2022 ANNUAL ENVIRONMENTAL MONITORING REPORT

Hansville Landfill, Kitsap County, Washington

Prepared for: Kitsap County Public Works - Solid Waste

Project No. 160423-05 • February 28, 2023 FINAL

Aspect CONSULTING

earth + water

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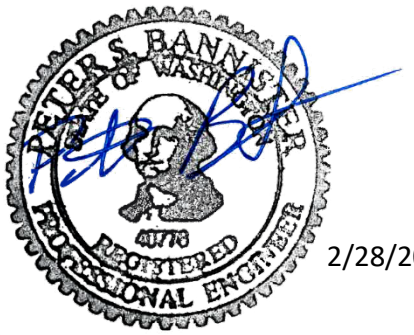

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Acronyms

Aspect	Aspect Consulting, LLC
bgs	below ground surface
CAP	Cleanup Action Plan
cfm	cubic feet per meter
CMP	Compliance Monitoring Plan
COCs	contaminants of concern
Ecology	Washington Department of Ecology
KCSL	Kitsap County Sanitary Landfill
KPHD	Kitsap Public Health District
mg/L	milligrams per liter
µg/L	micrograms per liter
MSW	municipal solid waste
MTCA	Model Toxics Control Act
NAVD88	North American Vertical Datum of 1988
PSCAA	Puget Sound Clean Air Agency
RASR	Remedial Action Status Report
RI/FS	Remedial Investigation/Feasibility Study
scfm	standard cubic feet per minute
Site	Hansville Landfill Site
SHA	Site Hazard Assessment
UCL / LCL	upper confidence limit / lower confidence limit
VOCs	volatile organic compounds
WAC	Washington Administrative Code
WMW	Waste Management of Washington

1 Introduction

This combined fourth quarter 2022 and 2022 annual monitoring report documents site activities conducted at and environmental monitoring results for the Hansville Landfill Site (Site; or the Landfill). This report was prepared by Aspect Consulting, LLC (Aspect) on behalf of Kitsap County (County) Public Works Solid Waste Division and Waste Management of Washington (WMW). Cleanup activities at the Site have been conducted under the Washington State Model Toxics Control Act (MTCA). Ongoing environmental monitoring at the Site supports the remedy of natural attenuation of groundwater with enhanced monitoring and institutional controls that were established with the final Cleanup Action Plan (CAP) provided with the Amended Consent Decree No. 95-2-03005-1 (August 5, 2011). The data sets presented in this report were collected in accordance with the Ecology-approved Compliance Monitoring Plan (CMP; SCS Engineers, 2011; SCS Engineers, 2012), except where otherwise noted.

During 2022, conditions monitored at the Site were consistent with historical trends and continued to show improvements in protection of human health and the environment. This report is organized to include topics listed in the CMP (SCS Engineers, 2011).

- Section 2 summarizes Site background, including general Site information, regulatory framework, surrounding land use, hydrogeologic conditions, the environmental monitoring network, and cleanup criteria.
- Section 3 describes Site activities during the fourth quarter 2022 and provides a summary of previous Site activities in 2022.
- Section 4 describes landfill gas collection activities and monitoring results during the fourth quarter 2022. The landfill gas collection system was safely operated to improve groundwater protection. Supporting figures and data tables are presented in Appendix A.
- Section 5 describes groundwater and surface water conditions observed during the fourth quarter 2022, including statistical analysis of trends in groundwater concentrations for 2022 and an assessment of natural attenuation processes. Supporting figures and data tables are presented in Appendix B, statistical analyses are included in Appendix C, and Appendix D presents laboratory reports and data review.
- Section 6 summarizes landfill inspection reports prepared by the Kitsap Public Health District. Copies of the inspection reports are included in Appendix E.
- Section 7 lists reference sources used in this report.

2 Site Background

Details on Site background were provided in the Remedial Investigation (RI) report (Parametrix, 2006), and the Feasibility Study (FS) report (Parametrix, 2009). This section summarizes Site background to provide context for ongoing Site activities and compliance monitoring.

2.1 Site Location and Description

The closed Hansville Landfill is located on an approximately 73-acre parcel within the northeast quarter of Section 9, Township 27 North, Range 2 East of the Willamette Meridian, in Kitsap County, Washington. The Landfill is approximately 5 miles south of the unincorporated community of Hansville on the northernmost reach of the Kitsap Peninsula, and is situated on the upper portions of several sloping drainages with perennial creeks that ultimately discharge into Port Gamble Bay. The topography ranges between approximately 310- and 390-feet elevation North American Vertical Datum of 1988 (NAVD88). A Site location map is provided on Figure B-1, showing property boundaries and other Site features.

The Site includes the Landfill, the Landfill property (Property), and a portion of land owned by the Port Gamble S'Klallam Tribe. The Landfill was active between 1962 and 1989, and consists of three separate disposal areas, or cells. These include the following:

1. A 13-acre municipal solid waste disposal cell (main municipal solid waste (MSW) cell) situated within the central portion of the Property.
2. A 4-acre demolition disposal cell situated on the northeast corner of the property, which accepted construction, demolition, and land-clearing wastes.
3. A 1/3-acre septage lagoon located immediately southwest of the demolition disposal area, which accepted residential septic tank waste until 1982. A second septage disposal area was reportedly located near the northeast corner of the demolition disposal area.

2.1.1 Engineering Controls

The engineering controls at the Landfill include engineered cover systems and an active landfill gas collection system. The engineered cover systems incorporate a geomembrane, vegetated surface, and integrated surface water control to prevent erosion. The layout of the landfill gas collection system is shown on Figure A-1, and includes:

- 13 vertical collection wells installed within the main MSW cell.
- Approximately 3,200 feet of horizontal collector trench installed below the engineered cover system at the main MSW cell and the demolition disposal cell with 8 monitoring and control points.
- Laterals and a perimeter header leading to the blower and flare compound.

The 10 perimeter collection wells originally installed outside the western edge of the main MSW cell were decommissioned in 2019 because they were subject to vacuum leaks and did not support landfill gas collection (Aspect, 2020).

2.1.2 Current Property Uses

The County owns the Property and has operated a transfer station east of the Landfill for solid waste transfer and/or recycling operations since 1989. The remaining portions of the Property are largely comprised of a former soil borrow area and wooded land. Prior to development of the landfill, the Property was undeveloped forested land.

2.2 Regulatory Framework

The Hansville Landfill is a former MSW landfill that stopped accepting waste and closed in 1989. The closure met requirements of Chapter 173-304 of the Washington Administrative Code (WAC), and included the following engineering controls:

- Installation of horizontal gas collector trenches in the main MSW cells and the demolition disposal cell to prevent landfill gas migration.
- Installation of an engineered cover system over all three distinct disposal areas to reduce or eliminate precipitation infiltration through refuse.

In 1991, the Bremerton-Kitsap County Health Department required corrective actions to better control landfill gas migration and prevent groundwater impacts. Kitsap County Sanitary Landfill[1] (KCSL) converted the landfill gas collection system from passive to active. KCSL also conducted additional investigations, continued environmental monitoring, and implemented additional improvements at the Site as part of a corrective action program. The active landfill gas collection and flare system has been in operation since 1991.

Also, in 1991, the Washington Department of Ecology (Ecology) performed a Site Hazard Assessment (SHA) under MTCA, which resulted in an initial ranking of 3. In 1992, this ranking was subsequently changed to a 1 (the highest rank on a scale of 1 to 5) based on changes in the state ranking model.

In October 1995, Ecology signed a consent decree with the County and KCSL to conduct a Remedial Investigation/Feasibility Study (RI/FS) for the Site. The RI/FS reports (Parametrix, 2006; Parametrix, 2009) identified contaminants of concern (COCs) related to the landfill in groundwater and in seepage to surface water. Based on these findings, Site-specific cleanup levels were developed for arsenic, vinyl chloride, and manganese in groundwater, and arsenic and vinyl chloride in surface water. The highest concentrations of these COCs were observed adjacent to the waste disposal areas, with decreasing concentrations at increasing distances to the landfill.

In preparing the 2011 Amended Consent Decree and CAP, Ecology selected the remedy involving natural attenuation of groundwater with enhanced monitoring and institutional controls (including a restrictive covenant for the Landfill Property). A CMP (SCS Engineers, 2011; SCS Engineers, 2012) provides monitoring program details, including

[1] By 1998, WMW assumed control of KCSL through a series of sales, mergers, and acquisitions.

the Sampling and Analysis Plan and the Quality Assurance Plan. Ongoing compliance monitoring under the CAP has been conducted since the fourth quarter of 2011.

During the summer of 2016, Ecology initiated the first 5-year review of the Hansville Landfill MTCA remedy as defined under the 2011 Amended Consent Decree. Consistent with Section XXVI of the Amended Consent Decree, a Remedial Action Status Report (RASR; SCS Engineers, 2016) was prepared and submitted to Ecology. In August 2016, Ecology prepared a draft memorandum that included an evaluation of the previous 5 years of groundwater data and comments to the RASR. Based on Ecology's review, the current monitoring program will continue to be implemented through the next 5-year MTCA review cycle. According to Ecology's website the next 5-year review was planned for 2022. To support Ecology's planned 5-year review, Aspect prepared a Remedial Action Status Report and submitted an Agency Review Draft on June 28, 2022 (Aspect, 2022a). At the time of this report an update from Ecology on the status of the planned 5-year review has not been received.

2.3 Surrounding Land Use

The Property is bordered to the south and west by lands owned by the Port Gamble S'Klallam Tribe. Tribal lands in the immediate vicinity of the Landfill Property consists of woodland and recreational land. The Point Casino and Hotel is located approximately 1,000 feet from the Landfill. The nearest Tribal residential land use is approximately 2,000 feet from the Landfill.

Surrounding areas to the north and east of the Property are zoned by the County as light industrial use, low-density residential, and rural woodland. The nearest off-property structures include a shop and office approximately 200 feet from the demolition disposal cell.

2.4 Hydrogeology

The regional near-surface geology in the vicinity of the Landfill is dominated by glacio-fluvial and glaciolacustrine deposits associated with the Vashon glaciation. The remedial investigation (Parametrix, 2006) identifies the following main stratigraphic units at the Site (from ground surface downward):

- **Sand** – This unit was reported in all the investigative borings from the ground surface to depths ranging from 62 to 142 feet below ground surface (bgs), and is also called the upper aquifer. All the monitoring wells are completed in the upper aquifer. The sand deposit consists primarily of poorly graded, fine- and medium-grained sand with trace amounts of silt and gravel. The material is dark yellowish brown to dark gray in color, dense to very dense, and dry to saturated. The RI references the sand unit as the upper aquifer. This unit has been interpreted as outwash associated with the Vashon Drift.
- **Transition Zone** – This zone was reported at three boring locations (MW-8, MW-9, and MW-14), occurs at the bottom of the upper aquifer, and is approximately 15 feet thick. It consists of interbedded layers of sand, silty sand, and silt, and does not appear to be extensive.

- **Silt** – This unit was reported in all borings advanced through the upper aquifer. It occurred at depths ranging from approximately 66 feet bgs (at MW-9) to 163 feet bgs (at MW-14). The silt is dark gray, silty to moderately plastic, very dense, and dry. This unit has been interpreted to be the Kitsap Formation.

Groundwater in the upper aquifer near the Landfill is approximately 50 feet below the bottom extent of refuse. Groundwater flows towards the west-southwest, and discharges into the headwaters of perennial creeks, including Creek A, Creek B, and Middle Creek (see Figure B-1). The dense silts reported for the Kitsap Formation underlying the upper aquifer restrict downward groundwater flow.

2.5 Environmental Monitoring Network

This section summarizes historical development of the Site performance and compliance monitoring network. The following are the conditional points of compliance for the Hansville Site described in the CAP:

- The Upper Aquifer at the Landfill Property boundary
- The Upper Aquifer downgradient of the Landfill Property boundary and upgradient of the creek headwaters on Tribal property
- Groundwater discharge to surface water at the headwaters of Creek A, Creek B, and Middle Creek on Tribal property

2.5.1 Subsurface Gas

The landfill gas collection system and gas probes have been monitored since 1990 to assess potential landfill gas migration from the Landfill, and landfill gas concentrations within the waste.

All (nine) subsurface gas probes were installed outside the waste in native soils to measure for potential landfill gas migration. In 1990, six subsurface gas probes (GP-1, GP-2S, GP-2I, GP-2D, GP-3, and GP-4) were installed at four on-Property locations to monitor the southern portion of the Landfill. In 1994 and 1996, gas probes GP-5 and GP-6 were installed to monitor the northern portion of the Landfill. In 1996, gas probe GP-7 was installed, to monitor the off-Property area west of the Landfill, adjacent to groundwater monitoring well MW-9.

Per the CAP, landfill gas performance monitoring includes quarterly field measurements at the nine subsurface gas probes and the landfill gas collection system (21 vertical well and horizontal trench monitoring locations, the blower inlet and outlet ports). Subsurface gas compliance monitoring locations are shown on Figures A-1 and B-1.

2.5.2 Groundwater

Groundwater monitoring was initiated at the Site in 1982 with the installation of three monitoring wells (MW-1 through MW-3). Three additional monitoring wells (MW-4 through MW-6) were added to the monitoring program in 1988. Beginning in 1996, 10 monitoring wells were installed as part of a phased RI (Parametrix, 2006):

- Phase I included wells MW-7 through MW-12

- Phase II included wells MW-8D, MW-12I, MW-13S, MW-13D, and MW-14

Based on the RI groundwater monitoring results, the CAP includes the following six points of compliance: MW-5, MW-6, MW-7, MW-12I, MW-13D, and MW-14. See Figure B-1 for the groundwater compliance monitoring locations.

2.5.3 Surface Water

Surface water monitoring commenced in 1991 at two locations on Middle Creek (SW-1 and SW-2). Two additional locations (SW-SB and SW-3) were added in 1992 and 1994, respectively. Seven new surface water sampling locations (SW-4, SW-5, SW-6, SW-7, SW-8, SW-9, SW-10) were established in 1996 during the RI (Parametrix, 2006). Based on the RI surface water monitoring results, the CAP includes the following four points of compliance: SW-1, SW-4, SW-6, and SW-7. See Figure B-1 for the surface water compliance monitoring locations.

2.5.4 Cleanup Criteria

The CAP established the final Site-specific cleanup levels for groundwater and surface water, summarized in the table below.

Table 1. Hansville Landfill Site Cleanup Levels

Chemical	Media	Site Cleanup Level (µg/L)	Origin of Cleanup Level
Vinyl Chloride	Groundwater	0.025	EPA Human Health, 2004
Arsenic		5	Background
Manganese		2,240	Method B Formula Value
Vinyl Chloride	Surface Water	0.025	EPA Human Health, 2004
Arsenic		5	Background

The performance standard for on-Property probes is to operate the landfill gas collection system to maintain methane concentrations below five percent by volume (see WAC 173-304-460).

3 Site Activities

2022 Site activities included environmental monitoring of landfill gas, groundwater, and surface water. A chronology of on-Site activities performed during the fourth quarter of 2022 is provided below.

- On October 19, 2022, Aspect completed performance and maintenance checks of the flare compound and condensate recovery systems.
- On October 19, 2022, Aspect also completed fourth quarter groundwater and surface water sampling in accordance with the CMP (SCS Engineers, 2011). Details of groundwater and surface water sampling are provided in Section 5.
- On November 18, 2022, Aspect completed performance and maintenance checks of the flare compound and condensate recovery systems.
- On December 30, 2022, Aspect conducted compliance landfill gas monitoring in accordance with the CMP (SCS Engineers, 2011). Details of landfill gas monitoring are provided in Section 4.

Previously during 2022, Site activities were documented in quarterly reports (Aspect 2022b, Aspect 2022c, and Aspect 2022d) and included the following:

- Monthly performance and maintenance checks of the flare compound and condensate recovery systems.
- Quarterly landfill gas compliance monitoring and wellfield tuning and maintenance.
- Quarterly groundwater and surface water performance and compliance monitoring.

3.1 Deviations from the Compliance Monitoring Plan

During the third and fourth quarter 2022 monitoring events, the dedicated pump at MW-5 was not producing water. A temporary bladder pump and tubing were used to collect the groundwater sample from MW-5 for both the third and fourth quarter 2022. Further assessment and correction of the issue with the dedicated pump at MW-5 is ongoing. The dedicated sampling pump will be put back into service in the first quarter of 2023.

4 Landfill Gas Conditions

The following sections provide a discussion of landfill gas monitoring, landfill gas collection system performance, and explosive gas control. The layout of the landfill gas collection system is shown on Figure A-1 (Appendix A).

Since active landfill gas collection started in 1991, the system has historically been operated to control landfill gas migration and to protect groundwater. Little to no methane has been observed at gas compliance probes since 1992. In 1995, the maximum methane concentration was 38 percent, and the balance gas concentration was 44 percent, indicating that approximately half of the gas collected was from the atmosphere. Until approximately January 2013, landfill gas collection rates decreased steadily due to low methane concentrations and difficulty in sustaining flare operation.

Since 2013, the landfill gas collection rate has been maintained at approximately 70 standard cubic feet per minute (scfm) to improve groundwater protection. Since 2013, the average methane concentration has been about 4 percent, and the average carbon dioxide concentration has been about 12 percent.

4.1 Landfill Gas Monitoring

During the fourth quarter of 2022, monitoring at the landfill gas collection system flare compound was performed on October 19 and November 18, and compliance monitoring of the landfill gas collection system and compliance probes was performed on December 30.

Landfill gas concentrations were measured with a calibrated GEM-5000 multi-gas meter. Landfill gas monitoring parameters collected for the compliance monitoring event are included in Appendix A, Tables A-1 through A-4, and summarized 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 or purging, reported as “initial” and “adjusted,” respectively. No valve adjustments were made during the December 30 compliance monitoring round.
- 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.”

4.2 Landfill Gas System Performance

During the fourth quarter of 2022, the flow at the blower inlet was approximately 72.5 scfm. Methane and carbon dioxide concentrations at the blower inlet were 4.2 and 15.3 percent by volume, respectively. The oxygen concentration was 3.2 percent by volume. The explosive range for methane in air is approximately 5 to 15 percent by volume, whereas the minimum methane concentration to sustain a flame is approximately 20

percent. Landfill gas measured at the blower inlet has contained less than 20 percent methane since 2012.

During the fourth quarter of 2022, methane concentrations measured at individual collection locations ranged between 0.0 and 10.4 percent by volume. These methane concentrations are somewhat lower than what was observed during the third quarter 2022 but within expected ranges. The landfill gas concentrations across the wellfield have remained relatively stable since mid-2017. Wellfield optimization will continue to focus on maximizing methane and carbon dioxide collection rates.

The 2,000-gallon condensate system storage tank held 780 gallons on December 30, 2022. The condensate system storage tank and western sump were emptied in October 2022. The County will be notified when the condensate storage tank or the western sump approach three-fourths full for pump out and off-site disposal.

4.3 Explosive Gas Control

Methane was not detected at any of the landfill gas compliance monitoring probe locations during the fourth quarter of 2022. Routine compliance monitoring continues to show that the Site remains in compliance with explosive gas control per WAC 173-304-460. Carbon dioxide concentrations in the compliance monitoring probes ranged from 0.1 to 4.2 percent by volume, and oxygen concentrations ranged from 16.0 to 21.8 percent by volume.

5 Groundwater and Surface Water Conditions

This section addresses groundwater and surface water conditions based on the monitoring event on October 19, 2022. Samples were collected from six groundwater monitoring wells and from four surface water monitoring locations (see Figure B-1) for laboratory analysis.

5.1 Groundwater and Surface Water Monitoring

During the fourth quarter of 2022, Aspect monitored and sampled groundwater and surface water on October 19, 2022.

Field parameter measurements were made with a calibrated YSI multiparameter probe, and a calibrated Hach turbidimeter. Samples for laboratory analysis were collected in laboratory supplied bottles and delivered on ice using standard chain-of-custody methods. Field parameters and laboratory results for all sampling events in 2022 are organized in Tables B-2 and B-3 (Appendix B), and listed below:

- Field parameters included dissolved oxygen, pH, oxidation reduction potential, specific conductivity, temperature, and turbidity.
- Conventional parameters included alkalinity, ammonia (as N), bicarbonate, carbonate, chloride, nitrate (as N), nitrite (as N), orthophosphate (as P), sulfate, and total organic carbon.
- Dissolved metals included arsenic and manganese.
- Detected volatile organic compounds (VOCs) included total 1,2-dichloroethene, cis-1,2-dichloroethene, and vinyl chloride.

5.2 Groundwater Elevations and Flow

Depth to groundwater measurements and calculated water table elevations for the fourth quarter of 2022 are presented in Table B-1, and a potentiometric surface map is provided on Figure B-1. Groundwater elevations ranged from 237.8 feet NAVD88 in MW-12I to 265.4 feet NAVD88 in MW-5. Groundwater at the Site flowed generally towards the west-southwest. Groundwater gradients ranged from 0.007 feet/feet in the upgradient areas, to 0.013 feet/feet further downgradient, with the gradient steepening and becoming more southwest oriented as it approaches the groundwater discharge area (Figure B-1). Groundwater elevation and gradient conditions were consistent with those observed during previous monitoring events.

5.3 Water Quality Results

Groundwater quality results from the fourth quarter of 2022 are presented in Table B-2, including field parameters, conventional parameters, dissolved metals, and VOCs. During the fourth quarter 2022 monitoring event, field parameters were within the range of observed values during previous monitoring events. Analytical results for groundwater COCs are summarized below (see Appendix B for water quality results tables and figures).

- The dissolved arsenic concentrations in monitoring well MW-14 were 0.0134 milligrams per liter (mg/L) and exceeded the 0.005 mg/L cleanup level. Dissolved arsenic was detected at concentrations below the cleanup level at the other groundwater points of compliance. See Section 5.5 for statistical evaluation of the arsenic concentrations.
- Dissolved manganese concentrations were less than the 2.24 mg/L cleanup level at all groundwater points of compliance.
- The vinyl chloride concentrations at monitoring wells MW-6, MW-12I, and MW-14 were 0.049 micrograms per liter (µg/L), 0.100 µg/L, and 0.034 µg/L, respectively, and exceeded the 0.025 µg/L cleanup level. Vinyl chloride was not detected at a reporting limit of 0.020 µg/L at other groundwater points of compliance. See Section 5.5 for statistical evaluation of the vinyl chloride concentrations.

Surface water quality results from the fourth quarter of 2022 are presented in Table B-3, including field parameters, conventional parameters, dissolved metals, and VOCs. Field parameters and analyte concentrations observed during the fourth quarter 2022 monitoring event were within the range of observed values during other monitoring events in 2022. During the fourth quarter of 2022, all analytical results for surface water COCs were either not detected at their respective reporting limits or were detected at concentrations below the site cleanup levels.

- Dissolved arsenic was detected at concentrations below the site cleanup level of 0.005 mg/L at all locations.
- Dissolved manganese was detected at concentrations below the site cleanup level of 2.24 mg/L at SW-4, SW-6, and SW-7, and was not detected at SW-1.
- Vinyl chloride has not been detected in surface water samples since the third quarter of 2013, and reporting limits have been less than the cleanup level of 0.025 µg/L.

5.4 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 landfill gas coming into contact with groundwater directly beneath the landfill. Optimizing landfill gas collection may reduce these impacts.

5.5 Statistical Evaluation

The groundwater quality data were evaluated following the description provided in the CAP (Appendix D). Time-series graphs show arsenic and vinyl chloride concentrations since 2007. Trend analysis and projected average concentrations are based on data collected since 2007, following Ecology guidance from the first 5-year review. See Appendix C for time-series graphs for groundwater quality.

5.5.1 Time-Series Graphs

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. Concentrations are decreasing or stable in all cases except dissolved arsenic concentrations observed at MW-13D, which have gradually increased to slightly above or at cleanup levels.

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. A slow and steady increase in dissolved arsenic concentrations has been observed at MW-13D, where concentrations historically hovered below the cleanup level and exceeded the cleanup level for the first time in the second quarter 2020 (Figure C-1). Dissolved arsenic concentrations at MW-14 were above site cleanup levels, but have been decreasing since 2007.

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. Vinyl chloride concentrations at MW-6, MW-12I, and MW-14 continued to trend downward over the long-term. During 2022, the vinyl chloride concentration at MW-12I showed both a decreasing long-term trend and seasonality with relatively higher concentrations during the third and fourth quarter compared to the other quarters. A similar seasonality has been observed, where maximum annual concentrations were recorded in the dry season of 2020, 2019, 2018, 2015, 2013, 2012, for example.

