



King County

Solid Waste Division

Department of Natural Resources and Parks

King Street Center

201 South Jackson Street, Suite 701

Seattle, WA 98104-3855

206-477-4466

711 TTY Relay

www.kingcounty.gov/solidwaste

May 29, 2020

TO: Darshan Dhillon, Health and Environmental Investigator III, Environmental Health Division, Public Health – Seattle & King County

VIA: Laura Belt, P.E., Engineer Supervisor ^{DS} LB

FM: Marisa Baptiste, Engineer III ^{DS} MB

RE: King County Vashon Island Closed Landfill Quarterly Environmental Monitoring Report for First Quarter 2020

The purpose of this letter is to transmit a copy of the Solid Waste Division's King County Vashon Island Closed Landfill Quarterly Environmental Monitoring Report for First Quarter 2020 for your review. This report includes environmental data collected from January 1, 2020 through March 31, 2020. Per WAC 173-351, the report also contains evaluations of groundwater and surface water quality at the landfill. The data included in this report are consistent with past characteristic reports.

If you have questions or need additional information, please contact me at 206-477-0458, or via email at marisa.baptiste@kingcounty.gov.

Enclosures

cc: Tim O'Connor, Hydrogeologist III, Washington State Department of Ecology
Alan Noell, PhD., P.E., Washington State Department of Ecology
Yolanda Pon, Managing Supervisor, Public Health - Seattle & King County
Glynda Steiner, P.E., CCM, Deputy Division Director, Solid Waste Division (SWD),
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Joan Kenton, Environmental Compliance Coordinator, SWD, DNRP



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May 29, 2020

Tim O'Connor, Hydrogeologist III
Solid Waste Management Program
Washington State Department of Ecology
Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008-5452

RE: King County Vashon Island Closed Landfill Quarterly Environmental Monitoring Report for First Quarter 2020

Dear Mr. O'Connor:

The purpose of this letter is to transmit a copy of the Solid Waste Division's *King County Vashon Island Closed Landfill Quarterly Environmental Monitoring Report* for First Quarter 2020 for your review. This report includes environmental data collected from January 1, 2020 through March 31, 2020. Per WAC 173-351, the report also contains evaluations of groundwater and surface water quality at the landfill. The data included in this report are consistent with past characteristic reports.

If you have questions or need additional information, please contact me at 206-477-0458, or via email at marisa.baptiste@kingcounty.gov.

Sincerely,

DocuSigned by:

Marisa Baptiste

52CD32739BC9450...

Marisa Baptiste
Engineer III

Enclosures

Tim O'Connor

May 29, 2020

Page 2

cc: Darshan Dhillon, Health and Environmental Investigator III, Environmental Health
Division, Public Health – Seattle & King County
Alan Noell, PhD., P.E., Solid Waste Program, Washington State Department of
Ecology
Glynda Steiner, P.E., CCM, Deputy Division Director, Solid Waste Division (SWD),
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KING COUNTY VASHON ISLAND CLOSED LANDFILL QUARTERLY ENVIRONMENTAL MONITORING REPORT

First Quarter 2020



King County

Department of
Natural Resources and Parks
Solid Waste Division

Serving
Community ● *Protecting*
Environment ● *Operating*
Excellence

May 2020

www.kingcounty.gov/solidwaste

KING COUNTY
VASHON ISLAND CLOSED
LANDFILL QUARTERLY
ENVIRONMENTAL
MONITORING REPORT

First Quarter 2020



Department of Natural Resources and Parks
Solid Waste Division



CHECKLIST FOR GROUNDWATER REPORTING
Municipal Solid Waste Landfills
WAC 173-351-415

Include a signed, completed copy of this checklist with each quarterly and annual report.

Quarterly groundwater reports shall be submitted to the jurisdictional health department and Ecology within 60 days of receipt of analytical data. Annual groundwater reports shall be submitted to the jurisdictional health department and Ecology by April 1 of each year.

1 st <input checked="" type="checkbox"/> 2 nd 3 rd 4 th YEAR <u>2020</u>	Reference (section, subsection)	Included in this report	Location – section or appendix
Quarterly Groundwater Reports: 173-351-415 (2) plus the referenced section			
Statistical calculations and summaries			
Descriptive statistics	420, (1)	<input type="checkbox"/>	
Statistical tests	420, (2)	<input checked="" type="checkbox"/>	Tables 7 & 14; App B
Notification of statistical increase (if applicable)	420, (4)	<input type="checkbox"/>	
Notification of concentrations above Chapter 173-200 WAC criteria (if any)	430, (4)	<input checked="" type="checkbox"/>	Sect 3.1.2, 3.1.3, 3.1.4, & 3.1.5
Static water level readings	415, (2)	<input checked="" type="checkbox"/>	App B
Potentiometric surface elevation maps depicting flow direction	415, (2)	<input checked="" type="checkbox"/>	App A
Flow rate – calculated	415, (2)	<input checked="" type="checkbox"/>	App A
Cation-anion balances	430, (5a)	<input checked="" type="checkbox"/>	Tables 2, 5, 9, 12
Explanation of greater than 5% (or 10%) difference if needed	430, (5a)	<input checked="" type="checkbox"/>	Sect 3.1.2, 3.1.3, 3.1.4, & 3.1.5
Trilinear diagrams	430, (5b)	<input checked="" type="checkbox"/>	Figs 2-5
Leachate analyses (if sampled and tested)	415, (2)	<input checked="" type="checkbox"/>	App B
Data entered into EIM database (date entered: 04/29/2020)	415, (3)	<input type="checkbox"/>	
Complete copy of the lab report with chain of custody record.		<input type="checkbox"/>	
Annual Groundwater Reports: 173-351-415 (1)			
Summary of statistical results and trends	415, (1)	<input type="checkbox"/>	
Summary of groundwater flow rate and direction for the year	415, (1)	<input type="checkbox"/>	
Copy of all potentiometric maps for the year	415, (1)	<input type="checkbox"/>	
Summary geochemical evaluation	415, (1)	<input type="checkbox"/>	
For Quarterly and Annual Reports			
Stamped by a licensed professional	RCW 18.220	<input checked="" type="checkbox"/>	



 Signature of Report Author

May 29, 2020

 Date

King County Vashon Island Closed Landfill

 Landfill

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CERTIFICATION

KING COUNTY VASHON ISLAND CLOSED LANDFILL QUARTERLY ENVIRONMENTAL MONITORING REPORT CERTIFICATION

I certify in accordance with the requirements of WAC 173-351-400(c) (3), that the contents of this document were prepared under my direction or supervision under a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Where applicable, some specific and related hydrogeologic portions have been duly certified by the responsible groundwater scientist. Based on my inquiry of the person(s) directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Name: Laura Belt, P.E.	Title: Supervising Engineer, Facility Engineering and Science Section	Date: 5/28/2020
Mailing Address: Solid Waste Division Department of Natural Resources & Parks 201 South Jackson Street, Suite 701 Seattle, WA 98104-3855		Telephone Number: 206-477-5215
Signature: <i>Laura Belt</i>		



EXPIRES 8-10-21

KING COUNTY
VASHON ISLAND
CLOSED LANDFILL
QUARTERLY ENVIRONMENTAL
MONITORING REPORT

For the First Quarter of 2020
January 1, 2020 - March 31, 2020

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Summary of Quarterly Water Quality for the King County Vashon Island Closed Landfill for the First Quarter of 2020

This report contains quarterly environmental monitoring results and an evaluation of groundwater quality for the King County Vashon Island Closed Landfill. This evaluation references the updated hydrogeological conceptual model, which was adopted in 2018 and was the model for the annual reports since 2018.

Environmental samples were collected and analyzed in accordance with the *Environmental Monitoring Sampling and Analysis Plan and Quality Assurance Project Plan for Vashon Island Closed Landfill, January 2016* (SAP). This document contains procedures to ensure data quality, consistency, and documentation.

Laboratory data was reviewed as outlined in the SAP for compliance with Data Quality Objectives (DQOs) and Quality Assurance/Quality Control (QA/QC). No quality control issues were identified for this quarter.

1.0 Regulatory Standards

Groundwater results are compared to National Primary and Secondary Drinking Water Regulations (40 CFR Parts 141 and 143) and Water Quality Standards for Groundwaters of the State of Washington (WAC 173-200) (see Appendix B). Seep and surface water monitoring results are compared to Water Quality Standards (40 CFR Parts 131) and Water Quality Standards for Surface Waters of the State of Washington (WAC 173-201A).

2.0 Analytical Methods

2.1 Data Evaluation

Groundwater quality is evaluated by comparison of analytical results to regulatory standards, geochemical analysis, and statistical evaluation. Changes made in accordance with federal regulations for the guidance of analytical testing methodologies covered by SW-846 (Test Methods for Evaluating Solid Waste) were implemented in 2017 by the contract laboratory. One specific effect of these changes was to replace the Method Detection Limit (MDL) methodology with the Lower Limit of Quantification (LLOQ) methodology as the basis for determining the lowest quantitative value of an analyte that can be reported. This affected all methods covered within SW-846.

The LLOQ is a performance-based methodology that tests known standards repeatedly to create a calibration curve for a specific method. Commonly, the lowest concentration of the (linear) calibration curve is set as the LLOQ. However, in some cases the LLOQ may be greater than the baseline curve concentration due to lab specific factors such as instrument sensitivity and method analytical uncertainty.

2.2 Trilinear Diagrams and Major Ion Balance

Geochemical data is presented on trilinear diagrams. Major cations and anions are plotted on individual triangles as percentages of total milliequivalents per liter (meq/L). These diagrams illustrate differences in major ion chemistry between groundwater samples and can be used to categorize water composition into identifiable groups or hydrochemical facies. These hydrochemical facies reflect distinct compositions of cation and anion concentrations. The value of the diagram lies in pointing out relationships that exist among individual samples. Trilinear diagrams are included with ionic balance calculations in this report.

2.3 Interwell and Intrawell Prediction Limits

Both interwell and intrawell prediction limit methods are used in evaluating groundwater data at the Vashon Island Closed Landfill. The interwell prediction limit is a statistical test that compares an analytical result from a downgradient well to a computed limit value derived from past analytical results from an upgradient well, considered to be representative background data. The prediction limits generated in this report are based on a 1% false positive rate (type I error) and depend on the background distribution. For each parameter tested, the background dataset is the 50 most recent data points beginning with the previous year for the upgradient well.

The intrawell prediction limit is a statistical test that compares an analytical result to a computed limit value derived from past analytical results from the same well, considered representative historical well data. The prediction limits generated in this report are based on a 1% false positive rate (type I error) and depend on the background distribution. For each parameter tested, the background dataset is the 50 most recent data points beginning with the previous year for the well.

Both types of the prediction limits are recalculated annually, adding in the previous year's sampling results. The dataset is tested for normality by application of the Shapiro-Wilk Test for Normality. If the data fail the test for normality, several transformations of the data are tested. When normal or transformed normal datasets are determined, a parametric interwell prediction limit is calculated and future results compared to this value. When transformations fail the test for normality, a non-parametric method is applied and future results are compared to this limit.

3.0 Results and Analysis

3.1 Groundwater

Groundwater monitoring well completion details for the Vashon Island Closed Landfill can be found in Table 1 and well locations can be found in Figure 1. Appendix A contains the Potentiometric Groundwater Surface Maps and Groundwater Velocity Calculations for the first quarter of 2020.

Iron, manganese, and arsenic occur naturally in groundwater of this region. The Washington State Department of Ecology conducted a background study on arsenic in groundwater and found for the Puget Sound basin the natural background is 0.008 mg/L (Ecology, 2016). Therefore, exceedances of the Water Quality Standards for Groundwaters of the State of

Washington (SGWC) for these contaminants are believed to be representative of background groundwater quality unaffected by the Vashon Island Closed Landfill.

3.1.1 Groundwater within Unit B Aquifer

Monitoring well MW-24 was previously identified as being located within Channel Cc1. However, in accordance with the updated hydrogeological conceptual model, monitoring well MW-24 has been determined to be completed within Unit B (see Figure 1). Monitoring well MW-24 is monitored for water level only and its groundwater elevations are within historical ranges (see Appendix B).

3.1.2 Groundwater within Channel Cc1

Monitoring wells MW-3, MW-4, MW-10, and MW-13 are completed within Channel Cc1 (see Figure 1), previously described as monitoring groundwater perched above the lacustrine silt.

Groundwater quality data for the groundwater samples collected during the first quarter of 2020 are consistent with sample results reported in the last annual report. Groundwater elevations are within historical ranges (see Appendix B).

The trilinear diagram (see Figure 2) shows samples from monitoring wells MW-3, MW-4, MW-10, and MW-13 to be within the same calcium-magnesium-bicarbonate hydrochemical facie as in past samples. The cation/anion balance during this quarter, for the wells in this zone, is within ten percent (see Table 2), which indicates analytical correctness.

Exceedances of regulatory standards are tabulated and presented (see Table 3). These exceedances are consistent with past analyses. Sample results exceeded the primary SGWC for total arsenic in the following wells:

- MW-3
- MW-4
- MW-10
- MW-13

Detections of volatile organic compounds in this zone are tabulated and presented in Table 4. These detections include the following:

- Cis-1,2-dichloroethene in monitoring well MW-4, which was qualified as 'JT', meaning results are only reported as qualitative, i.e. 'present but unquantified'
- Tetrachloroethene in monitoring well MW-3, which was qualified as 'JT'
- Trichlorofluoromethane in monitoring well MW-3

Volatile organic compounds will continued to be monitored and analyzed quarterly and future recurring volatile organic compound detections will continue to be evaluated to determine any change in trends.

3.1.3 Groundwater within Channel Cc2

The monitoring wells MW-2, MW-9, MW-20, MW-21, MW-33, and MW-35 are completed in Channel Cc2 (see Figure 1), previously described as monitoring groundwater within the

lacustrine silt. Monitoring well MW-20, which is located upgradient of the landfill, is used to calculate prediction limits and as a background comparison to monitoring wells MW-2, MW-9, MW-21, MW-33, and MW-35.

Groundwater quality data for the groundwater samples collected during the first quarter of 2020 are consistent with sample results reported in the last annual report. Groundwater elevations are within historical ranges (see Appendix B). The potentiometric map and groundwater velocity calculations (see Appendix A) are within historical values.

The trilinear diagram (see Figure 3) shows all samples collected from Channel Cc2 monitoring wells to be within the same calcium-magnesium-bicarbonate hydrochemical facie, as they have been in past samples for these wells. Monitoring wells MW-2, MW-21, MW-33, and MW-35 continue to be characterized by more dominant bicarbonate-carbonate characteristics. The cation/anion balance during this quarter, for the wells in this zone, is within ten percent (see Table 5).

Exceedances of regulatory standards are tabulated and presented in Table 6. All are consistent with past detections. Sample results exceeded the secondary SGWC for specific conductance (field) in following well:

- MW-33

Sample results exceeded the primary SGWC and the primary National Primary Drinking Water Regulations maximum contaminant levels (MCL) for total arsenic in the following wells:

- MW-2 (SGWC only)
- MW-9 (SGWC only)
- MW-20 (SGWC only)
- MW-21 (SGWC only)
- MW-33
- MW-35

Sample results exceeded the secondary SGWC and the secondary MCL for dissolved iron in the following wells:

- MW-33
- MW-35

Sample results exceeded the secondary SGWC and the secondary MCL for dissolved manganese in the following wells:

- MW-2
- MW-20
- MW-21
- MW-33
- MW-35

Sample results exceeded the primary SGWC for 1,1-dichloroethane in the following well:

- MW-33

Sample results exceeded the primary SGWC and the primary MCL for 1,2-dichloropropane in the following well:

- MW-35

Sample results exceeded the primary SGWC and the primary MCL for vinyl chloride in the following wells:

- MW-2 (SGWC only)
- MW-21 (SGWC only)
- MW-33
- MW-35

Exceedances of the interwell prediction limits (based on monitoring well MW-20) are tabulated and presented in Table 7. These prediction limits have been calculated to include all sample results through 2019. Sample results from monitoring well MW-2 exceeded the following interwell prediction limits:

- Specific Conductance (Field)
- Alkalinity
- Nitrate
- Total Dissolved Solids
- Total Calcium
- Total Magnesium
- Total Sodium

Sample results from monitoring well MW-9 exceeded the following interwell prediction limits:

- Chloride
- Nitrate

Sample results from monitoring well MW-21 exceeded the following interwell prediction limits:

- Specific Conductance (Field)
- Alkalinity
- Nitrate
- Total Dissolved Solids
- Total Calcium
- Total Magnesium
- Total Sodium

Sample results from monitoring well MW-33 exceeded the following interwell prediction limits:

- Specific Conductance (Field)
- Alkalinity
- Total Dissolved Solids
- Total Solids
- Total Arsenic
- Total Calcium
- Dissolved Iron
- Total Magnesium
- Dissolved Manganese
- Total Potassium
- Total Sodium
- Vinyl Chloride

Sample results from monitoring well MW-35 exceeded the following interwell prediction limits:

- Specific Conductance Field

- Alkalinity
- Ammonia
- Chloride
- Sulfate
- Total Dissolved Solids
- Total Organic Carbon
- Total Solids
- Total Suspended Solids
- Total Arsenic
- Total Barium
- Total Calcium
- Total Cobalt
- Dissolved Iron
- Total Lead
- Total Magnesium
- Dissolved Manganese
- Total Potassium
- Total Sodium
- Vinyl Chloride

Detections of volatile organic compounds in this zone are tabulated and presented in Table 8. Chlorinated hydrocarbons typically detected in sample results from these wells are consistent with previous data and represent stable or decreasing concentrations. Volatile organic compounds will continued to be monitored and analyzed quarterly and future recurring volatile organic compounds detections will continue to be evaluated to determine any change in trends.

3.1.4 Groundwater within Channel Cc3

Monitoring wells MW-8 and MW-36 are completed within Channel Cc3 (see Figure 1), previously described as monitoring groundwater perched above the lacustrine silt.

Groundwater quality data for the groundwater samples collected during the first quarter of 2020 are consistent with sample results reported in the last annual report. Groundwater elevations are within historical ranges (see Appendix B).

The trilinear diagram (see Figure 4) shows samples from monitoring wells MW-8 and MW-36 to be within the same calcium-magnesium-bicarbonate hydrochemical facie, as in past samples. The cation/anion balance during this quarter, for the well in this zone, is within ten percent (see Table 9), which indicates analytical correctness.

Exceedances of regulatory standards are tabulated and presented (see Table 10). These exceedances are consistent with past analyses. Sample results exceeded the primary SGWC for total arsenic in the following wells:

- MW-8
- MW-36

There were no volatile organic compounds detected in sampled collected from Channel Cc3 during first quarter of 2020.

3.1.5 Groundwater within Unit D Aquifer

The wells completed in the Unit D aquifer include monitoring wells MW-7, MW-12, MW-19, MW-26, MW-29, and MW-34, and piezometer wells MW-25 and MW-28 (see Figure 1). Monitoring well MW-7 is located upgradient of the landfill and is not considered to show impacts from landfill activities. The water level in MW-28 was measured below the bottom of the screen and is consider to be dry.

Groundwater quality data for the regional aquifer samples collected during the first quarter of 2020 are consistent with previous samples. Groundwater elevations are within historical ranges (see Appendix B). The potentiometric map and groundwater velocity calculations (see Appendix A) are within historical values.

The trilinear diagram shows all samples are within the same calcium-magnesium-bicarbonate hydrochemical facie (see Figure 5). During this quarter, the cation/anion balance for the wells in this zone is within ten percent (see Table 12).

Exceedances of primary and secondary regulatory standards are tabulated and presented (see Table 13). All exceedances are consistent with reported analyses in past quarterly reports. Sample results exceeded the primary SGWC and the primary MCL for total arsenic in the following wells:

- MW-7 (SGWC only)
- MW-12 (SGWC only)
- MW-19 (SGWC only)
- MW-26 (SGWC only)
- MW-34 (SGWC only)
- MW-29

Sample results exceeded the secondary SGWC and the secondary MCL for dissolved iron in the following wells:

- MW-29

Sample results exceeded the secondary SGWC and the secondary MCL for dissolved manganese in the following wells:

- MW-7
- MW-19
- MW-26
- MW-29

Wells located in Unit D Aquifer use the intrawell prediction limit method to determine prediction limit exceedances, which are tabulated and presented in Table 14. These prediction limits have been calculated to include all sample results through 2019. Sample results for monitoring well MW-34 exceeded the following intrawell prediction limits:

- pH (Field)

Monitoring well MW-34 has been placed into retesting protocol for pH (Field).

There were no volatile organic compounds detected in sampled collected from Unit D Aquifer during first quarter of 2020.

3.2 Weirs and Station SW-E

Samples were collected from the three weirs located on the West Hillslope and SW-E this quarter (see Figure 6). The water samples collected from these sampling stations are evaluated for surface water quality criteria exceedances (see Table 16). Sample results from all four stations were collected on January 29, 2020, and the KCSWD Environmental Scientists reported high flows at all four stations. The data from King County West Judd Creek Rain Gage (28Y), the closest rain gage to the landfill, shows 27 consecutive days of precipitation and ten inches of rain prior to this sampling event (approximately six inches more precipitation than the same time period in 2019). These unusually high flows caused by the January rain events likely caused some erosion of the West Hillslope, which resulted in more surface water exceedances than in previous quarters. Sample results from station SW-W1 exceeded the surface water quality criteria for the following constituents:

- Dissolved Oxygen (Field)
- Turbidity (Field)
- Total Iron
- Total Lead

Sample results from stations SW-W2 and SW-W3 exceeded the surface water quality criteria for the following constituents:

- Turbidity (Field)
- Total Iron

Station SW-E is located 1600 ft. west and downstream of the weirs. Sample results from station SW-W1 exceeded the surface water quality criteria for the following constituents:

- Turbidity (Field)
- Total Iron
- Total Lead

No vinyl chloride was detected in the first quarter of 2020 sample.

3.3 Landfill Gas

Landfill gas presence is monitored by a network of compliance probes installed around the perimeter of the landfill (see Figure 7). Probes are monitored monthly and the results are presented in Appendix B. No methane was detected in all compliance gas probes this quarter.

3.4 Offsite Private Wells

Environmental Scientists from the KCSWD sampled two privately owned wells (DW-85 and DW-PA) in the vicinity of the landfill this quarter. Figure 9 is attached to identify the location of the wells. The sample results are included with the groundwater results located in Appendix B. Additionally, a trilinear diagram is included for the private wells (see Figure 10). The trilinear diagram shows the samples to be within the same calcium-magnesium-bicarbonate hydrochemical facie as in samples from the monitoring wells for the landfill. Cation/anion balances are within ten percent (see Table 17), which indicates

analytical correctness.

4.0 References

King County Solid Waste Division. January 2016. *Environmental Monitoring Sampling and Analysis Plan and Quality Assurance Project Plan for Vashon Island Closed Landfill.*

Washington State Department of Ecology. 2016. *Natural Background Groundwater Arsenic Concentrations in Washington State.* Ecology Publication 14-09-044.

TABLES
AND FIGURES

Table 1
Vashon Island Closed Landfill Groundwater Monitoring Well Completion Details

Well Number	Date Completed	Installed By	Top of PVC Casing Elevation (feet) ^a	Well Casing and Screen	Well Dia. (inches)	Screen slot (inches)	Top of Screen Elevation ^b	Bottom of Screen Elevation ^b	Top of Seal Elevation ^b	Bottom of Seal Elevation ^b	Seal Type	Top of Sand Pack (feet elev.) ^b	Bottom of Sand Pack (feet elev.) ^b	Sand Type	Reference ^c
MW-1 ^d	9/8/1983	Sweet-Edwards	407.06	Sch 80 PVC	3	0.010	287.94	277.94	405.94	292.94	Bentonite	292.94	275.94	3/8 minus pea gravel	A
MW-2	9/9/1983	Sweet-Edwards	318.09	Sch 80 PVC	3	0.010	237.39	232.39	316.39	250.39	Bentonite	248.39	231.39	3/8 minus pea gravel	A
MW-3	9/12/1983	Sweet-Edwards	318.12	Sch 80 PVC	3	0.010	281.15	276.15	316.15	284.15	Bentonite	284.15	276.15	3/8 minus pea gravel	A
MW-4	9/14/1983	Sweet-Edwards	377.30	Sch 80 PVC	3	0.010	276.17	266.17	376.17	281.17	Bentonite	281.17	266.17	3/8 minus pea gravel	A
MW-5S ^d	3/6/1986	Golder	360.09	Sch 40 PVCb	2	0.020	285.32	275.32	359.32	356.32	Bentonite	356.32	274.82	#8 Monterey & Gravel	B
MW-5D ^d	3/6/1986	Golder	360.66	Sch 40 PVCb	2	0.020	244.32	233.32	258.82	253.32	Bentonite	257.32	233.32	#8 Monterey & Gravel	B
MW-6S ^d	3/19/1986	Golder	397.7	Sch 40 PVCb	2	0.020	290.88	280.88	395.88	392.88	Bentonite	392.88	279.88	#8 Aqua and Gravel	B
MW-6D ^d	3/19/1986	Golder	397.6	Sch 40 PVCb	2	0.020	245.38	235.38	259.88	253.88	Bentonite	247.88	234.88	#8 Aqua	B
MW-7	4/28/1995	CH2M HILL	376.56	Sch 40 PVC	2	0.010	154.40	144.40	374.40	157.40	Bentonite	157.40	142.40	#20 x 40	C
MW-8	6/30/1995	CH2M HILL	386.13	Sch 40 PVC	2	0.010	215.95	205.95	383.95	216.95	Bentonite	216.95	203.95	#20 x 40	C
MW-9	6/12/1995	CH2M HILL	405.32	Sch 40 PVC	2	0.010	236.39	226.39	403.39	239.39	Bentonite	239.39	223.39	#20 x 40	C
MW-10	7/1/1995	CH2M HILL	410.21	Sch 40 PVC	2	0.010	265.04	255.04	408.04	268.04	Bentonite	268.04	253.04	#20 x 40	C
MW-11 ^d	5/15/1995	CH2M HILL	409.85	Sch 40 PVC	2	0.010	165.74	155.74	407.74	167.74	Bentonite	167.74	147.74	#20 x 40	C
MW-12	5/26/1995	CH2M HILL	315.67	Sch 40 PVC	2	0.010	142.90	132.90	313.40	146.40	Bentonite	146.40	127.40	#20 x 40	C
MW-13	4/22/1992	Terra	377.37	Sch 40 PVC	2	0.020	267.30	262.30	375.30	269.30	Bentonite	269.30	259.80	#8	D
MW-14 ^d	6/21/1995	CH2M HILL	379.14	Sch 40 PVC	2	0.020	216.08	206.08	377.08	223.08	Bentonite	223.08	205.08	#20 x 40	C
MW-19	6/12/1995	CH2M HILL	405.58	Sch 40 PVC	2	0.020	142.85	132.85	402.35	142.35	Bentonite	142.35	126.35	#20 x 40	C
MW-20	10/21/1998	UES	370.43	Sch 40 PVC	2	0.020	240.79	236.49	368.49	244.09	Bentonite	244.09	234.49	#20 x 40	E
MW-21	10/21/1998	UES	348.95	Sch 40 PVC	2	0.020	246.46	237.06	347.06	252.06	Bentonite	252.06	236.06	#20 x 40	E
MW-24	4/27/1992	Terra	377.53	Sch 40 PVC	2	0.020	294.96	284.96	375.46	298.46	Bentonite	298.46	285.46	#8	D
MW-25	8/11/2003	UES	402.48	Sch 80 PVC	4	0.020	152.04	137.94	400.54	155.54	Bentonite	155.54	133.54	#16 x 30	F
MW-26	8/6/2003	UES	406.58	Sch 80 PVC	4	0.020	158.30	144.20	404.40	162.10	Bentonite	162.10	140.70	#16 x 30	F
MW-27 ^d	8/15/2003	UES	386.34	Sch 80 PVC	4	0.020	197.55	183.35	384.05	200.55	Bentonite	200.55	180.55	#16 x 30	F
MW-28	8/29/2003	UES	398.72	Sch 80 PVC	4	0.020	177.04	162.64	396.64	180.14	Bentonite	180.14	160.84	#16 x 30	F
MW-29	8/29/2003	UES	413.79	Sch 80 PVC	4	0.020	173.02	158.22	411.22	175.22	Bentonite	175.22	150.22	#16 x 30	G
MW-33	3/13/2015	Aspect Consulting	359.77	Sch 40 PVC	4	0.020	229.78	219.78	357.07	232.90	Bentonite	232.90	217.82	10 x 20 Colorado Silica	I
MW-34	3/26/2015	Aspect Consulting	385.88	Sch 40 PVC	4	0.020	147.96	137.96	383.26	151.26	Bentonite	151.26	135.76	10 x 20 Colorado Silica	I
MW-35	3/18/2015	Aspect Consulting	361.47	Sch 40 PVC	4	0.020	244.25	233.35	358.75	247.25	Bentonite	247.25	233.55	10 x 20 Colorado Silica	I
MW-36	4/02/2015	Aspect Consulting	378.24	Sch 40 PVC	4	0.020	221.25	211.25	375.25	223.25	Bentonite	223.25	210.25	10 x 20 Colorado Silica	I
P-1S ^d	3/12/1986	Golder	No data	Sch 40 PVC	2	0.020	307.46	297.46	396.46	393.46	Bentonite	393.46	291.46	#8 Aqua and Gravel	B
P-1D ^d	3/12/1986	Golder	No data	Sch 40 PVC	2	0.020	281.96	271.96	291.46	286.46	Bentonite	286.46	271.46	#8 Aqua	B
P-1A ^d	3/25/1986	Golder	No data	Sch 40 PVC	2	0.020	283.48	273.48	357.48	289.48	Bentonite	289.48	272.48	#8 Monterey	B
P-1B ^d	3/29/1986	Golder	No data	Sch 40 PVC	2	0.020	302.54	292.54	383.54	307.54	Bentonite	307.54	292.54	10 x 20 silica	B
P-2 ^d	3/19/1986	Golder	No data	Sch 40 PVC	2	0.020	277.19	262.19	287.19	282.19	Bentonite	282.19	260.19	#8 Aqua	B
P-2A ^d	3/24/1986	Golder	No data	Sch 40 PVC	2	0.020	297.06	285.06	352.06	310.06	Bentonite	310.06	283.56	#8 Aqua	B
P-4	2/29/1988	Golder	No data	Sch 80 PVC	1	0.020	378.36	376.36	410.86	380.36	Bentonite	380.36	375.36	#16 Monterey	H

^aAll survey data in feet are relative to site NAVD88 datum.
^bWell installed as a dual-completion.
^cA = R.W. Beck, 1984; B = Golder Associates, 1986; C = CH2M HILL, 1996; D = Terra Associates, 1992; E = B&H and UES, 1999b; F = B&H and UES, 2003b; G = B&H and UES, 2003a; H = Golder Associates, 1986; I = Aspect Consulting, 2015.
^dWell has been decommissioned.

