9	-1.2	-1.2	58	58	1.9	2.2
Trench Collector TR-2	HANSTR02	9/18/2019 11:05	6.8	19.2	0.1	73.9	-1.54	-1.55	57.5	57.5	0	0
Trench Collector TR-3	HANSTR03	9/18/2019 11:21	0	0.2	20.6	79.2	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-4	HANSTR04	9/18/2019 11:48	2.8	19.8	0	77.4	-1.22	-1.22	58	58	2	2.4
Trench Collector TR-5	HANSTR05	9/18/2019 12:22	0	0.5	19.9	79.6	-1.23	-1.22	58	58	0	0
Trench Collector TR-6	HANSTR06	9/18/2019 12:26	7.1	18.2	0.3	74.4	-1.4	-1.39	58	58	0	0
Trench Collector TR-7	HANSTR07	9/18/2019 11:38	8	18.3	0	73.7	-1.29	-1.28	58	58	2.8	3.1
Native Soil Extraction Well 1 Shallow	HANSN01S	--	--	--	--	--	--	--	--	--	--	--
Native Soil Extraction Well 1 Deep	HANSN01D	--	--	--	--	--	--	--	--	--	--	--
Native Soil Extraction Well 2 Shallow	HANSN02S	--	--	--	--	--	--	--	--	--	--	--
Native Soil Extraction Well 2 Deep	HANSN02D	--	--	--	--	--	--	--	--	--	--	--
Native Soil Extraction Well 3 Shallow	HANSN03S	--	--	--	--	--	--	--	--	--	--	--
Native Soil Extraction Well 3 Deep	HANSN03D	--	--	--	--	--	--	--	--	--	--	--
Native Soil Extraction Well 4 Shallow	HANSN04S	--	--	--	--	--	--	--	--	--	--	--
Native Soil Extraction Well 4 Deep	HANSN04D	--	--	--	--	--	--	--	--	--	--	--
Native Soil Extraction Well 5 Shallow	HANSN05S	--	--	--	--	--	--	--	--	--	--	--
Native Soil Extraction Well 5 Deep	HANSN05D	--	--	--	--	--	--	--	--	--	--	--
Gas Probe 1	HANSGP01	9/23/2019 13:50	0	0.8	20.3	78.9	N/A	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Shallow	HANSGP2S	9/23/2019 14:18	0	0.1	21	78.9	N/A	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Middle	HANSGP2M	9/23/2019 14:12	0	0.1	21	78.9	N/A	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Deep	HANSGP2D	9/23/2019 14:04	0	0.1	20.8	79.1	N/A	N/A	N/A	N/A	N/A	N/A
Gas Probe 3	HANSGP03	9/23/2019 14:30	0	1.3	20.3	78.4	N/A	N/A	N/A	N/A	N/A	N/A
Gas Probe 4	HANSGP04	9/23/2019 14:46	0	1.9	19.9	78.2	N/A	N/A	N/A	N/A	N/A	N/A
Gas Probe 5	HANSGP05	9/23/2019 15:05	0	1.4	20.2	78.4	N/A	N/A	N/A	N/A	N/A	N/A
Gas Probe 6	HANSGP06	9/18/2019 9:58	0	0.1	20.3	79.6	N/A	N/A	N/A	N/A	N/A	N/A
Gas Probe 7	HANSGP07	9/18/2019 10:45	0	3.5	18.1	78.4	N/A	N/A	N/A	N/A	N/A	N/A

Notes

Flow rates measured using orifice plates

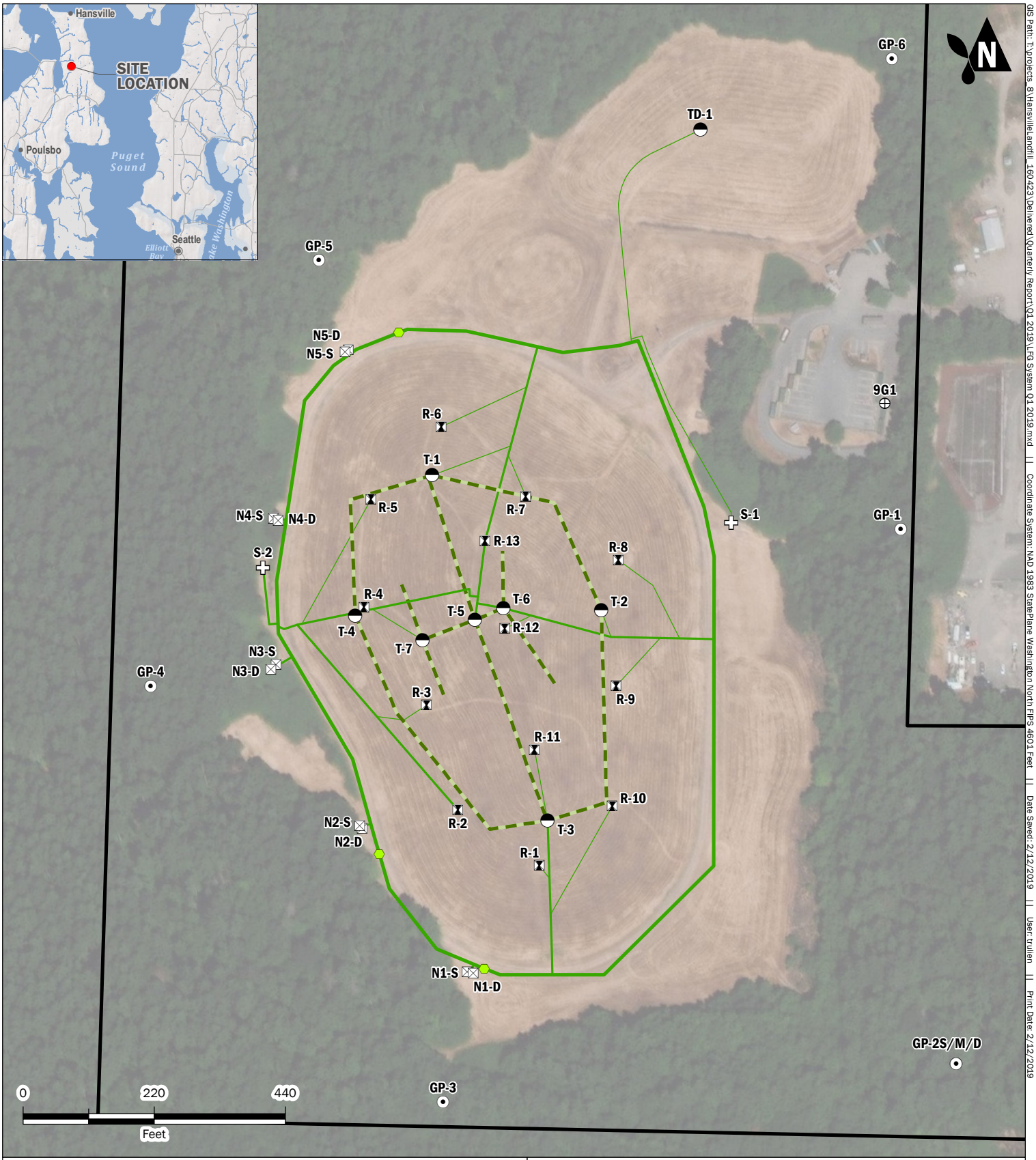
N/A = indicates parameter not measured

inches H2O = inches water column

degrees F = degrees Fahrenheit

SCFM = standard cubic feet per minute

(--) = indicates location was not monitored and is to be decommissioned due to little to no landfill gas collection



Exploration

- Condensate Sump
- Gas Detection Probe
- Gas Extraction Well (Native Soil Completion)
- Gas Extraction Well (in Refuse Completion)
- Trench Completion
- Well Geologic Control

Landfill Gas System

- LFG Pipe - 2"
- LFG Pipe - 4"
- LFG Pipe - 6"
- Trench
- LFG Valve
- Landfill Boundary

Landfill Gas System

Third Quarter 2019 Environmental Monitoring
Report Hansville Landfill
Kitsap County, Washington

Aspect Consulting	JUL-2019	BY: MLK / RAP	FIGURE NO. A-1
	PROJECT NO. 160423	REVISED BY: ---	

ATTACHMENT B

Water Quality Results

Table B-1. Water Level Elevations

Project No. 160423, Hansville Landfill, Hansville, WA

Well	Ground Elevation (ft NAVD88)	Top of Casing Elevation (ft NAVD88)	Screen Elevation (ft NAVD88)		Depth to Water (ft)	Water Level Elevation (ft NAVD88)
			Top	Bottom		
MW-5	363.7	366.9	244	234	99.06	267.8
MW-6	332.0	332.7	260	245	73.40	259.3
MW-7	344.3	346.0	259	244	83.87	262.1
MW-12I	245.6	248.1	217	207	9.42	238.7
MW-13D	258.1	260.4	205	195	11.00	249.4
MW-14	338.6	341.1	262	247	83.87	257.2

Notes

Depths to water collected July 17, 2019.

Elevations relative to North American Vertical Datum of 1988 (NAVD88).

ft - feet

Table B-2. Groundwater Quality Results

Project No. 160423, Hansville Landfill, Hansville, WA

		Location	MW-5	MW-6	MW-7	MW-12I	MW-13D	MW-14
		Date	07/17/2019	07/17/2019	07/17/2019	07/17/2019	07/17/2019	07/17/2019
Parameter	**Units**	**Site Cleanup Level**						
Field Parameters								
Dissolved Oxygen	mg/L		**8.93**	**0.47**	**1.2**	**0.55**	**0.39**	**0.97**
pH	pH units		**7.35**	**7**	**6.52**	**7.2**	**7.66**	**7**
Redox	mV		**105.1**	**154.5**	**77.5**	**120**	**126.4**	**172.6**
Specific Conductivity	uS/cm		**162.2**	**375.8**	**242.5**	**190.2**	**191.2**	**340.7**
Temperature	deg C		**11**	**13.5**	**10.2**	**10.6**	**11.3**	**12.3**
Turbidity	NTU		**0.31**	**0.74**	**0.62**	**0.28**	**0.59**	**0.82**
Conventional Parameters								
Alkalinity	mg/L		**67**	**170**	**140**	**93**	**77**	**120**
Ammonia (as N)	mg/L		0.030 U	0.030 U	0.030 U	0.030 U	0.030 U	0.030 U
Bicarbonate	mg/L		**67**	**170**	**140**	**93**	**77**	**120**
Carbonate	mg/L		10 U	10 U	10 U	10 U	10 U	10 U
Chloride	mg/L		**1.8**	**5.7**	1.0 UJ	**3.4**	**5.4**	**19**
Nitrate (as N)	mg/L		**2.00**	**0.676**	**0.284**	0.100 U	0.100 U	**1.53**
Nitrite (as N)	mg/L		0.100 U	**0.194**	0.100 U	0.100 U	0.100 U	0.100 U
Sulfate	mg/L		**8.4**	**27**	**5.9 J**	**6.8**	**17**	**14**
Total Organic Carbon	mg/L		1.0 U	**1.6**	**1.8**	**2.3**	1.0 U	**2.3**
Dissolved Metals								
Arsenic	mg/L	0.005	**0.00186**	**0.00155**	**0.00117**	**0.00207**	**0.00512**	**0.0115**
Manganese	mg/L	2.24	0.0010 U	**0.4**	0.0010 U	**0.035**	**0.0053**	**0.16**
Volatile Organic Compounds (detected only)								
Vinyl Chloride	ug/L	0.025	0.020 U	**0.061**	0.020 U	**0.082**	0.020 U	0.020 U

Notes

Samples were collected on July 17, 2019.

Bold - Detected

Shaded - Exceeded Site Cleanup Level

U - Not detected at or above reporting limit

mV = millivolts

µS/cm = microSiemens per centimeter

deg C = degrees Celcius

NTU = Nephelometric Turbidity Units

mg/L = milligram per liter

µg/L = microgram per liter

Table B-3. Surface Water Quality Results

Project No. 160423, Hansville Landfill, Hansville, WA

		Location	SW-1	SW-4	SW-6	SW-7
		Date	07/17/2019	07/17/2019	07/17/2019	07/17/2019
Parameter	Units	Site Cleanup Level			(dry)	
Field Parameters						
Dissolved Oxygen	mg/L		**18.93**	**16.6**	--	**7.37**
pH	pH units		**7.63**	**7.97**	--	**7.14**
Redox	mV		**34.1**	**112.9**	--	**171.3**
Specific Conductivity	uS/cm		**167**	**354.2**	--	**197.2**
Temperature	deg C		**11.5**	**12.8**	--	**14.2**
Turbidity	NTU		**6.96**	**7.55**	--	**8.46**
Conventional Parameters						
Alkalinity	mg/L		**76**	**180**	--	**68**
Ammonia (as N)	mg/L		0.030 U	0.030 U	--	0.030 U
Bicarbonate	mg/L		**76**	**180**	--	**68**
Carbonate	mg/L		10 U	10 U	--	10 U
Chloride	mg/L		**4.8**	**15**	--	**3.7**
Nitrate (as N)	mg/L		**1.66**	**0.876**	--	**0.706**
Nitrite (as N)	mg/L		0.100 U	0.100 U	--	0.100 U
Sulfate	mg/L		**10**	**22**	--	**7.5**
Total Organic Carbon	mg/L		**1.4**	**3.8**	--	**5.8**
Dissolved Metals						
Arsenic	mg/L	0.005	**0.00170**	**0.00190**	--	**0.00160**
Manganese	mg/L	2.24	0.0010 U	**0.055**	--	**0.0055**
Volatile Organic Compounds (detected only)						
Vinyl Chloride	ug/L	0.025	0.020 U	0.020 U	--	0.020 U

Notes

Samples were collected on April 17, 2019. Location SW-6 was dry, therefore a sample was not collected.

Bold - Detected

Shaded - Exceeded Site Cleanup Level

U - Not detected at or above reporting limit

mV = millivolts

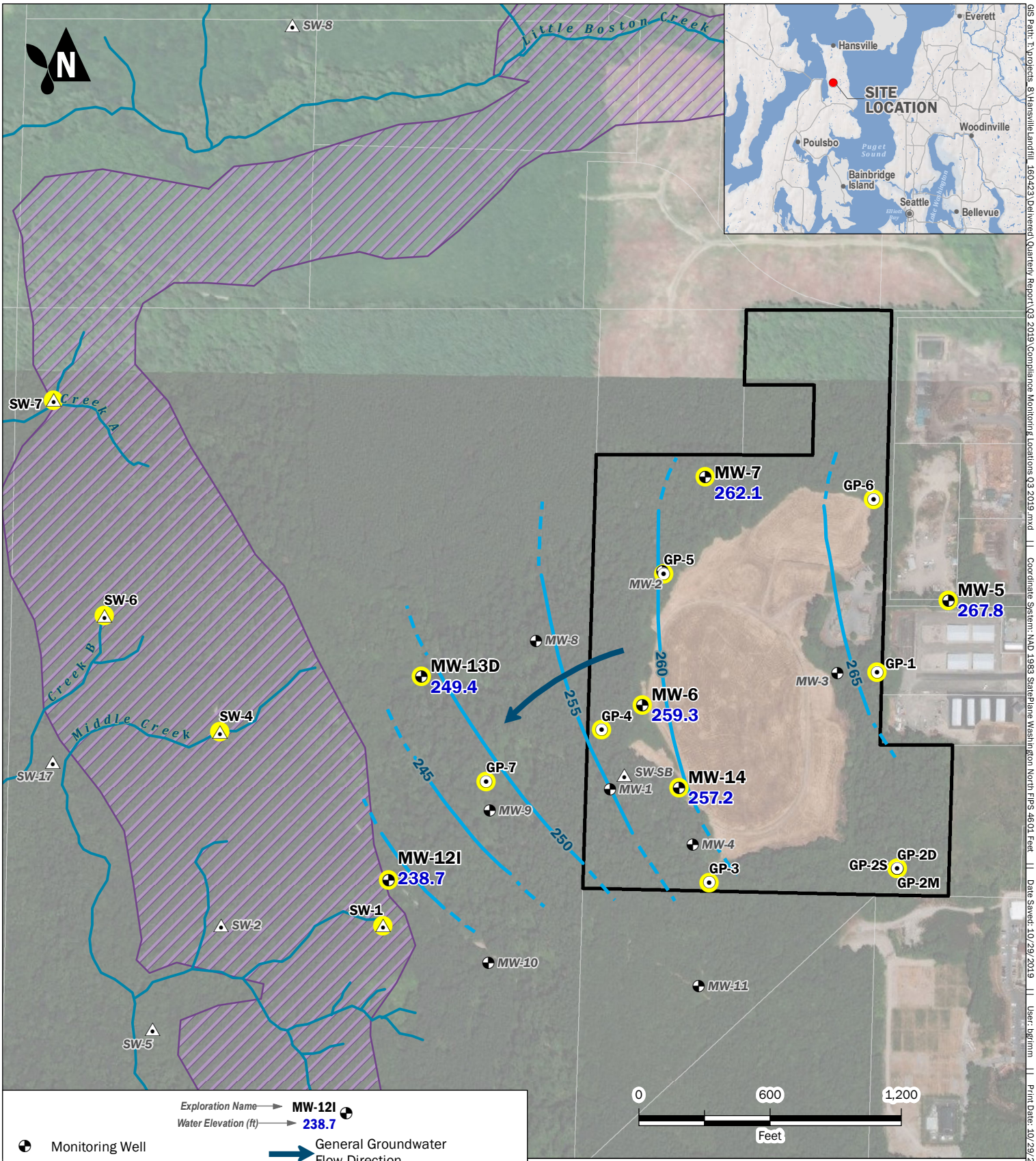
µS/cm = microSiemens per centimeter

deg C = degrees Celcius

NTU = Nephelometric Turbidity Units

mg/L = milligram per liter

µg/L = microgram per liter



Note: Vertical datum is NAVD88. Approximate area of groundwater discharge from upper aquifer delineation from Remedial Investigation Report (Parametrix, 2006).