5.5.2 Statistical Trend Analysis

Based on the results of statistical analysis provided in Table C-1, the dissolved arsenic concentrations in groundwater at MW-14, and vinyl chloride concentrations in groundwater at MW-6, MW-12I, and MW-14, have statistically significant downward trends. These results show continued progress toward achieving cleanup levels.

A statistically significant increasing trend in dissolved arsenic concentrations was observed at monitoring well MW-13D. Dissolved arsenic concentrations exceeded the Site-specific cleanup levels during the first two quarters of 2022 but leveled out at the cleanup levels in quarters three and four. Throughout the year arsenic concentrations remained below the regional natural background value reported by Ecology (Ecology, 2016; Ecology, 2022) as shown on Figure C-3. Statistical trend analysis for dissolved arsenic concentrations in MW-13D has been conducted since 2019 (Aspect, 2020). As previously noted, arsenic concentrations since 2007 likely reflect natural variations or off-Site influences, as opposed to effects from the Hansville Landfill Site. This conclusion is based on an engineering analysis that identified a lack of other landfill indicators (like vinyl chloride, specific conductance, manganese, etc.) and the substantial

lag between landfill activities and arsenic concentration increases. Dissolved arsenic concentrations in MW-13D and other locations continue to be monitored and evaluated.

Statistical analysis of groundwater data was performed in accordance with the CMP (SCS Engineers, 2011). 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.

Table C-1 provides results of statistical trend analysis, including the Mann-Kendall Test and Sen's Slope analysis. In all cases, the trends are 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). In cases where the Sen's Slope is negative, it indicates a decreasing trend, and where the Sen's Slope is positive it indicates an increasing trend.

5.5.3 Trend Projections

To qualitatively evaluate the convergence of downward trending groundwater exceedances with cleanup levels, exponential attenuation curves are shown on Figure C-3. These curves are projected out 10 years, through the end of 2031. Based on these long-term projections, the findings include the following:

- Within 10 years, the average vinyl chloride concentrations will meet the cleanup levels in MW-6, MW-12I, and MW-14.
- In more than 10 years, the average dissolved arsenic in MW-14 will meet the cleanup levels.

Optimizing the landfill gas collection system may reduce the time to meet cleanup levels. This is consistent with elements of the contaminant fate and transport model presented in the RI/FS (Parametrix, 2006; Parametrix, 2009). Increasing landfill gas collection reduces the potential for landfill gas (containing carbon dioxide, methane, and VOCs) to come in contact with groundwater, which results in low dissolved oxygen.

- For vinyl chloride, this means reducing the mass transfer from vapor-phase to groundwater, and increasing the natural attenuation rates.
- For dissolved metals, this means maintaining a higher pH in groundwater, and preventing mobilization of naturally occurring arsenic and manganese.

A linear trend was calculated for increasing dissolved arsenic concentrations at MW-13D, as shown on Figure C-3. This projected trend biases future concentrations high because it does not account for the historical oscillation in concentrations. For reference, the graph for MW-13D on Figure C-3 shows the average natural background concentration for the Puget Sound basin, based on Ecology's publication *Natural Background Groundwater Arsenic Concentrations in Washington State* (Ecology, 2016). The mean dissolved

arsenic concentration at MW-13D exceeded the cleanup level during 2022 but is not expected to exceed the natural background concentration in the next 10 years.

5.5.4 Calculation of Statistical Limits

Statistical limit concentrations were evaluated to assess the approach toward cleanup levels consistent with the CAP. Table C-2 shows the calculated annual statistics—including the mean[2], 95 percent upper confidence limit (UCL), and 95 percent lower confidence limit (LCL)—for sampling results from 2007 through 2022.

Except for dissolved arsenic at MW-13D, the mean and UCL concentrations have trended downward over time. For dissolved arsenic at MW-14, the UCL has lagged the mean trend by at least 5 years. For vinyl chloride at MW-6, MW-12I, and MW-14, the UCL has lagged the mean trend by 1 to 2 years. This lag will need to be considered when determining compliance with groundwater and surface water cleanup levels under MTCA (per WAC 173-340-720(9) and 173-340-730(7), respectively).

Statistical limit concentrations for dissolved arsenic at MW-13D were added to Table C-2 to account for the observed increasing trend. This analysis was first included in the annual 2020 report. The LCL concentrations at MW-13D equaled (but did not exceed) the dissolved arsenic cleanup level in 2019, 2020, and 2022, while the UCL slightly exceeded the cleanup level in 2020 and 2022. We recommend taking the steps necessary for establishing background dissolved arsenic concentrations at this Site.

[2] The mean statistic was based on the least-squares regression method for log-transformed data, as shown by the curved trend lines in Figure C-3.

6 Annual Inspections

During 2022, the Kitsap Public Health District (KPHD) inspected the Landfill once each quarter. The inspection dates and comments included the following:

- March 10, 2022: Compliant; minor pooling of water observed in the drainage ditch to the north of the Landfill, some overgrowth of vegetation observed. Dredging of ditches is planned for summer.
- June 10, 2022: Compliant; no recommendations.
- August 4, 2022: Compliant; cap needs to be mowed.
- November 8, 2022: Compliant; cap was mowed and is in "excellent condition." Plans to address additional drainage and small fixes to the Landfill gas collection pipes are being constructed.

A copy of each inspection form and summary letter is included in Appendix E.

7 References

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Washington State Department of Ecology (Ecology), 2016, Natural Background Groundwater Arsenic Concentrations in Washington State, Ecology Publication No. 14-09-044, March 2016.

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8 Limitations

Work for this project was performed for the Kitsap County Public Works Division (Client), and this report 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 report does not represent a legal opinion. No other warranty, expressed or implied, is made.

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APPENDIX A

Landfill Gas Data

Table A-1. Landfill Gas Data, First Quarter, 2022

Project No. 160423, Hansville Landfill, Hansville, Washington

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	3/4/2022 6:13	5.9	15.2	2.4	76.5	-5.31	-5.31	45	45.6	79.8	78.4
Blower Outlet	HANSBLOT	3/4/2022 6:16	5.9	15.2	2.4	76.5	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 001	HANSR001	3/4/2022 6:56	8.2	14.5	0	77.3	-0.6	-0.6	46.4	46.4	0.4	0.4
Extraction Well 002	HANSR002	3/4/2022 6:48	3.1	15.4	3.8	77.7	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 003	HANSR003	3/4/2022 7:58	11.1	15	0	73.9	-1.19	-1.19	51.5	51.5	3.4	3.3
Extraction Well 004	HANSR004	3/4/2022 7:45	4.5	18.1	0.5	76.9	-1.69	-1.69	59.2	59.2	2.8	2.5
Extraction Well 005	HANSR005	3/4/2022 7:41	6.3	19.5	0.4	73.8	-1.1	-1.1	62.4	62.5	2.8	2.8
Extraction Well 006	HANSR006	3/4/2022 7:32	4.1	12.6	7.7	75.6	-1.61	-1.61	74	74	3.2	3.3
Extraction Well 007	HANSR007	3/4/2022 7:19	0.2	16.2	1.9	81.7	-1.29	-1.29	58.2	58.3	2.6	2.6
Extraction Well 008	HANSR008	3/4/2022 7:14	7.6	18.7	0	73.7	-0.83	-0.83	49.8	49.8	1.2	1.3
Extraction Well 009	HANSR009	3/4/2022 7:06	2.2	14.4	3.6	79.8	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 010	HANSR010	3/4/2022 7:01	8.5	11.2	3.8	76.5	-0.79	-0.79	48.3	48.3	0.7	0.6
Extraction Well 011	HANSR011	3/4/2022 6:44	5.2	9.2	0	85.6	-0.67	-0.67	46.3	46.3	0.3	0.3
Extraction Well 012	HANSR012	3/4/2022 6:29	15.6	4.7	0	79.7	-1.15	-1.15	46.2	46.2	1	1
Extraction Well 013	HANSR013	3/4/2022 7:23	5.6	14.5	1.7	78.2	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TD-1	HANSTD01	3/4/2022 8:06	2.1	20.6	0	77.3	-0.05	-0.05	53.4	53.4	13.8	13.7
Trench Collector TR-1	HANSTR01	3/4/2022 7:36	0.4	13.8	4.8	81	-0.93	-0.93	55	55	2.4	2.7
Trench Collector TR-2	HANSTR02	3/4/2022 7:10	12.7	16.7	0	70.6	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-3	HANSTR03	3/4/2022 6:52	11.5	16.7	0	71.8	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-4	HANSTR04	3/4/2022 7:49	1.2	18	0.5	80.3	-0.89	-0.89	52.7	52.8	2.8	2.4
Trench Collector TR-5	HANSTR05	3/4/2022 6:39	6.2	16.8	1.6	75.4	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-6	HANSTR06	3/4/2022 6:34	13.9	16.5	0.7	68.9	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-7	HANSTR07	3/4/2022 7:53	13.8	15.8	0.8	69.6	-0.93	-0.93	48.6	48.6	2.7	2.9
Gas Probe 1	HANSGP01	3/4/2022 13:15	0	1	19.7	79.3	0.05	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Shallow	HANSGP2S	3/4/2022 12:30	0	0.3	20.6	79.3	0.02	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Middle	HANSGP2M	3/4/2022 12:40	0	1.2	19	79.1	0.02	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Deep	HANSGP2D	3/4/2022 12:50	0	1.5	17.8	79.8	0.08	N/A	N/A	N/A	N/A	N/A
Gas Probe 3	HANSGP03	3/4/2022 11:45	0	1.2	20.1	80.7	-0.01	N/A	N/A	N/A	N/A	N/A
Gas Probe 4	HANSGP04	3/4/2022 12:00	0	1.9	19.7	78.7	0	N/A	N/A	N/A	N/A	N/A
Gas Probe 5	HANSGP05	3/4/2022 11:30	0	0.1	20.9	78.4	0.01	N/A	N/A	N/A	N/A	N/A
Gas Probe 6	HANSGP06	3/4/2022 11:10	0	4.4	15.3	79	0	N/A	N/A	N/A	N/A	N/A
Gas Probe 7	HANSGP07	3/4/2022 12:15	0	3	18.8	80.3	0.05	N/A	N/A	N/A	N/A	N/A

Notes

Flow rates measured using orifice plates (where installed).

N/A = indicates parameter not measured.

inches H2O = inches water column

degrees F = degrees Fahrenheit

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

Table A-2. Landfill Gas Data, Second Quarter, 2022

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	6/16/22 15:20	3.6	15.8	2	78.6	-5.28	-5.28	72.3	72.4	73.6	72.5
Blower Outlet	HANSBLOT	6/16/22 15:24	3.6	15.8	2	78.6	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 001	HANSR001	6/16/22 14:02	5.5	15.2	0	79.3	-0.47	-0.47	72.9	73.2	0.4	0.4
Extraction Well 002	HANSR002	6/16/22 14:11	2	15.6	3.9	78.5	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 003	HANSR003	6/16/22 14:20	6.5	15.2	0	78.3	-1.39	-1.39	71	71.1	3.4	2.5
Extraction Well 004	HANSR004	6/16/22 14:32	3.2	18.4	0.5	77.9	-0.02	-0.02	74	73.9	1.8	2
Extraction Well 005	HANSR005	6/16/22 14:37	4.6	20	0.2	75.2	0.43	0.43	74.4	74.5	1	1.8
Extraction Well 006	HANSR006	6/16/22 14:46	2.7	13.5	6.7	77.1	0.24	0.24	83.9	84	2.4	2.3
Extraction Well 007	HANSR007	6/16/22 13:39	0	13.2	6	80.8	-1.05	-1.05	70.6	70.7	2.7	2.7
Extraction Well 008	HANSR008	6/16/22 13:44	4.8	20	0	75.2	-1.3	-1.3	69.9	70.3	0	0
Extraction Well 009	HANSR009	6/16/22 13:53	1.7	15.9	2.5	79.9	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 010	HANSR010	6/16/22 13:57	5.5	11.5	3.7	79.3	-0.78	-0.78	72.2	72.2	0.8	0.9
Extraction Well 011	HANSR011	6/16/22 14:16	3.1	9.9	0	87	-0.64	-0.64	74.7	75.2	0.4	0.3
Extraction Well 012	HANSR012	6/16/22 15:00	8.6	5.3	0	86.1	0.57	0.57	71.3	71.3	0	0
Extraction Well 013	HANSR013	6/16/22 13:34	3.4	15.7	1.3	79.6	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TD-1	HANSTD01	6/16/22 15:10	1.3	21.8	0	76.9	-2.29	-2.29	84.2	84.3	0	0
Trench Collector TR-1	HANSTR01	6/16/22 14:41	0	13.2	5.4	81.4	0.71	0.71	81.3	81.7	0	0
Trench Collector TR-2	HANSTR02	6/16/22 13:50	6.6	18.5	0	74.9	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-3	HANSTR03	6/16/22 14:06	6.9	18.9	0	74.2	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-4	HANSTR04	6/16/22 14:28	1.7	20.5	0	77.8	-0.78	-0.78	72.8	72.9	3	2.6
Trench Collector TR-5	HANSTR05	6/16/22 14:51	2.9	17.5	1.8	77.8	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-6	HANSTR06	6/16/22 14:56	7.3	17.6	0.7	74.4	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-7	HANSTR07	6/16/22 14:24	6.7	17.2	0.8	75.3	-0.84	-0.84	76.4	76.4	2.7	2.4
Gas Probe 1	HANSGP01	6/16/22 11:55	0	1.3	19.1	79.6	-0.04	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Shallow	HANSGP2S	6/16/22 9:34	0	0.6	20.2	79.6	0.05	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Middle	HANSGP2M	6/16/22 9:44	0	1.2	19.1	79.2	-0.04	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Deep	HANSGP2D	6/16/22 9:50	0	1.4	18	79.7	0.47	N/A	N/A	N/A	N/A	N/A
Gas Probe 3	HANSGP03	6/16/22 10:09	0	1.1	20.4	80.6	-0.03	N/A	N/A	N/A	N/A	N/A
Gas Probe 4	HANSGP04	6/16/22 13:02	0	1.8	19.3	78.5	0.01	N/A	N/A	N/A	N/A	N/A
Gas Probe 5	HANSGP05	6/16/22 11:03	0	0.1	21.2	78.9	-0.01	N/A	N/A	N/A	N/A	N/A
Gas Probe 6	HANSGP06	6/16/22 11:18	0	4.6	14.9	78.7	0.00	N/A	N/A	N/A	N/A	N/A
Gas Probe 7	HANSGP07	6/16/22 12:38	0	3.2	18.1	80.5	0.00	N/A	N/A	N/A	N/A	N/A

Notes

Flow rates measured using orifice plates (where installed).

N/A = indicates parameter not measured.

inches H2O = inches water column

degrees F = degrees Fahrenheit

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

Table A-3. Landfill Gas Data, Third Quarter, 2022

Project No. 160423, Hansville Landfill, Hansville, WA

Location	Device ID	Date/Time	Methane CH_4 (% by vol)	Carbon Dioxide CO_2 (% by vol)	Oxygen O_2 (% by vol)	Hydrogen Sulfide H_2S (% by vol)	Balance Bal (% by vol)	Static Pressure (inches H_2O)		Gas Temperature (degrees F)		Flow Rate (SCFM)	
								Initial	Adjusted	Initial	Adjusted	Initial	Adjusted
Blower Inlet	HANSBLIN	9/15/22 15:15	3.5	15.6	2.2	1	78.7	-4.97	-5.35	69.1	69.2	72.6	94.5
Blower Outlet	HANSBLOT	9/15/22 15:19	4	16.1	1.8	5	78.1	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 001	HANSR001	9/16/22 10:41	6.5	14.9	0	3	78.6	-0.5	-0.5	67.9	68.6	0.3	0.3
Extraction Well 002	HANSR002	9/16/22 10:54	2	14.8	4	1	79.2	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 003	HANSR003	9/16/22 12:40	6.1	15	0	0	78.9	-1.33	-1.33	66.6	67.5	3.3	3.1
Extraction Well 004	HANSR004	9/16/22 11:55	3	17.4	0.6	0	79	-1.53	-1.52	66.1	69.1	2.2	2.7
Extraction Well 005	HANSR005	9/16/22 12:09	4.4	18.9	0.2	0	76.5	-1.04	-1.03	68.8	73.2	3	2.8
Extraction Well 006	HANSR006	9/16/22 12:23	2.6	12.6	8	0	76.8	-1.59	-1.59	88	87.1	2.9	3.3
Extraction Well 007	HANSR007	9/16/22 12:30	0.2	13.8	4.4	0	81.6	-1.19	-1.17	67.5	68.6	2.6	2.7
Extraction Well 008	HANSR008	9/15/22 15:35	4.6	18.6	0	3	76.8	-0.73	-0.74	68.1	68.1	1.4	1.7
Extraction Well 009	HANSR009	9/15/22 15:52	1.4	14.3	3.1	0	81.2	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 010	HANSR010	9/16/22 10:32	5.5	11.2	3.8	3	79.5	-0.73	-0.73	76.6	76.8	0.9	0.7
Extraction Well 011	HANSR011	9/16/22 11:08	3	9.5	0	0	87.5	-0.59	-0.59	67	67	0.3	0.3
Extraction Well 012	HANSR012	9/16/22 11:17	8.6	5.4	0	0	86	-1	-1	66.6	66.8	1.9	0.9
Extraction Well 013	HANSR013	9/16/22 12:34	3.8	14.9	1.3	0	80	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TD-1	HANSTD01	9/15/22 14:49	1.8	21.7	0	43	76.5	-0.1	-0.11	0	0	15	15
Trench Collector TR-1	HANSTR01	9/16/22 12:17	0.2	15.7	3.3	0	80.8	-0.85	-0.86	67.1	70.4	2.8	2.8
Trench Collector TR-2	HANSTR02	9/15/22 15:47	7.1	18.7	0	0	74.2	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-3	HANSTR03	9/16/22 10:47	8.1	19.7	0	1	72.2	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-4	HANSTR04	9/16/22 11:49	3	17.5	0.5	0	79	-1.53	-1.53	71	72	2.7	2.4
Trench Collector TR-5	HANSTR05	9/16/22 11:28	4.4	18.8	0.7	0	76.1	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-6	HANSTR06	9/16/22 11:22	8.4	18.6	0.3	0	72.7	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-7	HANSTR07	9/16/22 11:42	7.1	17.3	0.7	0	74.9	-0.87	-0.88	65.2	65.7	2.1	2.9
Gas Probe 1	HANSGP01	9/15/22 10:45	0	0.5	20.8	1	78.2	0.01	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Shallow	HANSGP2S	9/15/22 10:05	0	0.1	21.1	1	78.2	0.03	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Middle	HANSGP2M	9/15/22 9:45	0	0.9	19.5	1	77.9	-0.02	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Deep	HANSGP2D	9/15/22 9:53	0	1	18.7	1	79.5	0	N/A	N/A	N/A	N/A	N/A
Gas Probe 3	HANSGP03	9/15/22 11:05	0	0.8	20.5	1	80.3	0.04	N/A	N/A	N/A	N/A	N/A
Gas Probe 4	HANSGP04	9/15/22 12:08	0	1	20.1	0	78.5	0.01	N/A	N/A	N/A	N/A	N/A
Gas Probe 5	HANSGP05	9/15/22 13:41	0	0.1	21	0	79.9	0.03	N/A	N/A	N/A	N/A	N/A
Gas Probe 6	HANSGP06	9/15/22 14:04	0	2	19.2	1	79	0.01	N/A	N/A	N/A	N/A	N/A
Gas Probe 7	HANSGP07	9/16/22 9:50	0	3.4	18.3	1	79.8	0	N/A	N/A	N/A	N/A	N/A

Notes:

Flow rates measured using orifice plates

N/A = indicates parameter not measured

inches H_2O = 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

Table A-1. Landfill Gas Data, Fourth Quarter, 2022

Project No. 160423, Hansville Landfill, Hansville, WA

Location	Device ID	Date	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[a] (SCFM)	
							Initial	Adjusted	Initial	Adjusted[2]	Initial	Adjusted
Blower Inlet	HANSBLIN	12/30/2022	4.20	15.30	3.20	77.30	-4.73	-4.73	45.00	48.10	76.2	72.5
Blower Outlet	HANSBLOT	12/30/2022	4.40	15.30	3.00	77.30	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 001	HANSR001	12/30/2022	6.40	15.10	0.10	78.40	-0.91	-0.91	50.00	50.00	0.30	0.30
Extraction Well 002	HANSR002	12/30/2022	2.40	15.30	4.20	78.10	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 003	HANSR003	12/30/2022	7.70	15.80	0.00	76.50	-1.34	-1.34	52.90	52.90	3.90	3.60
Extraction Well 004	HANSR004	12/30/2022	3.60	18.10	0.70	77.60	-1.90	-1.90	59.50	59.60	2.40	2.80
Extraction Well 005	HANSR005	12/30/2022	4.70	19.80	0.50	75.00	-1.34	-1.34	63.00	63.40	3.00	3.20
Extraction Well 006	HANSR006	12/30/2022	3.30	13.60	7.40	75.70	-1.81	-1.81	74.40	74.20	3.20	3.30
Extraction Well 007	HANSR007	12/30/2022	0.00	17.30	0.90	81.80	-1.72	-1.72	59.60	59.60	2.50	2.60
Extraction Well 008	HANSR008	12/30/2022	6.10	19.20	0.00	74.70	-1.17	-1.17	53.30	53.30	1.50	1.40
Extraction Well 009	HANSR009	12/30/2022	1.80	14.70	3.30	80.20	N/A	N/A	N/A	N/A	N/A	N/A
Extraction Well 010	HANSR010	12/30/2022	6.50	11.50	3.50	78.50	-1.16	-1.16	52.80	52.80	0.80	0.70
Extraction Well 011	HANSR011	12/30/2022	3.80	9.60	0.00	86.60	-1.08	-1.08	51.90	52.00	0.10	0.20
Extraction Well 012	HANSR012	12/30/2022	10.20	5.30	0.00	84.50	-1.47	-1.47	51.60	51.50	1.10	0.70
Extraction Well 013	HANSR013	12/30/2022	4.30	14.80	2.10	78.80	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TD-1	HANSTD01	12/30/2022	2.00	20.90	0.10	77.00	-4.09	-4.09	0.00	0.00	0.00	0.00
Trench Collector TR-1	HANSTR01	12/30/2022	0.20	15.50	3.30	81.00	-1.18	-1.18	53.60	54.10	2.80	2.50
Trench Collector TR-2	HANSTR02	12/30/2022	8.00	17.60	0.20	74.20	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-3	HANSTR03	12/30/2022	7.90	17.20	0.00	74.90	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-4	HANSTR04	12/30/2022	1.90	18.10	0.10	79.90	-1.56	-1.56	51.00	51.20	2.80	2.90
Trench Collector TR-5	HANSTR05	12/30/2022	6.30	17.90	0.60	75.20	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-6	HANSTR06	12/30/2022	10.40	17.80	0.30	71.50	N/A	N/A	N/A	N/A	N/A	N/A
Trench Collector TR-7	HANSTR07	12/30/2022	9.40	15.80	2.00	72.80	-1.29	-1.29	49.00	49.00	2.90	2.70
Gas Probe 1	HANSGP01	12/30/2022	0.00	1.20	20.20	78.6	0.09	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Shallow	HANSGP2S	12/30/2022	0.00	0.10	21.80	78.6	-0.01	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Middle	HANSGP2M	12/30/2022	0.00	1.20	19.60	78.1	-0.23	N/A	N/A	N/A	N/A	N/A
Gas Probe 2 Deep	HANSGP2D	12/30/2022	0.00	0.70	20.40	79.2	-0.39	N/A	N/A	N/A	N/A	N/A
Gas Probe 3	HANSGP03	12/30/2022	0.00	1.20	20.80	78.9	-0.09	N/A	N/A	N/A	N/A	N/A
Gas Probe 4	HANSGP04	12/30/2022	0.00	1.50	20.50	78	-0.06	N/A	N/A	N/A	N/A	N/A
Gas Probe 5	HANSGP05	12/30/2022	0.00	0.10	21.70	78	0.01	N/A	N/A	N/A	N/A	N/A
Gas Probe 6	HANSGP06	12/30/2022	0.00	4.20	16.00	78.2	-0.10	N/A	N/A	N/A	N/A	N/A
Gas Probe 7	HANSGP07	12/30/2022	0.00	1.40	20.40	79.8	-0.02	N/A	N/A	N/A	N/A	N/A