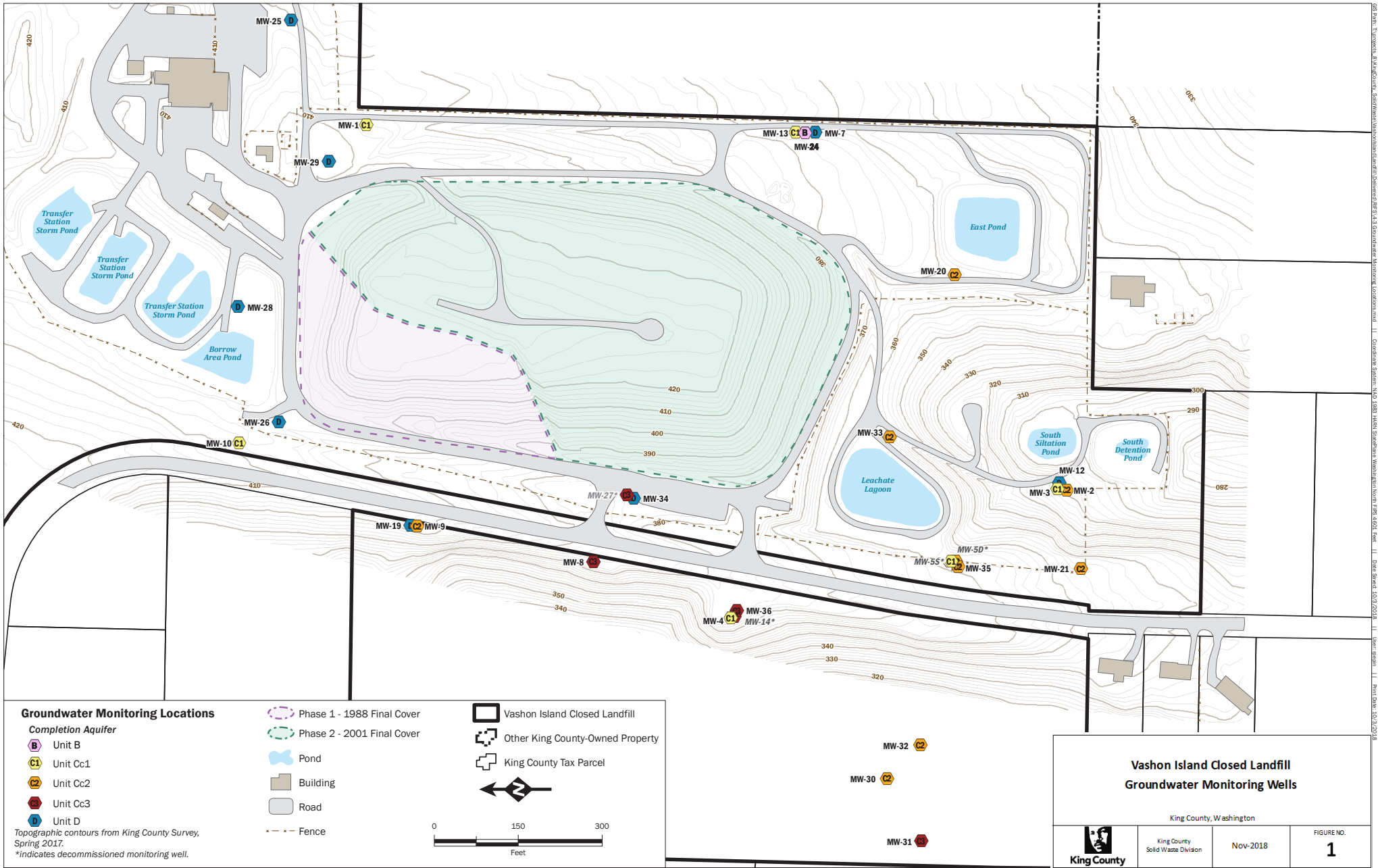


Figure 2. Channel Cc1 Trilinear Diagram

January 1, 2020 - March 31, 2020

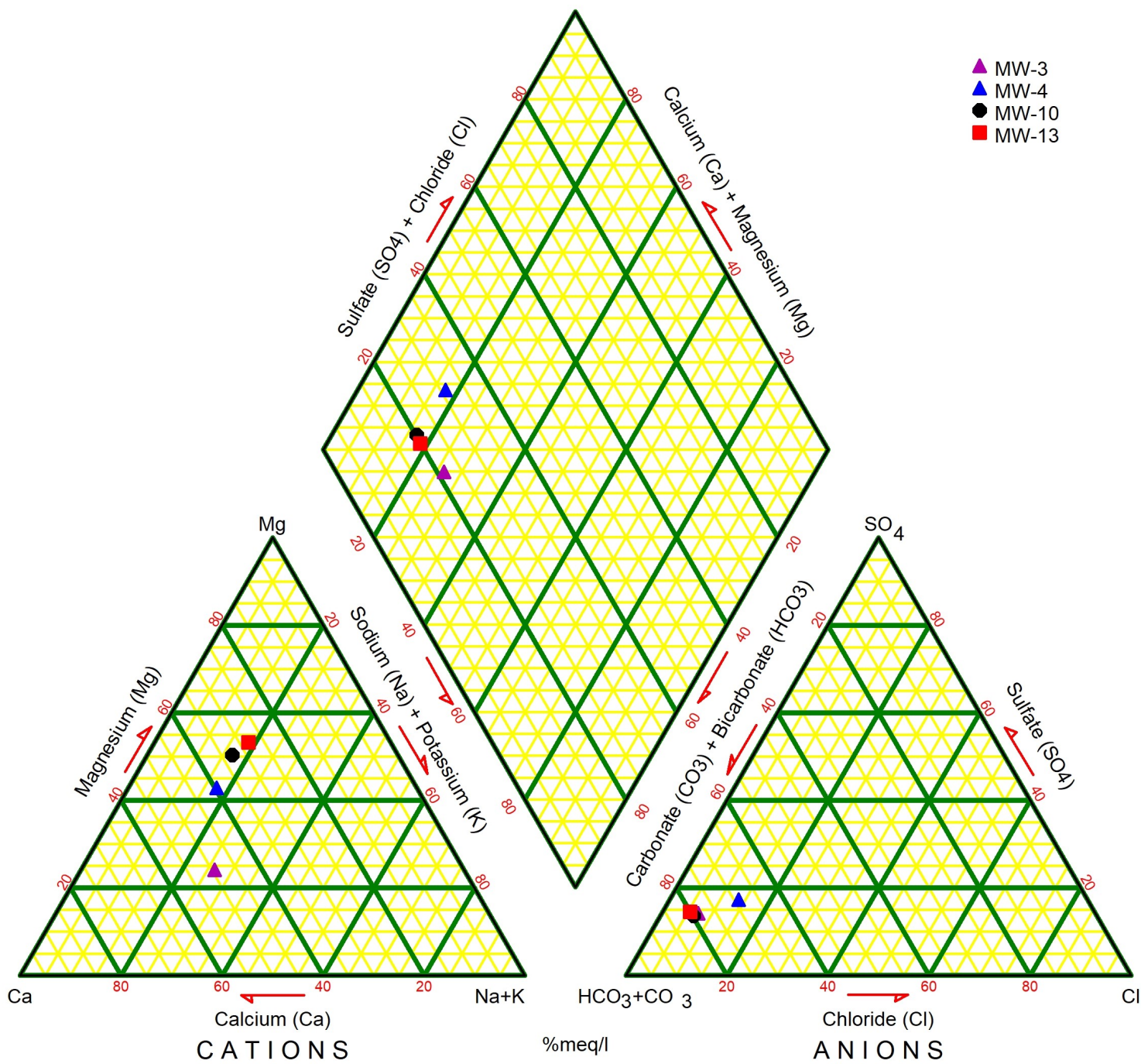


Table 2
Channel Cc1: Ion Balance Summary for Groundwater
January 1, 2020 - March 31, 2020

Well #			MW-3			MW-4			MW-10			MW-13		
Sample Date			1/27/2020			1/29/2020			1/27/2020			1/27/2020		
Cation Parameters	Molecular Weight (g/mol)	n	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)
pH	--		6.52			6.87			6.94			7.99		
Conductance	--		87			152.8			146.7			147.3		
TDS	--		66.7			127			107			111		
Calcium	40.1	2	8.39	0.4187	49.4	12.9	0.6437	39.7	9.81	0.4895	32.8	8.97	0.4476	28.1
Magnesium	24.3	2	2.48	0.2041	24.1	8.45	0.6953	42.9	9.15	0.7529	50.4	10.3	0.8476	53.3
Potassium	39.1	1	2.3	0.0588	6.9	0.942	0.0241	1.5	1.5	0.0384	2.6	1.73	0.0442	2.8
Sodium	23.0	1	3.81	0.1657	19.6	5.95	0.2588	16.0	4.9	0.2131	14.3	5.78	0.2514	15.8
Iron	55.8	2	0.005	0.0002	0.02	0.005	0.0002	0.01	0.005	0.0002	0.01	0.005	0.0002	0.01
Manganese	54.9	2	0.000708	0.0000	0.00	0.0047	0.0002	0.01	0.000284	0.0000	0.00	0.000005	0.0000	0.00
Ammonia-N	14.0	1	0.001	0.0001	0.01	0.001	0.0001	0.00	0.001	0.0001	0.00	0.001	0.0001	0.00
Total Cations (meq/L)			0.8			1.6			1.5			1.6		
Anion Parameters	Molecular Weight (g/mol)	n												
Alkalinity, Total	--		27.7			53.8			57.2			60.2		
Carbonate	60.0	2	0.006	0.0002	0.0226	0.024	0.0008	0.0468	0.030	0.0010	0.0677	0.350	0.0117	0.7637
Bicarbonate	61.0	1	33.8	0.5537	68.0	65.6	1.0750	63.0	69.7	1.1428	77.5	72.7	1.1921	77.9
Chloride	35.5	1	1.79	0.0505	6.2	7.54	0.2127	12.5	3.32	0.0936	6.4	2.9	0.0818	5.3
Nitrate-N	14.0	1	1.55	0.1107	13.581	2.05	0.1464	8.581	0.586	0.0418	2.838	0.353	0.0252	1.648
Sulfate	96.1	2	4.79	0.0997	12.2	13	0.2707	15.9	9.37	0.1951	13.2	10.5	0.2186	14.3
Total Anions (meq/L)			0.8			1.7			1.5			1.5		
Total Ions (meq/L)			1.7			3.3			3.0			3.1		
Cation/Anion Ratio			1.04			0.95			1.01			1.04		
Percent Difference			1.97			-2.50			0.67			1.98		

Table 3
Channel Cc1: Summary of groundwater quality criteria exceedances
January 1, 2020 - March 31, 2020

Parameter	Units	Site ID	Sample Date	Sample Value	Standard(s) Exceeded	Standard(s) Exceeded Numerical Limit
Arsenic, Total ¹	mg/L	MW-3	1/27/2020	0.000209	SGWC1	0.00005
		MW-4	1/29/2020	0.000367		
		MW-10	1/27/2020	0.00161		
		MW-13	1/27/2020	0.00218		

¹ Natural Background for arsenic in the Puget Sound Basin is 0.008 mg/L (Ecology, 2016)

SGWC1 = Washington State Primary Groundwater Quality Criteria

See Analytical Data Qualifier in Appendix B for Data Qualifier Information.

Table 4

Channel Cc1: Summary of groundwater volatile organic compound detections

January 1, 2020 - March 31, 2020

Compound	Units	Site ID	Date	Sample Value
Cis-1,2-dichloroethene	µg/L	MW-4	1/29/2020	0.113 JT
Tetrachloroethene	µg/L	MW-3	1/27/2020	0.103 JT
Trichlorofluoromethane	µg/L	MW-3	1/27/2020	0.218

See Data Qualifiers Section in Appendix B for Qualifier Information.

Figure 3. Channel Cc2 Trilinear Diagram

January 1, 2020 - March 31, 2020

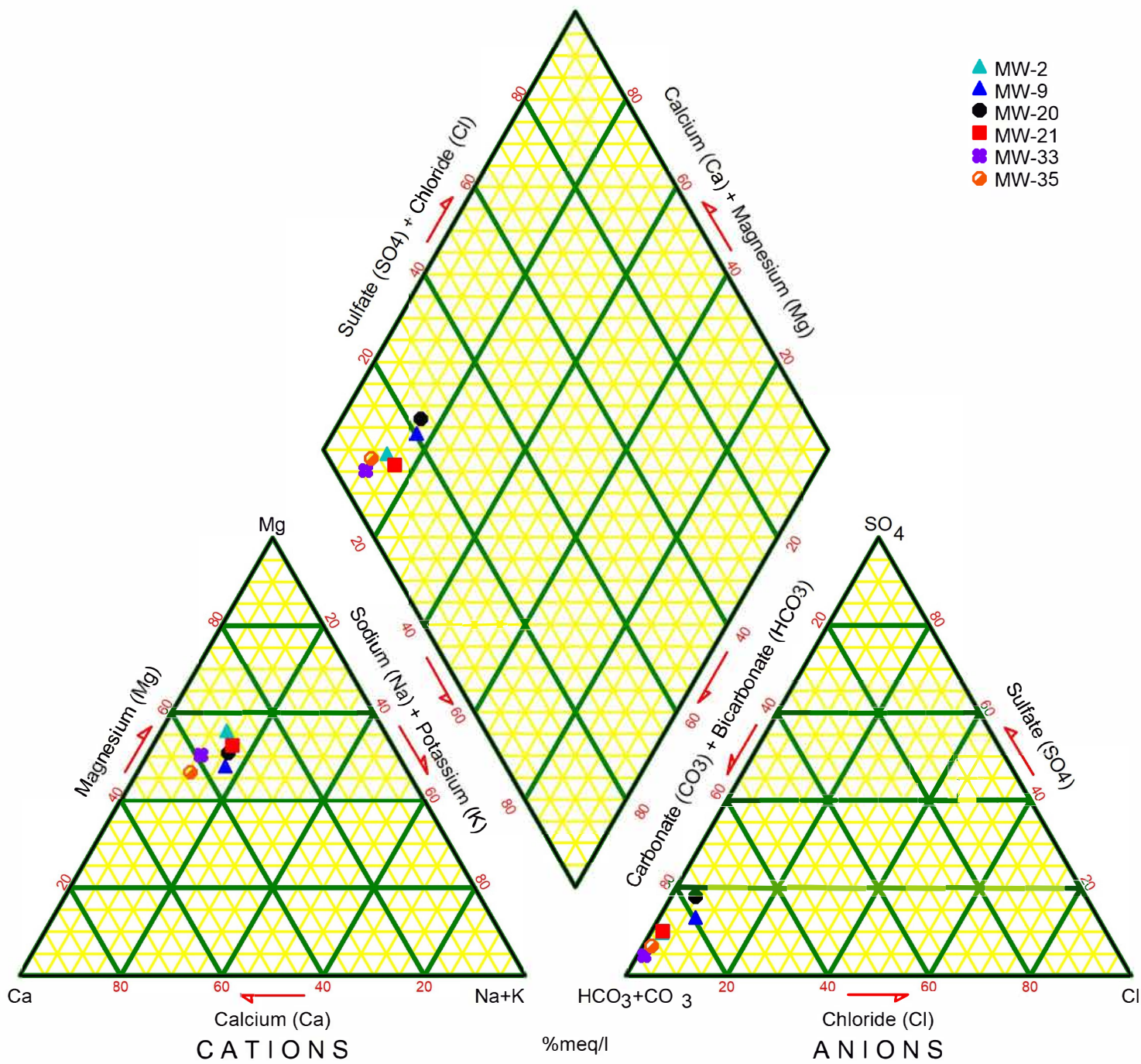


Table 5
Channel Cc2: Ion Balance Summary for Groundwater
January 1, 2020 - March 31, 2020

Well #			MW-2			MW-9			MW-20			MW-21			MW-33			MW-35		
Sample Date			1/30/2020			1/30/2020			1/30/2020			1/30/2020			1/30/2020			1/30/2020		
Cation Parameters	Molecular Weight (g/mol)	n	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)
pH	--		6.94			7.16			7.53			6.94			6.89			6.78		
Conductance	--		332.3			171.8			175			332.3			713			683		
TDS	--		183			113			131			179			419			404		
Calcium	40.1	2	21.2	1.0579	31.1	12.6	0.6287	35.5	13	0.6487	33.2	20.2	1.0080	31.5	63.3	3.1587	37.7	65.1	3.2485	40.0
Magnesium	24.3	2	23.1	1.9008	55.9	10.3	0.8476	47.8	12	0.9875	50.5	20.3	1.6704	52.1	49.5	4.0732	48.6	42.6	3.5055	43.1
Potassium	39.1	1	2.16	0.0552	1.6	2	0.0512	2.9	2.05	0.0524	2.7	2.28	0.0583	1.8	3.4	0.0859	1.0	3.2	0.0816	1.0
Sodium	23.0	1	8.85	0.3850	11.3	5.62	0.2445	13.8	5.86	0.2549	13.0	10.2	0.4437	13.8	17.9	0.7786	9.3	16.3	0.7090	8.7
Iron	55.8	2	0.005	0.0002	0.01	0.005	0.0002	0.01	0.184	0.0066	0.34	0.281	0.0101	0.31	6.67	0.2389	2.85	13.60	0.4870	5.99
Manganese	54.9	2	0.077	0.0028	0.08	0.00005	0.0000	0.00	0.145	0.0053	0.27	0.337	0.0123	0.38	1.04	0.0379	0.45	2.47	0.0899	1.11
Ammonia-N	14.0	1	0.0025	0.0002	0.01	0.001	0.0001	0.00	0.0166	0.0012	0.06	0.0098	0.0007	0.02	0.03	0.0023	0.03	0.07	0.0048	0.06
Total Cations (meq/L)			3.4			1.8			2.0			3.2			8.4			8.1		
Anion Parameters	Molecular Weight (g/mol)	n																		
Alkalinity, Total	--		149			68.4			73.8			137			383			345		
Carbonate	60.0	2	0.078	0.0026	0.0764	0.059	0.0020	0.1137	0.150	0.0050	0.2613	0.072	0.0024	0.0762	0.179	0.0060	0.0732	0.125	0.0042	0.0553
Bicarbonate	61.0	1	181.6	2.9770	87.5	83.3	1.3658	78.5	89.7	1.4708	76.9	167.0	2.7372	87.2	466.9	7.6529	94.0	420.6	6.8948	91.5
Chloride	35.5	1	2.71	0.0764	2.2	4.34	0.1224	7.0	3.25	0.0917	4.8	2.44	0.0688	2.2	3.8	0.1083	1.3	4.4	0.1238	1.6
Nitrate-N	14.0	1	0.208	0.0148	0.437	0.329	0.0235	1.349	0.011	0.0008	0.041	0.176	0.0126	0.400	0.005	0.0004	0.004	0.005	0.0004	0.005
Sulfate	96.1	2	15.9	0.3311	9.7	10.9	0.2269	13.0	16.5	0.3435	18.0	15.2	0.3165	10.1	17.9	0.3727	4.6	24.5	0.5101	6.8
Total Anions (meq/L)			3.4			1.7			1.9			3.1			8.1			7.5		
Total Ions (meq/L)			6.8			3.5			3.9			6.3			16.5			15.7		
Cation/Anion Ratio			1.00			1.02			1.02			1.02			1.03			1.08		
Percent Difference			0.00			0.90			1.16			1.04			1.42			3.79		

Table 6

Channel Cc2: Summary of groundwater quality criteria exceedances

January 1, 2020 - March 31, 2020

Parameter	Units	Site ID	Sample Date	Sample Value	Standard(s) Exceeded	Standard(s) Exceeded Numerical Limit
Specific Conductance (Field)	µmhos/cm	MW-33	1/30/2020	713	SGWC2	700
Arsenic, Total ¹	mg/L	MW-2	1/30/2020	0.000853	SGWC1	0.00005
		MW-9	1/30/2020	0.00244		
		MW-20	1/30/2020	0.00377		
		MW-21	1/30/2020	0.00413		
		MW-33	1/30/2020	0.0421	MCL1; SGWC1	0.01; 0.00005
		MW-35	1/30/2020	0.0312		
Iron, Dissolved	mg/L	MW-33	1/30/2020	6.67	MCL2; SGWC2	0.3; 0.3
		MW-35	1/30/2020	13.6		
Manganese, Dissolved	mg/L	MW-2	1/30/2020	0.077	MCL2; SGWC2	0.05; 0.05
		MW-20	1/30/2020	0.145		
		MW-21	1/30/2020	0.337		
		MW-33	1/30/2020	1.04		
		MW-35	1/30/2020	2.47		
1,1-Dichloroethane	µg/L	MW-33	1/30/2020	1.6	SGWC1	1
1,2-Dichloropropane	µg/L	MW-33	1/30/2020	7.43	MCL1; SGWC1	5; 0.6
Vinyl Chloride	µg/L	MW-2	1/30/2020	0.0445	SGWC1	0.02
		MW-21	1/30/2020	0.0699		
		MW-33	8/30/2019	25.9	MCL1; SGWC1	2; 0.02
		MW-35	8/30/2019	4.09		

¹ Natural Background for arsenic in the Puget Sound Basin is 0.008 mg/L (Ecology, 2016)

SGWC1 = Washington State Primary Groundwater Quality Criteria

SGWC2 = Washington State Secondary Groundwater Quality Criteria

MCL1 = National Primary Drinking Water Regulation Maximum Contaminant Level

MCL2 = National Secondary Drinking Water Regulation Maximum Contaminant Level

See Analytical Data Qualifier in Appendix B for Data Qualifier Information.

Table 7
Channel Cc2: Summary of groundwater prediction limit exceedances
Interwell
January 1, 2020 - March 31, 2020

Parameter	Units	Well ID	Sample Date	Sample Value	Prediction Limit (PL) Value
Specific Conductance (Field)	umhos/cm	MW-2	1/30/2020	332.3	242.1
		MW-21	1/30/2020	332.3	
		MW-33	1/30/2020	713	
		MW-35	1/30/2020	683.00	
Alkalinity	mg/L	MW-2	1/30/2020	149	94.9
		MW-21	1/30/2020	137	
		MW-33	1/30/2020	383.0	
		MW-35	1/30/2020	345	
Ammonia	mg/L	MW-35	1/30/2020	0.0676	0.0322
Chloride	mg/L	MW-9	1/30/2020	4.34	4.09
		MW-35	1/30/2020	4.390	
Nitrate	mg/L	MW-2	1/30/2020	0.2	0.05
		MW-9	1/30/2020	0.329	
		MW-21	1/30/2020	0.176	
Sulfate	mg/L	MW-35	1/30/2020	24.5	18.51
Total Dissolved Solids	mg/L	MW-2	1/30/2020	183.000	159.02
		MW-21	1/30/2020	179.000	
		MW-33	1/30/2020	419.00	
		MW-35	1/30/2020	404.00	
Total Organic Carbon	mg/L	MW-35	1/30/2020	3.72	2.33
Total Solids	mg/L	MW-33	1/30/2020	452	286.00
		MW-35	1/30/2020	660	
Total Suspended Solids	mg/L	MW-35	1/30/2020	453	95.00
Arsenic, Total	mg/L	MW-33	1/30/2020	0.0421	0.0044
		MW-35	1/30/2020	0.0	
Barium, Total	mg/L	MW-35	1/30/2020	0.0504	0.0384
Calcium, Total	mg/L	MW-2	1/30/2020	22.1	15.42
		MW-21	1/30/2020	20.8	
		MW-33	1/30/2020	64.8	
		MW-35	1/30/2020	66.90	
Cobalt, Total	mg/L	MW-35	1/30/2020	0.00	0.003
Iron, Dissolved	mg/L	MW-33	1/30/2020	6.67	0.386
		MW-35	1/30/2020	13.6	
Lead, Total	mg/L	MW-35	1/30/2020	0.0022	0.0019
Magnesium, Total	mg/L	MW-2	1/30/2020	22.90	17.33
		MW-21	1/30/2020	20.50	
		MW-33	1/30/2020	50.70	
		MW-35	1/30/2020	43.60	
Manganese, Dissolved	mg/L	MW-33	1/30/2020	1.04	0.548
		MW-35	1/30/2020	2.47	
Potassium, Total	mg/L	MW-33	1/30/2020	3.42	2.52
		MW-35	1/30/2020	3.53	
Sodium, Total	mg/L	MW-2	1/30/2020	8.88	7.57
		MW-21	1/30/2020	10.3	
		MW-33	1/30/2020	18.2	
		MW-35	1/30/2020	16.7	
Vinyl Chloride	ug/L	MW-33	1/30/2020	25.9	0.0867
		MW-35	1/30/2020	4.09	

Table 8**Channel Cc2: Summary of groundwater volatile organic compound detections****January 1, 2020 - March 31, 2020**

Compound	Units	Site ID	Date	Sample Value
1,1-dichloroethane	µg/L	MW-33	1/30/2020	1.6
		MW-35	1/30/2020	0.199 JT
1,1-dichloroethene	µg/L	MW-33	1/30/2020	0.16 JT
1,2-dichloropropane		MW-33	1/30/2020	7.43
		MW-35	1/30/2020	0.469
Benzene	µg/L	MW-33	1/30/2020	0.974
		MW-35	1/30/2020	0.518
Cis-1,2-dichloroethene	µg/L	MW-21	1/30/2020	0.503
		MW-33	1/30/2020	31.5
		MW-35	1/30/2020	4.68
Dichlorodifluoromethane	µg/L	MW-2	1/30/2020	4.23
		MW-20	1/30/2020	0.311
		MW-21	1/30/2020	2.01
		MW-33	1/30/2020	4.95
		MW-35	1/30/2020	0.641
Trans-1,2-dichloroethene	µg/L	MW-33	1/30/2020	0.743
		MW-35	1/30/2020	0.226
Trichloroethene	µg/L	MW-35	1/30/2020	0.866
Trichlorofluoromethane	µg/L	MW-2	1/30/2020	1.2
		MW-21	1/30/2020	0.852
Vinyl Chloride	µg/L	MW-2	1/30/2020	0.0445
		MW-21	1/30/2020	0.0699
		MW-33	1/30/2020	25.9
		MW-35	1/30/2020	4.09

See Data Qualifiers Section in Appendix B for Qualifier Information.