Compliance Monitoring Locations

Third Quarter 2019 Environmental Monitoring Report
Hansville Landfill
Kitsap County, Washington

Aspect Consulting	OCT-2019	BY: MLK / RAP	FIGURE NO. B-1
	PROJECT NO. 160423	REVISED BY: WEG	

GIS Path: T:\projects_8\HansvilleLandfill_160423\Delivered\Quarterly Report\Q3 2019\Compliance Monitoring Locations Q3 2019.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 10/29/2019 || User: bgrimm || Print Date: 10/29/2019

ATTACHMENT C

Groundwater Statistics and Time-Series Plots

Table C-1. Statistical Analysis

Project 160423, Hansville Landfill, Hansville, WA

Dissolved Arsenic Statistical Results

Well	Statistical Trend[1]	Mann-Kendall Test[2]				Sen's Slope	
		Test Value, Z	Critical Value	Number of data points, n	Statistical Significance	(ug/L per day)	(ug/L per year)
MW-5	--[3]	--	--	--	--	--	--
MW-6	--	--	--	--	--	--	--
MW-7	--	--	--	--	--		--
MW-12I	--	--	--	--	--	--	--
MW-13D	--	--	--	--	--		--
MW-14	Decreasing	-7.0	-1.96	50	Yes	-3.4E-06	-0.0012

Vinyl Chloride Statistical Results

Well	Statistical Trend[1]	Mann-Kendall Test[2]				Sen's Slope	
		Test Value, Z	Critical Value	Number of data points, n	Statistical Significance	(ug/L per day)	(ug/L per year)
MW-5	--[3]	--	--	--	--		--
MW-6	Decreasing	-6.4	-1.96	51	Yes	-6.9E-05	-0.025
MW-7	--	--	--	--	--		--
MW-12I	Decreasing	-7.2	-1.96	51	Yes	-1.0E-04	-0.037
MW-13D	--	--	--	--	--		--
MW-14	Decreasing	-8.3	-1.96	51	Yes	-1.1E-04	-0.039

Notes

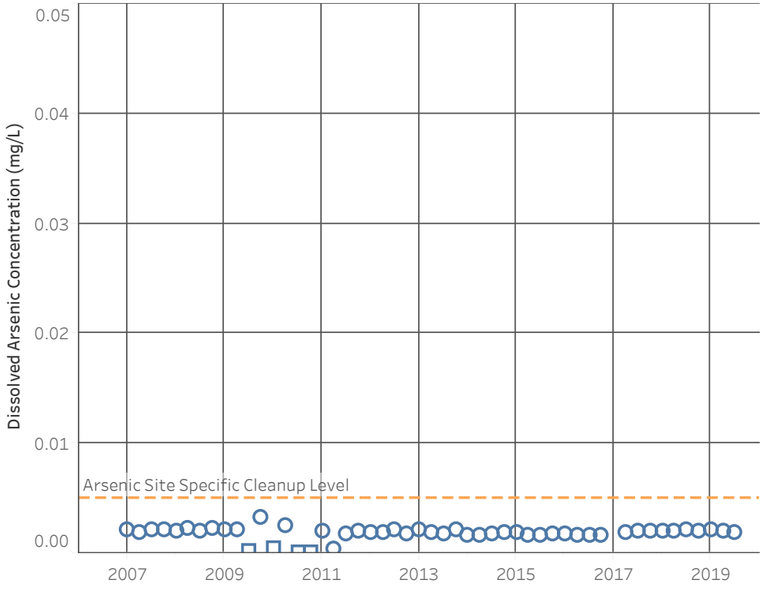
1 - The Statistical Trend indicates:
"Non-significant" if the magnitude of the Test Value is less than the Critical Value,
"Increasing" if the magnitude of the Test Value is greater than the Critical Value and the Sen's Slope is positive, or
"Decreasing" if the magnitude of the Test Value is greater than the Critical Value and the Sen's Slope is negative.

2 - Mann-Kendall tests were performed with alpha = 0.05 (95% confidence level).
For N>40, Mann-Kendall uses an approximation of a normal distribution, represented by Test Value Z.

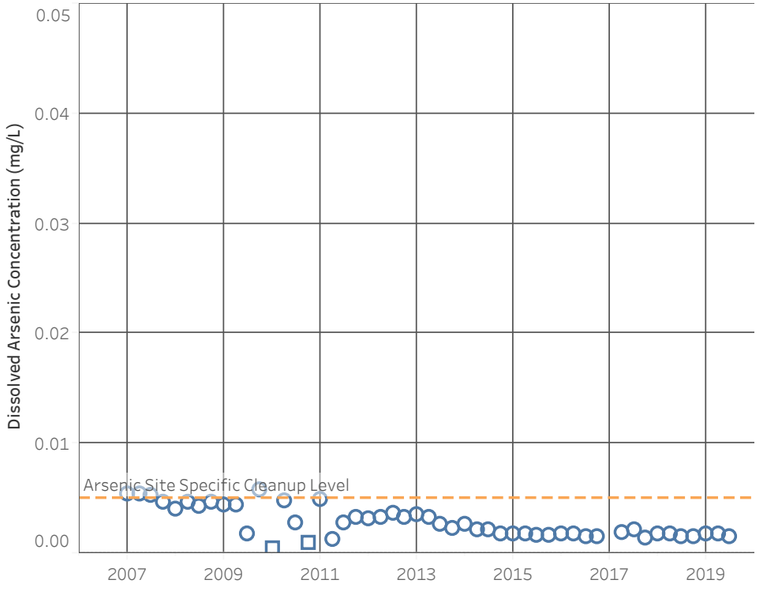
3 - "--" Indicates statistical analysis not conducted.

ug/L - micrograms per liter

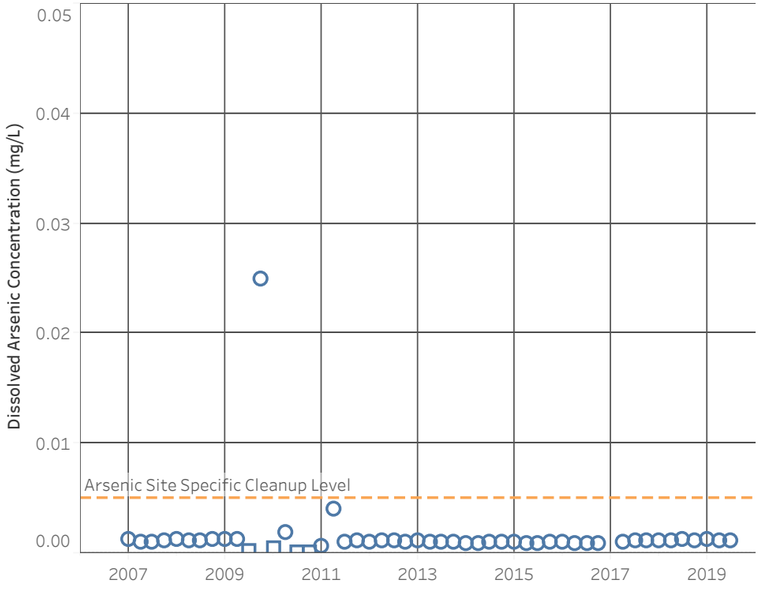
MW-5 (Background Well)



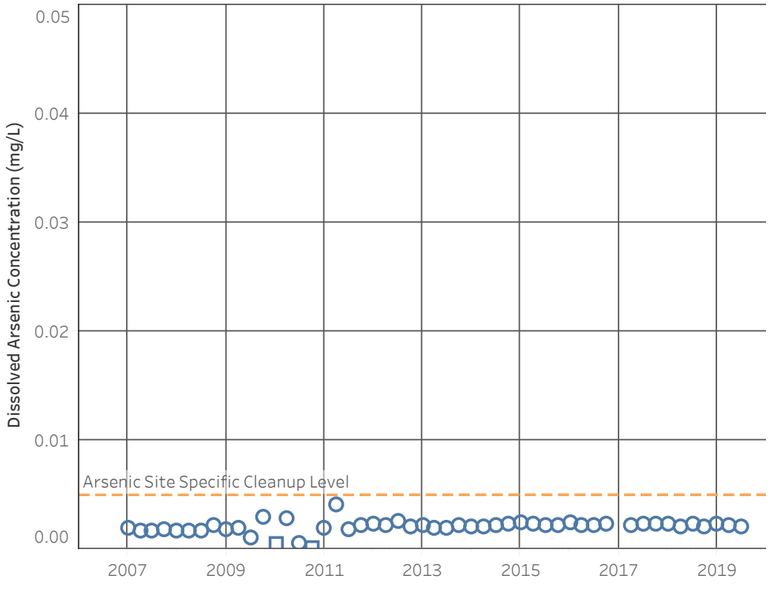
MW-6



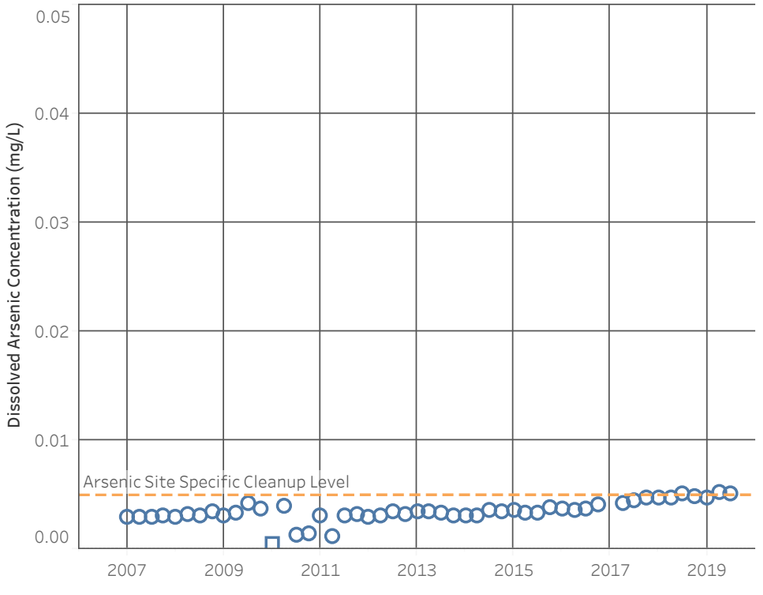
MW-7



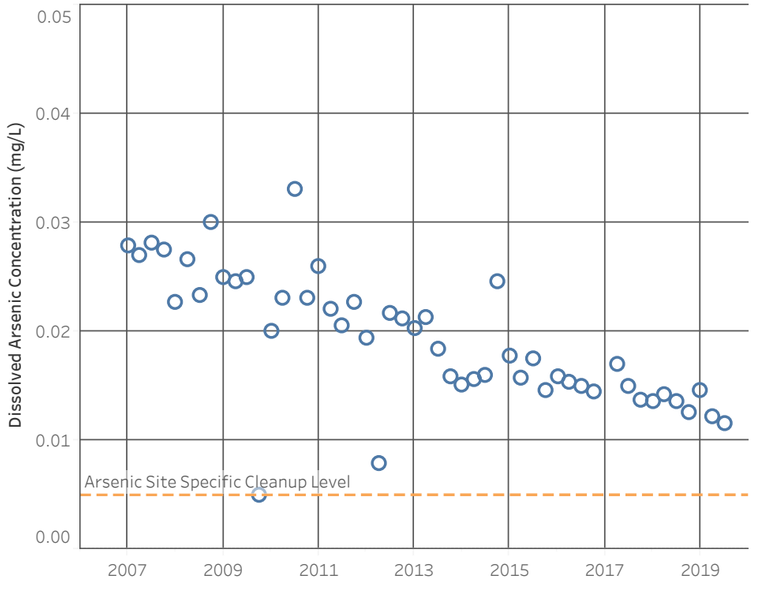
MW-12I



MW-13D



MW-14



Note: Non-detected values are shown at 1/2 the reporting limit.
Results from First Quarter 2017 were rejected. See text.

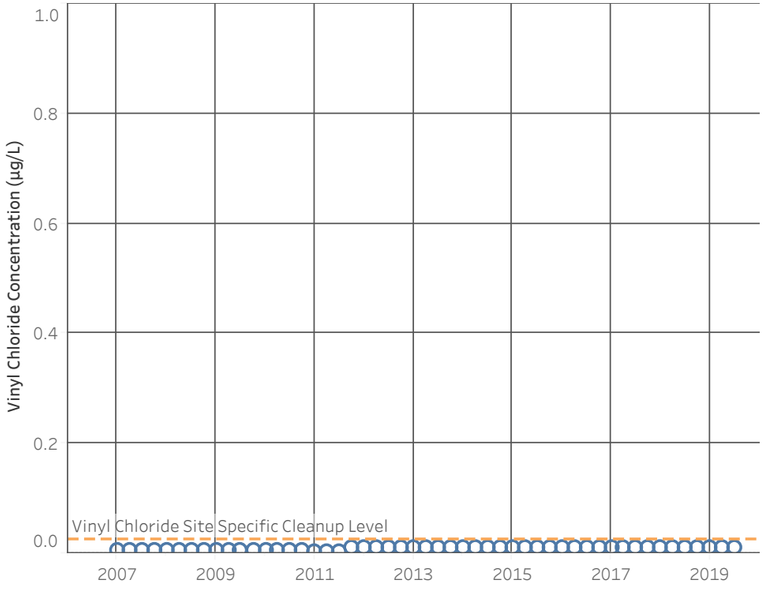
Result Flags
○ Detected □ U - Non-Detect

Aspect CONSULTING

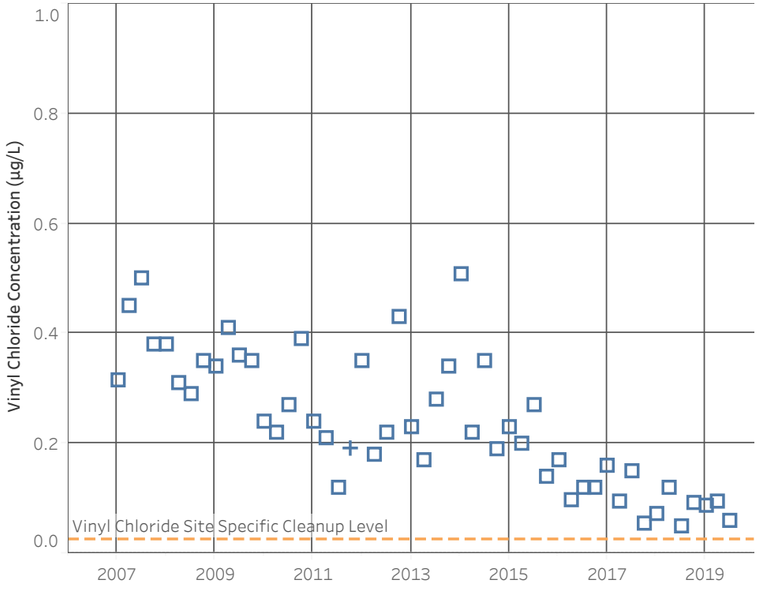
10/11/2019
Trend Plots (As)

Figure C-1 - Dissolved Arsenic Sampling Results
Third Quarter 2019 Environmental Monitoring Report
Hansville Landfill
Kitsap County, WA

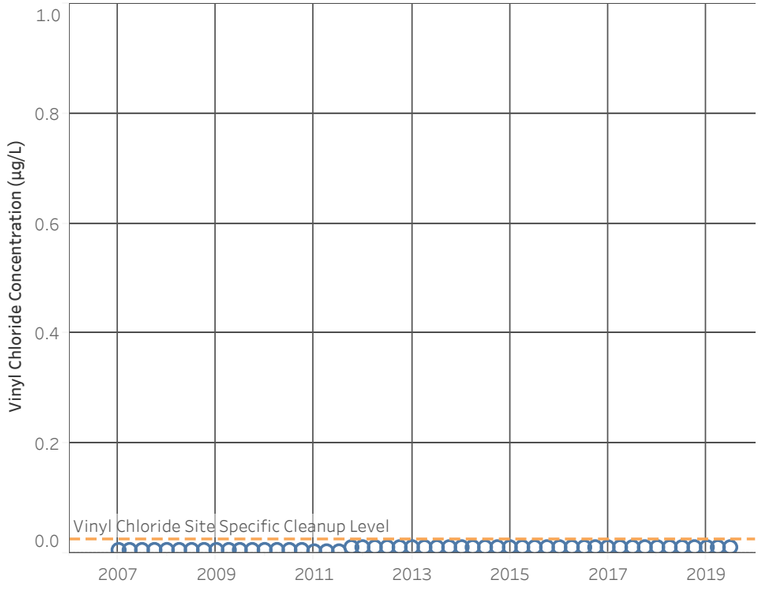
MW-5 (Background Well)