Notes

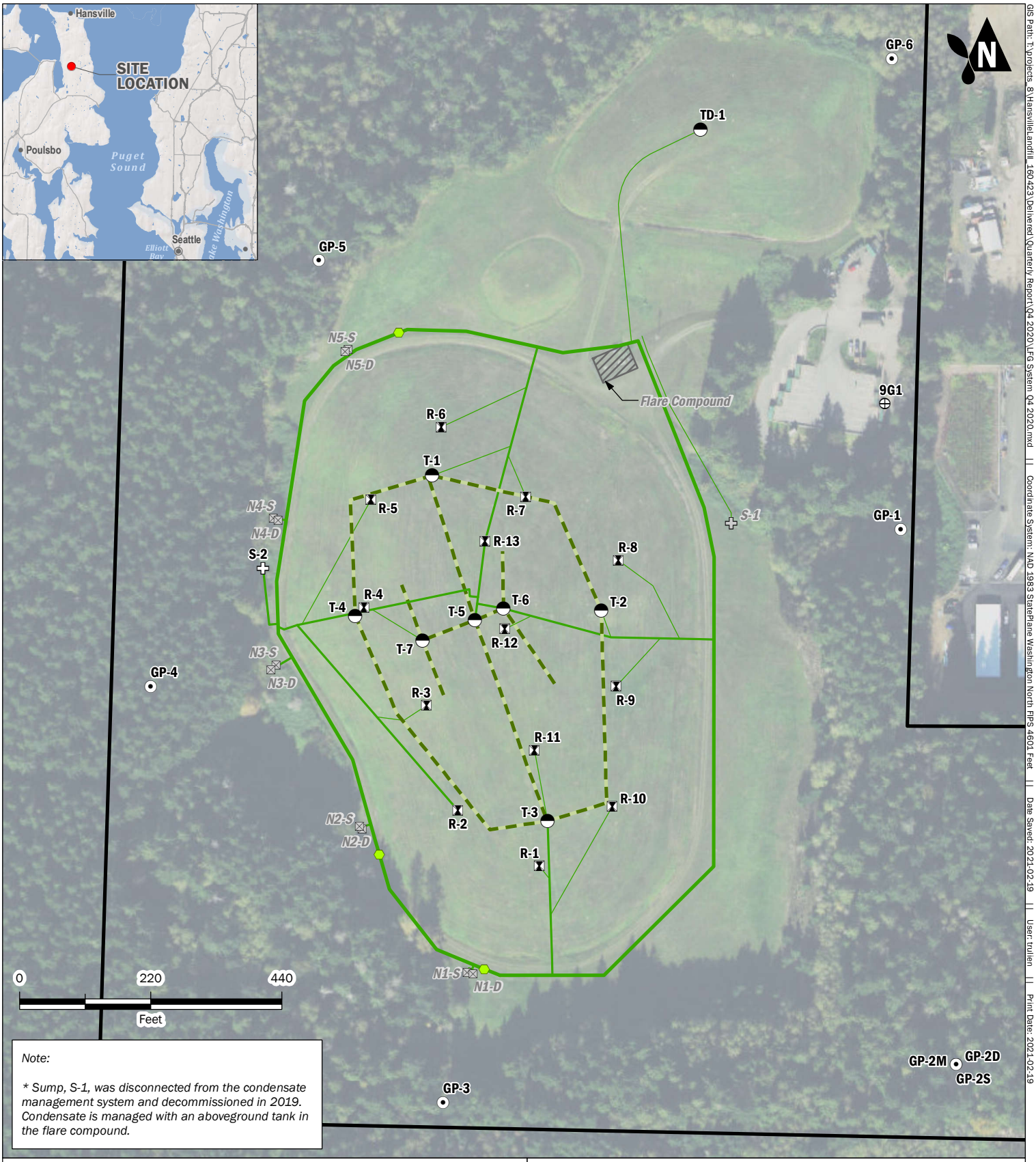
Flow rates measured using orifice plates (where installed).

N/A = indicates parameter not measured.

inches H2O = inches water column

degrees F = degrees Fahrenheit

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



Note:

** Sump, S-1, was disconnected from the condensate management system and decommissioned in 2019. Condensate is managed with an aboveground tank in the flare compound.*

Exploration

- Gas Detection Probe
- Gas Extraction Well (in Refuse Completion)
- Gas Extraction Well (Native Soil Completion) *Disconnected in October, 2019*
- Trench Completion
- Well Geologic Control
- Condensate Sump
- Condensate Sump* *Decomissioned in 2019*

Landfill Gas System

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

Landfill Gas System

2022 Annual Quarter Environmental Monitoring Report Hansville Landfill
Kitsap County, Washington

Aspect Consulting	JAN-2023	BY: MLK / RAP	FIGURE NO. A-1
	PROJECT NO. 160423	REVISED BY: MLK	

GIS Path: T:\projects_8\Hansville Landfill_160423\Delivered\Quarterly Report\Q4 2020\LFG System Q4 2020.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 2021-02-19 || User: trullen || Print Date: 2021-02-19

APPENDIX B

Water Quality Results

Table B-1. Water Level Elevations, 2022

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	100.95	266.0
MW-6	332.0	332.7	260	245	74.88	257.8
MW-7	344.3	346.0	259	244	85.72	260.3
MW-12I	245.6	248.1	217	207	9.87	238.2
MW-13D	258.1	260.4	205	195	11.51	248.9
MW-14	338.6	341.1	262	247	81.41	259.7

Notes

Depths to water collected January 19, 2022.

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

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	100.53	266.4
MW-6	332	332.7	260	245	74.36	258.3
MW-7	344.3	346.0	259	244	85.08	260.9
MW-12I	245.6	248.1	217	207	9.71	238.4
MW-13D	258.1	260.4	205	195	11.00	249.4
MW-14	338.6	341.1	262	247	82.05	259.1

Notes

Depths to water collected April 20 and 21, 2022.

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

Table B-1. Water Level Elevations, 2022

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	100.52	266.4
MW-6	332	332.7	260	245	74.47	258.2
MW-7	344.3	346.0	259	244	84.89	261.1
MW-12I	245.6	248.1	217	207	10.28	237.8
MW-13D	258.1	260.4	205	195	11.34	249.1
MW-14	338.6	341.1	262	247	82.45	258.7

Notes

Depths to water collected July 20, 2022.

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

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	100.92	266.0
MW-6	332	332.7	260	245	74.71	258.0
MW-7	344.3	346.0	259	244	85.16	260.8
MW-12I	245.6	248.1	217	207	10.33	237.8
MW-13D	258.1	260.4	205	195	11.69	248.7
MW-14	338.6	341.1	262	247	82.89	258.2

Notes

Depths to water collected October 19, 2022.

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

Table B-2. Groundwater Quality Results, 2022

Project No. 160423, Hansville Landfill, Hansville Washington

Parameter	Units	Site Cleanup Level	Location / Date	MW-5 01/19/2022	MW-5 04/20/2022	MW-5 07/20/2022	MW-5 10/19/2022	MW-6 01/19/2022	MW-6 04/20/2022	MW-6 07/20/2022	MW-6 10/19/2022	MW-7 01/19/2022	MW-7 04/20/2022	MW-7 07/20/2022	MW-7 10/19/2022
Field Parameters															
Dissolved Oxygen	mg/L			**7.89**	**6.69**	**7.41**	**7.03**	**0.29**	**0.57**	**0.36**	**0.26**	**0.36**	**0.37**	**0.58**	**0.68**
pH	pH units			**7.24**	**7.07**	**7.16**	**7.05**	**7.23**	**8.63**	**7.09**	**7**	**6.58**	**6.86**	**6.52**	**6.19**
Redox	mV			**194.1**	**190.2**	**38.5**	**77.9**	**139.4**	**281**	**27.7**	**83.2**	**125.2**	**75**	**48.9**	**85.1**
Specific Conductivity	uS/cm			**79.3**	**128.8**	**111.0**	**117**	**144.9**	**287**	**205.3**	**185.5**	**99.3**	**191.6**	**185.7**	**197**
Temperature	deg C			**10.3**	**9.8**	**13.3**	**12**	**12.3**	**11.2**	**12.9**	**12.5**	**9.3**	**9.2**	**11.5**	**9.5**
Turbidity	NTU			**1.37**	**2.01**	**24.7**	**19.6**	**1.07**	**0.4**	**1.88**	**1.67**	**2.08**	**2.94**	**2.47**	**1.11**
Conventionals															
Alkalinity	mg/L			**71**	**78**	**70**	**94**	**130**	**140**	**150**	**140**	**120**	**140**	**160**	**170**
Ammonia (as N)	mg/L			0.03 U	0.03 U	< 0.03 U	< 0.03 U	0.03 U	0.03 U	0.03 U	< 0.03 U	0.03 U	0.03 U	< 0.03 U	< 0.03 U
Bicarbonate	mg/L			**71**	**78**	**70**	< 10 U	**130**	**140**	**150**	**140**	**120**	**140**	**160**	**170**
Carbonate	mg/L			10 U	10 U	< 10 U	**93**	10 U	10 U	10 U	< 10 U	10 U	10 U	< 10 U	< 10 U
Chloride	mg/L			3 U	3 U	< 3 U	< 3 U	**5.8**	**6.8**	**3.6**	**3.6**	3 U	3 U	< 3 U	< 3 U
Nitrate (as N)	mg/L			**4.49 J**	**2.35**	**2.6**	**2.6**	**3.46**	**4.86**	**0.928**	**6**	**0.157**	**0.209**	**0.386**	**0.386**
Nitrite (as N)	mg/L			0.1 UJ	0.1 U	< 0.1 U	< 0.1 U	**0.303**	**0.32**	0.100 U	**0.27**	0.1	0.1 U	< 0.1 U	< 0.1 U
Orthophosphate (as P)	mg/L			0.1 UJ	**0.1**	< 0.1 U	< 0.1 U	0.1	0.1 U	0.10 U	< 0.1 U	0.1	**0.12 J**	**< 0.1 UJ**	**< 0.1 UJ**
Sulfate	mg/L			**7.6**	**7.1**	**8.3 J**	**7.7**	**21**	**25**	**17**	**18**	5 U	5 U	< 5 U	< 5 U
Total Organic Carbon	mg/L			1 U	1 U	< 1 U	< 1 U	1 U	**1.4**	**2.0**	**1.1**	**1.5**	**1.8**	**1.4**	**1.4**
Dissolved Metals															
Arsenic	mg/L	0.005		**0.0018**	**0.00179**	**0.00168**	**0.00168**	**0.00189**	**0.00172**	**0.00163**	**0.00163**	**0.00124**	**0.00119**	**0.00103**	**0.00103**
Manganese	mg/L	2.24		< 0.001 U	< 0.001 U	**0.0019**	< 0.001 U	**0.3**	**0.34**	**0.360**	**0.27**	**0.0014**	**0.0013**	**0.0015**	**0.0012**
Volatile Organic Compounds (VOCs)															
1,2-Dichloroethene (total	ug/L			--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	ug/L			--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	ug/L	0.025		< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.042**	**0.028**	**0.042**	**0.042**	0.02 U	< 0.02 U	< 0.02 U	< 0.02 U

Notes

Bold text = Analyte was detected

Shaded Cell = Result exceeded Site Cleanup level

U = Not detected at or above the Reporting Limit shown

mg/L = milligram per liter

(--) = not analyzed

mV = millivolts

µS/cm = microSiemens per centimeter

deg C = degrees Celsius

NTU = Nephelometric Turbidity Units

µg/L = microgram per liter

Table B-2. Groundwater Quality Results, 2022

Project No. 160423, Hansville Landfill, Hansville Washington

Parameter	Units	Site Cleanup Level	Location / Date	MW-12I 01/19/2022	MW-12I 04/20/2022	MW-12I 07/20/2022	MW-12I 10/19/2022	MW-13D 01/19/2022	MW-13D 04/20/2022	MW-13D 07/20/2022	MW-13D 10/19/2022	MW-14 01/19/2022	MW-14 04/21/2022	MW-14 07/20/2022	MW-14 10/19/2022
Field Parameters															
Dissolved Oxygen	mg/L			**0.36**	**0.23**	**0.43**	**1.37**	**0.3**	**0.76**	**0.44**	**0.2**	**0.39**	**3.01**	**0.23**	**0.22**
pH	pH units			**7.36**	**4.45**	**7.03**	**6.98**	**7.69**	**7.31**	**7.38**	**7.32**	**7.21**	**7.22**	**7.44**	**7.08**
Redox	mV			**197.8**	**347.3**	**59.0**	**88.3**	**160.1**	**183.4**	**59.8**	**100.8**	**146.6**	**149.9**	**43.5**	**87.7**
Specific Conductivity	uS/cm			**65**	**73.2**	**96.1**	**108.9**	**79.9**	**148.3**	**115.0**	**115.1**	**91.5**	**115.3**	**113.7**	**102.4**
Temperature	deg C			**9.6**	**9.4**	**10.9**	**10.4**	**10.3**	**10.1**	**12.1**	**10.5**	**10.5**	**10.2**	**12.9**	**11.6**
Turbidity	NTU			**1.69**	**0.97**	**0.17**	**1.04**	**1.87**	**5.55**	**3.96**	**3.62**	**1.26**	**1.48**	**1.07**	**1.15**
Conventionals															
Alkalinity	mg/L			**67**	**70**	**70**	**84**	**74**	**73**	**80**	**83**	**100**	**93**	**85**	**92**
Ammonia (as N)	mg/L			0.03 U	0.03 U	< 0.03 U	< 0.03 U	0.03 U	0.03 U	< 0.03 U	< 0.03 U	0.03 U	0.03 U	**0.052**	< 0.03 U
Bicarbonate	mg/L			**67**	**70**	**70**	**84**	**74**	**73**	**80**	**83**	**100**	**93**	**85**	**92**
Carbonate	mg/L			10 U	10 U	< 10 U	< 10 U	10 U	10 U	< 10 U	< 10 U	10 U	10 U	< 10 U	< 10 U
Chloride	mg/L			**3.8**	**3.8**	**4.6**	< 3 U	**5.1**	**5.1**	**5.5**	**5.5**	**3.2**	**3.6**	**3.5 J**	< 3 U
Nitrate (as N)	mg/L			0.1	0.1 U	< 0.1 U	< 0.1 U	0.1	0.1 U	**0.149**	**0.149**	0.1	0.1 U	< 0.1 U	< 0.1 U
Nitrite (as N)	mg/L			0.1	0.1 U	< 0.1 U	< 0.1 U	0.1	0.1 U	< 0.1 U	< 0.1 U	0.1	0.1 U	< 0.1 U	< 0.1 U
Orthophosphate (as P)	mg/L			0.1	0.1 U	< 0.1 U	< 0.1 U	0.1	0.1 U	< 0.1 U	< 0.1 U	0.1	0.1 U	< 0.1 U	< 0.1 U
Sulfate	mg/L			**6**	**5.7**	**6.8**	< 5 U	**15**	**15**	**17**	**14**	**7.6**	**7**	**7 J**	< 5 U
Total Organic Carbon	mg/L			**2**	**2**	**2**	**2**	1 U	1 U	< 1 U	< 1 U	1 U	1 U	**1.7**	**1.8**
Dissolved Metals															
Arsenic	mg/L	0.005		**0.00242**	**0.00247**	**0.00225**	**0.0025**	**0.00512**	**0.00535**	**0.005**	**0.005**	**0.0125**	**0.0141**	**0.0134**	**0.0134**
Manganese	mg/L	2.24		**0.030**	**0.027**	**0.030**	**0.036**	**0.0063**	**0.0063**	**0.0054**	**0.0057**	**1.8**	**0.13**	**0.91**	**0.96**
Volatile Organic Compounds (VOCs)															
1,2-Dichloroethene (total	ug/L			--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	ug/L			--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	ug/L	0.025		**0.037**	**0.033**	**0.045**	**0.100**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	0.074	**0.04**	**0.033**	**0.032**

Notes

Bold text = Analyte was detected

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mg/L = milligram per liter

(--) = not analyzed

mV = millivolts

µS/cm = microSiemens per centimeter

deg C = degrees Celsius

NTU = Nephelometric Turbidity Units

µg/L = microgram per liter

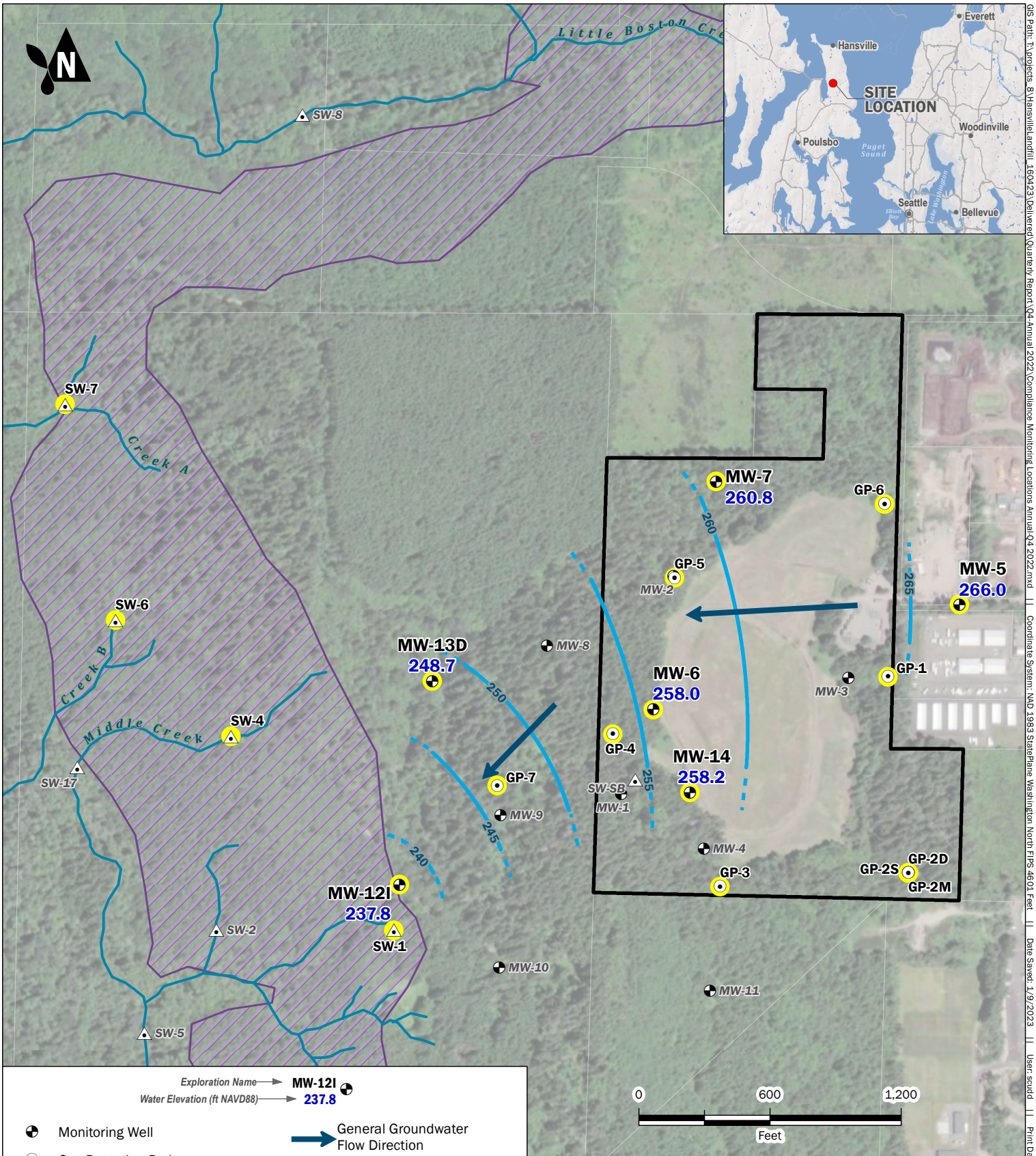
Table B-3. Surface Water Quality Results, 2022

Project No. 160423, Hansville Landfill, Hansville Washington

Parameter	Units	Site Cleanup Level	Location	SW-1	SW-1	SW-1	SW-1	SW-4	SW-4	SW-4	SW-4	SW-6	SW-6	SW-6	SW-6	SW-7	SW-7	SW-7	SW-7
			Date	01/19/2022	04/20/2022	07/20/2022	10/19/2022	01/19/2022	04/20/2022	07/20/2022	10/19/2022	01/19/2022	04/20/2022	07/20/2022	10/19/2022	01/19/2022	04/20/2022	07/20/2022	10/19/2022
Field Parameters																			
Dissolved Oxygen	mg/L			**9.83**	**6.45**	**8.32**	**7.99**	**10.52**	**10.23**	**8.77**	**8.34**	**9.96**	**9.41**	**8.75**	**8.82**	**11.34**	**96.5**	**8.95**	**10.11**
pH	pH units			**7.47**	**6.86**	**7.28**	**6.79**	**7.78**	**7.4**	**7.68**	**7.27**	**7.03**	**7.18**	**7.72**	**7.98**	**7.37**	**7.75**	**7.72**	**7.81**
Redox	mV			**163**	**47.1**	**40.9**	**67.7**	**167.8**	**162.2**	**56.6**	**66.2**	**176.4**	**120**	**43.0**	**25.7**	**-251.7**	**122.6**	**43.0**	**32.4**
Specific Conductivity	uS/cm			**128**	**205.5**	**112.8**	**124**	**206.8**	**228.5**	**110.8**	**70.5**	**74.2**	**77.2**	**97.6**	**114.7**	**82**	**80.9**	**97.6**	**102**
Temperature	deg C			**9**	**10**	**12.8**	**11.7**	**8.2**	**8.3**	**18.5**	**12.5**	**7.6**	**7.8**	**15.5**	**13**	**7.8**	**8**	**15.5**	**12.8**
Turbidity	NTU			**2.19**	**47.1**	**11.8**	**3**	**3.53**	**18.8**	**10.4**	**6.78**	**10.8**	**12.8**	**81.4**	**69.4**	**4.25**	**13.5**	**10**	--
Conventionals																			
Alkalinity	mg/L			**69**	**100**	**69**	**71**	**120**	**130**	**170**	**180**	**38**	**46**	**71**	**84**	**40**	**57**	**83**	**86**
Ammonia (as N)	mg/L			0.03 U	0.03 U	< 0.03 U	< 0.03 U	0.03 U	0.03 U	< 0.03 U	< 0.03 U	0.03 U	0.03 U	< 0.03 U	**0.054**	0.03 U	0.03 U	< 0.03 U	**0.034**
Bicarbonate	mg/L			**69**	**100**	**69**	**71**	**120**	**130**	**170**	**180**	**38**	**46**	**71**	**84**	**40**	**57**	**83**	**86**
Carbonate	mg/L			10 U	10 U	< 10 U	< 10 U	10 U	10 U	< 10 U	< 10 U	10 U	10 U	< 10 U	< 10 U	10 U	10 U	< 10 U	< 10 U
Chloride	mg/L			**4.5**	**9.4**	**5.2**	< 3 U	**10**	**10**	**14**	**11**	**3.8**	**3.3**	**3.8**	**3.1**	**3.8**	**3.3**	**3.7**	**3**
Nitrate (as N)	mg/L			**1.74**	**3.57**	**2.6**	**2.6**	**0.854**	**0.782**	**1.26**	**1.26**	0.1	0.1 U	**0.747**	**0.747**	**1.21**	**0.96**	**1.06**	**1.06**
Nitrite (as N)	mg/L			0.1	0.1 U	< 0.1 U	< 0.1 U	0.1	0.1 U	< 0.1 U	< 0.1 U	0.1	0.1 U	< 0.1 U	< 0.1 U	0.1	0.1 U	< 0.1 U	< 0.1 U
Orthophosphate (as P)	mg/L			0.1	0.1 U	< 0.1 U	< 0.1 U	0.1	0.1 U	< 0.1 U	< 0.1 U	0.1	0.1 U	< 0.1 U	< 0.1 U	0.1	0.1 U	< 0.1 U	< 0.1 U
Sulfate	mg/L			**8.5**	**17**	**9.3**	< 5 U	**17**	**17**	**25**	**21**	**5.2**	5 U	**5.4**	**5.2**	**5.8**	**5.8**	**8**	**6.7**
Total Organic Carbon	mg/L			**2.5**	**2.7**	**4.4**	**2.3**	**11**	**9.7**	**4**	**4**	**22**	**22**	**10**	**7.2**	**12**	**9.2**	**7.1**	**5.8**
Dissolved Metals																			
Arsenic	mg/L	0.005		**0.00163**	**0.000943**	**0.000773**	**0.00073**	**0.00183**	**0.00182**	**0.00167**	**0.00167**	**0.00253**	**0.00259**	**0.00388**	**0.00388**	**0.00113**	**0.00143**	**0.00215**	**0.00215**
Manganese	mg/L	2.24		**0.0015**	**0.0011**	**0.0012**	**0.0011**	**0.038**	**0.035**	**0.033**	**0.038**	**0.032**	**0.035**	**0.053**	**0.046**	**0.0026**	**0.0027**	**0.0050**	**0.0010**
Volatile Organic Compounds (VOCs)																			
1,2-Dichloroethene (total	ug/L			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	ug/L			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	ug/L	0.025		< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U

Notes

Bold text = Analyte was detected
Shaded Cell = Result exceeded Site Cleanup level
U = Not detected at or above the Reporting Limit shown
mg/L = milligram per liter
(--) = not analyzed
mV = millivolts
µS/cm = microSiemens per centimeter
deg C = degrees Celsius
NTU = Nephelometric Turbidity Units
µg/L = microgram per liter



Exploration Name → MW-12I
Water Elevation (ft NAVD88) → 237.8

- Monitoring Well
- Gas Detection Probe
- Surface Water Station
- Compliance Monitoring Location
- Water Elevation Contour (ft NAVD88, dashed where inferred) *Measured October 19th, 2022*
- General Groundwater Flow Direction
- Approximate Area of Groundwater Discharge from Upper Aquifer
- Stream
- Landfill Boundary
- Tax Parcel

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

Compliance Monitoring Locations

2022 Annual/Fourth Quarter Environmental Monitoring Report
Hansville Landfill
Kitsap County, Washington

Aspect Consulting	JAN-2023	BY: MLK / RAP	FIGURE NO. B-1
	PROJECT NO. 160423	REVISED BY: NLK / AWP / SCC	

GIS Path: T:\projects_8\Hansville\Landfill_160423\Delivered\Quarterly Report\Q4-Annual 2022\Compliance Monitoring Locations Annual-Q4 2022.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 1/9/2023 || User: soudd || Print Date: 1/9/2023

APPENDIX C

Groundwater Statistics and Time-Series Graphs

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	(µg/L per day)	(µg/L per year)
MW-5	--[3]	--	--	--	--	--	--
MW-6	--	--	--	--	--		--
MW-7	--	--	--	--	--		--
MW-12I	--	--	--	--	--		--
MW-13D	Increasing	8.1	1.96	63	Yes	5.1E-04	0.185
MW-14	Decreasing	-8.0	-1.96	63	Yes	-2.7E-03	-0.998

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	(µg/L per day)	(µg/L per year)
MW-5	--[3]	--	--	--	--		--
MW-6	Decreasing	-8.4	-1.96	64	Yes	-6.2E-05	-0.023
MW-7	--	--	--	--	--		--
MW-12I	Decreasing	-7.6	-1.96	64	Yes	-7.1E-05	-0.026
MW-13D	--	--	--	--	--		--
MW-14	Decreasing	-9.1	-1.96	64	Yes	-8.4E-05	-0.031

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.