Figure 4. Channel Cc3 Trilinear Diagram

January 1, 2020 - March 31, 2020

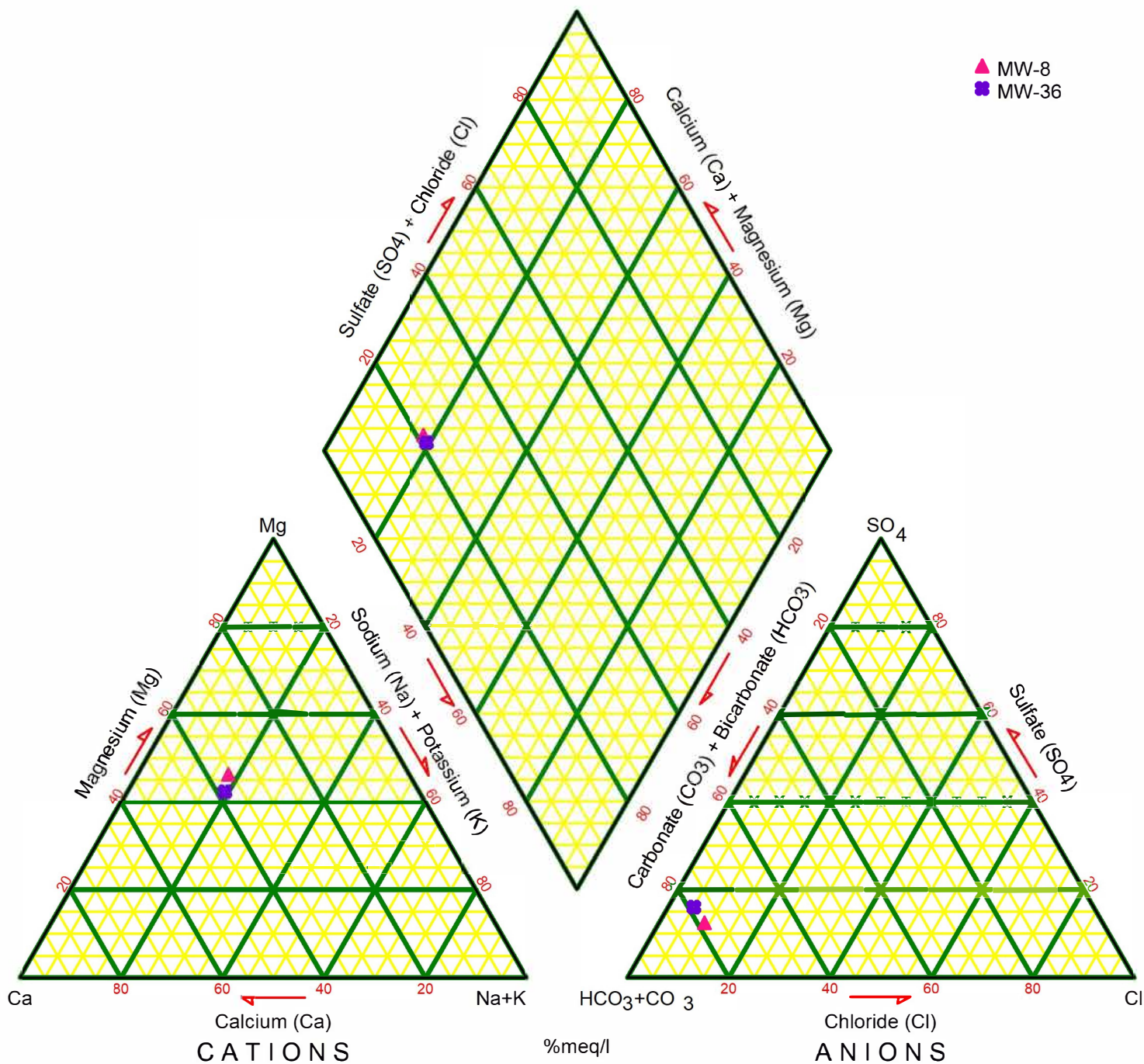


Table 9
Channel Cc3: Ion Balance Summary for Groundwater
January 1, 2020 - March 31, 2020

Well #			MW-8			MW-36		
Sample Date			1/27/2020			1/28/2020		
Cation Parameters	Molecular Weight (g/mol)	n	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)
pH	--		6.93			7.58		
Conductance	--		169.8			190.4		
TDS	--		125			128		
Calcium	40.1	2	12.2	0.6088	35.7	13.7	0.6836	38.4
Magnesium	24.3	2	9.6	0.7900	46.4	9.17	0.7546	42.3
Potassium	39.1	1	1.2	0.0307	1.8	2.74	0.0701	3.9
Sodium	23.0	1	6.3	0.2740	16.1	6.28	0.2732	15.3
Iron	55.8	2	0.005	0.0002	0.01	0.005	0.0002	0.01
Manganese	54.9	2	0.00005	0.000002	0.0001	0.000948	0.00003	0.002
Ammonia-N	14.0	1	0.001	0.0001	0.004	0.0034	0.0002	0.014
Total Cations (meq/L)			1.7			1.8		
Anion Parameters	Molecular Weight (g/mol)	n						
Alkalinity, Total	--		59.2			69.5		
Carbonate	60.0	2	0.030	0.0010	0.0595	0.158	0.0053	0.2993
Bicarbonate	61.0	1	72.2	1.1828	69.7	84.5	1.3845	78.5
Chloride	35.5	1	4.77	0.1345	7.9	3.14	0.0886	5.0
Nitrate-N	14.0	1	2.66	0.1899	11.198	0.022	0.0016	0.089
Sulfate	96.1	2	9.01	0.1876	11.1	13.6	0.2832	16.1
Total Anions (meq/L)			1.7			1.8		
Total Ions (meq/L)			3.4			3.5		
Cation/Anion Ratio			1.00			1.01		
Percent Difference			0.23			0.53		

Table 10

Channel Cc3: Summary of groundwater quality criteria exceedances

January 1, 2020 - March 31, 2020

Parameter	Units	Site ID	Sample Date	Sample Value	Standard(s) Exceeded	Standard(s) Exceeded Numerical Limit
Arsenic, Total ¹	mg/L	MW-8	1/27/2020	0.000512	SGWC1	0.00005
		MW-36	1/28/2020	0.00184		

¹ Natural Background for arsenic in the Puget Sound Basin is 0.008 mg/L (Ecology, 2016)

SGWC1 = Washington State Primary Groundwater Quality Criteria

See Analytical Data Qualifier in Appendix B for Data Qualifier Information.

Table 11

Channel Cc3: Summary of groundwater volatile organic compound detections

January 1, 2020 - March 31, 2020

Compound	Units	Site ID	Date	Sample Value
There were no volatile organic compounds detected this quarter in Channel Cc3 samples.				

See Data Qualifiers Section in Appendix B for Qualifier Information.

Figure 5. Unit D Aquifer Trilinear Diagram

January 1, 2020 - March 31, 2020

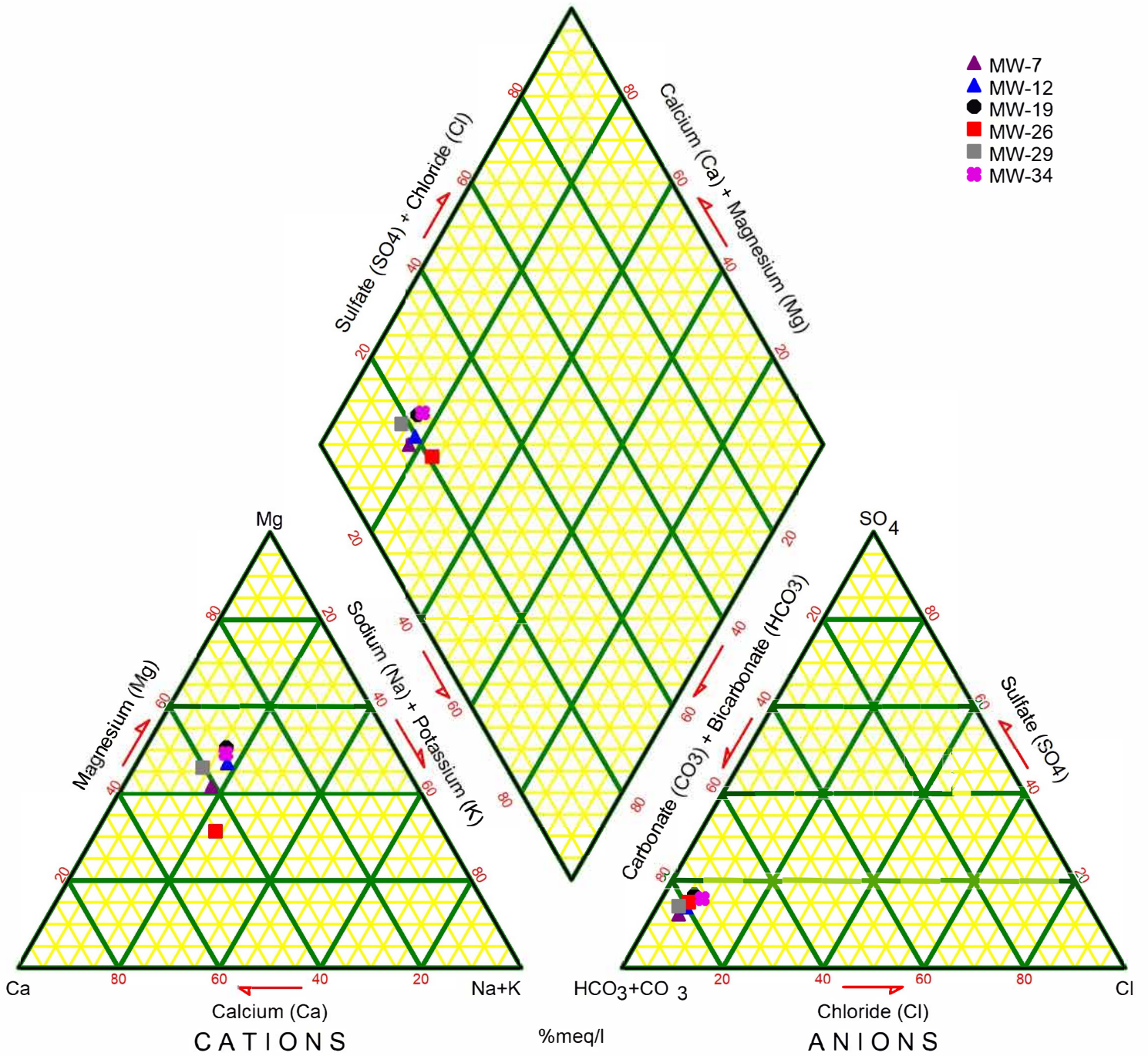


Table 12
Unit D Aquifer: Ion Balance Summary for Groundwater
January 1, 2020 - March 31, 2020

Well #			MW-7			MW-12			MW-19			MW-26			MW-29			MW-34		
Sample Date			1/28/2020			1/27/2020			1/28/2020			1/28/2020			1/28/2020			1/28/2020		
Cation Parameters	Molecular Weight (g/mol)	n	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)
pH	--		8.06			7.37			7.55			7.58			7.48			7.55		
Conductance	--		187.7			164.9			216.3			190.4			240			194.8		
TDS	--		132			119			145			128			151			135		
Calcium	40.1	2	15.8	0.7884	40.4	11.7	0.5838	35.0	15	0.7485	33.1	17.4	0.8683	44.6	20.1	1.0030	39.8	13.3	0.6637	34.2
Magnesium	24.3	2	9.75	0.8023	41.1	9.55	0.7858	47.1	13.8	1.1356	50.2	7.3	0.6007	30.9	13.9	1.1438	45.4	11.6	0.9545	49.1
Potassium	39.1	1	2.84	0.0726	3.7	1.91	0.0489	2.9	2.52	0.0645	2.8	3.11	0.0795	4.1	2.25	0.0575	2.3	1.57	0.0402	2.1
Sodium	23.0	1	6.11	0.2658	13.6	5.78	0.2514	15.1	6.75	0.2936	13.0	8.6	0.3741	19.2	6.46	0.2810	11.2	6.52	0.2836	14.6
Iron	55.8	2	0.015	0.0005	0.03	0.005	0.0002	0.01	0.0426	0.0015	0.07	0.0739	0.0026	0.14	0.806	0.0289	1.15	0.005	0.0002	0.01
Manganese	54.9	2	0.145	0.0053	0.27	0.00005	0.0000	0.00	0.478	0.0174	0.77	0.0655	0.0024	0.12	0.0884	0.0032	0.13	0.000127	0.0000	0.00
Ammonia-N	14.0	1	0.248	0.0177	0.91	0.001	0.0001	0.00	0.0308	0.0022	0.10	0.264	0.0188	0.97	0.0038	0.0003	0.01	0.0029	0.0002	0.01
Total Cations (meq/L)			2.0			1.7			2.3			1.9			2.5			1.9		
Anion Parameters	Molecular Weight (g/mol)	n																		
Alkalinity, Total	--		79.1			64.6			86.2			75.8			101			69.8		
Carbonate	60.0	2	0.540	0.0180	0.9387	0.091	0.0030	0.1818	0.183	0.0061	0.2738	0.173	0.0058	0.3006	0.183	0.0061	0.2464	0.14842082	0.0049	0.2502
Bicarbonate	61.0	1	95.4	1.5638	81.6	78.6	1.2888	77.4	104.8	1.7176	77.0	92.1	1.5100	78.9	122.8	2.0136	81.4	84.9	1.3908	70.3
Chloride	35.5	1	3.46	0.0976	5.1	3.3	0.0931	5.6	4.79	0.1351	6.1	3.85	0.1086	5.7	3.71	0.1046	4.2	5.24	0.1478	7.5
Nitrate-N	14.0	1	0.011	0.0008	0.041	0.787	0.0562	3.373	0.005	0.0004	0.016	0.016	0.0011	0.060	0.005	0.0004	0.014	1.99	0.1421	7.186
Sulfate	96.1	2	11.4	0.2374	12.4	10.8	0.2249	13.5	17.9	0.3727	16.7	13.9	0.2894	15.1	16.8	0.3498	14.1	14	0.2915	14.7
Total Anions (meq/L)			1.9			1.7			2.2			1.9			2.5			2.0		
Total Ions (meq/L)			3.9			3.3			4.5			3.9			5.0			3.9		
Cation/Anion Ratio			1.02			1.00			1.01			1.02			1.02			0.98		
Percent Difference			0.91			0.13			0.70			0.82			0.87			-0.89		

Table 13

Unit D Aquifer: Summary of groundwater quality criteria exceedances

January 1, 2020 - March 31, 2020

Parameter	Units	Site ID	Sample Date	Sample Value	Standard(s) Exceeded	Standard(s) Exceeded Numerical Limit
Arsenic, Total ¹	mg/L	MW-7	1/28/2020	0.00507	SGWC1	0.00005
		MW-12	1/27/2020	0.00201		
		MW-19	1/28/2020	0.00127		
		MW-26	1/28/2020	0.00333		
		MW-34	1/28/2020	0.00131		
		MW-29	1/28/2020	0.0105	MCL1; SGWC1	0.01; 0.00005
Iron, Dissolved	mg/L	MW-29	1/28/2020	0.806	MCL2; SGWC2	0.3; 0.3
Manganese, Dissolved	mg/L	MW-7	1/28/2020	0.145	MCL2; SGWC2	0.05; 0.05
		MW-19	1/28/2020	0.478		
		MW-26	1/28/2020	0.0655		
		MW-29	1/28/2020	0.0884		

¹ Natural Background for arsenic in the Puget Sound Basin is 0.008 mg/L (Ecology, 2016)

SGWC1 = Washington State Primary Groundwater Quality Criteria

SGWC2 = Washington State Secondary Groundwater Quality Criteria

MCL1 = National Primary Drinking Water Regulation Maximum Contaminant Level

MCL2 = National Secondary Drinking Water Regulation Maximum Contaminant Level

See Analytical Data Qualifier in Appendix B for Data Qualifier Information.

Table 14
Unit D Aquifer: Summary of groundwater prediction limit exceedances
Intrawell
January 1, 2020 - March 31, 2020

Parameter	Units	Well ID	Sample Date	Sample Value	Prediction Limit (PL) Value
pH (Field)	std. pH Units	MW-34	1/28/2020	7.55	7.3432

Table 15

Unit D Aquifer: Summary of groundwater volatile organic compound detections

January 1, 2020 - March 31, 2020

Compound	Units	Site ID	Date	Sample Value
There were no volatile organic compounds detected this quarter in Unit D samples.				

See Data Qualifiers Section in Appendix B for Qualifier Information.

Table 16
Summary of surface water monitoring location exceedances vs. SW quality standard
Weirs & Station SW-E
January 1, 2020 - March 31, 2020

Compound	Units	Site ID	Sample Date	Sample Value	Reg. Limit	Standard(s) Exceeded
Dissolved Oxygen (Field)	mg/L	SW-W1	1/29/2020	3.09	8; 4; 6.5	SSWC; FA; FC
Turbidity (Field)	NTU	SW-E	1/29/2020	42.9	25	SSWC; FA; FC
		SW-W1	1/29/2020	91		
		SW-W2	1/29/2020	40.5		
		SW-W3	1/29/2020	27.7		
Iron ¹	mg/L	SW-E	1/29/2020	2.46	1	FC
		SW-W1	1/29/2020	11		
		SW-W2	1/29/2020	6.26		
		SW-W3	1/29/2020	3.29		
Lead ¹	mg/L	SW-E	1/29/2020	0.00209	0.00124; 0.00157	SSWC; FC
		SW-W1	1/29/2020	0.00429		

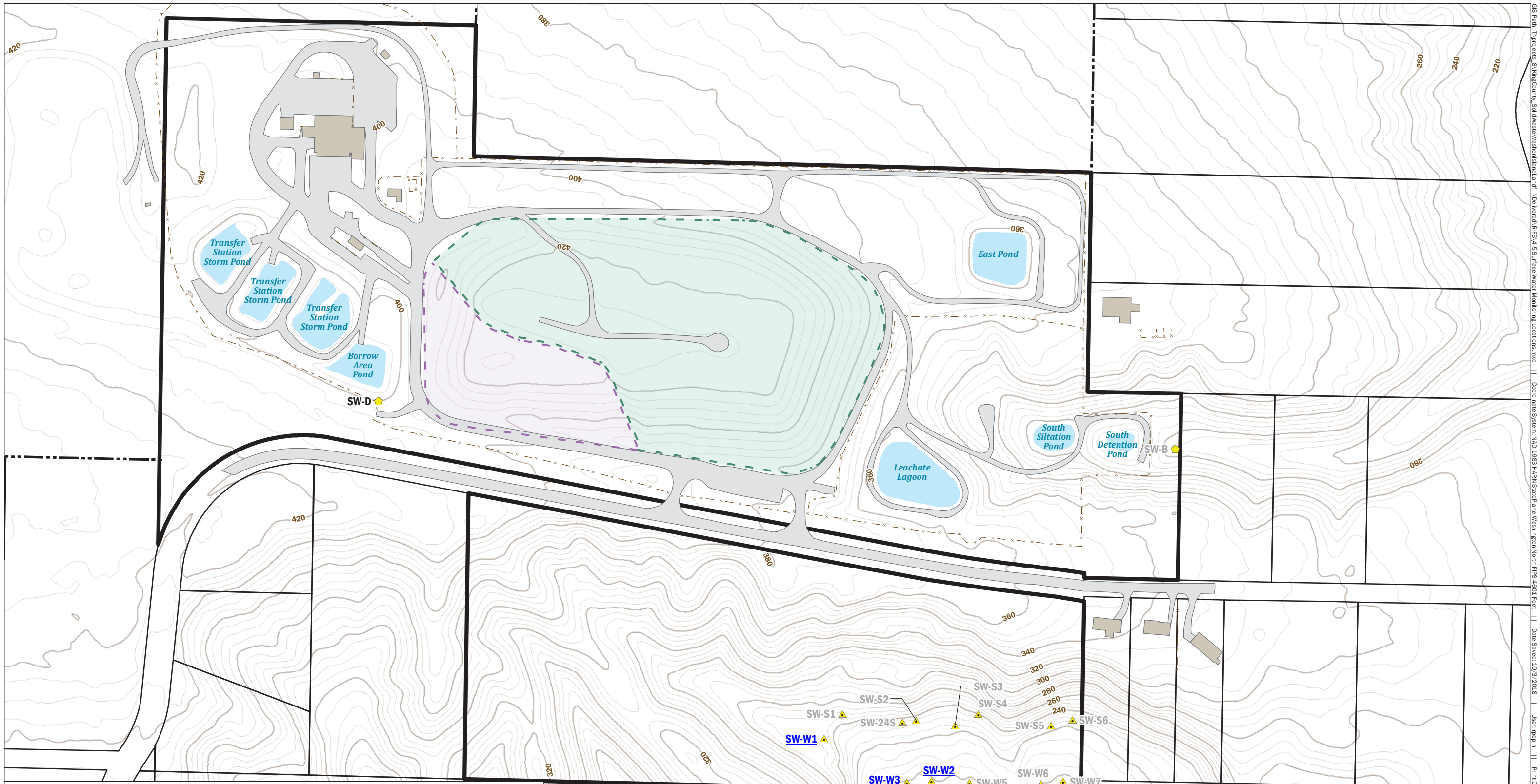
¹ Total Metal

FC Federal chronic surface water quality criteria

FA Federal Acute Surface Water Criteria

SSWC Washington State chronic surface water quality criteria

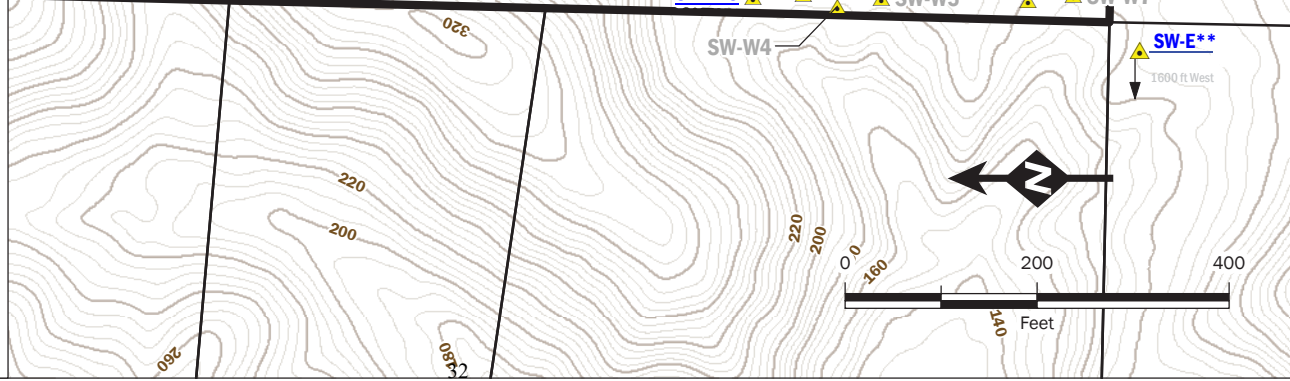
See Data Qualifiers Section in Appendix B for Qualifier Information.



Surface Water Monitoring Locations

- Seep/Weir Sampling Location
- Former Surface Water Monitoring Station
- Phase 1 - 1988 Final Cover
- Phase 2 - 2001 Final Cover
- Pond
- Building
- Road
- Fence
- Vashon Island Closed Landfill
- Other King County-Owned Property
- King County Tax Parcel

Topographic contours from King County LIDAR, 2016.



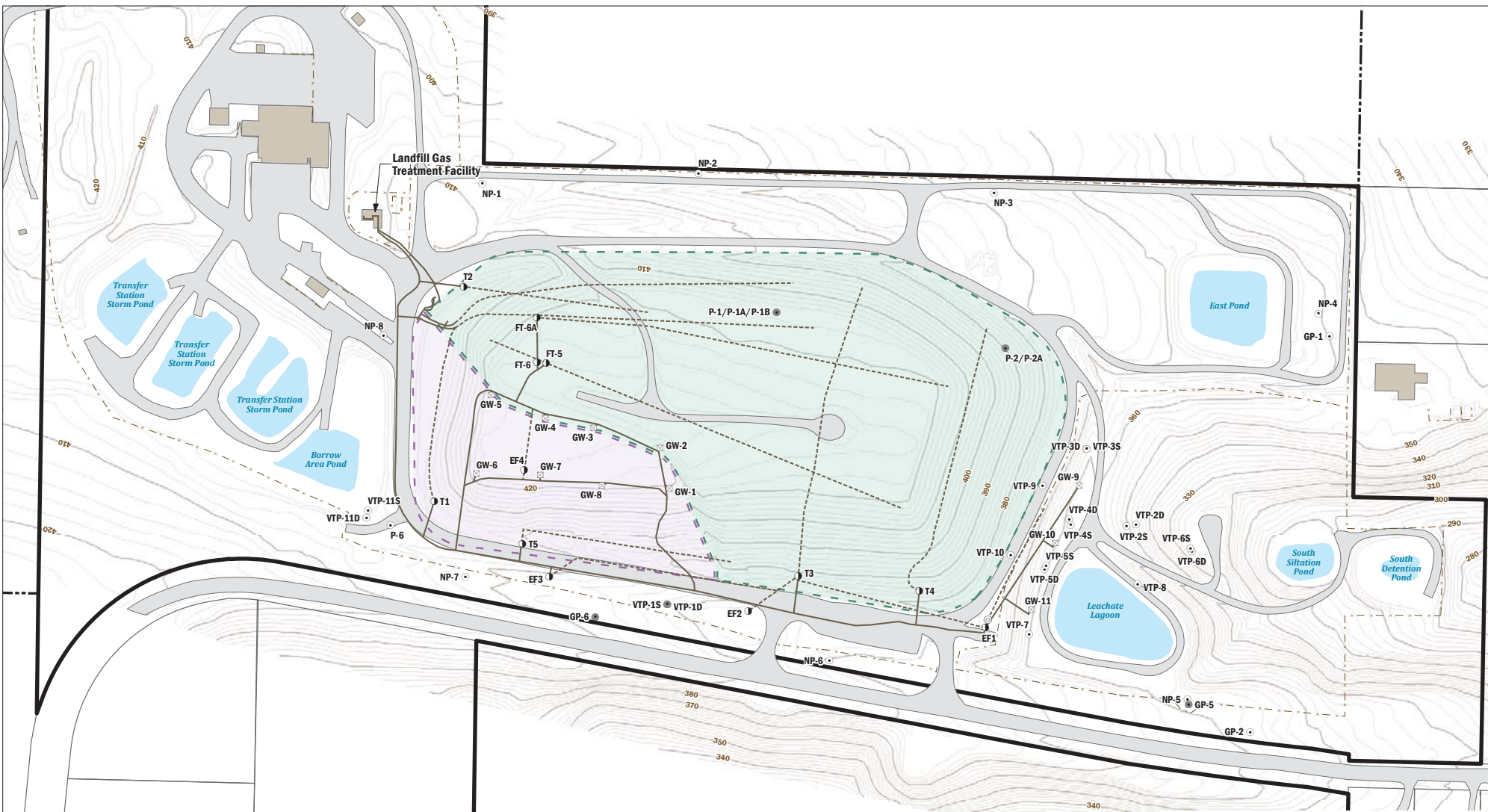
Surface Water Monitoring Well Locations

Vashon Island Closed Landfill
King County, Washington

	2018	FIGURE NO.
		6


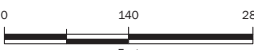
GIS Data: T:\Projects\B_KingCounty_SolidWaste\VashonIsland\env\lidar\Delivered_RFS\4-5 Surface Water Monitoring Locations.mxd | Coordinate System: NAD 1983 HARN StatePlane Washington North FIPS 4601 Feet | Date Saved: 10/3/2018 | User: mapin | Print Date: 10/2/2018

GIS Data: \GIS\Projects\2017\2017-03-08\GIS\2017-03-08_Vashon Island Closed Landfill Environmental Monitoring Systems.mxd 11: Coordinate System: NAD 83(11N) StatePlane Washington North 1195 4901 Feet 11: Data Source: 10/23/2018 11: User: gregg 11: Print Date: 03/23/2018




○ Gas Probe/Piezometer	○ Phase 1 - 1988 Final Cover	- - - Fence
● Decommissioned Gas Probe	○ Phase 2 - 2001 Final Cover	▭ Vashon Island Closed Landfill
□ LFG Extraction Well	○ Pond	▭ Other King County-Owned Property
○ LFG Trench Riser	■ Building	□ King County Tax Parcel
— LFG Pipe	○ Road	
- - - LFG Pipe (Perforated)		

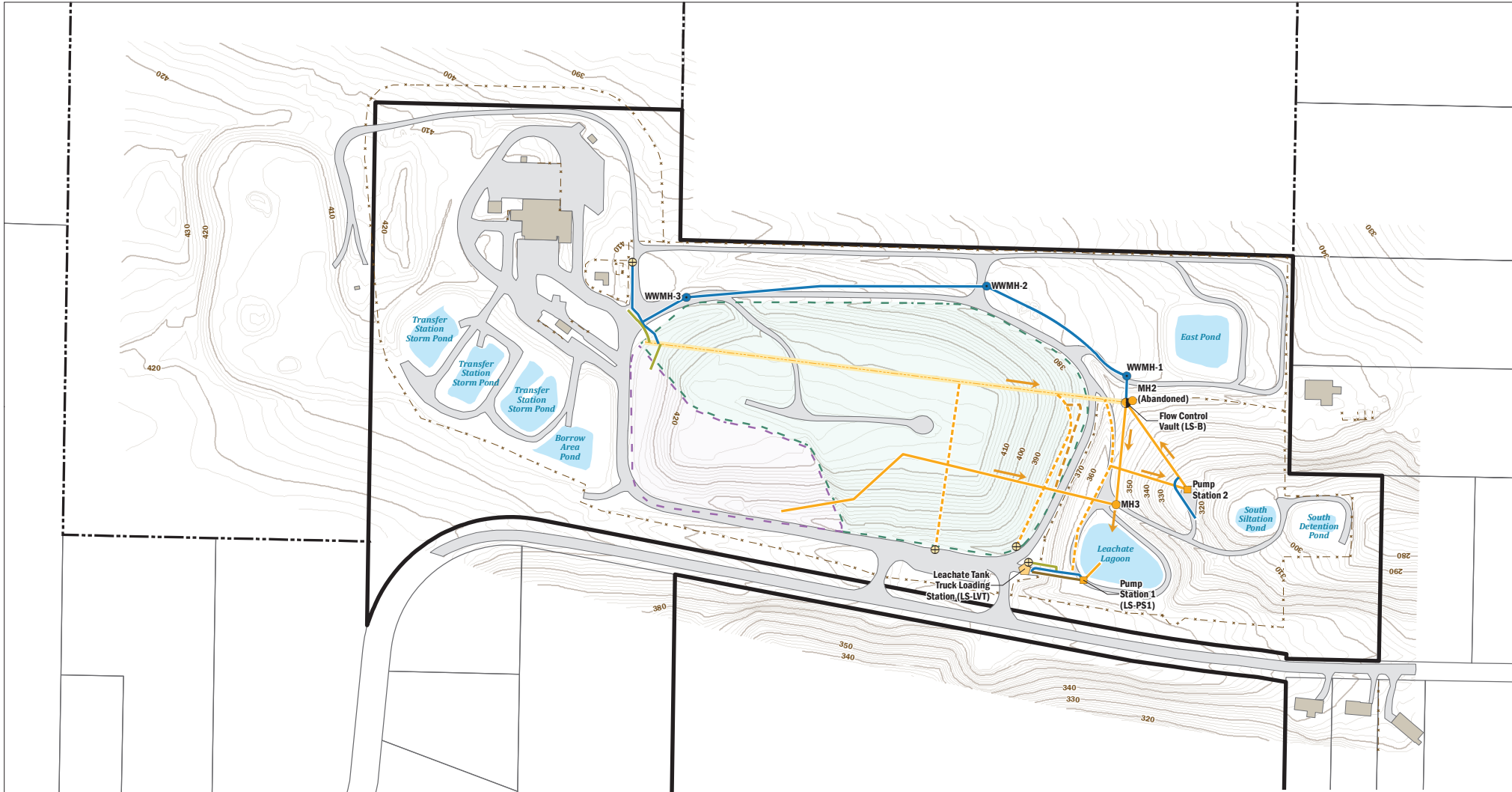
Topographic contours from King County Survey, Spring 2017. Landfill gas system features are approximated from as-built locations, and revised to match survey data where available.