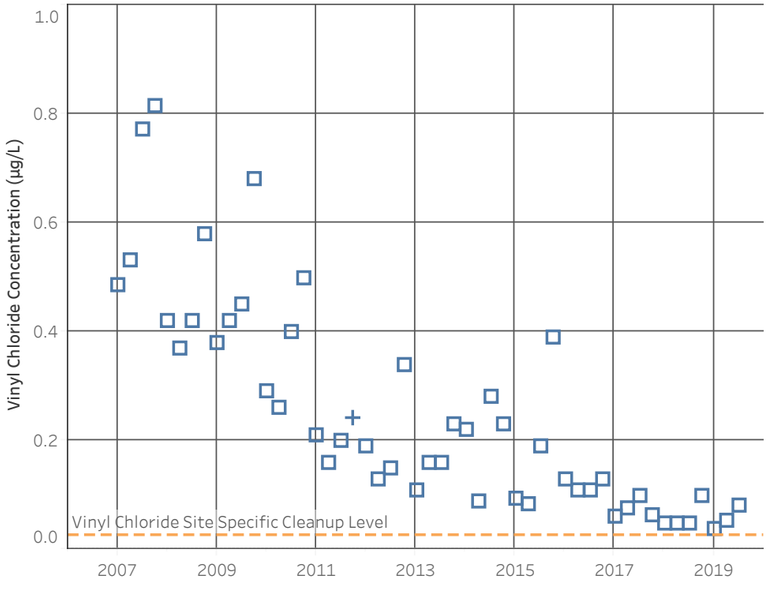
MW-6



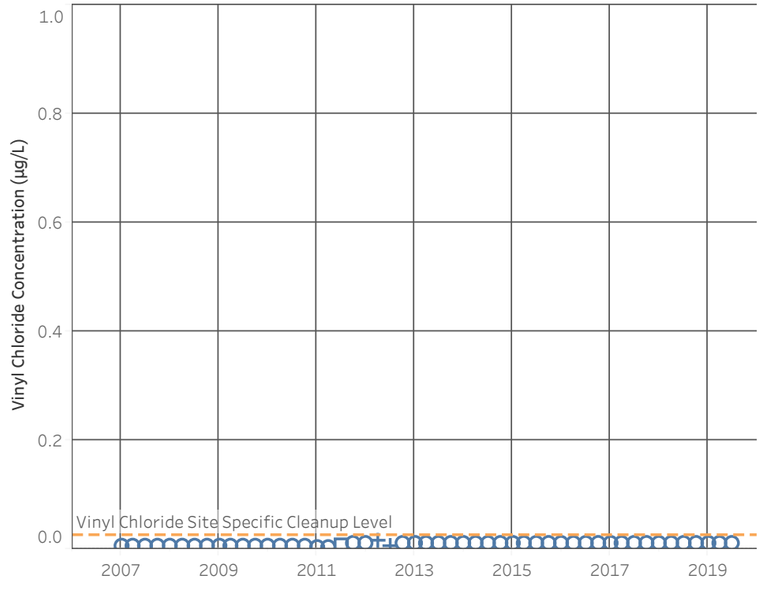
MW-7



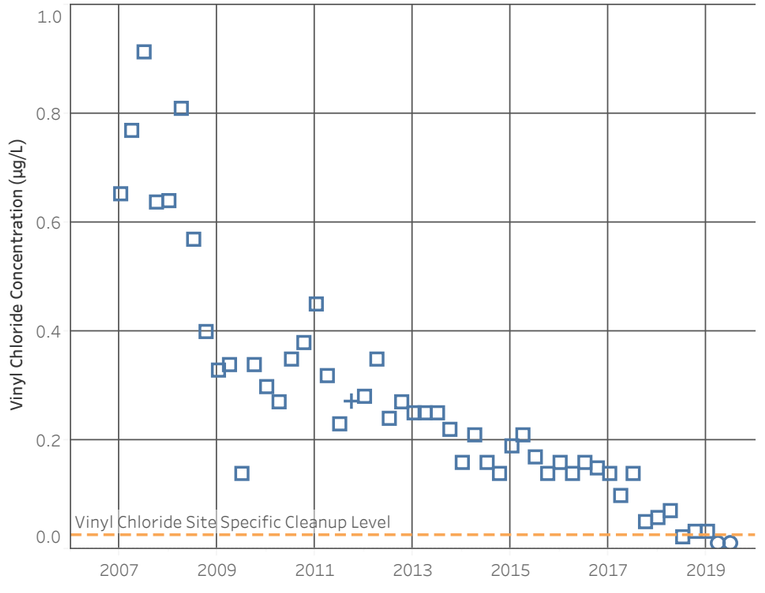
MW-12I



MW-13D



MW-14



Result Flags
□ Detected + J - Estimate ○ U - Non-Detect

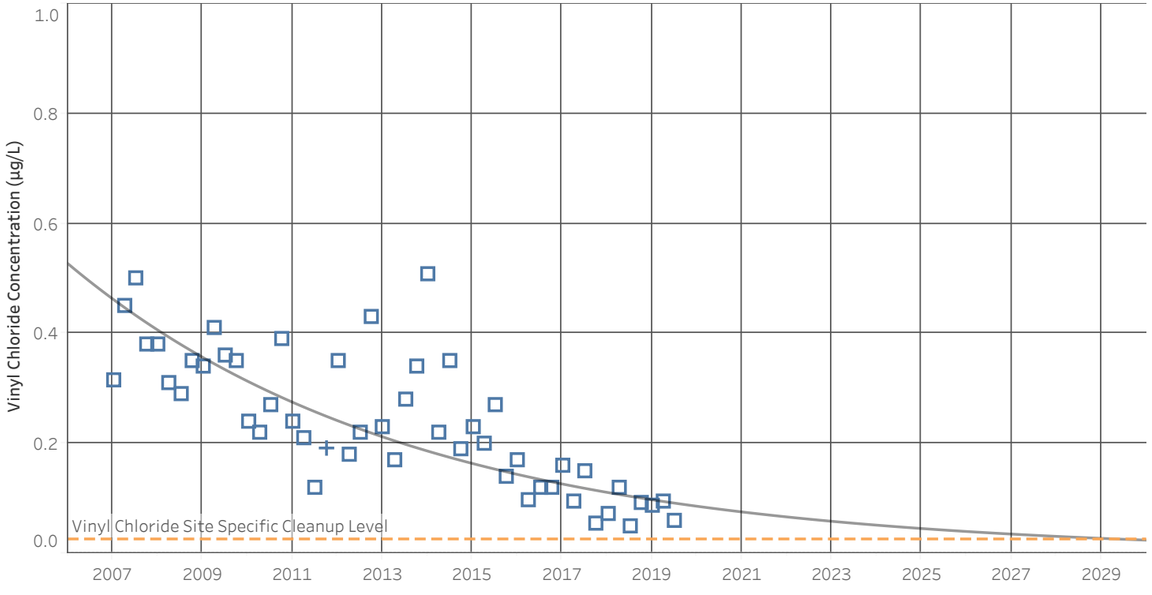
Note: Non-detected values are shown at 1/2 the reporting limit.

Aspect CONSULTING

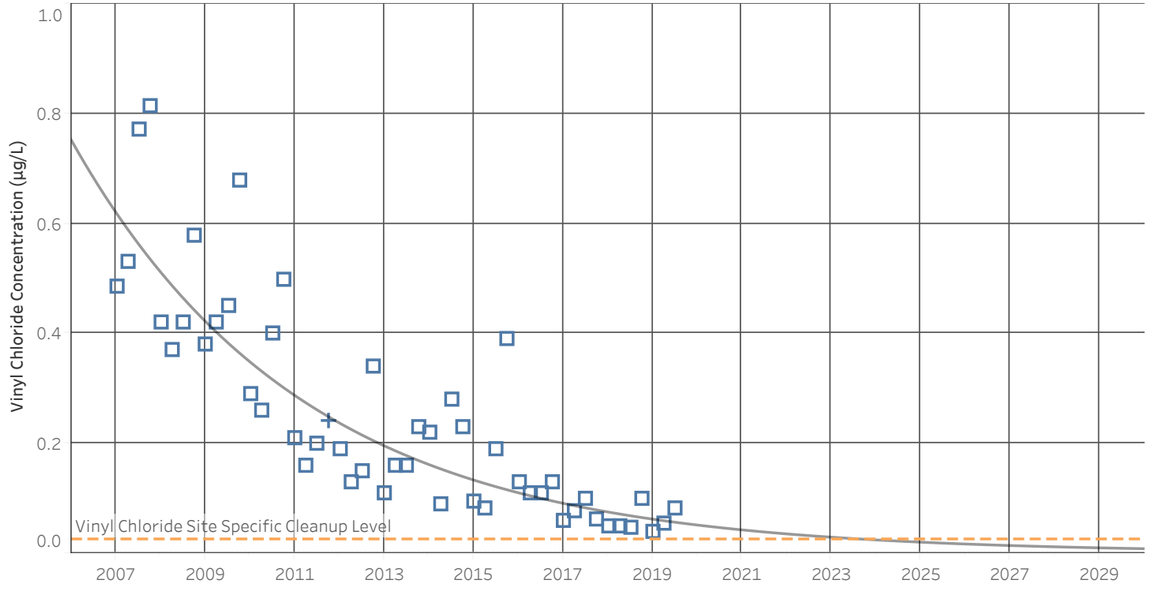
10/11/2019
Trend Plots (VC)

Figure C-2 - Vinyl Chloride Sampling Results
Third Quarter 2019 Environmental Monitoring Report
Hansville Landfill
Kitsap County, WA

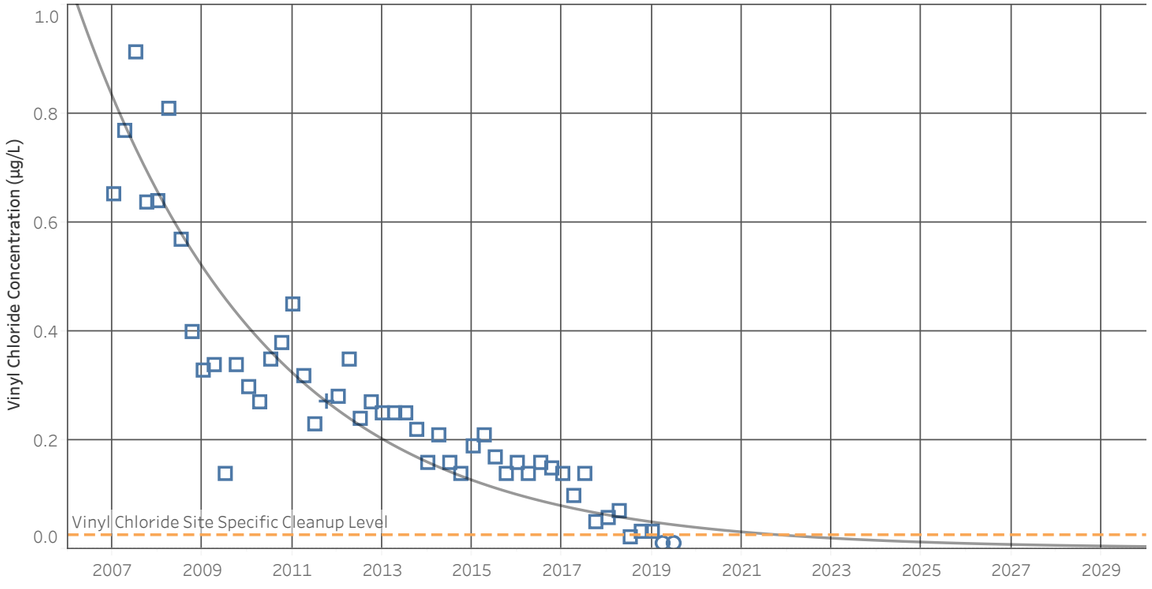
MW-6 Vinyl Chloride Trend



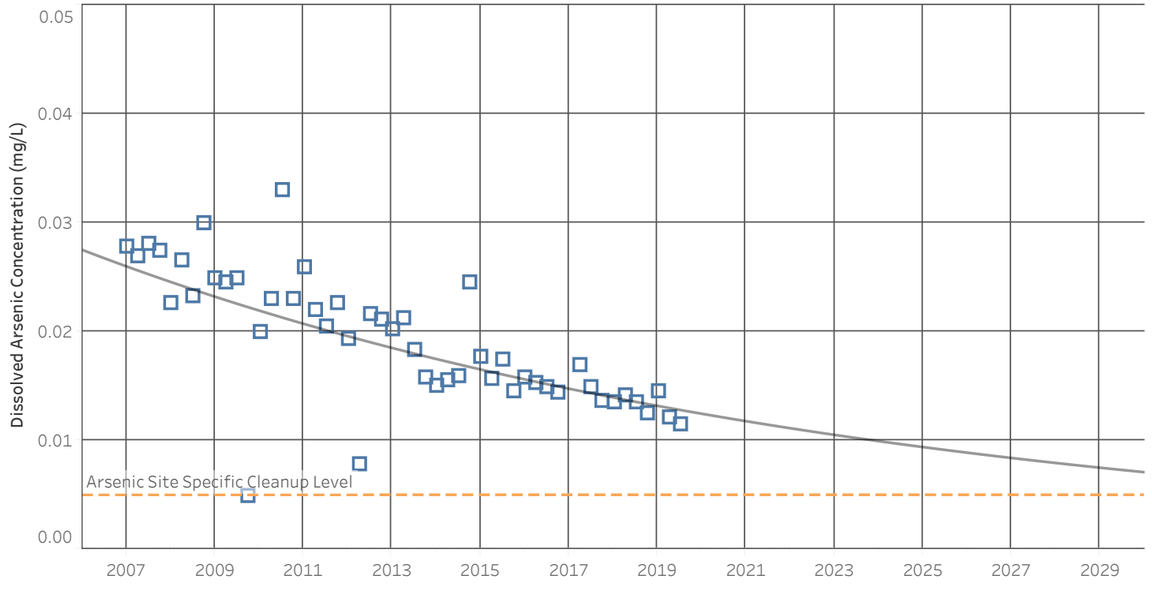
MW-12I Vinyl Chloride Trend



MW-14 Vinyl Chloride Trend



MW-14 Dissolved Arsenic Trend



Note: Non-detected values are shown at 1/2 the reporting limit.
Attentuation curves based on exponential least squares fit to the data.

Result Flags
□ Detected + J - Estimate ○ U - Non-Detect

Aspect CONSULTING

10/11/2019
Trend Plots (VC)

Figure C-3 - 10 Year Attenuation Curves
Third Quarter 2019 Environmental Monitoring Report
Hansville Landfill
Kitsap County, WA

ATTACHMENT D

Field Forms and Laboratory Reports

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

Laboratory Job ID: 280-126472-1
Client Project/Site: Hansville Landfill

For:
Aspect Consulting
350 Madison Ave N
Bainbridge Island, Washington 98110

Attn: Ms. Meilani Lanier-Kamaha'o

Betsy Sara

Authorized for release by:
8/9/2019 3:55:00 PM

Betsy Sara, Project Manager II
(303)736-0189
betsy.sara@testamericainc.com

Table of Contents

Definitions/Glossary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
F3	Duplicate RPD exceeds the control limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 280-126472-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: Aspect Consulting

Project: Hansville Landfill

Report Number: 280-126472-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

This report may include reporting limits (RLs) less than Eurofins TestAmerica's standard reporting limit. The reported sample results and associated reporting limits are being used specifically to meet the needs of this project. Note that data are not normally reported to these levels without qualification because they are inherently less reliable and potentially less defensible than required by the latest industry standards.

Sample Receiving

The samples were received on 07/20/2019; the samples arrived in good condition, properly preserved and on ice. The temperatures of the coolers at receipt were 0.4º C, 2.6º C and 3.8º C.

Holding Times

All holding times were within established control limits.

Method Blanks

All Method Blanks were within established control limits.

Laboratory Control Samples (LCS)

All Laboratory Control Samples were within established control limits.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD)

Sample MW-7-071719 was selected to fulfill the laboratory batch quality control requirements for Method 300.0. Analysis of the laboratory generated MS/MSD for this sample exhibited recoveries of Chloride and Sulfate below the lower control limits. Because the corresponding Laboratory Control Sample and the Method Blank sample were within control limits, this anomaly may be due to matrix interference and no corrective action was taken.

All other MS and MSD samples were within established control limits.

Sample Duplicate

The RPD for Sulfate Method 300.0 performed on sample MW-7-071719 was outside control limits. Because all other QC and calibration criteria were met no corrective action was needed.