µg/L - micrograms per liter

4 - Data range is from 1st quarter 2007 through 4th quarter 2022

Table C-2. Statistical Limit Analysis

Project 160423, Hansville Landfill, Hansville, WA

Dissolved Arsenic Statistical Concentrations (mg/L) since 2011

Well	Statistic	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Site-specific Cleanup Level
MW-14	LCL	0.020	0.019	0.018	0.017	0.016	0.016	0.015	0.014	0.013	0.012	0.011	0.011	0.005
	Trend	0.021	0.020	0.019	0.018	0.017	0.016	0.015	0.014	0.014	0.013	0.012	0.011	
	UCL	0.022	0.021	0.020	0.019	0.018	0.017	0.016	0.015	0.014	0.013	0.013	0.012	
MW-13D	LCL	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.005	
	Trend	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.005	0.006	
	UCL	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.006	0.006	0.006	

Vinyl Chloride Statistical Concentrations (ug/L) since 2011

Well	Statistic	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Site-specific Cleanup Level
MW-6	LCL	0.233	0.203	0.176	0.152	0.130	0.112	0.095	0.081	0.069	0.058	0.049	0.041	0.025
	Trend	0.263	0.226	0.195	0.167	0.144	0.124	0.106	0.091	0.078	0.067	0.058	0.050	
	UCL	0.297	0.253	0.216	0.184	0.158	0.137	0.118	0.103	0.090	0.078	0.068	0.060	
MW-12I	LCL	0.230	0.200	0.174	0.149	0.128	0.110	0.093	0.079	0.066	0.056	0.047	0.039	
	Trend	0.266	0.228	0.197	0.168	0.144	0.124	0.106	0.091	0.078	0.067	0.058	0.049	
	UCL	0.308	0.261	0.222	0.189	0.162	0.140	0.122	0.106	0.092	0.081	0.071	0.062	
MW-14	LCL	0.256	0.210	0.173	0.141	0.114	0.092	0.074	0.059	0.047	0.038	0.030	0.024	
	Trend	0.295	0.239	0.195	0.157	0.128	0.104	0.084	0.068	0.055	0.045	0.036	0.029	
	UCL	0.339	0.272	0.219	0.176	0.143	0.117	0.096	0.078	0.065	0.053	0.044	0.037	

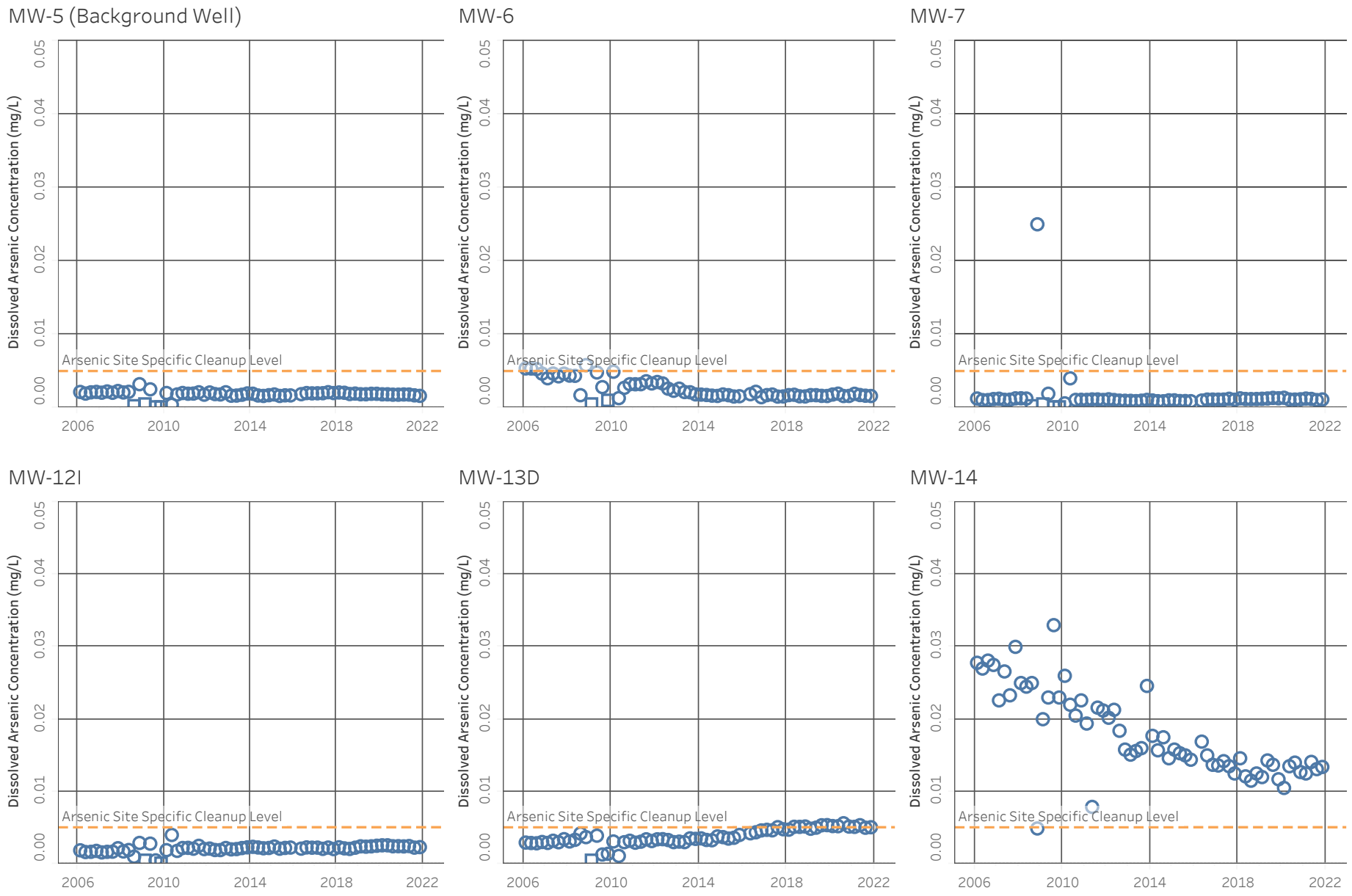
Notes

LCL is the 95% Lower Confidence Limit calculated using log-normal transformed concentrations.

Trend is the average concentration calculated using least-squares fit a line for log-normal transformed concentrations.

UCL is the 95% Upper Confidence Limit calculated using log-normal transformed concentrations.

UCL and LCL are calculated based on method described in CMP (SCS Engineers, 2011), except using data collected since January 2007.



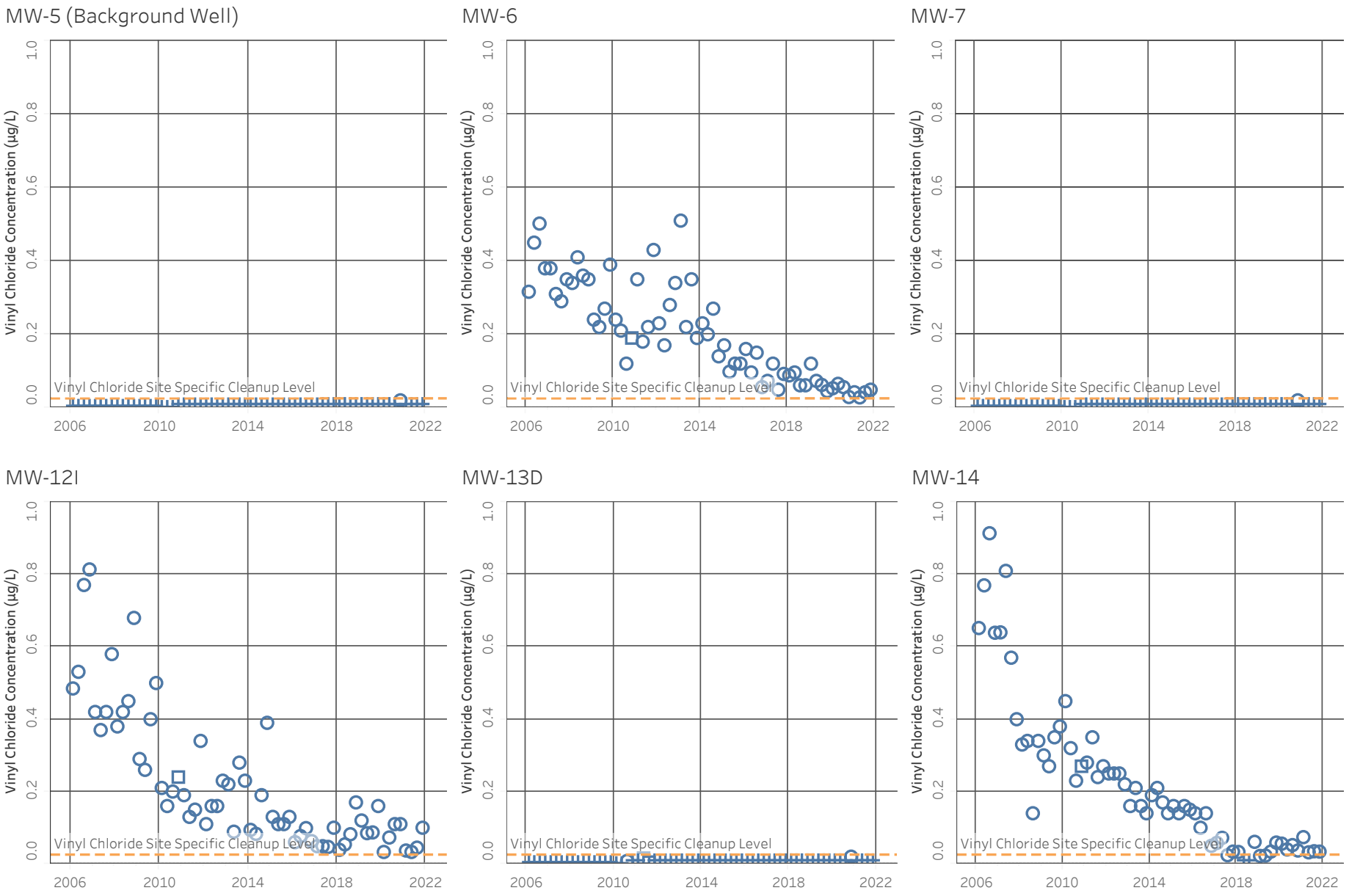
Note: Non-detected values are shown at 1/2 the reporting limit.
Results from First Quarter 2017 were rejected. See text.

Result Flags ○ Detected □ U - Non-Detect

Aspect CONSULTING

12/19/2022
Trend Plots (As)

Figure C-1 - 2022 Fourth Quarter Dissolved Arsenic Sampling Results
2022 Fourth Quarter Environmental Monitoring Report
Hansville Landfill
Kitsap County, WA

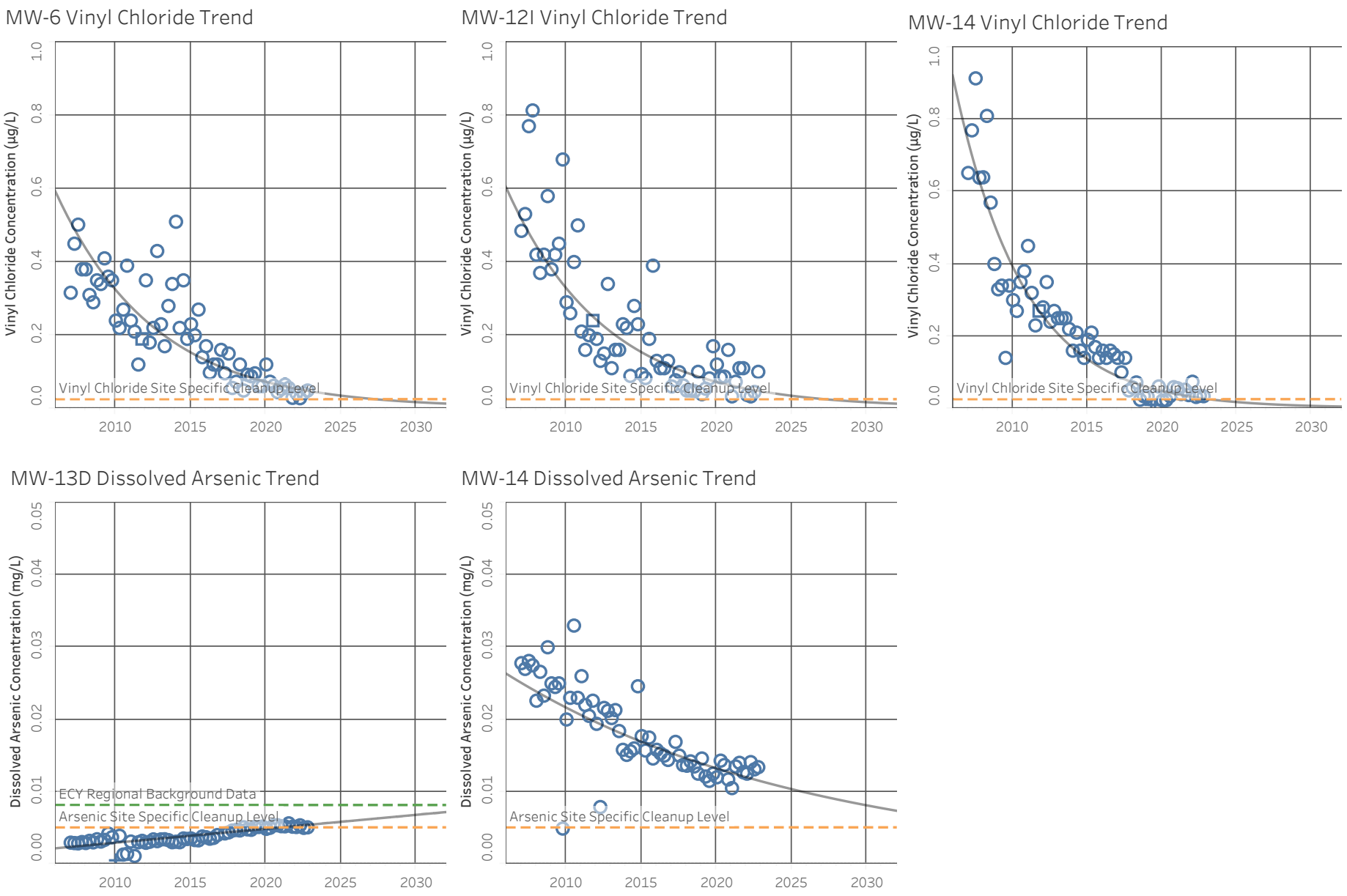


Note: Non-detected values are shown at 1/2 the reporting limit.

Aspect CONSULTING

12/19/2022
Trend Plots (VC) 2021

Figure C-2 - 2022 Fourth Quarter Vinyl Chloride Sampling Results
2022 Fourth Quarter Environmental Monitoring Report
Hansville Landfill
Kitsap County, WA



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

12/19/2022
Trend Plots (VC) 2021

Figure C-3 - 10 Year Attenuation Curves
2022 Fourth Quarter Environmental Monitoring Report
Hansville Landfill
Kitsap County, WA

APPENDIX D

Fourth Quarter Field Forms and Laboratory Reports

Aspect CONSULTING

Sample number MW-5-221019

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-5 Page: 1 of 1

Project Name: Hansville Landfill
Date: 10/19/2022
Sampled by: CB & CMT
Measuring Point of Well: N TOC
Screened Interval (ft. TOC) —
Filter Pack Interval (ft. TOC) —

Project Number: 160423
Starting Water Level (ft TOC): 100.92
Casing Stickup (ft): ~~0.80~~
Total Depth (ft TOC): —
Casing Diameter (inches): 2"

Casing Volume _____ (ft Water) x 0.16 (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
0936			—							Start
0940	0	0.1	100.89	11.8	170.6	5.74	6.65	79.9	116.1	clear, no odor, no sheen
0951	0.1	0.1	100.89	11.4	122.4	6.88	6.88	74.3	41.6	"
0956	0.1	0.1	100.89	11.4	111.6	7.47	6.98	74.5	16.8	"
1001	0.2	0.1	100.89	11.4	109.6	7.72	7.04	74.8	12.8	"
1006	0.2	0.1	100.85	11.5	110.4	7.32	7.05	75.6	83.4	"
1011	0.3	0.1	100.82	11.5	113.3	7.24	7.05	76.2	54.5	"
1016	0.3	0.1	100.85	11.6	115.1	7.01	7.05	76.8	36.7	"
1021	0.4	0.1	100.83	11.7	116.0	6.75	7.03	77.3	30.9	"
1026	0.5	0.1	100.85	11.9	116.4	6.78	7.04	77.1	26.3	"
1031	0.5	0.1	100.85	11.9	117.1	6.94	7.05	77.6	25.0	"
1036	0.5	0.1	100.87	12.0	117.0	7.03	7.05	77.9	19.6	"
1040										Sampled

Total Gallons Purged: ~1gal
Ending Water Level (ft TOC): 99.92
Total Casing Volumes Removed: _____
Ending Total Depth (ft TOC): _____

SAMPLE INVENTORY

Time	Volume mL	Bottle Type	Quantity	Filtration	Preservation	Appearance: Color	Appearance: Turbidity & Sediment	Remarks
1040	40	VOA	3	N	HCl	Clear	19.6	
↓	500	Amber	1	N	H_2SO_4	↓	↓	
	500	Poly	2	N	N			direct sub to ARI
	500	Poly	2	Y	HNO_3			direct sub to ARI
↓	250	Poly	1	Y	N	↓	↓	direct sub to ARI

METHODS

Parameters measured with (instrument model & serial number) YSI: white Turbidimeter: orange WLI: blue/white
Purging Equipment: ~~dedicated bladder pump~~ ~~OR~~ ~~peristaltic~~ Decon Equipment: Alconox + water
Disposal of Discharged Water: on site
Observations/Comments: Very Very Slow to Sample

orange non-dedicated bladder pump →

P:\Kitsap County Solid Waste\Hansville Landfill 2016\Project 160423\Data\Field Data\WQ Sampling\Groundwater Sampling Form_Hansville

Aspect CONSULTING

Sample number MW-6-221019

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-6 Page: 1 of 1

Project Name: Hansville Landfill
Date: 10/19/2022
Sampled by: CMT
Measuring Point of Well: N TOC
Screened Interval (ft. TOC) —
Filter Pack Interval (ft. TOC) —

Project Number: 160423
Starting Water Level (ft TOC): 74.71
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
1508										Start
1509	0	0.1	74.75	12.7	192.0	1.83	7.21	85.7	5.70	clear, no odor, no sheen
1514	0.1	0.1	74.69	12.5	187.0	0.23	6.98	88.4	5.99	"
1519	0.2	0.1	74.73	12.6	184.3	0.27	7.00	87.9	4.40	"
1524	0.3	0.1	74.68	12.6	185.0	0.26	7.02	87.4	4.22	"
1529	0.4	0.1	74.68	12.5	185.5	0.26	7.00	83.2	2.99	"
1535										Sample

Total Gallons Purged: ~1 gal
Total Casing Volumes Removed: —
Ending Water Level (ft TOC): 74.74
Ending Total Depth (ft TOC): —

SAMPLE INVENTORY

Time	Volume mL	Bottle Type	Quantity	Filtration	Preservation	Appearance: Color	Appearance: Turbidity & Sediment	Remarks
1535	40	VOA	3	N	HCl	Clear	1.67	
↓	500	Amber	1	N	H2SO4	↓	↓	
↓	500	Poly	2	N	N	↓	↓	direct sub to ARI
↓	500	Poly	2	Y	HNO3	↓	↓	direct sub to ARI
↓	250	Poly	1	Y	N	↓	↓	direct sub to ARI

METHODS

Parameters measured with (instrument model & serial number) YSI: white Turbidimeter: Green WLI: Blue/white
Purging Equipment: (dedicated bladder pump) OR peristaltic Decon Equipment: Alconox + water
Disposal of Discharged Water: on site
Observations/Comments: —

Aspect CONSULTING

Sample number MW-7-221019

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-7 Page: 1 of 1

Project Name: Hansville Landfill
Project Number: 160423
Date: 10/19/2022
Sampled by: CMT + CB
Measuring Point of Well: N TOC
Screened Interval (ft. TOC) —
Filter Pack Interval (ft. TOC) —
Starting Water Level (ft TOC): 85.16
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): 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
0800			—							Start
0805	0.0		85.16							
0810	0.5	0.1	85.18	9.8	434.5	1.42	6.48	107.2	3.66	Clear colorless no odor no sheen
0815	1.0		85.20	9.6	274.6	0.61	6.02	107.9	2.15	"
0820	1.5		85.20	9.5	201.0	0.53	5.84	108.3	2.22	"
0825	2.0		85.20	9.5	198.8	0.52	5.99	97.1	1.86	"
0830	2.5		85.20	9.5	197.3	0.66	6.12	89.5	1.64	"
0835	3.0		85.20	9.5	196.8	0.63	6.17	86.5	1.56	"
0840	3.5		85.20	9.5	197.0	0.68	6.19	85.1	1.11	SAMPLE