Landfill Gas Collection and Monitoring Systems

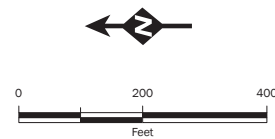
Vashon Island Closed Landfill
King County, Washington

 King County Solid Waste Division	Nov-2018	FIGURE NO. 7
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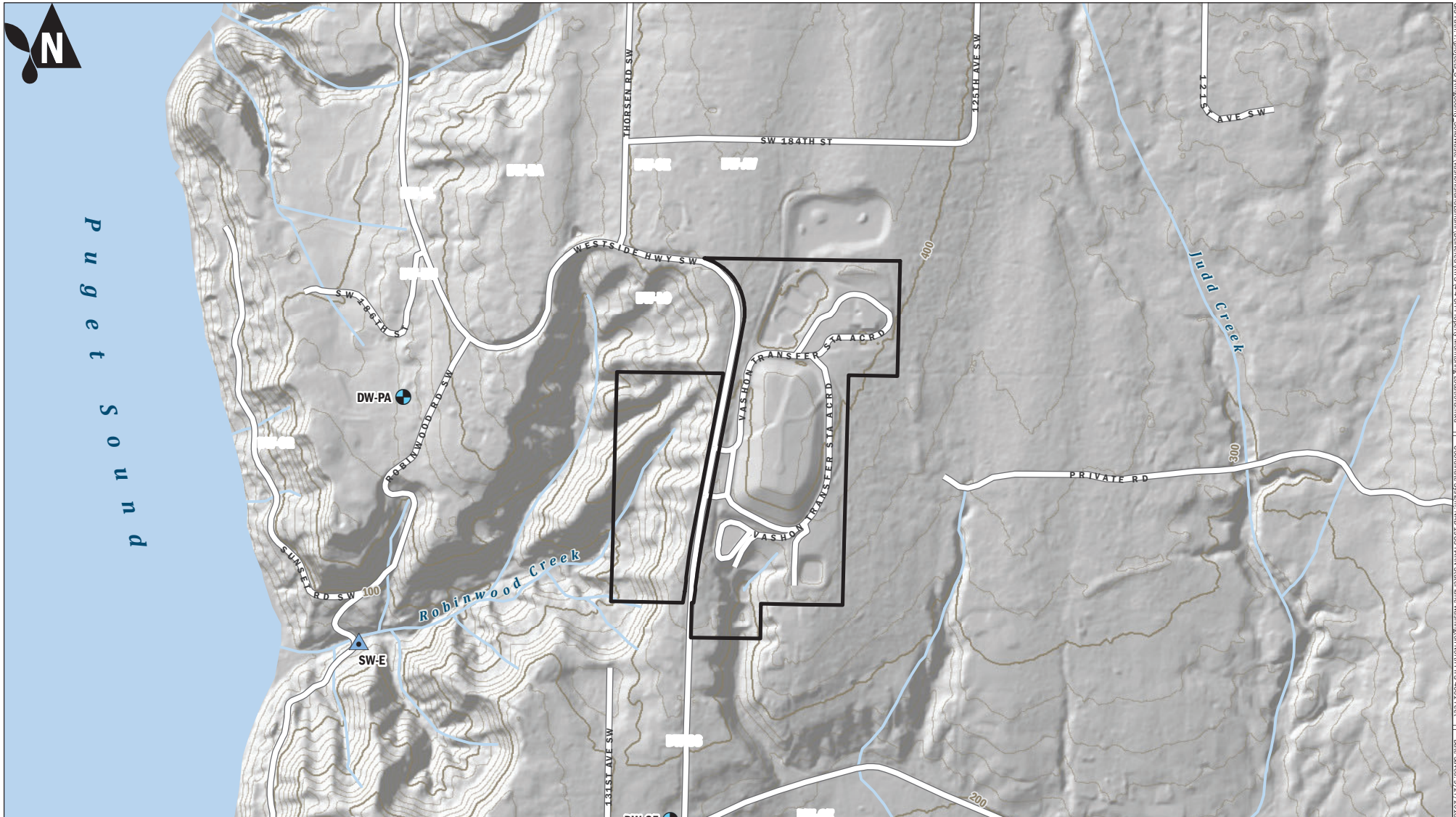





Manhole	Leachate Collection Pipe	Phase 1 - 1988 Final Cover	Vashon Island Closed Landfill
Pump Station	Leachate Collection Pipe (Perforated)	Phase 2 - 2001 Final Cover	Other King County-Owned Property
Loading Station	Leachate Collection Trench	Pond	King County Tax Parcel
Flow Control Vault	Leachate Forcemain	Building	
Wastewater Manhole	Condensate Pipe	Road	
Cleanout	Wastewater Pipe	Fence	
General Direction of Flow	Underdrain Pipe		

Topographic contours from King County Survey, Spring 2017

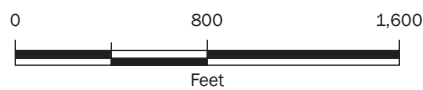


Vashon Island Closed Landfill Leachate Control System			
King County, Washington			
	King County Solid Waste Division	Nov-2018	FIGURE NO. 8



-  Regional Well Sampling Location
-  Surface Water Sampling Location
-  Vashon Island Closed Landfill

Topographic contours derived from King County LIDAR, 2016.



Vashon Island Closed Landfill Private Wells

King County, Washington

 King County	King County Solid Waste Division	Nov-2018	FIGURE NO. 9
---	-------------------------------------	----------	------------------------

GIS Data: Topographic & King County Solid Waste Vashon Island Landfill (Updated: KRS 14.4 CR Property Monitoring Locations.mxd) | Coordinate System: NAD 1983 HARN StatePlane Washington North (ft) 4001 Feet | Date Saved: 9/27/2018 | Layer: Private Wells | Print Date: 10/2/2018

Figure 10. Private Wells Trilinear Diagram

January 1, 2020 - March 31, 2020

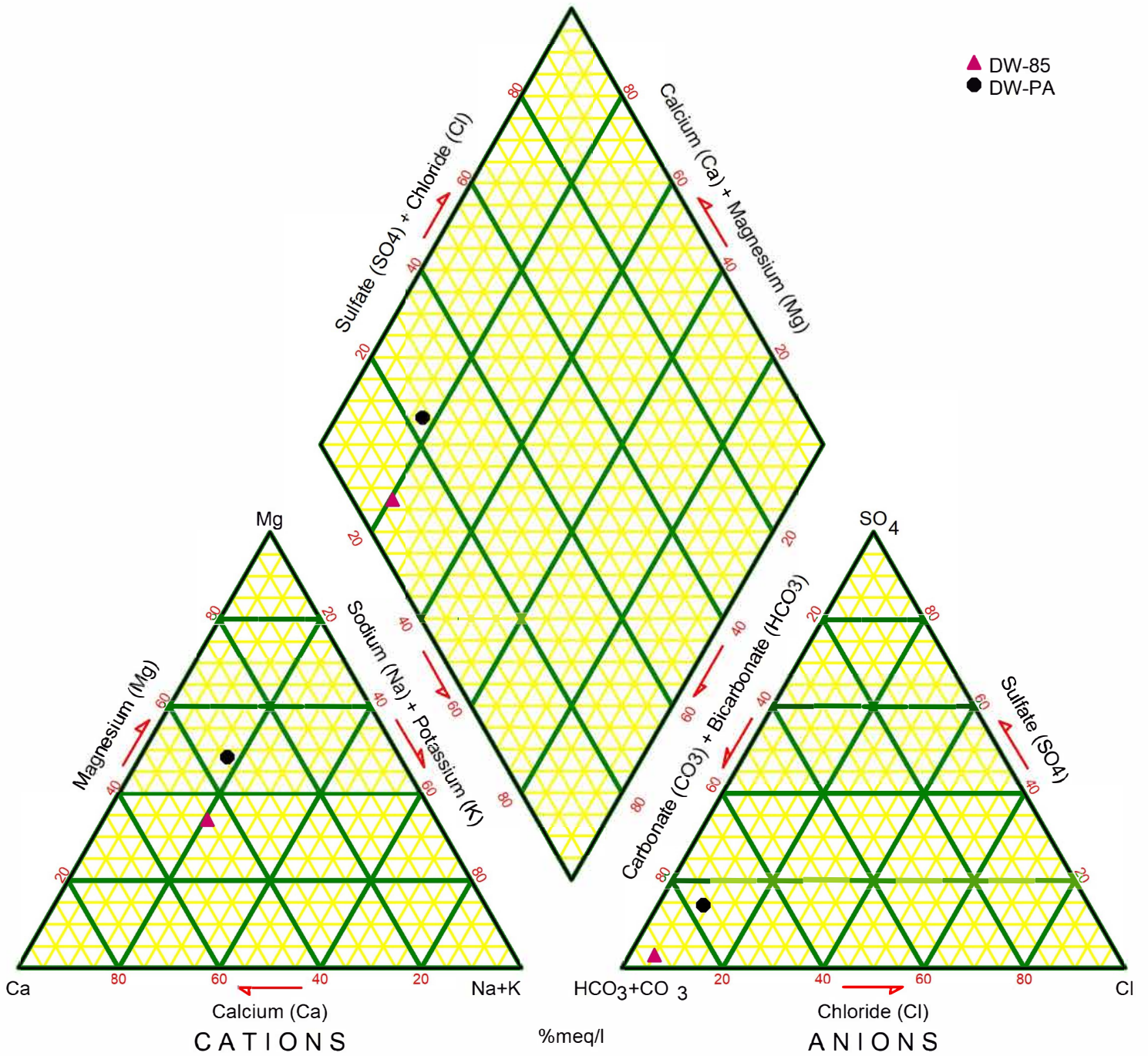


Table 17
Private Wells: Ion Balance Summary for Groundwater
January 1, 2020 - March 31, 2020

			DW-85			DW-PA		
Well #			1/29/2020			1/29/2020		
Sample Date								
Cation Parameters	Molecular Weight (g/mol)	n	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)
pH	--		6.26			6.86		
Conductance	--		150.4			183.4		
TDS	--		101			119		
Calcium	40.1	2	14.1	0.7036	44.8	13	0.6487	34.3
Magnesium	24.3	2	6.39	0.5258	33.5	11.1	0.9134	48.3
Potassium	39.1	1	2.51	0.0642	4.1	1.61	0.0412	2.2
Sodium	23.0	1	5.85	0.2545	16.2	6.57	0.2858	15.1
Iron	55.8	2	0.0687	0.0025	0.16	0.0191	0.0007	0.04
Manganese	54.9	2	0.0542	0.0020	0.13	0.00322	0.0001	0.01
Ammonia-N	14.0	1	0.272	0.0194	1.24	0.001	0.0001	0.00
Total Cations (meq/L)			1.6			1.9		
Anion Parameters	Molecular Weight (g/mol)	n						
Alkalinity, Total	--		70.8			68.4		
Carbonate	60.0	2	0.008	0.0003	0.0168	0.030	0.0010	0.054
Bicarbonate	61.0	1	86.4	1.4155	92.1	83.4	1.3668	73.8
Chloride	35.5	1	2.7	0.0762	5.0	5.7	0.1608	8.7
Nitrate-N	14.0	1	0.005	0.0004	0.023	0.905	0.0646	3.490
Sulfate	96.1	2	2.18	0.0454	3.0	12.4	0.2582	13.9
Total Anions (meq/L)			1.5			1.9		
Total Ions (meq/L)			3.1			3.7		
Cation/Anion Ratio			1.02			1.02		
Percent Difference			1.10			1.03		

APPENDIX A

Potentiometric Surface Maps and Aquifer Flow
Calculations



King County

Water and Land Resources Division

Department of Natural Resources and Parks
King Street Center
201 South Jackson Street, Suite 704
Seattle, WA 98104-3855

206-477-4800 Fax 206-296-0192
TTY Relay: 711

TECHNICAL MEMORANDUM

April 27, 2020

TO: Marisa Baptiste, Engineer III, Facility Engineering and Science Section, Solid Waste Division, Department of Natural Resources and Parks (DNRP)

FM: Sevin Bilir, Environmental Scientist IV, Science and Technical Support Section, Water and Land Resources Division, DNRP

RE: Potentiometric Groundwater Surface Maps & Groundwater Velocity Calculations First Quarter 2020 Results
Vashon Island Closed Landfill, King County, Washington
Project No. 1033601 – Task 29.14.137.45

The King County Water and Land Resources Division (WLRD) submits this memorandum report on groundwater conditions during the first quarter of 2020 for the middle channel deposit in the Cc2 perched zone and the Unit D aquifer beneath the Vashon Island Closed Landfill (Landfill), in accordance with the *Proposal for Potentiometric Groundwater Surface Maps & Groundwater Velocity Calculations* (WLRD, 2020). King County Solid Waste Division (SWD) personnel measured groundwater levels at the Landfill on January 27, 2020. These measurements were received by WLRD on April 1, 2020 and were used to:

1. Evaluate the potentiometric groundwater surface elevation for the Cc2 perched zone and the Unit D aquifer;
2. Determine the groundwater flow direction and horizontal gradient for the Cc2 perched zone and the Unit D aquifer; and
3. Calculate the groundwater velocity of the Cc2 perched zone and the Unit D aquifer.

There have been no significant changes in the interpreted groundwater conditions for the Cc2 perched zone and the Unit D aquifer since the report submitted for the fourth quarter of 2019.

Groundwater Elevation Data

The SWD attempted groundwater level measurements at 14 monitoring wells during the first quarter of 2020. These wells are completed in the Cc2 perched zone and the Unit D aquifer, as referred to in *Remedial Investigation Report, Phase 1 – Vashon Island Closed Landfill, Volume 1* (Aspect 2018).

Table A-1 lists the groundwater monitoring well identifications, locations, construction details, measured depth to groundwater levels and calculated groundwater elevations for monitoring wells screened in the Cc2 perched zone and Unit D aquifer.

Cc2 Perched Zone

Three separate coarse-grained perched zones are identified within variable fine-grained sediment in the Cc2 perched zone (Aspect 2018). The Cc2 channel deposit perched zone is not laterally extensive across the Landfill as was not identified in borings southeast and northwest of the landfill closure area (Aspect 2018). Groundwater in this perched zone is monitored by wells MW-2, MW-9, MW-20, MW-21, MW-30, MW-33, and MW-35 (Aspect 2018).

According to Aspect (2018), water levels in the Unit Cc2 perched zone generally indicate unconfined groundwater conditions, with the exception of monitoring wells MW-20 and MW-33. Groundwater elevations in these two wells are above coarse-grained layers indicating confined conditions (Aspect 2018). During this quarter, the water level in monitoring well MW-33 was measured at almost 17 feet above the top of the screen and may be influenced by confining conditions.

Figure A-1 shows calculated groundwater elevations at monitoring well locations and interpreted groundwater potentiometric surface contours for the Cc2 perched zone based on measurements taken on January 27, 2020.

Unit D Aquifer

Groundwater in the Unit D aquifer is monitored by wells MW-7, MW-12, MW-19, MW 25, MW-26, MW-28, MW-29, and MW-34 (Aspect 2018). Measured water levels in monitoring wells MW-7, MW-12, MW-19, MW-25, and MW-34 were at least 16.5 feet above the top of the screen and may be influenced by vertical gradients, permeability differences (Aspect 2018), or confining conditions in the Unit D aquifer.

Monitoring well MW-28 was again reported as dry as the water level was noted below the screen bottom elevation. This well has historically been reported as “dry” for this reason. The screen for MW-28 was installed at the contact between Unit D and unit below (Unit E) and requires a two foot rise in surrounding groundwater levels to reach the screen bottom.

Figure A-2 shows calculated groundwater elevations at monitoring well locations and interpreted groundwater potentiometric surface contours for the Unit D aquifer based on measurements taken on January 27, 2020.

Direction of Groundwater Flow

Interpreted groundwater flow directions in the Cc2 perched zone and Unit D aquifer, based on measurements taken on January 27, 2020, are shown in Figures A-1 and A-2. Table A-2 lists the flow direction for the Cc2 perched zone and Unit D aquifer beneath the Landfill based on measurements and mapping of groundwater elevation contours taken during the first quarter of 2020.

Cc2 Perched Zone

Calculated groundwater elevations and interpreted groundwater potentiometric surface contours indicate that groundwater in the Cc2 perched zone generally flows towards the west-northwest property-wide with a west to west-southwest component in the south slope area (Figure A-1).

Unit D Aquifer

As per Aspect (2018), groundwater flow direction in Unit D is strongly influenced by the typically higher water levels in MW-7 and MW-34 and this is seen in quarterly mapping of the potentiometric surface forming a groundwater divide running generally west-east beneath the southern area of the landfill footprint. Calculated groundwater elevations and interpreted groundwater potentiometric surface contours during the first quarter of 2020 indicate that groundwater in the Unit D aquifer flows generally southwesterly in the area south of the divide and northerly in the area north of the divide with components of flow to the northeast and northwest (Figure A-2). The groundwater gradient south of the divide is less steep than that north of the divide.

Groundwater Parameters

Table A-2 presents a summary of the groundwater parameters. Hydraulic conductivity and effective porosity values are based on the ranges referred to in *Remedial Investigation Report, Phase 1 – Vashon Island Closed Landfill, Volume 1* (Aspect 2018). However, average horizontal hydraulic conductivity values for Unit Cc2 are assumed incorrectly listed in that document but assumed correctly commented on later in the notes of that document. Table A-2 reflects this correction (also noted in the accompanying notes) and presents a summary of the groundwater parameters used to calculate groundwater velocities from the first quarter 2020 data.

The average horizontal hydraulic conductivity for the Cc2 perched zone beneath the Landfill is reported to be 8.2 feet per day (ft/d) property wide and 5.8 ft/d in the south slope area (Aspect 2018). The average horizontal hydraulic conductivity in the Unit D aquifer beneath the landfill is reported to be 10.2 ft/d (Aspect 2018). The effective

porosity is reported as 20 percent for both the Cc2 perched zone and the Unit D aquifer (Aspect 2018).

Average hydraulic gradients are approximately 0.019 ft/ft property wide and 0.012 ft/d for the south slope area based on measurements made during the first quarter of 2020. The average hydraulic gradients for the Unit D aquifer, based on measurements made during the first quarter of 2020, are approximately 0.030 and 0.016 ft/ft in the northerly and southerly flow directions, respectively.

Average horizontal groundwater velocities calculated for the Cc2 perched zone and Unit D aquifer beneath the Landfill, are based on spatial differences in aquifer parameters, hydraulic gradients, and calculations using the following formula:

$$\text{where: } v = \frac{I}{n_{eff}} K \frac{\Delta H}{\Delta L}$$

v = Groundwater velocity [L/t]
 n_{eff} = Effective porosity [dimensionless]
 K = Hydraulic conductivity [L/t]
 $\frac{\Delta H}{\Delta L}$ = Hydraulic gradient [L/L]

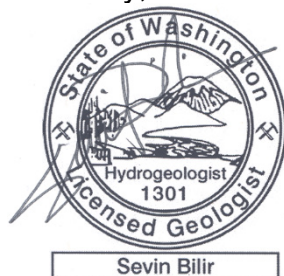
The average horizontal groundwater velocities in the Cc2 perched zone are approximately 0.76 ft/d property wide and 0.35 ft/d in the south slope area. The average horizontal groundwater velocities in the Unit D aquifer are approximately 1.50 and 0.82 ft/d in the northerly and southerly direction, respectively.

References

- Aspect Consulting, LLC. (Aspect). 2018. Remedial Investigation Report, Phase 1 – Vashon Island Closed Landfill, Volume 1 (Contract Number E00102E08; Task No. 310.3 – D310.3.2). AGENCY DRAFT. October 9.
- King County Water and Land Resources Division (WLRD). 2020. Proposal for 2020 Potentiometric Groundwater Surface Maps & Groundwater Velocity Calculations; King County Closed Landfills (Cedar Falls, Enumclaw, Hobart and Vashon Island) and Cedar Hills Regional Landfill. February.

Thank you for the opportunity to provide hydrogeologic services to SWD. If you have any questions, please feel free to contact me at 206-477-4646 or sevin.bilir@kingcounty.gov.

Sincerely,



Sevin Bilir, WA LHG
Environmental Scientist IV
King County Water and Land Resources Division

Enclosures:

- Table A-1: Well Details and Groundwater Elevations – First Quarter 2020
- Table A-2: Groundwater Parameters – First Quarter 2020
- Figure A-1: Groundwater Potentiometric Surface Map – First Quarter 2020 – Cc2 Perched Zone
- Figure A-2: Groundwater Potentiometric Surface Map – First Quarter 2020 – Unit D Aquifer

Table A-1: Well Details and Groundwater Elevations – First Quarter 2020
Vashon Island Closed Landfill
King County, Washington

	Well Identification	Easting ² (ft)	Northing ² (ft)	Top of Casing Elevation (ft MSL)	Top of Screen Elevation (ft MSL)	Bottom of Screen Elevation (ft MSL)	January 27, 2020	
							Measured Depth to Water ¹ (ft)	Groundwater Elevations (ft MSL)
Cc2 Perched Zone	MW-2	1227788.53	162365.91	317.97	237.06	232.06	74.27	243.70
	MW-9	1227723.68	163527.21	405.17	236.22	224.22	166.33	238.84
	MW-20	1228173.43	162566.52	370.32	241.41	236.41	122.32	248.00
	MW-21	1227647.90	162340.10	349.05	246.45	237.05	106.99	242.06
	MW-30	1227273.26	162671.10	235.67	230.40	225.40	5.11	230.56
	MW-33	1227883.53	162682.24	359.17	229.63	219.63	112.81	246.36
	MW-35	1227651.53	162559.82	361.34	244.20	234.20	118.81	242.53
Unit D Aquifer	MW-7	1228427.68	162811.30	376.75	154.40	144.40	191.61	185.14
	MW-12	1227800.99	162375.28	315.53	142.72	132.72	142.42	173.11
	MW-19	1227725.02	163535.12	405.43	143.14	131.64	245.80	159.63
	MW-25	1228628.13	163749.00	402.33	141.76	137.76	243.45	158.88
	MW-26	1227910.18	163770.66	406.54	153.55	144.15	247.50	159.04
	MW-28 ³	1228116.11	163843.88	398.73	172.15	162.65	Dry	NA
	MW-29	1228375.59	163681.26	413.85	168.03	158.63	244.44	169.41
	MW-34	1227774.04	163135.04	385.96	147.94	137.94	204.41	181.55

Notes:

1. Water level measurements made by SWD personnel.
2. Reference datum for eastings and northings is the North American Datum of 1983 (NAD83/11).
3. MW-28 requires 2 foot rise in groundwater levels. MW-28 screen installed at contact between Unit D and unit below (Unit E). Historically reported as a dry well (Aspect 2018).

Elevations are reported in feet (ft) above mean sea level (MSL) based on the North American Vertical Datum of 1988 (NAVD88).

DRY Well indicated as dry, water detected below screen interval.

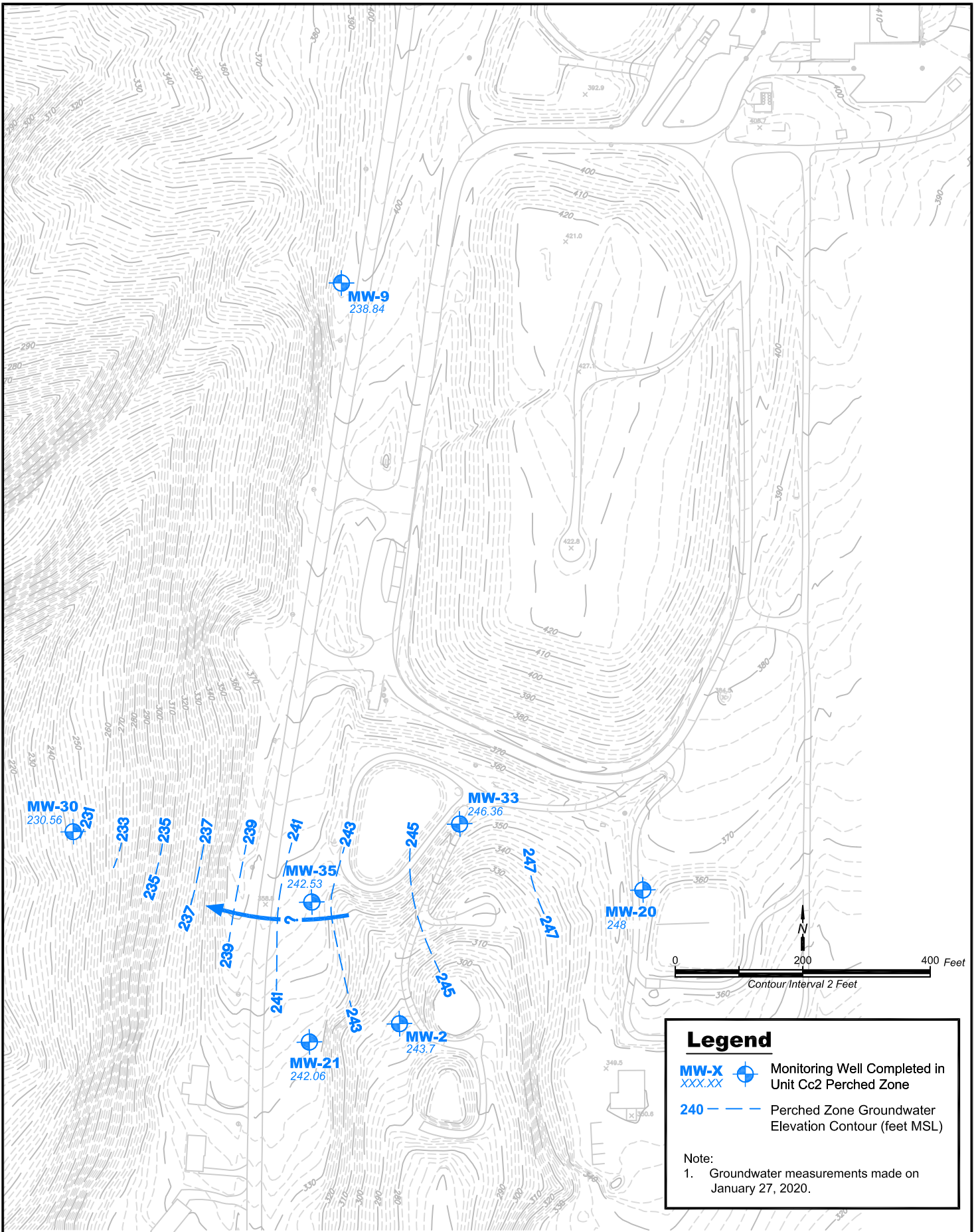
NA Not applicable

Table A-2: Groundwater Parameters – First Quarter 2020
Vashon Island Closed Landfill
King County, Washington


Water Bearing Zone	Horizontal Hydraulic Conductivity (K) ^{1,2}			Horizontal Hydraulic Gradient (DH/DL) ³	Effective Porosity (n_{eff}) ¹	Horizontal Groundwater Velocity (v)	General Groundwater Flow Direction
	Range	(cm/s)	(ft/d)	(ft/ft)		(ft/d)	
Unit Cc2 - Property Wide ^{4,6}	Low	5.7E-04	1.61	0.006	20%	0.05	West-northwest
	High	1.6E-02	46.08	0.031		7.14	
	Average ⁶	2.9E-03	8.21	0.019		0.76	
Unit Cc2 - South Slope Area ^{5,6}	Low	5.7E-04	1.61	0.006		0.05	West to West-southwest
	High	6.8E-03	19.35	0.018		1.74	
	Average ⁶	2.1E-03	5.81	0.012		0.35	
Unit D - Northerly flow direction	Low	1.5E-03	4.4	0.030		0.64	North - with flow to the northeast and northwest
	High	1.6E-02	46.1			6.80	
	Average	3.6E-03	10.2			1.50	
Unit D - Southerly flow direction	Low	1.5E-03	4.4	0.016	0.35	Southwest - away from divide	
	High	1.6E-02	46.1		3.69		
	Average	3.6E-03	10.2		0.82		

Notes:

1. Horizontal hydraulic conductivity values and effective porosity values (Aspect 2018). However, average horizontal hydraulic conductivity values for Unit Cc2 are assumed incorrectly listed in the Aspect (2018) document table and assumed correctly commented on in the document table notes. The table above reflects the assumed correct values. See notes 4 and 6 below.
2. Average horizontal hydraulic conductivity values are the geometric mean of values reported per well and unit (Aspect 2018).
3. Horizontal hydraulic gradients based on average of gradients measured at several points from the maps shown on Figures A-1 and A-2.
4. Calculations for property wide Unit Cc2 horizontal hydraulic conductivities include data from wells MW-2, MW-9, MW-20, MW-21, MW-33, and MW-35. (Aspect 2018).
5. Calculations for South Slope Area Unit Cc2 horizontal hydraulic conductivities include data from wells MW-2, MW-20, MW-21, MW-33, and MW-35. (Aspect 2018).
6. Calculations of average hydraulic conductivities for Unit Cc2 did not include data obtained in 1986 from MW-2 as the value was significantly lower than a remeasurement completed in 2015 (Aspect 2018).