General Comments

The analysis for 8260C SIM was performed by TestAmerica Buffalo. Their address and phone number are:
TestAmerica Buffalo

Job ID: 280-126472-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

10 Hazelwood Drive, Suite 106
Amherst, NY 14228
716-691-2600

The analysis for Nitrate, Nitrite, Ortho-phosphate Method 300.0, and Dissolved Arsenic Method 200.8 were performed by ARI. Their address and phone number are:
Analytical Resources, Inc.
4611 S.134th Place
Tukwila, WA 98168-3240
206-695-6200

Detection Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Client Sample ID: MW-7-071719 — Lab Sample ID: 280-126472-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	5.9	F1	1.0		mg/L	1		300.0	Total/NA
Total Alkalinity	140		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	140		10		mg/L	1		SM 2320B	Total/NA
Total Organic Carbon - Average	1.8		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: MW-5-071719 — Lab Sample ID: 280-126472-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	1.8		1.0		mg/L	1		300.0	Total/NA
Sulfate	8.4		1.0		mg/L	1		300.0	Total/NA
Total Alkalinity	67		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	67		10		mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-12I-071719 — Lab Sample ID: 280-126472-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.082		0.020		ug/L	1		8260C SIM	Total/NA
Manganese	35		1.0		ug/L	1		6020	Dissolved
Chloride	3.4		1.0		mg/L	1		300.0	Total/NA
Sulfate	6.8		1.0		mg/L	1		300.0	Total/NA
Total Alkalinity	93		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	93		10		mg/L	1		SM 2320B	Total/NA
Total Organic Carbon - Average	2.3		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: SW-1-071719 — Lab Sample ID: 280-126472-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	4.8		1.0		mg/L	1		300.0	Total/NA
Sulfate	10		1.0		mg/L	1		300.0	Total/NA
Total Alkalinity	76		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	76		10		mg/L	1		SM 2320B	Total/NA
Total Organic Carbon - Average	1.4		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: SW-4-071719 — Lab Sample ID: 280-126472-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	55		1.0		ug/L	1		6020	Dissolved
Chloride	15		1.0		mg/L	1		300.0	Total/NA
Sulfate	22		1.0		mg/L	1		300.0	Total/NA
Total Alkalinity	180		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	180		10		mg/L	1		SM 2320B	Total/NA
Total Organic Carbon - Average	3.8		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: MW-13D-071719 — Lab Sample ID: 280-126472-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	5.3		1.0		ug/L	1		6020	Dissolved
Chloride	5.4		1.0		mg/L	1		300.0	Total/NA
Sulfate	17		1.0		mg/L	1		300.0	Total/NA
Total Alkalinity	77		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	77		10		mg/L	1		SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Client Sample ID: SW-7-071719 — Lab Sample ID: 280-126472-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	5.5		1.0		ug/L	1		6020	Dissolved
Chloride	3.7		1.0		mg/L	1		300.0	Total/NA
Sulfate	7.5		1.0		mg/L	1		300.0	Total/NA
Total Alkalinity	68		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	68		10		mg/L	1		SM 2320B	Total/NA
Total Organic Carbon - Average	5.8		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: MW-6-071719 — Lab Sample ID: 280-126472-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.061		0.020		ug/L	1		8260C SIM	Total/NA
Manganese	400		1.0		ug/L	1		6020	Dissolved
Chloride	5.7		1.0		mg/L	1		300.0	Total/NA
Sulfate	27		1.0		mg/L	1		300.0	Total/NA
Total Alkalinity	170		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	170		10		mg/L	1		SM 2320B	Total/NA
Total Organic Carbon - Average	1.6		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: MW-14-071719 — Lab Sample ID: 280-126472-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	160		1.0		ug/L	1		6020	Dissolved
Chloride	19		1.0		mg/L	1		300.0	Total/NA
Sulfate	14		1.0		mg/L	1		300.0	Total/NA
Total Alkalinity	120		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	120		10		mg/L	1		SM 2320B	Total/NA
Total Organic Carbon - Average	2.3		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: MW-20DD-071719 — Lab Sample ID: 280-126472-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	170		1.0		ug/L	1		6020	Dissolved
Chloride	19		1.0		mg/L	1		300.0	Total/NA
Sulfate	14		1.0		mg/L	1		300.0	Total/NA
Total Alkalinity	120		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	120		10		mg/L	1		SM 2320B	Total/NA
Total Organic Carbon - Average	2.3		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: VTRP- — Lab Sample ID: 280-126472-11

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Method	Method Description	Protocol	Laboratory
8260C SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL BUF
6020	Metals (ICP/MS)	SW846	TAL DEN
300.0	Anions, Ion Chromatography	MCAWW	TAL DEN
350.1	Nitrogen, Ammonia	MCAWW	TAL DEN
SM 2320B	Alkalinity	SM	TAL DEN
SM 5310B	Organic Carbon, Total (TOC)	SM	TAL DEN
Subcontract	Dissolved As (ARI) - direct sub to ARI from field	None	SC0056
Subcontract	Nitrate/Nitrite/o-phos(field filtered) (ARI) - direct sub to ARI from field	None	SC0056
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL DEN
5030C	Purge and Trap	SW846	TAL BUF

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

SC0056 = Analytical Resources, Inc, 4611 South 134th Place, Suite 100, Tukwila, WA 98168, TEL (206)695-6200
TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600
TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-126472-1	MW-7-071719	Water	07/17/19 08:35	07/20/19 08:30	
280-126472-2	MW-5-071719	Water	07/17/19 09:40	07/20/19 08:30	
280-126472-3	MW-12I-071719	Water	07/17/19 10:55	07/20/19 08:30	
280-126472-4	SW-1-071719	Water	07/17/19 11:00	07/20/19 08:30	
280-126472-5	SW-4-071719	Water	07/17/19 11:40	07/20/19 08:30	
280-126472-6	MW-13D-071719	Water	07/17/19 12:05	07/20/19 08:30	
280-126472-7	SW-7-071719	Water	07/17/19 13:20	07/20/19 08:30	
280-126472-8	MW-6-071719	Water	07/17/19 14:50	07/20/19 08:30	
280-126472-9	MW-14-071719	Water	07/17/19 15:55	07/20/19 08:30	
280-126472-10	MW-20DD-071719	Water	07/17/19 00:00	07/20/19 08:30	
280-126472-11	VTRP-	Water	07/17/19 00:00	07/20/19 08:30	

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Client Sample ID: MW-7-071719
Date Collected: 07/17/19 08:35
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			07/25/19 12:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*123*		*50 - 150*		*07/25/19 12:24*	*1*
TBA-d9 (Surr)	*99*		*50 - 150*		*07/25/19 12:24*	*1*

Client Sample ID: MW-5-071719
Date Collected: 07/17/19 09:40
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			07/25/19 12:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*122*		*50 - 150*		*07/25/19 12:49*	*1*
TBA-d9 (Surr)	*97*		*50 - 150*		*07/25/19 12:49*	*1*

Client Sample ID: MW-12I-071719
Date Collected: 07/17/19 10:55
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**0.082**		0.020		ug/L			07/25/19 13:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*122*		*50 - 150*		*07/25/19 13:13*	*1*
TBA-d9 (Surr)	*90*		*50 - 150*		*07/25/19 13:13*	*1*

Client Sample ID: SW-1-071719
Date Collected: 07/17/19 11:00
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			07/25/19 13:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*126*		*50 - 150*		*07/25/19 13:38*	*1*
TBA-d9 (Surr)	*88*		*50 - 150*		*07/25/19 13:38*	*1*

Client Sample ID: SW-4-071719
Date Collected: 07/17/19 11:40
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			07/25/19 14:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*121*		*50 - 150*		*07/25/19 14:02*	*1*
TBA-d9 (Surr)	*87*		*50 - 150*		*07/25/19 14:02*	*1*

Client Sample ID: MW-13D-071719
Date Collected: 07/17/19 12:05
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			07/25/19 14:27	1

Method: 8260C SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	119		50 - 150		07/25/19 14:27	1
TBA-d9 (Surr)	89		50 - 150		07/25/19 14:27	1

Client Sample ID: SW-7-071719 — **Lab Sample ID: 280-126472-7**
Date Collected: 07/17/19 13:20 — **Matrix: Water**
Date Received: 07/20/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			07/25/19 14:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	121		50 - 150		07/25/19 14:52	1
TBA-d9 (Surr)	87		50 - 150		07/25/19 14:52	1

Client Sample ID: MW-6-071719 — **Lab Sample ID: 280-126472-8**
Date Collected: 07/17/19 14:50 — **Matrix: Water**
Date Received: 07/20/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**0.061**		0.020		ug/L			07/25/19 15:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	123		50 - 150		07/25/19 15:17	1
TBA-d9 (Surr)	90		50 - 150		07/25/19 15:17	1

Client Sample ID: MW-14-071719 — **Lab Sample ID: 280-126472-9**
Date Collected: 07/17/19 15:55 — **Matrix: Water**
Date Received: 07/20/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			07/25/19 15:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	121		50 - 150		07/25/19 15:41	1
TBA-d9 (Surr)	91		50 - 150		07/25/19 15:41	1

Client Sample ID: MW-20DD-071719 — **Lab Sample ID: 280-126472-10**
Date Collected: 07/17/19 00:00 — **Matrix: Water**
Date Received: 07/20/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			07/25/19 16:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	123		50 - 150		07/25/19 16:06	1
TBA-d9 (Surr)	90		50 - 150		07/25/19 16:06	1

Client Sample ID: VTRP- — **Lab Sample ID: 280-126472-11**
Date Collected: 07/17/19 00:00 — **Matrix: Water**
Date Received: 07/20/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			07/25/19 16:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	125		50 - 150		07/25/19 16:30	1
TBA-d9 (Surr)	94		50 - 150		07/25/19 16:30	1

Method: 6020 - Metals (ICP/MS) - Dissolved

Client Sample ID: MW-7-071719
Date Collected: 07/17/19 08:35
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	ND		1.0		ug/L		08/03/19 07:45	08/06/19 16:29	1

Client Sample ID: MW-5-071719
Date Collected: 07/17/19 09:40
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	ND		1.0		ug/L		08/03/19 07:45	08/06/19 16:53	1

Client Sample ID: MW-12I-071719
Date Collected: 07/17/19 10:55
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**35**		1.0		ug/L		08/03/19 07:45	08/06/19 16:57	1

Client Sample ID: SW-1-071719
Date Collected: 07/17/19 11:00
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	ND		1.0		ug/L		08/03/19 07:45	08/06/19 17:00	1

Client Sample ID: SW-4-071719
Date Collected: 07/17/19 11:40
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**55**		1.0		ug/L		08/03/19 07:45	08/06/19 17:04	1

Client Sample ID: MW-13D-071719
Date Collected: 07/17/19 12:05
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**5.3**		1.0		ug/L		08/03/19 07:45	08/06/19 17:07	1

Client Sample ID: SW-7-071719
Date Collected: 07/17/19 13:20
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**5.5**		1.0		ug/L		08/03/19 07:45	08/06/19 17:11	1

Client Sample ID: MW-6-071719
Date Collected: 07/17/19 14:50
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**400**		1.0		ug/L		08/03/19 07:45	08/06/19 17:14	1

Client Sample ID: MW-14-071719
Date Collected: 07/17/19 15:55
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**160**		1.0		ug/L		08/03/19 07:45	08/06/19 17:18	1

Method: 6020 - Metals (ICP/MS) - Dissolved

Client Sample ID: MW-20DD-071719
Date Collected: 07/17/19 00:00
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**170**		1.0		ug/L		08/03/19 07:45	08/06/19 17:21	1

General Chemistry

Client Sample ID: MW-7-071719
Date Collected: 07/17/19 08:35
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND	F1	1.0		mg/L			08/01/19 16:36	1
Sulfate	**5.9**	**F1**	1.0		mg/L			08/01/19 16:36	1
Ammonia as N	ND		0.030		mg/L			07/22/19 13:34	1
Total Alkalinity	**140**		10		mg/L			07/24/19 13:42	1
Bicarbonate Alkalinity	**140**		10		mg/L			07/24/19 13:42	1
Carbonate Alkalinity	ND		10		mg/L			07/24/19 13:42	1
Total Organic Carbon - Average	**1.8**		1.0		mg/L			08/05/19 22:56	1

Client Sample ID: MW-5-071719
Date Collected: 07/17/19 09:40
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1.8**		1.0		mg/L			08/01/19 17:42	1
Sulfate	**8.4**		1.0		mg/L			08/01/19 17:42	1
Ammonia as N	ND		0.030		mg/L			07/22/19 13:36	1
Total Alkalinity	**67**		10		mg/L			07/24/19 13:49	1
Bicarbonate Alkalinity	**67**		10		mg/L			07/24/19 13:49	1
Carbonate Alkalinity	ND		10		mg/L			07/24/19 13:49	1
Total Organic Carbon - Average	ND		1.0		mg/L			08/05/19 23:49	1

Client Sample ID: MW-12I-071719
Date Collected: 07/17/19 10:55
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**3.4**		1.0		mg/L			08/01/19 17:58	1
Sulfate	**6.8**		1.0		mg/L			08/01/19 17:58	1
Ammonia as N	ND		0.030		mg/L			07/22/19 13:42	1
Total Alkalinity	**93**		10		mg/L			07/24/19 13:56	1
Bicarbonate Alkalinity	**93**		10		mg/L			07/24/19 13:56	1
Carbonate Alkalinity	ND		10		mg/L			07/24/19 13:56	1
Total Organic Carbon - Average	**2.3**		1.0		mg/L			08/06/19 00:44	1

Client Sample ID: SW-1-071719
Date Collected: 07/17/19 11:00
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**4.8**		1.0		mg/L			08/01/19 18:15	1
Sulfate	**10**		1.0		mg/L			08/01/19 18:15	1
Ammonia as N	ND		0.030		mg/L			07/22/19 13:44	1
Total Alkalinity	**76**		10		mg/L			07/24/19 14:03	1
Bicarbonate Alkalinity	**76**		10		mg/L			07/24/19 14:03	1
Carbonate Alkalinity	ND		10		mg/L			07/24/19 14:03	1
Total Organic Carbon - Average	**1.4**		1.0		mg/L			08/06/19 01:05	1

General Chemistry

Client Sample ID: SW-4-071719
Date Collected: 07/17/19 11:40
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**15**		1.0		mg/L			08/01/19 19:04	1
Sulfate	**22**		1.0		mg/L			08/01/19 19:04	1
Ammonia as N	ND		0.030		mg/L			07/22/19 13:46	1
Total Alkalinity	**180**		10		mg/L			07/24/19 14:11	1
Bicarbonate Alkalinity	**180**		10		mg/L			07/24/19 14:11	1
Carbonate Alkalinity	ND		10		mg/L			07/24/19 14:11	1
Total Organic Carbon - Average	**3.8**		1.0		mg/L			08/06/19 01:23	1

Client Sample ID: MW-13D-071719
Date Collected: 07/17/19 12:05
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.4**		1.0		mg/L			08/01/19 19:21	1
Sulfate	**17**		1.0		mg/L			08/01/19 19:21	1
Ammonia as N	ND		0.030		mg/L			07/22/19 13:48	1
Total Alkalinity	**77**		10		mg/L			07/24/19 14:18	1
Bicarbonate Alkalinity	**77**		10		mg/L			07/24/19 14:18	1
Carbonate Alkalinity	ND		10		mg/L			07/24/19 14:18	1
Total Organic Carbon - Average	ND		1.0		mg/L			08/06/19 01:40	1

Client Sample ID: SW-7-071719
Date Collected: 07/17/19 13:20
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**3.7**		1.0		mg/L			08/01/19 19:37	1
Sulfate	**7.5**		1.0		mg/L			08/01/19 19:37	1
Ammonia as N	ND		0.030		mg/L			07/22/19 13:50	1
Total Alkalinity	**68**		10		mg/L			07/24/19 14:26	1
Bicarbonate Alkalinity	**68**		10		mg/L			07/24/19 14:26	1
Carbonate Alkalinity	ND		10		mg/L			07/24/19 14:26	1
Total Organic Carbon - Average	**5.8**		1.0		mg/L			08/06/19 01:59	1

Client Sample ID: MW-6-071719
Date Collected: 07/17/19 14:50
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.7**		1.0		mg/L			08/01/19 19:54	1
Sulfate	**27**		1.0		mg/L			08/01/19 19:54	1
Ammonia as N	ND		0.030		mg/L			07/22/19 14:04	1
Total Alkalinity	**170**		10		mg/L			07/24/19 14:33	1
Bicarbonate Alkalinity	**170**		10		mg/L			07/24/19 14:33	1
Carbonate Alkalinity	ND		10		mg/L			07/24/19 14:33	1
Total Organic Carbon - Average	**1.6**		1.0		mg/L			08/06/19 02:15	1

Client Sample ID: MW-14-071719
Date Collected: 07/17/19 15:55
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**19**		1.0		mg/L			08/01/19 20:10	1
Sulfate	**14**		1.0		mg/L			08/01/19 20:10	1

General Chemistry (Continued)

Client Sample ID: MW-14-071719
Date Collected: 07/17/19 15:55
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	ND		0.030		mg/L			07/22/19 14:06	1
Total Alkalinity	**120**		10		mg/L			07/24/19 14:56	1
Bicarbonate Alkalinity	**120**		10		mg/L			07/24/19 14:56	1
Carbonate Alkalinity	ND		10		mg/L			07/24/19 14:56	1
Total Organic Carbon - Average	**2.3**		1.0		mg/L			08/06/19 02:36	1

Client Sample ID: MW-20DD-071719
Date Collected: 07/17/19 00:00
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**19**		1.0		mg/L			08/01/19 20:26	1
Sulfate	**14**		1.0		mg/L			08/01/19 20:26	1
Ammonia as N	ND		0.030		mg/L			07/22/19 14:08	1
Total Alkalinity	**120**		10		mg/L			07/24/19 15:04	1
Bicarbonate Alkalinity	**120**		10		mg/L			07/24/19 15:04	1
Carbonate Alkalinity	ND		10		mg/L			07/24/19 15:04	1
Total Organic Carbon - Average	**2.3**		1.0		mg/L			08/06/19 02:55	1