Total Gallons Purged: 3.5 L
Total Casing Volumes Removed: —
Ending Water Level (ft TOC): 85.15
Ending Total Depth (ft TOC): —

SAMPLE INVENTORY

Time	Volume mL	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
0845	40	VOA	3	N	HCl	Clear	1.11	
	500	Amber	1	N	H2SO4			
↓	500	Poly	2	N	N	↓	↓	direct sub to ARI
	500	Poly	2	Y	HNO3			direct sub to ARI
	250	Poly	1	Y	N			direct sub to ARI

METHODS

Parameters measured with (instrument model & serial number) YSI: White Turbidimeter: WLI: Blue/white
Purging Equipment: dedicated bladder pump OR peristaltic Decon Equipment: Alconox + water
Disposal of Discharged Water: on site
Observations/Comments:

Aspect CONSULTING

Sample number MW-121-221019

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-121 Page: 1 of 1

Project Name: Hansville Landfill
Project Number: 160423
Date: 10/19/2022
Starting Water Level (ft TOC): 10.33
Sampled by: CMT
Casing Stickup (ft):
Measuring Point of Well: N TOC
Total Depth (ft TOC): —
Screened Interval (ft. TOC) —
Casing Diameter (inches): —
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):

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
1237										Start
1240	0	0.1	10.39	9.7	105.9	3.27	7.01	96.8	2.33	Clear, no odor, no sheen
1245	0.2	0.1	10.35	10.3	108.3	2.09	6.74	103.4	0.85	"
1250	0.3	0.1	10.38	10.4	109.2	1.89	6.84	94.2	0.78	"
1255	0.4	0.1	10.36	10.3	109.1	1.63	6.93	91.6	1.01	"
1300	0.5	0.1	10.35	10.4	109.1	1.59	6.95	89.9	1.28	"
1305	0.6	0.1	10.35	10.5	109.0	1.49	6.97	88.9	1.18	"
1310	0.7	0.1	10.38	10.4	108.9	1.37	6.98	88.3	1.00	"
1315										Sampled

Total Gallons Purged: ~1.2gal
Total Casing Volumes Removed:
Ending Water Level (ft TOC): 10.34
Ending Total Depth (ft TOC):

SAMPLE INVENTORY

Time	Volume mL	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1315	40	VOA	3	N	HCl	Clear	1.04	
↓	500	Amber	1	N	H2SO4	↓	↓	
	500	Poly	2	N	N			direct sub to ARI
	500	Poly	2	Y	HNO3			direct sub to ARI
↓	250	Poly	1	Y	N	↓	↓	direct sub to ARI

METHODS

Parameters measured with (instrument model & serial number) YSI: white Turbidimeter: Green WLI: Blue/white
Purging Equipment: dedicated bladder pump OR peristaltic Decon Equipment: Alconox + water
Disposal of Discharged Water: on site
Observations/Comments:

Aspect CONSULTING

Sample number MW-130-221019

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-130 Page: 1 of 1

Project Name: Hansville Landfill
Date: 10/19/2022
Sampled by: CMcT
Measuring Point of Well: N TOC
Screened Interval (ft. TOC) —
Filter Pack Interval (ft. TOC) —

Project Number: 160423
Starting Water Level (ft TOC): 11.69
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
1350			11.85							Start
1351	0	0.1	11.90	11.0	116.7	1.89	7.24	103.5	1.35	clear, no odor, no sheen
1356	0.1	0.1	11.93	10.6	115.7	0.79	7.23	108.2	49.1	"
1401	0.2	0.1	12.06	10.5	115.3	0.40	7.16	111.6	15.9	"
1406	0.3	0.1	11.86	10.5	115.3	0.21	7.24	106.3	6.76	"
1411	0.4	0.1	11.96	10.5	115.1	0.20	7.29	103.1	4.23	"
1416	0.5	0.1	12.03	10.5	115.1	0.20	7.32	100.8	3.22	"
1420										Sample

Total Gallons Purged: ~1.2 gal
Total Casing Volumes Removed: ____
Ending Water Level (ft TOC): 11.88
Ending Total Depth (ft TOC): ____

SAMPLE INVENTORY

Time	Volume mL	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1420	40	VOA	3	N	HCl	Clear	3.62	
↓	500	Amber	1	N	H2SO4	↓	↓	
↓	500	Poly	2	N	N	↓	↓	direct sub to ARI
↓	500	Poly	2	Y	HNO3	↓	↓	direct sub to ARI
↓	250	Poly	1	Y	N	↓	↓	direct sub to ARI

METHODS

Parameters measured with (instrument model & serial number) YSI: white Turbidimeter: Green WLI: white / blue
Purging Equipment: dedicated bladder pump OR peristaltic Decon Equipment: Alconox + water
Disposal of Discharged Water: on site
Observations/Comments: ____

Aspect CONSULTING

Sample number MW-14-221019

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-14 Page: 1 of 1

Project Name: Hansville Landfill
Project Number: 160423
Date: 10/19/2022
Sampled by: CMT
Measuring Point of Well: N TOC
Screened Interval (ft. TOC) —
Filter Pack Interval (ft. TOC) —
Starting Water Level (ft TOC): 82.59
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
1602			—	—	—	—	—	—	—	Start
1604	0	0.1	82.88	12.1	100.5	9.06	7.40	82.8	2.05	clear, no odor, no sheen
1609	0.1	0.1	82.89	11.7	101.4	0.69	7.08	91.3	1.95	"
1614	0.2	0.1	82.88	11.5	102.9	0.24	6.99	94.7	1.46	"
1619	0.7	0.1	82.88	11.5	102.6	0.23	7.06	89.8	2.12	
1624	1.2	0.1	82.88	11.6	102.4	0.22	7.08	87.7	1.15	

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	
1635	40	VOA	3	N	HCl	clear		
	500	Amber	1	N	H2SO4			
	500	Poly	2	N	N			direct sub to ARI
	500	Poly	2	Y	HNO3			direct sub to ARI
	250	Poly	1	Y	N			direct sub to ARI

METHODS

Parameters measured with (instrument model & serial number) YSI: white Turbidimeter: Green WLI: Blue/white

Purging Equipment: dedicated bladder pump OR peristaltic Decon Equipment: Alconox + water

Disposal of Discharged Water: on site

Observations/Comments: Dup Called MW-20DD-221019 Collected @ 0700

Aspect CONSULTING

Sample number SW-1-221019

GROUNDWATER SAMPLING RECORD

WELL NUMBER: SW-1 Page: 1 of 1

Project Name: Hansville Landfill
Project Number: 160423
Date: 10/19/2022
Starting Water Level (ft TOC): —
Sampled by:
Casing Stickup (ft): —
Measuring Point of Well: N TOC
Total Depth (ft TOC): —
Screened Interval (ft. TOC) —
Casing Diameter (inches): —
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): —

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
1240	—	0.1	—	11.7	124.0	7.99	6.79	60.7	3.00	Start
										H brown tracer w/ small brown particles

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	
1245	40	VOA	3	N	HCl	3.00		
	500	Amber	1	N	H2SO4			
	500	Poly	2	N	N			direct sub to ARI
	500	Poly	2	Y	HNO3			direct sub to ARI
	250	Poly	1	Y	N			direct sub to ARI

METHODS

Parameters measured with (instrument model & serial number) YSI: orange Turbidimeter: white WLI: —

Purging Equipment: dedicated bladder pump OR peristaltic Decon Equipment: Alconox + water

Disposal of Discharged Water: on site

Observations/Comments:

Aspect CONSULTING

Sample number SW-4-721019

GROUNDWATER SAMPLING RECORD

WELL NUMBER: SW-4 Page: 1 of 1

Project Name: Hansville Landfill
Project Number: 160423
Date: 10/19/2022
Sampled by:
Measuring Point of Well: N 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
1323	0	0.1	—	12.5	170.5	8.34	7.27	66.2	6.78	Start
										It brown, no odor
										no sheen
										some black particulate

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	
1330	40	VOA	3	N	HCl	lt brown	6.78	
	500	Amber	1	N	H2SO4	to clear		
	500	Poly	2	N	N			direct sub to ARI
	500	Poly	2	Y	HNO3			direct sub to ARI
	250	Poly	1	Y	N			direct sub to ARI

METHODS

Parameters measured with (instrument model & serial number) YSI: orange Turbidimeter: white WLI: —
Purging Equipment: dedicated bladder pump OR peristaltic Decon Equipment: Alconox + water
Disposal of Discharged Water: on site
Observations/Comments:

Aspect CONSULTING

Sample number SW-6-221019

GROUNDWATER SAMPLING RECORD

WELL NUMBER: SW-6 Page: 1 of 1

Project Name: Hansville Landfill
Date: 10/19/2022
Sampled by: CB
Measuring Point of Well: N TOC
Screened Interval (ft. TOC)
Filter Pack Interval (ft. TOC)

Project Number: 160423
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
1400	0	0.1	—	13.0	114.7	8.82	7.98	25.7	69.4	Start
										Ithram w
										black particles
										no odor no sheen

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: Color	Appearance: Turbidity & Sediment	Remarks
1405	40	VOA	3	N	HCl	lt brown	69.4	
	500	Amber	1	N	H_2SO_4			
	500	Poly	2	N	N			direct sub to ARI
	500	Poly	2	Y	HNO_3			direct sub to ARI
	250	Poly	1	Y	N			direct sub to ARI

METHODS

Parameters measured with (instrument model & serial number) YSI: orange Turbidimeter: white WLI: N/A
Purging Equipment: dedicated bladder pump OR peristaltic Decon Equipment: Alconox + water
Disposal of Discharged Water: on site

Observations/Comments:

Aspect CONSULTING

Sample number SW-7-221019

GROUNDWATER SAMPLING RECORD

WELL NUMBER: SW-7 Page: 1 of 1

Project Name: Hansville Landfill
Project Number: 160423
Date: 10/19/2022
Sampled by:
Measuring Point of Well: N 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
1445	0	0.1	—	12.8	102.6	10.11	7.81	32.4		Start
										~~Clear~~ colorless, some black particulates, no odor no sheen

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: Color	Appearance: Turbidity & Sediment	Remarks
1450	40	VOA	3	N	HCl			
	500	Amber	1	N	H2SO4			
	500	Poly	2	N	N			direct sub to ARI
	500	Poly	2	Y	HNO3			direct sub to ARI
	250	Poly	1	Y	N			direct sub to ARI

METHODS

Parameters measured with (instrument model & serial number) YSI: Orange Turbidimeter: White WLI: N/A
Purging Equipment: dedicated bladder pump OR peristaltic Decon Equipment: Alconox + water
Disposal of Discharged Water: on site

Observations/Comments:

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Meilani Lanier-Kamaha'o
Aspect Consulting
350 Madison Ave N
Bainbridge Island Washington 98110

JOB DESCRIPTION

Hansville Landfill
2Q_3Q_4Q Sampling

JOB NUMBER

280-168093-1

Eurofins Denver
4955 Yarrow Street
Arvada CO80002

myEOL

Table of Contents

Definitions/Glossary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-168093-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 280-168093-1

Laboratory: Eurofins Denver

Narrative

CASE NARRATIVE

Client: Aspect Consulting

Project: Hansville Landfill

Report Number: 280-168093-1

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.

RECEIPT

The samples were received on 10/21/2022; the samples arrived in good condition, properly preserved and on ice. The temperatures of the coolers at receipt were 1.6°C and 2.3°C

VOLATILE ORGANICS (GC-MS)

Samples MW5-221019 (280-168093-1), MW6-221019 (280-168093-2), MW7-221019 (280-168093-3), MW12I-221019 (280-168093-4), MW14-221019 (280-168093-5), MW20DD-221019 (280-168093-6), SW1-221019 (280-168093-7), SW4-221019 (280-168093-8), SW6-221019 (280-168093-9), SW7-221019 (280-168093-10), MW13D-221019 (280-168093-11) and TB1-221019 (280-168093-12) were analyzed for volatile organics (GC-MS) in accordance with 8260C_SIM. The samples were analyzed on 10/26/2022 and 10/27/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

DISSOLVED METALS

Samples MW5-221019 (280-168093-1), MW6-221019 (280-168093-2), MW7-221019 (280-168093-3), MW12I-221019 (280-168093-4), MW14-221019 (280-168093-5), MW20DD-221019 (280-168093-6), SW1-221019 (280-168093-7), SW4-221019 (280-168093-8), SW6-221019 (280-168093-9), SW7-221019 (280-168093-10) and MW13D-221019 (280-168093-11) were analyzed for dissolved metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 10/24/2022 and analyzed on 10/25/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ALKALINITY

Samples MW5-221019 (280-168093-1), MW6-221019 (280-168093-2), MW7-221019 (280-168093-3), MW12I-221019 (280-168093-4), MW14-221019 (280-168093-5), MW20DD-221019 (280-168093-6), SW1-221019 (280-168093-7), SW4-221019 (280-168093-8), SW6-221019 (280-168093-9), SW7-221019 (280-168093-10) and MW13D-221019 (280-168093-11) were analyzed for Alkalinity in accordance with SM20 2320B. The samples were analyzed on 10/24/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples MW5-221019 (280-168093-1), MW6-221019 (280-168093-2), MW7-221019 (280-168093-3), MW12I-221019 (280-168093-4), MW14-221019 (280-168093-5), MW20DD-221019 (280-168093-6), SW1-221019 (280-168093-7), SW4-221019 (280-168093-8), SW6-221019 (280-168093-9), SW7-221019 (280-168093-10) and MW13D-221019 (280-168093-11) were analyzed for anions (28 days) in accordance with EPA Method 300.0 (28 Days). The samples were analyzed on 11/11/2022.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 280-593066 were outside control limits for Chloride and

Job ID: 280-168093-1 (Continued)

Laboratory: Eurofins Denver (Continued)

Sulfate. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

AMMONIA

Samples MW5-221019 (280-168093-1), MW6-221019 (280-168093-2), MW7-221019 (280-168093-3), MW12I-221019 (280-168093-4), MW14-221019 (280-168093-5), MW20DD-221019 (280-168093-6), SW1-221019 (280-168093-7), SW4-221019 (280-168093-8), SW6-221019 (280-168093-9), SW7-221019 (280-168093-10) and MW13D-221019 (280-168093-11) were analyzed for ammonia in accordance with EPA Method 350.1. The samples were analyzed on 10/31/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL ORGANIC CARBON

Samples MW5-221019 (280-168093-1), MW6-221019 (280-168093-2), MW7-221019 (280-168093-3), MW12I-221019 (280-168093-4), MW14-221019 (280-168093-5), MW20DD-221019 (280-168093-6), SW1-221019 (280-168093-7), SW4-221019 (280-168093-8), SW6-221019 (280-168093-9), SW7-221019 (280-168093-10) and MW13D-221019 (280-168093-11) were analyzed for total organic carbon in accordance with SM20 5310B. The samples were analyzed on 11/01/2022, 11/02/2022 and 11/08/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-168093-1

Client Sample ID: MW5-221019 — Lab Sample ID: 280-168093-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	7.7	F1	5.0		mg/L	1		300.0	Total/NA
Total Alkalinity	94		10		mg/L	1		SM 2320B	Total/NA
Carbonate Alkalinity	93		10		mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW6-221019 — Lab Sample ID: 280-168093-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.049		0.020		ug/L	1		8260C SIM	Total/NA
Manganese	270		1.0		ug/L	1		6020	Dissolved
Chloride	3.6		3.0		mg/L	1		300.0	Total/NA
Sulfate	18		5.0		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	1.1		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: MW7-221019 — Lab Sample ID: 280-168093-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	1.2		1.0		ug/L	1		6020	Dissolved
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	1.4		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: MW12I-221019 — Lab Sample ID: 280-168093-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.10		0.020		ug/L	1		8260C SIM	Total/NA
Manganese	36		1.0		ug/L	1		6020	Dissolved
Total Alkalinity	84		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	84		10		mg/L	1		SM 2320B	Total/NA
Total Organic Carbon - Average	2.0		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: MW14-221019 — Lab Sample ID: 280-168093-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.034		0.020		ug/L	1		8260C SIM	Total/NA
Manganese	960		1.0		ug/L	1		6020	Dissolved
Total Alkalinity	92		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	92		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: MW20DD-221019 — Lab Sample ID: 280-168093-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.030		0.020		ug/L	1		8260C SIM	Total/NA
Manganese	960		1.0		ug/L	1		6020	Dissolved
Ammonia as N	0.038		0.030		mg/L	1		350.1	Total/NA
Total Alkalinity	92		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	92		10		mg/L	1		SM 2320B	Total/NA
Total Organic Carbon - Average	1.8		1.0		mg/L	1		SM 5310B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-168093-1

Client Sample ID: SW1-221019 — Lab Sample ID: 280-168093-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	1.1		1.0		ug/L	1		6020	Dissolved
Total Alkalinity	71		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	71		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: SW4-221019 — Lab Sample ID: 280-168093-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	38		1.0		ug/L	1		6020	Dissolved
Chloride	11		3.0		mg/L	1		300.0	Total/NA
Sulfate	21	F1	5.0		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	4.0		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: SW6-221019 — Lab Sample ID: 280-168093-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	46		1.0		ug/L	1		6020	Dissolved
Chloride	3.1		3.0		mg/L	1		300.0	Total/NA
Sulfate	5.2		5.0		mg/L	1		300.0	Total/NA
Ammonia as N	0.054		0.030		mg/L	1		350.1	Total/NA
Total Alkalinity	84		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	84		10		mg/L	1		SM 2320B	Total/NA
Total Organic Carbon - Average	7.2		1.0		mg/L	1		SM 5310B	Total/NA

Client Sample ID: SW7-221019 — Lab Sample ID: 280-168093-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	10		1.0		ug/L	1		6020	Dissolved
Chloride	3.0		3.0		mg/L	1		300.0	Total/NA
Sulfate	6.7		5.0		mg/L	1		300.0	Total/NA
Ammonia as N	0.034		0.030		mg/L	1		350.1	Total/NA
Total Alkalinity	86		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	86		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: MW13D-221019 — Lab Sample ID: 280-168093-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	5.7		1.0		ug/L	1		6020	Dissolved
Chloride	4.2		3.0		mg/L	1		300.0	Total/NA
Sulfate	14		5.0		mg/L	1		300.0	Total/NA
Total Alkalinity	83		10		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity	83		10		mg/L	1		SM 2320B	Total/NA

Client Sample ID: TB1-221019 — Lab Sample ID: 280-168093-12

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-168093-1

Method	Method Description	Protocol	Laboratory
8260C SIM	Volatile Organic Compounds (GC/MS)	SW846	EET BUF
6020	Metals (ICP/MS)	SW846	EET DEN
300.0	Anions, Ion Chromatography	MCAWW	EET DEN
350.1	Nitrogen, Ammonia	MCAWW	EET DEN
SM 2320B	Alkalinity	SM	EET DEN
SM 5310B	Organic Carbon, Total (TOC)	SM	EET 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	EET DEN
5030C	Purge and Trap	SW846	EET 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:

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

Sample Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-168093-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-168093-1	MW5-221019	Water	10/19/22 10:40	10/21/22 09:30
280-168093-2	MW6-221019	Water	10/19/22 15:35	10/21/22 09:30
280-168093-3	MW7-221019	Water	10/19/22 08:45	10/21/22 09:30
280-168093-4	MW12I-221019	Water	10/19/22 13:15	10/21/22 09:30
280-168093-5	MW14-221019	Water	10/19/22 16:35	10/21/22 09:30
280-168093-6	MW20DD-221019	Water	10/19/22 07:00	10/21/22 09:30
280-168093-7	SW1-221019	Water	10/19/22 12:45	10/21/22 09:30
280-168093-8	SW4-221019	Water	10/19/22 13:30	10/21/22 09:30
280-168093-9	SW6-221019	Water	10/19/22 14:05	10/21/22 09:30
280-168093-10	SW7-221019	Water	10/19/22 14:50	10/21/22 09:30
280-168093-11	MW13D-221019	Water	10/19/22 14:20	10/21/22 09:30
280-168093-12	TB1-221019	Water	10/19/22 07:00	10/21/22 09:30

Method: SW846 8260C SIM - Volatile Organic Compounds (GC/MS)

Client Sample ID: MW5-221019
Date Collected: 10/19/22 10:40
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			10/26/22 21:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*119*		*50 - 150*		*10/26/22 21:52*	*1*
TBA-d9 (Surr)	*128*		*50 - 150*		*10/26/22 21:52*	*1*

Client Sample ID: MW6-221019
Date Collected: 10/19/22 15:35
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**0.049**		0.020		ug/L			10/26/22 22:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*123*		*50 - 150*		*10/26/22 22:16*	*1*
TBA-d9 (Surr)	*121*		*50 - 150*		*10/26/22 22:16*	*1*

Client Sample ID: MW7-221019
Date Collected: 10/19/22 08:45
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			10/26/22 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*124*		*50 - 150*		*10/26/22 22:40*	*1*
TBA-d9 (Surr)	*123*		*50 - 150*		*10/26/22 22:40*	*1*

Client Sample ID: MW12I-221019
Date Collected: 10/19/22 13:15
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**0.10**		0.020		ug/L			10/26/22 23:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*122*		*50 - 150*		*10/26/22 23:03*	*1*
TBA-d9 (Surr)	*137*		*50 - 150*		*10/26/22 23:03*	*1*

Client Sample ID: MW14-221019
Date Collected: 10/19/22 16:35
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**0.034**		0.020		ug/L			10/26/22 23:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*126*		*50 - 150*		*10/26/22 23:27*	*1*
TBA-d9 (Surr)	*125*		*50 - 150*		*10/26/22 23:27*	*1*

Client Sample ID: MW20DD-221019
Date Collected: 10/19/22 07:00
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**0.030**		0.020		ug/L			10/26/22 23:51	1

Method: SW846 8260C SIM - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	122		50 - 150		10/26/22 23:51	1
TBA-d9 (Surr)	124		50 - 150		10/26/22 23:51	1

Client Sample ID: SW1-221019 — **Lab Sample ID: 280-168093-7**
Date Collected: 10/19/22 12:45 — **Matrix: Water**
Date Received: 10/21/22 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			10/27/22 00:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	127		50 - 150		10/27/22 00:14	1
TBA-d9 (Surr)	124		50 - 150		10/27/22 00:14	1

Client Sample ID: SW4-221019 — **Lab Sample ID: 280-168093-8**
Date Collected: 10/19/22 13:30 — **Matrix: Water**
Date Received: 10/21/22 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			10/27/22 00:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	127		50 - 150		10/27/22 00:39	1
TBA-d9 (Surr)	129		50 - 150		10/27/22 00:39	1

Client Sample ID: SW6-221019 — **Lab Sample ID: 280-168093-9**
Date Collected: 10/19/22 14:05 — **Matrix: Water**
Date Received: 10/21/22 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			10/27/22 01:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	127		50 - 150		10/27/22 01:03	1
TBA-d9 (Surr)	128		50 - 150		10/27/22 01:03	1

Client Sample ID: SW7-221019 — **Lab Sample ID: 280-168093-10**
Date Collected: 10/19/22 14:50 — **Matrix: Water**
Date Received: 10/21/22 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			10/27/22 01:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	125		50 - 150		10/27/22 01:27	1
TBA-d9 (Surr)	108		50 - 150		10/27/22 01:27	1

Client Sample ID: MW13D-221019 — **Lab Sample ID: 280-168093-11**
Date Collected: 10/19/22 14:20 — **Matrix: Water**
Date Received: 10/21/22 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			10/27/22 01:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	129		50 - 150		10/27/22 01:51	1
TBA-d9 (Surr)	124		50 - 150		10/27/22 01:51	1

Method: SW846 8260C SIM - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB1-221019
Date Collected: 10/19/22 07:00
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.020		ug/L			10/27/22 02:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*132*		*50 - 150*		*10/27/22 02:15*	*1*
TBA-d9 (Surr)	*130*		*50 - 150*		*10/27/22 02:15*	*1*

Method: SW846 6020 - Metals (ICP/MS) - Dissolved

Client Sample ID: MW5-221019
Date Collected: 10/19/22 10:40
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	ND		1.0		ug/L		10/24/22 15:04	10/25/22 10:08	1

Client Sample ID: MW6-221019
Date Collected: 10/19/22 15:35
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**270**		1.0		ug/L		10/24/22 15:04	10/25/22 10:10	1

Client Sample ID: MW7-221019
Date Collected: 10/19/22 08:45
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**1.2**		1.0		ug/L		10/24/22 15:04	10/25/22 10:12	1

Client Sample ID: MW12I-221019
Date Collected: 10/19/22 13:15
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**36**		1.0		ug/L		10/24/22 15:04	10/25/22 10:14	1

Client Sample ID: MW14-221019
Date Collected: 10/19/22 16:35
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**960**		1.0		ug/L		10/24/22 15:04	10/25/22 10:16	1

Client Sample ID: MW20DD-221019
Date Collected: 10/19/22 07:00
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**960**		1.0		ug/L		10/24/22 15:04	10/25/22 10:17	1

Client Sample ID: SW1-221019
Date Collected: 10/19/22 12:45
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**1.1**		1.0		ug/L		10/24/22 15:04	10/25/22 10:19	1

Method: SW846 6020 - Metals (ICP/MS) - Dissolved

Client Sample ID: SW4-221019
Date Collected: 10/19/22 13:30
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**38**		1.0		ug/L		10/24/22 15:04	10/25/22 10:21	1

Client Sample ID: SW6-221019
Date Collected: 10/19/22 14:05
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**46**		1.0		ug/L		10/24/22 15:04	10/25/22 10:23	1

Client Sample ID: SW7-221019
Date Collected: 10/19/22 14:50
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**10**		1.0		ug/L		10/24/22 15:04	10/25/22 10:29	1

Client Sample ID: MW13D-221019
Date Collected: 10/19/22 14:20
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	**5.7**		1.0		ug/L		10/24/22 15:04	10/25/22 10:31	1

General Chemistry

Client Sample ID: MW5-221019
Date Collected: 10/19/22 10:40
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (MCAWW 300.0)	ND	F1	3.0		mg/L			11/11/22 06:33	1
Sulfate (MCAWW 300.0)	**7.7**	**F1**	5.0		mg/L			11/11/22 06:33	1
Ammonia as N (MCAWW 350.1)	ND		0.030		mg/L			10/31/22 18:24	1
Total Alkalinity (SM 2320B)	**94**		10		mg/L			10/24/22 21:36	1
Bicarbonate Alkalinity (SM 2320B)	ND		10		mg/L			10/24/22 21:36	1
Carbonate Alkalinity (SM 2320B)	**93**		10		mg/L			10/24/22 21:36	1
Total Organic Carbon - Average (SM 5310B)	ND		1.0		mg/L			11/01/22 23:31	1

Client Sample ID: MW6-221019
Date Collected: 10/19/22 15:35
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (MCAWW 300.0)	**3.6**		3.0		mg/L			11/11/22 07:37	1
Sulfate (MCAWW 300.0)	**18**		5.0		mg/L			11/11/22 07:37	1
Ammonia as N (MCAWW 350.1)	ND		0.030		mg/L			10/31/22 18:27	1
Total Alkalinity (SM 2320B)	**140**		10		mg/L			10/24/22 21:42	1
Bicarbonate Alkalinity (SM 2320B)	**140**		10		mg/L			10/24/22 21:42	1
Carbonate Alkalinity (SM 2320B)	ND		10		mg/L			10/24/22 21:42	1
Total Organic Carbon - Average (SM 5310B)	**1.1**		1.0		mg/L			11/01/22 23:46	1

General Chemistry

Client Sample ID: MW7-221019
Date Collected: 10/19/22 08:45
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (MCAWW 300.0)	ND		15		mg/L			11/11/22 07:52	5
Sulfate (MCAWW 300.0)	ND		25		mg/L			11/11/22 07:52	5
Ammonia as N (MCAWW 350.1)	ND		0.030		mg/L			10/31/22 18:30	1
Total Alkalinity (SM 2320B)	**170**		10		mg/L			10/24/22 21:48	1
Bicarbonate Alkalinity (SM 2320B)	**170**		10		mg/L			10/24/22 21:48	1
Carbonate Alkalinity (SM 2320B)	ND		10		mg/L			10/24/22 21:48	1
Total Organic Carbon - Average (SM 5310B)	**1.4**		1.0		mg/L			11/02/22 00:00	1

Client Sample ID: MW12I-221019
Date Collected: 10/19/22 13:15
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (MCAWW 300.0)	ND		15		mg/L			11/11/22 08:08	5
Sulfate (MCAWW 300.0)	ND		25		mg/L			11/11/22 08:08	5
Ammonia as N (MCAWW 350.1)	ND		0.030		mg/L			10/31/22 18:32	1
Total Alkalinity (SM 2320B)	**84**		10		mg/L			10/24/22 22:18	1
Bicarbonate Alkalinity (SM 2320B)	**84**		10		mg/L			10/24/22 22:18	1
Carbonate Alkalinity (SM 2320B)	ND		10		mg/L			10/24/22 22:18	1
Total Organic Carbon - Average (SM 5310B)	**2.0**		1.0		mg/L			11/02/22 00:15	1

Client Sample ID: MW14-221019
Date Collected: 10/19/22 16:35
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (MCAWW 300.0)	ND		15		mg/L			11/11/22 08:24	5
Sulfate (MCAWW 300.0)	ND		25		mg/L			11/11/22 08:24	5
Ammonia as N (MCAWW 350.1)	ND		0.030		mg/L			10/31/22 18:52	1
Total Alkalinity (SM 2320B)	**92**		10		mg/L			10/24/22 22:29	1
Bicarbonate Alkalinity (SM 2320B)	**92**		10		mg/L			10/24/22 22:29	1
Carbonate Alkalinity (SM 2320B)	ND		10		mg/L			10/24/22 22:29	1
Total Organic Carbon - Average (SM 5310B)	**1.8**		1.0		mg/L			11/02/22 00:29	1

Client Sample ID: MW20DD-221019
Date Collected: 10/19/22 07:00
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (MCAWW 300.0)	ND		15		mg/L			11/11/22 08:40	5
Sulfate (MCAWW 300.0)	ND		25		mg/L			11/11/22 08:40	5
Ammonia as N (MCAWW 350.1)	**0.038**		0.030		mg/L			10/31/22 18:53	1
Total Alkalinity (SM 2320B)	**92**		10		mg/L			10/24/22 22:35	1
Bicarbonate Alkalinity (SM 2320B)	**92**		10		mg/L			10/24/22 22:35	1
Carbonate Alkalinity (SM 2320B)	ND		10		mg/L			10/24/22 22:35	1
Total Organic Carbon - Average (SM 5310B)	**1.8**		1.0		mg/L			11/02/22 00:43	1

General Chemistry

Client Sample ID: SW1-221019
Date Collected: 10/19/22 12:45
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (MCAWW 300.0)	ND		15		mg/L			11/11/22 08:56	5
Sulfate (MCAWW 300.0)	ND		25		mg/L			11/11/22 08:56	5
Ammonia as N (MCAWW 350.1)	ND		0.030		mg/L			10/31/22 18:56	1
Total Alkalinity (SM 2320B)	**71**		10		mg/L			10/24/22 22:40	1
Bicarbonate Alkalinity (SM 2320B)	**71**		10		mg/L			10/24/22 22:40	1
Carbonate Alkalinity (SM 2320B)	ND		10		mg/L			10/24/22 22:40	1
Total Organic Carbon - Average (SM 5310B)	**2.3**		1.0		mg/L			11/02/22 01:55	1

Client Sample ID: SW4-221019
Date Collected: 10/19/22 13:30
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (MCAWW 300.0)	**11**		3.0		mg/L			11/11/22 00:29	1
Sulfate (MCAWW 300.0)	**21**	**F1**	5.0		mg/L			11/11/22 00:29	1
Ammonia as N (MCAWW 350.1)	ND		0.030		mg/L			10/31/22 18:59	1
Total Alkalinity (SM 2320B)	**180**		10		mg/L			10/24/22 22:46	1
Bicarbonate Alkalinity (SM 2320B)	**180**		10		mg/L			10/24/22 22:46	1
Carbonate Alkalinity (SM 2320B)	ND		10		mg/L			10/24/22 22:46	1
Total Organic Carbon - Average (SM 5310B)	**4.0**		1.0		mg/L			11/02/22 02:09	1

Client Sample ID: SW6-221019
Date Collected: 10/19/22 14:05
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (MCAWW 300.0)	**3.1**		3.0		mg/L			11/11/22 01:32	1
Sulfate (MCAWW 300.0)	**5.2**		5.0		mg/L			11/11/22 01:32	1
Ammonia as N (MCAWW 350.1)	**0.054**		0.030		mg/L			10/31/22 19:01	1
Total Alkalinity (SM 2320B)	**84**		10		mg/L			10/24/22 22:52	1
Bicarbonate Alkalinity (SM 2320B)	**84**		10		mg/L			10/24/22 22:52	1
Carbonate Alkalinity (SM 2320B)	ND		10		mg/L			10/24/22 22:52	1
Total Organic Carbon - Average (SM 5310B)	**7.2**		1.0		mg/L			11/08/22 05:29	1

Client Sample ID: SW7-221019
Date Collected: 10/19/22 14:50
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (MCAWW 300.0)	**3.0**		3.0		mg/L			11/11/22 01:48	1
Sulfate (MCAWW 300.0)	**6.7**		5.0		mg/L			11/11/22 01:48	1
Ammonia as N (MCAWW 350.1)	**0.034**		0.030		mg/L			10/31/22 19:09	1
Total Alkalinity (SM 2320B)	**86**		10		mg/L			10/24/22 22:57	1
Bicarbonate Alkalinity (SM 2320B)	**86**		10		mg/L			10/24/22 22:57	1
Carbonate Alkalinity (SM 2320B)	ND		10		mg/L			10/24/22 22:57	1
Total Organic Carbon - Average (SM 5310B)	**5.8**		1.0		mg/L			11/08/22 06:40	1

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-168093-1

General Chemistry

Client Sample ID: MW13D-221019
Date Collected: 10/19/22 14:20
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride (MCAWW 300.0)	**4.2**		3.0		mg/L			11/11/22 02:04	1
Sulfate (MCAWW 300.0)	**14**		5.0		mg/L			11/11/22 02:04	1
Ammonia as N (MCAWW 350.1)	ND		0.030		mg/L			10/31/22 19:12	1
Total Alkalinity (SM 2320B)	**83**		10		mg/L			10/24/22 23:02	1
Bicarbonate Alkalinity (SM 2320B)	**83**		10		mg/L			10/24/22 23:02	1
Carbonate Alkalinity (SM 2320B)	ND		10		mg/L			10/24/22 23:02	1
Total Organic Carbon - Average (SM 5310B)	ND		1.0		mg/L			11/08/22 06:54	1

Surrogate Summary

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-168093-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)											
		DBFM	TBA										
Lab Sample ID	Client Sample ID	(50-150)	(50-150)										
280-168093-1	MW5-221019	119	128										
280-168093-2	MW6-221019	123	121										
280-168093-3	MW7-221019	124	123										
280-168093-4	MW12I-221019	122	137										
280-168093-5	MW14-221019	126	125										
280-168093-6	MW20DD-221019	122	124										
280-168093-7	SW1-221019	127	124										
280-168093-8	SW4-221019	127	129										
280-168093-9	SW6-221019	127	128										
280-168093-10	SW7-221019	125	108										
280-168093-11	MW13D-221019	129	124										
280-168093-12	TB1-221019	132	130										
LCS 480-647249/6	Lab Control Sample	96	105										
LCSD 480-647249/7	Lab Control Sample Dup	97	112										
MB 480-647249/9	Method Blank	125	124										

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)
TBA = TBA-d9 (Surr)

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

Lab Sample ID: MB 480-647249/9
Matrix: Water
Analysis Batch: 647249

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			10/26/22 20:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*125*		*50 - 150*		*10/26/22 20:41*	*1*
TBA-d9 (Surr)	*124*		*50 - 150*		*10/26/22 20:41*	*1*

Lab Sample ID: LCS 480-647249/6
Matrix: Water
Analysis Batch: 647249

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	0.148		ug/L		74	50 - 150		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*96*		*50 - 150*
TBA-d9 (Surr)	*105*		*50 - 150*

Lab Sample ID: LCSD 480-647249/7
Matrix: Water
Analysis Batch: 647249

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	0.153		ug/L		76	50 - 150	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*97*		*50 - 150*
TBA-d9 (Surr)	*112*		*50 - 150*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 280-590931/1-A
Matrix: Water
Analysis Batch: 591190

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 590931

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	ND		1.0		ug/L		10/24/22 15:04	10/25/22 09:45	1

Lab Sample ID: LCS 280-590931/2-A
Matrix: Water
Analysis Batch: 591190

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 590931

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Manganese			40.0	41.6		ug/L		104	85 - 117		

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

Lab Sample ID: 280-168012-A-1-B MS
Matrix: Water
Analysis Batch: 591190

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 590931

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Manganese	ND		40.0	39.8		ug/L		98	85 - 117

Lab Sample ID: 280-168012-A-1-C MSD
Matrix: Water
Analysis Batch: 591190

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 590931

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Manganese	ND		40.0	39.6		ug/L		98	85 - 117	1	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 280-593066/13
Matrix: Water
Analysis Batch: 593066

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/L			11/10/22 18:47	1
Sulfate	ND		5.0		mg/L			11/10/22 18:47	1

Lab Sample ID: MB 280-593066/44
Matrix: Water
Analysis Batch: 593066

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/L			11/11/22 04:58	1
Sulfate	ND		5.0		mg/L			11/11/22 04:58	1

Lab Sample ID: LCS 280-593066/11
Matrix: Water
Analysis Batch: 593066

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	50.0	49.7		mg/L		99	90 - 110
Sulfate	50.0	46.4		mg/L		93	90 - 110

Lab Sample ID: LCS 280-593066/42
Matrix: Water
Analysis Batch: 593066

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	50.0	49.8		mg/L		100	90 - 110
Sulfate	50.0	46.4		mg/L		93	90 - 110

Lab Sample ID: LCSD 280-593066/12
Matrix: Water
Analysis Batch: 593066

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	50.0	49.7		mg/L		99	90 - 110	0	10
Sulfate	50.0	46.3		mg/L		93	90 - 110	0	10

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 280-593066/43
Matrix: Water
Analysis Batch: 593066

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			50.0	49.8		mg/L		100	90 - 110	0	10
Sulfate			50.0	46.4		mg/L		93	90 - 110	0	10

Lab Sample ID: MRL 280-593066/10
Matrix: Water
Analysis Batch: 593066

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	2.50	J	mg/L		100	50 - 150		
Sulfate			2.50	2.10	J	mg/L		84	50 - 150		

Lab Sample ID: 280-168093-1 MS
Matrix: Water
Analysis Batch: 593066

Client Sample ID: MW5-221019
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	58.3	F1	mg/L		223	80 - 120		
Sulfate	7.7	F1	25.0	65.7	F1	mg/L		232	80 - 120		

Lab Sample ID: 280-168093-1 MSD
Matrix: Water
Analysis Batch: 593066

Client Sample ID: MW5-221019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	ND	F1	25.0	58.4	F1	mg/L		223	80 - 120	0	20
Sulfate	7.7	F1	25.0	65.8	F1	mg/L		232	80 - 120	0	20

Lab Sample ID: 280-168093-8 MS
Matrix: Water
Analysis Batch: 593066

Client Sample ID: SW4-221019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	11		25.0	33.0		mg/L		88	80 - 120		
Sulfate	21	F1	25.0	106	E F1	mg/L		343	80 - 120		

Lab Sample ID: 280-168093-8 MSD
Matrix: Water
Analysis Batch: 593066

Client Sample ID: SW4-221019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	11		25.0	33.0		mg/L		88	80 - 120	0	20
Sulfate	21	F1	25.0	106	E F1	mg/L		343	80 - 120	0	20

Lab Sample ID: 280-168093-1 DU
Matrix: Water
Analysis Batch: 593066

Client Sample ID: MW5-221019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Chloride	ND	F1		ND		mg/L				NC	15
Sulfate	7.7	F1		7.63		mg/L				0.8	15

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: 280-168093-8 DU
Matrix: Water
Analysis Batch: 593066

Client Sample ID: SW4-221019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	11		11.1		mg/L		0.1	15
Sulfate	21	F1	20.7		mg/L		0.09	15

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 280-591920/214
Matrix: Water
Analysis Batch: 591920

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	ND		0.030		mg/L			10/31/22 18:11	1

Lab Sample ID: LCS 280-591920/213
Matrix: Water
Analysis Batch: 591920

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	2.50	2.55		mg/L		102	90 - 110

Lab Sample ID: 280-168093-9 MS
Matrix: Water
Analysis Batch: 591920

Client Sample ID: SW6-221019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	0.054		1.00	1.08		mg/L		103	90 - 110

Lab Sample ID: 280-168093-9 MSD
Matrix: Water
Analysis Batch: 591920

Client Sample ID: SW6-221019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia as N	0.054		1.00	1.09		mg/L		104	90 - 110	1	10

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-591109/31
Matrix: Water
Analysis Batch: 591109

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	ND		10		mg/L			10/24/22 14:29	1
Bicarbonate Alkalinity	ND		10		mg/L			10/24/22 14:29	1
Carbonate Alkalinity	ND		10		mg/L			10/24/22 14:29	1

Lab Sample ID: MB 280-591109/57
Matrix: Water
Analysis Batch: 591109

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	ND		10		mg/L			10/24/22 18:05	1

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: MB 280-591109/57
Matrix: Water
Analysis Batch: 591109

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	ND		10		mg/L			10/24/22 18:05	1
Carbonate Alkalinity	ND		10		mg/L			10/24/22 18:05	1

Lab Sample ID: MB 280-591109/83
Matrix: Water
Analysis Batch: 591109

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	ND		10		mg/L			10/24/22 22:13	1
Bicarbonate Alkalinity	ND		10		mg/L			10/24/22 22:13	1
Carbonate Alkalinity	ND		10		mg/L			10/24/22 22:13	1

Lab Sample ID: LCS 280-591109/56
Matrix: Water
Analysis Batch: 591109

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Alkalinity			200	200		mg/L		100	89 - 109		

Lab Sample ID: LCS 280-591109/82
Matrix: Water
Analysis Batch: 591109

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Alkalinity			200	202		mg/L		101	89 - 109		

Lab Sample ID: 280-168093-4 DU
Matrix: Water
Analysis Batch: 591109

Client Sample ID: MW12I-221019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Alkalinity	84			85.3		mg/L				2	10
Bicarbonate Alkalinity	84			85.3		mg/L				2	20
Carbonate Alkalinity	ND			ND		mg/L				NC	20

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

Lab Sample ID: MB 280-592095/22
Matrix: Water
Analysis Batch: 592095

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average	ND		1.0		mg/L			11/01/22 20:53	1

Lab Sample ID: MB 280-592095/5
Matrix: Water
Analysis Batch: 592095

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average	ND		1.0		mg/L			11/01/22 16:45	1

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

Lab Sample ID: LCS 280-592095/21
Matrix: Water
Analysis Batch: 592095

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon - Average			25.0	24.2		mg/L		97	88 - 112		

Lab Sample ID: LCSD 280-592095/4
Matrix: Water
Analysis Batch: 592095

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
Total Organic Carbon - Average			25.0	25.4		mg/L		101	88 - 112	1	15

Lab Sample ID: 280-168093-6 MS
Matrix: Water
Analysis Batch: 592095

Client Sample ID: MW20DD-221019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon - Average	1.8		25.0	26.2		mg/L		97	88 - 112		

Lab Sample ID: 280-168093-6 MSD
Matrix: Water
Analysis Batch: 592095

Client Sample ID: MW20DD-221019
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	26.1		mg/L		97	88 - 112	0	15

Lab Sample ID: MB 280-592764/34
Matrix: Water
Analysis Batch: 592764

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average	ND		1.0		mg/L			11/08/22 01:37	1

Lab Sample ID: LCS 280-592764/33
Matrix: Water
Analysis Batch: 592764

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

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

Lab Sample ID: 280-168093-9 MS
Matrix: Water
Analysis Batch: 592764

Client Sample ID: SW6-221019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon - Average	7.2		25.0	31.7		mg/L		98	88 - 112		

Lab Sample ID: 280-168093-9 MSD
Matrix: Water
Analysis Batch: 592764

Client Sample ID: SW6-221019
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	7.2		25.0	31.7		mg/L		98	88 - 112	0	15

GC/MS VOA

Analysis Batch: 647249

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-168093-1	MW5-221019	Total/NA	Water	8260C SIM	
280-168093-2	MW6-221019	Total/NA	Water	8260C SIM	
280-168093-3	MW7-221019	Total/NA	Water	8260C SIM	
280-168093-4	MW12I-221019	Total/NA	Water	8260C SIM	
280-168093-5	MW14-221019	Total/NA	Water	8260C SIM	
280-168093-6	MW20DD-221019	Total/NA	Water	8260C SIM	
280-168093-7	SW1-221019	Total/NA	Water	8260C SIM	
280-168093-8	SW4-221019	Total/NA	Water	8260C SIM	
280-168093-9	SW6-221019	Total/NA	Water	8260C SIM	
280-168093-10	SW7-221019	Total/NA	Water	8260C SIM	
280-168093-11	MW13D-221019	Total/NA	Water	8260C SIM	
280-168093-12	TB1-221019	Total/NA	Water	8260C SIM	
MB 480-647249/9	Method Blank	Total/NA	Water	8260C SIM	
LCS 480-647249/6	Lab Control Sample	Total/NA	Water	8260C SIM	
LCSD 480-647249/7	Lab Control Sample Dup	Total/NA	Water	8260C SIM	

Metals

Prep Batch: 590931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-168093-1	MW5-221019	Dissolved	Water	3005A	
280-168093-2	MW6-221019	Dissolved	Water	3005A	
280-168093-3	MW7-221019	Dissolved	Water	3005A	
280-168093-4	MW12I-221019	Dissolved	Water	3005A	
280-168093-5	MW14-221019	Dissolved	Water	3005A	
280-168093-6	MW20DD-221019	Dissolved	Water	3005A	
280-168093-7	SW1-221019	Dissolved	Water	3005A	
280-168093-8	SW4-221019	Dissolved	Water	3005A	
280-168093-9	SW6-221019	Dissolved	Water	3005A	
280-168093-10	SW7-221019	Dissolved	Water	3005A	
280-168093-11	MW13D-221019	Dissolved	Water	3005A	
MB 280-590931/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-590931/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-168012-A-1-B MS	Matrix Spike	Dissolved	Water	3005A	
280-168012-A-1-C MSD	Matrix Spike Duplicate	Dissolved	Water	3005A	

Analysis Batch: 591190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-168093-1	MW5-221019	Dissolved	Water	6020	590931
280-168093-2	MW6-221019	Dissolved	Water	6020	590931
280-168093-3	MW7-221019	Dissolved	Water	6020	590931
280-168093-4	MW12I-221019	Dissolved	Water	6020	590931
280-168093-5	MW14-221019	Dissolved	Water	6020	590931
280-168093-6	MW20DD-221019	Dissolved	Water	6020	590931
280-168093-7	SW1-221019	Dissolved	Water	6020	590931
280-168093-8	SW4-221019	Dissolved	Water	6020	590931
280-168093-9	SW6-221019	Dissolved	Water	6020	590931
280-168093-10	SW7-221019	Dissolved	Water	6020	590931
280-168093-11	MW13D-221019	Dissolved	Water	6020	590931
MB 280-590931/1-A	Method Blank	Total Recoverable	Water	6020	590931
LCS 280-590931/2-A	Lab Control Sample	Total Recoverable	Water	6020	590931

Metals (Continued)

Analysis Batch: 591190 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-168012-A-1-B MS	Matrix Spike	Dissolved	Water	6020	590931
280-168012-A-1-C MSD	Matrix Spike Duplicate	Dissolved	Water	6020	590931

General Chemistry

Analysis Batch: 591109

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-168093-1	MW5-221019	Total/NA	Water	SM 2320B	
280-168093-2	MW6-221019	Total/NA	Water	SM 2320B	
280-168093-3	MW7-221019	Total/NA	Water	SM 2320B	
280-168093-4	MW12I-221019	Total/NA	Water	SM 2320B	
280-168093-5	MW14-221019	Total/NA	Water	SM 2320B	
280-168093-6	MW20DD-221019	Total/NA	Water	SM 2320B	
280-168093-7	SW1-221019	Total/NA	Water	SM 2320B	
280-168093-8	SW4-221019	Total/NA	Water	SM 2320B	
280-168093-9	SW6-221019	Total/NA	Water	SM 2320B	
280-168093-10	SW7-221019	Total/NA	Water	SM 2320B	
280-168093-11	MW13D-221019	Total/NA	Water	SM 2320B	
MB 280-591109/31	Method Blank	Total/NA	Water	SM 2320B	
MB 280-591109/57	Method Blank	Total/NA	Water	SM 2320B	
MB 280-591109/83	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-591109/56	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 280-591109/82	Lab Control Sample	Total/NA	Water	SM 2320B	
280-168093-4 DU	MW12I-221019	Total/NA	Water	SM 2320B	

Analysis Batch: 591920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-168093-1	MW5-221019	Total/NA	Water	350.1	
280-168093-2	MW6-221019	Total/NA	Water	350.1	
280-168093-3	MW7-221019	Total/NA	Water	350.1	
280-168093-4	MW12I-221019	Total/NA	Water	350.1	
280-168093-5	MW14-221019	Total/NA	Water	350.1	
280-168093-6	MW20DD-221019	Total/NA	Water	350.1	
280-168093-7	SW1-221019	Total/NA	Water	350.1	
280-168093-8	SW4-221019	Total/NA	Water	350.1	
280-168093-9	SW6-221019	Total/NA	Water	350.1	
280-168093-10	SW7-221019	Total/NA	Water	350.1	
280-168093-11	MW13D-221019	Total/NA	Water	350.1	
MB 280-591920/214	Method Blank	Total/NA	Water	350.1	
LCS 280-591920/213	Lab Control Sample	Total/NA	Water	350.1	
280-168093-9 MS	SW6-221019	Total/NA	Water	350.1	
280-168093-9 MSD	SW6-221019	Total/NA	Water	350.1	

Analysis Batch: 592095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-168093-1	MW5-221019	Total/NA	Water	SM 5310B	
280-168093-2	MW6-221019	Total/NA	Water	SM 5310B	
280-168093-3	MW7-221019	Total/NA	Water	SM 5310B	
280-168093-4	MW12I-221019	Total/NA	Water	SM 5310B	
280-168093-5	MW14-221019	Total/NA	Water	SM 5310B	
280-168093-6	MW20DD-221019	Total/NA	Water	SM 5310B	

General Chemistry (Continued)

Analysis Batch: 592095 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-168093-7	SW1-221019	Total/NA	Water	SM 5310B	
280-168093-8	SW4-221019	Total/NA	Water	SM 5310B	
MB 280-592095/22	Method Blank	Total/NA	Water	SM 5310B	
MB 280-592095/5	Method Blank	Total/NA	Water	SM 5310B	
LCS 280-592095/21	Lab Control Sample	Total/NA	Water	SM 5310B	
LCSD 280-592095/4	Lab Control Sample Dup	Total/NA	Water	SM 5310B	
280-168093-6 MS	MW20DD-221019	Total/NA	Water	SM 5310B	
280-168093-6 MSD	MW20DD-221019	Total/NA	Water	SM 5310B	

Analysis Batch: 592764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-168093-9	SW6-221019	Total/NA	Water	SM 5310B	
280-168093-10	SW7-221019	Total/NA	Water	SM 5310B	
280-168093-11	MW13D-221019	Total/NA	Water	SM 5310B	
MB 280-592764/34	Method Blank	Total/NA	Water	SM 5310B	
LCS 280-592764/33	Lab Control Sample	Total/NA	Water	SM 5310B	
280-168093-9 MS	SW6-221019	Total/NA	Water	SM 5310B	
280-168093-9 MSD	SW6-221019	Total/NA	Water	SM 5310B	

Analysis Batch: 593066

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-168093-1	MW5-221019	Total/NA	Water	300.0	
280-168093-2	MW6-221019	Total/NA	Water	300.0	
280-168093-3	MW7-221019	Total/NA	Water	300.0	
280-168093-4	MW12I-221019	Total/NA	Water	300.0	
280-168093-5	MW14-221019	Total/NA	Water	300.0	
280-168093-6	MW20DD-221019	Total/NA	Water	300.0	
280-168093-7	SW1-221019	Total/NA	Water	300.0	
280-168093-8	SW4-221019	Total/NA	Water	300.0	
280-168093-9	SW6-221019	Total/NA	Water	300.0	
280-168093-10	SW7-221019	Total/NA	Water	300.0	
280-168093-11	MW13D-221019	Total/NA	Water	300.0	
MB 280-593066/13	Method Blank	Total/NA	Water	300.0	
MB 280-593066/44	Method Blank	Total/NA	Water	300.0	
LCS 280-593066/11	Lab Control Sample	Total/NA	Water	300.0	
LCS 280-593066/42	Lab Control Sample	Total/NA	Water	300.0	
LCSD 280-593066/12	Lab Control Sample Dup	Total/NA	Water	300.0	
LCSD 280-593066/43	Lab Control Sample Dup	Total/NA	Water	300.0	
MRL 280-593066/10	Lab Control Sample	Total/NA	Water	300.0	
280-168093-1 MS	MW5-221019	Total/NA	Water	300.0	
280-168093-1 MSD	MW5-221019	Total/NA	Water	300.0	
280-168093-8 MS	SW4-221019	Total/NA	Water	300.0	
280-168093-8 MSD	SW4-221019	Total/NA	Water	300.0	
280-168093-1 DU	MW5-221019	Total/NA	Water	300.0	
280-168093-8 DU	SW4-221019	Total/NA	Water	300.0	

Lab Chronicle

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-168093-1

Client Sample ID: MW5-221019
Date Collected: 10/19/22 10:40
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-1
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	647249	10/26/22 21:52	CDC	EET BUF
Dissolved	Prep	3005A			50 mL	50 mL	590931	10/24/22 15:04	MCR	EET DEN
Dissolved	Analysis	6020		1			591190	10/25/22 10:08	LMT	EET DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	593066	11/11/22 06:33	EJS	EET DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	591920	10/31/22 18:24	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1			591109	10/24/22 21:36	KEG	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	592095	11/01/22 23:31	ABW	EET DEN

Client Sample ID: MW6-221019
Date Collected: 10/19/22 15:35
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-2
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	647249	10/26/22 22:16	CDC	EET BUF
Dissolved	Prep	3005A			50 mL	50 mL	590931	10/24/22 15:04	MCR	EET DEN
Dissolved	Analysis	6020		1			591190	10/25/22 10:10	LMT	EET DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	593066	11/11/22 07:37	EJS	EET DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	591920	10/31/22 18:27	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1			591109	10/24/22 21:42	KEG	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	592095	11/01/22 23:46	ABW	EET DEN

Client Sample ID: MW7-221019
Date Collected: 10/19/22 08:45
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-3
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	647249	10/26/22 22:40	CDC	EET BUF
Dissolved	Prep	3005A			50 mL	50 mL	590931	10/24/22 15:04	MCR	EET DEN
Dissolved	Analysis	6020		1			591190	10/25/22 10:12	LMT	EET DEN
Total/NA	Analysis	300.0		5	5 mL	5 mL	593066	11/11/22 07:52	EJS	EET DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	591920	10/31/22 18:30	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1			591109	10/24/22 21:48	KEG	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	592095	11/02/22 00:00	ABW	EET DEN

Client Sample ID: MW12I-221019
Date Collected: 10/19/22 13:15
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-4
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	8260C SIM		1	25 mL	25 mL	647249	10/26/22 23:03	CDC	EET BUF
Dissolved	Prep	3005A			50 mL	50 mL	590931	10/24/22 15:04	MCR	EET DEN
Dissolved	Analysis	6020		1			591190	10/25/22 10:14	LMT	EET DEN
Total/NA	Analysis	300.0		5	5 mL	5 mL	593066	11/11/22 08:08	EJS	EET DEN

Lab Chronicle

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-168093-1

Client Sample ID: MW12I-221019
Date Collected: 10/19/22 13:15
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-4
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	591920	10/31/22 18:32	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1			591109	10/24/22 22:18	KEG	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	592095	11/02/22 00:15	ABW	EET DEN

Client Sample ID: MW14-221019
Date Collected: 10/19/22 16:35
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-5
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	647249	10/26/22 23:27	CDC	EET BUF
Dissolved	Prep	3005A			50 mL	50 mL	590931	10/24/22 15:04	MCR	EET DEN
Dissolved	Analysis	6020		1			591190	10/25/22 10:16	LMT	EET DEN
Total/NA	Analysis	300.0		5	5 mL	5 mL	593066	11/11/22 08:24	EJS	EET DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	591920	10/31/22 18:52	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1			591109	10/24/22 22:29	KEG	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	592095	11/02/22 00:29	ABW	EET DEN

Client Sample ID: MW20DD-221019
Date Collected: 10/19/22 07:00
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-6
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	647249	10/26/22 23:51	CDC	EET BUF
Dissolved	Prep	3005A			50 mL	50 mL	590931	10/24/22 15:04	MCR	EET DEN
Dissolved	Analysis	6020		1			591190	10/25/22 10:17	LMT	EET DEN
Total/NA	Analysis	300.0		5	5 mL	5 mL	593066	11/11/22 08:40	EJS	EET DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	591920	10/31/22 18:53	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1			591109	10/24/22 22:35	KEG	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	592095	11/02/22 00:43	ABW	EET DEN

Client Sample ID: SW1-221019
Date Collected: 10/19/22 12:45
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-7
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	647249	10/27/22 00:14	CDC	EET BUF
Dissolved	Prep	3005A			50 mL	50 mL	590931	10/24/22 15:04	MCR	EET DEN
Dissolved	Analysis	6020		1			591190	10/25/22 10:19	LMT	EET DEN
Total/NA	Analysis	300.0		5	5 mL	5 mL	593066	11/11/22 08:56	EJS	EET DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	591920	10/31/22 18:56	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1			591109	10/24/22 22:40	KEG	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	592095	11/02/22 01:55	ABW	EET DEN

Lab Chronicle

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-168093-1

Client Sample ID: SW4-221019
Date Collected: 10/19/22 13:30
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-8
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	647249	10/27/22 00:39	CDC	EET BUF
Dissolved	Prep	3005A			50 mL	50 mL	590931	10/24/22 15:04	MCR	EET DEN
Dissolved	Analysis	6020		1			591190	10/25/22 10:21	LMT	EET DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	593066	11/11/22 00:29	EJS	EET DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	591920	10/31/22 18:59	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1			591109	10/24/22 22:46	KEG	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	592095	11/02/22 02:09	ABW	EET DEN

Client Sample ID: SW6-221019
Date Collected: 10/19/22 14:05
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-9
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	647249	10/27/22 01:03	CDC	EET BUF
Dissolved	Prep	3005A			50 mL	50 mL	590931	10/24/22 15:04	MCR	EET DEN
Dissolved	Analysis	6020		1			591190	10/25/22 10:23	LMT	EET DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	593066	11/11/22 01:32	EJS	EET DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	591920	10/31/22 19:01	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1			591109	10/24/22 22:52	KEG	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	592764	11/08/22 05:29	ABW	EET DEN

Client Sample ID: SW7-221019
Date Collected: 10/19/22 14:50
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-10
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	647249	10/27/22 01:27	CDC	EET BUF
Dissolved	Prep	3005A			50 mL	50 mL	590931	10/24/22 15:04	MCR	EET DEN
Dissolved	Analysis	6020		1			591190	10/25/22 10:29	LMT	EET DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	593066	11/11/22 01:48	EJS	EET DEN
Total/NA	Analysis	350.1		1	10 mL	10 mL	591920	10/31/22 19:09	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1			591109	10/24/22 22:57	KEG	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	592764	11/08/22 06:40	ABW	EET DEN

Client Sample ID: MW13D-221019
Date Collected: 10/19/22 14:20
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-11
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	647249	10/27/22 01:51	CDC	EET BUF
Dissolved	Prep	3005A			50 mL	50 mL	590931	10/24/22 15:04	MCR	EET DEN
Dissolved	Analysis	6020		1			591190	10/25/22 10:31	LMT	EET DEN
Total/NA	Analysis	300.0		1	5 mL	5 mL	593066	11/11/22 02:04	EJS	EET DEN

Lab Chronicle

Client: Aspect Consulting
Project/Site: Hansville Landfill

Job ID: 280-168093-1

Client Sample ID: MW13D-221019

Date Collected: 10/19/22 14:20
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-11

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	591920	10/31/22 19:12	MMP	EET DEN
Total/NA	Analysis	SM 2320B		1			591109	10/24/22 23:02	KEG	EET DEN
Total/NA	Analysis	SM 5310B		1	20 mL	20 mL	592764	11/08/22 06:54	ABW	EET DEN

Client Sample ID: TB1-221019

Date Collected: 10/19/22 07:00
Date Received: 10/21/22 09:30

Lab Sample ID: 280-168093-12

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	647249	10/27/22 02:15	CDC	EET BUF

Laboratory References:

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

Analytical Resources, LLC
Analytical Chemists and Consultants

15 November 2022

Janice Collins
Eurofins - Test America - Denver
4955 Yarrow Street
Arvada, CO 80002

RE: Hansville (28006013)

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)
22J0304	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, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Shelly Fishel, Project Manager

Cert# 100006-012

Eurofins Denver
4955 Yarrow Street 22J0304
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica — ARI

Client Information	Sampler: CB/CMT	Lab PM: Collins, Janice S	Carrier Tracking No(s):	COC No: 280-23414-6845.1
Client Contact: Peter J. Bannister	Phone: 206-780-7728	E-Mail: Janice.Collins@et.eurofinsus.com	State of Origin:	Page:
Company: Aspect Consulting, LLC				Job #:
Address: 350 Madison Ave N	Due Date Requested:			
City: Bainbridge Island	TAT Requested (days):			
State, Zip: WA, 98110	Compliance Project: Δ Yes Δ No			
Phone: 206-780-7728	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

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 - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

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 (Buffalo)	6020- Dissolved Mn (FF)	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-5-221019	10/19/22	1040	G	W							X	X	X		Diss As,NO3,NO2,o-phos subbed direct to ARI
MW-6-221019		1535													
MW-7-221019		0845													
MW-12I-221019		1315													
MW-13D-221019		1420													
MW-14-221019		1635													
SW-1-221019		1245													
SW-2 DUP 4-221019		1330													
SW-6-221019		1405													
SW-7-221019		1450													
MW-200D-221019	↓	0700	↓	↓							↓	↓	↓		

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
Camm Tapm	10/20/22 1153	Aspect	[signature]	10/20/22	ARI LLC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
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:

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-5-221019	22J0304-01	Water	19-Oct-2022 10:40	20-Oct-2022 11:52
MW-6-221019	22J0304-02	Water	19-Oct-2022 15:35	20-Oct-2022 11:52
MW-7-221019	22J0304-03	Water	19-Oct-2022 08:45	20-Oct-2022 11:52
MW-12I-221019	22J0304-04	Water	19-Oct-2022 13:15	20-Oct-2022 11:52
MW-14-221019	22J0304-05	Water	19-Oct-2022 16:35	20-Oct-2022 11:52
SW-1-221019	22J0304-06	Water	19-Oct-2022 12:45	20-Oct-2022 11:52
SW-4-221019	22J0304-07	Water	19-Oct-2022 13:30	20-Oct-2022 11:52
SW-6-221019	22J0304-08	Water	19-Oct-2022 14:05	20-Oct-2022 11:52
SW-7-221019	22J0304-09	Water	19-Oct-2022 14:50	20-Oct-2022 11:52
MW-20DD-221019	22J0304-10	Water	19-Oct-2022 07:00	20-Oct-2022 11:52
MW-13D-221019	22J0304-11	Water	19-Oct-2022 14:20	20-Oct-2022 11:52

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

Work Order Case Narrative

Client: Eurofins - Test America - Denver
Project: Hansville
Project Number: 28006013
Work Order: 22J0304

Sample receipt

Sample(s) as listed on the preceding page were received 20-Oct-2022 11:52 under ARI work order 22J0304. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times except Orthophosporus data flagged with "H" qualifiers. The holding times for qualified data were exceeded upon sample receipt.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Eurofins / Aspect Consulting (T.S.) | Project Name: Horseshoe Landfill

COC No(s): NA | Delivered by: Fed-Ex UPS Courier Hand Delivered Other: ______

Assigned ARI Job No: 22J0304 | 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
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 11:53 1.1

If cooler temperature is out of compliance fill out form 00070F   Temp Gun ID#: 200A208

Cooler Accepted by: [signature] Date: 10/20/22 Time: 11:52

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? ………		YES	NO
What kind of packing material was used? … Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: groove bags			
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: ______ Equipment: ______ Split by: ______

Samples Logged by: [signature] Date: 10/20/22 Time: 1310 Labels checked by: [signature]

***** 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:

By: Date:

WORK ORDER

22J0304

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Eurofins - Test America - Denver
Project Manager: Shelly Fishel

Project: Hansville
Project Number: 28006013

Preservation Confirmation

Container ID	Container Type	pH
22J0304-01 A	HDPE NM, 500 mL	
22J0304-01 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22J0304-01 C	HDPE NM, 250mL	
22J0304-02 A	HDPE NM, 500 mL	
22J0304-02 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22J0304-02 C	HDPE NM, 250mL	
22J0304-03 A	HDPE NM, 500 mL	
22J0304-03 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22J0304-03 C	HDPE NM, 250mL	
22J0304-04 A	HDPE NM, 500 mL	
22J0304-04 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22J0304-04 C	HDPE NM, 250mL	
22J0304-05 A	HDPE NM, 500 mL	
22J0304-05 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22J0304-05 C	HDPE NM, 250mL	
22J0304-06 A	HDPE NM, 500 mL	
22J0304-06 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22J0304-06 C	HDPE NM, 250mL	
22J0304-07 A	HDPE NM, 500 mL	
22J0304-07 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22J0304-07 C	HDPE NM, 250mL	
22J0304-08 A	HDPE NM, 500 mL	
22J0304-08 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22J0304-08 C	HDPE NM, 250mL	
22J0304-09 A	HDPE NM, 500 mL	
22J0304-09 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22J0304-09 C	HDPE NM, 250mL	
22J0304-10 A	HDPE NM, 500 mL	
22J0304-10 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22J0304-10 C	HDPE NM, 250mL	
22J0304-11 A	HDPE NM, 500 mL	
22J0304-11 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22J0304-11 C	HDPE NM, 250mL	

Reviewed By

Date

WORK ORDER

22J0304

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Eurofins - Test America - Denver	Project Manager: Shelly Fishel
Project: Hansville	Project Number: 28006013

Preservation Confirmed By

10/20/22
Date

Reviewed By

Date

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-5-221019

22J0304-01 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/19/2022 10:40

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 04:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0304-01 B 01

Preparation Batch: BKK0016 — Sample Size: 25 mL

Prepared: 11/01/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.61	ug/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-5-221019

22J0304-01 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 10:40

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 00:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BKJ0564; Prepared: 10/20/2022; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 22J0304-01 C

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	3.74	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	1426-44-42	1	0.10	0.10	0.13	mg-P/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-5-221019

22J0304-01RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 10:40

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 16:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22J0304-01RE1 C

Preparation Batch: BKJ0564 — Sample Size: 10 mL

Prepared: 10/20/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Orthophosphorus	1426-44-42	1	0.10	0.10	ND	mg-P/L	H, U

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-6-221019

22J0304-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/19/2022 15:35

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 03:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0304-02 B 01

Preparation Batch: BKK0016 — Sample Size: 25 mL

Prepared: 11/01/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.59	ug/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-6-221019

22J0304-02 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 15:35

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 01:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BKJ0564; Prepared: 10/20/2022; Sample Size: 10 mL; Final Volume: 10 mL; Extract ID: 22J0304-02 C

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	1.56	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	1426-44-42	1	0.10	0.10	ND	mg-P/L	U

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-7-221019

22J0304-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/19/2022 08:45

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 03:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0304-03 B 01

Preparation Batch: BKK0016 — Sample Size: 25 mL

Prepared: 11/01/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.12	ug/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-7-221019

22J0304-03 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 08:45

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 01:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BKJ0564; Prepared: 10/20/2022; Sample Size: 10 mL; Final Volume: 10 mL; Extract ID: 22J0304-03 C

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	0.704	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	1426-44-42	1	0.10	0.10	ND	mg-P/L	U

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-12I-221019

22J0304-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/19/2022 13:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 04:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0304-04 B 01

Preparation Batch: BKK0016 — Sample Size: 25 mL

Prepared: 11/01/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	2.32	ug/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-12I-221019

22J0304-04 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 13:15

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 02:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BKJ0564; Prepared: 10/20/2022; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 22J0304-04 C

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	1426-44-42	1	0.10	0.10	ND	mg-P/L	U

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-14-221019

22J0304-05 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/19/2022 16:35

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 04:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0304-05 B 01

Preparation Batch: BKK0016 — Sample Size: 25 mL

Prepared: 11/01/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	13.4	ug/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-14-221019

22J0304-05 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 16:35

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 03:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BKJ0564; Prepared: 10/20/2022; Sample Size: 10 mL; Final Volume: 10 mL; Extract ID: 22J0304-05 C

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	1426-44-42	1	0.10	0.10	ND	mg-P/L	U

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

SW-1-221019

22J0304-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/19/2022 12:45

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 04:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0304-06 B 01

Preparation Batch: BKK0016 — Sample Size: 25 mL

Prepared: 11/01/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.781	ug/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

SW-1-221019

22J0304-06 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 12:45

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 03:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BKJ0564; Prepared: 10/20/2022; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 22J0304-06 C

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	2.32	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	1426-44-42	1	0.10	0.10	ND	mg-P/L	U

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

SW-4-221019

22J0304-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/19/2022 13:30

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 04:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0304-07 B 01

Preparation Batch: BKK0016 — Sample Size: 25 mL

Prepared: 11/01/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.69	ug/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

SW-4-221019

22J0304-07 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 13:30

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 03:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BKJ0564; Prepared: 10/20/2022; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 22J0304-07 C

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	0.993	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	1426-44-42	1	0.10	0.10	ND	mg-P/L	U

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

SW-6-221019

22J0304-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/19/2022 14:05

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 04:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0304-08 B 01

Preparation Batch: BKK0016 — Sample Size: 25 mL

Prepared: 11/01/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	2.93	ug/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

SW-6-221019

22J0304-08 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 14:05

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 04:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BKJ0564; Prepared: 10/20/2022; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 22J0304-08 C

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	2.31	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	1426-44-42	1	0.10	0.10	ND	mg-P/L	U

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

SW-7-221019

22J0304-09 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/19/2022 14:50

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 04:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0304-09 B 01

Preparation Batch: BKK0016 — Sample Size: 25 mL

Prepared: 11/01/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.82	ug/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

SW-7-221019

22J0304-09 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 14:50

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 04:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BKJ0564; Prepared: 10/20/2022; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 22J0304-09 C

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	0.454	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	1426-44-42	1	0.10	0.10	ND	mg-P/L	U

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-20DD-221019

22J0304-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/19/2022 07:00

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 05:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0304-10 B 01

Preparation Batch: BKK0016 — Sample Size: 25 mL

Prepared: 11/01/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	13.5	ug/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-20DD-221019

22J0304-10 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 07:00

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 04:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BKJ0564; Prepared: 10/20/2022; Sample Size: 10 mL; Final Volume: 10 mL; Extract ID: 22J0304-10 C

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	1426-44-42	1	0.10	0.10	ND	mg-P/L	U

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-13D-221019

22J0304-11 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/19/2022 14:20

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 05:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0304-11 B 01

Preparation Batch: BKK0016 — Sample Size: 25 mL

Prepared: 11/01/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	5.07	ug/L	

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

MW-13D-221019

22J0304-11 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 10/19/2022 14:20

Instrument: IC930 Analyst: KLD — Analyzed: 10/21/2022 05:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem; Preparation Batch: BKJ0564; Prepared: 10/20/2022; Sample Size: 10 mL; Final Volume: 10 mL — Extract ID: 22J0304-11 C

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	1426-44-42	1	0.10	0.10	ND	mg-P/L	U

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKK0016 - EPA 200.8 UCT-KED

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0016-BLK1)						Prepared: 01-Nov-2022 Analyzed: 01-Nov-2022 22:06						
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
LCS (BKK0016-BS1)						Prepared: 01-Nov-2022 Analyzed: 01-Nov-2022 22:10						
Arsenic, Dissolved	75a	24.8	0.0373	0.200	ug/L	25.0		99.1	80-120			
Duplicate (BKK0016-DUP1)			**Source: 22J0304-01**			Prepared: 01-Nov-2022 Analyzed: 05-Nov-2022 04:06						
Arsenic, Dissolved	75a	1.67	0.0373	0.200	ug/L		1.61			3.91	20	
Matrix Spike (BKK0016-MS1)			**Source: 22J0304-01**			Prepared: 01-Nov-2022 Analyzed: 05-Nov-2022 04:12						
Arsenic, Dissolved	75a	26.5	0.0373	0.200	ug/L	25.0	1.61	99.8	75-125			

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

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BKJ0564 - EPA 300.0

Instrument: IC930 Analyst: KLD

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0564-BLK1)				Prepared: 20-Oct-2022 Analyzed: 20-Oct-2022 23:40							
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-P/L							U
LCS (BKJ0564-BS1)				Prepared: 20-Oct-2022 Analyzed: 21-Oct-2022 00:00							
Nitrate-N	5.29	0.100	0.100	mg/L	5.00		106	90-110			
Nitrite-N	4.98	0.100	0.100	mg/L	5.00		99.6	90-110			
Orthophosphorus	5.08	0.10	0.10	mg-P/L	5.00		102	90-110			
Duplicate (BKJ0564-DUP1)		**Source: 22J0304-01**		Prepared: 20-Oct-2022 Analyzed: 21-Oct-2022 00:40							
Nitrate-N	3.74	0.100	0.100	mg/L		3.74			0.16	20	
Nitrite-N	ND	0.100	0.100	mg/L		ND					U
Orthophosphorus	ND	0.10	0.10	mg-P/L		0.13					U
Matrix Spike (BKJ0564-MS1)		**Source: 22J0304-01**		Prepared: 20-Oct-2022 Analyzed: 21-Oct-2022 01:00							
Nitrate-N	5.76	0.100	0.100	mg/L	1.98	3.74	102	75-125			
Nitrite-N	1.93	0.100	0.100	mg/L	2.03	ND	95.2	75-125			
Orthophosphorus	1.63	0.10	0.10	mg-P/L	2.00	0.13	75.1	75-125			

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

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

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	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023

Eurofins - Test America - Denver	Project: Hansville	
4955 Yarrow Street	Project Number: 28006013	**Reported:**
Arvada CO, 80002	Project Manager: Janice Collins	15-Nov-2022 11:58

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
H	Hold time violation - Hold time was exceeded.
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.

TA

Eurofins 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	Sampler: CB + CMT	Lab PM: Collins, Janice S	Carrier Tracking No(s):	COC No: 280-23414-6845.1
Client Contact: Peter S Bannister	Phone: 206-780-7728	E-Mail: Janice.Collins@et.eurofinsus.com	State of Origin:	Page:
Company: Aspect Consulting, LLC				Job #:

Address: 350 Madison Ave N	Due Date Requested:	Analysis Requested
City: Bainbridge Island	TAT Requested (days):	
State, Zip: WA, 98110	Compliance Project: Δ Yes Δ No	
Phone: 206-780-7728	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#:	

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 - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

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 (Buffalo)	6020- Dissolved Mn (FF)	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-5-221019	10/19/22	1040	G	W			X	X	X	X					Diss As,NO3,NO2,o-phos subbed direct to ARI
MW-6-221019		1535													
MW-7-221019		0845													
MW-12I-221019		1315													
MW-14-221019		1635													
MW-20DD-221019		0700													
SW-1-221019		1245													
SW-4-221019		1330													
SW-6-221019		1405													
SW-7-221019		1450													
MW-13D-221019	↓	1420	↓	↓			↓	↓	↓	↓					

280-168093 Chain of Custody

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: Connor Tagum	Date/Time: 10/20/22 1120	Company: Aspect	Received by:	Date/Time: 10/21/22 0930	Company: EHDEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
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: 16.3 IR1 (F0.0

11/15/2022

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

Chain of Custody Record

TA

eurofins | Environment Testing TestAmerica

Client Information			
Client Contact: Peter S. Bannister	Sampler: CB + CMT	Lab PM: Collins, Janice S	Carrier Tracking No(s):
	Phone: 206-780-7728	E-Mail: Janice.Collins@et.eurofinsus.com	State of Origin:
Company: Aspect Consulting, LLC			
Address: 350 Madison Ave N	Due Date Requested:		
City: Bainbridge Island	TAT Requested (days):		
State, Zip: WA, 98110	Compliance Project: Δ Yes Δ No		
Phone: 206-780-7728	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#:		

COC No: 280-23414-6845.1
Page:
Job #:

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 (Buffalo)	6020- Dissolved Mn (FF)	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		
TB1-221019	—	—		AQ			X								Diss As,NO3,NO2,o-phos subbed direct to ARI

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 - Na2S2SO3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - ph 4-5; 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)

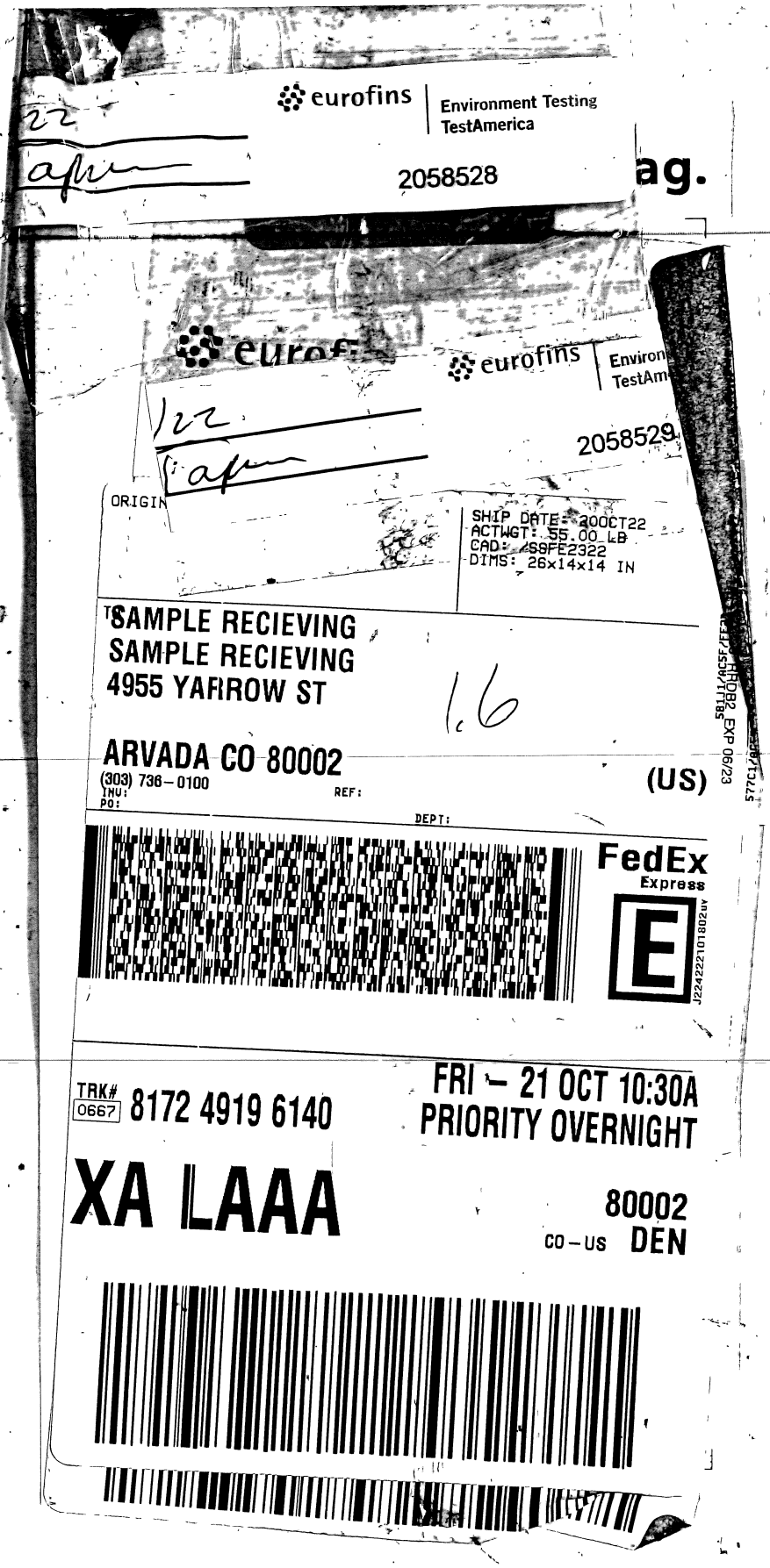
Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:		Time:	Method of Shipment:	
Relinquished by: Cammi Tayman	Date/Time: 10/20/22 1120	Company: Aspect	Received by: [signature]	Date/Time: 10/21/22 0930	Company: ETADEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
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:


Custody Seal
10/20
2058530
Environment Testing
TestAmerica
2058531
eurofins
Environment Testing
TestAmerica
280-168093 Waybill
ORIGIN ID:BFIA
SHIP DATE: 20OCT22
ACTWGT: 50.00 LB
CAD: /SSFE2322
DIMS: 24x14x14 IN
SAMPLE RECIEVING
SAMPLE RECIEVING
4955 YARROW ST
ARVADA CO 80002
(303) 736-0100
INV:
PO:
REF:
DEPT:
(US)
FedEx
Express
TRK# 8172 4919 6161
FRI - 21 OCT 10:30A
PRIORITY OVERNIGHT
NXA LAAA
80002
CO-US DEN
Part # 156297-435 RRDB2 EXP 06/23
139469-434 MTW EXP 07/23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SAMPLE RECIEVING
4955 YARROW ST
1.6
ARVADA CO 80002
(303) 736-0100
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PO:
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(US)
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Express
TRK# 0667 8172 4919 6140
FRI - 21 OCT 10:30A
PRIORITY OVERNIGHT
XA LAAA
80002
CO-US DEN

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

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Collins, Janice S	Carrier Tracking No(s):	COC No: 280-633397.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Janice.Collins@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 2
Company: Eurofins Environment Testing Northeast,		Accreditations Required (See note): State Program - Washington		Job #: 280-168093-1
Address: 10 Hazelwood Drive, ,	Due Date Requested: 11/3/2022			
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, Y - Trizma, 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:						
MW5-221019 (280-168093-1)	10/19/22	10:40 Pacific		Water			X	3	
MW6-221019 (280-168093-2)	10/19/22	15:35 Pacific		Water			X	3	
MW7-221019 (280-168093-3)	10/19/22	08:45 Pacific		Water			X	3	
MW12I-221019 (280-168093-4)	10/19/22	13:15 Pacific		Water			X	3	
MW14-221019 (280-168093-5)	10/19/22	16:35 Pacific		Water			X	3	
MW20DD-221019 (280-168093-6)	10/19/22	07:00 Pacific		Water			X	3	
SW1-221019 (280-168093-7)	10/19/22	12:45 Pacific		Water			X	3	
SW4-221019 (280-168093-8)	10/19/22	13:30 Pacific		Water			X	3	
SW6-221019 (280-168093-9)	10/19/22	14:05 Pacific		Water			X	3	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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 Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

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		10/24/22 14:51	ETADEN		10-26-22 1000	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:
		0.5 ICE

11/15/2022

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

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Collins, Janice S	Carrier Tracking No(s):	COC No: 280-633397.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: Janice.Collins@et.eurofinsus.com	State of Origin: Washington	Page: Page 2 of 2
Company: Eurofins Environment Testing Northeast,		Accreditations Required (See note): State Program - Washington		Job #: 280-168093-1
Address: 10 Hazelwood Drive, ,	Due Date Requested: 11/3/2022			
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, Y - Trizma, 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:						
SW7-221019 (280-168093-10)	10/19/22	14:50 Pacific		Water			X	3	
MW13D-221019 (280-168093-11)	10/19/22	14:20 Pacific		Water			X	3	
TB1-221019 (280-168093-12)	10/19/22	07:00 Pacific		Water			X	3	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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 Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

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]	10/24/22 14:51	ETADEN	[signature]		
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	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:

Login Sample Receipt Checklist

Client: Aspect Consulting

Job Number: 280-168093-1

Login Number: 168093
List Number: 1
Creator: Lee, Jerry

List Source: Eurofins Denver

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	
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: 280-168093-1

Login Number: 168093
List Number: 2
Creator: Yeager, Brian A

List Source: Eurofins Buffalo
List Creation: 10/26/22 02:40 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	2.5 ice
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.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	True	

Eurofins Denver

Job Notes

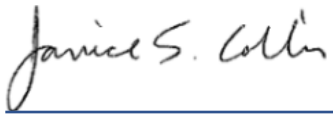
The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the Eurofins TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the {0} Project Manager.

Authorization



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Authorized for release by
Janice Collins, Project Manager
Janice.Collins@et.eurofinsus.com
(303)736-0100

APPENDIX E

Annual Inspection Forms – Kitsap Public Health District

KITSAP PUBLIC
HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

SOLID WASTE FACILITY INSPECTION FORM

Facility Name: HANSville Landfill **Operator:** **Phone #:**

Location of Facility: 7791 NE Ecology RD Kingston, WA

Inspector: Jakob Hughes **Date:** 03/10/2022 **Time:** 9:00 A.M

Type of Inspection Checklist Used: **Facility Representative Present:** Alexis McKinnon

Reason for Inspection	Type of Inspection	Results	Sample Taken?
X Scheduled ___ Return ___ Complaint ___ Permit Investigation ___ Sample ___ By Request ___ Other	X Full Quarterly ___ Brief ___ No Entry ___ Consultation ___ Plan Review ___ Site Review ___ Other	X Compliant ___ Non-Compliant ___ Approved ___ Disapproved ___ Other	___ Yes X No **Attachments?** ___ Yes ___ No Type?

Item #	Description (see attached checklist for complete list of items)	Correction Date

Comments:
/ Ditches have vegetation; Plans to have ditches dredged this summer
/ NO Damage to cap
/ Growth of grass; acceptable

AMcKinnon
Facility Representative

Jakob Hughes
KPHD Inspector

File Name: _____

KITSAP PUBLIC
HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

March 14, 2022

Alexis McKinnon
Kitsap County Public Works
614 Division Street, MS-27
Port Orchard, WA 98366

RE: HANSVILLE LANDFILL INSPECTION, 1st QUARTER 2022

Dear Ms. McKinnon:

The Kitsap Public Health District (Health District) is writing to relay the results of the 1st quarter inspection of 2022 at the Hansville Landfill. Enclosed please find a copy of the inspection checklist/report for the quarterly inspection conducted on March 10, 2022, at 9:00 A.M.

The following items were noted or discussed:

- The landfill cover was in good condition. Some minor pooling in the ditch to the north side of the landfill, but not enough to breach the ditch.
- Some overgrowth of vegetation observed in the drainage ditches. Plans to hire a contractor and to dredge these ditches closer to summer are in the works.
- Discussion of the 2021 Annual Monitoring report occurred. No issues were observed in the submitted report.
- The next inspection is scheduled for June 2022.
- A copy of the inspection form is attached.

If you have any questions or comments, please feel free to contact me at (360) 728-2307.

Sincerely,

Jakob Hughes

Jakob Hughes
Environmental Health Specialist
Solid and Hazardous Waste Program
Phone: (360)728-2307
Jakob.Hughes@KitsapPublicHealth.org

enc: Inspection Checklist

KITSAP PUBLIC
HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

June 13th, 2022

Alexis McKinnon
Kitsap County Public Works
614 Division Street, MS-27
Port Orchard, WA 98366

RE: QUARTERLY HANSVILLE LANDFILL INSPECTION,

Dear Ms. McKinnon:

The Kitsap Public Health District (Health District) is writing to relay the results of the 2nd quarter inspection of 2022 at the Hansville Landfill. Enclosed please find a copy of the inspection checklist/report for the quarterly inspection conducted on June 10, 2022, at 9:00 A.M.

The following items were noted or discussed:

- The landfill cover was in good condition.
- The next inspection is scheduled for September 2022.
- A copy of the inspection form is attached.

If you have any questions or comments, please feel free to contact me at (360) 728-2307.

Sincerely,

Jakob Hughes

Jakob Hughes
Environmental Health Specialist
Solid and Hazardous Waste Program
Phone: (360)728-2307
Email: Jakob.Hughes@KitsapPublicHealth.org

enc: Inspection Checklist

To File: II. A. 3

KITSAP PUBLIC HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

SOLID WASTE FACILITY INSPECTION FORM

Facility Name: Hansville Landfill **Operator:** **Phone #:**

Location of Facility:

Inspector: Jakob Hughes **Date:** 6/10/2022 **Time:** 9:00 A.M

Type of Inspection Checklist Used: **Facility Representative Present:** Alexis

Reason for Inspection	Type of Inspection	Results	Sample Taken?
X Scheduled	X Full Quarterly	X Compliant	___ Yes X No
___ Return	___ Brief	___ Non-Compliant	
___ Complaint	___ No Entry	___ Approved	**Attachments?**
___ Permit Investigation	___ Consultation	___ Disapproved	___ Yes X No
___ Sample	___ Plan Review	___ Other	Type?
___ By Request	___ Site Review		
___ Other	___ Other		

Item #	Description (see attached checklist for complete list of items)	Correction Date

Comments: NO Issues

Facility Representative

KPHD Inspector

File Name: II. A. 3

KITSAP PUBLIC
HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

August 9th, 2022

Alexis McKinnon
Kitsap County Public Works
614 Division Street, MS-27
Port Orchard, WA 98366

RE: QUARTERLY HANSVILLE LANDFILL INSPECTION,

Dear Ms. McKinnon:

The Kitsap Public Health District (Health District) is writing to relay the results of the 3rd quarter inspection of 2022 at the Hansville Landfill. Enclosed please find a copy of the inspection checklist/report for the quarterly inspection conducted on August 4th, 2022, at 9:00 A.M.

The following items were noted or discussed:

- The landfill cover was in good condition.
- Grass needs to be mowed.

If you have any questions or comments, please feel free to contact me at (360) 728-2307.

Sincerely,

Jakob Hughes

Jakob Hughes
Environmental Health Specialist
Solid and Hazardous Waste Program
Phone: (360)728-2307
Email: Jakob.Hughes@KitsapPublicHealth.org

enc: Inspection Checklist

KITSAP PUBLIC
HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

Closed and Abandoned Landfill Inspection Form

Hansville Landfill
Facility Name

7791 NE Ecology RD
Location of Facility

Jakob Hughes — 08/04/2022 — 9:00 A.M.
Inspector **Date** **Time**

Reason for Inspection	Type of Inspection	Results	Sample Taken?
☒ Scheduled ☐ Complaint ☐ Sample ☐ Other	☐ Annual ☒ Other	☒ Compliant ☐ Substantially compliant ☐ Non-compliant	☐ Yes ☒ No **Attachments (photos, documents, etc.)?** ☐ Yes ☒ No

General

Landfill cap is intact. No garbage/waste eroding out of the cap.			
Yes ☒	No ☐	N/A ☐	**Citation:** *WAC 173-351-500(2)(a)(i)*

The landfill is undeveloped. No construction/buildings within the active area of the landfill.			
Yes ☒	No ☐	N/A ☐	**Citation:** *KCBH 2010-1-460(c)*

No stormwater is being detained or stored on the landfill.			
Yes ☒	No ☐	N/A ☐	**Citation:** *KCBH 2010-1-460(b)*

The site is free of solid waste, debris, and/or illegal dumping.			
Yes ☒	No ☐	N/A ☐	**Citation:** *WAC 173-304-407(5)(c)*

KITSAP PUBLIC
HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

The site is free of noxious odors.	
Yes ☒ No ☐ N/A ☐	**Issue:** Potential cause for concern.

There are no signs of leachate seeps coming from the landfill.	
Yes ☒ No ☐ N/A ☐	**Issue:** Potential cause for concern.

Post-Closure Monitoring (for landfills closed between 1985 and 2003)

Groundwater is being monitored in accordance with WAC 173-304-490.	
Yes ☒ No ☐ N/A ☐	**Citation:** *WAC 173-304-460(3)(g)(ii)*

Leachate is being monitored (if required by the Health District)	
Yes ☒ No ☐ N/A ☐	**Citation:** *WAC 173-304-460(3)(g)(ii)(B)*

Methane/landfill gasses are being monitored (if required by the Health District)	
Yes ☒ No ☐ N/A ☐	**Citation:** *WAC 173-304-460(3)(g)(ii)(A)*

KITSAP PUBLIC
HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

Comments

- Grass needs to be cut.
- NO issues

Signatures: Jakob Hughes
Environmental Health Specialist

08/4/2022
Date

X [signature]

8/4/22
Date

KITSAP PUBLIC
HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

Revisions

Revision date	Author	Notes
6/27/2022	RMB	Created
7/11/2022	RMB	Changed language on stormwater item; added WAC 173-304 items.

KITSAP PUBLIC HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

File Index: II A. 3

Closed and Abandoned Landfill Inspection Form

Hansville landfill
Facility Name

7791 NE Ecology RD
Location of Facility

Jakob Hughes — 11/08/2022 — 9:00 A.M.
Inspector **Date** **Time**

Reason for Inspection	Type of Inspection	Results	Sample Taken?
☒ Scheduled ☐ Complaint ☐ Sample ☐ Other	☐ Annual ☒ Other – Quarterly	☒ Compliant ☐ Substantially compliant ☐ Non-compliant	☐ Yes ☒ No **Attachments (photos, documents, etc.)?** ☐ Yes ☐ No

General

Landfill cap is intact. No garbage/waste eroding out of the cap.			
Yes ☒	No ☐	N/A ☐	**Citation:** *WAC 173-351-500(2)(a)(i)*

The landfill is undeveloped. No construction/buildings within the active area of the landfill.			
Yes ☒	No ☐	N/A ☐	**Citation:** *KCBH 2010-1-460(c)*

No stormwater is being detained or stored on the landfill.			
Yes ☒	No ☐	N/A ☐	**Citation:** *KCBH 2010-1-460(b)*

KITSAP PUBLIC
HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

The site is free of solid waste, debris, and/or illegal dumping.	
Yes ☒ No ☐ N/A ☐	**Citation:** *WAC 173-304-407(5)(c)*

The site is free of noxious odors.	
Yes ☒ No ☐ N/A ☐	**Issue:** Potential cause for concern.

There are no signs of leachate seeps coming from the landfill.	
Yes ☒ No ☐ N/A ☐	**Issue:** Potential cause for concern.

Post-Closure Monitoring (for landfills closed between 1985 and 2003)

Groundwater is being monitored in accordance with WAC 173-304-490.	
Yes ☒ No ☐ N/A ☐	**Citation:** *WAC 173-304-460(3)(g)(ii)*

Leachate is being monitored (if required by the Health District)	
Yes ☒ No ☐ N/A ☐	**Citation:** *WAC 173-304-460(3)(g)(ii)(B)*

Methane/landfill gasses are being monitored (if required by the Health District)	
Yes ☒ No ☐ N/A ☐	**Citation:** *WAC 173-304-460(3)(g)(ii)(A)*

KITSAP PUBLIC
HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

Comments

NO Issues
Grass is cut
Plans to install/improve drainage system
Plans to fix small cracks in LP gas pipes

Signatures: _____ _____ 11/08/2027
Environmental Health Specialist — Facility Representative — Date

KITSAP PUBLIC
HEALTH DISTRICT

345 6th Street, Suite 300
Bremerton, WA 98337
360-728-2235

November 9th, 2022

Alexis McKinnon
Kitsap County Public Works
614 Division Street, MS-27
Port Orchard, WA 98366

RE: QUARTERLY HANSVILLE LANDFILL INSPECTION,

Dear Ms. McKinnon:

The Kitsap Public Health District (Health District) is writing to relay the results of the 4th quarter inspection of 2022 at the Hansville Landfill. Enclosed please find a copy of the inspection checklist/report for the quarterly inspection conducted on November 8th, 2022, at 9:00 A.M.

The following items were noted or discussed:

- The landfill cover was in good condition.
- Grass had been mowed and is in excellent condition
- Plans are in works for additional drainage of surface water runoff.
- Plans are in works for small fixes to Landfill gas collection pipes.

If you have any questions or comments, please feel free to contact me at (360) 728-2307.

Sincerely,

Jakob Hughes

Jakob Hughes
Environmental Health Specialist
Solid and Hazardous Waste Program
Phone: (360)728-2307
Email: Jakob.Hughes@KitsapPublicHealth.org

enc: Inspection Checklist