Legend

MW-X  Monitoring Well Completed in Unit Cc2 Perched Zone

240 - - - Perched Zone Groundwater Elevation Contour (feet MSL)

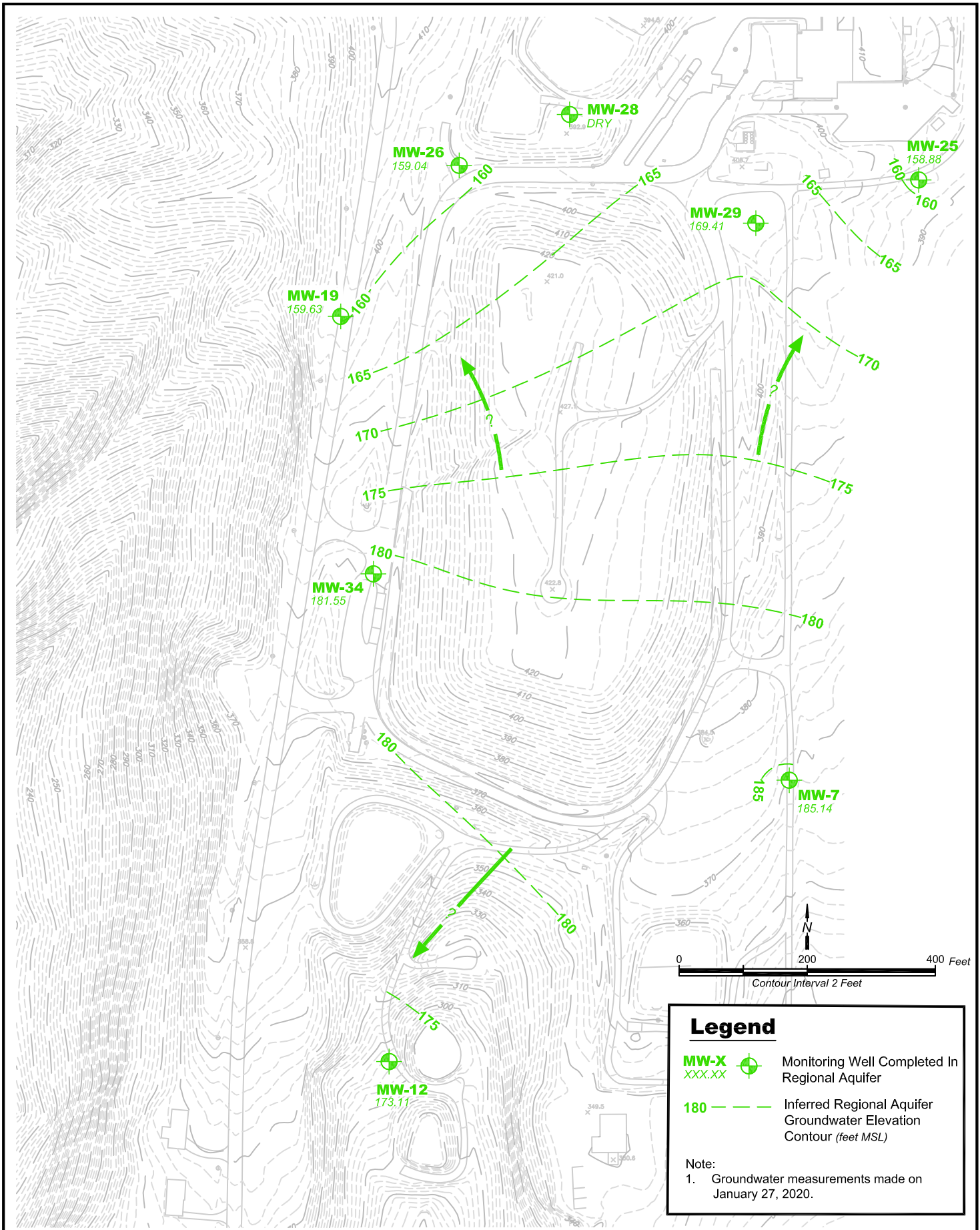
Note:
 1. Groundwater measurements made on January 27, 2020.




Groundwater Potentiometric Surface Map
First Quarter 2020 - Cc2 Perched Zone
 Vashon Island Closed Landfill
 King County, Washington


DATE:	April 2020
DESIGNED BY:	SB
DRAWN BY:	KK
REVISED BY:	SB

PROJECT NO.	1033601
FIGURE NO.	A-1



Legend

**MW-X
XXX.XX**  Monitoring Well Completed In Regional Aquifer

180  Inferred Regional Aquifer Groundwater Elevation Contour (feet MSL)

Note:
1. Groundwater measurements made on January 27, 2020.



Groundwater Potentiometric Surface Map
First Quarter 2020 - Unit D Aquifer
 Vashon Island Closed Landfill
 King County, Washington

DATE: April 2020	PROJECT NO. 1033601
DESIGNED BY: SB	FIGURE NO. A-2
DRAWN BY: KK	
REVISED BY: SB	

APPENDIX B

Field and Analytical Test Results

Water Quality Standards

Analyte	CAS No.	National Drinking Water Regulation			Washington State Groundwater Quality Criteria			
		MCL	Eff. Date	Ref.	Criterion*	Eff. Date	Ref.	
Primary Standards								
A. Inorganics								
Antimony	7440-36-0	0.006	mg/L	17-Jan-94	FR v. 57 No.138	0.006	mg/L 17-Jan-94	WAC 173-200
Arsenic c	7440-38-2	0.01	mg/L	23-Jan-06	66 FR 28342	0.00005	mg/L 01-Dec-90	WAC 173-200
Asbestos	132207-33-1	7	mf/L	30-Jul-92	FR v. 56 No. 20	7	mf/L 30-Jul-92	WAC 173-200
Barium	7440-39-3	2.0	mg/L	1-Jan-93	FR v. 56 No. 126	1.0	mg/L 01-Dec-90	WAC 173-200
Beryllium	7440-41-7	0.004	mg/L	17-Jan-94	FR v. 57 No.138	0.004	mg/L 17-Jan-94	WAC 173-200
Cadmium	7440-43-9	0.005	mg/L	30-Jul-92	FR v. 56 No. 20	0.005	mg/L 01-Dec-90	WAC 173-200
Chromium	7440-47-3	0.1	mg/L	30-Jul-92	FR v. 56 No. 20	0.05	mg/L 01-Dec-90	WAC 173-200
Copper	7440-50-8	1.3**	mg/L	7-Dec-92	FR v. 57 No. 125	1.0	mg/L 01-Dec-90	WAC 173-200
Cyanide	57-12-5	0.2	mg/L	17-Jan-94	FR v. 57 No.138	0.2	mg/L 17-Jan-94	WAC 173-200
Fluoride	16984-48-8	4.0	mg/L	2-Oct-87	40 CFR 141	4.0	mg/L 01-Dec-90	WAC 173-200
Lead	7439-92-1	0.015**	mg/L	7-Dec-92	FR v. 57 No. 125	0.015	mg/L 01-Dec-90	WAC 173-200
Mercury	7439-97-6	0.002	mg/L	2-Apr-86	40 CFR 141	0.002	mg/L 01-Dec-90	WAC 173-200
Nickel	7440-02-0	0.1	mg/L	17-Jan-94	FR v. 57 No.138	0.1	mg/L 17-Jan-94	WAC 173-200
Nitrate	14797-55-8	10.0	mg/L	2-Apr-86	FR v. 56 No. 20	10.0	mg/L 01-Dec-90	WAC 173-200
Nitrate and Nitrite	14797-55-8+14797-65-0	10.0	mg/L	30-Jul-92	FR v. 56 No. 20	10.0	mg/L 30-Jul-92	WAC 173-200
Nitrite	14797-65-0	1	mg/L	30-Jul-92	FR v. 56 No. 20	1.0	mg/L 30-Jul-92	WAC 173-200
Selenium	7782-49-2	0.05	mg/L	30-Jul-92	FR v. 56 No. 20	0.01	mg/L 01-Dec-90	WAC 173-200
Silver	7440-22-4	--				0.05	mg/L 01-Dec-90	WAC 173-200
Sodium	7440-23-5	20***	mg/L	20-Sep-04		20***	mg/L 03-Jul-04	WAC 246-290
Thallium	7440-28-0	0.002	mg/L	17-Jan-94	FR v. 57 No.138	0.002	mg/L 17-Jan-94	WAC 173-200
Total Coliforms		1/100	mL	24-Dec-75	40 CFR 141	1/100	mL 01-Dec-90	WAC 173-200
Turbidity		1	NTU	24-Dec-75	40 CFR 141	--	--	--
B. Organic Chemicals								
Alachlor	15972-60-8	2	µg/L	30-Jul-92	FR v. 56 No. 20	2	µg/L 30-Jul-92	WAC 173-200
Atrazine	1912-24-9	3	µg/L	30-Jul-92	FR v. 56 No. 20	3	µg/L 30-Jul-92	WAC 173-200
Benzene c	71-43-2	5	µg/L	9-Jan-89	40 CFR 141	1	µg/L 01-Dec-90	WAC 173-200
Bis(2-ethylhexyl)phthalate	117-81-7	6	µg/L	17-Jan-94	FR v. 57 No.138	6	µg/L 01-Dec-90	WAC 173-200
Bromodichloromethane c	75-27-4	--				0.3	µg/L 01-Dec-90	WAC 173-200
Bromoform c	75-25-2	--				5	µg/L 01-Dec-90	WAC 173-200
Carbofuran	1563-66-2	40	µg/L	30-Jul-92	FR v. 56 No. 20	40	µg/L 30-Jul-92	WAC 173-200
Carbon Tetrachloride c	56-23-5	5	µg/L	9-Jan-89	40 CFR 141	0.3	µg/L 01-Dec-90	WAC 173-200
Chlordane c	5103-71-9	2	µg/L	30-Jul-92	FR v. 56 No. 20	0.06	µg/L 01-Dec-90	WAC 173-200
Chlorobenzene	108-90-7	100	µg/L	30-Jul-92	FR v. 56 No. 20	100	µg/L 30-Jul-92	WAC 173-200
Chlorodibromomethane c	124-48-1	--				0.5	µg/L 01-Dec-90	WAC 173-200
Chloroform c	67-66-3	--				7	µg/L 01-Dec-90	WAC 173-200
2,4-D	94-75-7	70	µg/L	30-Jul-92	FR v. 56 No. 20	70	µg/L 01-Dec-90	WAC 173-200
Dalapon	75-99-0	200	µg/L	17-Jan-94	FR v. 57 No.138	200	µg/L 17-Jan-94	WAC 173-200
1,2-Dibromo-3-chloropropane	96-12-8	0.2	µg/L	30-Jul-92	FR v. 56 No. 20	0.2	µg/L 30-Jul-92	WAC 173-200
1,2-Dichlorobenzene	95-50-1	600	µg/L	30-Jul-92	FR v. 56 No. 20	600	µg/L 30-Jul-92	WAC 173-200
1,4-Dichlorobenzene c	106-46-7	75	µg/L	9-Jan-89	40 CFR 141	4	µg/L 01-Dec-90	WAC 173-200
1,1-Dichloroethane c	75-34-3	--				1	µg/L 01-Dec-90	WAC 173-200
1,2-Dichloroethane c	107-06-2	5	µg/L	9-Jan-89	40 CFR 141	0.5	µg/L 01-Dec-90	WAC 173-200
1,1-Dichloroethene	75-35-4	7	µg/L	9-Jan-89	40 CFR 141	7	µg/L 01-Dec-90	WAC 173-200
c-1,2-Dichloroethene	156-59-2	70	µg/L	30-Jul-92	FR v. 56 No. 20	70	µg/L 30-Jul-92	WAC 173-200
t-1,2-Dichloroethene	156-60-5	100	µg/L	30-Jul-92	FR v. 56 No. 20	100	µg/L 30-Jul-92	WAC 173-200
1,2-Dichloropropane c	78-87-5	5	µg/L	30-Jul-92	FR v. 56 No. 20	0.6	µg/L 01-Dec-90	WAC 173-200
1,3-Dichloropropene tot. c	542-75-6	--				0.2	µg/L 01-Dec-90	WAC 173-200
Di(ethylhexyl)adipate	103-23-1	400	µg/L	17-Jan-94	FR v. 57 No.138	400	µg/L 17-Jan-94	WAC 173-200
Dinoseb	88-85-7	7	µg/L	17-Jan-94	FR v. 57 No.138	7	µg/L 17-Jan-94	WAC 173-200
Diquat	231-36-7	20	µg/L	17-Jan-94	FR v. 57 No.138	20	µg/L 17-Jan-94	WAC 173-200
Endothall	145-73-3	100	µg/L	17-Jan-94	FR v. 57 No.138	100	µg/L 17-Jan-94	WAC 173-200
Endrin	72-20-8	2	µg/L	17-Jan-94	40 CFR 141	0.2	µg/L 01-Dec-90	WAC 173-200
Ethylbenzene	100-41-4	700	µg/L	30-Jul-92	FR v. 56 No. 20	700	µg/L 30-Jul-92	WAC 173-200
Ethylene dibromide c	106-93-4	0.05	µg/L	30-Jul-92	FR v. 56 No. 20	0.001	µg/L 01-Dec-90	WAC 173-200
Glyphosate	1071-83-6	70	µg/L	17-Jan-94	FR v. 57 No.138	70	µg/L 17-Jan-94	WAC 173-200
Heptachlor c	76-44-8	0.4	µg/L	30-Jul-92	FR v. 56 No. 20	0.02	µg/L 01-Dec-90	WAC 173-200
Heptachlor epoxide c	1024-57-3	0.2	µg/L	30-Jul-92	FR v. 56 No. 20	0.009	µg/L 01-Dec-90	WAC 173-200
Hexachlorobenzene	118-74-1	1	µg/L	17-Jan-94	FR v. 57 No.138	0.05	µg/L 01-Dec-90	WAC 173-200
Hexachlorocyclopentadiene (HEX)	77-47-4	50	µg/L	17-Jan-94	FR v. 57 No.138	50	µg/L 17-Jan-94	WAC 173-200
Lindane c	58-89-9	0.2	µg/L	30-Jul-92	FR v. 56 No. 20	0.06	µg/L 01-Dec-90	WAC 173-200

Water Quality Standards

Analyte	CAS No.	National Drinking Water Regulation			Washington State Groundwater Quality Criteria				
		MCL	Eff. Date	Ref.	Criterion*	Eff. Date	Ref.		
Methoxychlor	72-43-5	40	µg/L	30-Jul-92	FR v. 56 No. 20	40	µg/L	30-Jul-92	WAC 173-200
Methylene Chloride c	75-09-2	5	µg/L	17-Jan-94	FR v. 57 No.138	5	µg/L	17-Jan-94	WAC 173-200
Oxamyl (vydate)	23135-22-0	200	µg/L	17-Jan-94	FR v. 57 No.138	200	µg/L	17-Jan-94	WAC 173-200
PAHs [Benzo(a)pyrene]		0.2	µg/L	17-Jan-94	FR v. 57 No.138	0.01	µg/L	17-Jan-94	WAC 173-200
PCBs c	27323-18-8	0.5	µg/L	30-Jul-92	FR v. 56 No. 20	0.01	µg/L	01-Dec-90	WAC 173-200
Pentachlorophenol	87-86-5	1	µg/L	1-Jan-93	FR v. 56 No. 126	1	µg/L	01-Jan-93	WAC 173-200
Picloram	1918-02-1	500	µg/L	17-Jan-94	FR v. 57 No.138	500	µg/L	17-Jan-94	WAC 173-200
Simazine	122-34-9	4	µg/L	17-Jan-94	FR v. 57 No.138	4	µg/L	17-Jan-94	WAC 173-200
Styrene	100-42-5	100	µg/L	30-Jul-92	FR v. 56 No. 20	100	µg/L	30-Jul-92	WAC 173-200
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	3E-05	µg/L	17-Jan-94	FR v. 57 No.138	0.0000006	µg/L	01-Dec-90	WAC 173-200
Tetrachloroethylene c	127-18-4	5	µg/L	30-Jul-92	FR v. 56 No. 20	0.8	µg/L	30-Jul-92	WAC 173-200
Toluene	108-88-3	1000	µg/L	30-Jul-92	FR v. 56 No. 20	1000	µg/L	30-Jul-92	WAC 173-200
Total Trihalomethanes c	75-27-4, 75-25-2, 124-48-1, 67-66-3	100	µg/L	29-Nov-79	40 CFR 141	--	--	--	--
Toxaphene c	8001-35-2	3	µg/L	30-Jul-92	FR v. 56 No. 20	0.08	µg/L	01-Dec-90	WAC 173-200
2,4,5-TP	93-72-1	50	µg/L	30-Jul-92	FR v. 56 No. 20	100	µg/L	01-Dec-90	WAC 173-200
1,2,4-Trichlorobenzene	120-82-1	70	µg/L	17-Jan-94	FR v. 57 No.138	70	µg/L	17-Jan-94	WAC 173-200
1,1,1-Trichloroethane	71-55-6	200	µg/L	9-Jan-89	40 CFR 141	200	µg/L	01-Dec-90	WAC 173-200
1,1,2-Trichloroethane	79-00-5	5	µg/L	17-Jan-94	FR v. 57 No.138	5	µg/L	17-Jan-94	WAC 173-200
Trichloroethylene (TCE) c	79-01-6	5	µg/L	9-Jan-89	40 CFR 141	3	µg/L	01-Dec-90	WAC 173-200
Vinyl chloride c	75-01-4	2	µg/L	9-Jan-89	40 CFR 141	0.02	µg/L	01-Dec-90	WAC 173-200
Xylenes (total)	1330-20-7	10000	µg/L	30-Jul-92	FR v. 56 No. 20	10000	µg/L	30-Jul-92	WAC 173-200
C. Radionuclides and Radioactivity									
Radium 226 & Radium 228		5	pCi/L	9-Jul-76	FR v. 41 No. 133	5	pCi/L	01-Dec-90	WAC 173-200
Radium 226	13982-63-3	--				3	pCi/L	01-Dec-90	WAC 173-200
Radium 228	15262-20-1	--				5	pCi/L	01-Dec-90	WAC 173-200
Gross Alpha particle activity		15	pCi/L	9-Jul-76	FR v. 41 No. 133	15	pCi/L	01-Dec-90	WAC 173-200
Tritium	10028-17-8	20,000	pCi/L	9-Jul-76	FR v. 41 No. 133	20,000	pCi/L	01-Dec-90	WAC 173-200
Strontium	7440-24-6	8	pCi/L	9-Jul-76	FR v. 41 No. 133	8	pCi/L	01-Dec-90	WAC 173-200
Gross Beta particle activity		50	pCi/L	9-Jul-76	FR v. 41 No. 133	50	pCi/L	01-Dec-90	WAC 173-200
D. Additional Carcinogens Listed in Groundwater Criteria									
Acrylamide	79-06-1	--				0.02	µg/L	01-Dec-90	WAC 173-200
Acrylonitrile	107-13-1	--				0.07	µg/L	01-Dec-90	WAC 173-200
Aldrin	309-00-2	--				0.005	µg/L	01-Dec-90	WAC 173-200
Aniline	62-53-3	--				14	µg/L	01-Dec-90	WAC 173-200
Aramite	140-57-8	--				3	µg/L	01-Dec-90	WAC 173-200
Azobenzene	103-33-3	--				0.7	µg/L	01-Dec-90	WAC 173-200
Benidine	92-87-5	--				0.0004	µg/L	01-Dec-90	WAC 173-200
Benzo(a)pyrene	50-32-8	--				0.008	µg/L	01-Dec-90	WAC 173-200
Benzotrithloride	98-07-7	--				0.007	µg/L	01-Dec-90	WAC 173-200
Benzyl chloride	100-44-7	--				0.5	µg/L	01-Dec-90	WAC 173-200
Bis(chloroethyl)ether	111-44-4	--				0.07	µg/L	01-Dec-90	WAC 173-200
Bis(chloromethyl)ether	542-88-1	--				0.0004	µg/L	01-Dec-90	WAC 173-200
Carbazole	86-74-8	--				5	µg/L	01-Dec-90	WAC 173-200
4-Chloro-2-methyl aniline	95-69-2	--				0.1	µg/L	01-Dec-90	WAC 173-200
4-Chloro-2-methyl aniline hydrochloride	3165-93-3	--				0.2	µg/L	01-Dec-90	WAC 173-200
o-Chloronitrobenzene	88-73-3	--				3	µg/L	01-Dec-90	WAC 173-200
p-Chloronitrobenzene	100-00-5	--				5	µg/L	01-Dec-90	WAC 173-200
Chlorthalonil	1897-45-6	--				30	µg/L	01-Dec-90	WAC 173-200
Diallate	2303-16-4	--				1	µg/L	01-Dec-90	WAC 173-200
DDT (includes DDE and DDD)	50-29-3, 72-55-9, 72-54-8	--				0.3	µg/L	01-Dec-90	WAC 173-200
1,2-Dibromomethane	106-93-4	--				0.001	µg/L	01-Dec-90	WAC 173-200
3,3'-Dichlorobenzidine	91-94-1	--				0.2	µg/L	01-Dec-90	WAC 173-200
Dichlorovos	62-73-7	--				0.3	µg/L	01-Dec-90	WAC 173-200
Dieldrin	60-57-1	--				0.005	µg/L	01-Dec-90	WAC 173-200
3,3'-Dimethoxybenzidine	119-90-4	--				6.0	µg/L	01-Dec-90	WAC 173-200
3,3-Dimethylbenzidine	119-93-7	--				0.007	µg/L	01-Dec-90	WAC 173-200
1,2-Dimethylhydrazine	540-73-8	--				60	µg/L	01-Dec-90	WAC 173-200
2,4-Dinitrotoluene	121-14-2	--				0.1	µg/L	01-Dec-90	WAC 173-200
2,6-Dinitrotoluene	606-20-2	--				0.1	µg/L	01-Dec-90	WAC 173-200
1,4-Dioxane	123-91-1	--				7	µg/L	01-Dec-90	WAC 173-200
1,2-Diphenylhydrazine	122-66-7	--				0.09	µg/L	01-Dec-90	WAC 173-200

Water Quality Standards

Analyte	CAS No.	National Drinking Water Regulation			Washington State Groundwater Quality Criteria				
		MCL	Eff. Date	Ref.	Criterion*	Eff. Date	Ref.		
Direct Black 38	1937-37-7	--			0.009	µg/L	01-Dec-90	WAC 173-200	
Direct Blue 6	2602-46-2	--			0.009	µg/L	01-Dec-90	WAC 173-200	
Direct Brown 95	16071-86-6	--			0.009	µg/L	01-Dec-90	WAC 173-200	
Epichlorohydrin	106-89-8	--			8	µg/L	01-Dec-90	WAC 173-200	
Ethyl acrylate	140-88-5	--			2	µg/L	01-Dec-90	WAC 173-200	
Ethylene thiourea	96-45-7	--			2	µg/L	01-Dec-90	WAC 173-200	
Folpet	133-07-3	--			20	µg/L	01-Dec-90	WAC 173-200	
Furazolidone	67-45-8	--			0.02	µg/L	01-Dec-90	WAC 173-200	
Furium	531-82-8	--			0.002	µg/L	01-Dec-90	WAC 173-200	
Furmecyclox	60568-05-0	--			3	µg/L	01-Dec-90	WAC 173-200	
Hexachlorocyclohexane (alpha)	319-84-6	--			0.001	µg/L	01-Dec-90	WAC 173-200	
Hexachlorocyclohexane (technical)	608-73-1	--			0.05	µg/L	01-Dec-90	WAC 173-200	
Hexachlorodibenzo-p-dioxin, mix	34465-46-8	--			0.00001	µg/L	01-Dec-90	WAC 173-200	
Hydrazine/hydrazine sulfate	302-01-2/10034-93-2	--			0.03	µg/L	01-Dec-90	WAC 173-200	
2-Methoxy-5-nitroaniline	99-59-2	--			2.0	µg/L	01-Dec-90	WAC 173-200	
2-Methylaniline	95-53-4	--			0.2	µg/L	01-Dec-90	WAC 173-200	
2-Methylaniline hydrochloride	636-21-5	--			0.5	µg/L	01-Dec-90	WAC 173-200	
4,4'-Methylene bis(N,N'-dimethyl) aniline	101-61-1	--			2.0	µg/L	01-Dec-90	WAC 173-200	
Mirex	2385-85-5	--			0.05	µg/L	01-Dec-90	WAC 173-200	
Nitrofurazone	59-87-0	--			0.06	µg/L	01-Dec-90	WAC 173-200	
N-Nitrosodiethanolamine	1116-54-7	--			0.03	µg/L	01-Dec-90	WAC 173-200	
N-Nitrosodiethylamine	55-18-5	--			0.0005	µg/L	01-Dec-90	WAC 173-200	
N-Nitrosodimethylamine	62-75-9	--			0.002	µg/L	01-Dec-90	WAC 173-200	
N-Nitrosodiphenylamine	86-30-6	--			17.0	µg/L	01-Dec-90	WAC 173-200	
N-Nitroso-di-n-propylamine	621-64-7	--			0.01	µg/L	01-Dec-90	WAC 173-200	
N-Nitrosopyrrolidine	930-55-2	--			0.04	µg/L	01-Dec-90	WAC 173-200	
N-Nitroso-di-n-butylamine	924-16-3	--			0.02	µg/L	01-Dec-90	WAC 173-200	
N-Nitroso-N-methylethylamine	10595-95-6	--			0.004	µg/L	01-Dec-90	WAC 173-200	
PBBs	59536-65-1	--			0.01	µg/L	01-Dec-90	WAC 173-200	
o-Phenylenediamine	95-54-5	--			0.005	µg/L	01-Dec-90	WAC 173-200	
Propylene oxide	75-56-9	--			0.01	µg/L	01-Dec-90	WAC 173-200	
p,a,a,a-Tetrachlorotoluene	5216-25-1	--			0.004	µg/L	01-Dec-90	WAC 173-200	
2,4-Toluenediamine	95-80-7	--			0.002	µg/L	01-Dec-90	WAC 173-200	
o-Toluidine	95-53-4	--			0.2	µg/L	01-Dec-90	WAC 173-200	
2,4,6-Trichlorophenol	88-06-2	--			4.0	µg/L	01-Dec-90	WAC 173-200	
Trimethyl phosphate	512-56-1	--			2.0	µg/L	01-Dec-90	WAC 173-200	
Secondary Standards									
Aluminum	7429-90-5	0.05-0.2	mg/L	30-Jul-92	FR v. 56 No. 20	0.05-0.2	mg/L	30-Jul-92	WAC 173-200
Copper	7440-50-8	1.0	mg/L	7-Dec-92	FR v. 57 No. 125	1.0	mg/L	01-Dec-90	WAC 173-200
Iron	7439-89-6	0.3	mg/L	2-Apr-86	40 CFR 143	0.3	mg/L	01-Dec-90	WAC 173-200
Manganese	7439-96-5	0.05	mg/L	2-Apr-86	40 CFR 143	0.05	mg/L	01-Dec-90	WAC 173-200
Color		15	units	2-Apr-86	40 CFR 143	15	units	01-Dec-90	WAC 173-200
pH	12408-02-5	6.5-8.5	units	2-Apr-86	40 CFR 143	6.5-8.5	units	01-Dec-90	WAC 173-200
Specific Conductivity		--				700	µS/cm		WAC 246-290
Total Dissolved Solids		500	mg/L	2-Apr-86	40 CFR 143	500	mg/L	01-Dec-90	WAC 173-200
Chloride	16887-00-6	250	mg/L	2-Apr-86	40 CFR 143	250	mg/L	01-Dec-90	WAC 173-200
Fluoride	16984-48-8	2.0	mg/L	2-Apr-86	40 CFR 143	p			
Silver	7440-22-4	0.1	mg/L	30-Jul-92	FR v. 56 No. 20	p			
Sulfate	14808-79-8	250	mg/L	2-Apr-86	40 CFR 143	250	mg/L	01-Dec-90	WAC 173-200
Surfactants		0.5	mg/L	2-Apr-86	40 CFR 143	0.5	mg/L	01-Dec-90	WAC 173-200
Corrosivity		non-corrosive		2-Apr-86	40 CFR 143	non-corrosive		01-Dec-90	WAC 173-200
Odor-Threshold		3	units	2-Apr-86	40 CFR 143	3	units	01-Dec-90	WAC 173-200
Zinc	7440-66-6	5.0	mg/L	2-Apr-86	40 CFR 143	5.0	mg/L	01-Dec-90	WAC 173-200
NOTES:							mg/L = milligrams per liter		
p = Listed as a primary standard							mf/L = million fibers per liter		
c = Listed as a carcinogen in the Washington State Groundwater Quality Criteria							mL = milliliter		
-- = no standard established							NTU = Nephelometric Turbidity Unit		
* = Criteria shall be the most stringent concentration of the Federal MCLG, MCL, or State MCL							µg/L = micrograms per liter		
** = treatment technique in lieu of an MCL							pCi/L = per liter		
*** = A Drinking Water Advisory, not an enforceable standard.							µS/cm = microSiemen per centimeter		
National Primary and Secondary Drinking Water Regulations (40 CFR Parts 141 and 143)							units = standard unit for either color, pH, or odor		
Washington State Groundwater Quality Criteria = Water Quality Standards for Groundwaters of the State of Washington (WAC 173-200)							MCL = Maximum Contaminant Level		
							MCLG = Maximum Contaminant Level Goal		

Compiled by KCSWD 1/12/94. Revised 12/13/19

**KING COUNTY SOLID WASTE DIVISION
QUALIFIER INFORMATION**
(Effective 8/27/2015)

QUAL	QUALIFIER DESCRIPTION
U	Undetected; Analyte Concentration Less than Method Detection Limit (< MDL)
T	Estimated; Less than Reporting Detection Limit (<RDL) but Greater than Method Detection Limit (> MDL)
J	Reported Value is an Estimate
B	Matrix Target Analyte Present in Blank, AND, Sample Result Less than or Equal to 10x Blank Detection
C	Confluent Growth
E	Estimated; Outside Expected Accuracy
H	Exceeds Holding Time
R	Data Rejected
S	Sample Handling Errors
X	Too Numerous to Count
D	Re-analysis Due to Dilution
P	PASS – Qualitative Result Acceptable
F	FAIL – Qualitative Result is not Acceptable
G	Estimated with Low Bias (Coliform; BOD; All Other Chemistry Parameters)
L	Estimated with High Bias (BOD; All Other Chemistry Parameters)

Summary of Trip, Field, and Method Blanks Volatile Organic Compound Detections

January 1, 2020 - March 31, 2020

Summary of trip blank volatile organic compound detections

Compound	Units	Sample ID	Date	Sample Value
There were no volatile organic compounds detected in trip blanks this quarter.				