Surrogate Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)											
Lab Sample ID	Client Sample ID	DBFM (50-150)	TBA (50-150)										
280-126472-1	MW-7-071719	123	99										
280-126472-2	MW-5-071719	122	97										
280-126472-3	MW-12I-071719	122	90										
280-126472-4	SW-1-071719	126	88										
280-126472-5	SW-4-071719	121	87										
280-126472-6	MW-13D-071719	119	89										
280-126472-7	SW-7-071719	121	87										
280-126472-8	MW-6-071719	123	90										
280-126472-9	MW-14-071719	121	91										
280-126472-10	MW-20DD-071719	123	90										
280-126472-11	VTRP-	125	94										
LCS 480-483657/6	Lab Control Sample	110	75										
LCSD 480-483657/7	Lab Control Sample Dup	112	98										
MB 480-483657/9	Method Blank	122	105										

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)

TBA = TBA-d9 (Surr)

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-483657/9
Matrix: Water
Analysis Batch: 483657

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			07/25/19 11:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*122*		*50 - 150*		*07/25/19 11:51*	*1*
TBA-d9 (Surr)	*105*		*50 - 150*		*07/25/19 11:51*	*1*

Lab Sample ID: LCS 480-483657/6
Matrix: Water
Analysis Batch: 483657

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Vinyl chloride			0.200	0.201		ug/L		100	50 - 150		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*110*		*50 - 150*
TBA-d9 (Surr)	*75*		*50 - 150*

Lab Sample ID: LCSD 480-483657/7
Matrix: Water
Analysis Batch: 483657

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl chloride			0.200	0.216		ug/L		108	50 - 150	7	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*112*		*50 - 150*
TBA-d9 (Surr)	*98*		*50 - 150*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 280-466496/1-A
Matrix: Water
Analysis Batch: 466882

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 466496

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	ND		1.0		ug/L		08/03/19 07:45	08/06/19 16:22	1

Lab Sample ID: LCS 280-466496/2-A
Matrix: Water
Analysis Batch: 466882

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 466496

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Manganese			40.0	46.1		ug/L		115	85 - 117		

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 280-126472-1 MS
Matrix: Water
Analysis Batch: 466882

Client Sample ID: MW-7-071719
Prep Type: Dissolved
Prep Batch: 466496

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Manganese	ND		40.0	40.2		ug/L		99	85 - 117

Lab Sample ID: 280-126472-1 MSD
Matrix: Water
Analysis Batch: 466882

Client Sample ID: MW-7-071719
Prep Type: Dissolved
Prep Batch: 466496

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Manganese	ND		40.0	39.0		ug/L		96	85 - 117	3	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 280-466333/6
Matrix: Water
Analysis Batch: 466333

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0		mg/L			08/01/19 11:16	1
Sulfate	ND		1.0		mg/L			08/01/19 11:16	1

Lab Sample ID: LCS 280-466333/4
Matrix: Water
Analysis Batch: 466333

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	99.1		mg/L		99	90 - 110
Sulfate	100	98.6		mg/L		99	90 - 110

Lab Sample ID: LCSD 280-466333/5
Matrix: Water
Analysis Batch: 466333

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	98.6		mg/L		99	90 - 110	0	10
Sulfate	100	97.3		mg/L		97	90 - 110	1	10

Lab Sample ID: MRL 280-466333/3
Matrix: Water
Analysis Batch: 466333

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.50	ND		mg/L		98	50 - 150
Sulfate	2.50	ND		mg/L		103	50 - 150

Lab Sample ID: 280-126472-1 MS
Matrix: Water
Analysis Batch: 466333

Client Sample ID: MW-7-071719
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	ND	F1	25.0	1.84	F1	mg/L		7	80 - 120
Sulfate	5.9	F1	25.0	4.41	F1	mg/L		-6	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 280-126472-1 MSD — **Client Sample ID: MW-7-071719**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 466333

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	ND	F1	25.0	1.80	F1	mg/L		7	80 - 120	2	20
Sulfate	5.9	F1	25.0	4.56	F1	mg/L		-5	80 - 120	3	20

Lab Sample ID: 280-126472-1 DU — **Client Sample ID: MW-7-071719**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 466333

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	ND	F1	ND		mg/L		NC	15
Sulfate	5.9	F1	3.47	F3	mg/L		52	15

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 280-465299/19 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 465299

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	ND		0.030		mg/L			07/22/19 12:58	1

Lab Sample ID: LCS 280-465299/18 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 465299

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia as N	2.50	2.50		mg/L		100	90 - 110

Lab Sample ID: 280-126411-N-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 465299

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia as N	ND		1.00	0.997		mg/L		100	90 - 110

Lab Sample ID: 280-126411-N-1 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 465299

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia as N	ND		1.00	0.990		mg/L		99	90 - 110	1	10

Lab Sample ID: 280-126472-2 MS — **Client Sample ID: MW-5-071719**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 465299

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia as N	ND		1.00	1.03		mg/L		103	90 - 110

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: 280-126472-2 MSD — **Client Sample ID: MW-5-071719**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 465299

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia as N	ND		1.00	1.02		mg/L		102	90 - 110	1	10

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-465584/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 465584

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	ND		10		mg/L			07/24/19 13:00	1
Bicarbonate Alkalinity	ND		10		mg/L			07/24/19 13:00	1
Carbonate Alkalinity	ND		10		mg/L			07/24/19 13:00	1

Lab Sample ID: LCS 280-465584/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 465584

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity	200	204		mg/L		102	89 - 109

Lab Sample ID: 280-126253-C-2 DU — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 465584

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Alkalinity	ND		ND		mg/L		NC	10

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 280-466833/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 466833

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average	ND		1.0		mg/L			08/05/19 19:54	1

Lab Sample ID: LCS 280-466833/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 466833

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Average	25.0	25.1		mg/L		100	88 - 112

Lab Sample ID: 280-126472-1 MS — **Client Sample ID: MW-7-071719**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 466833

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Average	1.8		25.0	25.8		mg/L		96	88 - 112

Method: SM 5310B - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: 280-126472-1 MSD
Matrix: Water
Analysis Batch: 466833

Client Sample ID: MW-7-071719
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Average	1.8		25.0	26.6		mg/L		99	88 - 112	3	15

QC Association Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

GC/MS VOA

Analysis Batch: 483657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-126472-1	MW-7-071719	Total/NA	Water	8260C SIM	
280-126472-2	MW-5-071719	Total/NA	Water	8260C SIM	
280-126472-3	MW-12I-071719	Total/NA	Water	8260C SIM	
280-126472-4	SW-1-071719	Total/NA	Water	8260C SIM	
280-126472-5	SW-4-071719	Total/NA	Water	8260C SIM	
280-126472-6	MW-13D-071719	Total/NA	Water	8260C SIM	
280-126472-7	SW-7-071719	Total/NA	Water	8260C SIM	
280-126472-8	MW-6-071719	Total/NA	Water	8260C SIM	
280-126472-9	MW-14-071719	Total/NA	Water	8260C SIM	
280-126472-10	MW-20DD-071719	Total/NA	Water	8260C SIM	
280-126472-11	VTRP-	Total/NA	Water	8260C SIM	
MB 480-483657/9	Method Blank	Total/NA	Water	8260C SIM	
LCS 480-483657/6	Lab Control Sample	Total/NA	Water	8260C SIM	
LCSD 480-483657/7	Lab Control Sample Dup	Total/NA	Water	8260C SIM	

Metals

Prep Batch: 466496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-126472-1	MW-7-071719	Dissolved	Water	3005A	
280-126472-2	MW-5-071719	Dissolved	Water	3005A	
280-126472-3	MW-12I-071719	Dissolved	Water	3005A	
280-126472-4	SW-1-071719	Dissolved	Water	3005A	
280-126472-5	SW-4-071719	Dissolved	Water	3005A	
280-126472-6	MW-13D-071719	Dissolved	Water	3005A	
280-126472-7	SW-7-071719	Dissolved	Water	3005A	
280-126472-8	MW-6-071719	Dissolved	Water	3005A	
280-126472-9	MW-14-071719	Dissolved	Water	3005A	
280-126472-10	MW-20DD-071719	Dissolved	Water	3005A	
MB 280-466496/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-466496/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-126472-1 MS	MW-7-071719	Dissolved	Water	3005A	
280-126472-1 MSD	MW-7-071719	Dissolved	Water	3005A	

Analysis Batch: 466882

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-126472-1	MW-7-071719	Dissolved	Water	6020	466496
280-126472-2	MW-5-071719	Dissolved	Water	6020	466496
280-126472-3	MW-12I-071719	Dissolved	Water	6020	466496
280-126472-4	SW-1-071719	Dissolved	Water	6020	466496
280-126472-5	SW-4-071719	Dissolved	Water	6020	466496
280-126472-6	MW-13D-071719	Dissolved	Water	6020	466496
280-126472-7	SW-7-071719	Dissolved	Water	6020	466496
280-126472-8	MW-6-071719	Dissolved	Water	6020	466496
280-126472-9	MW-14-071719	Dissolved	Water	6020	466496
280-126472-10	MW-20DD-071719	Dissolved	Water	6020	466496
MB 280-466496/1-A	Method Blank	Total Recoverable	Water	6020	466496
LCS 280-466496/2-A	Lab Control Sample	Total Recoverable	Water	6020	466496
280-126472-1 MS	MW-7-071719	Dissolved	Water	6020	466496
280-126472-1 MSD	MW-7-071719	Dissolved	Water	6020	466496

General Chemistry

Analysis Batch: 465299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-126472-1	MW-7-071719	Total/NA	Water	350.1	
280-126472-2	MW-5-071719	Total/NA	Water	350.1	
280-126472-3	MW-12I-071719	Total/NA	Water	350.1	
280-126472-4	SW-1-071719	Total/NA	Water	350.1	
280-126472-5	SW-4-071719	Total/NA	Water	350.1	
280-126472-6	MW-13D-071719	Total/NA	Water	350.1	
280-126472-7	SW-7-071719	Total/NA	Water	350.1	
280-126472-8	MW-6-071719	Total/NA	Water	350.1	
280-126472-9	MW-14-071719	Total/NA	Water	350.1	
280-126472-10	MW-20DD-071719	Total/NA	Water	350.1	
MB 280-465299/19	Method Blank	Total/NA	Water	350.1	
LCS 280-465299/18	Lab Control Sample	Total/NA	Water	350.1	
280-126411-N-1 MS	Matrix Spike	Total/NA	Water	350.1	
280-126411-N-1 MSD	Matrix Spike Duplicate	Total/NA	Water	350.1	
280-126472-2 MS	MW-5-071719	Total/NA	Water	350.1	
280-126472-2 MSD	MW-5-071719	Total/NA	Water	350.1	

Analysis Batch: 465584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-126472-1	MW-7-071719	Total/NA	Water	SM 2320B	
280-126472-2	MW-5-071719	Total/NA	Water	SM 2320B	
280-126472-3	MW-12I-071719	Total/NA	Water	SM 2320B	
280-126472-4	SW-1-071719	Total/NA	Water	SM 2320B	
280-126472-5	SW-4-071719	Total/NA	Water	SM 2320B	
280-126472-6	MW-13D-071719	Total/NA	Water	SM 2320B	
280-126472-7	SW-7-071719	Total/NA	Water	SM 2320B	
280-126472-8	MW-6-071719	Total/NA	Water	SM 2320B	
280-126472-9	MW-14-071719	Total/NA	Water	SM 2320B	
280-126472-10	MW-20DD-071719	Total/NA	Water	SM 2320B	
MB 280-465584/5	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-465584/4	Lab Control Sample	Total/NA	Water	SM 2320B	
280-126253-C-2 DU	Duplicate	Total/NA	Water	SM 2320B	

Analysis Batch: 466333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-126472-1	MW-7-071719	Total/NA	Water	300.0	
280-126472-2	MW-5-071719	Total/NA	Water	300.0	
280-126472-3	MW-12I-071719	Total/NA	Water	300.0	
280-126472-4	SW-1-071719	Total/NA	Water	300.0	
280-126472-5	SW-4-071719	Total/NA	Water	300.0	
280-126472-6	MW-13D-071719	Total/NA	Water	300.0	
280-126472-7	SW-7-071719	Total/NA	Water	300.0	
280-126472-8	MW-6-071719	Total/NA	Water	300.0	
280-126472-9	MW-14-071719	Total/NA	Water	300.0	
280-126472-10	MW-20DD-071719	Total/NA	Water	300.0	
MB 280-466333/6	Method Blank	Total/NA	Water	300.0	
LCS 280-466333/4	Lab Control Sample	Total/NA	Water	300.0	
LCSD 280-466333/5	Lab Control Sample Dup	Total/NA	Water	300.0	
MRL 280-466333/3	Lab Control Sample	Total/NA	Water	300.0	
280-126472-1 MS	MW-7-071719	Total/NA	Water	300.0	
280-126472-1 MSD	MW-7-071719	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 466333 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-126472-1 DU	MW-7-071719	Total/NA	Water	300.0	

Analysis Batch: 466833

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-126472-1	MW-7-071719	Total/NA	Water	SM 5310B	
280-126472-2	MW-5-071719	Total/NA	Water	SM 5310B	
280-126472-3	MW-12I-071719	Total/NA	Water	SM 5310B	
280-126472-4	SW-1-071719	Total/NA	Water	SM 5310B	
280-126472-5	SW-4-071719	Total/NA	Water	SM 5310B	
280-126472-6	MW-13D-071719	Total/NA	Water	SM 5310B	
280-126472-7	SW-7-071719	Total/NA	Water	SM 5310B	
280-126472-8	MW-6-071719	Total/NA	Water	SM 5310B	
280-126472-9	MW-14-071719	Total/NA	Water	SM 5310B	
280-126472-10	MW-20DD-071719	Total/NA	Water	SM 5310B	
MB 280-466833/13	Method Blank	Total/NA	Water	SM 5310B	
LCS 280-466833/12	Lab Control Sample	Total/NA	Water	SM 5310B	
280-126472-1 MS	MW-7-071719	Total/NA	Water	SM 5310B	
280-126472-1 MSD	MW-7-071719	Total/NA	Water	SM 5310B	

Lab Chronicle

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Client Sample ID: MW-7-071719

Lab Sample ID: 280-126472-1

Date Collected: 07/17/19 08:35

Matrix: Water

Date Received: 07/20/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	25 mL	25 mL	483657	07/25/19 12:24	KMN	TAL BUF
Dissolved	Prep	3005A			50 mL	50 mL	466496	08/03/19 07:45	MRJ	TAL DEN
Dissolved	Analysis	6020		1			466882	08/06/19 16:29	LMT	TAL DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	466333	08/01/19 16:36	JAP	TAL DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	465299	07/22/19 13:34	MJS	TAL DEN
Total/NA	Analysis	SM 2320B		1			465584	07/24/19 13:42	SPG	TAL DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	466833	08/05/19 22:56	SGB	TAL DEN

Client Sample ID: MW-5-071719

Lab Sample ID: 280-126472-2

Date Collected: 07/17/19 09:40

Matrix: Water

Date Received: 07/20/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	25 mL	25 mL	483657	07/25/19 12:49	KMN	TAL BUF
Dissolved	Prep	3005A			50 mL	50 mL	466496	08/03/19 07:45	MRJ	TAL DEN
Dissolved	Analysis	6020		1			466882	08/06/19 16:53	LMT	TAL DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	466333	08/01/19 17:42	JAP	TAL DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	465299	07/22/19 13:36	MJS	TAL DEN
Total/NA	Analysis	SM 2320B		1			465584	07/24/19 13:49	SPG	TAL DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	466833	08/05/19 23:49	SGB	TAL DEN

Client Sample ID: MW-12I-071719

Lab Sample ID: 280-126472-3

Date Collected: 07/17/19 10:55

Matrix: Water

Date Received: 07/20/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	25 mL	25 mL	483657	07/25/19 13:13	KMN	TAL BUF
Dissolved	Prep	3005A			50 mL	50 mL	466496	08/03/19 07:45	MRJ	TAL DEN
Dissolved	Analysis	6020		1			466882	08/06/19 16:57	LMT	TAL DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	466333	08/01/19 17:58	JAP	TAL DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	465299	07/22/19 13:42	MJS	TAL DEN
Total/NA	Analysis	SM 2320B		1			465584	07/24/19 13:56	SPG	TAL DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	466833	08/06/19 00:44	SGB	TAL DEN

Client Sample ID: SW-1-071719

Lab Sample ID: 280-126472-4

Date Collected: 07/17/19 11:00

Matrix: Water

Date Received: 07/20/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	25 mL	25 mL	483657	07/25/19 13:38	KMN	TAL BUF
Dissolved	Prep	3005A			50 mL	50 mL	466496	08/03/19 07:45	MRJ	TAL DEN
Dissolved	Analysis	6020		1			466882	08/06/19 17:00	LMT	TAL DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	466333	08/01/19 18:15	JAP	TAL DEN

Lab Chronicle

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Client Sample ID: SW-1-071719
Date Collected: 07/17/19 11:00
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	350.1		1	10 mL	10 mL	465299	07/22/19 13:44	MJS	TAL DEN
Total/NA	Analysis	SM 2320B		1			465584	07/24/19 14:03	SPG	TAL DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	466833	08/06/19 01:05	SGB	TAL DEN

Client Sample ID: SW-4-071719
Date Collected: 07/17/19 11:40
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	25 mL	25 mL	483657	07/25/19 14:02	KMN	TAL BUF
Dissolved	Prep	3005A			50 mL	50 mL	466496	08/03/19 07:45	MRJ	TAL DEN
Dissolved	Analysis	6020		1			466882	08/06/19 17:04	LMT	TAL DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	466333	08/01/19 19:04	JAP	TAL DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	465299	07/22/19 13:46	MJS	TAL DEN
Total/NA	Analysis	SM 2320B		1			465584	07/24/19 14:11	SPG	TAL DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	466833	08/06/19 01:23	SGB	TAL DEN

Client Sample ID: MW-13D-071719
Date Collected: 07/17/19 12:05
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	25 mL	25 mL	483657	07/25/19 14:27	KMN	TAL BUF
Dissolved	Prep	3005A			50 mL	50 mL	466496	08/03/19 07:45	MRJ	TAL DEN
Dissolved	Analysis	6020		1			466882	08/06/19 17:07	LMT	TAL DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	466333	08/01/19 19:21	JAP	TAL DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	465299	07/22/19 13:48	MJS	TAL DEN
Total/NA	Analysis	SM 2320B		1			465584	07/24/19 14:18	SPG	TAL DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	466833	08/06/19 01:40	SGB	TAL DEN

Client Sample ID: SW-7-071719
Date Collected: 07/17/19 13:20
Date Received: 07/20/19 08:30

Lab Sample ID: 280-126472-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	25 mL	25 mL	483657	07/25/19 14:52	KMN	TAL BUF
Dissolved	Prep	3005A			50 mL	50 mL	466496	08/03/19 07:45	MRJ	TAL DEN
Dissolved	Analysis	6020		1			466882	08/06/19 17:11	LMT	TAL DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	466333	08/01/19 19:37	JAP	TAL DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	465299	07/22/19 13:50	MJS	TAL DEN
Total/NA	Analysis	SM 2320B		1			465584	07/24/19 14:26	SPG	TAL DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	466833	08/06/19 01:59	SGB	TAL DEN

Lab Chronicle

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Client Sample ID: MW-6-071719

Lab Sample ID: 280-126472-8

Date Collected: 07/17/19 14:50

Matrix: Water

Date Received: 07/20/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	25 mL	25 mL	483657	07/25/19 15:17	KMN	TAL BUF
Dissolved	Prep	3005A			50 mL	50 mL	466496	08/03/19 07:45	MRJ	TAL DEN
Dissolved	Analysis	6020		1			466882	08/06/19 17:14	LMT	TAL DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	466333	08/01/19 19:54	JAP	TAL DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	465299	07/22/19 14:04	MJS	TAL DEN
Total/NA	Analysis	SM 2320B		1			465584	07/24/19 14:33	SPG	TAL DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	466833	08/06/19 02:15	SGB	TAL DEN

Client Sample ID: MW-14-071719

Lab Sample ID: 280-126472-9

Date Collected: 07/17/19 15:55

Matrix: Water

Date Received: 07/20/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	25 mL	25 mL	483657	07/25/19 15:41	KMN	TAL BUF
Dissolved	Prep	3005A			50 mL	50 mL	466496	08/03/19 07:45	MRJ	TAL DEN
Dissolved	Analysis	6020		1			466882	08/06/19 17:18	LMT	TAL DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	466333	08/01/19 20:10	JAP	TAL DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	465299	07/22/19 14:06	MJS	TAL DEN
Total/NA	Analysis	SM 2320B		1			465584	07/24/19 14:56	SPG	TAL DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	466833	08/06/19 02:36	SGB	TAL DEN

Client Sample ID: MW-20DD-071719

Lab Sample ID: 280-126472-10

Date Collected: 07/17/19 00:00

Matrix: Water

Date Received: 07/20/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	25 mL	25 mL	483657	07/25/19 16:06	KMN	TAL BUF
Dissolved	Prep	3005A			50 mL	50 mL	466496	08/03/19 07:45	MRJ	TAL DEN
Dissolved	Analysis	6020		1			466882	08/06/19 17:21	LMT	TAL DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	466333	08/01/19 20:26	JAP	TAL DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	465299	07/22/19 14:08	MJS	TAL DEN
Total/NA	Analysis	SM 2320B		1			465584	07/24/19 15:04	SPG	TAL DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	466833	08/06/19 02:55	SGB	TAL DEN

Client Sample ID: VTRP-

Lab Sample ID: 280-126472-11

Date Collected: 07/17/19 00:00

Matrix: Water

Date Received: 07/20/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	25 mL	25 mL	483657	07/25/19 16:30	KMN	TAL BUF

Lab Chronicle

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Laboratory References:

SC0056 = Analytical Resources, Inc, 4611 South 134th Place, Suite 100, Tukwila, WA 98168, TEL (206)695-6200

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Laboratory: Eurofins TestAmerica, Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C583	08-03-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
6020	3005A	Water	Manganese
SM 2320B		Water	Bicarbonate Alkalinity
SM 2320B		Water	Carbonate Alkalinity
SM 5310B		Water	Total Organic Carbon - Average

Laboratory: Eurofins TestAmerica, Buffalo

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arkansas DEQ	State Program	6	88-0686	07-06-20
California	State		2931	04-01-20
California	State Program	9	2931	04-01-20
Connecticut	State		PH-0568	09-30-20
Connecticut	State Program	1	PH-0568	09-30-20
Florida	NELAP	4	E87672	06-30-20
Florida	NELAP		E87672	06-30-20
Georgia	State Program	4	10026 (NY)	03-31-20
Georgia	State Program	4	956	03-31-20
Illinois	NELAP	5	200003	09-30-19 *
Illinois	NELAP		200003	09-30-19 *
Iowa	State Program	7	374	02-28-21
Kansas	NELAP	7	E-10187	01-31-20
Kansas	NELAP		E-10187	01-31-20
Kentucky (DW)	State Program	4	90029	12-31-19
Kentucky (WW)	State Program	4	90029	12-31-19
Louisiana	NELAP	6	02031	06-30-20
Maine	State Program	1	NY00044	12-04-20
Maryland	State Program	3	294	03-31-20
Massachusetts	State Program	1	M-NY044	06-30-20
Michigan	State Program	5	9937	03-31-20
Minnesota	NELAP	5	036-999-337	12-31-19
Minnesota	NELAP		1524384	12-31-19
New Hampshire	NELAP	1	2337	11-17-19
New Jersey	NELAP	2	NY455	06-30-20
New Jersey	NELAP		NY455	06-25-20
New York	NELAP	2	10026	03-31-20
New York	NELAP		10026	04-01-20
North Dakota	State Program	8	R-176	03-31-20
Oklahoma	State		9421	08-31-19
Oklahoma	State Program	6	9421	08-31-19 *
Oregon	NELAP	10	NY200003	06-09-20
Oregon	NELAP		NY200003	06-10-20
Rhode Island	State Program	1	LAO00328	12-30-19
Tennessee	State Program	4	TN02970	03-31-20
Texas	NELAP	6	T104704412-15-6	07-31-20
Texas	NELAP		T104704412-18-10	07-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-126472-1

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
USDA	Federal		P330-11-00386	02-06-21
Virginia	NELAP	3	460185	09-14-19
Virginia	NELAP		460185	09-14-19 *
Washington	State		C784	02-10-20
Washington	State Program	10	C784	02-10-20
Wisconsin	State		998310390	08-31-19
Wisconsin	State Program	5	998310390	08-31-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

25 July 2019

Betsy Sara
Test America - Denver
4955 Yarrow Street
Arvada, CO 80002

RE: Hansville

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
19G0234	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

Chain of Custody Record & Laboratory Analysis Request

* FIELD FILTERED

ARI Assigned Number: 19G0234	Turn-around Requested:
ARI Client Company: ASPECT	Phone: (206) 780 7728
Client Contact: PETER BANNISTER	
Client Project Name: HANSVILLE W.Q. SAMPLING	
Client Project #: 160423	Samplers: JTL/DWU

Page: 1 of 1	
Date: 7/18/19	Ice Present? YES
No. of Coolers: 2	Cooler Temps: 1.5°C 1.8°C

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: ORTHO-* PHOSPHATE	DISSOLVED ARSENIC	NITRATE/NITRITE (ISE)						Notes/Comments
MW-7-071719	7/17/19	0835	W	3	X	X	X						
MW-5-071719		0940											
MW-12I-071719		1055											
SW-1-071719		1100											
SW-4-071719		1140											
MW-13D-071719		1205											
SW-7-071719		1320											
MW-6-071719		1450											
MW-14-071719		1555											
MW-20D-071719		—											

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
pbannister@aspectconsulting.com	Printed Name: JACKSON LUNDGREN	Printed Name: Jacob Walter	Printed Name:	Printed Name:
	Company: ASPECT	Company: ARI	Company:	Company:
	Date & Time: 11:00 7/18/19	Date & Time: 07/18/19 1100	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Report

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-7-071719	19G0234-01	Water	17-Jul-2019 08:35	18-Jul-2019 11:00
MW-5-071719	19G0234-02	Water	17-Jul-2019 09:40	18-Jul-2019 11:00
MW-12I-071719	19G0234-03	Water	17-Jul-2019 10:55	18-Jul-2019 11:00
SW-1-071719	19G0234-04	Water	17-Jul-2019 11:00	18-Jul-2019 11:00
SW-4-071719	19G0234-05	Water	17-Jul-2019 11:40	18-Jul-2019 11:00
MW-13D-071719	19G0234-06	Water	17-Jul-2019 12:05	18-Jul-2019 11:00
SW-7-071719	19G0234-07	Water	17-Jul-2019 13:20	18-Jul-2019 11:00
MW-6-071719	19G0234-08	Water	17-Jul-2019 14:50	18-Jul-2019 11:00
MW-14-071719	19G0234-09	Water	17-Jul-2019 15:55	18-Jul-2019 11:00
MW-20DD-071719	19G0234-10	Water	17-Jul-2019 00:00	18-Jul-2019 11:00

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Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

Work Order Case Narrative

Sample receipt

Samples as listed on the preceding page were received July 18, 2019 under ARI work order 19G0234. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Dissolved Arsenic - EPA Method 200.8

The samples were digested and analyzed within the recommended holding times.

Sample MW-14-071719 was split from the field filtered O-Phos bottle as a preserved field filtered dissolved metals bottle was not received.

Initial and continuing calibrations were within method requirements.

The method blank was clean at the reporting limits.

The LCS percent recoveries were within control limits.

Anions - EPA Method 300.0

The samples were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blanks were clean at the reporting limits.

The LCS percent recoveries were within control limits.

A matrix spike and duplicate were prepared in conjunction with sample MW-7-071719. The matrix spike percent recoveries and duplicate RPD were within QC limits.

WORK ORDER

19G0234

Client: Test America - Denver | **Project Manager:** Amanda Volgardsen

Project: Hansville | **Project Number:** 160423

Preservation Confirmation

Container ID	Container Type	pH	
19G0234-01 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass
19G0234-01 B	Miscellaneous Container		
19G0234-01 C	Miscellaneous Container		
19G0234-02 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass
19G0234-02 B	Miscellaneous Container		
19G0234-02 C	Miscellaneous Container		
19G0234-03 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass
19G0234-03 B	Miscellaneous Container		
19G0234-03 C	Miscellaneous Container		
19G0234-04 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass
19G0234-04 B	Miscellaneous Container		
19G0234-04 C	Miscellaneous Container		
19G0234-05 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass
19G0234-05 B	Miscellaneous Container		
19G0234-05 C	Miscellaneous Container		
19G0234-06 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass
19G0234-06 B	Miscellaneous Container		
19G0234-06 C	Miscellaneous Container		
19G0234-07 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass
19G0234-07 B	Miscellaneous Container		
19G0234-07 C	Miscellaneous Container		
19G0234-08 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass
19G0234-08 B	Miscellaneous Container		
19G0234-08 C	Miscellaneous Container		
19G0234-09 A	Miscellaneous Container		
19G0234-09 B	Miscellaneous Container		
19G0234-09 C	HDPE NM, 500 mL (FF)	>2	Fail
19G0234-10 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass
19G0234-10 B	Miscellaneous Container		
19G0234-10 C	Miscellaneous Container		

JBW
Preservation Confirmed By

07/18/19
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Aspect Consulting
COC No(s): ~~NA~~
Assigned ARI Job No: 19G0234

Project Name: Hanville WQ Sampling
Delivered by: Fed-Ex UPS Courier ~~Hand Delivered~~ Other: ____
Tracking No: ~~NA~~

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	~~YES~~	NO
Were custody papers included with the cooler?	YES	~~NO~~ JBu
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1100 — 1.5°C 1.8°C ____ ____ ____ ____

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: DOO 5206

Cooler Accepted by: JBu Date: 07/18/19 Time: 1100

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		~~YES~~ JBu	NO
What kind of packing material was used? ...	~~Bubble Wrap~~ ~~Wet Ice~~ Gel Packs ~~Baggies~~ Foam Block Paper Other: ____		
Was sufficient ice used (if appropriate)?	NA	~~YES~~	NO
How were bottles sealed in plastic bags?	Individually	Grouped	~~Not~~
Did all bottles arrive in good condition (unbroken)?		~~YES~~	NO
Were all bottle labels complete and legible?		~~YES~~	NO
Did the number of containers listed on COC match with the number of containers received?		YES	~~NO~~
Did all bottle labels and tags agree with custody papers?		~~YES~~	NO
Were all bottles used correct for the requested analyses?		~~YES~~	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	NA	~~YES~~	NO
Were all VOC vials free of air bubbles?	~~NA~~	YES	NO
Was sufficient amount of sample sent in each bottle?		~~YES~~	NO
Date VOC Trip Blank was made at ARI	~~NA~~		____

Were the sample(s) split by ARI? ~~NA~~ ~~YES~~ Date/Time: 7/18/19 1357 Equipment: pour Split by: JBu

Samples Logged by: JBu Date: 07/18/19 Time: 1150 Labels checked by: JBu

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

1 container for sample "MW-14-071719" was not received. missing container should be for Dissolved Arsenic. Split volume from Orphos sample into new container for Dissolved metals per Amanda.

By: JBu Date: 07/18/19

WORK ORDER

19G0234

Client: Test America - Denver	**Project Manager:** Amanda Volgardsen
Project: Hansville	**Project Number:** 160423

Preservation Confirmation

Container ID	Container Type	pH		
19G0234-01 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass	
19G0234-01 B	Miscellaneous Container			
19G0234-01 C	Miscellaneous Container			
19G0234-02 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass	
19G0234-02 B	Miscellaneous Container			
19G0234-02 C	Miscellaneous Container			
19G0234-03 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass	
19G0234-03 B	Miscellaneous Container			
19G0234-03 C	Miscellaneous Container			
19G0234-04 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass	
19G0234-04 B	Miscellaneous Container			
19G0234-04 C	Miscellaneous Container			
19G0234-05 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass	
19G0234-05 B	Miscellaneous Container			
19G0234-05 C	Miscellaneous Container			
19G0234-06 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass	
19G0234-06 B	Miscellaneous Container			
19G0234-06 C	Miscellaneous Container			
19G0234-07 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass	
19G0234-07 B	Miscellaneous Container			
19G0234-07 C	Miscellaneous Container			
19G0234-08 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass	
19G0234-08 B	Miscellaneous Container			
19G0234-08 C	Miscellaneous Container			
19G0234-09 A	Miscellaneous Container			
19G0234-09 B	Miscellaneous Container			
19G0234-09 C	HDPE NM, 500 mL (FF)	>2	Fail	(1)
19G0234-10 A	Miscellaneous container, 1:1 HN03 (FF)	<2	Pass	
19G0234-10 B	Miscellaneous Container			
19G0234-10 C	Miscellaneous Container			

JBr
Preservation Confirmed By

07/18/19
Date

(1) Preserved to pH<2.0
7/22/19 sm

Reviewed By

Date

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-7-071719

19G0234-01 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 07/17/2019 08:35

Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/22/2019 20:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19G0234-01 A 02

Preparation Batch: BHG0513 — Sample Size: 25 mL

Prepared: 22-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.000200	**0.00117**	mg/L	

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Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-7-071719

19G0234-01 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 07/17/2019 08:35

Instrument: DX500 Analyst: YK — Analyzed: 07/18/2019 19:53

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19G0234-01 B

Preparation Batch: BHG0450 — Sample Size: 5 mL

Prepared: 18-Jul-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**0.284**	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Orthophosphorus	1426-54-42	1	0.10	0.10	ND	mg/L	U

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-5-071719

19G0234-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 07/17/2019 09:40

Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/22/2019 20:17

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19G0234-02 A 02

Preparation Batch: BHG0513 — Sample Size: 25 mL

Prepared: 22-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.000200	**0.00186**	mg/L	

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-5-071719

19G0234-02 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 07/17/2019 09:40

Instrument: DX500 Analyst: YK — Analyzed: 07/18/2019 20:43

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19G0234-02 C

Preparation Batch: BHG0450 — Sample Size: 5 mL

Prepared: 18-Jul-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**2.00**	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Orthophosphorus	1426-54-42	1	0.10	0.10	ND	mg/L	U

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-12I-071719

19G0234-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 07/17/2019 10:55

Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/22/2019 20:21

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19G0234-03 A 02

Preparation Batch: BHG0513 — Sample Size: 25 mL

Prepared: 22-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.000200	**0.00207**	mg/L	