Summary of field blank volatile organic compound detections

Compound	Units	Sample ID	Date	Sample Value
Chloroform	ug/L	WV8-200127F	1/29/2020	0.851

Summary of method blank volatile organic compound detections

Compound	Units	Workgroup ID	Date	Sample Value
There were no volatile organic compounds detected in method blanks this quarter.				

Parameter	Unit	Prediction Limits for MW-20			Prediction Limits for MW-7			Prediction Limits for MW-12			Prediction Limits for MW-19			Prediction Limits for MW-26			Prediction Limits for MW-29			Prediction Limits for MW-34		
		Transformation Used	Lower Prediction Limit	Upper Prediction Limit	Transformation Used	Lower Prediction Limit	Upper Prediction Limit	Transformation Used	Lower Prediction Limit	Upper Prediction Limit	Transformation Used	Lower Prediction Limit	Upper Prediction Limit	Transformation Used	Lower Prediction Limit	Upper Prediction Limit	Transformation Used	Lower Prediction Limit	Upper Prediction Limit	Transformation Used	Lower Prediction Limit	Upper Prediction Limit
pH (Field)	(std. Units)	cubed	6.29	8.60	Not Normal	7.00	8.09	cubed	6.68	7.85	Not Normal	6.94	7.79	Not Normal	7.34	9.20	Not Normal	6.65	7.80	normal	6.59	7.34
Conductance (Field)	(µmhos/cm)	Not Normal		242.1	Not Normal		194.2	Not Normal		170.8	Not Normal		230.0	Not Normal		200.0	Not Normal		265.0	Not Normal		210
Alkalinity, Total (CaCO ₃)	(mg/L)	Not Normal		94.9	Not Normal		100	fifth power		66.86	Not Normal		110.0	Not Normal		86.0	Not Normal		140	Not Normal		80.2
Ammonia	(mg/L)	Not Normal		0.0	normal		0.32	<=50% Detected		0.036	Not Normal		0.093	squared		0.31	<=50% Detected		0.03	<=50% Detected		0.059
Chloride	(mg/L)	Not Normal		4.09	normal		3.79	Not Normal		4.07	Not Normal		37.6	Not Normal		9.11	Not Normal		4.3	cubed		5.36
Nitrate (NO ₃ as N)	(mg/L)	<=50% Detected		0.05	<=50% Detected		0.13	normal		0.82	<=50% Detected		0.12	Not Normal		0.23	<=50% Detected		0.082	normal		2.82
Sulfate	(mg/L)	normal		18.51	normal		11.87	normal		11.50	fifth power		18.98	fourth power		14.5	normal		18.51	normal		14.39
Total Dissolved Solids	(mg/L)	squared		159.02	Not Normal		137.00	squared		129	fourth power		170.0	Not Normal		210	fourth power		167.9	normal		148.35
Total Organic Carbon	(mg/L)	<=50% Detected		2.33	<=50% Detected		1.83	<=50% Detected		1.36	<=50% Detected		18.4	<=50% Detected		1.6	<=50% Detected		2.43	<=50% Detected		1
Total Solids	(mg/L)	Not Normal		286	Not Normal		141.00	Not Normal		150	Not Normal		221.0	Not Normal		582	Not Normal		207	Not Normal		183.00
Total Suspended Solids	(mg/L)	Not Normal		95	<=50% Detected		2.0	<=50% Detected		49	<=50% Detected		12.8	Not Normal		637	Not Normal		133	<=50% Detected		41.7
Antimony, Total	(mg/L)	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001
Arsenic, Total	(mg/L)	log		0.00442	normal		0.0057	normal		0.00230	log		0.00208	Not Normal		0.0108	Not Normal		0.01550	Not Normal		0.002
Barium, Total	(mg/L)	Not Normal		0.0384	normal		0.01714	Not Normal		0.0101	Not Normal		0.0233	Not Normal		0.0636	Not Normal		0.0189	Not Normal		0.010
Beryllium, Total	(mg/L)	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001
Cadmium, Total	(mg/L)	Not Detected		0.002	Not Detected		0.002	Not Detected		0.002	<=50% Detected		0.002	Not Detected		0.002	Not Detected		0.002	Not Detected		0.002
Calcium, Total	(mg/L)	normal		15.42	normal		17.8	normal		13.7131	normal		17.2	fourth power		19.71	normal		22.87	normal		15.63
Chromium, Total	(mg/L)	<=50% Detected		0.0111	<=50% Detected		0.005	<=50% Detected		0.005	Not Detected		0.005	<=50% Detected		0.012	<=50% Detected		0.005	Not Normal		0.00316
Cobalt, Total	(mg/L)	<=50% Detected		0.003	<=50% Detected		0.003	Not Detected		0.003	Not Detected		0.003	<=50% Detected		0.00379	<=50% Detected		0.003	<=50% Detected		0.003
Copper, Total	(mg/L)	<=50% Detected		0.0114	<=50% Detected		0.002	<=50% Detected		0.00476	<=50% Detected		0.002	Not Normal		0.0202	<=50% Detected		0.00279	<=50% Detected		0.002
Iron, Dissolved	(mg/L)	Not Normal		0.39	<=50% Detected		0.0590	<=50% Detected		0.12	Not Normal		0.191	log		0.2	Not Normal		0.98	Not Detected		0.01
Lead, Total	(mg/L)	<=50% Detected		0.00188	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	<=50% Detected		0.00513	Not Detected		0.001	<=50% Detected		0.001
Magnesium, Total	(mg/L)	normal		17.33	normal		11.56	normal		11.25	normal		16.60	normal		9.35	normal		16.53	normal		13.68
Manganese, Dissolved	(mg/L)	Not Normal		0.55	Not Normal		0.255	<=50% Detected		0.140	Not Normal		1.350	normal		0.0805	Not Normal		0.123	Not Normal		0.016
Mercury, Total	(mg/L)	Not Detected		0.0001	Not Detected		0.0001	Not Detected		0.0001	Not Detected		0.0001	Not Detected		0.0001	Not Detected		0.0001	Not Detected		0.0001
Nickel, Total	(mg/L)	<=50% Detected		0.0119	<=50% Detected		0.01	<=50% Detected		0.01	<=50% Detected		0.01	<=50% Detected		0.0179	<=50% Detected		0.01	Not Normal		0.005
Potassium, Total	(mg/L)	normal		2.52	cubed		3.01	normal		2.09	normal		2.79	normal		3.47	normal		2.45	normal		1.80
Selenium, Total	(mg/L)	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001
Silver, Total	(mg/L)	Not Detected		0.003	Not Detected		0.003	<=50% Detected		0.003	Not Detected		0.003	Not Detected		0.003	Not Detected		0.003	Not Detected		0.003
Sodium, Total	(mg/L)	normal		7.57	normal		7.10	normal		7.02	normal		7.99	normal		10.50	normal		7.55	normal		7.59
Thallium, Total	(mg/L)	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001	Not Detected		0.001
Vanadium, Total	(mg/L)	<=50% Detected		0.00767	<=50% Detected		0.002	log		0.00620	<=50% Detected		0.002	<=50% Detected		0.0142	<=50% Detected		0.00313	Not Normal		0.0047
Zinc, Dissolved	(mg/L)	<=50% Detected		0.0053	<=50% Detected		0.00910	<=50% Detected		0.0048	<=50% Detected		0.066	<=50% Detected		0.052	<=50% Detected		0.023	Not Normal		0.00217
Vinyl Chloride	(ug/L)	<=50% Detected		0.0867	Not Detected		0.02	Not Detected		0.02	<=50% Detected		0.2	Not Detected		0.02	Not Detected		0.02	Not Detected		0.02

Groundwater - Static Water Levels		Top of PVC Casing Elevation	Depth to Groundwater	Groundwater Elevation
Well #	Measurement Date	(feet)	(feet)	(feet above MSL)
MW-24	1/27/2020	377.48	89.45	288.03
MW-3	1/27/2020	318.02	39.25	278.77
MW-4	1/27/2020	377.18	107.16	270.02
MW-10	1/27/2020	409.94	145.53	264.41
MW-13	1/27/2020	377.28	100.30	276.98
MW-2	1/27/2020	317.97	74.27	243.70
MW-9	1/27/2020	405.17	166.33	238.84
MW-20	1/27/2020	370.32	122.32	248.00
MW-21	1/27/2020	349.05	106.99	242.06
MW-30	1/27/2020	235.67	5.11	230.56
MW-33	1/27/2020	359.17	112.81	246.36
MW-35	1/27/2020	361.34	118.81	242.53
MW-8	1/27/2020	386.00	176.95	209.05
MW-36	1/27/2020	378.19	151.71	226.48
MW-7	1/27/2020	376.75	191.61	185.14
MW-12	1/27/2020	315.53	142.42	173.11
MW-19	1/27/2020	405.43	245.80	159.63
MW-25	1/27/2020	402.33	243.45	158.88
MW-26	1/27/2020	406.54	247.50	159.04
MW-28	1/27/2020	398.73	DRY	DRY
MW-29	1/27/2020	413.85	244.44	169.41
MW-34	1/27/2020	385.96	204.41	181.55

Groundwater - Sampling Water Levels		Top of PVC Casing Elevation	Depth to Groundwater	Groundwater Elevation
Well #	Measurement Date	(feet)	(feet)	(feet above MSL)
MW-3	1/27/2020	318.02	39.25	278.77
MW-4	1/29/2020	377.18	107.06	270.12
MW-10	1/27/2020	409.94	145.53	264.41
MW-13	1/27/2020	377.28	100.30	276.98
MW-2	1/30/2020	317.97	74.28	243.69
MW-9	1/30/2020	405.17	166.23	238.94
MW-20	1/30/2020	370.32	122.34	247.98
MW-21	1/30/2020	349.05	106.92	242.13
MW-33	1/30/2020	359.17	112.86	246.31
MW-35	1/30/2020	361.34	118.85	242.49
MW-8	1/27/2020	386.00	176.95	209.05
MW-36	1/28/2020	378.19	151.56	226.63
MW-7	1/28/2020	376.75	191.42	185.33
MW-12	1/27/2020	315.53	142.42	173.11
MW-19	1/28/2020	405.43	245.61	159.82
MW-26	1/28/2020	406.54	247.40	159.14
MW-29	1/28/2020	413.85	244.47	169.38
MW-34	1/28/2020	385.96	204.20	181.76

Groundwater - Field Parameters			Dissolved Oxygen (DO) (Field)	Oxidation-Reduction Potential (ORP) (Field)	pH (Field)	Specific Conductance (Field)	Temperature (Field)	Turbidity (Field)	Volume Purged
Well #	Sample Date	Sample ID	(mg/L)	(mV)	(µmhos/cm)	(std. Units)	(° C)	(NTU)	(gal)
MW-3	1/27/2020	WV3-200127-	10.55	228.7	6.52	87	9.43	3.6	1.5
MW-4	1/29/2020	WV4-200129-	--	--	6.87	152.8	8.75	2.64	1.25
MW-10	1/27/2020	WV10200127-	4.96	192.9	6.94	146.7	9.88	0.75	3
MW-13	1/27/2020	WV13200127-	7.72	170.3	7.99	147.3	10.5	1.57	1.5
MW-2	1/30/2020	WV2-200130-	1.13	218.8	6.94	332.3	9.57	0.83	3
MW-9	1/30/2020	WV9-200130-	7.48	284.4	7.16	171.8	9.7	0.84	3
MW-20	1/30/2020	WV20200130-	1.03	-60	7.53	175	10.53	9.24	3.5
MW-21	1/30/2020	WV21200130-	1.13	218.8	6.94	332.3	9.57	0.83	3
MW-33	1/30/2020	WV33200130-	0.41	-63.7	6.89	713	12.47	0.58	3
MW-35	1/30/2020	WV35200130-	0.34	-57.1	6.78	683	10.33	47.5	3.25
MW-8	1/27/2020	WV8-200127-	10.14	186.6	6.93	169.8	10.12	0.33	2
MW-36	1/28/2020	WV36200128-	0.54	-59	7.58	190.4	10.08	4.87	7.75
MW-7	1/28/2020	WV7-200128-	1	32	8.06	187.7	10.33	1	3.9
MW-12	1/27/2020	WV12200127-	5.06	189.7	7.37	164.9	9.45	0.95	3
MW-19	1/28/2020	WV19200128-	0.94	13.1	7.55	216.3	9.65	2.17	5
MW-26	1/28/2020	WV26200128-	0.54	-59	7.58	190.4	10.08	4.87	7.75
MW-29	1/28/2020	WV29200128-	0.65	-86.1	7.48	240	10.38	7.91	5.5
MW-34	1/28/2020	WV34200128-	6.22	202.2	7.55	194.8	11.9	0.27	2.1
DW-85	1/29/2020	WV85200129-	0.48	-262.6	6.26	150.4	9.45	1.49	90
DW-PA	1/29/2020	WVPA200129-	8.33	-22.3	6.86	183.4	9.34	2.63	60
FIELD BLANK	1/27/2020	WV8-200127F	--	--	7.37	0.64	10.1	--	--

Groundwater - Conventionals			Alkalinity, Total (as CaCO ₃)	Ammonia as N	Chloride	Nitrate	Specific Conductance (Lab)	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Solids	Total Suspended Solids
Well #	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(µmhos/cm)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW-3	1/27/20	WV3-200127-	27.7	0.002 U	1.79	1.55	90.8	4.79	66.7	0.88 T	74.7	2.9
MW-4	1/29/20	WV4-200129-	53.8	0.002 U	7.54	2.05	181	13	127	0.52 T	137	0.5 T
MW-10	1/27/20	WV10200127-	57.2	0.002 U	3.32	0.586	152	9.37	107	0.5 U	131	1.2
MW-13	1/27/20	WV13200127-	60.2	0.002 U	2.9	0.353	156	10.5	111	0.5 U	115	1.6
MW-2	1/30/20	WV2-200130-	149	0.0025 T	2.71	0.208	329	15.9	183	0.71 T	190 H	1 U
MW-9	1/30/20	WV9-200130-	68.4	0.002 U	4.34	0.329	178	10.9	113	0.5 U	123	4.5
MW-20	1/30/20	WV20200130-	73.8	0.0166	3.25	0.011 T	193	16.5	131	0.5 U	148	3.8
MW-21	1/30/20	WV21200130-	137	0.0098 T	2.44	0.176	306	15.2	179	0.62 T	190	2
MW-33	1/30/20	WV33200130-	383	0.0317	3.84	0.01 U	731	17.9	419	1.58	452	9.5
MW-35	1/30/20	WV35200130-	345	0.0676	4.39	0.01 U	680	24.5	404 J	3.72	660 J	453 J
MW-8	1/27/20	WV8-200127-	59.2	0.002 U	4.77	2.66	176	9.01	125	0.5 U	129	1.1
MW-36	1/28/20	WV36200128-	69.5	0.0034 T	3.14	0.022 T	180	13.6	128	0.5 U	134	0.5 U
MW-7	1/28/20	WV7-200128-	79.1	0.248	3.46	0.011 T	194	11.4	132 H	0.5 U	134 H	1.1
MW-12	1/27/20	WV12200127-	64.6	0.002 U	3.3	0.787	170	10.8	119	0.5 U	123	0.5 T
MW-19	1/28/20	WV19200128-	86.2	0.0308	4.79	0.01 U	224	17.9	145	0.5 U	151	0.76 T
MW-26	1/28/20	WV26200128-	75.8	0.264	3.85	0.016 T	195	13.9	128	0.5 U	153	10.7
MW-29	1/28/20	WV29200128-	101	0.0038 T	3.71	0.01 U	246	16.8	151	0.5 U	162	4.5
MW-34	1/28/20	WV34200128-	69.8	0.0029 T	5.24	1.99	202	14	135	0.5 U	143	0.5 U
DW-85	1/29/20	WV85200129-	70.8	0.272	2.7	0.01 U	157	2.18	101	0.5 U	110	0.5 U
DW-PA	1/29/20	WVPA200129-	68.4	0.002 U	5.7	0.905	190	12.4	119	0.5 U	129	0.5 U
FIELD BLANK	1/27/20	WV8-200127F	1 U	0.002 U	0.05 U	0.01 U	1.4 T	0.1 U	10 U	0.5 U	10 U	0.5 U

Groundwater - Metals (Dissolved & Total)			Antimony, Dissolved	Antimony, Total	Arsenic, Dissolved	Arsenic, Total	Barium, Dissolved	Barium, Total	Beryllium, Dissolved	Beryllium, Total	Cadmium, Dissolved	Cadmium, Total	Calcium, Dissolved
Well #	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW-3	1/27/2020	WV3-200127-	0.0003 U	0.0003 U	5.53E-05	0.000209	0.0254	0.0312	0.0001 U	0.0001 U	5E-05 U	5E-05 U	8.39
MW-4	1/29/2020	WV4-200129-	0.0003 U	0.0003 U	0.000366	0.000367	0.00419	0.00471	0.0001 U	0.0001 U	0.00011	5E-05 U	12.9
MW-10	1/27/2020	WV10200127-	0.0003 U	0.0003 U	0.00163	0.00161	0.00335	0.00327	0.0001 U	0.0001 U	9.68E-05	8.61E-05	9.81
MW-13	1/27/2020	WV13200127-	0.0003 U	0.0003 U	0.00216	0.00218	0.00388	0.00416	0.0001 U	0.0001 U	5E-05 U	5E-05 U	8.97
MW-2	1/30/2020	WV2-200130-	0.0003 U	0.0003 U	0.000845	0.000853	0.00697	0.00764	0.0001 U	0.0001 U	5E-05 U	5E-05 U	21.2
MW-9	1/30/2020	WV9-200130-	0.0003 U	0.0003 U	0.00233	0.00244	0.00342	0.00389	0.0001 U	0.0001 U	5E-05 U	5E-05 U	12.6
MW-20	1/30/2020	WV20200130-	0.0003 U	0.0003 U	0.00195	0.00377	0.00501	0.00674	0.0001 U	0.0001 U	5E-05 U	5E-05 U	13
MW-21	1/30/2020	WV21200130-	0.0003 U	0.0003 U	0.000901	0.00413	0.0075	0.00989	0.0001 U	0.0001 U	5E-05 U	5E-05 U	20.2
MW-33	1/30/2020	WV33200130-	0.0003 U	0.0003 U	0.0409	0.0421	0.0251	0.0264	0.0001 U	0.0001 U	5E-05 U	5E-05 U	63.3
MW-35	1/30/2020	WV35200130-	0.0003 U	0.0003 U	0.0284	0.0312	0.0232	0.0504	0.0001 U	0.0001 U	5E-05 U	6.95E-05	65.1
MW-8	1/27/2020	WV8-200127-	0.0003 U	0.0003 U	0.000492	0.000512	0.00363	0.0037	0.0001 U	0.0001 U	5E-05 U	5E-05 U	12.2
MW-36	1/28/2020	WV36200128-	0.0003 U	0.0003 U	0.00183	0.00184	0.00759	0.00761	0.0001 U	0.0001 U	5E-05 U	5E-05 U	13.7
MW-7	1/28/2020	WV7-200128-	0.0003 U	0.0003 U	0.00493	0.00507	0.0118	0.0144	0.0001 U	0.0001 U	5E-05 U	5E-05 U	15.8
MW-12	1/27/2020	WV12200127-	0.0003 U	0.0003 U	0.00201	0.00201	0.00464	0.0039	0.0001 U	0.0001 U	5E-05 U	5E-05 U	11.7
MW-19	1/28/2020	WV19200128-	0.0003 U	0.0003 U	0.00105	0.00127	0.0156	0.0168	0.0001 U	0.0001 U	5E-05 U	5E-05 U	15
MW-26	1/28/2020	WV26200128-	0.0003 U	0.0003 U	0.00294	0.00333	0.00908	0.0113	0.0001 U	0.0001 U	5E-05 U	5E-05 U	17.4
MW-29	1/28/2020	WV29200128-	0.0003 U	0.0003 U	0.00396	0.0105	0.01	0.0138	0.0001 U	0.0001 U	5E-05 U	5E-05 U	20.1
MW-34	1/28/2020	WV34200128-	0.0003 U	0.0003 U	0.0013	0.00131	0.00427	0.00461	0.0001 U	0.0001 U	5E-05 U	5E-05 U	13.3
DW-85	1/29/2020	WV85200129-	0.0003 U	0.0003 U	0.000404	0.000422	0.00979	0.0102	0.0001 U	0.0001 U	5E-05 U	5E-05 U	14.1
DW-PA	1/29/2020	WVPA200129-	0.0003 U	0.0003 U	0.00126	0.00128	0.00384	0.00387	0.0001 U	0.0001 U	5E-05 U	5E-05 U	13
FIELD BLANK	1/27/2020	WV8-200127F	0.0003 U	0.0003 U	5E-05 U	5E-05 U	0.0005 U	0.0005 U	0.0001 U	0.0001 U	5E-05 U	5E-05 U	0.05 U

Groundwater - Metals (Dissolved & Total)			Calcium, Total	Chromium, Dissolved	Chromium, Total	Cobalt, Dissolved	Cobalt, Total	Copper, Dissolved	Copper, Total	Iron, Dissolved	Iron, Total	Lead, Dissolved	Lead, Total
Well #	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW-3	1/27/2020	WV3-200127-	8.18	0.0002 U	0.000556	5E-05 U	0.00022	0.0002 U	0.000751	0.01 U	0.353	0.0001 U	0.000622
MW-4	1/29/2020	WV4-200129-	13.8	0.00557	0.00674	5E-05 U	5E-05 U	0.0038	0.000321	0.01 U	0.0147	0.0001 U	0.0001 U
MW-10	1/27/2020	WV10200127-	9.76	0.00284	0.00284	5E-05 U	5E-05 U	0.0002 U	0.0002 U	0.01 U	0.025	0.0001 U	0.0001 U
MW-13	1/27/2020	WV13200127-	8.97	0.00241	0.00253	5E-05 U	5E-05 U	0.000288	0.00028	0.01 U	0.0348	0.0001 U	0.0001 U
MW-2	1/30/2020	WV2-200130-	22.1	0.0002 U	0.00022	5E-05 U	5.87E-05	0.0002 U	0.000214	0.01 U	0.01 U	0.0001 U	0.0001 U
MW-9	1/30/2020	WV9-200130-	13.4	0.00375	0.00408	5E-05 U	5E-05 U	0.0002 U	0.000228	0.01 U	0.0936	0.0001 U	0.0001 U
MW-20	1/30/2020	WV20200130-	13.4	0.0002 U	0.0002 U	5E-05 U	5E-05 U	0.0002 U	0.0002 U	0.184	1.38	0.0001 U	0.0001 U
MW-21	1/30/2020	WV21200130-	20.8	0.0002 U	0.0002 U	0.000161	0.000263	0.0002 U	0.0002 U	0.281	1.86	0.0001 U	0.0001 U
MW-33	1/30/2020	WV33200130-	64.8	0.0002 U	0.0002 U	0.00123	0.00126	0.0002 U	0.0002 U	6.67	6.78	0.0001 U	0.0001 U
MW-35	1/30/2020	WV35200130-	66.9	0.0002 U	0.00638	0.00184	0.00352	0.0002 U	0.004	13.6	17.3	0.0001 U	0.00218
MW-8	1/27/2020	WV8-200127-	11.9	0.00227	0.00228	5E-05 U	5E-05 U	0.0002 U	0.0002 U	0.01 U	0.024	0.0001 U	0.0001 U
MW-36	1/28/2020	WV36200128-	13.7	0.000558	0.000575	5E-05 U	5E-05 U	0.0002 U	0.0002 U	0.01 U	0.01 U	0.0001 U	0.0001 U
MW-7	1/28/2020	WV7-200128-	15.8	0.0002 U	0.0002 U	5E-05 U	5E-05 U	0.0002 U	0.0002 U	0.015	0.0852	0.0001 U	0.0001 U
MW-12	1/27/2020	WV12200127-	11.6	0.00381	0.00382	5E-05 U	5E-05 U	0.0002 U	0.0002 U	0.01 U	0.015	0.0001 U	0.0001 U
MW-19	1/28/2020	WV19200128-	15	0.0002 U	0.0002 U	5E-05 U	5E-05 U	0.0002 U	0.0002 U	0.0426	0.287	0.0001 U	0.0001 U
MW-26	1/28/2020	WV26200128-	17.2	0.0002 U	0.000543	5E-05 U	0.000139	0.0002 U	0.000483	0.0739	0.737	0.0001 U	0.000117
MW-29	1/28/2020	WV29200128-	20	0.0002 U	0.000226	5E-05 U	5E-05 U	0.0002 U	0.0002 U	0.806	3.54	0.0001 U	0.0001 U
MW-34	1/28/2020	WV34200128-	13.4	0.00104	0.00116	5E-05 U	5E-05 U	0.0002 U	0.0002 U	0.01 U	0.01 U	0.0001 U	0.0001 U
DW-85	1/29/2020	WV85200129-	14.4	0.0002 U	0.0002 U	5E-05 U	5E-05 U	0.0002 U	0.00737	0.0687	0.071	0.0001 U	0.000102
DW-PA	1/29/2020	WVPA200129-	12.8	0.00129	0.00135	5E-05 U	5E-05 U	0.00871	0.0149	0.0191	0.0643	0.000211	0.000733
FIELD BLANK	1/27/2020	WV8-200127F	0.05 U	0.0002 U	0.0002 U	5E-05 U	5E-05 U	0.0002 U	0.0002 U	0.01 U	0.01 U	0.0001 U	0.0001 U

Groundwater - Metals (Dissolved & Total)			Magnesium, Dissolved	Magnesium, Total	Manganese, Dissolved	Manganese, Total	Mercury, Dissolved	Mercury, Total	Nickel, Dissolved	Nickel, Total	Potassium, Dissolved	Potassium, Total	Selenium, Dissolved
Well #	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW-3	1/27/2020	WV3-200127-	2.48	2.54	0.000708	0.0357	5E-05 U	5E-05 U	0.000234	0.000752	2.3	2.25	0.0005 U
MW-4	1/29/2020	WV4-200129-	8.45	8.86	0.0047	0.0185	5E-05 U	5E-05 U	0.00105	0.00139	0.942	1	0.0005 U
MW-10	1/27/2020	WV10200127-	9.15	9.24	0.000284	0.000875	5E-05 U	5E-05 U	0.00031	0.000339	1.5	1.49	0.0005 U
MW-13	1/27/2020	WV13200127-	10.3	10.4	0.0001 U	0.000983	5E-05 U	5E-05 U	0.000927	0.00102	1.73	1.73	0.0005 U
MW-2	1/30/2020	WV2-200130-	23.1	22.9	0.077	0.0958	5E-05 U	5E-05 U	0.00304	0.00294	2.16	2.24	0.0005 U
MW-9	1/30/2020	WV9-200130-	10.3	10.3	0.0001 U	0.0037	5E-05 U	5E-05 U	0.000136	0.000387	2	2.11	0.0005 U
MW-20	1/30/2020	WV20200130-	12	11.7	0.145	0.159	5E-05 U	5E-05 U	0.000167	0.000239	2.05	2.08	0.0005 U
MW-21	1/30/2020	WV21200130-	20.3	20.5	0.337	0.479	5E-05 U	5E-05 U	0.00179	0.00206	2.28	2.33	0.0005 U
MW-33	1/30/2020	WV33200130-	49.5	50.7	1.04	1.07	5E-05 U	5E-05 U	0.00528	0.00544	3.36	3.42	0.0005 U
MW-35	1/30/2020	WV35200130-	42.6	43.6	2.47	2.51	5E-05 U	5E-05 U	0.00319	0.0116	3.19	3.53	0.0005 U
MW-8	1/27/2020	WV8-200127-	9.6	9.51	0.0001 U	0.00035	5E-05 U	5E-05 U	0.000633	0.000656	1.2	1.19	0.0005 U
MW-36	1/28/2020	WV36200128-	9.17	9.38	0.000948	0.00244	5E-05 U	5E-05 U	0.0001 U	0.000107	2.74	2.79	0.0005 U
MW-7	1/28/2020	WV7-200128-	9.75	9.83	0.145	0.188	5E-05 U	5E-05 U	0.0001 U	0.000142	2.84	2.88	0.0005 U
MW-12	1/27/2020	WV12200127-	9.55	9.72	0.0001 U	0.000276	5E-05 U	5E-05 U	0.00019	0.000233	1.91	1.9	0.0005 U
MW-19	1/28/2020	WV19200128-	13.8	14	0.478	0.508	5E-05 U	5E-05 U	0.0001 U	0.0001 U	2.52	2.51	0.0005 U
MW-26	1/28/2020	WV26200128-	7.3	7.51	0.0655	0.075	5E-05 U	5E-05 U	0.000207	0.000659	3.11	3.11	0.0005 U
MW-29	1/28/2020	WV29200128-	13.9	14.4	0.0884	0.114	5E-05 U	5E-05 U	0.000116	0.000247	2.25	2.24	0.0005 U
MW-34	1/28/2020	WV34200128-	11.6	12.3	0.000127	0.000213	5E-05 U	5E-05 U	0.00122	0.00123	1.57	1.58	0.0005 U
DW-85	1/29/2020	WV85200129-	6.39	6.38	0.0542	0.0556	5E-05 U	5E-05 U	0.0001 U	0.0001 U	2.51	2.57	0.0005 U
DW-PA	1/29/2020	WVPA200129-	11.1	11.2	0.00322	0.00325	5E-05 U	5E-05 U	0.000571	0.000533	1.61	1.58	0.0005 U
FIELD BLANK	1/27/2020	WV8-200127F	0.05 U	0.05 U	0.0001 U	0.0001 U	5E-05 U	5E-05 U	0.0001 U	0.0001 U	0.1 U	0.1 U	0.0005 U

Groundwater - Metals (Dissolved & Total)			Selenium, Total	Silver, Dissolved	Silver, Total	Sodium, Dissolved	Sodium, Total	Thallium, Dissolved	Thallium, Total	Vanadium, Dissolved	Vanadium, Total	Zinc, Dissolved	Zinc, Total
Well #	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW-3	1/27/2020	WV3-200127-	0.0005 U	4E-05 U	4E-05 U	3.81	3.72	0.0001 U	0.0001 U	0.000365	0.000812 D	0.000779	0.00146
MW-4	1/29/2020	WV4-200129-	0.000502	4E-05 U	4E-05 U	5.95	6.4	0.0001 U	0.0001 U	0.00238	0.00243	0.0102	0.000677
MW-10	1/27/2020	WV10200127-	0.0005 U	4E-05 U	4.10E-05	4.9	4.92	0.0001 U	0.0001 U	0.00428	0.00414 D	0.00075	0.000676
MW-13	1/27/2020	WV13200127-	0.0005 U	4E-05 U	4E-05 U	5.78	5.87	0.0001 U	0.0001 U	0.00678	0.00653 D	0.000546	0.00099
MW-2	1/30/2020	WV2-200130-	0.0005 U	4E-05 U	4E-05 U	8.85	8.88	0.0001 U	0.0001 U	0.00336	0.00331	0.000596	0.000834
MW-9	1/30/2020	WV9-200130-	0.0005 U	4E-05 U	4E-05 U	5.62	5.76	0.0001 U	0.0001 U	0.00486	0.00514	0.000746	0.00201
MW-20	1/30/2020	WV20200130-	0.0005 U	4E-05 U	4E-05 U	5.86	5.95	0.0001 U	0.0001 U	0.000126	0.000144	0.0005 U	0.00144
MW-21	1/30/2020	WV21200130-	0.0005 U	4E-05 U	4E-05 U	10.2	10.3	0.0001 U	0.0001 U	0.000551	0.00104	0.0011	0.00102
MW-33	1/30/2020	WV33200130-	0.0005 U	4E-05 U	4E-05 U	17.9	18.2	0.0001 U	0.0001 U	0.000665	0.000674	0.000633	0.0005 U
MW-35	1/30/2020	WV35200130-	0.0005 U	4E-05 U	4E-05 U	16.3	16.7	0.0001 U	0.0001 U	0.000255	0.00544	0.00207	0.0493
MW-8	1/27/2020	WV8-200127-	0.0005 U	4E-05 U	4E-05 U	6.3	6.31	0.0001 U	0.0001 U	0.0026	0.00247 D	0.000586	0.0005 U
MW-36	1/28/2020	WV36200128-	0.0005 U	4E-05 U	4E-05 U	6.28	6.28	0.0001 U	0.0001 U	0.00206	0.0018 D	0.0005 U	0.000568
MW-7	1/28/2020	WV7-200128-	0.0005 U	4E-05 U	4E-05 U	6.11	6.19	0.0001 U	0.0001 U	0.000373	0.000131 D	0.000717	0.00136
MW-12	1/27/2020	WV12200127-	0.0005 U	4E-05 U	4E-05 U	5.78	5.88	0.0001 U	0.0001 U	0.00518	0.00505 D	0.0005 U	0.0005 U
MW-19	1/28/2020	WV19200128-	0.0005 U	4E-05 U	4E-05 U	6.75	6.92	0.0001 U	0.0001 U	0.000331	7.5E-05 DU	0.000681	0.00057
MW-26	1/28/2020	WV26200128-	0.0005 U	4E-05 U	4E-05 U	8.6	8.8	0.0001 U	0.0001 U	0.000294	0.000477 D	0.00284	0.0198
MW-29	1/28/2020	WV29200128-	0.0005 U	4E-05 U	4E-05 U	6.46	6.44	0.0001 U	0.0001 U	0.000247	0.000173 D	0.000784	0.00111
MW-34	1/28/2020	WV34200128-	0.0005 U	4E-05 U	4E-05 U	6.52	6.77	0.0001 U	0.0001 U	0.00292	0.00268 D	0.000879	0.00141
DW-85	1/29/2020	WV85200129-	0.0005 U	4E-05 U	4E-05 U	5.85	5.75	0.0001 U	0.0001 U	0.000107	0.000102	0.00179	0.0135
DW-PA	1/29/2020	WVPA200129-	0.0005 U	4E-05 U	4E-05 U	6.57	6.56	0.0001 U	0.0001 U	0.00304	0.00276 D	0.0037	0.00512
FIELD BLANK	1/27/2020	WV8-200127F	0.0005 U	4E-05 U	4E-05 U	0.1 U	0.1 U	0.0001 U	0.0001 U	0.000229	7.5E-05 DU	0.0005 U	0.000618

Groundwater - Volatile Organic Compounds			1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2,3-Trichloropropane	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane
CAS #			630-20-6	71-55-6	79-34-5	79-00-5	75-34-3	75-35-4	96-18-4	96-12-8	106-93-4	95-50-1	107-06-2	78-87-5
Well #	Sample Date	Sample ID	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-3	1/27/2020	WV3-200127-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-4	1/29/2020	WV4-200129-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-10	1/27/2020	WV10200127-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-13	1/27/2020	WV13200127-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-2	1/30/2020	WV2-200130-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-9	1/30/2020	WV9-200130-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-20	1/30/2020	WV20200130-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-21	1/30/2020	WV21200130-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-33	1/30/2020	WV33200130-	0.25 U	0.1 U	0.1 U	0.1 U	1.6	0.16 JT	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	7.43
MW-35	1/30/2020	WV35200130-	0.25 U	0.1 U	0.1 U	0.1 U	0.199 JT	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.469
MW-8	1/27/2020	WV8-200127-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-36	1/28/2020	WV36200128-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-7	1/28/2020	WV7-200128-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-12	1/27/2020	WV12200127-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-19	1/28/2020	WV19200128-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-26	1/28/2020	WV26200128-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-29	1/28/2020	WV29200128-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-34	1/28/2020	WV34200128-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
DW-85	1/29/2020	WV85200129-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
DW-PA	1/29/2020	WVPA200129-	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U
FIELD BLANK	1/27/2020	WV8-200127F	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U

Groundwater - Volatile Organic Compounds			1,4-Dichlorobenzene	2-Butanone	2-Hexanone	4-Methyl-2-Pentanone	Acetone	Acrylonitrile	Benzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Disulfide
CAS #			106-46-7	78-93-3	591-78-6	108-10-1	67-64-1	107-13-1	71-43-2	74-97-5	75-27-4	75-25-2	74-83-9	75-15-0
Well #	Sample Date	Sample ID	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-3	1/27/2020	WV3-200127-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-4	1/29/2020	WV4-200129-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-10	1/27/2020	WV10200127-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-13	1/27/2020	WV13200127-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-2	1/30/2020	WV2-200130-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-9	1/30/2020	WV9-200130-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-20	1/30/2020	WV20200130-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-21	1/30/2020	WV21200130-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-33	1/30/2020	WV33200130-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.974	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-35	1/30/2020	WV35200130-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.518	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-8	1/27/2020	WV8-200127-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-36	1/28/2020	WV36200128-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-7	1/28/2020	WV7-200128-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-12	1/27/2020	WV12200127-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-19	1/28/2020	WV19200128-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-26	1/28/2020	WV26200128-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-29	1/28/2020	WV29200128-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
MW-34	1/28/2020	WV34200128-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
DW-85	1/29/2020	WV85200129-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
DW-PA	1/29/2020	WVPA200129-	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U
FIELD BLANK	1/27/2020	WV8-200127F	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U

Groundwater - Volatile Organic Compounds			Carbon Tetra- chloride	Chloro- benzene	Chloro- dibromo- methane	Chloro- ethane	Chloroform	Chloro- methane	Cis-1-2- Dichloro- ethene	Cis-1,3- Dichloro- propene	Dibromo- methane	Dichloro- difluoro- methane	Ethyl- benzene	M & P Xylene
CAS #			56-23-5	108-90-7	124-48-1	75-00-3	67-66-3	74-87-3	156-59-2	10061-01-5	74-95-3	75-71-8	100-41-4	MPX
Well #	Sample Date	Sample ID	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-3	1/27/2020	WV3-200127-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-4	1/29/2020	WV4-200129-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.113 JT	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-10	1/27/2020	WV10200127-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-13	1/27/2020	WV13200127-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-2	1/30/2020	WV2-200130-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	4.23	0.1 U	0.1 U
MW-9	1/30/2020	WV9-200130-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-20	1/30/2020	WV20200130-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.311	0.1 U	0.1 U
MW-21	1/30/2020	WV21200130-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.503	0.25 U	0.1 U	2.01	0.1 U	0.1 U
MW-33	1/30/2020	WV33200130-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	31.5	0.25 U	0.1 U	4.95	0.1 U	0.1 U
MW-35	1/30/2020	WV35200130-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	4.68	0.25 U	0.1 U	0.641	0.1 U	0.1 U
MW-8	1/27/2020	WV8-200127-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-36	1/28/2020	WV36200128-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-7	1/28/2020	WV7-200128-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-12	1/27/2020	WV12200127-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-19	1/28/2020	WV19200128-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-26	1/28/2020	WV26200128-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-29	1/28/2020	WV29200128-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-34	1/28/2020	WV34200128-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
DW-85	1/29/2020	WV85200129-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
DW-PA	1/29/2020	WVPA200129-	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
FIELD BLANK	1/27/2020	WV8-200127F	0.25 U	0.1 U	0.5 U	0.1 U	0.851	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U

Groundwater - Volatile Organic Compounds			Methyl Iodide	Methylene Chloride	O-Xylene	Styrene	Tetra-chloroethene	Toluene	Trans-1-2-Dichloro-ethene	Trans-1-3-Dichloro-propene	Trans-1-4-Dichloro-2-Butene	Trichloro-ethene	Trichloro-fluoro-methane	Vinyl Acetate	Vinyl Chloride
CAS #			74-88-4	75-09-2	95-47-6	100-42-5	127-18-4	108-88-3	156-60-5	10061-02-6	110-57-6	79-01-6	75-69-4	108-05-4	75-01-4
Well #	Sample Date	Sample ID	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-3	1/27/2020	WV3-200127-	0.1 U	2.5 U	0.1 U	0.1 U	0.103 JT	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.218	0.1 U	0.01 DU
MW-4	1/29/2020	WV4-200129-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 U
MW-10	1/27/2020	WV10200127-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
MW-13	1/27/2020	WV13200127-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
MW-2	1/30/2020	WV2-200130-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	1.2	0.1 U	0.0445
MW-9	1/30/2020	WV9-200130-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 U
MW-20	1/30/2020	WV20200130-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 U
MW-21	1/30/2020	WV21200130-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.852	0.1 U	0.0699
MW-33	1/30/2020	WV33200130-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.743	0.5 U	5 U	0.1 U	0.1 U	0.1 U	25.9
MW-35	1/30/2020	WV35200130-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.226	0.5 U	5 U	0.866	0.1 U	0.1 U	4.09
MW-8	1/27/2020	WV8-200127-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
MW-36	1/28/2020	WV36200128-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
MW-7	1/28/2020	WV7-200128-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
MW-12	1/27/2020	WV12200127-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
MW-19	1/28/2020	WV19200128-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
MW-26	1/28/2020	WV26200128-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
MW-29	1/28/2020	WV29200128-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
MW-34	1/28/2020	WV34200128-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
DW-85	1/29/2020	WV85200129-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 U
DW-PA	1/29/2020	WVPA200129-	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
FIELD BLANK	1/27/2020	WV8-200127F	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU

Groundwater - Volatile Organic Compounds Trip Blanks			1,1,1,2-Tetrachloro-ethane	1,1,1-Trichloro-ethane	1,1,2,2-Tetrachloro-ethane	1,1,2-Trichloro-ethane	1,1-Dichloroethane	1,1-Dichloro-ethene	1,2,3-Trichloro-propane	1,2-Dibromo-3-Chloropropane	1,2-Dibromo-ethane	1,2-Dichloro-benzene	
Site ID	Sample Date	Sample ID	CAS #	630-20-6	71-55-6	79-34-5	79-00-5	75-34-3	75-35-4	96-18-4	96-12-8	106-93-4	95-50-1
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOA TRIP BLANK	1/24/2020	VTRP200127X		0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/24/2020	VTRP200127Y		0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/24/2020	VTRP200130Y		0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/27/2020	VTRP200128X		0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/27/2020	VTRP200128Y		0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/27/2020	VTRP200128Z		0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/28/2020	VTRP200129X		0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/28/2020	VTRP200129Y2		0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/29/2020	VTRP200130X		0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/29/2020	VTRP200130Z		0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U

Groundwater - Volatile Organic Compounds Trip Blanks			1,2-Dichloro-ethane	1,2-Dichloro-propane	1,4-Dichloro-benzene	2-Butanone	2-Hexanone	4-Methyl-2-Pentanone	Acetone	Acrylonitrile	Benzene	Bromochloro-methane	
Site ID	Sample Date	Sample ID	CAS #	107-06-2	78-87-5	106-46-7	78-93-3	591-78-6	108-10-1	67-64-1	107-13-1	71-43-2	74-97-5
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOA TRIP BLANK	1/24/2020	VTRP200127X		0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U
VOA TRIP BLANK	1/24/2020	VTRP200127Y		0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U
VOA TRIP BLANK	1/24/2020	VTRP200130Y		0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U
VOA TRIP BLANK	1/27/2020	VTRP200128X		0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U
VOA TRIP BLANK	1/27/2020	VTRP200128Y		0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U
VOA TRIP BLANK	1/27/2020	VTRP200128Z		0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U
VOA TRIP BLANK	1/28/2020	VTRP200129X		0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U
VOA TRIP BLANK	1/28/2020	VTRP200129Y2		0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U
VOA TRIP BLANK	1/29/2020	VTRP200130X		0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U
VOA TRIP BLANK	1/29/2020	VTRP200130Z		0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U	0.1 U	0.1 U

Groundwater - Volatile Organic Compounds Trip Blanks			Bromodichloro-methane	Bromoform	Bromomethane	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chlorodibromo-methane	Chloroethane	Chloroform	Chloromethane	
Site ID	Sample Date	Sample ID	CAS #	75-27-4	75-25-2	74-83-9	75-15-0	56-23-5	108-90-7	124-48-1	75-00-3	67-66-3	74-87-3
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOA TRIP BLANK	1/24/2020	VTRP200127X		0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U
VOA TRIP BLANK	1/24/2020	VTRP200127Y		0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U
VOA TRIP BLANK	1/24/2020	VTRP200130Y		0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U
VOA TRIP BLANK	1/27/2020	VTRP200128X		0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U
VOA TRIP BLANK	1/27/2020	VTRP200128Y		0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U
VOA TRIP BLANK	1/27/2020	VTRP200128Z		0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U
VOA TRIP BLANK	1/28/2020	VTRP200129X		0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U
VOA TRIP BLANK	1/28/2020	VTRP200129Y2		0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U
VOA TRIP BLANK	1/29/2020	VTRP200130X		0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U
VOA TRIP BLANK	1/29/2020	VTRP200130Z		0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U

Groundwater Volatile Organic Compounds Trip Blanks			Cis-1,2-Dichloroethene	Cis-1,3-Dichloropropene	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	M & P Xylene	Methyl Iodide	Methylene Chloride	O-Xylene	Styrene	
Site ID	Sample Date	Sample ID	CAS # (µg/L)	156-59-2 (µg/L)	10061-01-5 (µg/L)	74-95-3 (µg/L)	75-71-8 (µg/L)	100-41-4 (µg/L)	MPX (µg/L)	74-88-4 (µg/L)	75-09-2 (µg/L)	95-47-6 (µg/L)	100-42-5 (µg/L)
VOA TRIP BLANK	1/24/2020	VTRP200127X		0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/24/2020	VTRP200127Y		0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/24/2020	VTRP200130Y		0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/27/2020	VTRP200128X		0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/27/2020	VTRP200128Y		0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/27/2020	VTRP200128Z		0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/28/2020	VTRP200129X		0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/28/2020	VTRP200129Y2		0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/29/2020	VTRP200130X		0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U
VOA TRIP BLANK	1/29/2020	VTRP200130Z		0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U	0.1 U

Groundwater Volatile Organic Compounds Trip Blanks			Tetrachloroethene	Toluene	Trans-1,2-Dichloroethene	Trans-1,3-Dichloropropene	Trans-1,4-Dichloro-2-Butene	Trichloroethene	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	
Site ID	Sample Date	Sample ID	CAS # (µg/L)	127-18-4 (µg/L)	108-88-3 (µg/L)	156-60-5 (µg/L)	10061-02-6 (µg/L)	110-57-6 (µg/L)	79-01-6 (µg/L)	75-69-4 (µg/L)	108-05-4 (µg/L)	75-01-4 (µg/L)
VOA TRIP BLANK	1/24/2020	VTRP200127X		0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
VOA TRIP BLANK	1/24/2020	VTRP200127Y		0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
VOA TRIP BLANK	1/24/2020	VTRP200130Y		0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 U
VOA TRIP BLANK	1/27/2020	VTRP200128X		0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
VOA TRIP BLANK	1/27/2020	VTRP200128Y		0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
VOA TRIP BLANK	1/27/2020	VTRP200128Z		0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 DU
VOA TRIP BLANK	1/28/2020	VTRP200129X		0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 U
VOA TRIP BLANK	1/28/2020	VTRP200129Y2		0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 U
VOA TRIP BLANK	1/29/2020	VTRP200130X		0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 U
VOA TRIP BLANK	1/29/2020	VTRP200130Z		0.1 U	0.1 U	0.1 U	0.5 U	5 U	0.1 U	0.1 U	0.1 U	0.01 U

Leachate - Field Parameters			Specific Conductance (Field)	pH (Field)	Temperature (Field)
Site ID	Sample Date	Sample ID	(μ mhos/cm)	(Std. pH Units)	($^{\circ}$ C)
LS-PS1	1/29/2020	LVP-200129Q	227.1	8.54	7.7
LS-B	1/29/2020	LVB-200129Q	1331	6.28	10.6
LS-LVT	3/13/2020	LVT-200313P	392.5	7.5	8.34

Leachate - Conventionals			Alkalinity, Total (as CaCO ₃)	Ammonia as N	Biological Oxygen Demand - 5 Day	Chemical Oxygen Demand	Chloride	Coliforms, Fecal	Coliforms, Total
Site ID	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(CFU/100 mL)	(CFU/100 mL)
LS-PS1	01/29/20	LVP-200129Q	60	0.0215	3.66	19 T	17	32	1300
LS-B	01/29/20	LVB-200129Q	57.2	0.002 T	2 U	21.7	156	20	90
LS-LVT	3/13/2020	LVT-200313P	--	--	--	--	--	--	--

Leachate - Conventionals			Cyanide	Fluoride	Nitrate + Nitrite as N	Phosphorous, Soluble Reactive	Phosphorus, Total (as P)	Specific Conductance	Sulfate
Site ID	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/l)	(µohms/cm)	(mg/L)
LS-PS1	1/29/2020	LVP-200129Q	0.002 U	0.036 T	0.171	0.0017 T	0.983 U	247	25.4
LS-B	1/29/2020	LVB-200129Q	0.002 U	0.02 U	24.1	0.0217	0.996 U	1310	271
LS-LVT	3/13/2020	LVT-200313P	--	--	--	--	--	--	--

Leachate - Conventionals			Sulfide, Total	Total Fats, Oil, & Grease	Total Kjeldahl Nitrogen	Total Organic Carbon	Total Suspended Solids	Total Volatile Solids	Volatile Suspended Solids
Site ID	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
LS-PS1	1/29/2020	LVP-200129Q	0.01 U	1.5 U	0.787	3.5 T	7	46	5.4
LS-B	1/29/2020	LVB-200129Q	0.01 U	1.5 U	0.605	6.7	0.52 U	222 H	0.52 U
LS-LVT	3/13/2020	LVT-200313P	--	1.9 U	--	--	--	--	--

Leachate - Metals (Total)			Aluminum, Total (mg/L)	Antimony, Total (mg/L)	Arsenic, Total (mg/L)	Barium, Total (mg/L)	Beryllium, Total (mg/L)	Cadmium, Total (mg/L)
Site ID	Sample Date	Sample ID						
LS-PS1	1/29/2020	LVP-200129Q	0.316	0.00295 U	0.000694	0.0188	0.000983 U	0.000492 U
LS-B	1/29/2020	LVB-200129Q	0.0498 U	0.00299 U	0.00159	0.0155	0.000996 U	0.000498 U
LS-LVT	3/13/2020	LVT-200313P	--	--	0.00133	--	--	0.000494 U

Leachate - Metals (Total)			Calcium, Total (mg/L)	Chromium, Total (mg/L)	Cobalt, Total (mg/L)	Copper, Total (mg/L)	Iron, Total (mg/L)	Lead, Total (mg/L)
Site ID	Sample Date	Sample ID						
LS-PS1	1/29/2020	LVP-200129Q	23.2	0.00197 U	0.000492 U	0.00279	0.302	0.000983 U
LS-B	1/29/2020	LVB-200129Q	76.5	0.00199 U	0.00131	0.00296	0.0996 U	0.000996 U
LS-LVT	3/13/2020	LVT-200313P	--	0.0021	--	0.00423	--	0.000988 U

Leachate - Metals (Total)			Magnesium, Total (mg/L)	Manganese, Total (mg/L)	Mercury, Total (mg/L)	Nickel, Total (mg/L)	Potassium, Total (mg/L)	Selenium, Total (mg/L)
Site ID	Sample Date	Sample ID						
LS-PS1	1/29/2020	LVP-200129Q	6.9	0.0733	5E-05 U	0.00367	2.57	0.00492 U
LS-B	1/29/2020	LVB-200129Q	49.8	0.00384	5E-05 U	0.021	14.4	0.00498 U
LS-LVT	3/13/2020	LVT-200313P	--	--	--	0.00514	--	--

Leachate - Metals (Total)			Silver, Total (mg/L)	Sodium, Total (mg/L)	Thallium, Total (mg/L)	Tin, Total (mg/L)	Vanadium, Total (mg/L)	Zinc, Total (mg/L)
Site ID	Sample Date	Sample ID						
LS-PS1	1/29/2020	LVP-200129Q	0.000393 U	12.9	0.000983 U	0.00492 U	0.000737 U	0.0369
LS-B	1/29/2020	LVB-200129Q	0.000398 U	103	0.000996 U	0.00498 U	0.000747 U	0.0498
LS-LVT	3/13/2020	LVT-200313P	0.000395 U	--	--	--	--	0.0188

Leachate - Volatile Organic Compounds			1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichloropropane
Site ID	Sample Date	Sample ID	CAS # 630-20-6 (µg/L)	71-55-6 (µg/L)	79-34-5 (µg/L)	79-00-5 (µg/L)	75-34-3 (µg/L)	75-35-4 (µg/L)	563-58-6 (µg/L)	96-18-4 (µg/L)
LS-PSI	1/29/2020	LVP-200129Q	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LS-B	1/29/2020	LVB-200129Q	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
VOA TRIP BLANK	1/28/2020	VTRP200129Z	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

Leachate - Volatile Organic Compounds			1,2-Dibromo-3-Chloro-propane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene
Site ID	Sample Date	Sample ID	CAS # 96-12-8 (µg/L)	106-93-4 (µg/L)	95-50-1 (µg/L)	107-06-2 (µg/L)	78-87-5 (µg/L)	541-73-1 (µg/L)	142-28-9 (µg/L)	106-46-7 (µg/L)
LS-PSI	1/29/2020	LVP-200129Q	25 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LS-B	1/29/2020	LVB-200129Q	25 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
VOA TRIP BLANK	1/28/2020	VTRP200129Z	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

Leachate - Volatile Organic Compounds			2,2-Dichloropropane	2-Butanone	2-Hexanone	2-Methyl-1-Propanol	3-Chloropropene	4-Methyl-2-Pentanone	Acetone	Acetonitrile
Site ID	Sample Date	Sample ID	CAS # 594-20-7 (µg/L)	78-93-3 (µg/L)	591-78-6 (µg/L)	78-83-1 (µg/L)	107-05-1 (µg/L)	108-10-1 (µg/L)	67-64-1 (µg/L)	75-05-8 (µg/L)
LS-PSI	1/29/2020	LVP-200129Q	1 U	2.5 U	5 U	50 U	1 U	25 U	25 U	50 U
LS-B	1/29/2020	LVB-200129Q	1 U	2.5 U	5 U	50 U	1 U	25 U	25 U	50 U
VOA TRIP BLANK	1/28/2020	VTRP200129Z	0.1 U	0.25 U	0.5 U	5 U	0.1 U	2.5 U	2.5 U	5 U

Leachate - Volatile Organic Compounds			Acrolein	Acrylonitrile	Benzene	Bromo-chloro-methane	Bromo-dichloro-methane	Bromoform	Bromomethane	Carbon Disulfide
Site ID	Sample Date	Sample ID	CAS # 107-02-8 (µg/L)	107-13-1 (µg/L)	71-43-2 (µg/L)	74-97-5 (µg/L)	75-27-4 (µg/L)	75-25-2 (µg/L)	74-83-9 (µg/L)	75-15-0 (µg/L)
LS-PSI	1/29/2020	LVP-200129Q	25 U	0.35 U	1 U	1 U	2.5 U	5 U	1 U	1 U
LS-B	1/29/2020	LVB-200129Q	25 U	0.35 U	1 U	1 U	2.5 U	5 U	1 U	1 U
VOA TRIP BLANK	1/28/2020	VTRP200129Z	2.5 U	0.035 U	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U

Leachate - Volatile Organic Compounds			Carbon Tetra- chloride	Chlorobenzene	Chlorodibromo- methane	Chloroethane	Chloroform	Chloromethane	Chloroprene	Cis-1,2-Dichloro- ethene	
Site ID	Sample Date	Sample ID	CAS #	56-23-5	108-90-7	124-48-1	75-00-3	67-66-3	74-87-3	126-99-8	156-59-2
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
LS-PS1	1/29/2020	LVP-200129Q		2.5 U	1 U	5 U	1 U	1 U	2.5 U	1 U	1 U
LS-B	1/29/2020	LVB-200129Q		2.5 U	1 U	5 U	1 U	1 U	2.5 U	1 U	1 U
VOA TRIP BLANK	1/28/2020	VTRP200129Z		0.25 U	0.1 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.1 U

Leachate - Volatile Organic Compounds			Cis-1,3- Dichloro- propene	Dibromomethane	Dichloro-difluoro- methane	Ethylbenzene	M & P Xylene	Methyl Iodide	Methyl Methacrylate	Methyl- acrylonitrile	
Site ID	Sample Date	Sample ID	CAS #	10061-01-5	74-95-3	75-71-8	100-41-4	MPX	74-88-4	80-62-6	126-98-7
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
LS-PS1	1/29/2020	LVP-200129Q		2.5 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
LS-B	1/29/2020	LVB-200129Q		2.5 U	1 U	1 U	1 U	1 U	1 U	2.5 U	1 U
VOA TRIP BLANK	1/28/2020	VTRP200129Z		0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.25 U	0.1 U

Leachate - Volatile Organic Compounds			Methylene Chloride	O-Xylene	Propionitrile	Styrene	Tetrachloroethene	Toluene	Trans-1,2- Dichloro-ethene	Trans-1,3- Dichloropropene	
Site ID	Sample Date	Sample ID	CAS #	75-09-2	95-47-6	107-12-0	100-42-5	127-18-4	108-88-3	156-60-5	10061-02-6
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
LS-PS1	1/29/2020	LVP-200129Q		25 U	1 U	5 U	1 U	1 U	1 U	1 U	5 U
LS-B	1/29/2020	LVB-200129Q		25 U	1 U	5 U	1 U	1 U	1 U	1 U	5 U
VOA TRIP BLANK	1/28/2020	VTRP200129Z		2.5 U	0.1 U	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U

Leachate - Volatile Organic Compounds			Trans-1,4- Dichloro-2- Butene	Trichloroethene	Trichloro-fluoro- methane	Vinyl Acetate	Vinyl Chloride	
Site ID	Sample Date	Sample ID	CAS #	110-57-6	79-01-6	75-69-4	108-05-4	75-01-4
				(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
LS-PS1	1/29/2020	LVP-200129Q		5 U	1 U	1 U	1 U	0.1 U
LS-B	1/29/2020	LVB-200129Q		5 U	1 U	1 U	1 U	0.1 U
VOA TRIP BLANK	1/28/2020	VTRP200129Z		0.5 U	0.1 U	0.1 U	0.1 U	0.01 U

Leachate - Pesticides, Herbicides, & Polychlorinated biphenyls (PCBs)			2,4,5-T	2,4,5-TP Silvex	2,4-D	4,4'DDD	4,4'DDE	4,4'DDT	Aldrin
Site ID	Sample Date	Sample ID	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
LS-PS1	1/29/2020	LVP-200129Q	0.25 U	0.25 U	0.5 U	0.01 U	0.01 U	0.01 U	0.01 U
LS-B	1/29/2020	LVB-200129Q	0.25 U	0.25 U	0.5 U	0.01 U	0.01 U	0.01 U	0.01 U

Leachate - Pesticides, Herbicides, & Polychlorinated biphenyls (PCBs)			Alpha BHC	Alpha Chlordane	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248
Site ID	Sample Date	Sample ID	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
LS-PS1	1/29/2020	LVP-200129Q	0.01 U	0.01 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
LS-B	1/29/2020	LVB-200129Q	0.01 U	0.01 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U

Leachate - Pesticides, Herbicides, & Polychlorinated biphenyls (PCBs)			Aroclor 1254	Aroclor 1260	Beta BHC	Delta BHC	Dieldrin	Dinoseb	Endosulfan I
Site ID	Sample Date	Sample ID	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
LS-PS1	1/29/2020	LVP-200129Q	0.025 U	0.025 U	0.01 U	0.01 U	0.01 U	0.25 U	0.4 U
LS-B	1/29/2020	LVB-200129Q	0.025 U	0.025 U	0.01 U	0.01 U	0.01 U	0.25 U	0.01 U

Leachate - Pesticides, Herbicides, & Polychlorinated biphenyls (PCBs)			Endosulfan II	Endosulfan Sulfate	Endrin	Endrin Aldehyde	Heptachlor	Heptachlor Epoxide	Isodrin
Site ID	Sample Date	Sample ID	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
LS-PS1	1/29/2020	LVP-200129Q	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
LS-B	1/29/2020	LVB-200129Q	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U

Leachate - Pesticides, Herbicides, & Polychlorinated biphenyls (PCBs)			Lindane (Gamma BHC)	Methoxychlor	Total Aroclors	Toxaphene	trans-Chlordane
Site ID	Sample Date	Sample ID	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
LS-PS1	1/29/2020	LVP-200129Q	0.01 U	0.05 U	0.025 U	1 U	0.01 U
LS-B	1/29/2020	LVB-200129Q	0.01 U	0.05 U	0.025 U	1 U	0.01 U

Surface Water - Field Parameters			Dissolved Oxygen (DO) (Field) (mg/L)	Oxidation-Reduction Potential (ORP) (Field) (mV)	pH (Field) (µmhos/cm)	Specific Conductance (Field) (std. Units)	Temperature (Field) (°C)	Turbidity (Field) (NTU)
Site ID	Sample Date	Sample ID						
SW-W1	1/29/2020	SVW1200129Q	3.09	-64.2	7.38	183.3	8.12	91
SW-W2	1/29/2020	SVW2200129Q	11.3	204.9	7.44	449.8	8.18	40.5
SW-W3	1/29/2020	SVW3200129Q	11.01	219.8	7.6	229.1	8.81	27.7
SW-E	1/29/2020	SVE-200129Q	11.76	-12.6	6.53	119.9	8.37	42.9
FIELD BLANK	1/29/2020	SVW3200129F	10.14	150.6	8.07	1.8	9.64	0.52

Surface Water - Conventionals			Alkalinity, Total (as CaCO ₃)	Ammonia as N	Biological Oxygen Demand - 5 Day	Chemical Oxygen Demand	Chloride	Coliforms, Fecal	Coliforms, Total	Cyanide
Site ID	Sample Date	Sample ID	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(CFU/100 mL)	(CFU/100 mL)	(mg/l)
SW-W1	1/29/2020	SVW1200129Q	64.2	0.0243	2 U	71.5	5.69	78	900	0.002 U
SW-W2	1/29/2020	SVW2200129Q	226	0.0076 T	2 U	37	13.6	71	800	0.002 U
SW-W3	1/29/2020	SVW3200129Q	97.4	0.0095 T	2 U	41.4	6.88	57	80 C	0.002 U
SW-E	1/29/2020	SVE-200129Q	--	--	--	--	--	--	--	--
FIELD BLANK	1/29/2020	SVW3200129F	1 U	0.002 U	2 U	5 U	0.05 U	1 U	1 U	0.002 U

Surface Water - Conventionals			Fluoride	Hardness	Nitrate	Nitrate + Nitrite as N	Phosphorous, Soluble Reactive	Phosphorus, Total (as P)	Specific Conductance	Sulfate
Site ID	Sample Date	Sample ID	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	mg/l	µmhos/cm	(mg/l)
SW-W1	1/29/2020	SVW1200129Q	0.02 U	83.8	1.44	1.44	0.0346	0.366	176	8.26
SW-W2	1/29/2020	SVW2200129Q	0.02 U	235	0.326	0.326	0.0143	0.183	478	12
SW-W3	1/29/2020	SVW3200129Q	0.02 U	109	0.587	0.587	0.0707	0.297	238	9.26
SW-E	1/29/2020	SVE-200129Q	--	57.4	--	--	--	--	--	--
FIELD BLANK	1/29/2020	SVW3200129F	0.02 U	0.331 U	0.01 U	0.01 U	0.0005 U	0.0063 T	1.6 T	0.1 U

Surface Water - Conventionals			Total Dissolved Solids	Total Kjeldahl Nitrogen	Total Organic Carbon	Total Solids	Total Suspended Solids	Turbidity
Site ID	Sample Date	Sample ID	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(NTU)
SW-W1	1/29/2020	SVW1200129Q	132	1.39	14.8	252	111	58.6
SW-W2	1/29/2020	SVW2200129Q	272	0.779	13.1	372	53.5	47.7
SW-W3	1/29/2020	SVW3200129Q	152 H	0.739	12.3	252	66	28.3
SW-E	1/29/2020	SVE-200129Q	--	--	--	--	--	37.6
FIELD BLANK	1/29/2020	SVW3200129F	10 U	0.1 U	0.5 U	10 U	0.5 U	0.2 U

Surface Water - Metals (Dissolved & Total)			Aluminum, Dissolved	Aluminum, Total	Antimony, Dissolved	Antimony, Total	Arsenic, Dissolved	Arsenic, Total	Barium, Dissolved	Barium, Total
Site ID	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
SW-W1	1/29/2020	SVW1200129Q	0.00893 D	1.23	0.0003 U	0.0003 U	0.00232	0.0153	0.00087	0.0262
SW-W2	1/29/2020	SVW2200129Q	0.005 DU	0.345	0.0003 U	0.0003 U	0.00119	0.00677	0.00246	0.0191
SW-W3	1/29/2020	SVW3200129Q	0.0236 D	0.642	0.0003 U	0.0003 U	0.00299	0.0076	0.00332	0.0146
SW-E	1/29/2020	SVE-200129Q	0.078 D	1.73	0.0003 U	0.0003 U	0.00142	0.00269	0.00579	0.0194
FIELD BLANK	1/29/2020	SVW3200129F	0.005 DU	0.005 U	0.0003 U	0.0003 U	5E-05 U	5E-05 U	0.0005 U	0.0005 U

Surface Water - Metals (Dissolved & Total)			Beryllium, Dissolved	Beryllium, Total	Cadmium, Dissolved	Cadmium, Total	Calcium, Dissolved	Calcium, Total	Chromium, Dissolved	Chromium, Total
Site ID	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
SW-W1	1/29/2020	SVW1200129Q	0.0001 U	0.0001 U	5E-05 U	0.000091	13.3	15.4	0.000456	0.00634
SW-W2	1/29/2020	SVW2200129Q	0.0001 U	0.0001 U	5E-05 U	5E-05 U	39.1	40.2	0.000383	0.00161
SW-W3	1/29/2020	SVW3200129Q	0.0001 U	0.0001 U	5E-05 U	5E-05 U	18.5	19	0.000508	0.00268
SW-E	1/29/2020	SVE-200129Q	0.0001 U	0.0001 U	5E-05 U	5E-05 U	8.97	9.74	0.00109	0.00616
FIELD BLANK	1/29/2020	SVW3200129F	0.0001 U	0.0001 U	5E-05 U	5E-05 U	0.05 U	0.05 U	0.0002 U	0.0002 U

Surface Water - Metals (Dissolved & Total)			Cobalt, Dissolved	Cobalt, Total	Copper, Dissolved	Copper, Total	Iron, Dissolved	Iron, Total	Lead, Dissolved	Lead, Total
Site ID	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
SW-W1	1/29/2020	SVW1200129Q	0.000118	0.00379	0.000948	0.00523	0.192	11	0.0001 U	0.00429
SW-W2	1/29/2020	SVW2200129Q	5E-05 U	0.000571	0.000623	0.0019	0.0483	6.26	0.0001 U	0.00134
SW-W3	1/29/2020	SVW3200129Q	0.0000891	0.000807	0.000947	0.00286	0.136	3.29	0.0001 U	0.0021
SW-E	1/29/2020	SVE-200129Q	0.0000736	0.00115	0.00153	0.0043	0.171	2.46	0.000191	0.00209
FIELD BLANK	1/29/2020	SVW3200129F	5E-05 U	5E-05 U	0.0002 U	0.000262	0.01 U	0.01 U	0.0001 U	0.0001 U

Surface Water - Metals (Dissolved & Total)			Magnesium, Dissolved	Magnesium, Total	Manganese, Dissolved	Manganese, Total	Mercury, Total	Nickel, Dissolved	Nickel, Total	Potassium, Dissolved
Site ID	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
SW-W1	1/29/2020	SVW1200129Q	10.1	11	0.399	3.52	5E-05 U	0.000977	0.0154	1.18
SW-W2	1/29/2020	SVW2200129Q	31.9	32.7	0.0155	1.19	5E-05 U	0.00165	0.00388	2.87
SW-W3	1/29/2020	SVW3200129Q	14.6	14.9	0.302	0.963	5E-05 U	0.00132	0.00477	2.32
SW-E	1/29/2020	SVE-200129Q	7.52	8.04	0.00764	0.171	0	0.00127	0.00639	1.79
FIELD BLANK	1/29/2020	SVW3200129F	0.05 U	0.05 U	0.0001 U	0.0001 U	5E-05 U	0.0001 U	0.0001 U	0.1 U

Surface Water - Metals (Dissolved & Total)			Potassium, Total	Selenium, Dissolved	Selenium, Total	Silver, Dissolved	Silver, Total	Sodium, Dissolved	Sodium, Total	Thallium, Dissolved
Site ID	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
SW-W1	1/29/2020	SVW1200129Q	1.27	0.0005 U	0.0005 U	4E-05 U	4E-05 U	6.26	6.35	0.0001 U
SW-W2	1/29/2020	SVW2200129Q	2.9	0.0005 U	0.0005 U	4E-05 U	4E-05 U	12.4	12.5	0.0001 U
SW-W3	1/29/2020	SVW3200129Q	2.32	0.0005 U	0.0005 U	4E-05 U	4E-05 U	7.24	7.25	0.0001 U
SW-E	1/29/2020	SVE-200129Q	1.89	0.0005 U	0.0005 U	4E-05 U	4E-05 U	4.71	4.74	0.0001 U
FIELD BLANK	1/29/2020	SVW3200129F	0.1 U	0.0005 U	0.0005 U	4E-05 U	4E-05 U	0.1 U	0.1 U	0.0001 U

Surface Water - Metals (Dissolved & Total)			Thallium, Total	Tin, Dissolved	Tin, Total	Vanadium, Dissolved	Vanadium, Total	Zinc, Dissolved	Zinc, Total
Site ID	Sample Date	Sample ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
SW-W1	1/29/2020	SVW1200129Q	0.0001 U	0.0005 U	0.0005 U	0.000738	0.0078 D	0.00202	0.0133
SW-W2	1/29/2020	SVW2200129Q	0.0001 U	0.0005 U	0.0005 U	0.000627	0.0022 D	0.000842	0.00299
SW-W3	1/29/2020	SVW3200129Q	0.0001 U	0.0005 U	0.0005 U	0.00123	0.00389 D	0.00094	0.0048
SW-E	1/29/2020	SVE-200129Q	0.0001 U	0.0005 U	0.0005 U	0.00265	0.00757 D	0.00137	0.00637
FIELD BLANK	1/29/2020	SVW3200129F	0.0001 U	0.0005 U	0.0005 U	0.000284	7.5E-05 DU	0.00069	0.0005 U

Surface Water - Volatile Organic Compounds			1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2,3-Trichloropropane	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane
Site ID	Sample Date	CAS # Sample ID	630-20-6 (µg/L)	71-55-6 (µg/L)	79-34-5 (µg/L)	79-00-5 (µg/L)	75-34-3 (µg/L)	75-35-4 (µg/L)	96-18-4 (µg/L)	96-12-8 (µg/L)	106-93-4 (µg/L)
SW-W1	1/29/2020	SVW1200129Q	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U
SW-W2	1/29/2020	SVW2200129Q	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U
SW-W3	1/29/2020	SVW3200129Q	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U
SW-E	1/29/2020	SVE-200129Q	--	--	--	--	--	--	--	--	--
FIELD BLANK	1/29/2020	SVW3200129F	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U
VOA TRIP BLANK	1/28/2020	VTRP200129X2	--	--	--	--	--	--	--	--	--
VOA TRIP BLANK	1/28/2020	VTRP200129Y	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2.5 U	0.1 U

Surface Water - Volatile Organic Compounds			1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,4-Dichlorobenzene	2-Butanone	2-Hexanone	4-Methyl-2-Pentanone	Acetone	Acrylonitrile
Site ID	Sample Date	CAS # Sample ID	95-50-1 (µg/L)	107-06-2 (µg/L)	78-87-5 (µg/L)	106-46-7 (µg/L)	78-93-3 (µg/L)	591-78-6 (µg/L)	108-10-1 (µg/L)	67-64-1 (µg/L)	107-13-1 (µg/L)
SW-W1	1/29/2020	SVW1200129Q	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U
SW-W2	1/29/2020	SVW2200129Q	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U
SW-W3	1/29/2020	SVW3200129Q	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U
SW-E	1/29/2020	SVE-200129Q	--	--	--	--	--	--	--	--	--
FIELD BLANK	1/29/2020	SVW3200129F	0.1 U	0.1 U	0.1 U	0.1 U	9.29	0.5 U	2.5 U	2.5 U	0.035 U
VOA TRIP BLANK	1/28/2020	VTRP200129X2	--	--	--	--	--	--	--	--	--
VOA TRIP BLANK	1/28/2020	VTRP200129Y	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.5 U	2.5 U	2.5 U	0.035 U

Surface Water - Volatile Organic Compounds			Benzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chlorodibromomethane
Site ID	Sample Date	CAS # Sample ID	71-43-2 (µg/L)	74-97-5 (µg/L)	75-27-4 (µg/L)	75-25-2 (µg/L)	74-83-9 (µg/L)	75-15-0 (µg/L)	56-23-5 (µg/L)	108-90-7 (µg/L)	124-48-1 (µg/L)
SW-W1	1/29/2020	SVW1200129Q	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U
SW-W2	1/29/2020	SVW2200129Q	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U
SW-W3	1/29/2020	SVW3200129Q	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U
SW-E	1/29/2020	SVE-200129Q	--	--	--	--	--	--	--	--	--
FIELD BLANK	1/29/2020	SVW3200129F	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.305	0.25 U	0.1 U	0.5 U
VOA TRIP BLANK	1/28/2020	VTRP200129X2	--	--	--	--	--	--	--	--	--
VOA TRIP BLANK	1/28/2020	VTRP200129Y	0.1 U	0.1 U	0.25 U	0.5 U	0.1 U	0.1 U	0.25 U	0.1 U	0.5 U

Surface Water - Volatile Organic Compounds			Chloroethane	Chloroform	Chloromethane	Cis-1-2-Dichloroethene	Cis-1,3-Dichloropropene	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	M & P Xylene
Site ID	Sample Date	CAS # Sample ID	75-00-3 (µg/L)	67-66-3 (µg/L)	74-87-3 (µg/L)	156-59-2 (µg/L)	10061-01-5 (µg/L)	74-95-3 (µg/L)	75-71-8 (µg/L)	100-41-4 (µg/L)	MPX (µg/L)
SW-W1	1/29/2020	SVW1200129Q	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
SW-W2	1/29/2020	SVW2200129Q	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
SW-W3	1/29/2020	SVW3200129Q	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
SW-E	1/29/2020	SVE-200129Q	--	--	--	--	--	--	--	--	--
FIELD BLANK	1/29/2020	SVW3200129F	0.1 U	0.781	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U
VOA TRIP BLANK	1/28/2020	VTRP200129X2	--	--	--	--	--	--	--	--	--
VOA TRIP BLANK	1/28/2020	VTRP200129Y	0.1 U	0.1 U	0.25 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U	0.1 U

Surface Water - Volatile Organic Compounds			Methyl Iodide	Methylene Chloride	O-Xylene	Styrene	Tetrachloroethene	Toluene	Trans-1-2-Dichloroethene	Trans-1-3-Dichloropropene	Trans-1-4-Dichloro-2-Butene
Site ID	Sample Date	CAS # Sample ID	74-88-4 (µg/L)	75-09-2 (µg/L)	95-47-6 (µg/L)	100-42-5 (µg/L)	127-18-4 (µg/L)	108-88-3 (µg/L)	156-60-5 (µg/L)	10061-02-6 (µg/L)	110-57-6 (µg/L)
SW-W1	1/29/2020	SVW1200129Q	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U
SW-W2	1/29/2020	SVW2200129Q	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U
SW-W3	1/29/2020	SVW3200129Q	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U
SW-E	1/29/2020	SVE-200129Q	--	--	--	--	--	--	--	--	--
FIELD BLANK	1/29/2020	SVW3200129F	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U
VOA TRIP BLANK	1/28/2020	VTRP200129X2	--	--	--	--	--	--	--	--	--
VOA TRIP BLANK	1/28/2020	VTRP200129Y	0.1 U	2.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	5 U

Surface Water - Volatile Organic Compounds			Trichloroethene	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride
Site ID	Sample Date	CAS # Sample ID	79-01-6 (µg/L)	75-69-4 (µg/L)	108-05-4 (µg/L)	75-01-4 (µg/L)
SW-W1	1/29/2020	SVW1200129Q	0.1 U	0.1 U	0.1 U	0.0122 DJT
SW-W2	1/29/2020	SVW2200129Q	0.1 U	0.1 U	0.1 U	0.01 DU
SW-W3	1/29/2020	SVW3200129Q	0.1 U	0.1 U	0.1 U	0.0566 D
SW-E	1/29/2020	SVE-200129Q	--	--	--	0.01 DU
FIELD BLANK	1/29/2020	SVW3200129F	0.1 U	0.1 U	0.1 U	0.01 U
VOA TRIP BLANK	1/28/2020	VTRP200129X2	--	--	--	0.01 U
VOA TRIP BLANK	1/28/2020	VTRP200129Y	0.1 U	0.1 U	0.1 U	0.01 U

Surface Water - Pesticides & Herbicides			2,4,5-T	2,4,5-TP Silvex	2,4-D	Dinoseb
Site ID	Sample Date	Sample ID	(µg/L)	(µg/L)	(µg/L)	(µg/L)
SW-W1	1/29/2020	SVW1200129Q	0.0263 U	0.0263 U	0.0526 U	0.0263 U
SW-W2	1/29/2020	SVW2200129Q	0.0263 U	0.0263 U	0.0526 U	0.0771
SW-W3	1/29/2020	SVW3200129Q	0.0263 U	0.0263 U	0.0526 U	0.0263 U
FIELD BLANK	1/29/2020	SVW3200129F	0.0263 U	0.0263 U	0.0526 U	0.0263 U

Surface Water - Pesticides & Herbicides			Endrin	Lindane (Gamma BHC)	Methoxychlor	Toxaphene
Site ID	Sample Date	Sample ID	(µg/L)	(µg/L)	(µg/L)	(µg/L)
SW-W1	1/29/2020	SVW1200129Q	0.0129 U	0.0129 U	0.0644 U	1.29 U
SW-W2	1/29/2020	SVW2200129Q	0.0126 U	0.0126 U	0.0631 U	1.26 U
SW-W3	1/29/2020	SVW3200129Q	0.0129 U	0.0129 U	0.0644 U	1.29 U
FIELD BLANK	1/29/2020	SVW3200129F	0.0132 U	0.0132 U	0.0658 U	1.32 U

Landfill Gas Monitoring Data

January 1, 2020 - March 31, 2020

Sample ID	Date/Time	CH4		CO2 (% Vol)	O2 (% Vol)	Static Pressure (in H2O)	Map Location (see Fig. 7)
		(% Vol)	(% LEL)				
GP-001	1/9/2020	0	0.2	20.3	0	-1.68	GP-1
GP-001	2/5/2020	0	2.9	17.2	0	0.9	
GP-001	3/13/2020	0	3.5	19	0	2.52	
GP-002	1/9/2020	0	2.1	17.9	0	0.01	GP-2
GP-002	2/5/2020	0	2.1	17.4	0	0.11	
GP-002	3/13/2020	0	2.8	18.9	0	0.52	
GP-01D	1/9/2020	0	0.2	20.7	0	-3.83	NP-1
GP-01D	2/5/2020	0	0.1	19.7	0	1.64	
GP-01D	3/13/2020	0	0.2	21	0	5.07	
GP-01I	1/9/2020	0	0.2	20.7	0	-3.21	
GP-01I	2/5/2020	0	0.3	19.1	0	1.58	
GP-01I	3/13/2020	0	0.5	18.4	0	3.6	
GP-01S	1/9/2020	0	2.2	18	0	2.64	
GP-01S	2/5/2020	0	1.2	18.2	0	0.05	
GP-01S	3/13/2020	0	0.5	20.8	0	0.02	
GP-02D	1/9/2020	0	0.3	20.5	0	-3.78	NP-2
GP-02D	2/5/2020	0	0.4	18.6	0	1.32	
GP-02D	3/13/2020	0	0.8	19.4	0	4.91	
GP-02I	1/9/2020	0	1.4	18.6	0	-3.83	
GP-02I	2/5/2020	0	0.4	17.6	0	1.33	
GP-02I	3/13/2020	0	0.6	18.9	0	4.64	
GP-02S	1/9/2020	0	1.6	18.6	0	2.88	
GP-02S	2/5/2020	0	1	18.8	0	0.26	
GP-02S	3/13/2020	0	0.3	21	0	0.01	
GP-03D	1/9/2020	0	1.6	18.5	0	-3.63	NP-3
GP-03D	2/5/2020	0	1.6	17.7	0	1.34	
GP-03D	3/13/2020	0	1.8	19	0	4.43	
GP-03I	1/9/2020	0	1.4	19.1	0	-3.59	
GP-03I	2/5/2020	0	1.1	18.7	0	1.37	
GP-03I	3/13/2020	0	1.6	19.8	0	4.38	
GP-03S	1/9/2020	0	0.1	20.6	0	-3.37	
GP-03S	2/5/2020	0	0.5	19.6	0	0.04	
GP-03S	3/13/2020	0	1.3	19.9	0	0.9	
GP-04D	1/9/2020	0	1.1	18.8	0	-3.08	NP-4
GP-04D	2/5/2020	0	1	18.5	0	1.74	
GP-04D	3/13/2020	0	0.9	21	0	4.51	
GP-04I	1/9/2020	0	0.3	20.2	0	-2	
GP-04I	2/5/2020	0	0.2	19.9	0	0.95	
GP-04I	3/13/2020	0	1.3	21	0	2.81	
GP-04S	1/9/2020	0	1.8	18.8	0	-1.64	
GP-04S	2/5/2020	0	2.9	17.7	0	2.57	
GP-04S	3/13/2020	0	2.5	20.1	0	2.77	

Landfill Gas Monitoring Data
January 1, 2020 - March 31, 2020

Sample ID	Date/Time	CH4		CO2	O2	Static Pressure	Map Location (see Fig. 7)
		(% Vol)	(% LEL)	(% Vol)	(% Vol)	(in H2O)	
GP-05D	1/9/2020	0	0.2	20	0	-0.68	NP-5
GP-05D	2/5/2020	0	1.2	18.8	0	0.12	
GP-05D	3/13/2020	0	2.1	20.3	0	1.41	
GP-05I	1/9/2020	0	1.1	19	0	-0.34	
GP-05I	2/5/2020	0	1.1	19	0	0.09	
GP-05I	3/13/2020	0	1.7	20.9	0	0.72	
GP-05S	1/9/2020	0	0.3	19.9	0	-0.02	
GP-05S	2/5/2020	0	4	17.1	0	0.07	
GP-05S	3/13/2020	0	4.2	18.3	0	0.02	
GP-06D	1/9/2020	0	0.3	20.3	0	-1.82	NP-6
GP-06D	2/5/2020	0	0.3	19.9	0	0.5	
GP-06D	3/13/2020	0	0.5	21	0	2.59	
GP-06I	1/9/2020	0	0.2	20.3	0	-0.98	
GP-06I	2/5/2020	0	0.3	19.6	0	-0.02	
GP-06I	3/13/2020	0	2	20.9	0	0.9	
GP-06S	1/9/2020	0	3	17.9	0	0.04	
GP-06S	2/5/2020	0	1.8	18.5	0	0.09	
GP-06S	3/13/2020	0	3.6	18.1	0	-0.03	
GP-07D	1/9/2020	0	1.5	18.7	0	-0.07	NP-7
GP-07D	2/5/2020	0	2.5	16.8	0	6.45	
GP-07D	3/13/2020	0	1.6	19.7	0	0.19	
GP-07I	1/9/2020	0	0.1	20.3	0	-2.83	
GP-07I	2/5/2020	0	0.2	19.9	0	0.32	
GP-07I	3/13/2020	0	0.5	21	0	3.01	
GP-07S	1/9/2020	0	0.2	20.2	0	-2.64	
GP-07S	2/5/2020	0	0.2	19.7	0	0.89	
GP-07S	3/13/2020	0	1.4	20.2	0	3.43	
GP-08D	1/9/2020	0	0.8	15.4	0	-3.89	NP-8
GP-08D	2/5/2020	0	0.8	13.3	0	1.59	
GP-08D	3/13/2020	0	1.1	14.1	0	4.88	
GP-08I	1/9/2020	0	3	16	0	-3.94	
GP-08I	2/5/2020	0	3.1	13.4	0	1.31	
GP-08I	3/13/2020	0	5.2	6.3	0	0.69	
GP-08S	1/9/2020	0	3.8	15.1	0	-6.6	
GP-08S	2/5/2020	0	3.3	5.1	0	0.45	
GP-08S	3/13/2020	0	4	15.2	0	4.67	

APPENDIX C

Leachate Hauling Data

Table C -1
Leachate Hauling Report
 January 1, 2020 - March 31, 2020

Date	Volume of Leachate [gal]		Comments
	Discharge Points		
	A4355*	Cedar Hills Regional Landfill	
01/01/20	--		
01/02/20	--		
01/03/20	14000		
01/04/20	14000		
01/05/20	7000		
01/06/20	14000		
01/07/20	--		
01/08/20	14000		
01/09/20	7000		
01/10/20	14000		
01/11/20	14000		
01/12/20	14000		
01/13/20	14000		
01/14/20	7000		
01/15/20	28000		
01/16/20	14000		
01/17/20	28000		
01/18/20	14000		
01/19/20	--		
01/20/20	14000		
01/21/20	7000		
01/22/20	7000		
01/23/20	--		
01/24/20	--		
01/25/20	14000		
01/26/20	14000		
01/27/20	--		
01/28/20	--		
01/29/20	14000		
01/30/20	14000		
01/31/20	20000		
Total	321,000	0	

Date	Volume of Leachate [gal]		Comments
	Discharge Points		
	A4355*	Cedar Hills Regional Landfill	
02/01/20	20000		
02/02/20	14000		
02/03/20	14000		
02/04/20	28000		
02/05/20	14000		
02/06/20	--		
02/07/20	28000		
02/08/20	14000		
02/09/20	14000		
02/10/20	14000		
02/11/20	21000		
02/12/20	21000		
02/13/20	28000		
02/14/20	28000		
02/15/20	14000		
02/16/20	14000		
02/17/20	14000		
02/18/20	14000		
02/19/20	14000		
02/20/20	7000		
02/21/20	--		
02/22/20	--		
02/23/20	--		
02/24/20	--		
02/25/20	--		
02/26/20	--		
02/27/20	--		
02/28/20	--		
02/29/20	--		
Total	335,000	0	

Date	Volume of Leachate [gal]		Comments
	Discharge Points		
	A4355*	Cedar Hills Regional Landfill	
03/01/20	--		
03/02/20	--		
03/03/20	--		
03/04/20	--		
03/05/20	--		
03/06/20	--		
03/07/20	--		
03/08/20	--		
03/09/20	--		
03/10/20	--		
03/11/20	--		
03/12/20	--		
03/13/20	14000		
03/14/20	14000		
03/15/20	--		
03/16/20	--		
03/17/20	--		
03/18/20	--		
03/19/20	--		
03/20/20	--		
03/21/20	--		
03/22/20	--		
03/23/20	--		
03/24/20	--		
03/25/20	--		
03/26/20	--		
03/27/20	14000		
03/28/20	14000		
03/29/20	7000		
03/30/20	--		
03/31/20	--		
Total	63,000	0	

Note: A4355* - Sample site number of discharge point (i.e. Major Discharge Authorization No 4366-01 for KCSWD-Vashon Transfer Station and Closed Landfill)