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Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-12I-071719

19G0234-03 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 07/17/2019 10:55

Instrument: DX500 Analyst: YK — Analyzed: 07/18/2019 21:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19G0234-03 B

Preparation Batch: BHG0450 — Sample Size: 5 mL

Prepared: 18-Jul-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Orthophosphorus	1426-54-42	1	0.10	0.10	ND	mg/L	U

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

SW-1-071719

19G0234-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 07/17/2019 11:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/22/2019 20:26

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19G0234-04 A 02

Preparation Batch: BHG0513 — Sample Size: 25 mL

Prepared: 22-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.000200	**0.00170**	mg/L	

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SW-1-071719

19G0234-04 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 07/17/2019 11:00

Instrument: DX500 Analyst: YK — Analyzed: 07/18/2019 21:17

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19G0234-04 C

Preparation Batch: BHG0450 — Sample Size: 5 mL

Prepared: 18-Jul-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**1.66**	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Orthophosphorus	1426-54-42	1	0.10	0.10	ND	mg/L	U

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

SW-4-071719

19G0234-05 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 07/17/2019 11:40

Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/22/2019 20:31

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19G0234-05 A 02

Preparation Batch: BHG0513 — Sample Size: 25 mL

Prepared: 22-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.000200	**0.00190**	mg/L	

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SW-4-071719

19G0234-05 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 07/17/2019 11:40

Instrument: DX500 Analyst: YK — Analyzed: 07/18/2019 21:33

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19G0234-05 C

Preparation Batch: BHG0450 — Sample Size: 5 mL

Prepared: 18-Jul-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**0.876**	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Orthophosphorus	1426-54-42	1	0.10	0.10	ND	mg/L	U

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4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-13D-071719

19G0234-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 07/17/2019 12:05

Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/22/2019 20:35

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19G0234-06 A 02

Preparation Batch: BHG0513 — Sample Size: 25 mL

Prepared: 22-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.000200	**0.00512**	mg/L	

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MW-13D-071719

19G0234-06 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 07/17/2019 12:05

Instrument: DX500 Analyst: YK — Analyzed: 07/18/2019 21:50

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19G0234-06 C

Preparation Batch: BHG0450 — Sample Size: 5 mL

Prepared: 18-Jul-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Orthophosphorus	1426-54-42	1	0.10	0.10	ND	mg/L	U

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

SW-7-071719

19G0234-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 07/17/2019 13:20

Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/22/2019 20:40

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19G0234-07 A 02

Preparation Batch: BHG0513 — Sample Size: 25 mL

Prepared: 22-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.000200	**0.00160**	mg/L	

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SW-7-071719

19G0234-07 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 07/17/2019 13:20

Instrument: DX500 Analyst: YK — Analyzed: 07/18/2019 22:07

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19G0234-07 C

Preparation Batch: BHG0450 — Sample Size: 5 mL

Prepared: 18-Jul-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**0.706**	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Orthophosphorus	1426-54-42	1	0.10	0.10	ND	mg/L	U

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-6-071719

19G0234-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 07/17/2019 14:50

Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/22/2019 20:44

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19G0234-08 A 02

Preparation Batch: BHG0513 — Sample Size: 25 mL

Prepared: 22-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.000200	**0.00155**	mg/L	

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Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-6-071719

19G0234-08 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 07/17/2019 14:50

Instrument: DX500 Analyst: YK — Analyzed: 07/18/2019 22:24

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19G0234-08 C

Preparation Batch: BHG0450 — Sample Size: 5 mL

Prepared: 18-Jul-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**0.676**	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	**0.194**	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Orthophosphorus	1426-54-42	1	0.10	0.10	ND	mg/L	U

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-14-071719

19G0234-09 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 07/17/2019 15:55

Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/22/2019 20:49

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19G0234-09 C 01

Preparation Batch: BHG0513 — Sample Size: 25 mL

Prepared: 22-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.000200	**0.0115**	mg/L	

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-14-071719

19G0234-09 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 07/17/2019 15:55

Instrument: DX500 Analyst: YK — Analyzed: 07/18/2019 23:14

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19G0234-09 A

Preparation Batch: BHG0450 — Sample Size: 5 mL

Prepared: 18-Jul-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**1.53**	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Orthophosphorus	1426-54-42	1	0.10	0.10	ND	mg/L	U

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

MW-20DD-071719

19G0234-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 07/17/2019 00:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/22/2019 20:54

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19G0234-10 A 02

Preparation Batch: BHG0513 — Sample Size: 25 mL

Prepared: 22-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.000200	**0.0118**	mg/L	

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MW-20DD-071719

19G0234-10 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 07/17/2019 00:00

Instrument: DX500 Analyst: YK — Analyzed: 07/18/2019 23:31

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 19G0234-10 C

Preparation Batch: BHG0450 — Sample Size: 5 mL

Prepared: 18-Jul-2019 — Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	**1.58**	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.100	0.100	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Orthophosphorus	1426-54-42	1	0.10	0.10	ND	mg/L	U

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BHG0513 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHG0513-BLK1)				Prepared: 22-Jul-2019 Analyzed: 22-Jul-2019 15:59							
Arsenic, Dissolved	75a	ND	0.000200	mg/L							U
LCS (BHG0513-BS1)				Prepared: 22-Jul-2019 Analyzed: 22-Jul-2019 16:04							
Arsenic, Dissolved	75a	0.0247	0.000200	mg/L	0.0250		98.7	80-120			

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Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

Wet Chemistry - Quality Control

Batch BHG0450 - No Prep Wet Chem

Instrument: DX500 Analyst: YK

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHG0450-BLK1)				Prepared: 18-Jul-2019 Analyzed: 18-Jul-2019 18:45							
Nitrate-N	ND	0.100	0.100	mg/L							U
Nitrite-N	ND	0.100	0.100	mg/L							U
Orthophosphorus	ND	0.10	0.10	mg/L							U
LCS (BHG0450-BS1)				Prepared: 18-Jul-2019 Analyzed: 18-Jul-2019 19:02							
Nitrate-N	1.39	0.100	0.100	mg/L	1.50		92.7	90-110			
Nitrite-N	1.50	0.100	0.100	mg/L	1.50		100	90-110			
Orthophosphorus	1.45	0.10	0.10	mg/L	1.50		96.7	90-110			
Duplicate (BHG0450-DUP1)		**Source: 19G0234-01**		Prepared: 18-Jul-2019 Analyzed: 18-Jul-2019 20:09							
Nitrate-N	0.283	0.100	0.100	mg/L		0.284			0.35	20	
Nitrite-N	ND	0.100	0.100	mg/L		ND					U
Orthophosphorus	ND	0.10	0.10	mg/L		ND					U
Matrix Spike (BHG0450-MS1)		**Source: 19G0234-01**		Prepared: 18-Jul-2019 Analyzed: 18-Jul-2019 20:26							
Orthophosphorus	4.22	0.20	0.20	mg/L	4.00	ND	106	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BHG0450-MS2)		**Source: 19G0234-01**		Prepared: 18-Jul-2019 Analyzed: 19-Jul-2019 13:36							
Nitrate-N	4.10	0.200	0.200	mg/L	4.00	0.284	95.4	75-125			D
Nitrite-N	4.34	0.200	0.200	mg/L	4.00	ND	108	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 300.0 in Water	
Nitrate-N	DoD-ELAP,WADOE,WA-DW,NELAP
Nitrite-N	DoD-ELAP,WADOE,WA-DW,NELAP
Orthophosphorus	DoD-ELAP,WADOE,WA-DW,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 160423	**Reported:**
Arvada CO, 80002	Project Manager: Betsy Sara	25-Jul-2019 13:01

Notes and Definitions

D	The reported value is from a dilution
J	Estimated concentration value detected below the reporting limit.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Denver #280

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: David Orsch / Jackson Lundgren	Lab PM: Sara, Betsy A	Carrier Tracking No(s):	COC No: 280-23414-6845.1
Client Contact: Peter Bannister	Phone: (206) 413-5407	E-Mail: betsy.sara@testamericainc.com		Page: 1/1
Company: Aspect Consulting, LLC				Job #: 160423
Address: 350 Madison Ave N	Due Date Requested:			
City: Bainbridge Island	TAT Requested (days):			
State, Zip: WA, 98110				
Phone:	PO #: Purchase Order not required			
Email: pbannister@aspectconsulting.com	WO #:			
Project Name: Hansville Landfill	Project #:skip sites/events 28006013 - 2Q/3Q/4Q Sampling			
Site: Washington	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C SIM - Vinyl Chloride (TA Buffalo)	Dissolved Metals	Ammonia/TOC	Alks/Cl/SO4	Ortho-phosphate (field filtered)- direct sub to ARI	Dissolved Arsenice - direct sub to ARI	Nitrate/Nitrite (IC) - direct sub to ARI	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	D	S	N	N	D	N		
MW-7-071714	7/17/14	0835		W	Y		X	X	X	X					
MW-5-071714		~~0944~~ 0940													
MW-12I-071714		1055													Diss As,NO3,NO2,o-phos subbed direct to ARI
SW-1-071714		1100													
SW-4-071714		1140													
MW-13D-071714		1205													
SW-7-071714		1320													
MW-6-071714		1450													
MW-14-071714		1555													
MW-20DD-071714		—													
VTRP-		—		W	↓		↓	↓	↓	↓					BLANKS

280-126472 Chain of Custody

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	JACKSON LUNDGREN	07/18/14 11:00	ASPECT		7/19/14 900	TAL
2		7/19/14 720	TAL		7/19/14 830	TA DEN
3						

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 3.8°C, 0.4°C, 2.0°C MM 07/20/14


TestAm
THE LEADER IN ENVIR
TestAm
THE LEADER IN ENVIRONI
THE LEADER IN ENVIRONMENTAL TESTIN
ORIGIN ID:AGCA (412) 963-7058
EUROFINS TESTAMERICA PITTSBURGH
EUROFINS TESTAMERICA PITTSBURGH
301 ALPHA DRIVE
PITTSBURGH, PA 152381330
UNITED STATES US
SHIP DATE: 19JUL19
ACTWGT: 40.00 LB MA
CAD: 741733/CAFE32
BILL RECIPIENT
TO SAMPLE RECEIVING
TEST AMERICA DENVER
4955 YARROW STREET
ARVADA CO 80002
(303) 421-6611
DEPT: SAMPLE RECEIVING
REF: WASTE MGT
3 of 3
MPS# 0263 4818 7133 7829
Mstr# 4818 7133 7807
0201
XO WHHA
1 of 3
TRK# 0201 4818 7133 7807
MASTER
XO WHHA
2 of 3
MPS# 0263 4818 7133 7818
Mstr# 4818 7133 7807
0201
XO WHHA
PRIORITY
RT 437
ST F1
280-126472 Waybill

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RIT2 EXP 04/20

ORIGIN ID:AGCA (412) 963- 587
EUROFINS TESTAMERICA PITTSBU
EUROFINS TESTAMERICA PITTSBURG
301 ALPHA DRIVE
PITTSBURGH, PA 152381330
DATE: 11J
741733/CAFE3211
BILL SENDER

TO EUROFINS TESTAMERICA JACKSON LUNDGR
EUROFINS TESTAMERICA PITTSBU
301 ALPHA DRIVE

PITTSBURGH PA 152381330
(412) 963-7068
DEPT: SAMPLE/RECEIVING
REF: 6280-89708

RMA:

FedEx Express

FedEx
TRK# 0221 4818 7133 4966

FRI - 19 JUL 10:30A
PRIORITY OVERNIGHT

XH AGCA

15238
PA-US PIT

Uncorrected temp 3.3 °C
Thermometer ID TO
CF 0 Initials NO

PT-WI-SR-001 effective 11/8/18

#480875 07/18

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RIT2 EXP 04/20

ORIGIN ID:AGCA (206) 838-6587
ATTN: HANSVILLE LF ? JACKSON LUNDGR
ASPECT CONSULTING, LLC
350 MADISON AVE N
BAINBRIDGE ISLAND, WA 98110
UNITED STATES US

SHIP DATE: 11JUL19
ACTWGT: 45.00 LB MAN
CAD: 741733/CAFE3211

TO EUROFINS TESTAMERICA PITTSBURGH
EUROFINS TESTAMERICA PITTSBURGH
301 ALPHA DRIVE

PITTSBURGH PA 152381330
(412) 963-7068
DEPT: SAMPLE/RECEIVING
REF: 6280-89708

RMA:

FedEx Express

FedEx
TRK# 0221 4818 7133 4955

FRI - 19 JUL 10:30A
PRIORITY OVERNIGHT

XH AGCA

15238
PA-US PIT

Uncorrected temp 4.5 °C
Thermometer ID TO
CF -0.3 Initials NO

PT-WI-SR-001 effective 11/8/18

#480875 07/18

RT 97 FZ 1 10:30 A 4944 07.19

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

(P 04/20)

ORIGIN ID:AGCA (206) 838-6587
ATTN: HANSVILLE LF ? JACKSON LUNDGR
ASPECT CONSULTING, LLC
350 MADISON AVE N

BAINBRIDGE ISLAND, WA 98110
UNITED STATES US

SHIP DATE: 11JUL19
ACTWGT: 45.00 LB MAN
CAD: 741733/CAFE3211

TO EUROFINS TESTAMERICA PITTSBURGH
EUROFINS TESTAMERICA PITTSBURGH
301 ALPHA DRIVE

PITTSBURGH PA 152381330
(412) 963-7058 REF: 8280-89708
DEPT: SAMPLE/RECEIVING

RMA:

FedEx Express

FedEx
TRK# 0221 4818 7133 4944

FRI - 19 JUL 10:30A
PRIORITY OVERNIGHT

XH AGCA

15238
PA-US PIT

Uncorrected temp 3.1 °C
Thermometer ID 110
CF -0.3 Initials NO

PT-WI-SR-001 effective 11/8/18

Part # 156297-435 RRDB2 EXP 04/20

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RIT2 EXP 04/20

ORIGIN ID:AGCA (206) 838-6587
ATTN: HANSVILLE LF ? JACKSON LUNDGR
ASPECT CONSULTING, LLC
350 MADISON AVE N

BAINBRIDGE ISLAND, WA 98110
UNITED STATES US

SHIP DATE: 11JUL19
ACTWGT: 45.00 LB MAN
CAD: 741733/CAFE3211

TO EUROFINS TESTAMERICA PITTSBURGH
EUROFINS TESTAMERICA PITTSBURGH
301 ALPHA DRIVE

PITTSBURGH PA 152381330
(412) 963-7058 REF: 8230-89708
DEPT: SAMPLE/RECEIVING

RMA:

FedEx Express

TRK# 0221 4818 7133 4933

FRI - 19 JUL 10:30A
PRIORITY OVERNIGHT

XH AGCA

15238
PA-

Uncorrected temp 5.4 °C
Thermometer ID TO
CF -0.3 Initials NO

PT-WI-SR-001 effective 11/8/18

Part # 156297-435 RRDB

#480875 07/18 567J2/A6F9/05A2

8/9/2019

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Sara, Betsy A	Carrier Tracking No(s):	COC No: 280-492093.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: betsy.sara@testamericainc.com	State of Origin: Washington	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Washington		Job #: 280-126472-1
Address: 10 Hazelwood Drive, ,	Due Date Requested: 7/31/2019			
City: Amherst	TAT Requested (days):			
State, Zip: NY, 14228-2298				
Phone: 716-691-2600(Tel) 716-691-7991(Fax)	PO #:			
Email:	WO #:			
Project Name: Hansville Landfill	Project #: 28006013			
Site: Hansville	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C_SIM/5030C (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-7-071719 (280-126472-1)	7/17/19	08:35 Pacific		Water			X	3	
MW-5-071719 (280-126472-2)	7/17/19	09:40 Pacific		Water			X	3	
MW-12I-071719 (280-126472-3)	7/17/19	10:55 Pacific		Water			X	3	
SW-1-071719 (280-126472-4)	7/17/19	11:00 Pacific		Water			X	3	
SW-4-071719 (280-126472-5)	7/17/19	11:40 Pacific		Water			X	3	
MW-13D-071719 (280-126472-6)	7/17/19	12:05 Pacific		Water			X	3	
SW-7-071719 (280-126472-7)	7/17/19	13:20 Pacific		Water			X	3	
MW-6-071719 (280-126472-8)	7/17/19	14:50 Pacific		Water			X	3	
MW-14-071719 (280-126472-9)	7/17/19	15:55 Pacific		Water			X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	7-22-19 1720		[signature]	7/24/19 0915	TAB.
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: #1 3.6°

Ver: 01/16/2019

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Sara, Betsy A	Carrier Tracking No(s):	COC No: 280-492093.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: betsy.sara@testamericainc.com	State of Origin: Washington	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Washington		Job #: 280-126472-1
Address: 10 Hazelwood Drive, ,	Due Date Requested: 7/31/2019			
City: Amherst	TAT Requested (days):			
State, Zip: NY, 14228-2298				
Phone: 716-691-2600(Tel) 716-691-7991(Fax)	PO #:			
Email:	WO #:			
Project Name: Hansville Landfill	Project #: 28006013			
Site: Hansville	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C_SIM/5030C (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-20DD-071719 (280-126472-10)	7/17/19	Pacific		Water			X	3	
VTRP- (280-126472-11)	7/17/19	Pacific		Water			X	4	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	7-22-19 1720		[signature]	7/24/19 0915	TAB
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: #1 3.6°

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Aspect Consulting

Job Number: 280-126472-1

Login Number: 126472
List Number: 1
Creator: Wourms, Hannah M

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: Aspect Consulting

Job Number: 280-126472-1

Login Number: 126472
List Number: 2
Creator: Hulbert, Michael J

List Source: Eurofins TestAmerica, Buffalo
List Creation: 07/24/19 03:37 PM

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.6 #1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	False	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Aspect CONSULTING

Sample number: MW-7-071719

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-7 — Page: 1 of 1

Project Name: Hansville Landfill
Date: 7/17/2019
Sampled by: DWU/JTL
Measuring Point of Well: TOC
Screened Interval (ft. TOC)
Filter Pack Interval (ft. TOC)

Project Number: 160423
Starting Water Level (ft TOC): 83.87'
Casing Stickup (ft):
Total Depth (ft TOC): N/A
Casing Diameter (inches): 2"

Casing Volume ________ (ft Water) x ________ (Lpfv)(gpf) = ________ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC): midscreen

PURGING MEASUREMENTS

Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
0806	0	0.2	83.85							Clear
0811			83.85	10.3	231.2	3.11	6.41	82.8	5.96	
0816			83.85	10.3	234.0	1.22	6.44	82.9	1.86	
0821			83.85	10.2	239.3	1.27	6.49	80.0	1.58	
0826			83.85	10.2	240.0	1.20	6.50	78.7	1.13	
0831			83.85	10.2	242.5	1.20	6.52	77.5	1.19	sample

Total Gallons Purged: 1.5
Total Casing Volumes Removed:
Ending Water Level (ft TOC): 83.88
Ending Total Depth (ft TOC): —

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance: Color	Appearance: Turbidity & Sediment	Remarks
0835	250	Amber	2	-	Sulf.	Clear	0.62	
↓	1000	Poly	1	-	-	↓	↓	
↓	500	Poly	1	-	-	↓	↓	
↓	40	VOA	3	-	HCl	↓	↓	
↓	1000	Poly	2	Yes	Nitric	↓	↓	
↓	250	Poly	1	Yes	-	↓	↓	

METHODS

Parameters measured with (instrument model & serial number): YSI Pro Plus, Hach Turbidimeter RED YSI, Y/W turb
Purging Equipment: (Dedicated Bladder) or Peristaltic
Decon Equipment: Alconox + Water
Disposal of Discharged Water: on site
Observations/Comments:

Aspect CONSULTING

Sample number: MW-5-071719

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-5 Page: 1 of 3

Project Name: Hansville WQ Monitoring Q3 2019
Project Number: 160423
Date: 7/17/2019
Sampled by: DWU / JTL
Measuring Point of Well: NTOC
Screened Interval (ft. TOC)
Filter Pack Interval (ft. TOC)
Starting Water Level (ft TOC): 99.06
Casing Stickup (ft):
Total Depth (ft TOC): /
Casing Diameter (inches): 2"

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf
Sample Intake Depth (ft TOC): mid screen

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
0913		0.2	99.05							
0918			99.06	11.0	162.1	11.63	6.96	99.5	0.80	
0923			99.05	10.9	163.2	8.43	7.25	98.6	~~0.80~~	0.69
0928			99.05	11.1	163.9	8.03	7.32	100.1	0.63	
0933			99.05	11.1	163.7	8.88	7.33	102.8	0.95	
0938			99.05	11.0	162.2	8.93	7.35	105.1	0.41	sample

Total Gallons Purged: 2
Total Casing Volumes Removed:
Ending Water Level (ft TOC): 99.07
Ending Total Depth (ft TOC): /

SAMPLE INVENTORY

Time	Volume (mL)	Bottle Type	Quantity	Filtration	Preservation	Appearance: Color	Appearance: Turbidity & Sediment	Remarks
0940	40	VOA	3	--	HCl	Clear	0.31	VOCs
	250	amber	2	--	H2SO4			TOC
	500	poly	2	--	--			Anions / Alkalinity
	500	poly	1	--	--			Nitrate/Nitrite (Sub to ARI)
	1000	poly	2	y	HNO3			Dissolved As (Sub to ARI), Dissolved Mn
	250	poly	1	y	--			O-Phos (Sub to ARI)

METHODS

Parameters measured with (instrument model & serial number) YSI - Red Turbidimeter - Yellow WLI - Orange/White
Purging Equipment: Peristaltic pump / Dedicated bladder pump Decon Equipment: Alconox + Water
Disposal of Discharged Water: Onsite
Observations/Comments:

Aspect CONSULTING

Sample number MW-12I-071719

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-12I Page: 1 of 1

Project Name: Hansville WQ Monitoring Q3 2019
Project Number: 160423
Date: 7/17/2019
Sampled by: DWU / JTL
Measuring Point of Well: NTOC
Screened Interval (ft. TOC)
Filter Pack Interval (ft. TOC)
Starting Water Level (ft TOC): 9.42
Casing Stickup (ft):
Total Depth (ft TOC):
Casing Diameter (inches): 2"

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf
Sample Intake Depth (ft TOC): unknown

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1029	0	0.2	9.43							Clear
1034			9.94	11.0	186.3	1.37	7.29	117.4	0.57	
1039			9.94	10.9	189.9	0.90	7.27	117.7	0.37	
1044			9.94	10.7	190.3	0.67	7.22	119.4	0.29	
1044			9.94	10.6	190.3	0.60	7.20	120.3	0.27	
1054			9.94	10.6	190.2	0.55	7.20	120.0	0.25	Sample

Total Gallons Purged: 1.5
Total Casing Volumes Removed:
Ending Water Level (ft TOC): 9.94
Ending Total Depth (ft TOC): /

SAMPLE INVENTORY

Time	Volume (mL)	Bottle Type	Quantity	Filtration	Preservation	Appearance: Color	Appearance: Turbidity & Sediment	Remarks
1055	40	VOA	3	--	HCl	Clear	0.28	VOCs
	250	amber	2	--	H2SO4			TOC
	500	poly	2	--	--			Anions / Alkalinity
	500	poly	1	--	--			Nitrate/Nitrite (Sub to ARI)
	1000	poly	2	y	HNO3			Dissolved As (Sub to ARI), Dissolved Mn
	250	poly	1	y	--			O-Phos (Sub to ARI)

METHODS

Parameters measured with (instrument model & serial number) YSI - red Turbidimeter - yellow WLI - blue/white
Purging Equipment: Peristaltic pump / Dedicated bladder pump Decon Equipment: Alconox + Water
Disposal of Discharged Water: Onsite
Observations/Comments:

Aspect CONSULTING

Sample number SW-1-071719

GROUNDWATER SAMPLING RECORD

WELL NUMBER: SW-1 Page:___ of ___

Project Name: Hansville Landfill
Project Number: 160423
Date: 7/17/2019
Sampled by: JTL
Measuring Point of Well: TOC
Screened Interval (ft. TOC)
Filter Pack Interval (ft. TOC)

Starting Water Level (ft TOC):
Casing Stickup (ft):
Total Depth (ft TOC):
Casing Diameter (inches):

Casing Volume ___ (ft Water) x ___ (Lpfv)(gpf) = ___ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC):

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1100	✓		✓	11.5	167.0	18.93	7.63	34.1	6.96	
↓										

Total Gallons Purged:
Total Casing Volumes Removed:
Ending Water Level (ft TOC):
Ending Total Depth (ft TOC):

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1100	250	Amber	2	-	Sulf.	CLEAR	LOW	
↓	1000	Poly	2 1	-	-			
	500	Poly	1	-	-			
	40	VOA	3	-	HCl			
	1000	Poly	2	Yes	Nitric			
	250	Poly	1	Yes	-			

METHODS

Parameters measured with (instrument model & serial number): YSI Pro Plus, Hach Turbidimeter
Purging Equipment: Dedicated Bladder or (Peristaltic) Decon Equipment: Alconox + Water
Disposal of Discharged Water: on site
Observations/Comments:

Aspect CONSULTING

Sample number SW-4-071719

GROUNDWATER SAMPLING RECORD

WELL NUMBER: SW-4 Page: ___ of ___

Project Name: Hansville Landfill
Project Number: 160423
Date: 7/17/2019
Sampled by: JTL
Measuring Point of Well: TOC
Screened Interval (ft. TOC)
Filter Pack Interval (ft. TOC)
Starting Water Level (ft TOC): —
Casing Stickup (ft):
Total Depth (ft TOC):
Casing Diameter (inches):

Casing Volume ___ (ft Water) x ___ (Lpfv)(gpf) = ___ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf
Sample Intake Depth (ft TOC):

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1140		—		12.8	354.2	16.60	7.97	112.9	7.55	

Total Gallons Purged:
Total Casing Volumes Removed:
Ending Water Level (ft TOC):
Ending Total Depth (ft TOC):

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1140	250	Amber	2	-	Sulf.	CLEAR	Low	
↓	1000	Poly	1	-	-	↓	↓	
	500	Poly	1	-	-			
	40	VOA	3	-	HCl			
	1000	Poly	2	Yes	Nitric			
↓	250	Poly	1	Yes	-	↓	↓	

METHODS

Parameters measured with (instrument model & serial number): YSI Pro Plus, Hach Turbidimeter
Purging Equipment: Dedicated Bladder or (Peristaltic) Decon Equipment: Alconox + Water
Disposal of Discharged Water: on site
Observations/Comments:

Aspect CONSULTING

Sample number MW-13D-071719

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-13D Page: 1 of 1

Project Name: Hansville WQ Monitoring Q3 2019
Project Number: 160423
Date: 7/17/2019
Sampled by: DWU / JTL
Measuring Point of Well: NTOC
Screened Interval (ft. TOC)
Filter Pack Interval (ft. TOC)
Starting Water Level (ft TOC): 11.00
Casing Stickup (ft):
Total Depth (ft TOC): ~
Casing Diameter (inches): 2"

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf
Sample Intake Depth (ft TOC): mid screen

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1137	0	0.2	11.15							Clear
1142			11.14	11.9	191.1	1.40	7.59	124.4	1.38	
1147			11.12	11.9	191.6	1.13	7.64	128.4	0.93	
1152			11.10	11.4	191.5	0.88	7.64	128.0	0.85	
1157			11.10	11.3	191.3	0.46	7.66	127.1	0.56	
1202			11.13	11.3	191.2	0.39	7.66	126.4	0.64	Sample

Total Gallons Purged: 21.5
Total Casing Volumes Removed:
Ending Water Level (ft TOC): 11.15
Ending Total Depth (ft TOC): ~

SAMPLE INVENTORY

Time	Volume (mL)	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1205	40	VOA	3	--	HCl	Clear	0.59	VOCs
↓	250	amber	2	--	H2SO4	↓	↓	TOC
↓	500	poly	2	--	--	↓	↓	Anions / Alkalinity
↓	500	poly	1	--	--	↓	↓	Nitrate/Nitrite (Sub to ARI)
↓	1000	poly	2	y	HNO3	↓	↓	Dissolved As (Sub to ARI), Dissolved Mn
↓	250	poly	1	y	--	↓	↓	O-Phos (Sub to ARI)

METHODS

Parameters measured with (instrument model & serial number) YSI - red Turbidimeter - yellow WLI - blue/white
Purging Equipment: Peristaltic pump / Dedicated bladder pump Decon Equipment: Alconox + Water
Disposal of Discharged Water: Onsite
Observations/Comments:

Aspect CONSULTING

Sample number SW-7-071714

GROUNDWATER SAMPLING RECORD

WELL NUMBER: SW-7 Page: 1 of 1

Project Name: Hansville WQ Monitoring Q3 2019
Project Number: 160423
Date: 7/17/2019
Sampled by: DWU / JTL
Measuring Point of Well:
Screened Interval (ft. TOC)
Filter Pack Interval (ft. TOC)
Starting Water Level (ft TOC):
Casing Stickup (ft):
Total Depth (ft TOC):
Casing Diameter (inches):

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf
Sample Intake Depth (ft TOC):

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
				14.2	197.2	7.37	7.14	171.3	8.46	

Total Gallons Purged: _____ Total Casing Volumes Removed: _____

Ending Water Level (ft TOC): _____ Ending Total Depth (ft TOC): _____

SAMPLE INVENTORY

Time	Volume (mL)	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1320	40	VOA	3	--	HCl	lt brn	8.46	VOCs
	250	amber	2	--	H2SO4			TOC
	500	poly	2	--	--			Anions / Alkalinity
	500	poly	1	--	--			Nitrate/Nitrite (Sub to ARI)
	1000	poly	2	y	HNO3			Dissolved As (Sub to ARI), Dissolved Mn
	250	poly	1	y	--			O-Phos (Sub to ARI)

METHODS

Parameters measured with (instrument model & serial number): YSI - red Turbidimeter - Hach WLI - N/A

Purging Equipment: Peristaltic pump / Dedicated bladder pump Decon Equipment: Alconox + Water

Disposal of Discharged Water: Onsite

Observations/Comments: _____

C:\Users\dunruh\Documents\Projects\2019\Hansville_160423\data\Groundwater Sampling Form - Hansville Q3 2019

Aspect CONSULTING

Sample number MW-6-071719

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-6 Page: 1 of 1

Project Name: Hansville WQ Monitoring Q3 2019
Project Number: 160423
Date: 7/17/2019
Sampled by: DWU / JTL
Measuring Point of Well: N TOC
Screened Interval (ft. TOC)
Filter Pack Interval (ft. TOC)
Starting Water Level (ft TOC): 73.40
Casing Stickup (ft):
Total Depth (ft TOC): /
Casing Diameter (inches): 2"

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf
Sample Intake Depth (ft TOC): mid screen

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1421	0	0.2	73.42							clear
1426			73.42	13.3	368.2	1.14	7.12	155.0	1.63	
1431			73.42	13.3	370.5	0.50	7.10	156.3	0.44	
1436			73.42	13.3	369.2	0.51	7.03	154.8	0.58	
1441			73.41	13.3	372.2	0.44	7.02	154.8	0.51	
1446			73.41	13.5	375.8	0.47	7.00	154.5	0.50	sample

Total Gallons Purged: 2.2
Total Casing Volumes Removed:
Ending Water Level (ft TOC): 73.42
Ending Total Depth (ft TOC): /

SAMPLE INVENTORY

Time	Volume (mL)	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1450	40	VOA	3	--	HCl	Clear	0.74	VOCs
↓	250	amber	2	--	H2SO4	↓	↓	TOC
↓	500	poly	2	--	--	↓	↓	Anions / Alkalinity
↓	500	poly	1	--	--	↓	↓	Nitrate/Nitrite (Sub to ARI)
↓	1000	poly	2	y	HNO3	↓	↓	Dissolved As (Sub to ARI), Dissolved Mn
↓	250	poly	1	y	--	↓	↓	O-Phos (Sub to ARI)

METHODS

Parameters measured with (instrument model & serial number) YSI - red Turbidimeter - yellow WLI - blue/white
Purging Equipment: Peristaltic pump / Dedicated bladder pump Decon Equipment: Alconox + Water
Disposal of Discharged Water: Onsite
Observations/Comments:

Aspect CONSULTING

Sample number MW-14-071719 / MW-200D - 071719

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-14 (D) Page: 1 of 1

Project Name: Hansville WQ Monitoring Q3 2019
Project Number: 160423
Date: 7/17/2019
Starting Water Level (ft TOC): 81.32
Sampled by: DWU / JTL
Casing Stickup (ft):
Measuring Point of Well:
Total Depth (ft TOC): -
Screened Interval (ft. TOC)
Casing Diameter (inches): 2"
Filter Pack Interval (ft. TOC)

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf
Sample Intake Depth (ft TOC): midscreen

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1524	0	0.2	81.32							Clear
1529			81.32	12.4	329.0	3.50	7.15	172.1	5.95	
1534			81.32	12.4	360.3	1.45	6.98	177.8	3.94	
1539			81.32	12.3	354.8	1.10	6.98	176.8	2.32	
1544			81.32	12.3	344.4	0.98	6.99	175.2	1.11	
1549			81.34	12.3	345.7	0.96	7.00	173.9	1.18	
1554			81.34	12.3	340.7	0.97	7.00	172.6	0.92	Sample

Total Gallons Purged: 1.5
Total Casing Volumes Removed:
Ending Water Level (ft TOC): 81.35
Ending Total Depth (ft TOC): -

SAMPLE INVENTORY

Time	Volume (mL)	Bottle Type	Quantity	Filtration	Preservation	Appearance: Color	Appearance: Turbidity & Sediment	Remarks
1555	40	VOA	6	--	HCl	Clear	0.82	VOCs
	250	amber	2 4	--	H2SO4			TOC
	~~500~~ 1000	poly	2 2	--	--			Anions / Alkalinity
	500	poly	1 2	--	--			Nitrate/Nitrite (Sub to ARI)
	1000	poly	2 4	y	HNO3			Dissolved As (Sub to ARI), Dissolved Mn
	250	poly	1 2	y	--			O-Phos (Sub to ARI)

METHODS

Parameters measured with (instrument model & serial number) YSI - red Turbidimeter - yellow WLI - blue/white
Purging Equipment: Peristaltic pump / Dedicated bladder pump Decon Equipment: Alconox + Water
Disposal of Discharged Water: Onsite

Observations/Comments: