Cathcart Landfill Environmental Monitoring Report

Second Semiannual and Annual Summary

2022

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1.0 INTRODUCTION

The following report presents the results of groundwater, surface water, landfill gas, and associated infrastructure monitoring for the second semiannual monitoring period (*July through December*) of 2022 and the annual 2022 summary environmental monitoring report for the Cathcart Sanitary Landfill (*Landfill, site*). The site is located at 8915 Cathcart Way, just west of the intersection of Cathcart Way and State Route 9 in south-central Snohomish County, Washington. The location of the site relative to existing municipal improvements is shown on the **Vicinity Map** (***Figure 1***).

1.1 BACKGROUND

The Cathcart Landfill was designed and permitted in the late 1970s and was operated as a solid waste landfill for 12 years and ceased accepting any new solid waste in June 1992.

The closed landfill is approximately 60 acres in area and is part of a larger County parcel. The Cathcart Landfill is bounded by private residential property to the northwest, north and east and by other Snohomish County facilities to the south and west. Existing site improvements and the site layout are shown on the **Site Map** (***Figure 2***), and existing site topography is shown on the **Site Topographic Map** (***Figure 3***). Surficial geology of the site area is shown on the **Geologic Map** (***Figure 4***).

Leachate is collected and gravity flows to a pretreatment facility, after which it is pumped to the **City of Everett's** Wastewater Treatment Plant for final treatment and discharge. Gas generated by the landfill is collected and extracted through a negatively pressurized system and discharged through an on-site gas flaring facility.

The Landfill is currently permitted for post-closure monitoring by the Snohomish Health District (SHD) with a Solid Waste Facility Permit (SW-011, SHD 2022). Monitoring results are reviewed by both the SHD and the Department of Ecology.

1.2 MONITORING PROGRAM

The site is currently monitored following the procedures outlined in the current Sampling and Analysis Plan (**SAP**, *Snohomish County, 2020*), which was approved by Ecology and SHD in their letters dated December 11 and 17, 2020, respectively. The SAP includes changes to the monitoring program that were proposed in the County's Application of Variance, which was submitted to the SHD in 2018; the changes were conditionally approved by SHD with input from Ecology in their letter dated December 6, 2018. These changes to the monitoring program are summarized as follows:

- **Groundwater Monitoring:** Sample frequency at all wells (except for G-09S, G-09D, G-10S, and G-10D) reduced from quarterly to semiannual; reporting for all wells will be completed on a semiannual basis. Chemical analytical suites will remain unchanged from those specified in the 2006 SAP.
    - Wells G-09S, G-09D, G-10S, and G-10D will continue to be sampled quarterly and will be reported in the semiannual monitoring reports. Due to a gap in the data

for wells G-09S, G-09D, and G-10S between the third quarter 2013 and the third quarter of 2018, eight additional quarters of monitoring will be conducted to determine if a reduction to semiannual sampling frequency is warranted at those wells. Additionally, low vinyl chloride concentrations detected in those wells historically will be further evaluated during the additional quarterly monitoring period.

- **Landfill Gas Monitoring:** Quarterly monitoring at all currently monitored gas probes, barholes, vaults, and lift stations will be maintained, and new soil gas probe GP-6 will be integrated into the gas probe monitoring program to monitor for landfill gas migration on the northern edge of the Cathcart property, near the closest residences. Monitoring results will be included in the semiannual monitoring reports.
- **Surface Water Sampling:** Sample frequency at all monitoring points was reduced to semiannual; two monitoring points (CC-D1 and CC-J) were eliminated from the surface water monitoring program based on redundancy/accessibility concerns for those locations. Monitoring results will be included in the semiannual monitoring reports. Chemical analytical suites remain unchanged.

1.2.1 Groundwater Monitoring Network

Currently, a total of 17 groundwater monitoring wells (*eight shallow wells and nine deep wells*), are monitored on a semiannual basis. Of these wells, four-(*4*) are considered upgradient, and 13 are considered to be within the landfill footprint or downgradient site wells. Well locations are shown on the **Monitoring Network Map** (***Figure 5***). Groundwater monitoring results are summarized in **Section 2.0** of this report.

1.2.2 *Surface Water Monitoring Network*

Surface water monitoring stations have been established along Garden Creek and in the site stormwater detention ponds per the **SAP**. The seven surface water sampling locations consist of one-(*1*) sampling location upgradient of the site and six sampling locations within and downgradient of the site. Sampling locations are shown on **Monitoring Network Map** (***Figure 5***). Semiannual surface water monitoring results are summarized in **Section 3.0** of this report.

1.2.3 Landfill Gas Monitoring Network

Per the **SAP**, landfill gas monitoring is conducted quarterly and includes measurement of methane, oxygen, and carbon dioxide. The existing gas monitoring system consists of eight gas probes, six permanently-installed barhole probes, seven vaults, 19 manholes, and two lift stations, which surround the landfill. The gas monitoring locations are shown on the **Monitoring Network Maps** (***Figures 5 and 5a***). Quarterly landfill gas monitoring results are summarized and discussed in **Section 4.0** of this report.

2.0 GROUNDWATER MONITORING

The second semiannual groundwater monitoring events for 2022 were performed by Snohomish County personnel on July 13 and October 18 and 19, 2022.

Depths to water were measured and groundwater samples were collected in accordance with the approved **SAP**. Hydrographs of the historical and current groundwater elevations and precipitation totals are included in ***Appendix A***. The **Second Semiannual 2022 Groundwater Measurements** and comparison with the previous monitoring event elevation data (*delta*) are shown in *Table 1* below.

Table 1 – Second Semiannual 2022 Groundwater Measurements

Well Number	Sample Date	Top of Casing Elevation (feet above MSL)	Water Elevation (feet above MSL)	Delta* (feet)
Shallow Wells – Third Quarter 2022				
G-09S	7/13/21	273.08	242.87	-1.08
G-10S	7/13/21	266.94	243.33	-1.80
Shallow Wells – Fourth Quarter 2022				
G-01A	10/18/22	229.00	DRY	--
G-04A	10/18/22	286.52	DRY	--
G-08D1	10/18/22	222.02	191.30	-8.01
G-09S	10/19/22	273.08	241.13	-0.89
G-10S	10/19/22	266.94	241.52	-1.81
G-11S	10/18/22	250.74	225.29	-7.01
G-14S	10/19/22	328.76	313.80	-6.65
G-24S	10/18/22	321.13	305.73	-2.23
Deep Wells – Third Quarter 2022				
G-09D	7/13/21	274.60	226.16	2.88
G-10D	7/13/21	268.32	237.77	-0.50
Deep Wells – Fourth Quarter 2022				
G-01D	10/18/22	229.96	203.09	-3.06
G-02D	10/18/22	242.10	211.46	-2.03
G-06B	10/18/22	246.24	209.44	-1.74
G-08D2	10/18/22	221.62	212.11	-5.39
G-09D	10/19/22	274.60	220.40	-5.76
G-10D	10/19/22	268.32	237.41	-0.36
G-13D	10/19/22	232.17	217.66	-3.36
G-14D	10/19/22	329.58	297.66	-1.17
G-24D	10/18/22	320.51	299.63	-2.15

MSL = Mean sea level

* Delta = Change in groundwater elevation from previous sampling event; wells 09S/09D and 10S/10D are sampled quarterly

Groundwater Contour Maps for the shallow and deep zones during 2022 (*i.e., for the second and fourth quarter monitoring events*) are included as ***Figures 6a through 6d*** of this report.

2.2 GROUNDWATER SAMPLING

Four wells were sampled during the first and third quarters (G-09S, G-09D, G-10S, and G-10D); 17 wells were sampled during the second quarter, and 15 wells were sampled during the fourth quarter in accordance with the procedures outlined in the **SAP** and the modified schedule in the approved Variance. Well performance was consistent with recent sampling events at all wells.

Samples were transported to Am Test, Inc. of Kirkland, Washington under chain-of-custody for analysis of dissolved metals, volatile organic compounds (*VOCs*), and conventional chemistry parameters. The analytical results are tabulated in ***Appendix B*** of this report and discussed below.

2.3 EVALUATION OF GROUNDWATER ANALYTICAL RESULTS

Each of the groundwater samples collected during 2022 are compared to the applicable groundwater quality standards which are summarized in ***Tables 2 and 3*** below and in ***Appendix B***. Notable observations or deviations from scope are noted below:

2.3.1 Shallow Wells

- The dissolved calcium and potassium concentrations in well G-09S were an order of magnitude lower during the third quarter sampling event than during the other three 2022 sampling events.
- The VOCs detected in shallow wells during the 2022 sampling events include:
  - Vinyl chloride – well G-09S (*second quarter*)
  - 1,2-Dichloroethane – well G-24S (*second quarter*) and G-09S (*third quarter*)
  - Cis-1,2-Dichloroethene – well G-10S (*fourth quarter*)

Table 2 – Summary of Annual 2022 Shallow Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Downgradient	G-01A	4/18/22	pH	std units	5.72	6.5-8.5
			Arsenic	mg/L	0.000171	0.00005
		10/18/22	Insufficient water for sampling			
	G-04A	4/18/22	pH	std units	5.48	6.5-8.5
			Arsenic	mg/L	0.011	0.00005
			Iron	mg/L	20.2	0.3
			Manganese	mg/L	6.79	0.05
		10/18/22	Insufficient water for sampling			
	G-08D1	4/18/22	pH	std units	8.98	6.5-8.5
			Sodium	mg/L	115	20
			Arsenic	mg/L	0.00129	0.00005
		10/18/22	pH	std units	9.10	6.5-8.5
			Sodium	mg/L	112	20
			Arsenic	mg/L	0.00124	0.00005
	G-09S	1/26/22	Conductivity	µmhos/cm	890	700
			pH	std units	5.95	6.5-8.5
			Sodium	mg/L	94.3	20
			TDS	mg/L	620	500
			Arsenic	mg/L	0.00106	0.00005
		4/19/22	Conductivity	µmhos/cm	950	700
			pH	std units	5.80	6.5-8.5
			Sodium	mg/L	93.5	20
			TDS	mg/L	630	500
			Arsenic	mg/L	0.00107	0.00005
			Vinyl chloride	µg/L	0.18	0.02

Table 2 – Summary of Annual 2022 Shallow Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Downgradient	G-09S	7/13/22	pH	std units	5.88	6.5-8.5
			Sodium	mg/L	163	20
			Arsenic	mg/L	0.00306	0.00005
		10/19/22	Conductivity	µmhos/cm	930	700
			pH	std units	6.12	6.5-8.5
			Sodium	mg/L	88.5	20
			TDS	mg/L	610	500
			Arsenic	mg/L	0.000695	0.00005
	G-10S	1/26/22	Conductivity	µmhos/cm	1300	700
			Sodium	mg/L	178	20
			Sulfate	mg/L	301	250
			TDS	mg/L	940	500
			Arsenic	mg/L	0.00748	0.00005
			Iron	mg/L	10.8	0.3
			Manganese	mg/L	3.32	0.05
		4/19/22	Conductivity	µmhos/cm	1400	700
			pH	std units	6.33	6.5-8.5
			Sodium	mg/L	172	20
			Sulfate	mg/L	303	250
			TDS	mg/L	950	500
			Arsenic	mg/L	0.00731	0.00005
			Iron	mg/L	10.8	0.3
			Manganese	mg/L	3.2	0.05
		7/13/22	Conductivity	µmhos/cm	1400	700
			pH	std units	6.26	6.5-8.5
			Sodium	mg/L	178	20
			Sulfate	mg/L	279	250
			TDS	mg/L	900	500
			Arsenic	mg/L	0.00468	0.00005
			Iron	mg/L	10.2	0.3
			Manganese	mg/L	2.98	0.05
		10/19/22	Conductivity	µmhos/cm	1400	700
			pH	std units	6.46	6.5-8.5
			Sodium	mg/L	152	20
			Sulfate	mg/L	310	250
			TDS	mg/L	900	500
			Arsenic	mg/L	0.0058	0.00005
			Iron	mg/L	9.97	0.3
			Manganese	mg/L	3.13	0.05
	G-11S	4/19/22	pH	std units	5.82	6.5-8.5
			Sodium	mg/L	35.5	20
			Arsenic	mg/L	0.000565	0.00005
			Manganese	mg/L	0.065	0.05
		10/18/22	pH	std units	6.12	6.5-8.5
			Sodium	mg/L	37.2	20
			Arsenic	mg/L	0.000402	0.00005
Upgradient	G-14S	4/19/22	Sodium	mg/L	111	20
			Arsenic	mg/L	0.00493	0.00005

Table 2 – Summary of Annual 2022 Shallow Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Upgradient	G-14S	10/19/22	pH	std units	8.51	6.5-8.5
			Sodium	mg/L	99.2	20
			Arsenic	mg/L	0.00429	0.00005
	G-24S	4/18/22	Sodium	mg/L	88.4	20
			Arsenic	mg/L	0.000629	0.00005
	G-24S	10/18/22	Sodium	mg/L	98.0	20
			Arsenic	mg/L	0.00056	0.00005
			1,2-Dichloroethane	µg/L	0.59	0.5

2.3.2 Deep Wells

- The conductivity and TDS concentrations in well G-10D decreased by an order of magnitude between the third and fourth quarter 2022 sampling events.
- The VOCs detected in deep wells during the 2022 sampling events include:
  - Vinyl chloride – well G-09D (*first, second, and fourth quarters*); all three vinyl chloride detections exceeded the groundwater standard of 0.02 µg/L
  - 1,2-Dichloroethane (*1,2-DCA*) – well G-09D (*second quarter*) and well G-10D (*third quarter*); the 1,2-DCA concentration in well G-09D exceeded the groundwater standard of 0.5 µg/L
  - Cis-1,2-Dichloroethene (*Cis-1,2-DCE*) – well G-09D (*fourth quarter*); no groundwater standard has been established for cis-1,2-DCE
  - Acetone – well G-10D (*first quarter*) - no groundwater standard has been established for acetone
  - Methylene chloride – well G-10D (*first quarter*); groundwater standard of 5 µg/L not exceeded

Table 3 – Summary of Annual 2022 Deep Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Downgradient	G-01D	4/18/22	pH	std units	9.01	6.5-8.5
			Sodium	mg/L	141	20
			Arsenic	mg/L	0.000922	0.00005
		10/18/22	pH	std units	8.99	6.5-8.5
			Sodium	mg/L	146	20
			Arsenic	mg/L	0.000906	0.00005
	G-02D	4/18/22	Sodium	mg/L	83.3	20
			Arsenic	mg/L	0.00406	0.00005
		10/18/22	Sodium	mg/L	80.5	20
			Arsenic	mg/L	0.00294	0.00005
	G-06B	4/18/22	Sodium	mg/L	171	20
			Arsenic	mg/L	0.00445	0.00005
		10/18/22	Sodium	mg/L	171	20
			Arsenic	mg/L	0.00368	0.00005
	G-08D2	4/18/22	pH	std units	9.32	6.5-8.5
			Sodium	mg/L	114	20
			Arsenic	mg/L	0.00149	0.00005

Table 3 – Summary of Annual 2022 Deep Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Downgradient	G-08D2	10/18/22	pH	std units	9.33	6.5-8.5
			Sodium	mg/L	111	20
			Arsenic	mg/L	0.000681	0.00005
	G-09D	1/26/22	pH	std units	9.09	6.5-8.5
			Sodium	mg/L	164	20
			Arsenic	mg/L	0.00303	0.00005
			Vinyl chloride	µg/L	0.15	0.02
		4/19/22	pH	std units	8.89	6.5-8.5
			Sodium	mg/L	158	20
			Arsenic	mg/L	0.00325	0.00005
			1,2-dichloroethane	µg/L	0.59	0.5
			Vinyl chloride	µg/L	0.56	0.02
		7/13/22	Conductivity	µmhos/cm	960	700
			pH	std units	8.64	6.5-8.5
			Sodium	mg/L	97.7	20
			TDS	mg/L	670	500
			Arsenic	mg/L	0.000649	0.00005
		10/19/22	pH	std units	8.84	6.5-8.5
			Sodium	mg/L	170	20
			Arsenic	mg/L	0.00312	0.00005
			Vinyl chloride	µg/L	0.24	0.02
	G-10D	1/26/22	Conductivity	µmhos/cm	1500	700
			Sodium	mg/L	315	20
			Sulfate	mg/L	265	250
			TDS	mg/L	980	500
			Arsenic	mg/L	0.0015	0.00005
			Iron	mg/L	0.542	0.3
			Manganese	mg/L	0.347	0.05
		4/19/22	Conductivity	µmhos/cm	1500	700
			Sodium	mg/L	326	20
			Sulfate	mg/L	270	250
			TDS	mg/L	980	500
			Arsenic	mg/L	0.00142	0.00005
			Iron	mg/L	0.482	0.3
			Manganese	mg/L	0.324	0.05
		7/13/22	Conductivity	µmhos/cm	1500	700
			Sodium	mg/L	338	20
			Sulfate	mg/L	259	250
			TDS	mg/L	980	500
			Arsenic	mg/L	0.000984	0.00005
			Iron	mg/L	0.464	0.3
			Manganese	mg/L	0.282	0.05
		10/19/22	Sodium	mg/L	282	20
			Sulfate	mg/L	289	250
			Arsenic	mg/L	0.00112	0.00005
			Iron	mg/L	0.365	0.3
			Manganese	mg/L	0.288	0.05

Table 3 – Summary of Annual 2022 Deep Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Downgradient	G-13D	4/19/22	pH	std units	8.76	6.5-8.5
			Sodium	mg/L	111	20
			Arsenic	mg/L	0.000198	0.00005
		10/19/22	pH	std units	8.89	6.5-8.5
			Sodium	mg/L	116	20
			Arsenic	mg/L	0.000156	0.00005
Upgradient	G-14D	4/19/22	pH	std units	9.11	6.5-8.5
			Sodium	mg/L	121	20
			Arsenic	mg/L	0.000786	0.00005
		10/19/22	pH	std units	9.15	6.5-8.5
			Sodium	mg/L	104	20
			Arsenic	mg/L	0.000693	0.00005
	G-24D	4/18/22	Sodium	mg/L	128	20
			Arsenic	mg/L	0.000076	0.00005
		10/18/22	Sodium	mg/L	130	20
			Arsenic	mg/L	0.00007	0.00005

2.4 STATISTICAL EVALUATION

Where exceedances to the WAC groundwater standards occur, statistical analysis is performed as specified in the **SAP** using **DUMPStat Statistical Software** (*Version 3.0 by Robert D. Gibbons Ltd., 2018*) to determine the significance of the change.

Details regarding the statistical analyses are found in the SAP and in monitoring reports submitted prior to 2019. Per **Ecology** and **Snohomish Health District** request, the statistical prediction limits for each groundwater zone were previously updated in the first quarter of the year and subsequent data sets were compared against that prediction limit. However, since the first semiannual monitoring event for all wells does not occur until the second quarter, the prediction limits are updated annually following the second quarter sampling event.

2.4.1 Shallow Groundwater Well Statistical Results

Analytes that exceeded the calculated prediction limits in the shallow zone wells and the observed concentration trends are summarized in ***Tables 4 and 5*** below and ***Appendix B***. Plots of the shallow zone groundwater statistical analyses are included in ***Appendix C***.

Table 4 – Summary of Annual 2022 Shallow Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-01A	4/18/22	pH	std units	5.72	6.60-9.39
		10/18/22	Not sampled due to insufficient water			

Table 4 – Summary of Annual 2022 Shallow Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-04A	4/18/22	Alkalinity	mg/L	240	230
			Bicarbonate	mg/L	240	210
			Calcium	mg/L	47.4	22.8736
			pH	std units	5.48	6.60-9.39
			Arsenic	mg/L	0.011	0.0043
			Cobalt	mg/L	0.012	0.005
			Iron	mg/L	20.2	9.6403
		10/18/22	Not sampled due to insufficient water			
	G-08D1	4/18/22	None	--	--	--
		10/18/22	Nitrite nitrogen	mg/L	0.019	0.009
	G-09S	1/26/22	Alkalinity	mg/L	340	230
			Bicarbonate	mg/L	340	200
			Calcium	mg/L	80.6	23.7546
			Conductivity	µmhos/cm	890	546.7776
			pH	mg/L	5.95	6.00-9.39
			Potassium	mg/L	4.66	2.6282
			TDS	mg/L	620	395.6869
		4/19/22	Alkalinity	mg/L	340	230
			Bicarbonate	mg/L	340	210
			Calcium	mg/L	77.5	22.8736
			Conductivity	µmhos/cm	950	540
			pH	std units	5.80	6.60-9.39
			Potassium	mg/L	4.88	2.6065
			TDS	mg/L	630	381.4928
		7/13/22	Conductivity	µmhos/cm	640	540
			pH	std units	5.88	6.00-9.39
			Sodium	mg/L	163	119.6577
		10/19/22	Alkalinity	mg/L	340	230
			Bicarbonate	mg/L	340	210
			Calcium	mg/L	68.6	22.8736
			Conductivity	µmhos/cm	930	540
			pH	std units	6.12	6.60-9.39
			Potassium	mg/L	3.5	2.6065
			TDS	mg/L	610	381.4928
			Selenium	mg/L	0.00096	0.0004
	G-10S	1/26/22	Alkalinity	mg/L	480	230
			Bicarbonate	mg/L	480	200
			Calcium	mg/L	106	23.7546
			Conductivity	µmhos/cm	1300	546.7776
			Potassium	mg/L	3.69	2.6282
			Sodium	mg/L	178	121.1148
			TDS	mg/L	940	395.6869
			Arsenic	mg/L	0.00748	0.004
			Iron	mg/L	10.8	9.783

Table 4 – Summary of Annual 2022 Shallow Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-10S	4/19/22	Alkalinity	mg/L	480	230
			Bicarbonate	mg/L	480	210
			Calcium	mg/L	101	22.8736
			Conductivity	µmhos/cm	1400	540
			pH	std units	6.33	6.60-9.39
			Potassium	mg/L	3.53	2.6065
			Sodium	mg/L	172	119.6577
			TDS	mg/L	950	381.4928
			TOC	mg/L	18.0	14
			Arsenic	mg/L	0.00731	0.0043
			Iron	mg/L	10.8	9.6403
			Selenium	mg/L	0.00062	0.0004
		7/13/22	Alkalinity	mg/L	450	230
			Bicarbonate	mg/L	450	210
			Calcium	mg/L	92.3	22.8736
			Conductivity	µmhos/cm	1400	540
			Potassium	mg/L	3.75	2.6065
			Sodium	mg/L	178	119.6577
			TDS	mg/L	900	381.4928
			TOC	mg/L	41	14
			Arsenic	mg/L	0.00468	0.0043
			Iron	mg/L	10.2	9.6403
		10/19/22	Alkalinity	mg/L	460	230
			Bicarbonate	mg/L	460	210
			Calcium	mg/L	94.4	22.8736
			Conductivity	µmhos/cm	1400	540
			Nitrite nitrogen	mg/L	0.014	0.009
			pH	std units	6.46	6.60-9.39
			Sodium	mg/L	152	119.6577
			TDS	mg/L	900	381.4928
			Arsenic	mg/L	0.0058	0.0043
			Iron	mg/L	9.97	9.6403
	G-11S	4/19/22	pH	std units	5.82	6.60-9.39
		10/18/22	pH	std units	6.12	6.60-9.39
			Zinc	mg/L	0.032	0.03
Upgradient	G-14S	4/19/22	Arsenic	mg/L	0.00493	0.0043
			Selenium	mg/L	0.00043	0.0004
		10/19/22	Nitrite nitrogen	mg/L	0.028	0.009
	G-24S	4/18/22	None	--	--	--
		10/18/22	Nitrite nitrogen	mg/L	0.01	0.009

Significant increasing and decreasing concentration trends for the second semiannual 2022 monitoring events and for 2022 overall were noted in shallow groundwater, as summarized in ***Table 5*** below.

Table 5 – Significant Trends, Shallow Wells 2022

Well	Date	Significant Trends			
		Second Semiannual 2022		2022 Overall	
		Increasing	Decreasing	Increasing	Decreasing
Downgradient Wells					
G-01A	10/18/22	NS	NS	None	None
G-04A	10/18/22	NS	NS	Chloride, magnesium, potassium, sodium, arsenic, iron, manganese	None
G-08D1	10/18/22	**Sodium**	Chloride	Sodium	Chloride
G-09S	7/13/22	TOC	Calcium, chloride, conductivity, sulfate, TDS, **manganese**	Alkalinity, bicarbonate, pH, TOC	Calcium, chloride, conductivity, magnesium, potassium, sulfate, TDS, manganese
G-09S	10/19/22	Alkalinity, bicarbonate, TOC	Calcium, chloride, conductivity, magnesium, potassium, sulfate, TDS, **manganese**		
G-10S	7/13/22	Alkalinity, ammonia, bicarbonate	Calcium, chloride, sulfate, TDS	Alkalinity, ammonia, bicarbonate	Calcium, chloride, magnesium, sulfate, TDS, manganese
G-10S	10/19/22	Alkalinity, ammonia, bicarbonate	Calcium, chloride, sulfate, TDS		
G-11S	10/18/22	Calcium, magnesium, manganese	**Alkalinity, bicarbonate**, conductivity, sodium, sulfate	Calcium, magnesium, manganese	Alkalinity, bicarbonate, conductivity, sodium, sulfate
Upgradient Wells					
G-14S	10/19/22	Arsenic	Chloride, nitrate	Arsenic	Chloride, nitrate
G-24S	10/18/22	None	Calcium, chloride, magnesium, **potassium**, sulfate	None	Calcium, chloride, magnesium, potassium, sulfate

Constituents in **bold** (if any) indicate a new trend noted since the previous monitoring period

Decreasing trends in the shallow wells outnumbered increasing trends during all four 2022 sampling events, including the first quarter sampling event (*13 decreasing/7 increasing*), second quarter sampling event (*25 decreasing/18 increasing*), third quarter sampling event (*10 decreasing/4 increasing*), and fourth quarter sampling event (*23 decreasing/7 increasing*). Two increasing trends in arsenic were noted in upgradient well G-14S during the 2022 sampling events.

2.4.2 Deep Groundwater Well Statistical Results

Analytes that exceeded the calculated prediction limits in the deep zone wells and the observed concentration trends for the second semiannual 2022 events are summarized in ***Tables 6 and 7*** below and in ***Appendix B***. Plots of the deep zone groundwater statistical analyses are included in ***Appendix C***.

Table 6 – Summary of Annual 2022 Deep Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-01D	4/18/22	Conductivity	µmhos/cm	580	530
			Sodium	mg/L	141	133.7466
		10/18/22	Conductivity	µmhos/cm	580	530
			Sodium	mg/L	146	133.7466
			TDS	mg/L	380	355
	G-02D	4/18/22	pH	std units	7.14	7.27-9.88
			Arsenic	mg/L	0.00406	0.0015
		10/18/22	pH	std units	7.16	7.27-9.88
			Arsenic	mg/L	0.00294	0.0015
	G-06B	4/18/22	Conductivity	µmhos/cm	680	530
			Sodium	mg/L	171	133.7466
			TDS	mg/L	400	355
			Arsenic	mg/L	0.00445	0.0015
		10/18/22	Conductivity	µmhos/cm	640	530
			Sodium	mg/L	171	133.7466
			TDS	mg/L	420	355
			Arsenic	mg/L	0.00368	0.0015
	G-08D2	4/18/22	None	--	--	--
		10/18/22	Nitrite	mg/L	0.056	0.042
	G-09D	1/26/22	Conductivity	µmhos/cm	620	530
			Sodium	mg/L	164	130.7721
			Sulfate	mg/L	102	66.05
			Arsenic	mg/L	0.00303	0.0021
		4/19/22	Conductivity	µmhos/cm	640	530
			Sodium	mg/L	158	133.7466
			Sulfate	mg/L	105	66.05
			TDS	mg/L	390	355
			Arsenic	mg/L	0.00325	0.0015

Table 6 – Summary of Annual 2022 Deep Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-09D	7/13/22	Alkalinity	mg/L	350	280
			Bicarbonate	mg/L	350	280
			Calcium	mg/L	71.6	1.59
			Conductivity	µmhos/cm	960	530
			Magnesium	mg/L	29.0	2.33
			Potassium	mg/L	5.19	2.3419
			Sulfate	mg/L	163	66.05
			TDS	mg/L	670	355
			TOC	mg/L	27.0	25
		10/19/22	Conductivity	µmhos/cm	670	530
			Sodium	mg/L	170	133.7466
			Sulfate	mg/L	142	66.05
			TDS	mg/L	440	355
			Arsenic	mg/L	0.00312	0.0015
	G-10D	1/26/22	Alkalinity	mg/L	530	280
			Ammonia	mg/L	0.35	0.2927
			Bicarbonate	mg/L	530	280
			Calcium	mg/L	20.6	6.32
			Chloride	mg/L	15.9	8.7455
			Conductivity	µmhos/cm	1500	530
			Sodium	mg/L	315	130.7721
			Sulfate	mg/L	265	66.05
			TDS	mg/L	980	460
		4/19/22	Alkalinity	mg/L	520	280
			Ammonia	mg/L	0.340	0.249
			Bicarbonate	mg/L	520	280
			Calcium	mg/L	20.3	1.59
			Chloride	mg/L	16.4	6.86
			Conductivity	µmhos/cm	1500	530
			pH	std units	6.74	7.27-9.88
			Sodium	mg/L	326	133.7466
			Sulfate	mg/L	270	66.05
			TDS	mg/L	980	355
			Manganese	mg/L	0.324	0.0121
		7/13/22	Alkalinity	mg/L	490	280
			Ammonia	mg/L	0.344	0.249
			Bicarbonate	mg/L	490	280
			Calcium	mg/L	17.2	1.59
			Chloride	mg/L	15.8	6.86
			Conductivity	µmhos/cm	1500	530
			Sodium	mg/L	338	133.7466
			Sulfate	mg/L	259	66.05
			TDS	mg/L	980	355
			Manganese	mg/L	0.282	0.0121

Table 6 – Summary of Annual 2022 Deep Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-10D	10/19/22	Alkalinity	mg/L	460	280
			Ammonia	mg/L	0.291	0.249
			Bicarbonate	mg/L	460	280
			Calcium	mg/L	17.5	1.59
			Chloride	mg/L	16.8	6.86
			pH	std units	7.02	7.27-9.88
			Sodium	mg/L	282	133.7466
			Sulfate	mg/L	289	66.05
			Manganese	mg/L	0.288	0.0121
	G-13D	4/19/22	Chloride	mg/L	11.4	6.86
		10/19/22	Chloride	mg/L	9.7	6.86
Upgradient	G-14D	4/19/22	None	--	--	--
		10/19/22	None	--	--	--
	G-24D	4/18/22	None	--	--	--
		10/18/22	None	--	--	--

The trends noted during the first semiannual event are summarized in ***Table 7*** below and in ***Appendix B***. Decreasing trends in the deep wells outnumbered increasing trends during all four 2022 sampling events, including the first quarter sampling event (*9 decreasing/1 increasing*), second quarter event (*24 decreasing/11 increasing*), third quarter sampling event (*8 decreasing/2 increasing*), and fourth quarter sampling event (*23 decreasing/9 increasing*). Two of the increasing trends were noted in upgradient well G-24D during the fourth quarter event.

Table 7 – Significant Trends, Deep Wells 2022

Well	Date	Significant Trends			
		Second Semiannual 2022		2022 Overall	
		Increasing	Decreasing	Increasing	Decreasing
Downgradient Wells					
G-01D	10/18/22	pH	Bicarbonate, chloride	pH	Bicarbonate, chloride
G-02D	10/18/22	None	Calcium, chloride, conductivity, nitrate, **pH**, sodium, TDS	None	Calcium, chloride, conductivity, nitrate, pH, sodium, TDS
G-06B	10/18/22	**pH**, Arsenic	Chloride, sulfate	pH, arsenic	Chloride, sulfate
G-08D2	10/18/22	**Sodium, sulfate**, arsenic	Chloride	Sodium, sulfate, arsenic	Chloride

Table 7 – Significant Trends, Deep Wells 2022

Well	Date	Significant Trends			
		Second Semiannual 2022		2022 Overall	
		Increasing	Decreasing	Increasing	Decreasing
G-09D	7/13/22	None	Calcium, arsenic, lead	Ammonia	Bicarbonate, calcium, sulfate, TDS, arsenic, lead
	10/19/22	Ammonia	Bicarbonate, calcium, **sulfate**, **TDS,** arsenic, lead		
G-10D	7/13/22	Alkalinity, bicarbonate	Calcium, chloride, magnesium, sulfate, manganese	Alkalinity, bicarbonate	Calcium, chloride, magnesium, sulfate, manganese
	10/19/22	Alkalinity, bicarbonate	Calcium, chloride, magnesium, sulfate, manganese		
G-13D	10/19/22	None	Sulfate	None	Sulfate
Upgradient Wells					
G-14D	10/19/22	None	None	None	None
G-24D	10/18/22	pH, **sodium**	None	pH, sodium	None

Constituents in **bold** indicate a new trend noted since the previous monitoring period

3.0 SURFACE WATER MONITORING

Snohomish County performed surface water sampling during the second half of 2022 as required by the landfill permit and consistent with the **SAP** and approved Application of Variance.

3.1 SURFACE WATER SAMPLING

Snohomish County field personnel collected surface water samples from five locations on January 11, 2022 and from two locations on July 13, 2022 in accordance with the **SAP** procedures. The 2022 surface water analytical results were compared to applicable criteria in **Chapter 173-201A WAC** as summarized ***Table 8*** below.

Table 8 – Semiannual 2022 Surface Water Analytical Results

Sample Point	Date	Fecal Coliform	Conductivity	Nitrate as N	pH
	Criteria:	200	--	--	5.5-6.5
	Units:	CFM/100 mL	µmhos/cm	mg/L	std units
First Quarter					
CC-A1	1/11/22	47	120	1.9	**7.34**
CC-B1	1/11/22	12	130	1.4	**7.22**
CC-D	1/11/22	1	110	0.52	**6.98**
CC-F	1/11/22	31	140	1.6	**7.09**
CC-NSDP	1/11/22	2	120	0.82	**6.85**
Third Quarter					
CC-F	7/13/22	72	230	0.18	**7.30**
CC-NSDP	7/13/22	12	250	ND<0.01	**7.41**

NS = Not sampled – location was dry, ND = Not detected at the indicated laboratory detection limit
Values in **bold** exceed the listed water quality criteria

All of the pH concentrations detected during the 2022 surface water sampling events slightly exceeded the surface water quality criteria. None of the fecal coliform concentrations exceeded the surface water quality criteria during the 2022 surface water sampling events.

4.0 LANDFILL GAS MONITORING

During the second semiannual sampling events, landfill gas readings were collected from eight gas probes in accordance with the SAP on August 19 and November 16, 2022. Landfill gas readings were also collected from seven vaults, six barhole probes, and two lift station vaults on those dates. The 2022 landfill gas monitoring results are summarized in separate quarterly letter reports to SHD and herein on the field sheets in ***Appendix D***.

As shown on the field sheets, no detectable methane concentrations were detected from any of the monitoring points during 2022.

5.0 LEACHATE MONITORING

Cathcart Sanitary Landfill is authorized under City of Everett Industrial Waste Discharge Permit #7701-17 to discharge pretreated industrial wastewater (landfill leachate and vactor liquid wastes) to the City of Everett sewer system via connection through the Silver Lake Water and Sewage District sewer.

As shown on the pretreatment system flow diagram (Figure 7), landfill leachate and condensate drains to a pump station (designated SP-1), from which the leachate and condensate are pumped to a grit chamber and combined with groundwater from the landfill underdrain system to pump station SP-1. The combined leachate and groundwater is then pumped through a flow meter vault (designated P-FV-2), where the total daily flow is measured using an electromagnetic flow meter (mag meter). The flow is then discharged into either of two pretreatment lagoons. The lagoons

are constructed of concrete equipped with underdrain systems that are connected to leak detection vaults (designated P-MH-3 and P-MH-4), which are monitored monthly for the presence of liquid, which could indicate a leak from the lagoons. A total of 16 manholes and vaults within the leachate collection system are monitored monthly for the presence of excess sediment (or fluid, in the case of leak detection vaults) and maintenance issues. The completed inspection forms are included in ***Appendix D***. No fluid was observed in either of the leak detection vaults during 2022.

The maximum design capacity of each lagoon is approximately 2.5 million gallons. Combined leachate and vactor liquid is treated in one or both of the leachate collection lagoons by settlement and aeration. Each lagoon has two aerators installed, which operate hourly for 15 minutes. The aerated liquid is then routed via a sampling vault (P-MH-9) to a discharge point to the sewer. Liquid samples are collected from P-MH-9 on a monthly basis and the results are summarized in a monthly report, which is submitted to the City of Everett per the IWDP permit.

During 2022, a total of 2,147,100 gallons of landfill leachate were pumped to the pretreatment lagoons for treatment and eventual discharge to the sewer. Leachate was pumped to the pretreatment lagoons at an average rate of 178,925 gallons per month, which varied from 3,270 gallons in September to 376,500 gallons in January. Overall, the rate of leachate production and flow correlates with seasonal rainfall totals. The leachate flow totals are included in ***Table 9*** below.

Table 9 – Cathcart Landfill Leachate Flow Totals, 2022

Month	Total (gallons)
January	376,500
February	253,800
March	351,690
April	199,530
May	210,120
June	345,150
July	52,800
August	11,460
September	3,270
October	20,640
November	95,760
December	226,380
Maximum:	376,500
Minimum:	3,270
Monthly Average:	178,925
2022 Total:	**2,147,100**

5.1 LEACHATE SAMPLING

On January 26, 2022, Snohomish County Solid Waste personnel collected annual samples from the leachate pump station vaults designated SP-1 and SP-4 to characterize leachate from above (SP-1) and below (SP-4) the landfill liner. The leachate samples were analyzed for the following constituents:

- pH by USEPA Method 150.2
- Biological oxygen demand (BOD) by Method SM 5210B
- Conductivity by Method SM 2510B
- Total cyanide by USEPA Method 335.4
- Oil and Grease (HEM) by USEPA Method 1664 HEM
- Total Petroleum Hydrocarbons (Polar/Non-Polar) by USEPA Method 1664 SGT-HEM
- Total Suspended Solids (TSS) by Method SM 2540D
- Flashpoint by USEPA Method 1020
- Total Metals by USEPA Method 200.7/200.8/245.1, including:
    - Cadmium
    - Chromium
    - Copper
    - Mercury
    - Nickel
    - Silver
    - Zinc

In addition, the sample from vault SP-1 was analyzed for the standard groundwater constituent suite and priority pollutants, which included:

- Total Cyanide by SM 4500CN-E99
- Total Phenol by EPA Method 420.4
- Total Dissolved Metals by USEPA Methods 200.7/200.8, including the above-listed metals and:
    - Antimony
    - Arsenic
    - Barium
    - Beryllium
    - Cobalt
    - Iron
    - Lead
    - Manganese
    - Selenium
    - Thallium
    - Vanadium
- Dissolved Metals by USEPA Methods 200.7/200.8, including:
    - Antimony
    - Arsenic

- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Copper
- Iron
- Lead
- Manganese
- Nickel
- Selenium
- Silver
- Thallium
- Vanadium
- Zinc

- VOCs by USEPA Method 8260/8260 SIM/624
- Semivolatile Organic Compounds (*SVOCs*) and Polynuclear Aromatic Hydrocarbons (*PAHs*) by USEPA Method 625/625-SIM
- Organochlorine Pesticides (*OCPs*) by USEPA Method 608
- Polychlorinated Biphenyls (*PCBs*) by USEPA Method 608

Tabulated summaries of the leachate vault sample analytical results are included below as Tables 10 through 14. Only constituents that were detected are shown in the tables; none of the leachate vault samples collected during the current monitoring year contained detectable concentrations of OPPs or PCBs.

Table 10 – Leachate Vault Results – Inorganics

Location ID	Date	pH	BOD	Conductivity	TSS
Units		std. units	mg/L	µmhos/cm	mg/L
SP-1	1/26/22	5.89	7.6	840	200
SP-4	1/26/22	6.20	5.6	610	5.0

Table 11 – Leachate Vault Results – Metals

Location ID	Date	Antimony (200.8)	Arsenic (200.8)	Cadmium (200.8)	Chromium (200.8)	Copper (200.8)	Mercury (245.1)	Nickel (200.8)	Lead (200.8)	Selenium (200.8)	Zinc (200.8)
Units		µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
SP-1	1/26/22	0.52	8.80	0.067	5.99	5.42	0.00012	5.54	0.414	0.47	15.4
Location ID	**Date**	**Antimony (200.8)**	**Arsenic (200.7)**	**Cadmium (200.7)**	**Chromium (200.7)**	**Copper (200.7)**	**Mercury (245.1)**	**Nickel (200.7)**	**Lead (200.7)**	**Selenium (200.8)**	**Zinc (200.7)**
Units		**µg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**µg/L**	**mg/L**
SP-4	1/26/22	--	ND<0.005	ND<0.005	ND<0.01	ND<0.01	ND<0.0001	ND<0.01	ND<0.01	--	ND<0.01

-- = Not analyzed; ND = Not detected at the indicated detection limit

Table 12 – Leachate Vault Results – VOCs

Location ID	Date	1,4-Dichlorobenzene	Chlorobenzene
Units		µg/L	µg/L
SP-1	1/26/21	1.5	1. 32
SP-4	1/26/21	--	--

-- = Not analyzed

Table 13 – Leachate Vault Results – SVOCs

Location ID	Date	bis(2-Ethylhexyl) Phthalate	Diethyl Phthalate	Di-n-butyl phthalate
Units		µg/L	µg/L	µg/L
SP-1	1/26/22	0.56	0.35	0.24
SP-4	1/26/22	--	--	--

-- = Not analyzed

Table 14 – Leachate Vault Results – PAHs

Location ID	Date	2-Methylnaphthalene	Naphthalene
Units		µg/L	µg/L
SP-1	1/26/22	0.28	0.18
SP-4	1/26/22	--	--

-- = Not analyzed

6.0 SUMMARY AND RECOMMENDATIONS

6.1 SUMMARY

The groundwater, surface water, leachate, and landfill gas monitoring data collected during the 2022 monitoring events indicate the following:

- The groundwater elevations, flow direction, and gradient measured during the 2022 semiannual monitoring events were generally consistent with those measured historically at the site.
- The most common groundwater standard exceedances were pH, sodium, and arsenic, which is consistent with historical site data.
- Most statistical limit exceedances in the shallow zone were noted in wells G-09S and G-10S, which is consistent with recent historical data. No statistical exceedances were noted in shallow wells G-08D1 and G-24S during the second quarter 2022 monitoring event.
- Overall, significantly more decreasing trends were noted in both zones during all four monitoring events (*71 decreasing/36 increasing trends in the shallow zone, and 64 decreasing/23 increasing trends in the deep zone*).
- Most decreasing concentration trends noted in the shallow and deep zones during the second and fourth quarters occurred in downgradient wells – 34 of 48 decreasing trends in shallow downgradient wells and 45 of 47 decreasing trends in deep downgradient wells. Six of the increasing trends noted during the second quarter and fourth quarter occurred in upgradient wells G-14S and G-24D.
- VOC concentrations were mostly limited to the wells located immediately downgradient of the landfill (*G-09S, G-09D, G-10S, and G-10D*). Low concentrations of vinyl chloride were detected in the first quarter sample from deep well G-09D and the second quarter samples

from shallow well G-09S and deep well G-09D. In addition, low concentrations of 1,2-dichloroethane were detected in shallow well G-24S and deep well G-09D (*second quarter*), and wells G-09S and G-10D (*third quarter*). Three other VOCs were also present in wells during the first and fourth quarter 2022 monitoring events, including methylene chloride and acetone (*well G-09D, first quarter*) and cis-1,2-DCE (*wells G-10S and G-09D, fourth quarter*). These detections are generally consistent with recent results at these wells, although the recent detections of 1,2-dichloroethane and cis-1,2-DCE could be related to the decreased laboratory method detection limits for those constituents in 2021.

- Slight exceedances of the surface water quality goals for pH were noted in all 7 surface water samples collected during 2022. None of the surface water fecal coliform concentrations exceeded the quality goal of 200 CFU/100 mL.
- The monitoring results at the perimeter gas probe locations, vaults, and manholes and did not indicate the presence of detectable concentrations of landfill gas during 2022.
- Landfill settlement surveys were discontinued in 2019 after six years of annual measurements. During the previous six years, no significant settlement was noted across the landfill mass that exceeded tolerance levels established in the Department of Ecology's Uniform Guidance document.

6.2 CONCLUSIONS/RECOMMENDATIONS

- The groundwater elevation data and fluctuations with seasonal rainfall totals (*as shown on the hydrographs in* ***Appendix A***) suggest that the shallow and deep groundwater zones are hydraulically continuous and may in fact represent one complex water-bearing zone.
- There is no indication of groundwater impacts extending beyond the site boundaries of the Cathcart Landfill.
- The analytical data indicate that there is likely a leachate impact in monitoring wells G-09S, G-09D, G-10S, and G-10D.
- In accordance with the SAP and the approved variance, Snohomish County Solid Waste will continue to monitor groundwater and surface water semiannually.
- Landfill gas will continue to be monitored quarterly until the stratigraphy and hydrogeology of the site are evaluated for landfill gas migration potential. The data from probe GP-6 confirms that landfill gas is not migrating near the northwest perimeter of the landfill.

6.4 SIGNATURES AND LICENSES

Brian K. Eytcheson, LG
SCPW – Solid Waste Division

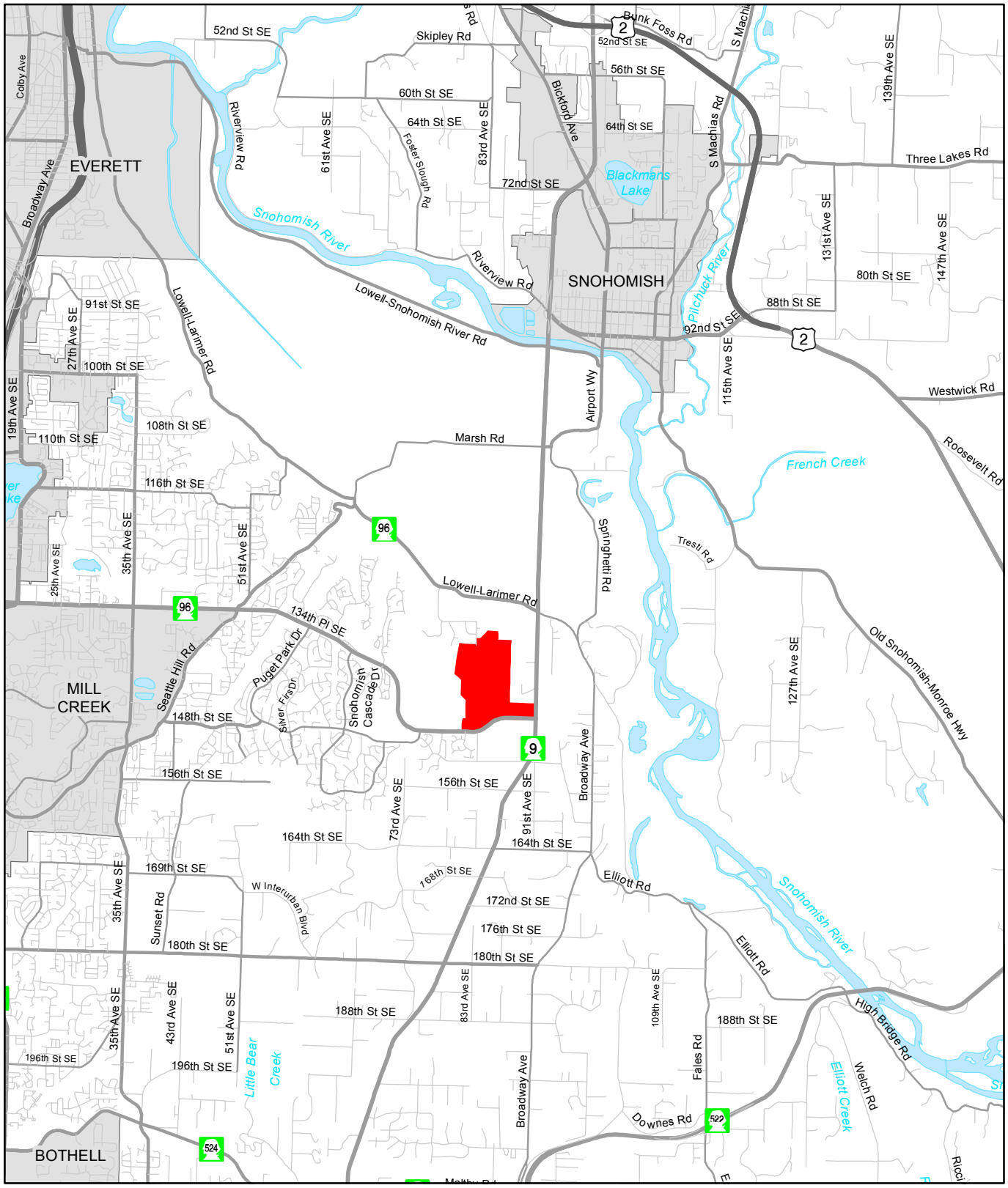
3/21/23
Date

State of Washington
3133
Licensed Geologist
BRIAN K. EYTCHESON

Figures

Figure 1

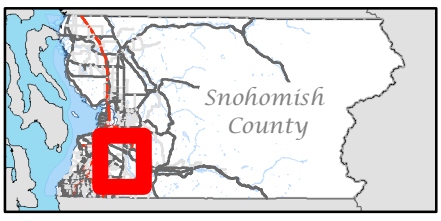
Cathcart Landfill Vicinity Map



0 0.5 1 2 Miles

0 0.5 1 2 3 Kilometers

N W E S



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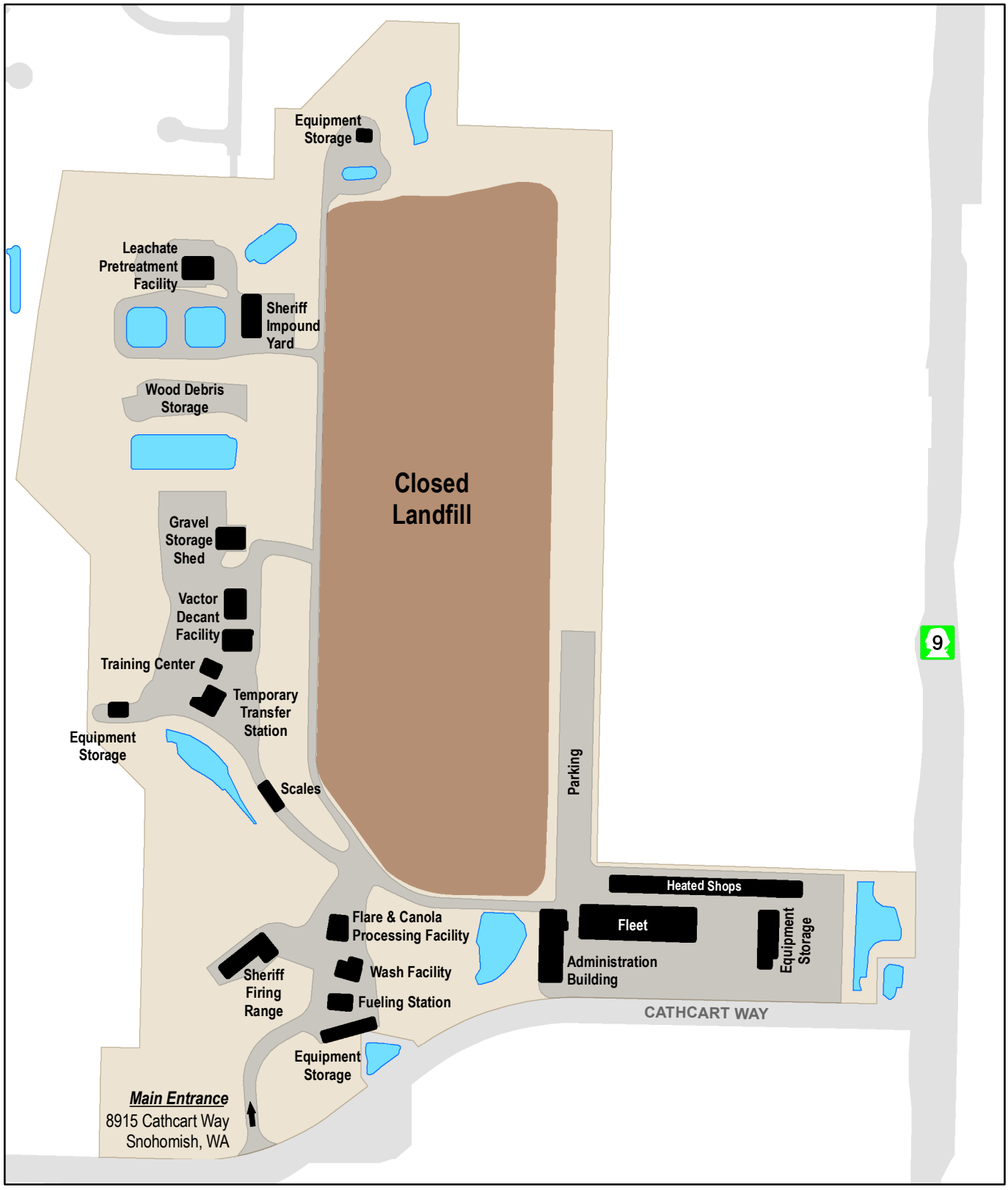
Solid Waste Division
March 16, 2010

Figure 2

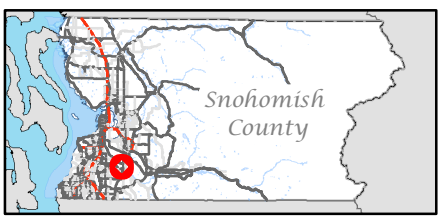
Cathcart Landfill Site Map



0 0.045 0.09 0.18 Miles

0 180 360 720 1,080 Feet

N W E S



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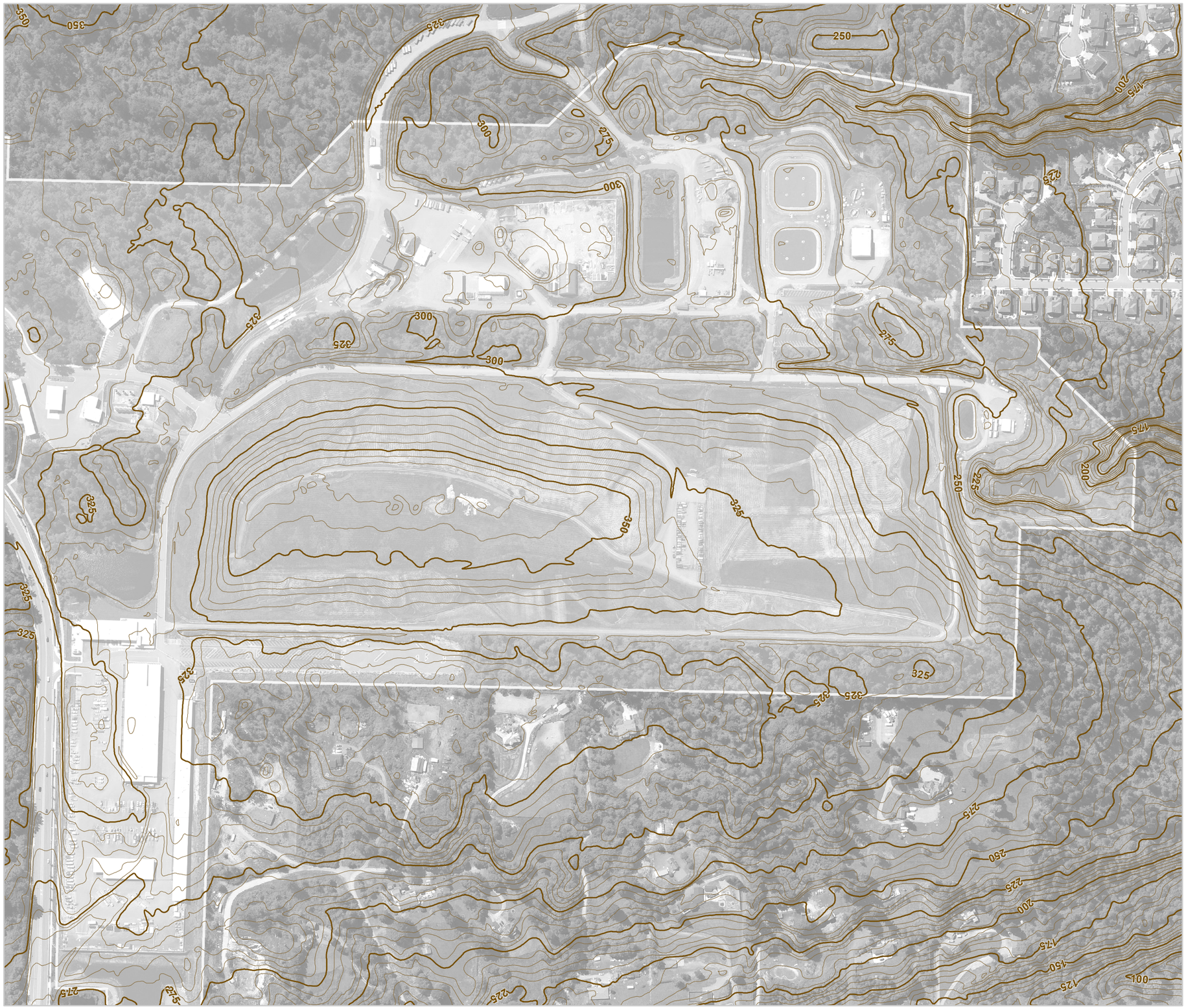
March 16, 2010

Figure 3

Cathcart Landfill

Topography



Map Features

- Parcel Boundary
- Subject Property Boundary
- 5 Foot Contours

N

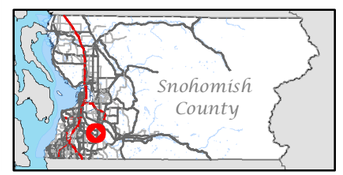
W

E

S

1 inch = 350 feet

0	0.02	0.04	0.08	0.12	0.16	0.2	Miles
0	137.5	275	550	825	1,100		Feet



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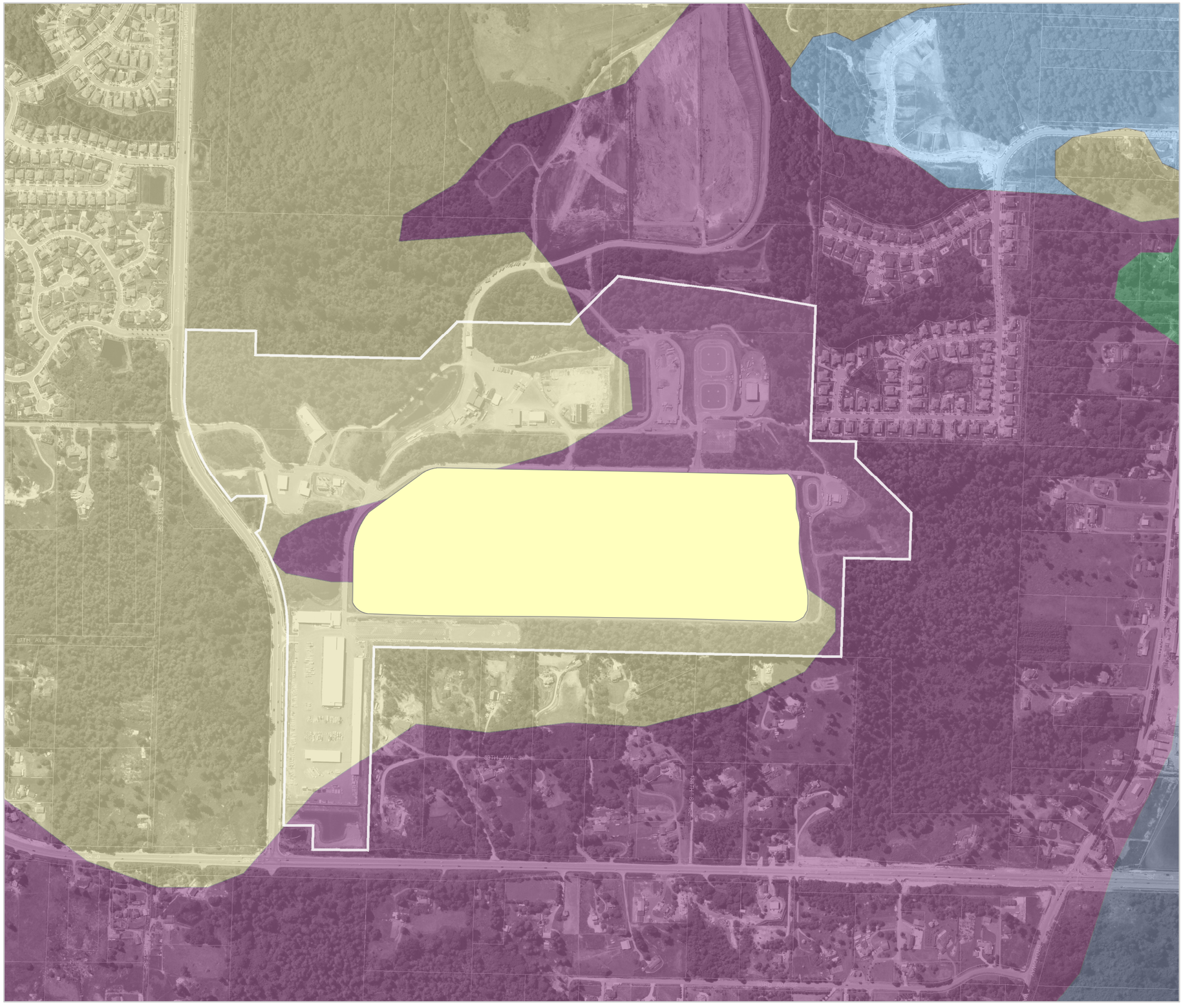
March 24, 2010

Figure 4

Cathcart Landfill

Geologic Map



Map Features

- Parcel Boundary
- Subject Property Boundary

Geologic Description

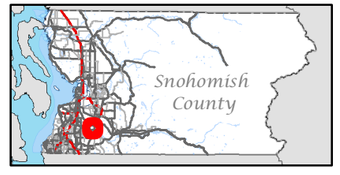
- Recent Alluvium (Qyal)
- Vashon Recessional Outwash (Qvr)
- Vashon Glacial Till (Qvt)
- Vashon Advance Outwash (Qva)
- Transitional Beds (Qtb)
- Modified Land

W S N E

1 inch = 600 feet

0 0.035 0.07 0.14 0.21 0.28 0.35 Miles

0 240 480 960 1,440 1,920 Feet



Snohomish County
Public Works
Solid Waste Division
June 8, 2010

Figure 5

Cathcart Landfill

Monitoring Network

Map Features

- Parcel Boundary
- Subject Property Boundary

Aquifer Unit (Active Wells)

- Deep Aquifer
- Shallow Aquifer

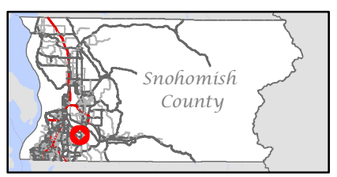
Inactive / Removed Wells

- Abandoned / Decommissioned
- Inactive

Additional Sampling Points

- Gas Probe
- Surface Water Sample Locations

0 125 250 500 750 1,000 Feet



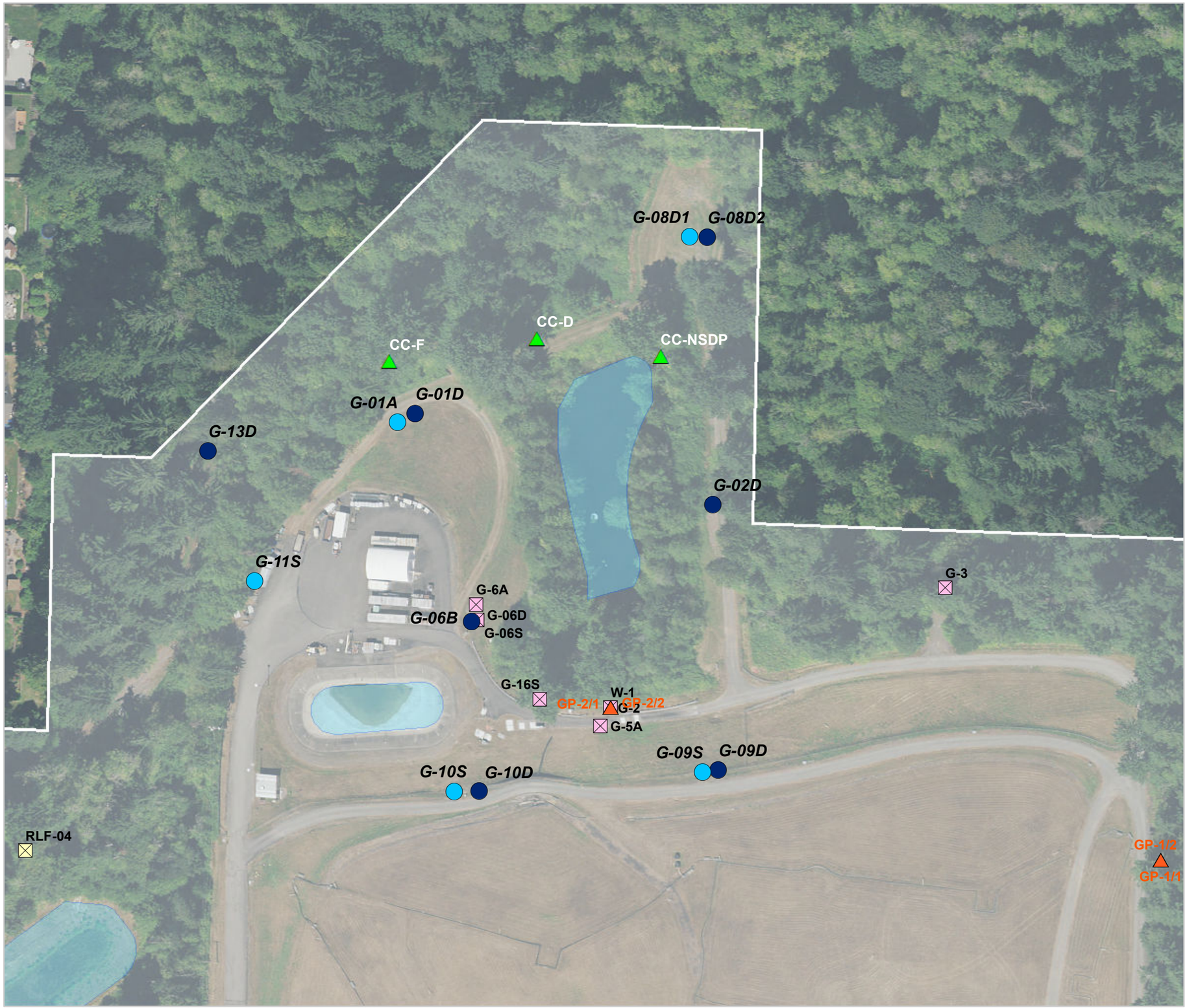
N

Snohomish County
Public Works
Solid Waste Division
November 12, 2019

Figure 5a

Cathcart Landfill

Monitoring Network



Map Features

- Parcel Boundary
- Subject Property Boundary

Aquifer Unit (Active Wells)

- Deep Aquifer
- Shallow Aquifer

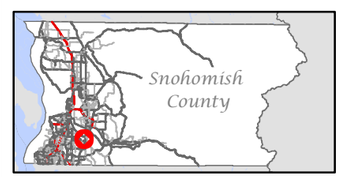
Inactive / Removed Wells

- Abandoned / Decommissioned
- Inactive

Additional Sampling Points

- Gas Probe
- Water Sample Locations

0 37.5 75 150 225 300 Feet



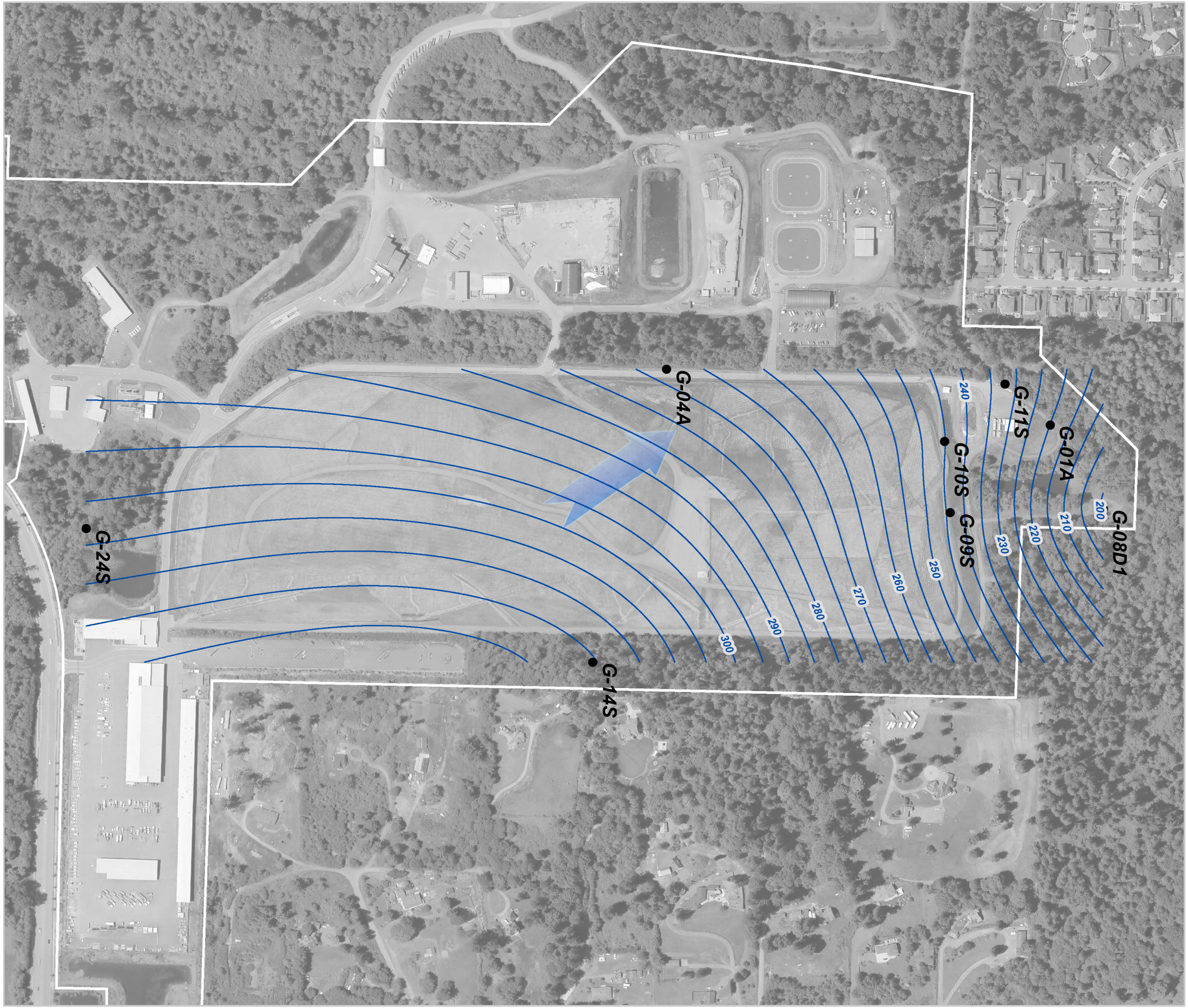
N

Snohomish County
Public Works
Solid Waste Division
November 12, 2019

Figure 6a

Cathcart Landfill

Shallow Aquifer Groundwater Elevation Contours Second Quarter 2022



DIRECTION OF GROUNDWATER FLOW
0.000372 ft / day
0.136 ft / year
125.34 degrees to the positive x - axis

PARCEL BOUNDARY

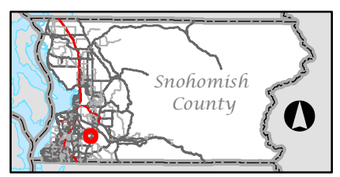
SUBJECT PROPERTY BOUNDARY

5 FT CONTOUR

WELL LOCATION

WELL_ID	SAMP_DATE	MEAS_HEAD
G-01A	4/18/2022	219.87
G-04A	4/18/2022	272.77
G-08D1	4/18/2022	199.31
G-09S	4/18/2022	243.95
G-10S	4/18/2022	245.13
G-11S	4/18/2022	232.30
G-14S	4/18/2022	320.45
G-24S	4/18/2022	307.96

0 125 250 500 750 1,000
Feet



N

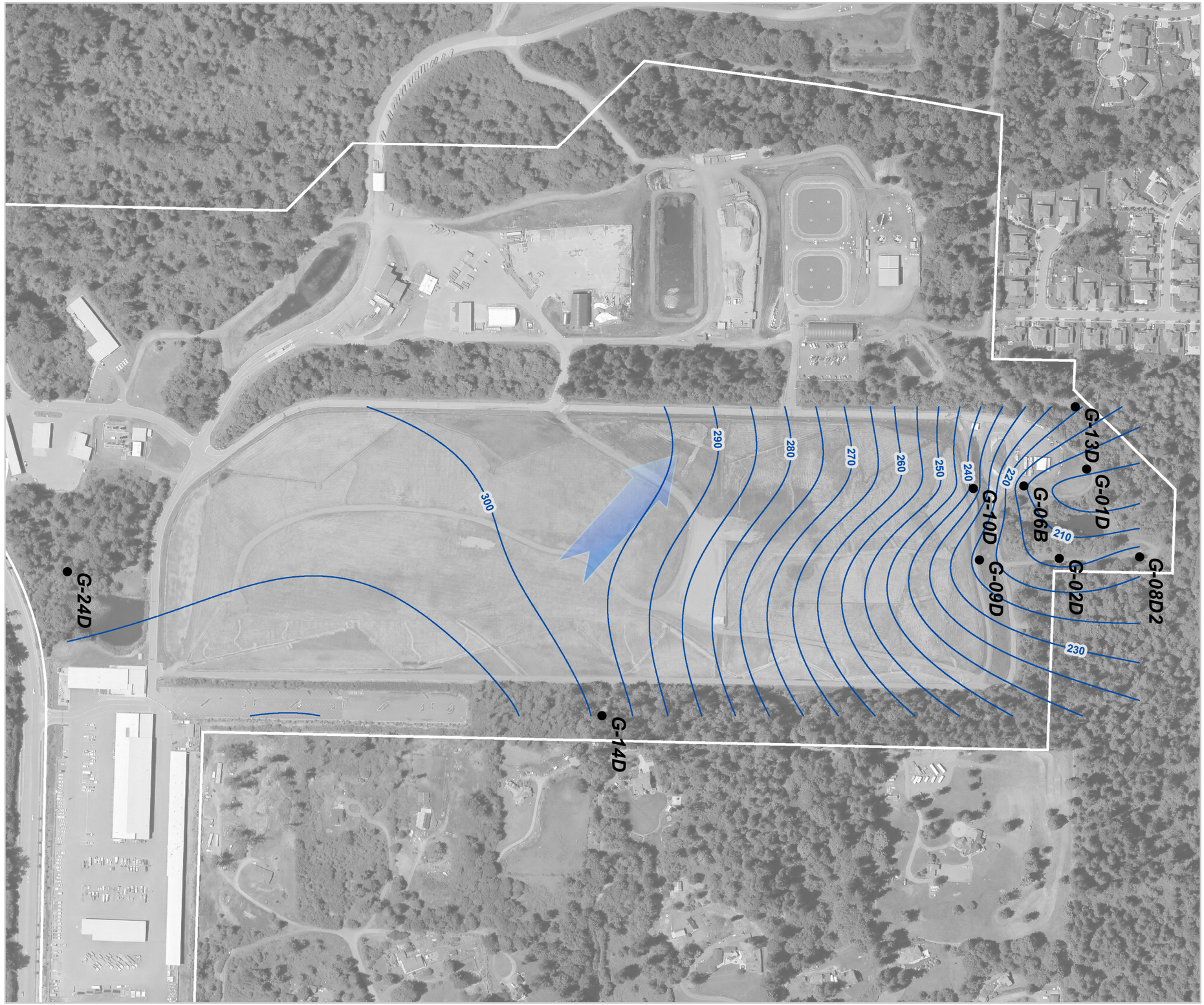
Snohomish County
Public Works
Solid Waste Division
Date: 7/27/2022

Document Path: I:\pw\swaste\projects\GroundwaterContours\ArcMaps\GroundwaterContours_Cathcart_Shallow.mxd

Figure 6b

Cathcart Landfill

Deep Aquifer Groundwater Elevation Contours Second Quarter 2022



DIRECTION OF GROUNDWATER FLOW
0.0117 ft / day
4.27 ft / year
139.38 degrees to the positive x - axis

PARCEL BOUNDARY

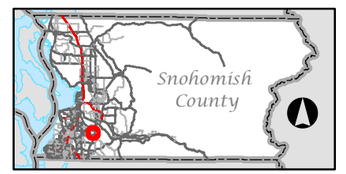
SUBJECT PROPERTY BOUNDARY

5 FT CONTOUR

WELL LOCATION

WELL_ID	SAMP_DATE	MEAS_HEAD
G-01D	4/18/2022	206.15
G-02D	4/18/2022	213.49
G-06B	4/18/2022	211.18
G-08D2	4/18/2022	217.50
G-09D	4/18/2022	223.28
G-10D	4/18/2022	238.27
G-13D	4/18/2022	221.02
G-14D	4/18/2022	298.83
G-24D	4/18/2022	301.78

0 120 240 480 720 960
Feet



N

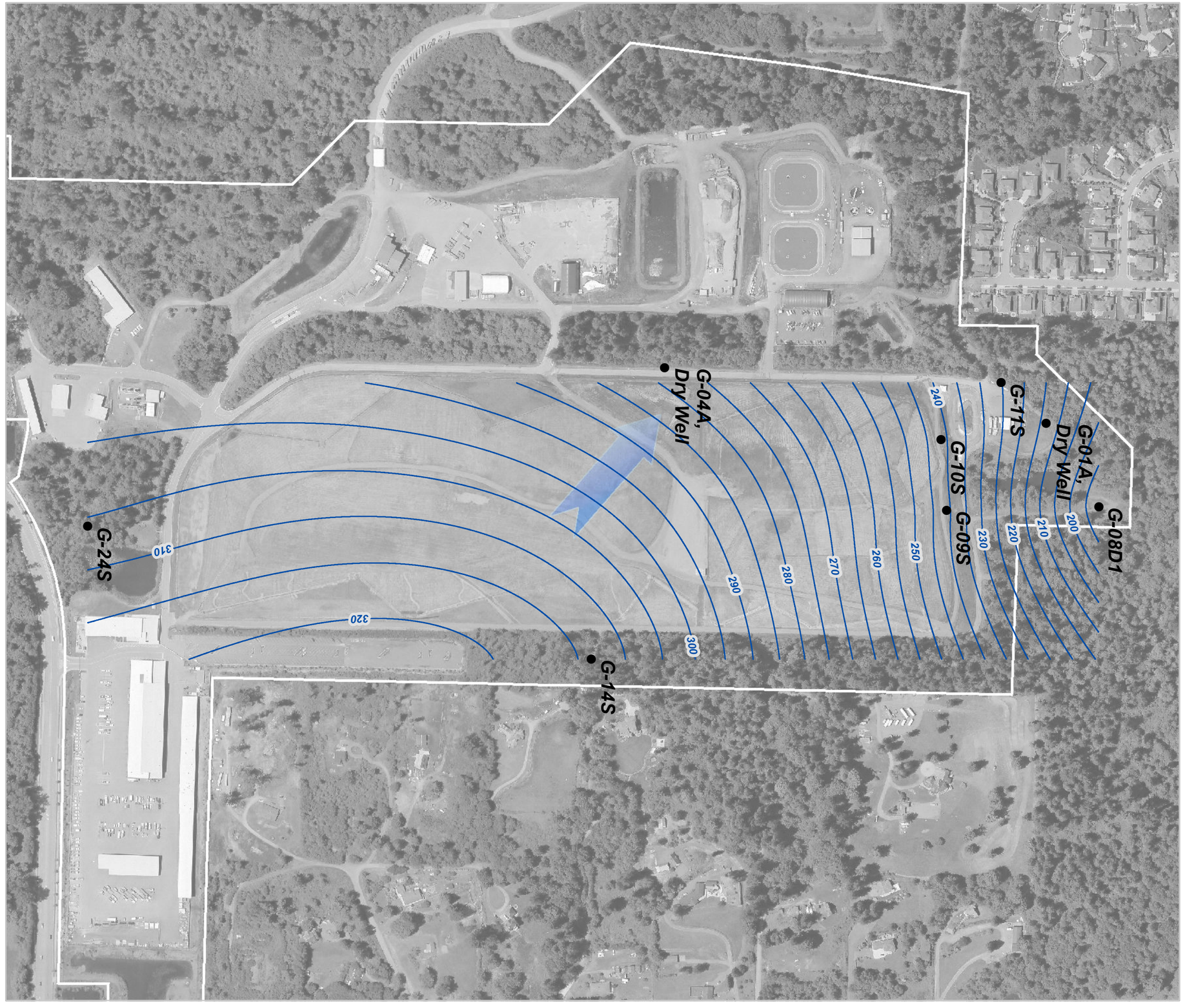
Snohomish County
Public Works
Solid Waste Division
Date: 7/27/2022

Document Path: I:\pw\swaste\projects\GroundwaterContours\ArcMaps\GroundwaterContours_Cathcart_Deep.mxd

Figure 6c

Cathcart Landfill

Shallow Aquifer Groundwater Elevation Contours Fourth Quarter 2022



DIRECTION OF GROUNDWATER FLOW
0.000429 ft / day
0.157 ft / year
137.80 degrees to the positive x - axis

PARCEL BOUNDARY

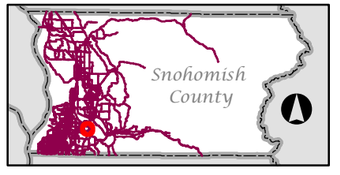
SUBJECT PROPERTY BOUNDARY

5 FT CONTOUR

WELL LOCATION

WELL_ID	SAMP_DATE	MEAS_HEAD
G-01A	10/18/2022	DRY
G-04A	10/18/2022	DRY
G-08D1	10/18/2022	191.30
G-09S	10/18/2022	241.13
G-10S	10/18/2022	241.52
G-11S	10/18/2022	225.29
G-14S	10/18/2022	313.80
G-24S	10/18/2022	305.73

0 125 250 500 750 1,000
Feet



N

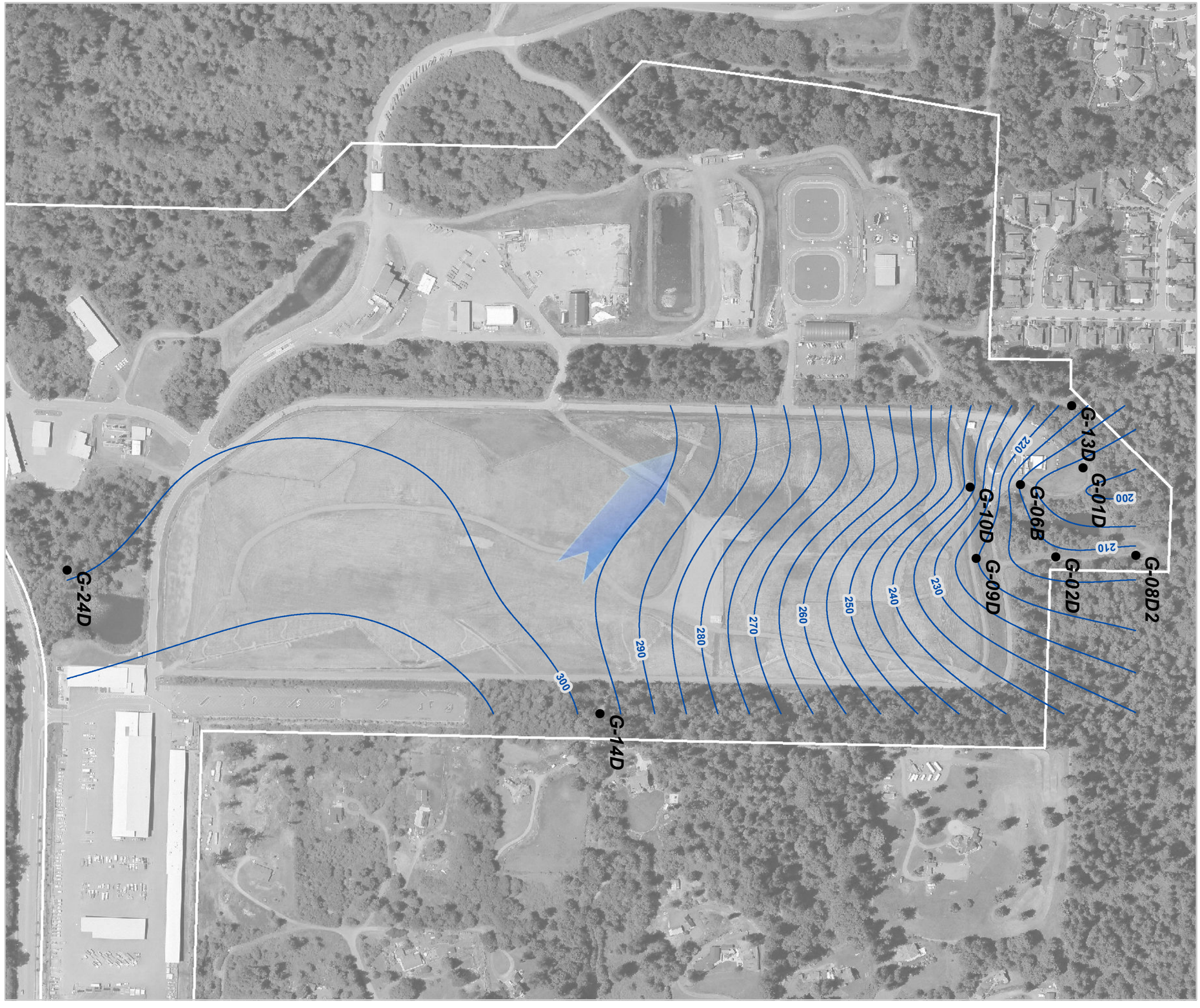
Snohomish County
Public Works
Solid Waste Division
Date: 3/16/2023

Document Path: I:\pw\swaste\projects\GroundwaterContours\ArcMaps\GroundwaterContours_Cathcart_Shallow.mxd

Figure 6d

Cathcart Landfill

Deep Aquifer Groundwater Elevation Contours Fourth Quarter 2022



DIRECTION OF GROUNDWATER FLOW
0.0118 ft / day
4.29 ft / year
138.68 degrees to the positive x - axis

PARCEL BOUNDARY

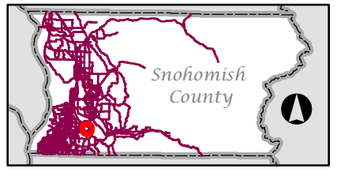
SUBJECT PROPERTY BOUNDARY

5 FT CONTOUR

WELL LOCATION

WELL_ID	SAMP_DATE	MEAS_HEAD
G-01D	10/18/2022	203.09
G-02D	10/18/2022	211.46
G-06B	10/18/2022	209.44
G-08D2	10/18/2022	212.11
G-09D	10/18/2022	220.40
G-10D	10/18/2022	237.41
G-13D	10/18/2022	217.66
G-14D	10/18/2022	297.66
G-24D	10/18/2022	299.63

0 120 240 480 720 960
Feet



N

Snohomish County
Public Works
Solid Waste Division
Date: 3/16/2023

Document Path: I:\pw\swaste\projects\GroundwaterContours\ArcMaps\GroundwaterContours_Cathcart_Deep.mxd

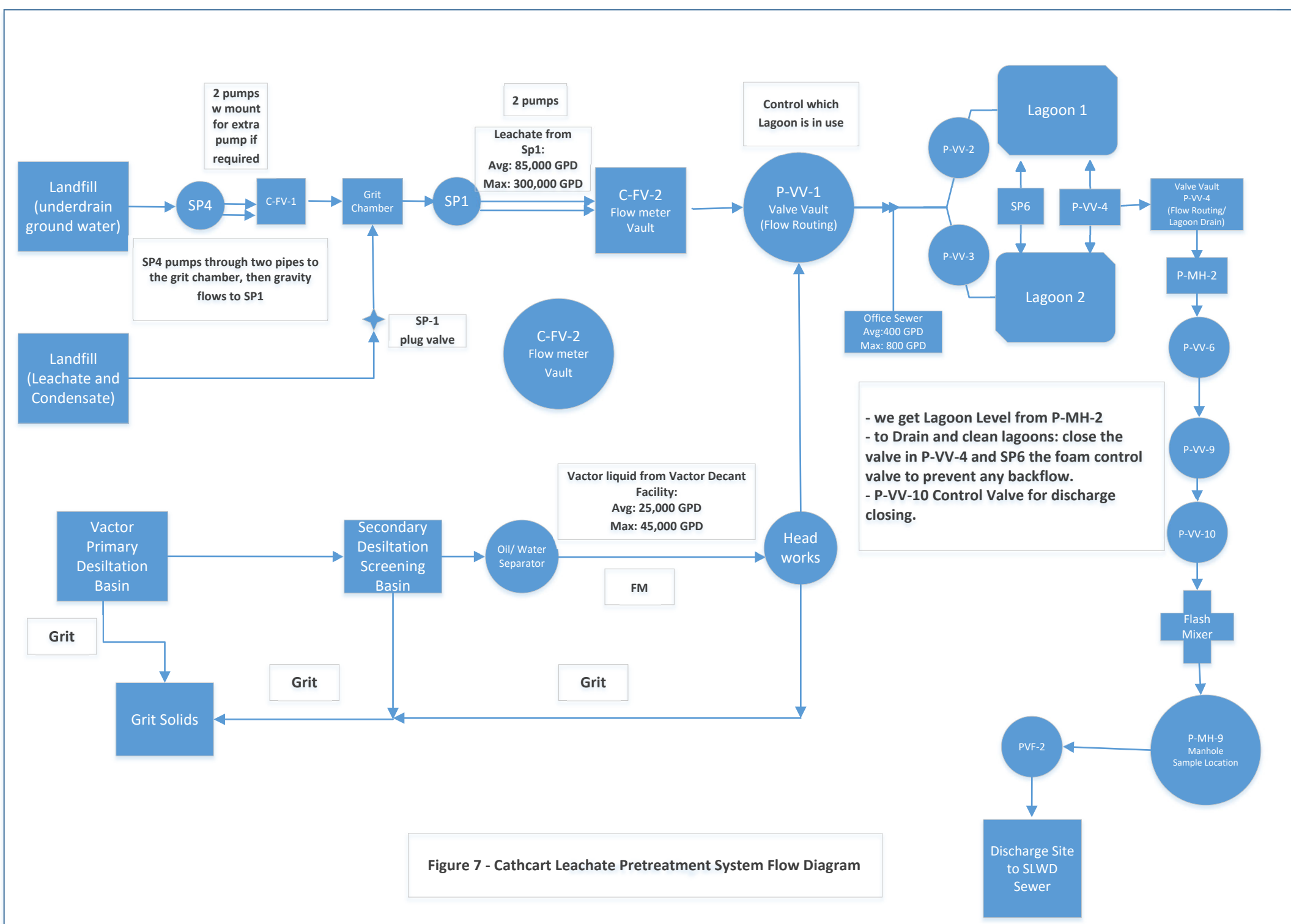
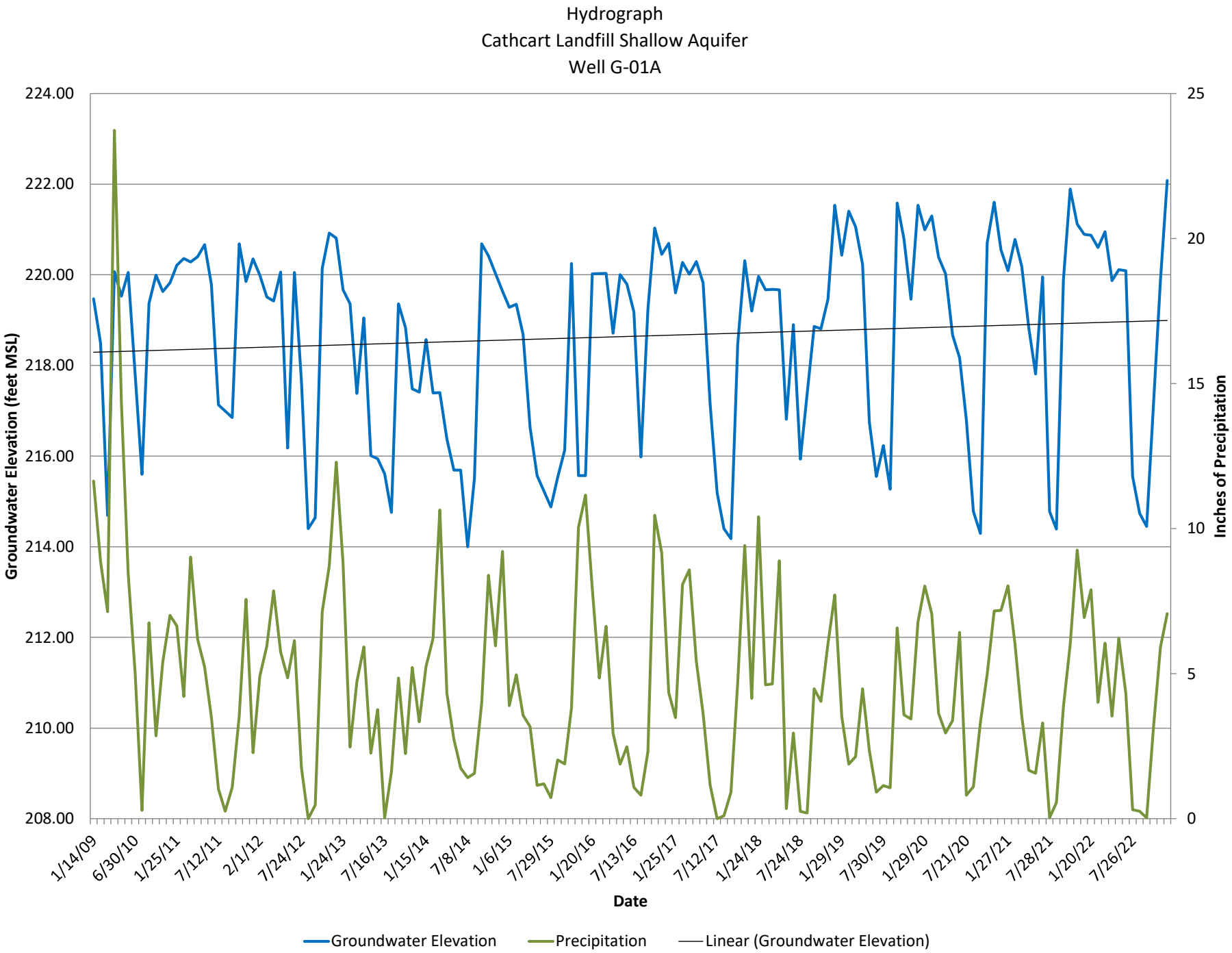


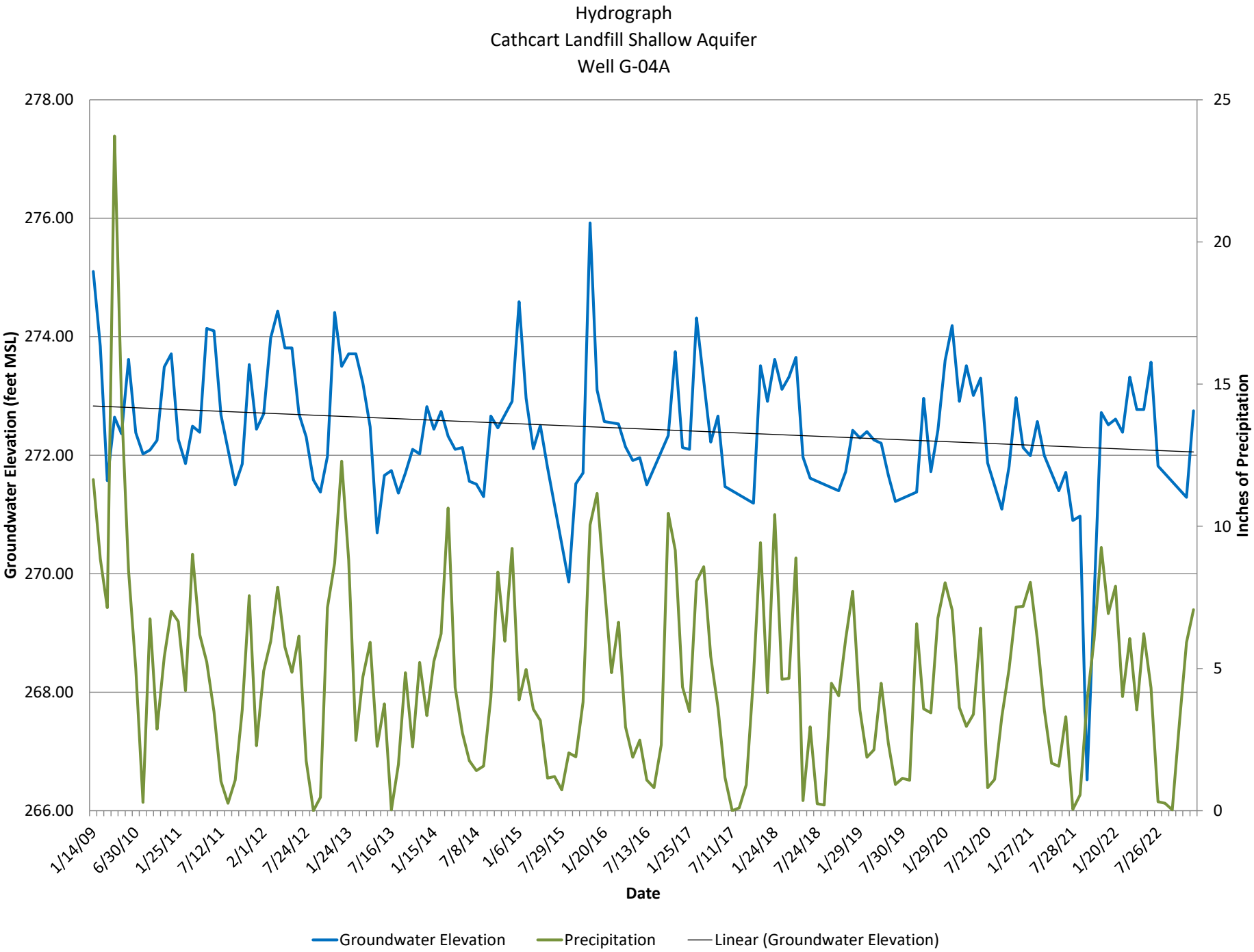
Figure 7 - Cathcart Leachate Pretreatment System Flow Diagram

Appendix A

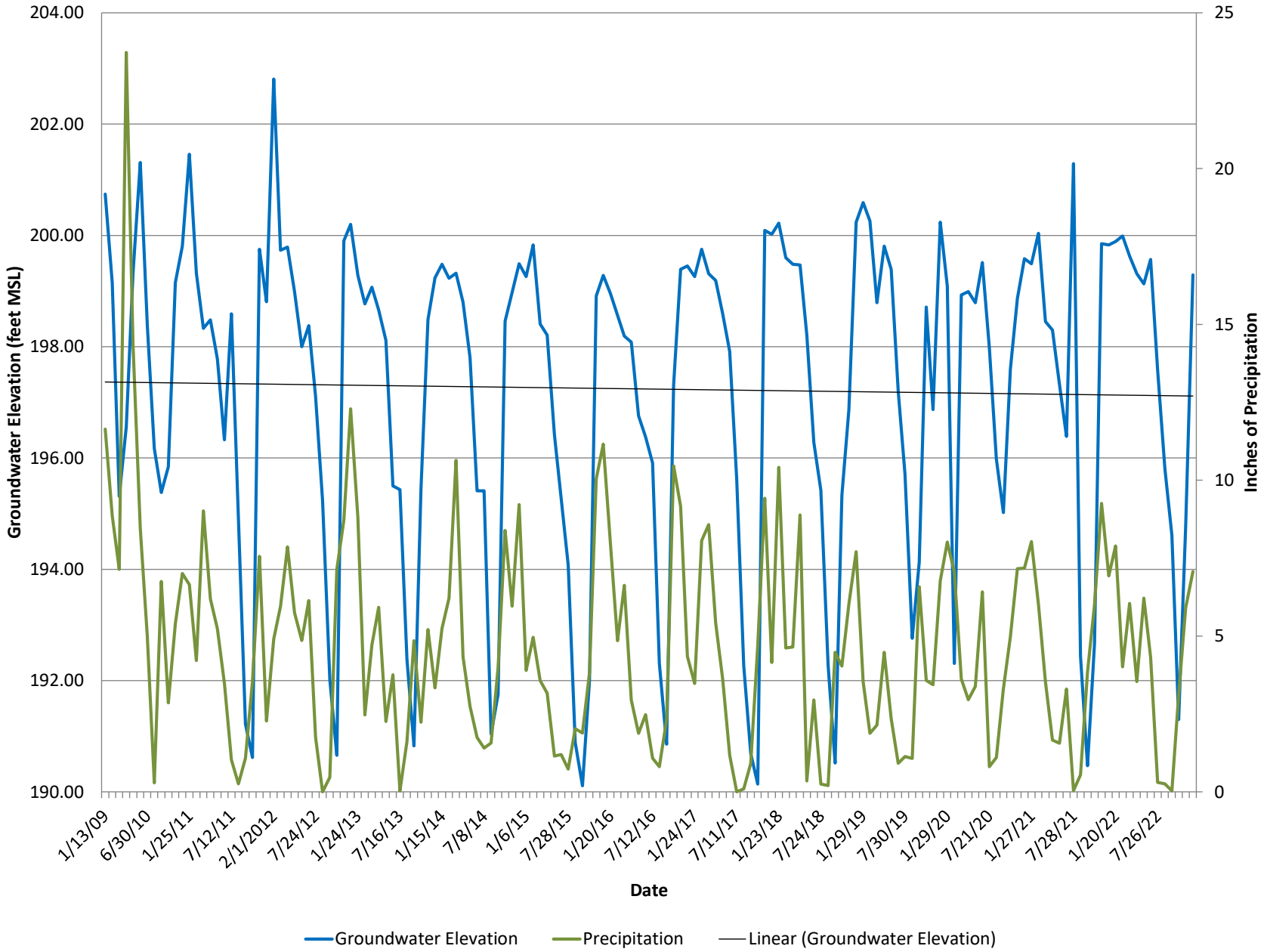
Hydrographs

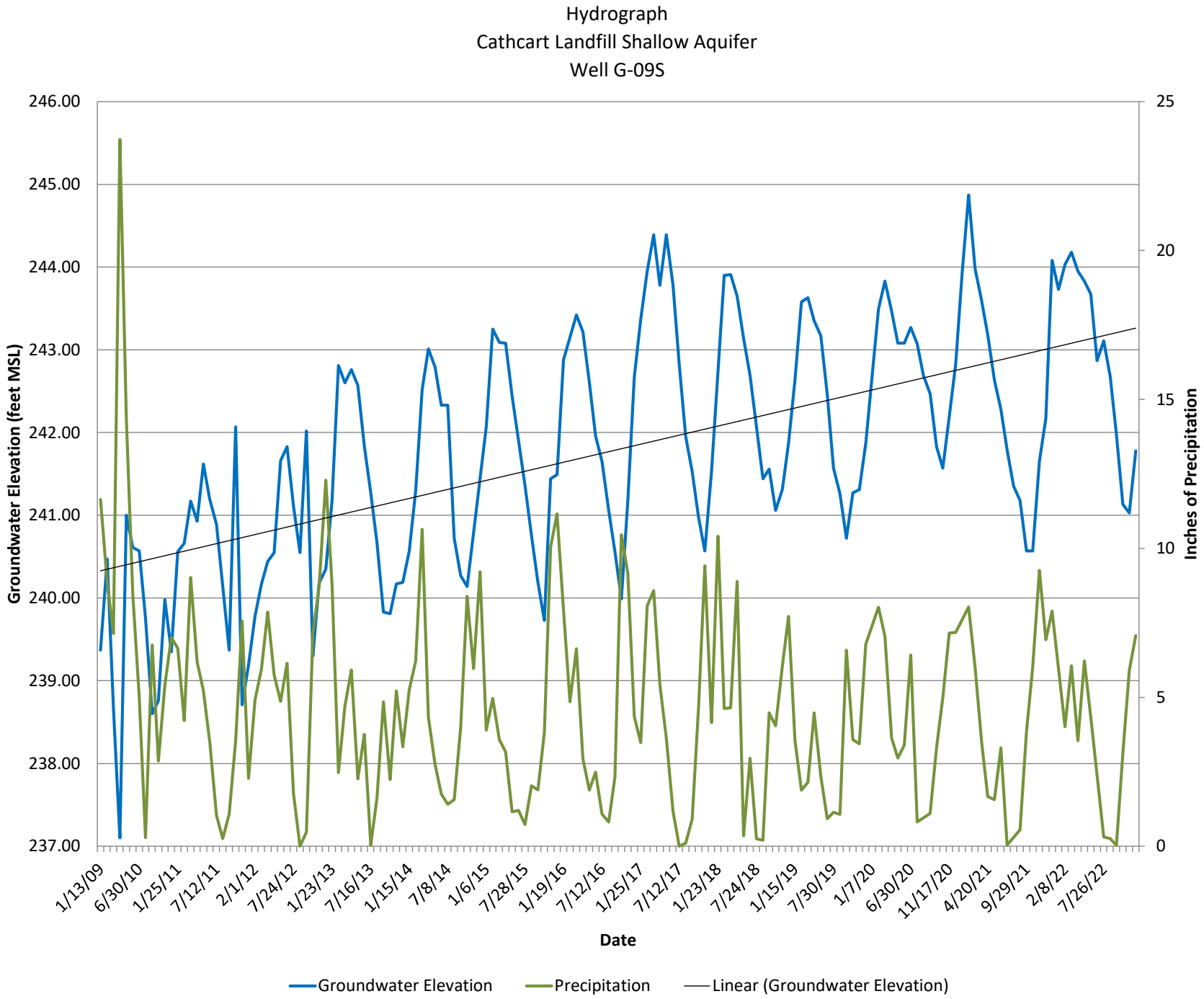
Shallow Wells


Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-01A
Groundwater Elevation (feet MSL)
224.00
222.00
220.00
218.00
216.00
214.00
212.00
210.00
208.00
Inches of Precipitation
25
20
15
10
5
0
1/14/09
6/30/10
1/25/11
7/12/11
2/1/12
7/24/12
1/24/13
7/16/13
1/15/14
7/8/14
1/6/15
7/29/15
1/20/16
7/13/16
1/25/17
7/12/17
1/24/18
7/24/18
1/29/19
7/30/19
1/29/20
7/21/20
1/27/21
7/28/21
1/20/22
7/26/22
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

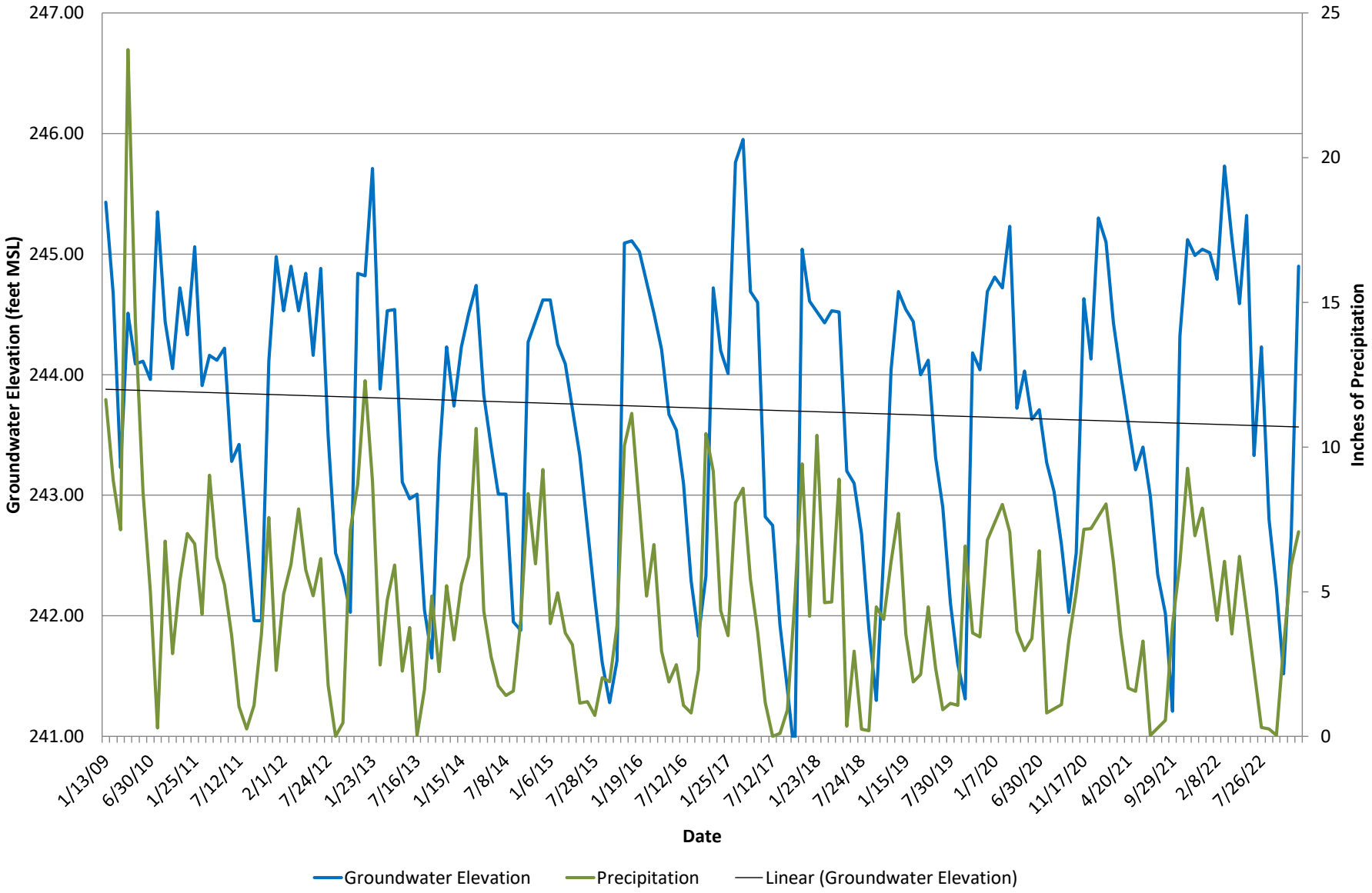

Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-04A
Groundwater Elevation (feet MSL)
278.00
276.00
274.00
272.00
270.00
268.00
266.00
Inches of Precipitation
25
20
15
10
5
0
1/14/09
6/30/10
1/25/11
7/12/11
2/1/12
7/24/12
1/24/13
7/16/13
1/15/14
7/8/14
1/6/15
7/29/15
1/20/16
7/13/16
1/25/17
7/11/17
1/24/18
7/24/18
1/29/19
7/30/19
1/29/20
7/21/20
1/27/21
7/28/21
1/20/22
7/26/22
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-08D1

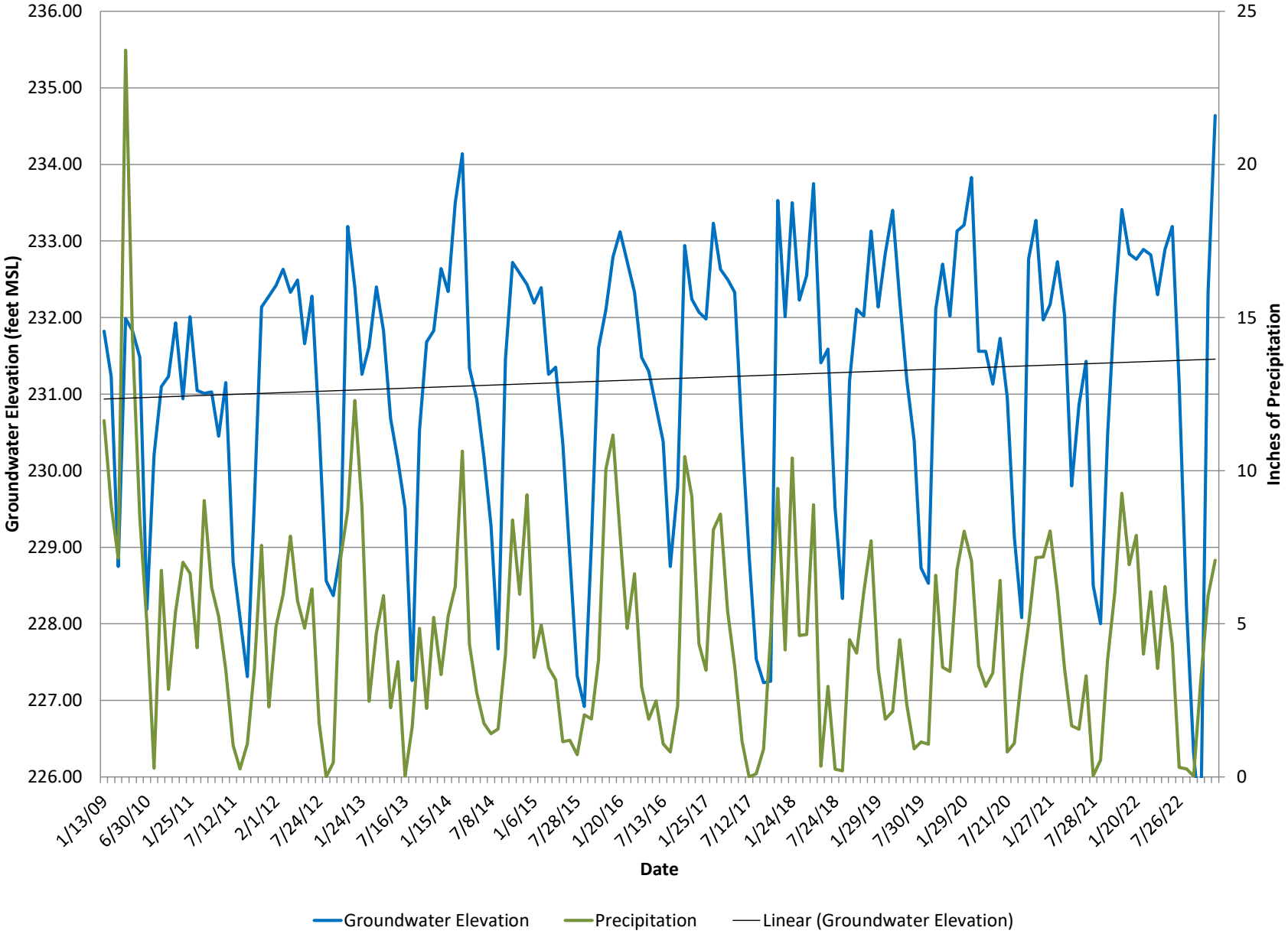



Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-09S
Groundwater Elevation (feet MSL)
246.00
245.00
244.00
243.00
242.00
241.00
240.00
239.00
238.00
237.00
Inches of Precipitation
25
20
15
10
5
0
1/13/09
6/30/10
1/25/11
7/12/11
2/1/12
7/24/12
1/23/13
7/16/13
1/15/14
7/8/14
1/6/15
7/28/15
1/19/16
7/12/16
1/25/17
7/12/17
1/23/18
7/24/18
1/15/19
7/30/19
1/7/20
6/30/20
11/17/20
4/20/21
9/29/21
2/8/22
7/26/22
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

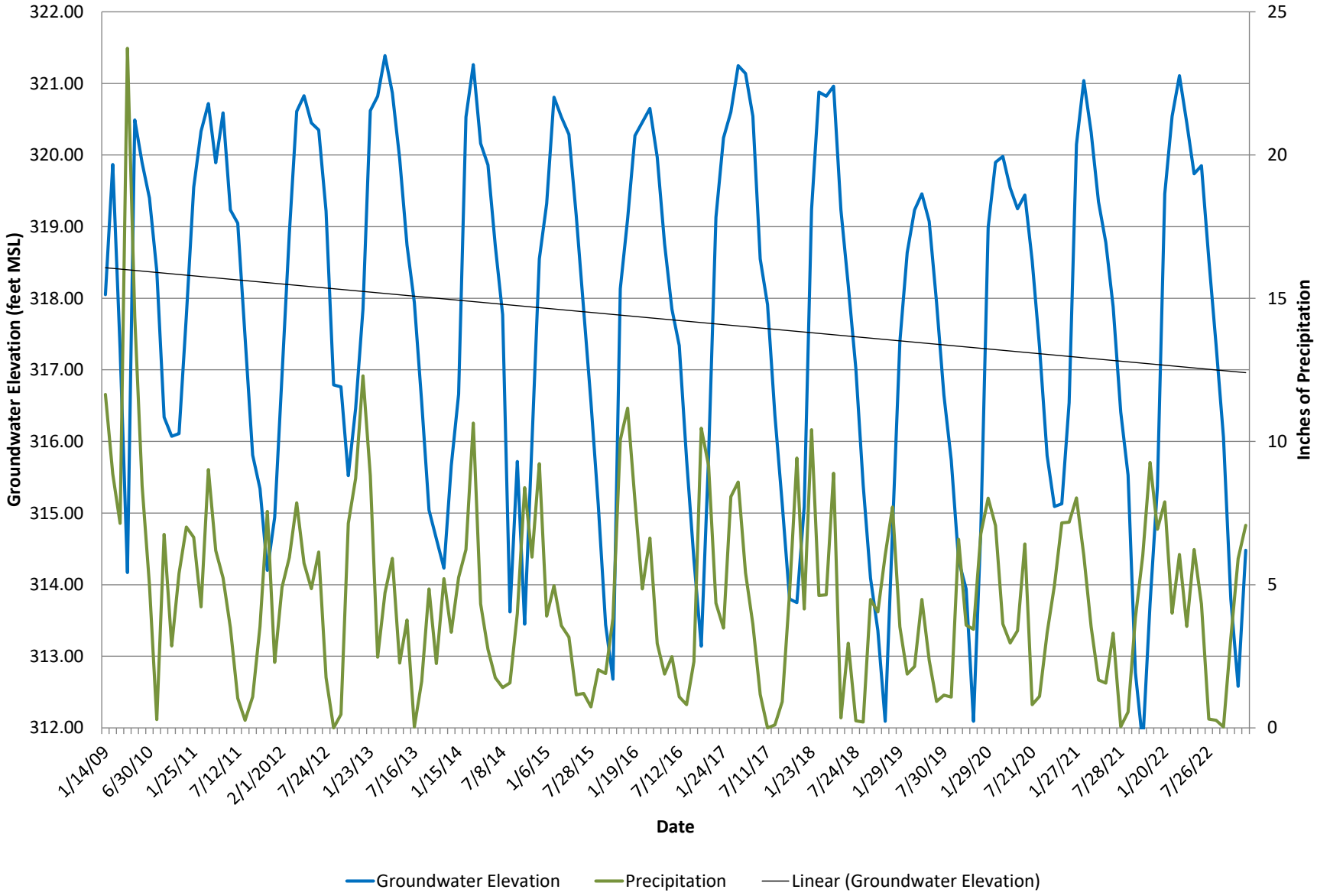
Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-10S

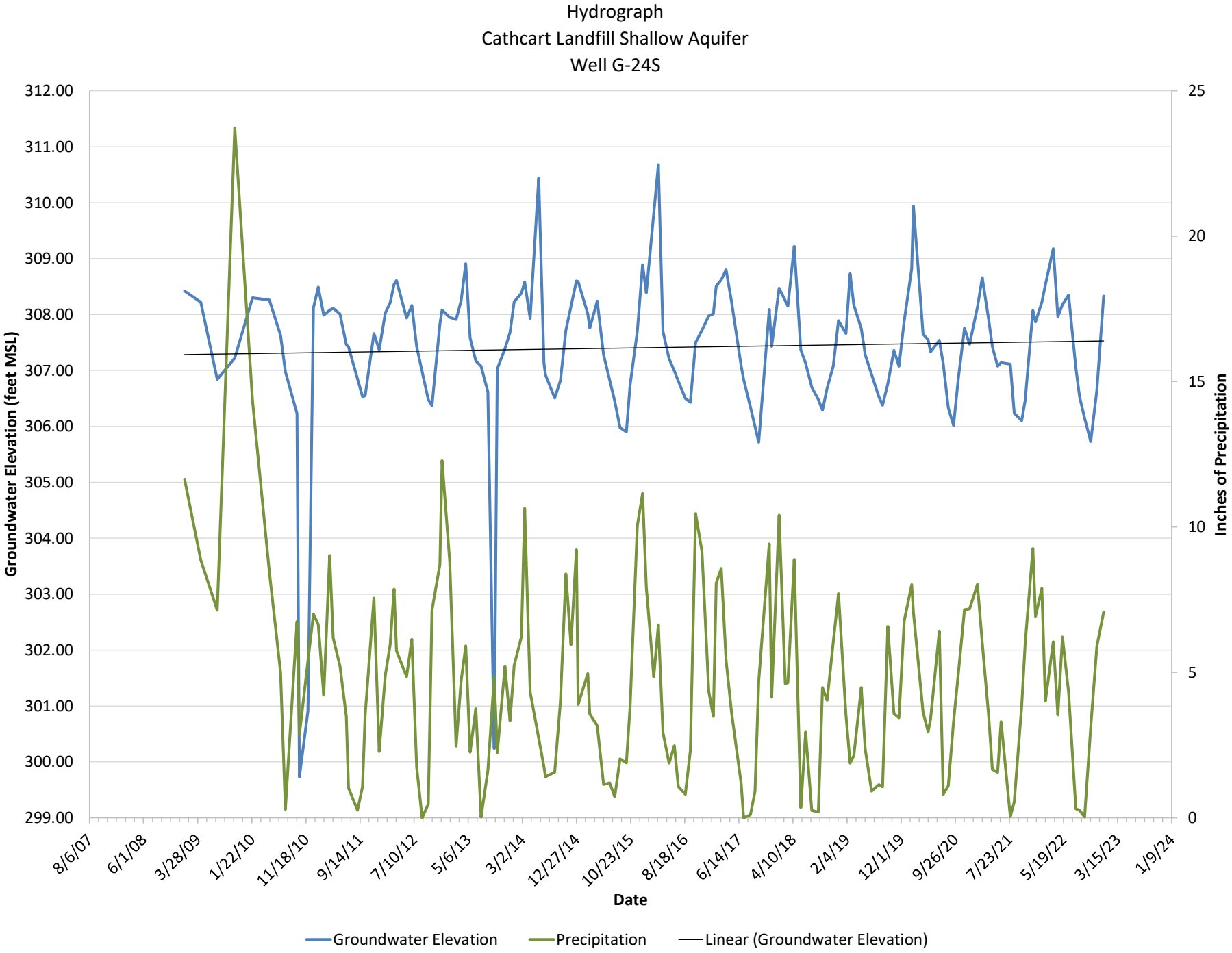


Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-11S



Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-14S




Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-24S
Groundwater Elevation (feet MSL)
312.00
311.00
310.00
309.00
308.00
307.00
306.00
305.00
304.00
303.00
302.00
301.00
300.00
299.00
Inches of Precipitation
25
20
15
10
5
0
8/6/07
6/1/08
3/28/09
1/22/10
11/18/10
9/14/11
7/10/12
5/6/13
3/2/14
12/27/14
10/23/15
8/18/16
6/14/17
4/10/18
2/4/19
12/1/19
9/26/20
7/23/21
5/19/22
3/15/23
1/9/24
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

Site: **Cathcart Landfill - Shallow Aquifer**

Measurement Date: **4/18/2022**

	[**X**] matrix			[**D**] matrix
Well ID	**X-axis**	**Y-axis**	**GW Elev.**	D
G-01A	413.12	3968.37	**219.87**	1
G-04A	213.73	2603.52	**272.77**	1
G-08D1	710.11	4157.06	**199.31**	1
G-09S	723.45	3612.73	**243.95**	1
G-10S	470.79	3595.13	**245.13**	1
G-11S	267.66	3807.05	**232.30**	1
G-14S	1256.30	2341.04	**320.45**	1
G-24S	778.15	538.89	**307.96**	1
9	0	0	0	1
10	0	0	0	1
11	0	0	0	1
12	0	0	0	1
13	0	0	0	1
14	0	0	0	1
15	0	0	0	1
16	0	0	0	1
17	0	0	0	1
18	0	0	0	1
19	0	0	0	1
20	0	0	0	1

Pt

413.12	213.73	710.11	723.45	470.79	267.66	1256.3	778.15
3968.37	2603.52	4157.06	3612.7	3595.13	3807.1	2341	538.89
219.87	272.77	199.31	243.95	245.13	232.3	320.45	307.96

{[P]t[P]}

3721076.974	13833394.8	1286952.1
13833394.8	86048702.88	5974351.5
1286952.058	5974351.539	533561.94

{[P]t[P]}'

1.66783E-06	5.02224E-08	-4.59E-06
5.02224E-08	5.37228E-08	-7.23E-07
-4.58517E-06	-7.22677E-07	2.103E-05

{[P]t[P]}'[P]t

-0.000119823	-0.000763474	0.0004793	0.0003	-0.000158206	-4E-04	0.0007	-9E-05
7.5045E-05	-4.65221E-05	0.000115	5E-05	3.9635E-05	5E-05	-4E-05	-2E-04
-0.000139193	0.002873638	-0.00207	-8E-04	0.000397217	0.0009	-7E-04	0.0025

{[P]t[P]}'[P]t [D] = [**A**] matrix

A	-6.3887E-05
B	9.00817E-05
C	0.002972063

Groundwater Gradient:	**0.0372**	
Conductivity (ft/day):	**0.001**	
Effective porosity:	**10%**	
GW velocity:	**0.000372**	**ft/day**
	0.136	**ft/year**
Flow direction:	**125.34**	**degrees from the positive x-axis**

This spreadsheet is from the paper, "A Spreadsheet Method For Estimating Hydraulic Gradient With Heads From Multiple Wells" submitted to Ground Water, March, 2002. To use the program, enter the coordinates for the well locations in the columns labeled x and y (part of the [**X**] matrix), and the water levels in the z column. The matrices are automatically updated and the gradient magnitude and direction are calculated in cell H30 and H35.

Site: **Cathcart Landfill - Shallow Aquifer**

Measurement Date: **10/18/2022**

	[**X**] matrix			[**D**] matrix
Well ID	**X-axis**	**Y-axis**	**GW Elev.**	D
G-08D1	710.11	4157.06	**191.30**	1
G-09S	723.45	3612.73	**241.13**	1
G-10S	470.79	3595.13	**241.52**	1
G-11S	267.66	3807.05	**225.29**	1
G-14S	1256.30	2341.04	**313.80**	1
G-24S	778.15	538.89	**305.73**	1
7	0	0	0	1
8	0	0	0	1
9	0	0	0	1
10	0	0	0	1
11	0	0	0	1
12	0	0	0	1
13	0	0	0	1
14	0	0	0	1
15	0	0	0	1
16	0	0	0	1
17	0	0	0	1
18	0	0	0	1
19	0	0	0	1
20	0	0	0	1

Pt

710.11	723.45	470.79	267.66	1256.3	778.15	0	0
4157.06	3612.73	3595.13	3807.1	2341.04	538.89	0	0
191.3	241.13	241.52	225.29	313.8	305.73	0	0

{[P]t[P]}

3504728.327	11637531.46	1116426.6
11637531.46	63522426.03	4291742.4
1116426.603	4291742.447	395768.13

{[P]t[P]}'

2.9203E-06	8.06649E-08	-9.11E-06
8.06649E-08	6.11126E-08	-8.9E-07
-9.11263E-06	-8.90258E-07	3.789E-05

{[P]t[P]}'[P]t

0.000665814	0.00020678	-0.000536	-1E-03	0.000998064	-5E-04	0	0
0.000141023	6.44723E-05	4.267E-05	5E-05	-3.49568E-05	-2E-04	0	0
-0.002924104	-0.000673179	0.0016597	0.0027	-0.001643486	0.004	0	0

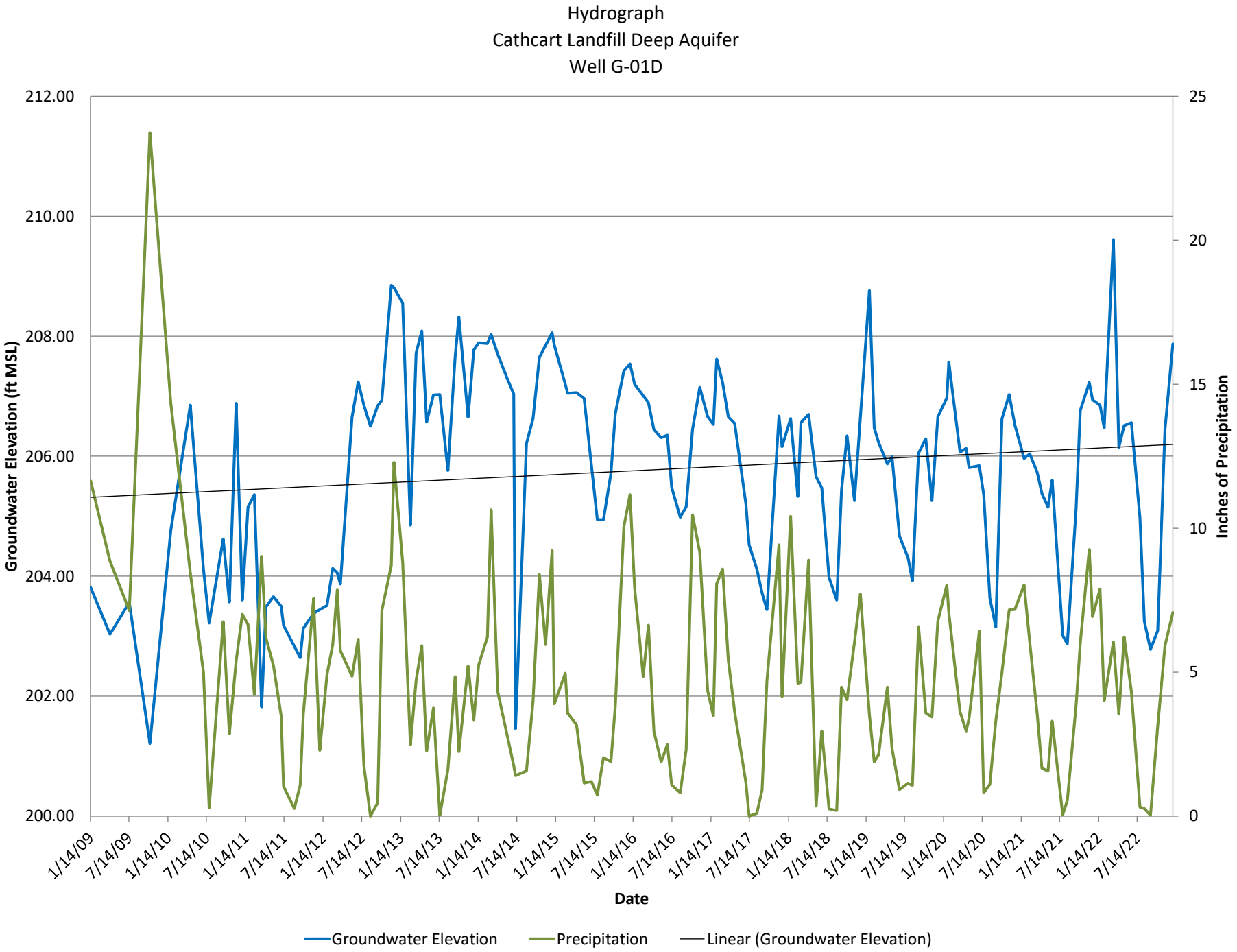
{[P]t[P]}'[P]t [D] = [**A**] matrix

A	-9.97281E-05
B	9.04142E-05
C	0.00313839

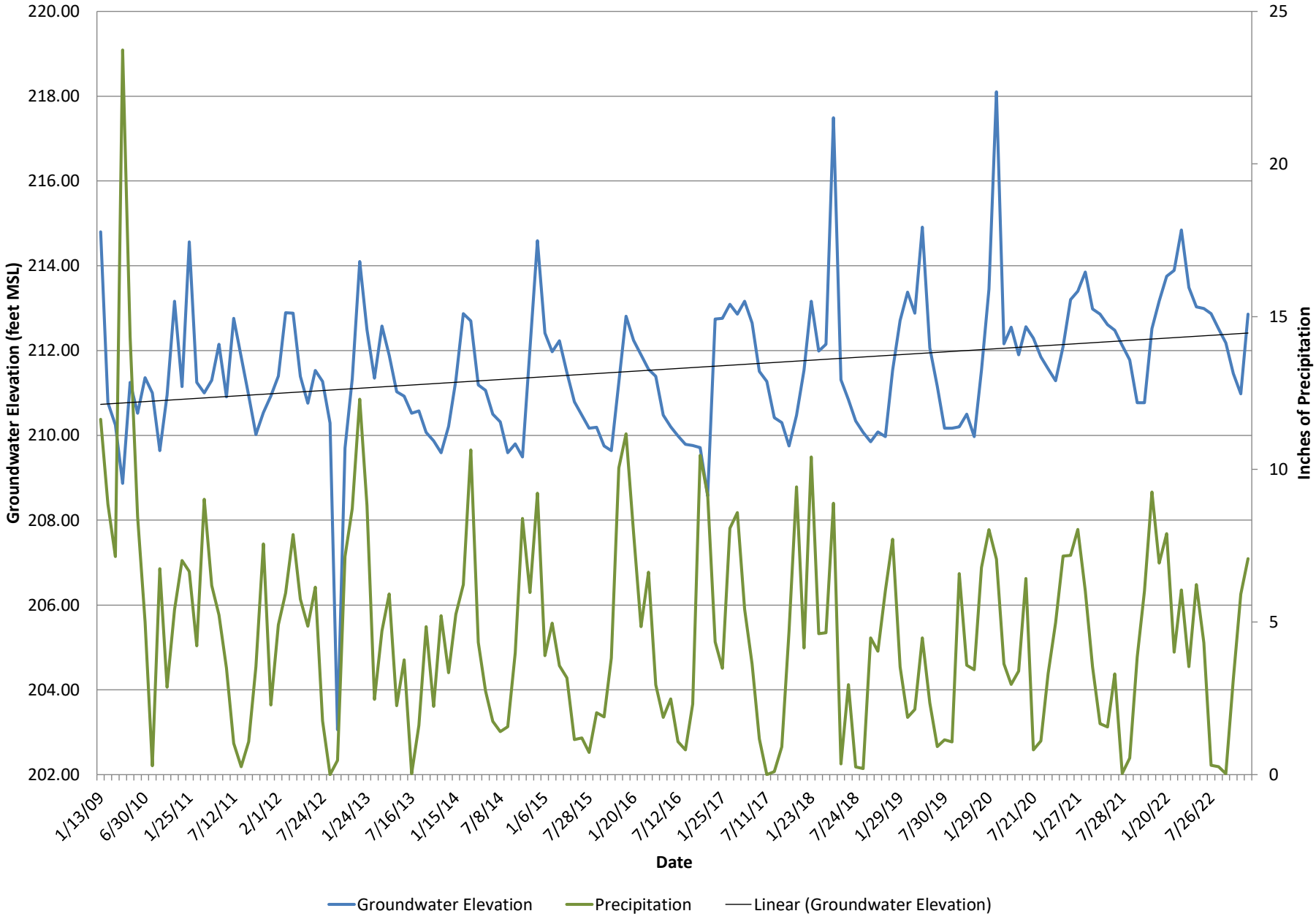
Groundwater Gradient:	**0.0429**	
Conductivity (ft/day):	**0.001**	
Effective porosity:	**10%**	
GW velocity:	**0.000429**	**ft/day**
	0.157	**ft/year**
Flow direction:	**137.80**	**degrees from the positive x-axis**

This spreadsheet is from the paper, "A Spreadsheet Method For Estimating Hydraulic Gradient With Heads From Multiple Wells" submitted to Ground Water, March, 2002. To use the program, enter the coordinates for the well locations in the columns labeled x and y (part of the [**X**] matrix), and the water levels in the z column. The matrices are automatically updated and the gradient magnitude and direction are calculated in cell H30 and H35.

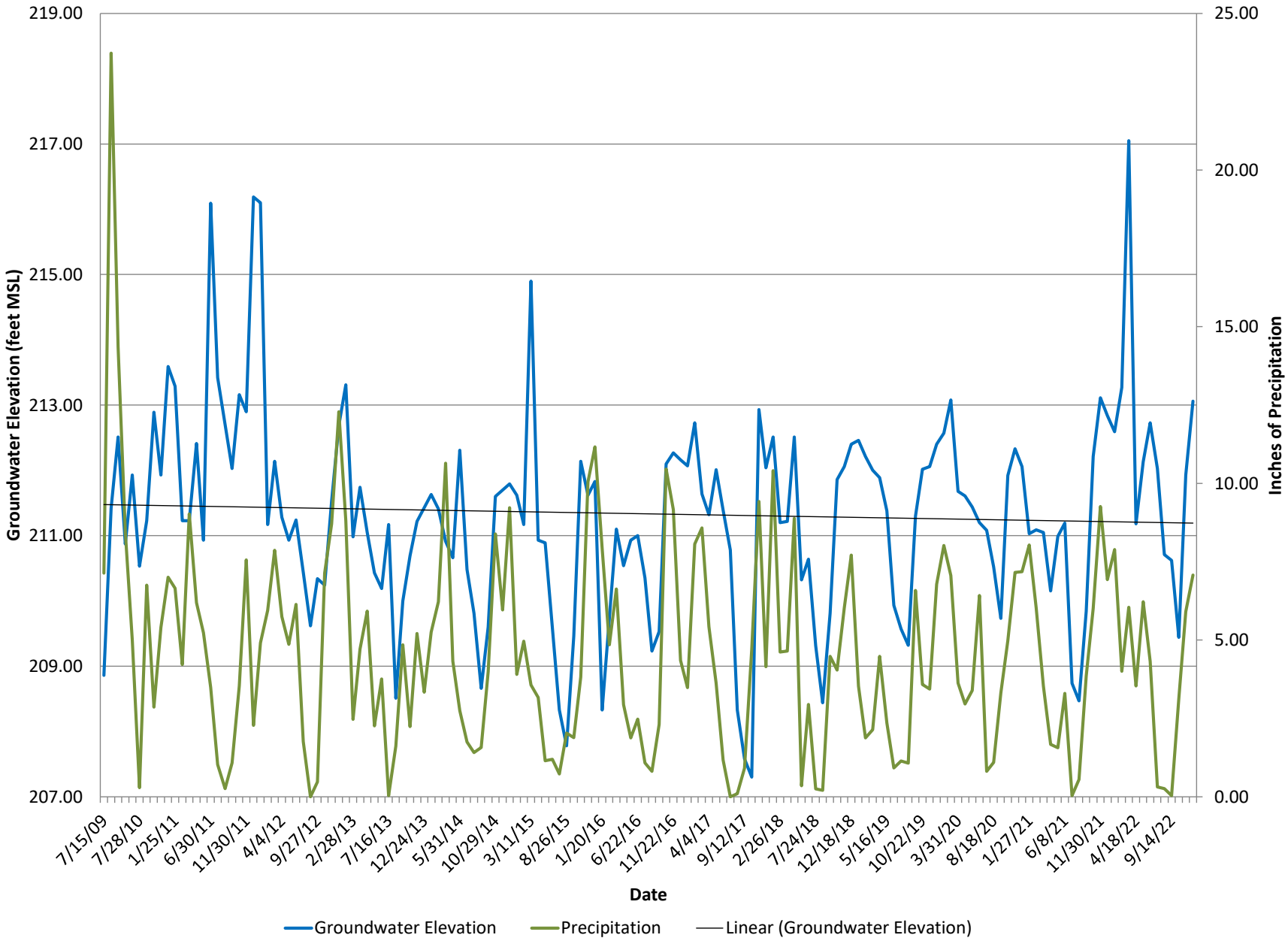
Deep Wells

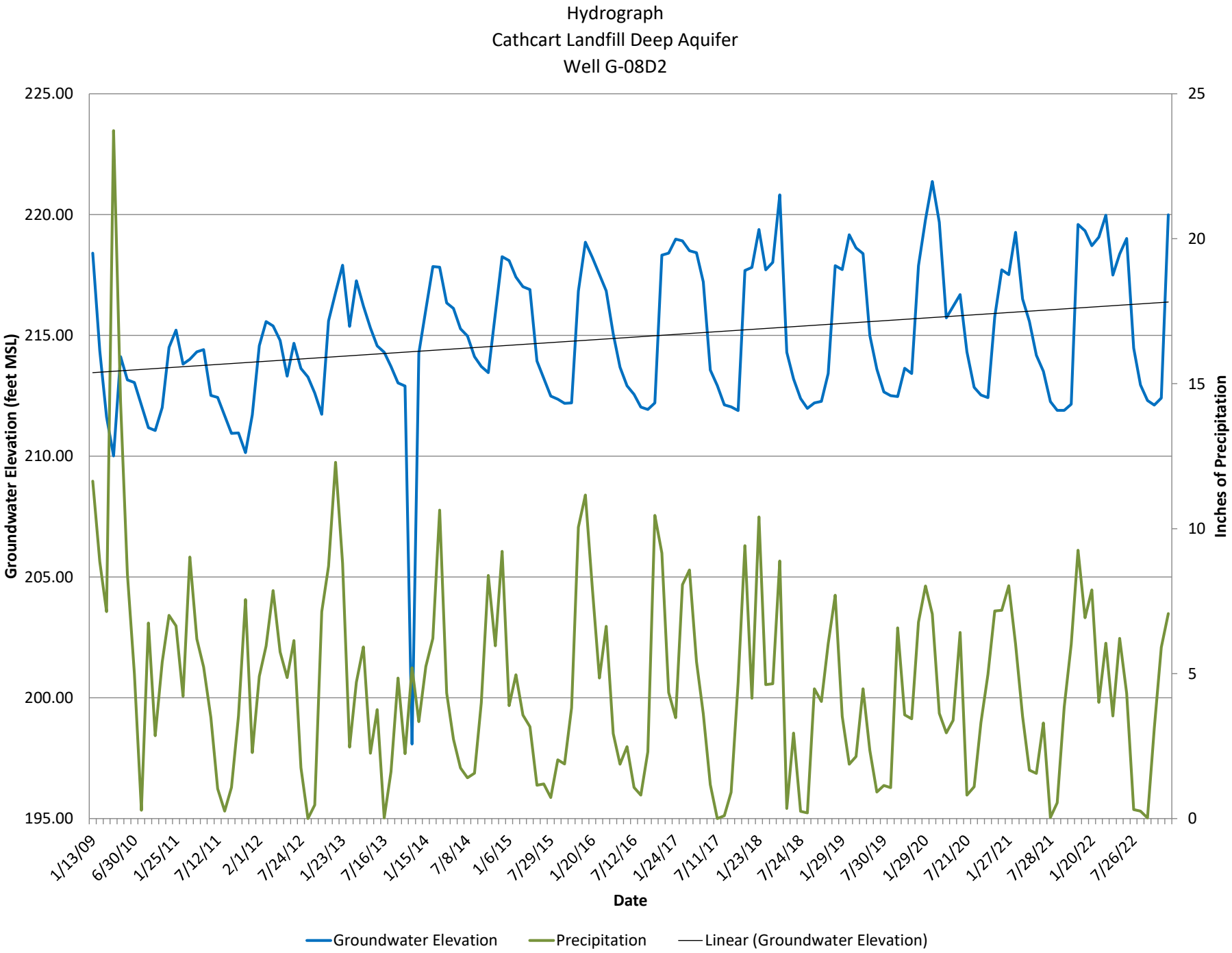

Hydrograph
Cathcart Landfill Deep Aquifer
Well G-01D
Groundwater Elevation (ft MSL)
212.00
210.00
208.00
206.00
204.00
202.00
200.00
Inches of Precipitation
25
20
15
10
5
0
1/14/09
7/14/09
1/14/10
7/14/10
1/14/11
7/14/11
1/14/12
7/14/12
1/14/13
7/14/13
1/14/14
7/14/14
1/14/15
7/14/15
1/14/16
7/14/16
1/14/17
7/14/17
1/14/18
7/14/18
1/14/19
7/14/19
1/14/20
7/14/20
1/14/21
7/14/21
1/14/22
7/14/22
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

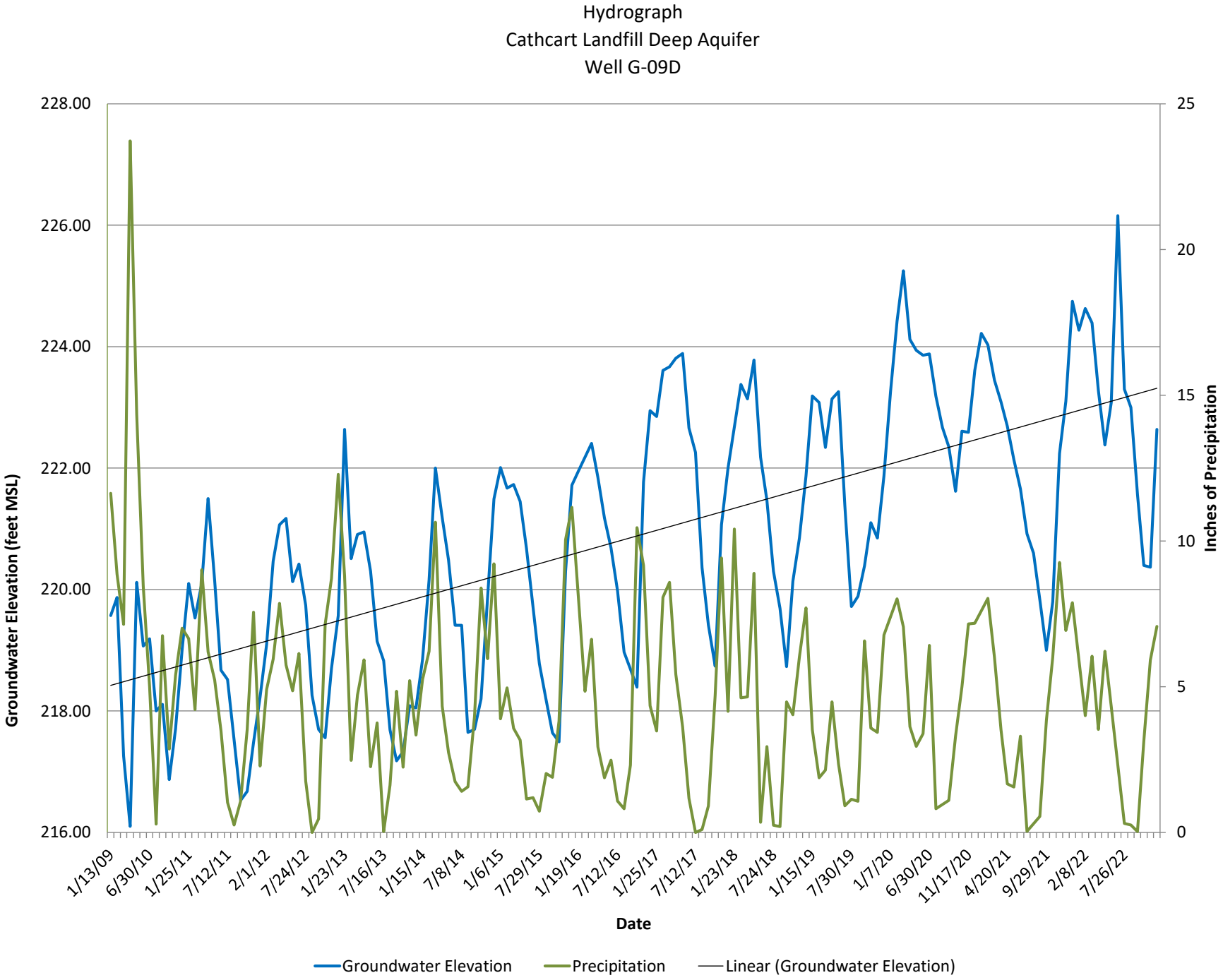
Hydrograph
Cathcart Landfill Deep Aquifer
Well G-02D

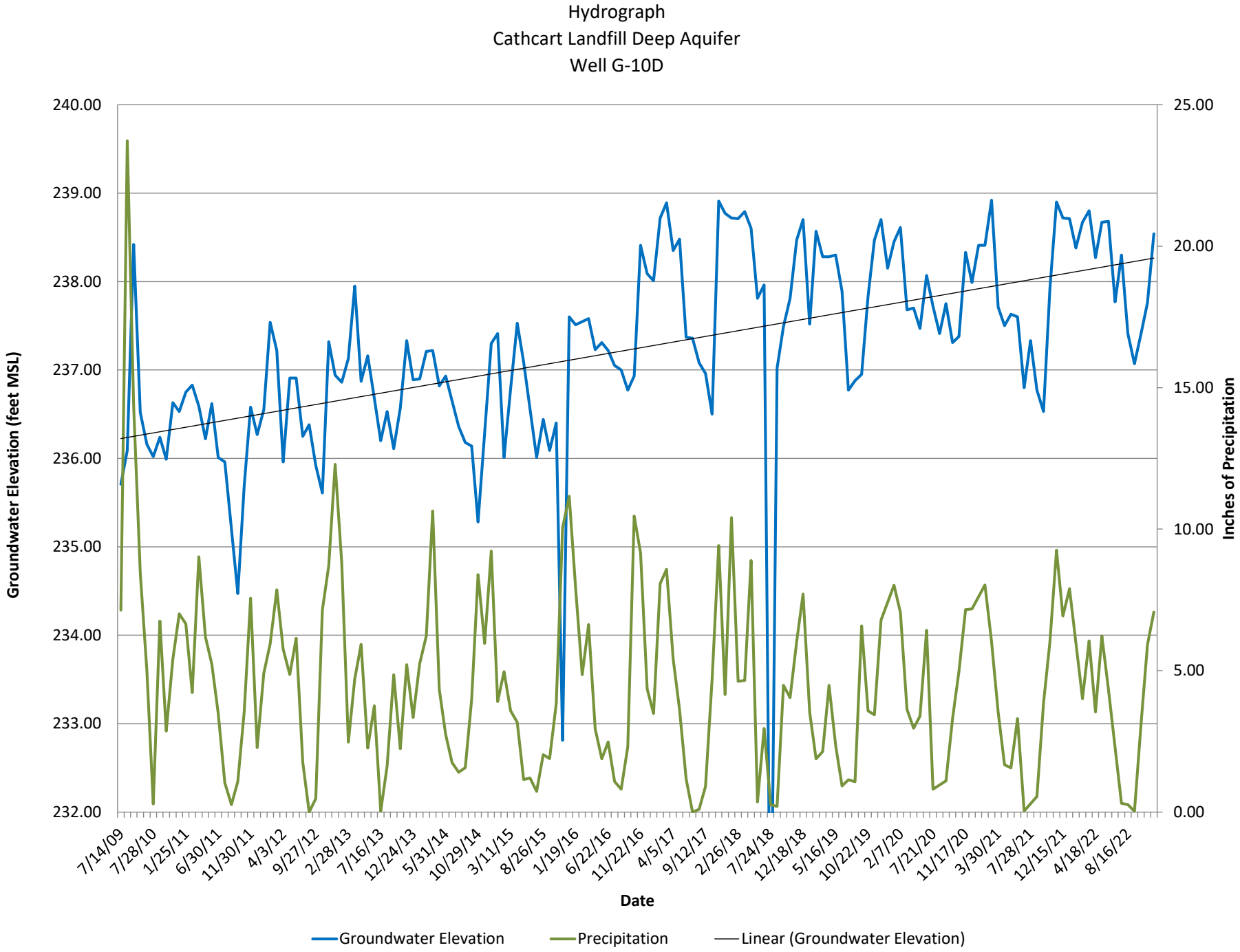


Hydrograph
Cathcart Landfill Deep Aquifer
Well G-06B

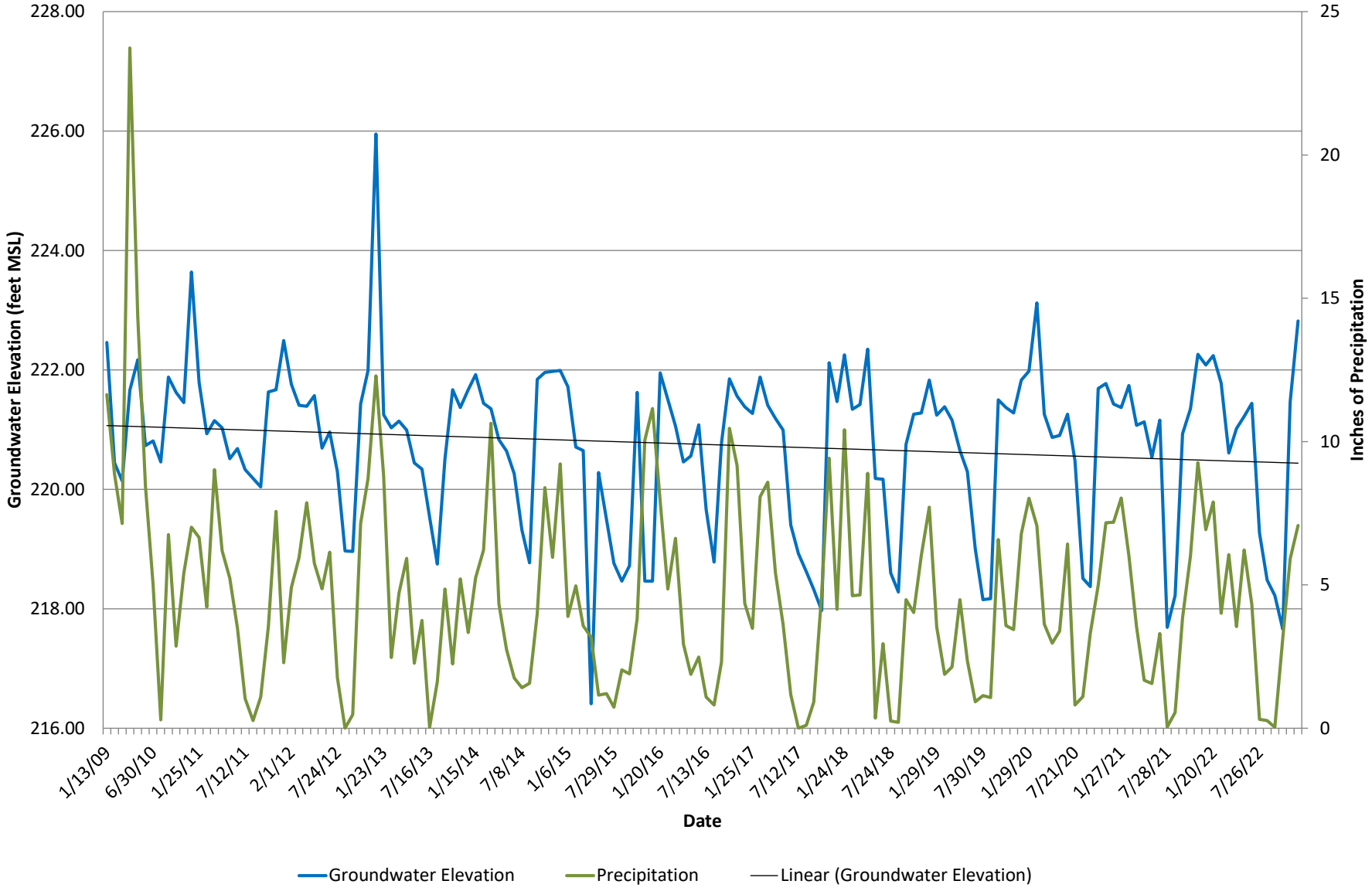


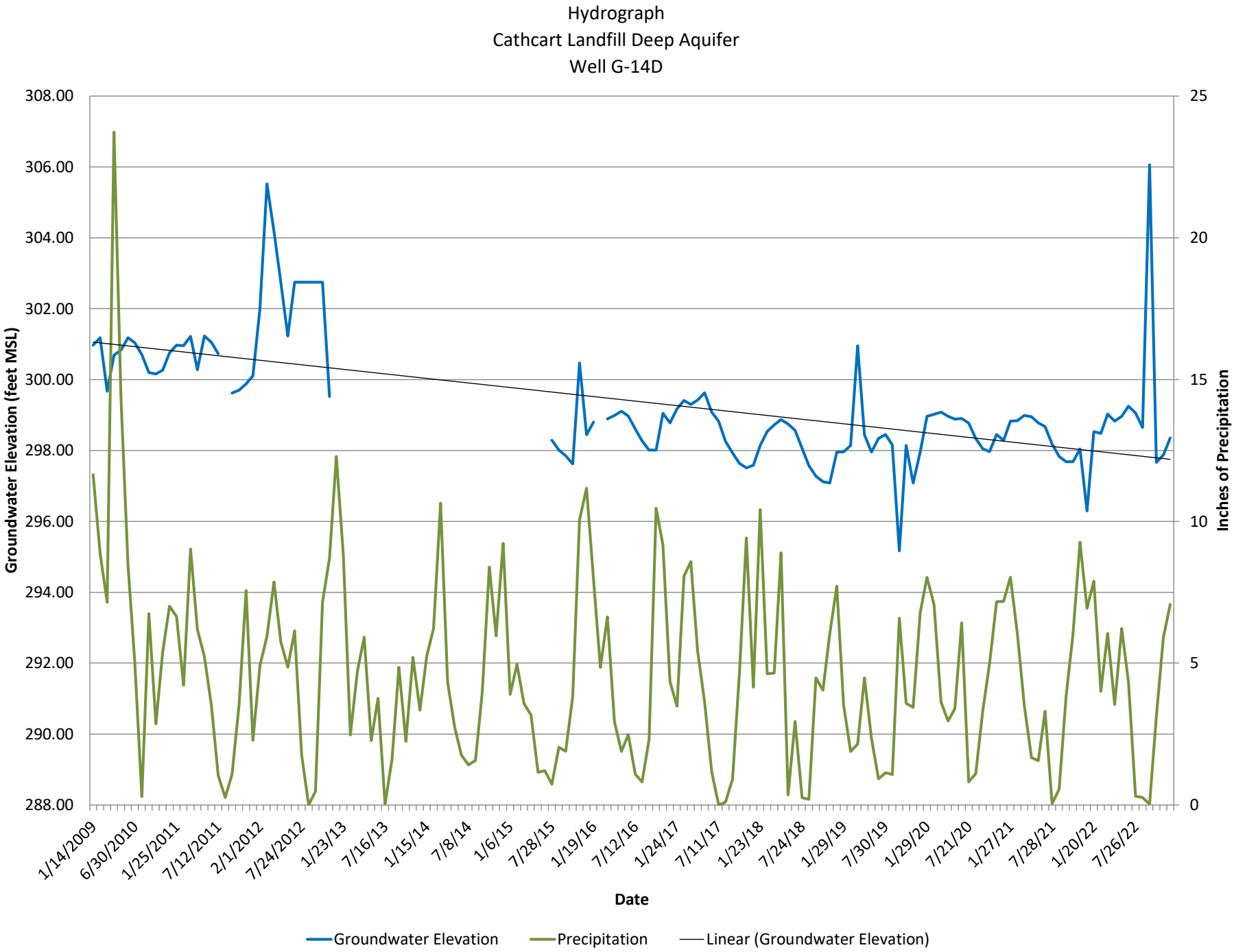

Hydrograph
Cathcart Landfill Deep Aquifer
Well G-08D2
Groundwater Elevation (feet MSL)
225.00
220.00
215.00
210.00
205.00
200.00
195.00
Inches of Precipitation
25
20
15
10
5
0
1/13/09
6/30/10
1/25/11
7/12/11
2/1/12
7/24/12
1/23/13
7/16/13
1/15/14
7/8/14
1/6/15
7/29/15
1/20/16
7/12/16
1/24/17
7/11/17
1/23/18
7/24/18
1/29/19
7/30/19
1/29/20
7/21/20
1/27/21
7/28/21
1/20/22
7/26/22
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)


Hydrograph
Cathcart Landfill Deep Aquifer
Well G-09D
228.00
226.00
224.00
222.00
220.00
218.00
216.00
Groundwater Elevation (feet MSL)
25
20
15
10
5
0
Inches of Precipitation
1/13/09
6/30/10
1/25/11
7/12/11
2/1/12
7/24/12
1/23/13
7/16/13
1/15/14
7/8/14
1/6/15
7/29/15
1/19/16
7/12/16
1/25/17
7/12/17
1/23/18
7/24/18
1/15/19
7/30/19
1/7/20
6/30/20
11/17/20
4/20/21
9/29/21
2/8/22
7/26/22
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

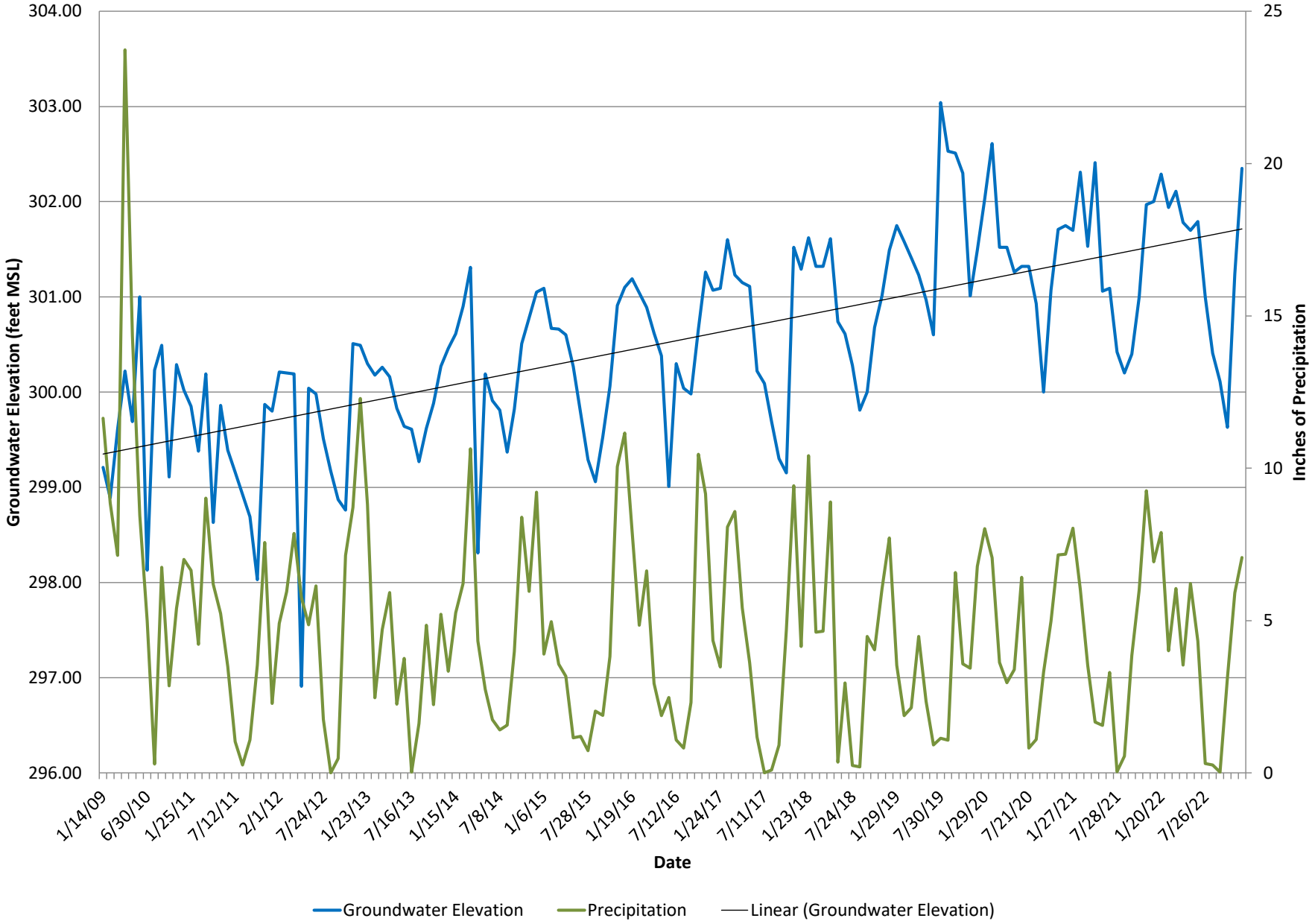

Hydrograph
Cathcart Landfill Deep Aquifer
Well G-10D
Groundwater Elevation (feet MSL)
240.00
239.00
238.00
237.00
236.00
235.00
234.00
233.00
232.00
Inches of Precipitation
25.00
20.00
15.00
10.00
5.00
0.00
7/14/09
7/28/10
1/25/11
6/30/11
11/30/11
4/3/12
9/27/12
2/28/13
7/16/13
12/24/13
5/31/14
10/29/14
3/11/15
8/26/15
1/19/16
6/22/16
11/22/16
4/5/17
9/12/17
2/26/18
7/24/18
12/18/18
5/16/19
10/22/19
2/7/20
7/21/20
11/17/20
3/30/21
7/28/21
12/15/21
4/18/22
8/16/22
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

Hydrograph
Cathcart Landfill Deep Aquifer
Well G-13D




Hydrograph
Cathcart Landfill Deep Aquifer
Well G-14D
Groundwater Elevation (feet MSL)
Inches of Precipitation
308.00
306.00
304.00
302.00
300.00
298.00
296.00
294.00
292.00
290.00
288.00
25
20
15
10
5
0
1/14/2009
6/30/2010
1/25/2011
7/12/2011
2/1/2012
7/24/2012
1/23/13
7/16/13
1/15/14
7/8/14
1/6/15
7/28/15
1/19/16
7/12/16
1/24/17
7/11/17
1/23/18
7/24/18
1/29/19
7/30/19
1/29/20
7/21/20
1/27/21
7/28/21
1/20/22
7/26/22
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

Hydrograph
Cathcart Landfill Deep Aquifer
Well G-24D



Site: **Cathcart Landfill - Deep Aquifer**

Measurement Date: **4/18/2022**

	[**X**] matrix			[**D**] matrix
Well ID	**X-axis**	**Y-axis**	**GW Elev.**	D
G-01D	431.12	3977.30	**206.15**	1
G-02D	733.79	3884.79	**213.49**	1
G-06B	488.43	3765.90	**211.18**	1
G-08D2	728.12	4156.36	**217.50**	1
G-09D	739.20	3614.85	**223.28**	1
G-10D	495.97	3593.41	**238.27**	1
G-13D	220.31	3939.18	**221.02**	1
G-14D	1266.00	2337.53	**298.83**	1
G-24D	780.99	528.85	**301.78**	1
10	0	0	0	1
11	0	0	0	1
12	0	0	0	1
13	0	0	0	1
14	0	0	0	1
15	0	0	0	1
16	0	0	0	1
17	0	0	0	1
18	0	0	0	1
19	0	0	0	1
20	0	0	0	1

Pt

431.12	733.79	488.43	728.1	739.2	496	220.3	1266	781
3977.3	3884.79	3765.9	4156	3614.85	3593	3939	2338	528.9
206.15	213.49	211.18	217.5	223.28	238.3	221	298.8	301.8

{[P]t[P]}

4546675.575	18125521.98	1452967
18125521.98	109608443.7	6740659
1452967.169	6740658.789	515826

{[P]t[P]}'

2.38371E-06	9.54009E-08	-7.96E-06
9.54009E-08	5.02789E-08	-9.26E-07
-7.96105E-06	-9.25753E-07	3.65E-05

{[P]t[P]}'[P]t

-0.000234068	0.00042015	-0.000158	4E-04	0.000329355	-4E-04	-9E-04	9E-04	-5E-04
5.02596E-05	6.76883E-05	4.04E-05	8E-05	4.5569E-05	7E-06	1E-05	-4E-05	-2E-04
0.00040219	-0.001654119	0.000325	-0.002	-0.001090341	0.001	0.003	-0.001	0.004

{[P]t[P]}'[P]t [D] = [**A**] matrix

A	-0.000100627
B	8.63096E-05
C	0.003287783

Groundwater Gradient:	**0.0403**	
Conductivity (ft/day):	**0.029**	
Effective porosity:	**10%**	
GW velocity:	**0.0117**	**ft/day**
	4.27	**ft/year**
Flow direction:	**139.38**	**degrees from the positive x-axis**

This spreadsheet is from the paper, "A Spreadsheet Method For Estimating Hydraulic Gradient With Heads From Multiple Wells" submitted to Ground Water, March, 2002. To use the program, enter the coordinates for the well locations in the columns labeled x and y (part of the [**X**] matrix), and the water levels in the z column. The matrices are automatically updated and the gradient magnitude and direction are calculated in cell H30 and H35.

Site: **Cathcart Landfill - Deep Aquifer**

Measurement Date: **10/18/2022**

	[**X**] matrix			[**D**] matrix
Well ID	**X-axis**	**Y-axis**	**GW Elev.**	D
G-01D	431.12	3977.30	**203.09**	1
G-02D	733.79	3884.79	**211.46**	1
G-06B	488.43	3765.90	**209.44**	1
G-08D2	728.12	4156.36	**212.11**	1
G-09D	739.20	3614.85	**220.40**	1
G-10D	495.97	3593.41	**237.41**	1
G-13D	220.31	3939.18	**217.66**	1
G-14D	1266.00	2337.53	**297.66**	1
G-24D	780.99	528.85	**299.63**	1
10	0	0	0	1
11	0	0	0	1
12	0	0	0	1
13	0	0	0	1
14	0	0	0	1
15	0	0	0	1
16	0	0	0	1
17	0	0	0	1
18	0	0	0	1
19	0	0	0	1
20	0	0	0	1

Pt

431.12	733.79	488.43	728.1	739.2	496	220.3	1266	781
3977.3	3884.79	3765.9	4156	3614.85	3593	3939	2338	528.9
203.09	211.46	209.44	212.1	220.4	237.4	217.7	297.7	299.6

{[P]t[P]}

4546675.575	18125521.98	1438928
18125521.98	109608443.7	6661038
1438927.893	6661037.998	505511.8

{[P]t[P]}'

2.38735E-06	9.12836E-08	-8E-06
9.12836E-08	4.92839E-08	-9.09E-07
-7.99838E-06	-9.09242E-07	3.67E-05

{[P]t[P]}'[P]t

-0.000232092	0.000415097	-0.000165	4E-04	0.000331866	-4E-04	-9E-04	9E-04	-5E-04
5.07131E-05	6.61723E-05	3.98E-05	8E-05	4.52338E-05	7E-06	2E-05	-4E-05	-2E-04
0.000394159	-0.001635197	0.000361	-0.002	-0.001104695	0.001	0.003	-0.001	0.004

{[P]t[P]}'[P]t [D] = [**A**] matrix

A	-0.000100349
B	8.82127E-05
C	0.00329501

Groundwater Gradient:	**0.0405**	
Conductivity (ft/day):	**0.029**	
Effective porosity:	**10%**	
GW velocity:	**0.0118**	**ft/day**
	4.29	**ft/year**
Flow direction:	**138.68**	**degrees from the positive x-axis**

This spreadsheet is from the paper, "A Spreadsheet Method For Estimating Hydraulic Gradient With Heads From Multiple Wells" submitted to Ground Water, March, 2002. To use the program, enter the coordinates for the well locations in the columns labeled x and y (part of the [**X**] matrix), and the water levels in the z column. The matrices are automatically updated and the gradient magnitude and direction are calculated in cell H30 and H35.

Appendix B

Groundwater Analytical Summary Tables

Shallow Wells

Groundwater Analytical Summary - Shallow Wells: First Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09S					G-10S				
						1/26/22	D	V	Tr	Ch	1/26/22	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)															
Alkalinity (as CaCO3)	nonpar	67	67	230	--	340		V	I	N	480		V	I	N
Ammonia Nitrogen	lognor	67	39	12.5265	--	0.029					0.28			I	N
Bicarbonate	nonpar	67	67	200	--	340		V	I	N	480		V	I	N
Calcium, Dissolved	normal	64	64	23.7546	--	80.6			D	N	106		V	D	N
Chemical Oxygen Demand	nonpar	67	10	18	--	10	U				10	U			
Chloride	lognor	67	66	18.3	250	3.70			D	N	9.28			D	N
Conductivity (umhos/cm)	normal	66	66	546.7776	700	890		V	D	N	1300		V		
Magnesium, Dissolved	lognor	66	57	50.1666	--	30.5			D	N	25.1			D	N
Nitrate Nitrogen (mg-N/L)	lognor	67	62	1.3	10	0.01	U				0.01	U			
Nitrite Nitrogen (mg-N/L)	lognor	67	35	0.021	1	0.003					0.004				
pH (std units)	nonpar	68	68	6.00-9.39	6.5-8.5	5.95			I	N	6.55				
Potassium, Dissolved	lognor	66	60	2.6282	--	4.66		V	D	N	3.69		V		
Sodium, Dissolved	normal	67	67	121.1148	20	94.3					178		V		
Sulfate	lognor	66	66	339.0862	250	178			D	N	301			D	N
Total Dissolved Solids	normal	67	67	395.6869	500	620		V	D	N	940		V	D	N
Total Organic Carbon	nonpar	67	62	14	--	7.8			I	N	11				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony	nonpar	65	28	0.0006	0.006	0.0003	U				0.0003	U			
Arsenic	nonpar	67	67	0.004	0.00005	0.00106					0.00748		V		
Barium	lognor	66	51	5.1339	1	0.005	U				0.0063				
Beryllium	nonpar	61	0	0.0005	0.004	0.005	U				0.005	U			
Cadmium	nonpar	66	27	0.001	0.005	0.00005	U				0.00005	U			
Chromium	nonpar	67	24	0.015	0.05	0.01	U				0.01	U			
Cobalt	nonpar	67	4	0.003	--	0.01	U				0.01	U			
Copper	lognor	66	34	0.115	1	0.02	U				0.02	U			
Iron	lognor	67	47	9.783	0.3	0.079					10.8		V		
Lead	nonpar	67	30	0.0027	0.05	0.0001	U				0.0001	U			
Manganese	lognor	67	49	8.2026	0.05	0.024					3.32			D	N
Nickel	nonpar	67	18	0.038	0.1	0.019					0.01	U			
Selenium	nonpar	63	1	0.0003	0.01	0.0005	U				0.0005	U			
Silver	nonpar	65	2	0.0002	0.05	0.00005	U				0.00005	U			
Thallium	nonpar	67	3	0.00009	0.002	0.00005	U				0.00005	U			
Vanadium	nonpar	67	0	0.01	--	0.01	U				0.01	U			
Zinc	nonpar	67	30	0.03	5	0.01	U				0.01	U			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony					0.006	0.0003	U				0.0003	U			
Arsenic					0.00005	0.000818					0.00628				
Barium					1	0.0061					0.0065				
Beryllium					0.004	0.005	U				0.005	U			
Cadmium					0.005	0.00005	U				0.00005	U			
Chromium					0.05	0.01	U				0.01	U			
Cobalt					--	0.01	U				0.01	U			
Copper					1	0.01	U				0.01	U			
Iron					0.3	0.379					11.6				
Lead					0.05	0.000455					0.0001	U			
Manganese					0.05	0.10					3.59				
Nickel					0.1	0.023					0.01	U			
Selenium					0.01	0.00038					0.0003	U			
Silver					0.05	0.0007					0.0001	U			
Thallium					0.002	0.0001	U				0.0001	U			
Vanadium					--	0.02	U				0.02	U			
Zinc					5	0.01	U				0.01	U			
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260/8260 SIM (µg/L)															
1,1,1-Trichloroethane					200	1	U				1	U			
1,1,2,2-Tetrachloroethane					--	1	U				1	U			
1,1,2-Trichloroethane					--	1	U				1	U			
1,1-Dichloroethane					1	1	U				1	U			
1,1-Dichloroethylene					--	1	U				1	U			
1,2,3-Trichloropropane					--	1	U				1	U			
1,2-Dibromo-3-chloropropane					0.2	0.05	U				0.05	U			
1,2-Dibromoethane					0.001	0.01	U				0.01	U			
1,2-Dichlorobenzene					--	1	U				1	U			

Groundwater Analytical Summary - Shallow Wells: First Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09S					G-10S				
						1/26/22	D	V	Tr	Ch	1/26/22	D	V	Tr	Ch
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260/8260 SIM (µg/L) (cont.)															
1,2-Dichloroethane					0.5	0.03	U				0.03	U			
1,2-Dichloropropane					0.6	0.02	U				0.02	U			
1,4-Dichlorobenzene					4	1	U				1	U			
2-Butanone					--	5	U				5	U			
2-Hexanone					--	5	U				5	U			
4-Methyl-2-Pentanone (MIBK)					--	5	U				5	U			
Acetone					--	5	U				5	U			
Acrylonitrile					0.07	0.03	U				0.03	U			
Benzene					1	1	U				1	U			
Bromodichloromethane					0.3	0.02	U				0.02	U			
Bromoform					5	1	U				1	U			
Bromomethane					--	1	U				1	U			
Carbon Disulfide					--	1	U				1	U			
Carbon Tetrachloride					0.3	0.02	U				0.02	U			
Chlorobenzene					--	0.03	U				0.03	U			
Chlorodibromomethane					0.5	0.5	U				0.5	U			
Chloroethane					--	1	U				1	U			
Chloroform					7	1	U				1	U			
Chloromethane					--	2	U				2	U			
cis-1,2-Dichloroethene					--	0.02	U				0.02	U			
cis-1,3-Dichloropropene					0.2	0.03	U				0.03	U			
Dibromomethane					--	0.02	U				0.02	U			
Ethyl Benzene					--	1	U				1	U			
m,p-Xylene					--	1	U				1	U			
Methyl Iodide					--	1	U				1	U			
Methylene Chloride					5	2	U				2	U			
o-Xylene					--	1	U				1	U			
Styrene					--	1	U				1	U			
Tetrachloroethylene					0.8	0.02	U				0.02	U			
Toluene					--	2	U				2	U			
trans-1,2-Dichloroethene					--	1	U				1	U			
trans-1,3-Dichloropropene					0.2	0.02	U				0.02	U			
trans-1,4-Dichloro-2-butene					--	5	U				5	U			
Trichlorethene (1,1,2-Trichloroethylene)					3	1	U				1	U			
Trichlorofluoromethane					--	1	U				1	U			
Vinyl Acetate					--	5	U				5	U			
Vinyl Chloride					0.02	0.01	U				0.01	U			

D: U = Indicates compound was not detected at the given reporting limit; X indicates that the compound was detected in the trip blank and contamination is suspected.

V: E= Exceedance, waiting verification based on subsequent lab data; V= Exceedance verified based on previous lab data; P=Passed, previous exceedance not verified based on current lab data.

Tr: I=increasing Trend, D=Decreasing Trend;

Ch: Y indicates a change in trend from previous quarter; N means no change in trend.

Values in **purple** exceed the prediction limit; indicates that a value exceeded the Groundwater Standards

The groundwater standards listed are based on the Washington Administrative Code (WAC) 173-200 groundwater limits as modified by the TMS 91-11 standards - the most restrictive of the two is used.

B = Methylene chloride was measured in the lab blank at a similar concentration - contamination during analysis suspected.

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Alkalinity (as caco3)	mg/L	G-01A	10/19/2021		35.0000		230.0000
Ammonia nitrogen	mg-N/L	G-01A	10/19/2021	ND	0.0200		13.3456
Bicarbonate	mg/L	G-01A	10/19/2021		35.0000		200.0000
Chemical oxygen demand	mg/L	G-01A	10/19/2021	ND	10.0000		18.0000
Chloride	mg/L	G-01A	10/19/2021		4.6800		18.7097
Conductivity	umhos/cm	G-01A	10/19/2021		190.0000		545.0587
Dissolved antimony	mg/L	G-01A	10/19/2021	ND	0.0003		0.0006
Dissolved arsenic	mg/L	G-01A	10/19/2021		0.0002		0.0035
Dissolved barium	mg/L	G-01A	10/19/2021	ND	0.0050		5.1040
Dissolved beryllium	mg/L	G-01A	10/19/2021	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-01A	10/19/2021	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-01A	10/19/2021		19.0000		23.9048
Dissolved chromium	mg/L	G-01A	10/19/2021	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-01A	10/19/2021	ND	0.0100		0.0030
Dissolved copper	mg/L	G-01A	10/19/2021	ND	0.0200		43.4689
Dissolved iron	mg/L	G-01A	10/19/2021		0.0230		9.3484
Dissolved lead	mg/L	G-01A	10/19/2021	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-01A	10/19/2021		5.0700		49.4740
Dissolved manganese	mg/L	G-01A	10/19/2021	ND	0.0050		8.4599
Dissolved nickel	mg/L	G-01A	10/19/2021	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-01A	10/19/2021		1.4900		2.6285
Dissolved selenium	mg/L	G-01A	10/19/2021	ND	0.0005		0.0003
Dissolved silver	mg/L	G-01A	10/19/2021	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-01A	10/19/2021		7.1100		119.4823
Dissolved thallium	mg/L	G-01A	10/19/2021	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-01A	10/19/2021	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-01A	10/19/2021	ND	0.0100		0.0300
Nitrate nitrogen	mg-N/L	G-01A	10/19/2021		1.0000		1.9745
Nitrite nitrogen	mg-N/L	G-01A	10/19/2021	ND	0.0020		50.6917
pH	std units	G-01A	10/19/2021		5.5800	***	6.60 - 9.39
Sulfate	mg/L	G-01A	10/19/2021		42.4000		349.0219
Total dissolved solids	mg/L	G-01A	10/19/2021		120.0000		392.9629
Total organic carbon	mg/L	G-01A	10/19/2021		4.0000		14.0000
Alkalinity (as caco3)	mg/L	G-04A	10/15/2020		230.0000		230.0000
Ammonia nitrogen	mg-N/L	G-04A	10/15/2020		0.1910		13.3456
Bicarbonate	mg/L	G-04A	10/15/2020		230.0000	*	200.0000
Chemical oxygen demand	mg/L	G-04A	10/15/2020	ND	10.0000	**	18.0000
Chloride	mg/L	G-04A	10/15/2020		5.5100		18.7097
Conductivity	umhos/cm	G-04A	10/15/2020		510.0000		545.0587
Dissolved antimony	mg/L	G-04A	10/15/2020	ND	0.0003		0.0006
Dissolved arsenic	mg/L	G-04A	10/15/2020		0.0108	***	0.0035
Dissolved barium	mg/L	G-04A	10/15/2020	ND	0.0050		5.1040
Dissolved beryllium	mg/L	G-04A	10/15/2020	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-04A	10/15/2020	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-04A	10/15/2020		46.5000	***	23.9048
Dissolved chromium	mg/L	G-04A	10/15/2020	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-04A	10/15/2020		0.0110	***	0.0030
Dissolved copper	mg/L	G-04A	10/15/2020	ND	0.0100		43.4689
Dissolved iron	mg/L	G-04A	10/15/2020		16.9000	***	9.3484
Dissolved lead	mg/L	G-04A	10/15/2020	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-04A	10/15/2020		27.1000		49.4740
Dissolved manganese	mg/L	G-04A	10/15/2020		6.8300		8.4599
Dissolved nickel	mg/L	G-04A	10/15/2020		0.0120		0.0380
Dissolved potassium	mg/L	G-04A	10/15/2020		2.4200		2.6285
Dissolved selenium	mg/L	G-04A	10/15/2020	ND	0.0005		0.0003
Dissolved silver	mg/L	G-04A	10/15/2020	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-04A	10/15/2020		14.4000		119.4823
Dissolved thallium	mg/L	G-04A	10/15/2020	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-04A	10/15/2020	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-04A	10/15/2020	ND	0.0100		0.0300
Nitrate nitrogen	mg-N/L	G-04A	10/15/2020	ND	0.0100		1.9745
Nitrite nitrogen	mg-N/L	G-04A	10/15/2020	ND	0.0020		50.6917
pH	std units	G-04A	10/15/2020		6.7100	**	6.60 - 9.39
Sulfate	mg/L	G-04A	10/15/2020		32.3000		349.0219
Total dissolved solids	mg/L	G-04A	10/15/2020		330.0000		392.9629
Total organic carbon	mg/L	G-04A	10/15/2020		8.6000	**	14.0000
Alkalinity (as caco3)	mg/L	G-08D1	10/19/2021		160.0000		230.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Ammonia nitrogen	mg-N/L	G-08D1	10/19/2021		0.1290		13.3456
Bicarbonate	mg/L	G-08D1	10/19/2021		160.0000		200.0000
Chemical oxygen demand	mg/L	G-08D1	10/19/2021	ND	10.0000		18.0000
Chloride	mg/L	G-08D1	10/19/2021		2.9800		18.7097
Conductivity	umhos/cm	G-08D1	10/19/2021		450.0000		545.0587
Dissolved antimony	mg/L	G-08D1	10/19/2021	ND	0.0003		0.0006
Dissolved arsenic	mg/L	G-08D1	10/19/2021		0.0016		0.0035
Dissolved barium	mg/L	G-08D1	10/19/2021	ND	0.0050		5.1040
Dissolved beryllium	mg/L	G-08D1	10/19/2021	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-08D1	10/19/2021	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-08D1	10/19/2021		0.6700		23.9048
Dissolved chromium	mg/L	G-08D1	10/19/2021	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-08D1	10/19/2021	ND	0.0100		0.0030
Dissolved copper	mg/L	G-08D1	10/19/2021	ND	0.0200		43.4689
Dissolved iron	mg/L	G-08D1	10/19/2021	ND	0.0200		9.3484
Dissolved lead	mg/L	G-08D1	10/19/2021	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-08D1	10/19/2021	ND	0.0500		49.4740
Dissolved manganese	mg/L	G-08D1	10/19/2021	ND	0.0050		8.4599
Dissolved nickel	mg/L	G-08D1	10/19/2021	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-08D1	10/19/2021		0.3100		2.6285
Dissolved selenium	mg/L	G-08D1	10/19/2021	ND	0.0005		0.0003
Dissolved silver	mg/L	G-08D1	10/19/2021	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-08D1	10/19/2021		104.0000		119.4823
Dissolved thallium	mg/L	G-08D1	10/19/2021	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-08D1	10/19/2021	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-08D1	10/19/2021	ND	0.0100		0.0300
Nitrate nitrogen	mg-N/L	G-08D1	10/19/2021		0.1600		1.9745
Nitrite nitrogen	mg-N/L	G-08D1	10/19/2021		0.0350		50.6917
pH	std units	G-08D1	10/19/2021		9.1400	**	6.60 - 9.39
Sulfate	mg/L	G-08D1	10/19/2021		49.1000		349.0219
Total dissolved solids	mg/L	G-08D1	10/19/2021		250.0000		392.9629
Total organic carbon	mg/L	G-08D1	10/19/2021		0.5500		14.0000
Alkalinity (as caco3)	mg/L	G-09S	01/26/2022		340.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-09S	01/26/2022		0.0290		13.3456
Bicarbonate	mg/L	G-09S	01/26/2022		340.0000	***	200.0000
Chemical oxygen demand	mg/L	G-09S	01/26/2022	ND	10.0000		18.0000
Chloride	mg/L	G-09S	01/26/2022		3.7000		18.7097
Conductivity	umhos/cm	G-09S	01/26/2022		890.0000	***	545.0587
Dissolved antimony	mg/L	G-09S	01/26/2022	ND	0.0003		0.0006
Dissolved arsenic	mg/L	G-09S	01/26/2022		0.0011		0.0035
Dissolved barium	mg/L	G-09S	01/26/2022	ND	0.0050		5.1040
Dissolved beryllium	mg/L	G-09S	01/26/2022	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-09S	01/26/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-09S	01/26/2022		80.6000	***	23.9048
Dissolved chromium	mg/L	G-09S	01/26/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-09S	01/26/2022	ND	0.0100		0.0030
Dissolved copper	mg/L	G-09S	01/26/2022	ND	0.0200		43.4689
Dissolved iron	mg/L	G-09S	01/26/2022		0.0790		9.3484
Dissolved lead	mg/L	G-09S	01/26/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-09S	01/26/2022		30.5000		49.4740
Dissolved manganese	mg/L	G-09S	01/26/2022		0.0240		8.4599
Dissolved nickel	mg/L	G-09S	01/26/2022		0.0190		0.0380
Dissolved potassium	mg/L	G-09S	01/26/2022		4.6600	***	2.6285
Dissolved selenium	mg/L	G-09S	01/26/2022	ND	0.0005		0.0003
Dissolved silver	mg/L	G-09S	01/26/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-09S	01/26/2022		94.3000		119.4823
Dissolved thallium	mg/L	G-09S	01/26/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-09S	01/26/2022	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-09S	01/26/2022	ND	0.0100		0.0300
Nitrate nitrogen	mg-N/L	G-09S	01/26/2022	ND	0.0100		1.9745
Nitrite nitrogen	mg-N/L	G-09S	01/26/2022		0.0030		50.6917
pH	std units	G-09S	01/26/2022		5.9500	*	6.60 - 9.39
Sulfate	mg/L	G-09S	01/26/2022		178.0000		349.0219
Total dissolved solids	mg/L	G-09S	01/26/2022		620.0000	***	392.9629
Total organic carbon	mg/L	G-09S	01/26/2022		7.8000		14.0000
Alkalinity (as caco3)	mg/L	G-10S	01/26/2022		480.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-10S	01/26/2022		0.2800		13.3456

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-10S	01/26/2022		480.0000	***	200.0000
Chemical oxygen demand	mg/L	G-10S	01/26/2022	ND	10.0000		18.0000
Chloride	mg/L	G-10S	01/26/2022		9.2800		18.7097
Conductivity	umhos/cm	G-10S	01/26/2022		1300.0000	***	545.0587
Dissolved antimony	mg/L	G-10S	01/26/2022	ND	0.0003		0.0006
Dissolved arsenic	mg/L	G-10S	01/26/2022		0.0075	***	0.0035
Dissolved barium	mg/L	G-10S	01/26/2022		0.0063		5.1040
Dissolved beryllium	mg/L	G-10S	01/26/2022	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-10S	01/26/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-10S	01/26/2022		106.0000	***	23.9048
Dissolved chromium	mg/L	G-10S	01/26/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-10S	01/26/2022	ND	0.0100		0.0030
Dissolved copper	mg/L	G-10S	01/26/2022	ND	0.0200		43.4689
Dissolved iron	mg/L	G-10S	01/26/2022		10.8000	***	9.3484
Dissolved lead	mg/L	G-10S	01/26/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-10S	01/26/2022		25.1000		49.4740
Dissolved manganese	mg/L	G-10S	01/26/2022		3.3200		8.4599
Dissolved nickel	mg/L	G-10S	01/26/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-10S	01/26/2022		3.6900	***	2.6285
Dissolved selenium	mg/L	G-10S	01/26/2022	ND	0.0005		0.0003
Dissolved silver	mg/L	G-10S	01/26/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-10S	01/26/2022		178.0000	***	119.4823
Dissolved thallium	mg/L	G-10S	01/26/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10S	01/26/2022	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-10S	01/26/2022	ND	0.0100		0.0300
Nitrate nitrogen	mg-N/L	G-10S	01/26/2022	ND	0.0100		1.9745
Nitrite nitrogen	mg-N/L	G-10S	01/26/2022		0.0040		50.6917
pH	std units	G-10S	01/26/2022		6.5500	***	6.60 - 9.39
Sulfate	mg/L	G-10S	01/26/2022		301.0000		349.0219
Total dissolved solids	mg/L	G-10S	01/26/2022		940.0000	***	392.9629
Total organic carbon	mg/L	G-10S	01/26/2022		11.0000		14.0000
Alkalinity (as caco3)	mg/L	G-11S	10/19/2021		84.0000		230.0000
Ammonia nitrogen	mg-N/L	G-11S	10/19/2021	ND	0.0200		13.3456
Bicarbonate	mg/L	G-11S	10/19/2021		84.0000		200.0000
Chemical oxygen demand	mg/L	G-11S	10/19/2021	ND	10.0000		18.0000
Chloride	mg/L	G-11S	10/19/2021		6.1100		18.7097
Conductivity	umhos/cm	G-11S	10/19/2021		270.0000		545.0587
Dissolved antimony	mg/L	G-11S	10/19/2021	ND	0.0003		0.0006
Dissolved arsenic	mg/L	G-11S	10/19/2021		0.0003		0.0035
Dissolved barium	mg/L	G-11S	10/19/2021	ND	0.0050		5.1040
Dissolved beryllium	mg/L	G-11S	10/19/2021	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-11S	10/19/2021	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-11S	10/19/2021		14.5000		23.9048
Dissolved chromium	mg/L	G-11S	10/19/2021	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-11S	10/19/2021	ND	0.0100	**	0.0030
Dissolved copper	mg/L	G-11S	10/19/2021	ND	0.0200		43.4689
Dissolved iron	mg/L	G-11S	10/19/2021	ND	0.0200		9.3484
Dissolved lead	mg/L	G-11S	10/19/2021	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-11S	10/19/2021		2.9900		49.4740
Dissolved manganese	mg/L	G-11S	10/19/2021		0.0560		8.4599
Dissolved nickel	mg/L	G-11S	10/19/2021	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-11S	10/19/2021		1.1700		2.6285
Dissolved selenium	mg/L	G-11S	10/19/2021	ND	0.0005		0.0003
Dissolved silver	mg/L	G-11S	10/19/2021	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-11S	10/19/2021		42.9000		119.4823
Dissolved thallium	mg/L	G-11S	10/19/2021	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-11S	10/19/2021	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-11S	10/19/2021	ND	0.0100		0.0300
Nitrate nitrogen	mg-N/L	G-11S	10/19/2021		0.0460		1.9745
Nitrite nitrogen	mg-N/L	G-11S	10/19/2021	ND	0.0020		50.6917
pH	std units	G-11S	10/19/2021		6.2600	*	6.60 - 9.39
Sulfate	mg/L	G-11S	10/19/2021		41.2000		349.0219
Total dissolved solids	mg/L	G-11S	10/19/2021		180.0000		392.9629

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Total organic carbon	mg/L	G-11S	10/19/2021		2.1000		14.0000

* - Current value failed - awaiting verification.
** - Current value passed - previous exceedance not verified.
*** - Current value failed - exceedance verified.
**** - Current value passed - awaiting one more verification.
***** - Insufficient background data to compute prediction limit.
ND = Not Detected, Result = detection limit.

Table 5

Summary Statistics and Prediction Limits

Constituent	Units	Detect	N	Mean	SD	alpha	Factor	Pred Limit	Type		Conf
Alkalinity (as caco3)	mg/L	67	67					230.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	39	67	-2.2593	2.0194	0.0100	2.4019	13.3456	lognor		
Bicarbonate	mg/L	67	67					200.0000	nonpar		0.99
Chemical oxygen demand	mg/L	10	67					18.0000	nonpar		0.99
Chloride	mg/L	66	67	1.4415	0.6193	0.0100	2.4019	18.7097	lognor		
Conductivity	umhos/cm	66	66	415.6061	53.8696	0.0100	2.4031	545.0587	normal		
Dissolved antimony	mg/L	28	65					0.0006	nonpar		0.99
Dissolved arsenic	mg/L	67	67					0.0035	nonpar		0.99
Dissolved barium	mg/L	51	66	-4.4948	2.5488	0.0100	2.4031	5.1040	lognor		
Dissolved beryllium	mg/L	0	61					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	27	66					0.0010	nonpar		0.99
Dissolved calcium	mg/L	64	64	7.1805	6.9524	0.0100	2.4056	23.9048	normal		
Dissolved chromium	mg/L	24	67					0.0150	nonpar		0.99
Dissolved cobalt	mg/L	4	67					0.0030	nonpar		0.99
Dissolved copper	mg/L	34	66	-2.5625	2.6360	0.0100	2.4031	43.4689	lognor		
Dissolved iron	mg/L	47	67	-1.9588	1.7461	0.0100	2.4019	9.3484	lognor		
Dissolved lead	mg/L	30	67					0.0027	nonpar		0.99
Dissolved magnesium	mg/L	57	66	-0.1599	1.6901	0.0100	2.4031	49.4740	lognor		
Dissolved manganese	mg/L	49	67	-3.8727	2.5014	0.0100	2.4019	8.4599	lognor		
Dissolved nickel	mg/L	18	67					0.0380	nonpar		0.99
Dissolved potassium	mg/L	60	66	-0.5893	0.6474	0.0100	2.4031	2.6285	lognor		
Dissolved selenium	mg/L	1	63					0.0003	nonpar		0.99
Dissolved silver	mg/L	2	65					0.0002	nonpar		0.99
Dissolved sodium	mg/L	67	67	88.8851	12.7388	0.0100	2.4019	119.4823	normal		
Dissolved thallium	mg/L	3	67					0.0000	nonpar		0.99
Dissolved vanadium	mg/L	0	67					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	30	67					0.0300	nonpar		0.99
Nitrate nitrogen	mg-N/L	62	67	-2.1924	1.1960	0.0100	2.4019	1.9745	lognor		
Nitrite nitrogen	mg-N/L	35	67	-2.9185	2.8495	0.0100	2.4019	50.6917	lognor		
pH	std units	68	68					6.60- 9.39	nonpar		0.99
Sulfate	mg/L	66	66	3.7764	0.8650	0.0100	2.4031	349.0219	lognor		
Total dissolved solids	mg/L	67	67	277.0149	48.2737	0.0100	2.4019	392.9629	normal		
Total organic carbon	mg/L	62	67					14.0000	nonpar		0.99

Conf = confidence level for passing initial test or one of two verification resamples at all downgradient wells for a single constituent (nonparametric test only).
* - Insufficient Data.
** - Calculated limit raised to Manual Reporting Limit.
*** - Nonparametric limit based on ND value.
For transformed data, mean and SD in transformed units and prediction limit in original units.
All sample sizes and statistics are based on outlier free data.
For nonparametric limits, median reporting limits are substituted for extreme reporting limit values.

Groundwater Analytical Summary - Shallow Wells: Second Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	Downgradient Wells																										Upgradient Wells									
						G-01A					G-04A					G-08D1					G-09S					G-10S					G-11S					G-14S					G-24S				
						4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/19/22	D	V	I	N	4/19/22	D	V	I	N	4/19/22	D	V	Tr	Ch	4/19/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)																																											
Alkalinity (as CaCO3)	nonpar	66	66	230	--	28					240		E			170					340		V	I	N	480		V	I	N	66			D	Y	190					76				
Ammonia Nitrogen	lognor	66	41	10.6815	--	0.02	U				0.21					0.119					0.02	U				0.259			I	N	0.02	U				0.021					0.02	U			
Bicarbonate	nonpar	66	66	210	--	28					240		E			84					340		V	I	N	480		V	I	N	66			D	Y	160					76				
Calcium, Dissolved	normal	63	63	22.8736	--	10.6					47.4		V			0.79					77.5		V	D	N	101		V	D	N	9.22			I	N	0.66					10.3			D	N
Chemical Oxygen Demand	nonpar	66	9	18	--	10	U				18					10	U				10	U				10	U				10	U				10	U				10	U			
Chloride	nonpar	66	66	18.3	250	0.53					15.1			I	N	2.61			D	N	3.17			D	N	8.58			D	N	3.17					1.92			D	N	3.18			D	N
Conductivity (umhos/cm)	nonpar	65	65	540	700	120					530					450					950		V	D	N	1400		V			190			D	N	390					280				
Magnesium, Dissolved	lognor	65	54	42.7765	--	2.94					28.1			I	Y	0.05	U				30.3			D	N	24.2				Y	2.09			I	N	0.05	U				3.17			D	N
Nitrate Nitrogen (mg-N/L)	nonpar	66	59	1.3	10	0.093					0.01	U				0.16					0.01	U				0.01	U				0.01	U				0.01	U		D	N	0.041				
Nitrite Nitrogen (mg-N/L)	normal	65	34	0.009	1	0.003					0.003					0.003		P			0.003					0.003	U				0.003	U				0.003					0.008				
pH (std units)	nonpar	67	67	6.60-9.39	6.5-8.5	5.72		V			5.48		E			8.98					5.80		V		Y	6.33		V			5.82		E			8.34				Y	6.84				
Potassium, Dissolved	lognor	65	57	2.6065	--	0.97					2.22			I	N	0.42					4.88		V	D	N	3.53		V			0.94					0.3	U				0.69			D	Y
Sodium, Dissolved	normal	66	66	119.6577	20	5.06					15.2			I	Y	115			I	Y	93.5					172		V			35.5			D	N	111					88.4				
Sulfate	lognor	65	65	333.9057	250	20.3					31.4					44.3					173			D	N	303			D	N	22.6			D	N	11.0				Y	45.9			D	N
Total Dissolved Solids	normal	66	66	381.4928	500	80					350					280					630		V	D	N	950		V	D	N	130					240					160				
Total Organic Carbon	nonpar	66	61	14	--	4.1					11.0					3.3					6.9			I	N	18.0		E			5.2					6.20					5.6				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)																																											
Antimony	nonpar	64	26	0.0006	0.006	0.00012					0.0001					0.0001	U				0.00018					0.0001	U				0.0001	U				0.00038					0.0002				
Arsenic	normal	66	66	0.0043	0.00005	0.000171					0.011		V	I	N	0.00129					0.00107					0.00731		V			0.000565					0.00493			I	N	0.000629				
Barium	lognor	65	47	9.8945	1	0.005	U				0.005	U				0.005	U				0.005	U				0.0055					0.005	U				0.005	U				0.005	U			
Beryllium	nonpar	66	0	0.0005	0.004	0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U			
Cadmium	nonpar	65	24	0.001	0.005	0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Chromium	nonpar	66	22	0.015	0.05	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Cobalt	nonpar	66	4	0.005	--	0.01	U				0.012		V			0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Copper	nonpar	65	29	0.115	1	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Iron	lognor	66	45	9.6403	0.3	0.03	U				20.2		V	I	N	0.03	U			Y	0.03	U				10.8		V			0.03	U				0.03	U				0.03	U			
Lead	nonpar	66	28	0.0027	0.05	0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Manganese	lognor	66	46	11.9194	0.05	0.01	U				6.79			I	Y	0.01	U				0.025			D	Y	3.2				Y	0.065			I	N	0.01	U			Y	0.01	U			
Nickel	nonpar	66	19	0.038	0.1	0.01	U				0.015					0.01	U				0.018					0.01	U				0.01	U				0.01	U				0.011				
Selenium	nonpar	62	2	0.0004	0.01	0.0003	U				0.0003	U				0.0003	U				0.00038					0.00062		E			0.0003	U				0.00043					0.0003	U			
Silver	nonpar	64	2	0.0002	0.05	0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.0001	U			
Thallium	nonpar	66	0	0.00009	0.002	0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Vanadium	nonpar	66	0	0.01	--	0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U			
Zinc	nonpar	66	27	0.03	5	0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)																																											
Antimony	--	--	--	--	0.006	0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U			
Arsenic	--	--	--	--	0.00005	0.000439					0.00951					0.00188					0.000906					0.00748					0.000575					0.00456					0.000757				
Barium	--	--	--	--	1	0.005	U				0.0078					0.0273					0.0068					0.0075					0.005	U				0.0611					0.0091				
Beryllium	--	--	--	--	0.004	0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U			
Cadmium	--	--	--	--	0.005	0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Chromium	--	--	--	--	0.05	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.033					0.01	U			
Cobalt	--	--	--	--	--	0.01	U				0.021					0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Copper	--	--	--	--	1	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Iron	--	--	--	--	0.3	0.333					17.8					5.4					0.498					12.4					0.086					9.73					0.684				
Lead	--	--	--	--	0.05	0.0005	U				0.0005	U				0.00134					0.000502					0.0005	U				0.0005	U				0.00184					0.000648				
Manganese	--	--	--	--	0.05	0.0102					6.86					0.0869					0.101					3.57					0.207					0.243					0.0545				
Nickel	--	--	--	--	0.1	0.01	U				0.013					0.012					0.026					0.01	U				0.01					0.036					0.014				
Selenium	--	--	--	--	0.01	0.001	U				0.001	U				0.001	U				0.001	U				0.001	U				0.001	U				0.001	U				0.001	U			
Silver	--	--	--	--	0.05	0.0002	U				0.0002	U				0.0002	U				0.00194					0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Thallium	--	--	--	--	0.002	0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Vanadium	--	--	--	--	--	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.024					0.02	U			
Zinc	--	--	--	--	5	0.01					0.01	U				0.0173					0.01	U				0.01	U				0.01	U				0.0324					0.01				
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L)																																											
1,1,1-Trichloroethane	--	--	--	--	200	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,1,2,2-Tetrachloroethane	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,1,2-Trichloroethane	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,1-Dichloroethane	--	--	--	--	1	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			

Groundwater Analytical Summary - Shallow Wells: Second Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	Downgradient Wells																						Upgradient Wells									
						G-01A					G-04A					G-08D1					G-09S					G-10S					G-11S					G-14S					G-24S				
						4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/19/22	D	V	Tr	Ch	4/19/22	D	V	Tr	Ch	4/19/22	D	V	Tr	Ch	4/19/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L) (cont.)																																											
1,1-Dichloroethylene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,2,3-Trichloropropane	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,2-Dibromo-3-chloropropane	--	--	--	--	0.2	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
1,2-Dibromoethane	--	--	--	--	0.001	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
1,2-Dichlorobenzene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,2-Dichloroethane	--	--	--	--	0.5	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.59				
1,2-Dichloropropane	--	--	--	--	0.6	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
1,4-Dichlorobenzene	--	--	--	--	4	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
2-Butanone	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
2-Hexanone	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
4-Methyl-2-Pentanone (MIBK)	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
Acetone	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
Acrylonitrile	--	--	--	--	0.07	0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U			
Benzene	--	--	--	--	1	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Bromodichloromethane	--	--	--	--	0.3	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Bromoform	--	--	--	--	5	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Bromomethane	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Carbon Disulfide	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Carbon Tetrachloride	--	--	--	--	0.3	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Chlorobenzene	--	--	--	--	--	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Chlorodibromomethane	--	--	--	--	0.5	0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U			
Chloroethane	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Chloroform	--	--	--	--	7	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Chloromethane	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
cis-1,2-Dichloroethene	--	--	--	--	--	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
cis-1,3-Dichloropropene	--	--	--	--	0.2	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Dibromomethane	--	--	--	--	--	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Ethyl Benzene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
m,p-Xylene	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Methyl Iodide	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Methylene Chloride	--	--	--	--	5	4	U				4	U				4	U				4	U				4	U				4	U				4	U				4	U			
o-Xylene	--	--	--	--	--	1.5	U				1.5	U				1.5	U				2	U				2	U				2	U				2	U				1.5	U			
Styrene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Tetrachloroethylene	--	--	--	--	0.8	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Toluene	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
trans-1,2-Dichloroethene	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
trans-1,3-Dichloropropene	--	--	--	--	0.2	0.03	U				0.03	U				0.03	U				0.02	U				0.02	U				0.02	U				0.02	U				0.03	U			
trans-1,4-Dichloro-2-butene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Trichlorethene (1,1,2-Trichloro	--	--	--	--	3	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Trichlorofluoromethane	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
Vinyl Acetate	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
Vinyl Chloride	--	--	--	--	0.02	0.05	U				0.05	U				0.05	U				0.18					0.05	U				0.05	U				0.05	U				0.05	U			

D: U = Indicates compound was not detected at the given reporting limit; X indicates that the compound was detected in the trip blank and contamination is suspected.

V: E= Exceedance, waiting verification based on subsequent lab data; V= Exceedance verified based on previous lab data; P=Passed, previous exceedance not verified based on current lab data.

Tr: I=increasing Trend, D=Decreasing Trend;

Ch: Y indicates a change in trend from previous quarter; N means no change in trend.

Values in **purple** exceed the prediction limit; indicates that a value exceeded the Groundwater Standards

The groundwater standards listed are based on the Washington Administrative Code (WAC) 173-200 groundwater limits or WAC 246-290, whichever is more protective of groundwater quality.

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Alkalinity (as caco3)	mg/L	G-01A	04/18/2022		28.0000		230.0000
Ammonia nitrogen	mg-N/L	G-01A	04/18/2022	ND	0.0200		10.6815
Bicarbonate	mg/L	G-01A	04/18/2022		28.0000		210.0000
Chemical oxygen demand	mg/L	G-01A	04/18/2022	ND	10.0000		18.0000
Chloride	mg/L	G-01A	04/18/2022		0.5300		18.3000
Conductivity	umhos/cm	G-01A	04/18/2022		120.0000		540.0000
Dissolved antimony	mg/L	G-01A	04/18/2022		0.0001		0.0006
Dissolved arsenic	mg/L	G-01A	04/18/2022		0.0002		0.0043
Dissolved barium	mg/L	G-01A	04/18/2022	ND	0.0050		9.8945
Dissolved beryllium	mg/L	G-01A	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-01A	04/18/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-01A	04/18/2022		10.6000		22.8736
Dissolved chromium	mg/L	G-01A	04/18/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-01A	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01A	04/18/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-01A	04/18/2022	ND	0.0300		9.6403
Dissolved lead	mg/L	G-01A	04/18/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-01A	04/18/2022		2.9400		42.7765
Dissolved manganese	mg/L	G-01A	04/18/2022	ND	0.0100		11.9194
Dissolved nickel	mg/L	G-01A	04/18/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-01A	04/18/2022		0.9700		2.6065
Dissolved selenium	mg/L	G-01A	04/18/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-01A	04/18/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-01A	04/18/2022		5.0600		119.6577
Dissolved thallium	mg/L	G-01A	04/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-01A	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-01A	04/18/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-01A	04/18/2022		0.0930		1.3000
Nitrite nitrogen	mg-N/L	G-01A	04/18/2022		0.0030		0.0090
pH	std units	G-01A	04/18/2022		5.7200	***	6.60 - 9.39
Sulfate	mg/L	G-01A	04/18/2022		20.3000		333.9057
Total dissolved solids	mg/L	G-01A	04/18/2022		80.0000		381.4928
Total organic carbon	mg/L	G-01A	04/18/2022		4.1000		14.0000
Alkalinity (as caco3)	mg/L	G-04A	04/18/2022		240.0000	*	230.0000
Ammonia nitrogen	mg-N/L	G-04A	04/18/2022		0.2100		10.6815
Bicarbonate	mg/L	G-04A	04/18/2022		240.0000	*	210.0000
Chemical oxygen demand	mg/L	G-04A	04/18/2022		18.0000		18.0000
Chloride	mg/L	G-04A	04/18/2022		15.1000		18.3000
Conductivity	umhos/cm	G-04A	04/18/2022		530.0000		540.0000
Dissolved antimony	mg/L	G-04A	04/18/2022		0.0001		0.0006
Dissolved arsenic	mg/L	G-04A	04/18/2022		0.0110	***	0.0043
Dissolved barium	mg/L	G-04A	04/18/2022	ND	0.0050		9.8945
Dissolved beryllium	mg/L	G-04A	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-04A	04/18/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-04A	04/18/2022		47.4000	***	22.8736
Dissolved chromium	mg/L	G-04A	04/18/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-04A	04/18/2022		0.0120	***	0.0050
Dissolved copper	mg/L	G-04A	04/18/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-04A	04/18/2022		20.2000	***	9.6403
Dissolved lead	mg/L	G-04A	04/18/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-04A	04/18/2022		28.1000		42.7765
Dissolved manganese	mg/L	G-04A	04/18/2022		6.7900		11.9194
Dissolved nickel	mg/L	G-04A	04/18/2022		0.0150		0.0380
Dissolved potassium	mg/L	G-04A	04/18/2022		2.2200		2.6065
Dissolved selenium	mg/L	G-04A	04/18/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-04A	04/18/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-04A	04/18/2022		15.2000		119.6577
Dissolved thallium	mg/L	G-04A	04/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-04A	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-04A	04/18/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-04A	04/18/2022	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-04A	04/18/2022		0.0030		0.0090
pH	std units	G-04A	04/18/2022		5.4800	*	6.60 - 9.39
Sulfate	mg/L	G-04A	04/18/2022		31.4000		333.9057
Total dissolved solids	mg/L	G-04A	04/18/2022		350.0000		381.4928
Total organic carbon	mg/L	G-04A	04/18/2022		11.0000		14.0000
Alkalinity (as caco3)	mg/L	G-08D1	04/18/2022		130.5000		230.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Ammonia nitrogen	mg-N/L	G-08D1	04/18/2022		0.0695		10.6815
Bicarbonate	mg/L	G-08D1	04/18/2022		87.5000		210.0000
Chemical oxygen demand	mg/L	G-08D1	04/18/2022	ND	10.0000		18.0000
Chloride	mg/L	G-08D1	04/18/2022		3.9800		18.3000
Conductivity	umhos/cm	G-08D1	04/18/2022		400.0000		540.0000
Dissolved antimony	mg/L	G-08D1	04/18/2022		0.0002		0.0006
Dissolved arsenic	mg/L	G-08D1	04/18/2022		0.0027		0.0043
Dissolved barium	mg/L	G-08D1	04/18/2022	ND	0.0050		9.8945
Dissolved beryllium	mg/L	G-08D1	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-08D1	04/18/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-08D1	04/18/2022		0.6100		22.8736
Dissolved chromium	mg/L	G-08D1	04/18/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-08D1	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D1	04/18/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-08D1	04/18/2022	ND	0.0300		9.6403
Dissolved lead	mg/L	G-08D1	04/18/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-08D1	04/18/2022	ND	0.0500		42.7765
Dissolved manganese	mg/L	G-08D1	04/18/2022	ND	0.0100		11.9194
Dissolved nickel	mg/L	G-08D1	04/18/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-08D1	04/18/2022		0.3800		2.6065
Dissolved selenium	mg/L	G-08D1	04/18/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-08D1	04/18/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-08D1	04/18/2022		99.1500		119.6577
Dissolved thallium	mg/L	G-08D1	04/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-08D1	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-08D1	04/18/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-08D1	04/18/2022		0.1200		1.3000
Nitrite nitrogen	mg-N/L	G-08D1	04/18/2022		0.0080	**	0.0090
pH	std units	G-08D1	04/18/2022		8.9800		6.60 - 9.39
Sulfate	mg/L	G-08D1	04/18/2022		52.0500		333.9057
Total dissolved solids	mg/L	G-08D1	04/18/2022		240.0000		381.4928
Total organic carbon	mg/L	G-08D1	04/18/2022		5.4000		14.0000
Alkalinity (as caco3)	mg/L	G-09S	04/19/2022		340.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-09S	04/19/2022	ND	0.0200		10.6815
Bicarbonate	mg/L	G-09S	04/19/2022		340.0000	***	210.0000
Chemical oxygen demand	mg/L	G-09S	04/19/2022	ND	10.0000		18.0000
Chloride	mg/L	G-09S	04/19/2022		3.1700		18.3000
Conductivity	umhos/cm	G-09S	04/19/2022		950.0000	***	540.0000
Dissolved antimony	mg/L	G-09S	04/19/2022		0.0002		0.0006
Dissolved arsenic	mg/L	G-09S	04/19/2022		0.0011		0.0043
Dissolved barium	mg/L	G-09S	04/19/2022	ND	0.0050		9.8945
Dissolved beryllium	mg/L	G-09S	04/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-09S	04/19/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-09S	04/19/2022		77.5000	***	22.8736
Dissolved chromium	mg/L	G-09S	04/19/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-09S	04/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09S	04/19/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-09S	04/19/2022	ND	0.0300		9.6403
Dissolved lead	mg/L	G-09S	04/19/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-09S	04/19/2022		30.3000		42.7765
Dissolved manganese	mg/L	G-09S	04/19/2022		0.0250		11.9194
Dissolved nickel	mg/L	G-09S	04/19/2022		0.0180		0.0380
Dissolved potassium	mg/L	G-09S	04/19/2022		4.8800	***	2.6065
Dissolved selenium	mg/L	G-09S	04/19/2022		0.0004		0.0004
Dissolved silver	mg/L	G-09S	04/19/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-09S	04/19/2022		93.5000		119.6577
Dissolved thallium	mg/L	G-09S	04/19/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-09S	04/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-09S	04/19/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-09S	04/19/2022	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-09S	04/19/2022		0.0030		0.0090
pH	std units	G-09S	04/19/2022		5.8000	***	6.60 - 9.39
Sulfate	mg/L	G-09S	04/19/2022		173.0000		333.9057
Total dissolved solids	mg/L	G-09S	04/19/2022		630.0000	***	381.4928
Total organic carbon	mg/L	G-09S	04/19/2022		6.4500		14.0000
Alkalinity (as caco3)	mg/L	G-10S	04/19/2022		480.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-10S	04/19/2022		0.2590		10.6815

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-10S	04/19/2022		480.0000	***	210.0000
Chemical oxygen demand	mg/L	G-10S	04/19/2022	ND	10.0000		18.0000
Chloride	mg/L	G-10S	04/19/2022		8.5800		18.3000
Conductivity	umhos/cm	G-10S	04/19/2022		1400.0000	***	540.0000
Dissolved antimony	mg/L	G-10S	04/19/2022	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-10S	04/19/2022		0.0073	***	0.0043
Dissolved barium	mg/L	G-10S	04/19/2022		0.0055		9.8945
Dissolved beryllium	mg/L	G-10S	04/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-10S	04/19/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-10S	04/19/2022		101.0000	***	22.8736
Dissolved chromium	mg/L	G-10S	04/19/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-10S	04/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10S	04/19/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-10S	04/19/2022		10.8000	***	9.6403
Dissolved lead	mg/L	G-10S	04/19/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-10S	04/19/2022		24.2000		42.7765
Dissolved manganese	mg/L	G-10S	04/19/2022		3.2000		11.9194
Dissolved nickel	mg/L	G-10S	04/19/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-10S	04/19/2022		3.5300	***	2.6065
Dissolved selenium	mg/L	G-10S	04/19/2022		0.0006	*	0.0004
Dissolved silver	mg/L	G-10S	04/19/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-10S	04/19/2022		172.0000	***	119.6577
Dissolved thallium	mg/L	G-10S	04/19/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10S	04/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-10S	04/19/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-10S	04/19/2022	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-10S	04/19/2022	ND	0.0030		0.0090
pH	std units	G-10S	04/19/2022		6.3300	***	6.60 - 9.39
Sulfate	mg/L	G-10S	04/19/2022		303.0000		333.9057
Total dissolved solids	mg/L	G-10S	04/19/2022		950.0000	***	381.4928
Total organic carbon	mg/L	G-10S	04/19/2022		18.0000	*	14.0000
Alkalinity (as caco3)	mg/L	G-11S	04/19/2022		66.0000		230.0000
Ammonia nitrogen	mg-N/L	G-11S	04/19/2022	ND	0.0200		10.6815
Bicarbonate	mg/L	G-11S	04/19/2022		66.0000		210.0000
Chemical oxygen demand	mg/L	G-11S	04/19/2022	ND	10.0000		18.0000
Chloride	mg/L	G-11S	04/19/2022		3.1700		18.3000
Conductivity	umhos/cm	G-11S	04/19/2022		190.0000		540.0000
Dissolved antimony	mg/L	G-11S	04/19/2022	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-11S	04/19/2022		0.0006		0.0043
Dissolved barium	mg/L	G-11S	04/19/2022	ND	0.0050		9.8945
Dissolved beryllium	mg/L	G-11S	04/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-11S	04/19/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-11S	04/19/2022		9.2200		22.8736
Dissolved chromium	mg/L	G-11S	04/19/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-11S	04/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-11S	04/19/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-11S	04/19/2022	ND	0.0300		9.6403
Dissolved lead	mg/L	G-11S	04/19/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-11S	04/19/2022		2.0900		42.7765
Dissolved manganese	mg/L	G-11S	04/19/2022		0.0650		11.9194
Dissolved nickel	mg/L	G-11S	04/19/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-11S	04/19/2022		0.9400		2.6065
Dissolved selenium	mg/L	G-11S	04/19/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-11S	04/19/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-11S	04/19/2022		35.5000		119.6577
Dissolved thallium	mg/L	G-11S	04/19/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-11S	04/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-11S	04/19/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-11S	04/19/2022	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-11S	04/19/2022	ND	0.0030		0.0090
pH	std units	G-11S	04/19/2022		5.8200	*	6.60 - 9.39
Sulfate	mg/L	G-11S	04/19/2022		22.6000		333.9057
Total dissolved solids	mg/L	G-11S	04/19/2022		130.0000		381.4928

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Total organic carbon	mg/L	G-11S	04/19/2022		5.2000		14.0000

* - Current value failed - awaiting verification.
** - Current value passed - previous exceedance not verified.
*** - Current value failed - exceedance verified.
**** - Current value passed - awaiting one more verification.
***** - Insufficient background data to compute prediction limit.
ND = Not Detected, Result = detection limit.

Groundwater Analytical Summary - Shallow Wells: Third Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09S					G-10S				
						7/13/22	D	V	Tr	Ch	7/13/22	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)															
Alkalinity (as CaCO3)	nonpar	66	66	230	--	190		P		Y	450		V	I	N
Ammonia Nitrogen	lognor	66	41	10.6815	--	0.068					0.247			I	N
Bicarbonate	nonpar	66	66	210	--	190		P		Y	450		V	I	N
Calcium, Dissolved	normal	63	63	22.8736	--	1.22		P	D	N	92.3		V	D	N
Chemical Oxygen Demand	nonpar	66	9	18	--	10	U				10				
Chloride	nonpar	66	66	18.3	250	5.35			D	N	8.88			D	N
Conductivity (umhos/cm)	nonpar	65	65	540	700	640		V	D	N	1400		V		
Magnesium, Dissolved	lognor	65	54	42.7765	--	0.05	U			Y	23.2				
Nitrate Nitrogen (mg-N/L)	nonpar	66	59	1.3	10	0.12					0.063				
Nitrite Nitrogen (mg-N/L)	normal	65	34	0.009	1	0.007					0.003	U			
pH (std units)	nonpar	67	67	6.60-9.39	6.5-8.5	5.88		V		Y	6.26				
Potassium, Dissolved	lognor	65	57	2.6065	--	0.57		P		Y	3.75		V		
Sodium, Dissolved	normal	66	66	119.6577	20	163		E			178		V		
Sulfate	lognor	65	65	333.9057	250	100			D	N	279			D	N
Total Dissolved Solids	normal	66	66	381.4928	500	380		P	D	N	900		V	D	N
Total Organic Carbon	nonpar	66	61	14	--	9.4			I	N	41		E		
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony	nonpar	64	26	0.0006	0.006	0.0001	U				0.0001	U			
Arsenic	normal	66	66	0.0043	0.00005	0.00306					0.00468		V		
Barium	lognor	65	47	9.8945	1	0.005	U				0.006				
Beryllium	nonpar	66	0	0.0005	0.004	0.006	U				0.006	U			
Cadmium	nonpar	65	24	0.001	0.005	0.00005	U				0.00005	U			
Chromium	nonpar	66	22	0.015	0.05	0.01	U				0.01	U			
Cobalt	nonpar	66	4	0.005	--	0.01	U				0.01	U			
Copper	nonpar	65	29	0.115	1	0.02	U				0.02	U			
Iron	lognor	66	45	9.6403	0.3	0.03	U				10.2		V		
Lead	nonpar	66	28	0.0027	0.05	0.0001	U				0.0001	U			
Manganese	lognor	66	46	11.9194	0.05	0.01	U		D	Y	2.98				
Nickel	nonpar	66	19	0.038	0.1	0.01	U				0.01	U			
Selenium	nonpar	62	2	0.0004	0.01	0.0003	U				0.0003	U	P		
Silver	nonpar	64	2	0.0002	0.05	0.00005	U				0.00005	U			
Thallium	nonpar	66	3	0.00009	0.002	0.00005	U				0.00005	U			
Vanadium	nonpar	66	0	0.01	--	0.015	U				0.015	U			
Zinc	nonpar	66	27	0.03	5	0.015	U				0.015	U			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony					0.006	0.0003	U				0.0003	U			
Arsenic					0.00005	0.00283					0.00658				
Barium					1	0.005	U				0.0059				
Beryllium					0.004	0.005	U				0.005	U			
Cadmium					0.005	0.0001	U				0.0001	U			
Chromium					0.05	0.01	U				0.01	U			
Cobalt					--	0.01	U				0.01	U			
Copper					1	0.01	U				0.01	U			
Iron					0.3	0.489					10.4				
Lead					0.05	0.000874					0.0005	U			
Manganese					0.05	0.0378					2.88				
Nickel					0.1	0.018					0.02				
Selenium					0.01	0.001	U				0.001	U			
Silver					0.05	0.0002	U				0.0002	U			
Thallium					0.002	0.0002	U				0.0002	U			
Vanadium					--	0.02	U				0.02	U			
Zinc					5	0.01	U				0.01	U			
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260/8260 SIM (µg/L)															
1,1,1-Trichloroethane					200	1	U				1	U			
1,1,2,2-Tetrachloroethane					--	1	U				1	U			
1,1,2-Trichloroethane					--	1	U				1	U			
1,1-Dichloroethane					1	1	U				1	U			
1,1-Dichloroethylene					--	1	U				1	U			
1,2,3-Trichloropropane					--	1	U				1	U			
1,2-Dibromo-3-chloropropane					0.2	0.03	U				0.05	U			
1,2-Dibromoethane					0.001	0.01	U				0.01	U			
1,2-Dichlorobenzene					--	1	U				1	U			

Groundwater Analytical Summary - Shallow Wells: Third Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09S					G-10S				
						7/13/22	D	V	Tr	Ch	7/13/22	D	V	Tr	Ch
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260/8260 SIM (µg/L) (cont.)															
1,2-Dichloroethane					0.5	**0.36**					0.03	U			
1,2-Dichloropropane					0.6	0.02	U				0.02	U			
1,4-Dichlorobenzene					4	1	U				1	U			
2-Butanone					--	5	U				5	U			
2-Hexanone					--	5	U				5	U			
4-Methyl-2-Pentanone (MIBK)					--	5	U				5	U			
Acetone					--	5	U				5	U			
Acrylonitrile					0.07	0.05	U				0.05	U			
Benzene					1	1.5	U				1.5	U			
Bromodichloromethane					0.3	0.02	U				0.02	U			
Bromoform					5	1	U				1	U			
Bromomethane					--	3	U				3	U			
Carbon Disulfide					--	3	U				3	U			
Carbon Tetrachloride					0.3	0.02	U				0.02	U			
Chlorobenzene					--	0.03	U				0.03	U			
Chlorodibromomethane					0.5	0.5	U				0.5	U			
Chloroethane					--	1.5	U				1.5	U			
Chloroform					7	1	U				1	U			
Chloromethane					--	1.5	U				1.5	U			
cis-1,2-Dichloroethene					--	0.03	U				0.03	U			
cis-1,3-Dichloropropene					0.2	0.03	U				0.03	U			
Dibromomethane					--	0.02	U				0.02	U			
Ethyl Benzene					--	1	U				1	U			
m,p-Xylene					--	1.5	U				1.5	U			
Methyl Iodide					--	1	U				1	U			
Methylene Chloride					5	4	U				4	U			
o-Xylene					--	1.5	U				1.5	U			
Styrene					--	1	U				1	U			
Tetrachloroethylene					0.8	0.03	U				0.03	U			
Toluene					--	2	U				2	U			
trans-1,2-Dichloroethene					--	1.5	U				1.5	U			
trans-1,3-Dichloropropene					0.2	0.03	U				0.03	U			
trans-1,4-Dichloro-2-butene					--	1	U				1	U			
Trichlorethene (1,1,2-Trichloroethylene)					3	1.5	U				1.5	U			
Trichlorofluoromethane					--	2	U				2	U			
Vinyl Acetate					--	5	U				5	U			
Vinyl Chloride					0.02	0.05	U				0.05	U			

D: U = Indicates compound was not detected at the given reporting limit; X indicates that the compound was detected in the trip blank and contamination is suspected.

V: E= Exceedance, waiting verification based on subsequent lab data; V= Exceedance verified based on previous lab data; P=Passed, previous exceedance not verified based on current lab data.

Tr: I=increasing Trend, D=Decreasing Trend;

Ch: Y indicates a change in trend from previous quarter; N means no change in trend.

Values in **purple** exceed the prediction limit; indicates that a value exceeded the Groundwater Standards

The groundwater standards listed are based on the Washington Administrative Code (WAC) 173-200 groundwater limits as modified by the TMS 91-11 standards - the most restrictive of the two is used.

B = Methylene chloride was measured in the lab blank at a similar concentration - contamination during analysis suspected.

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Alkalinity (as caco3)	mg/L	G-01A	04/18/2022		28.0000		230.0000
Ammonia nitrogen	mg-N/L	G-01A	04/18/2022	ND	0.0200		10.6815
Bicarbonate	mg/L	G-01A	04/18/2022		28.0000		210.0000
Chemical oxygen demand	mg/L	G-01A	04/18/2022	ND	10.0000		18.0000
Chloride	mg/L	G-01A	04/18/2022		0.5300		18.3000
Conductivity	umhos/cm	G-01A	04/18/2022		120.0000		540.0000
Dissolved antimony	mg/L	G-01A	04/18/2022		0.0001		0.0006
Dissolved arsenic	mg/L	G-01A	04/18/2022		0.0002		0.0043
Dissolved barium	mg/L	G-01A	04/18/2022	ND	0.0050		9.8945
Dissolved beryllium	mg/L	G-01A	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-01A	04/18/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-01A	04/18/2022		10.6000		22.8736
Dissolved chromium	mg/L	G-01A	04/18/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-01A	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01A	04/18/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-01A	04/18/2022	ND	0.0300		9.6403
Dissolved lead	mg/L	G-01A	04/18/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-01A	04/18/2022		2.9400		42.7765
Dissolved manganese	mg/L	G-01A	04/18/2022	ND	0.0100		11.9194
Dissolved nickel	mg/L	G-01A	04/18/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-01A	04/18/2022		0.9700		2.6065
Dissolved selenium	mg/L	G-01A	04/18/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-01A	04/18/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-01A	04/18/2022		5.0600		119.6577
Dissolved thallium	mg/L	G-01A	04/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-01A	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-01A	04/18/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-01A	04/18/2022		0.0930		1.3000
Nitrite nitrogen	mg-N/L	G-01A	04/18/2022		0.0030		0.0090
pH	std units	G-01A	04/18/2022		5.7200	***	6.60 - 9.39
Sulfate	mg/L	G-01A	04/18/2022		20.3000		333.9057
Total dissolved solids	mg/L	G-01A	04/18/2022		80.0000		381.4928
Total organic carbon	mg/L	G-01A	04/18/2022		4.1000		14.0000
Alkalinity (as caco3)	mg/L	G-04A	04/18/2022		240.0000	*	230.0000
Ammonia nitrogen	mg-N/L	G-04A	04/18/2022		0.2100		10.6815
Bicarbonate	mg/L	G-04A	04/18/2022		240.0000	*	210.0000
Chemical oxygen demand	mg/L	G-04A	04/18/2022		18.0000		18.0000
Chloride	mg/L	G-04A	04/18/2022		15.1000		18.3000
Conductivity	umhos/cm	G-04A	04/18/2022		530.0000		540.0000
Dissolved antimony	mg/L	G-04A	04/18/2022		0.0001		0.0006
Dissolved arsenic	mg/L	G-04A	04/18/2022		0.0110	***	0.0043
Dissolved barium	mg/L	G-04A	04/18/2022	ND	0.0050		9.8945
Dissolved beryllium	mg/L	G-04A	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-04A	04/18/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-04A	04/18/2022		47.4000	***	22.8736
Dissolved chromium	mg/L	G-04A	04/18/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-04A	04/18/2022		0.0120	***	0.0050
Dissolved copper	mg/L	G-04A	04/18/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-04A	04/18/2022		20.2000	***	9.6403
Dissolved lead	mg/L	G-04A	04/18/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-04A	04/18/2022		28.1000		42.7765
Dissolved manganese	mg/L	G-04A	04/18/2022		6.7900		11.9194
Dissolved nickel	mg/L	G-04A	04/18/2022		0.0150		0.0380
Dissolved potassium	mg/L	G-04A	04/18/2022		2.2200		2.6065
Dissolved selenium	mg/L	G-04A	04/18/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-04A	04/18/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-04A	04/18/2022		15.2000		119.6577
Dissolved thallium	mg/L	G-04A	04/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-04A	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-04A	04/18/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-04A	04/18/2022	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-04A	04/18/2022		0.0030		0.0090
pH	std units	G-04A	04/18/2022		5.4800	*	6.60 - 9.39
Sulfate	mg/L	G-04A	04/18/2022		31.4000		333.9057
Total dissolved solids	mg/L	G-04A	04/18/2022		350.0000		381.4928
Total organic carbon	mg/L	G-04A	04/18/2022		11.0000		14.0000
Alkalinity (as caco3)	mg/L	G-08D1	04/18/2022		130.5000		230.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Ammonia nitrogen	mg-N/L	G-08D1	04/18/2022		0.0695		10.6815
Bicarbonate	mg/L	G-08D1	04/18/2022		87.5000		210.0000
Chemical oxygen demand	mg/L	G-08D1	04/18/2022	ND	10.0000		18.0000
Chloride	mg/L	G-08D1	04/18/2022		3.9800		18.3000
Conductivity	umhos/cm	G-08D1	04/18/2022		400.0000		540.0000
Dissolved antimony	mg/L	G-08D1	04/18/2022		0.0002		0.0006
Dissolved arsenic	mg/L	G-08D1	04/18/2022		0.0027		0.0043
Dissolved barium	mg/L	G-08D1	04/18/2022	ND	0.0050		9.8945
Dissolved beryllium	mg/L	G-08D1	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-08D1	04/18/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-08D1	04/18/2022		0.6100		22.8736
Dissolved chromium	mg/L	G-08D1	04/18/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-08D1	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D1	04/18/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-08D1	04/18/2022	ND	0.0300		9.6403
Dissolved lead	mg/L	G-08D1	04/18/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-08D1	04/18/2022	ND	0.0500		42.7765
Dissolved manganese	mg/L	G-08D1	04/18/2022	ND	0.0100		11.9194
Dissolved nickel	mg/L	G-08D1	04/18/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-08D1	04/18/2022		0.3800		2.6065
Dissolved selenium	mg/L	G-08D1	04/18/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-08D1	04/18/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-08D1	04/18/2022		99.1500		119.6577
Dissolved thallium	mg/L	G-08D1	04/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-08D1	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-08D1	04/18/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-08D1	04/18/2022		0.1200		1.3000
Nitrite nitrogen	mg-N/L	G-08D1	04/18/2022		0.0080	**	0.0090
pH	std units	G-08D1	04/18/2022		8.9800		6.60 - 9.39
Sulfate	mg/L	G-08D1	04/18/2022		52.0500		333.9057
Total dissolved solids	mg/L	G-08D1	04/18/2022		240.0000		381.4928
Total organic carbon	mg/L	G-08D1	04/18/2022		5.4000		14.0000
Alkalinity (as caco3)	mg/L	G-09S	07/13/2022		190.0000	**	230.0000
Ammonia nitrogen	mg-N/L	G-09S	07/13/2022		0.0680		10.6815
Bicarbonate	mg/L	G-09S	07/13/2022		190.0000	**	210.0000
Chemical oxygen demand	mg/L	G-09S	07/13/2022	ND	10.0000		18.0000
Chloride	mg/L	G-09S	07/13/2022		5.3500		18.3000
Conductivity	umhos/cm	G-09S	07/13/2022		640.0000	***	540.0000
Dissolved antimony	mg/L	G-09S	07/13/2022	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-09S	07/13/2022		0.0031		0.0043
Dissolved barium	mg/L	G-09S	07/13/2022	ND	0.0050		9.8945
Dissolved beryllium	mg/L	G-09S	07/13/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-09S	07/13/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-09S	07/13/2022		1.2200	**	22.8736
Dissolved chromium	mg/L	G-09S	07/13/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-09S	07/13/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09S	07/13/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-09S	07/13/2022	ND	0.0300		9.6403
Dissolved lead	mg/L	G-09S	07/13/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-09S	07/13/2022	ND	0.0500		42.7765
Dissolved manganese	mg/L	G-09S	07/13/2022	ND	0.0100		11.9194
Dissolved nickel	mg/L	G-09S	07/13/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-09S	07/13/2022		0.5700	**	2.6065
Dissolved selenium	mg/L	G-09S	07/13/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-09S	07/13/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-09S	07/13/2022		163.0000	*	119.6577
Dissolved thallium	mg/L	G-09S	07/13/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-09S	07/13/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-09S	07/13/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-09S	07/13/2022		0.1200		1.3000
Nitrite nitrogen	mg-N/L	G-09S	07/13/2022		0.0070		0.0090
pH	std units	G-09S	07/13/2022		5.8800	***	6.60 - 9.39
Sulfate	mg/L	G-09S	07/13/2022		100.0000		333.9057
Total dissolved solids	mg/L	G-09S	07/13/2022		380.0000	**	381.4928
Total organic carbon	mg/L	G-09S	07/13/2022		9.4000		14.0000
Alkalinity (as caco3)	mg/L	G-10S	07/13/2022		450.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-10S	07/13/2022		0.2470		10.6815

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-10S	07/13/2022		450.0000	***	210.0000
Chemical oxygen demand	mg/L	G-10S	07/13/2022		10.0000		18.0000
Chloride	mg/L	G-10S	07/13/2022		8.8800		18.3000
Conductivity	umhos/cm	G-10S	07/13/2022		1400.0000	***	540.0000
Dissolved antimony	mg/L	G-10S	07/13/2022	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-10S	07/13/2022		0.0047	***	0.0043
Dissolved barium	mg/L	G-10S	07/13/2022		0.0060		9.8945
Dissolved beryllium	mg/L	G-10S	07/13/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-10S	07/13/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-10S	07/13/2022		92.3000	***	22.8736
Dissolved chromium	mg/L	G-10S	07/13/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-10S	07/13/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10S	07/13/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-10S	07/13/2022		10.2000	***	9.6403
Dissolved lead	mg/L	G-10S	07/13/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-10S	07/13/2022		23.2000		42.7765
Dissolved manganese	mg/L	G-10S	07/13/2022		2.9800		11.9194
Dissolved nickel	mg/L	G-10S	07/13/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-10S	07/13/2022		3.7500	***	2.6065
Dissolved selenium	mg/L	G-10S	07/13/2022	ND	0.0003	**	0.0004
Dissolved silver	mg/L	G-10S	07/13/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-10S	07/13/2022		178.0000	***	119.6577
Dissolved thallium	mg/L	G-10S	07/13/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10S	07/13/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-10S	07/13/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-10S	07/13/2022		0.0630		1.3000
Nitrite nitrogen	mg-N/L	G-10S	07/13/2022	ND	0.0030		0.0090
pH	std units	G-10S	07/13/2022		6.2600	***	6.60 - 9.39
Sulfate	mg/L	G-10S	07/13/2022		279.0000		333.9057
Total dissolved solids	mg/L	G-10S	07/13/2022		900.0000	***	381.4928
Total organic carbon	mg/L	G-10S	07/13/2022		41.0000	*	14.0000
Alkalinity (as caco3)	mg/L	G-11S	04/19/2022		66.0000		230.0000
Ammonia nitrogen	mg-N/L	G-11S	04/19/2022	ND	0.0200		10.6815
Bicarbonate	mg/L	G-11S	04/19/2022		66.0000		210.0000
Chemical oxygen demand	mg/L	G-11S	04/19/2022	ND	10.0000		18.0000
Chloride	mg/L	G-11S	04/19/2022		3.1700		18.3000
Conductivity	umhos/cm	G-11S	04/19/2022		190.0000		540.0000
Dissolved antimony	mg/L	G-11S	04/19/2022	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-11S	04/19/2022		0.0006		0.0043
Dissolved barium	mg/L	G-11S	04/19/2022	ND	0.0050		9.8945
Dissolved beryllium	mg/L	G-11S	04/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-11S	04/19/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-11S	04/19/2022		9.2200		22.8736
Dissolved chromium	mg/L	G-11S	04/19/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-11S	04/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-11S	04/19/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-11S	04/19/2022	ND	0.0300		9.6403
Dissolved lead	mg/L	G-11S	04/19/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-11S	04/19/2022		2.0900		42.7765
Dissolved manganese	mg/L	G-11S	04/19/2022		0.0650		11.9194
Dissolved nickel	mg/L	G-11S	04/19/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-11S	04/19/2022		0.9400		2.6065
Dissolved selenium	mg/L	G-11S	04/19/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-11S	04/19/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-11S	04/19/2022		35.5000		119.6577
Dissolved thallium	mg/L	G-11S	04/19/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-11S	04/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-11S	04/19/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-11S	04/19/2022	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-11S	04/19/2022	ND	0.0030		0.0090
pH	std units	G-11S	04/19/2022		5.8200	*	6.60 - 9.39
Sulfate	mg/L	G-11S	04/19/2022		22.6000		333.9057
Total dissolved solids	mg/L	G-11S	04/19/2022		130.0000		381.4928

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Total organic carbon	mg/L	G-11S	04/19/2022		5.2000		14.0000

* - Current value failed - awaiting verification.
** - Current value passed - previous exceedance not verified.
*** - Current value failed - exceedance verified.
**** - Current value passed - awaiting one more verification.
***** - Insufficient background data to compute prediction limit.
ND = Not Detected, Result = detection limit.

Table 5

Summary Statistics and Prediction Limits

Constituent	Units	Detect	N	Mean	SD	alpha	Factor	Pred Limit	Type		Conf
Alkalinity (as caco3)	mg/L	66	66					230.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	41	66	-2.4042	1.9861	0.0100	2.4031	10.6815	lognor		
Bicarbonate	mg/L	66	66					210.0000	nonpar		0.99
Chemical oxygen demand	mg/L	9	66					18.0000	nonpar		0.99
Chloride	mg/L	66	66					18.3000	nonpar		0.99
Conductivity	umhos/cm	65	65					540.0000	nonpar		0.99
Dissolved antimony	mg/L	26	64					0.0006	nonpar		0.99
Dissolved arsenic	mg/L	66	66	0.0016	0.0011	0.0100	2.4031	0.0043	normal		
Dissolved barium	mg/L	47	65	-4.2183	2.7078	0.0100	2.4043	9.8945	lognor		
Dissolved beryllium	mg/L	0	66					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	24	65					0.0010	nonpar		0.99
Dissolved calcium	mg/L	63	63	6.8030	6.6770	0.0100	2.4069	22.8736	normal		
Dissolved chromium	mg/L	22	66					0.0150	nonpar		0.99
Dissolved cobalt	mg/L	4	66					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	29	65					0.1150	nonpar		0.99
Dissolved iron	mg/L	45	66	-1.8506	1.7130	0.0100	2.4031	9.6403	lognor		
Dissolved lead	mg/L	28	66					0.0027	nonpar		0.99
Dissolved magnesium	mg/L	54	65	-0.1147	1.6099	0.0100	2.4043	42.7765	lognor		
Dissolved manganese	mg/L	46	66	-3.6464	2.5486	0.0100	2.4031	11.9194	lognor		
Dissolved nickel	mg/L	19	66					0.0380	nonpar		0.99
Dissolved potassium	mg/L	57	65	-0.5561	0.6297	0.0100	2.4043	2.6065	lognor		
Dissolved selenium	mg/L	2	62					0.0004	nonpar		0.99
Dissolved silver	mg/L	2	64					0.0002	nonpar		0.99
Dissolved sodium	mg/L	66	66	89.0788	12.7249	0.0100	2.4031	119.6577	normal		
Dissolved thallium	mg/L	3	66					0.0000	nonpar		0.99
Dissolved vanadium	mg/L	0	66					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	27	66					0.0300	nonpar		0.99
Nitrate nitrogen	mg-N/L	59	66					1.3000	nonpar		0.99
Nitrite nitrogen	mg-N/L	34	65	0.0023	0.0028	0.0100	2.4043	0.0090	normal		
pH	std units	67	67					6.60- 9.39	nonpar		0.99
Sulfate	mg/L	65	65	3.6989	0.8784	0.0100	2.4043	333.9057	lognor		
Total dissolved solids	mg/L	66	66	269.8485	46.4590	0.0100	2.4031	381.4928	normal		
Total organic carbon	mg/L	61	66					14.0000	nonpar		0.99

Conf = confidence level for passing initial test or one of two verification resamples at all downgradient wells for a single constituent (nonparametric test only).
* - Insufficient Data.
** - Calculated limit raised to Manual Reporting Limit.
*** - Nonparametric limit based on ND value.
For transformed data, mean and SD in transformed units and prediction limit in original units.
All sample sizes and statistics are based on outlier free data.
For nonparametric limits, median reporting limits are substituted for extreme reporting limit values.

Groundwater Analytical Summary - Shallow Wells: Fourth Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	Downgradient Wells																												Upgradient Wells									
						G-01A					G-04A					G-08D1					G-09S					G-10S					G-11S					G-14S					G-24S				
							D	V	Tr	Ch		D	V	Tr	Ch	10/18/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)																																											
Alkalinity (as CaCO3)	nonpar	64	64	230	--	Not sampled - insufficient water					Not sampled - insufficient water					160					340		E	I	N	460		V	I	N	76			D	Y	160					120				
Ammonia Nitrogen	lognor	64	41	10.6815	--											0.104					0.037					0.224			I	N	0.029					0.030					0.021				
Bicarbonate	nonpar	64	64	210	--											110					340		E	I	N	460		V	I	N	76			D	Y	160					120				
Calcium, Dissolved	normal	61	61	22.8736	--											0.64					68.6		E	D	N	94.4		V	D	N	7.97			I	N	0.78					6.75			D	N
Chemical Oxygen Demand	nonpar	64	7	18	--											10	U				10	U				18					10	U				10	U				10	U			
Chloride	lognor	64	64	18.3	250											2.52			D	N	4.39			D	N	8.69			D	N	3.49					1.89			D	N	4.6			D	N
Conductivity (umhos/cm)	nonpar	63	63	540	700											440					930		V	D	N	1400					220			D	N	400					430				
Magnesium, Dissolved	lognor	63	52	42.7765	--											0.05	U				27.2			D	N	23.2				Y	1.8			I	N	0.05	U				1.9			D	N
Nitrate Nitrogen (mg-N/L)	nonpar	64	56	1.3	10											0.29					0.01	U				0.044					0.01	U				0.01	U		D	N	0.01	U			
Nitrite Nitrogen (mg-N/L)	normal	62	33	0.009	1											0.019					0.003	U				0.014		E			0.003	U				0.028					0.01				
pH (std units)	nonpar	65	65	6.60-9.39	6.5-8.5											9.10					6.12		V		Y	6.46		V			6.12		V			8.51				Y	7.14				
Potassium, Dissolved	lognor	63	53	2.6065	--											0.3	U				3.5		E	D	N	2.12		P			0.7					0.3	U				0.3	U		D	Y
Sodium, Dissolved	lognor	64	64	119.6577	20											112			I	Y	88.5		P			152		V			37.2			D	N	99.2					98.0				
Sulfate	nonpar	63	63	333.9057	250											44.3					184			D	N	310			D	N	23.5			D	N	13.3				Y	76.6			D	N
Total Dissolved Solids	nonpar	64	64	381.4928	500											260					610		V	D	N	900		V	D	N	140					260					280				
Total Organic Carbon	nonpar	64	59	14	--											0.56					3.7			I	N	4.0		P			1.6					1.2					0.5	U			
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)																																											
Antimony	nonpar	61	25	0.0006	0.006	Not sampled - insufficient water					Not sampled - insufficient water					0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.00036					0.00019				
Arsenic	normal	64	64	0.0043	0.00005											0.00124					0.000695					0.0058		V			0.000402					0.00429			I	N	0.00056				
Barium	lognor	62	43	9.8945	1											0.005	U				0.005	U				0.0096					0.005	U				0.005	U				0.005	U			
Beryllium	nonpar	64	0	0.0005	0.004											0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U			
Cadmium	nonpar	63	20	0.001	0.005											0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Chromium	nonpar	64	21	0.015	0.05											0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Cobalt	nonpar	64	4	0.005	--											0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Copper	nonpar	63	25	0.115	1											0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Iron	lognor	64	42	9.6403	0.3											0.03	U			Y	0.03	U				9.97					0.03	U				0.03	U				0.03	U			
Lead	nonpar	62	23	0.0027	0.05											0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Manganese	lognor	64	43	11.9194	0.05											0.01	U				0.016			D	Y	3.13				Y	0.048			I	N	0.01	U			Y	0.023				
Nickel	nonpar	64	18	0.038	0.1											0.01	U				0.014					0.01	U				0.01	U				0.01	U				0.017				
Selenium	nonpar	60	2	0.0004	0.01											0.0003	U				0.00096		E			0.00032					0.0003	U				0.0003	U				0.0003	U			
Silver	nonpar	62	2	0.0002	0.05											0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Thallium	nonpar	64	3	0.00009	0.002											0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Vanadium	nonpar	64	0	0.01	--											0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U			
Zinc	nonpar	64	23	0.03	5											0.015	U				0.015	U				0.015	U				0.032		E			0.015	U				0.015	U			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)																																											
Antimony	--	--	--	--	0.006	Not sampled - insufficient water					Not sampled - insufficient water					0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U			
Arsenic	--	--	--	--	0.00005											0.0007					0.000793					0.00849					0.000624					0.00326					0.000762				
Barium	--	--	--	--	1											0.005	U				0.005	U				0.0058					0.005	U				0.0116					0.005	U			
Beryllium	--	--	--	--	0.004											0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U			
Cadmium	--	--	--	--	0.005											0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Chromium	--	--	--	--	0.05											0.01	U				0.01	U				0.01	U				0.01	U				0.01					0.01	U			
Cobalt	--	--	--	--	--											0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Copper	--	--	--	--	1											0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Iron	--	--	--	--	0.3											0.752					0.2					11.6					0.098					2.78					0.296				
Lead	--	--	--	--	0.05											0.0005	U				0.0005	U				0.0005	U				0.0005	U				0.000561					0.0005	U			
Manganese	--	--	--	--	0.05											0.0132					0.071					3.32					0.152					0.118					0.0516				
Nickel	--	--	--	--	0.1											0.01	U				0.021					0.01	U				0.01	U				0.01					0.012				
Selenium	--	--	--	--	0.01											0.00124					0.001	U				0.001	U				0.001	U				0.001	U				0.001	U			
Silver	--	--	--	--	0.05											0.0002	U				0.00026					0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Thallium	--	--	--	--	0.002											0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Vanadium	--	--	--	--	--											0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Zinc	--	--	--	--	5											0.0102					0.01	U				0.01	U				0.0114					0.01	U				0.0113				
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L)																																											
1,1,1-Trichloroethane	--	--	--	--	200	Not sampled - insufficient water					Not sampled - insufficient water					1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,1,2,2-Tetrachloroethane	--	--	--	--	--											1	U				1	U				1	U				1	U				1	U				1	U			
1,1,2-Trichloroethane	--	--	--	--	--											1	U				1	U				1	U				1	U				1	U				1	U			
1,1-Dichloroethane	--	--	--	--	1											1	U				1	U				1	U				1	U				1	U				1	U			

Groundwater Analytical Summary - Shallow Wells: Fourth Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	Downgradient Wells																										Upgradient Wells									
						G-01A					G-04A					G-08D1					G-09S					G-10S					G-11S					G-14S					G-24S				
							D	V	Tr	Ch		D	V	Tr	Ch	10/18/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L) (cont.)																																											
1,1-Dichloroethylene	--	--	--	--	--	Not sampled - insufficient water					Not sampled - insufficient water					1	U				1	U				1	U				1	U				1	U				1	U			
1,2,3-Trichloropropane	--	--	--	--	--											1	U				1	U				1	U				1	U				1	U				1	U			
1,2-Dibromo-3-chloropropane	--	--	--	--	0.2											0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
1,2-Dibromoethane	--	--	--	--	0.001											0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
1,2-Dichlorobenzene	--	--	--	--	--											1	U				1	U				1	U				1	U				1	U				1	U			
1,2-Dichloroethane	--	--	--	--	0.5											0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
1,2-Dichloropropane	--	--	--	--	0.6											0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
1,4-Dichlorobenzene	--	--	--	--	4											1	U				1	U				1	U				1	U				1	U				1	U			
2-Butanone	--	--	--	--	--											5	U				5	U				5	U				5	U				5	U				5	U			
2-Hexanone	--	--	--	--	--											5	U				5	U				5	U				5	U				5	U				5	U			
4-Methyl-2-Pentanone (MIBK)	--	--	--	--	--											5	U				5	U				5	U				5	U				5	U				5	U			
Acetone	--	--	--	--	--											5	U				5	U				5	U				5	U				5	U				5	U			
Acrylonitrile	--	--	--	--	0.07											0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U			
Benzene	--	--	--	--	1											1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Bromodichloromethane	--	--	--	--	0.3											0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Bromoform	--	--	--	--	5											1	U				1	U				1	U				1	U				1	U				1	U			
Bromomethane	--	--	--	--	--											3	U				3	U				3	U				3	U				3	U				3	U			
Carbon Disulfide	--	--	--	--	--											3	U				3	U				3	U				3	U				3	U				3	U			
Carbon Tetrachloride	--	--	--	--	0.3											0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Chlorobenzene	--	--	--	--	--											0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Chlorodibromomethane	--	--	--	--	0.5											0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U			
Chloroethane	--	--	--	--	--											1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Chloroform	--	--	--	--	7											1	U				1	U				1	U				1	U				1	U				1	U			
Chloromethane	--	--	--	--	--											1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
cis-1,2-Dichloroethene	--	--	--	--	--											0.03	U				0.03	U				**0.19**					0.03	U				0.03	U				0.03	U			
cis-1,3-Dichloropropene	--	--	--	--	0.2											0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Dibromomethane	--	--	--	--	--											0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Ethyl Benzene	--	--	--	--	--											1	U				1	U				1	U				1	U				1	U				1	U			
m,p-Xylene	--	--	--	--	--											1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Methyl Iodide	--	--	--	--	--											1	U				1	U				1	U				1	U				1	U				1	U			
Methylene Chloride	--	--	--	--	5											4	U				4	U				4	U				4	U				4	U				4	U			
o-Xylene	--	--	--	--	--											1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Styrene	--	--	--	--	--											1	U				1	U				1	U				1	U				1	U				1	U			
Tetrachloroethylene	--	--	--	--	0.8											0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Toluene	--	--	--	--	--											2	U				2	U				2	U				2	U				2	U				2	U			
trans-1,2-Dichloroethene	--	--	--	--	--											1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
trans-1,3-Dichloropropene	--	--	--	--	0.2											0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
trans-1,4-Dichloro-2-butene	--	--	--	--	--											1	U				1	U				1	U				1	U				1	U				1	U			
Trichlorethene (1,1,2-Trichloro	--	--	--	--	3											1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Trichlorofluoromethane	--	--	--	--	--											2	U				2	U				2	U				2	U				2	U				2	U			
Vinyl Acetate	--	--	--	--	--											5	U				5	U				5	U				5	U				5	U				5	U			
Vinyl Chloride	--	--	--	--	0.02											0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U			

D: U = Indicates compound was not detected at the given reporting limit; X indicates that the compound was detected in the trip blank and contamination is suspected.

V: E= Exceedance, waiting verification based on subsequent lab data; V= Exceedance verified based on previous lab data; P=Passed, previous exceedance not verified based on current lab data.

Tr: I=increasing Trend, D=Decreasing Trend;

Ch: Y indicates a change in trend from previous quarter; N means no change in trend.

Values in **purple** exceed the prediction limit; indicates that a value exceeded the Groundwater Standards

The groundwater standards listed are based on the Washington Administrative Code (WAC) 173-200 groundwater limits or WAC 246-290, whichever is more protective of groundwater quality.

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Alkalinity (as caco3)	mg/L	G-01A	04/18/2022		28.0000		230.0000
Ammonia nitrogen	mg-N/L	G-01A	04/18/2022	ND	0.0200		9.5594
Bicarbonate	mg/L	G-01A	04/18/2022		28.0000		210.0000
Chemical oxygen demand	mg/L	G-01A	04/18/2022	ND	10.0000		18.0000
Chloride	mg/L	G-01A	04/18/2022		0.5300		16.4155
Conductivity	umhos/cm	G-01A	04/18/2022		120.0000		540.0000
Dissolved antimony	mg/L	G-01A	04/18/2022		0.0001		0.0006
Dissolved arsenic	mg/L	G-01A	04/18/2022		0.0002		0.0045
Dissolved barium	mg/L	G-01A	04/18/2022	ND	0.0050		14.1185
Dissolved beryllium	mg/L	G-01A	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-01A	04/18/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-01A	04/18/2022		10.6000		22.2739
Dissolved chromium	mg/L	G-01A	04/18/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-01A	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01A	04/18/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-01A	04/18/2022	ND	0.0300		10.1743
Dissolved lead	mg/L	G-01A	04/18/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-01A	04/18/2022		2.9400		39.0100
Dissolved manganese	mg/L	G-01A	04/18/2022	ND	0.0100		14.6168
Dissolved nickel	mg/L	G-01A	04/18/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-01A	04/18/2022		0.9700		2.6424
Dissolved selenium	mg/L	G-01A	04/18/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-01A	04/18/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-01A	04/18/2022		5.0600		119.6575
Dissolved thallium	mg/L	G-01A	04/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-01A	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-01A	04/18/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-01A	04/18/2022		0.0930		1.3000
Nitrite nitrogen	mg-N/L	G-01A	04/18/2022		0.0030		0.0092
pH	std units	G-01A	04/18/2022		5.7200	***	6.60 - 9.39
Sulfate	mg/L	G-01A	04/18/2022		20.3000		333.1762
Total dissolved solids	mg/L	G-01A	04/18/2022		80.0000		360.0000
Total organic carbon	mg/L	G-01A	04/18/2022		4.1000		14.0000
Alkalinity (as caco3)	mg/L	G-04A	04/18/2022		240.0000	*	230.0000
Ammonia nitrogen	mg-N/L	G-04A	04/18/2022		0.2100		9.5594
Bicarbonate	mg/L	G-04A	04/18/2022		240.0000	*	210.0000
Chemical oxygen demand	mg/L	G-04A	04/18/2022		18.0000		18.0000
Chloride	mg/L	G-04A	04/18/2022		15.1000		16.4155
Conductivity	umhos/cm	G-04A	04/18/2022		530.0000		540.0000
Dissolved antimony	mg/L	G-04A	04/18/2022		0.0001		0.0006
Dissolved arsenic	mg/L	G-04A	04/18/2022		0.0110	***	0.0045
Dissolved barium	mg/L	G-04A	04/18/2022	ND	0.0050		14.1185
Dissolved beryllium	mg/L	G-04A	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-04A	04/18/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-04A	04/18/2022		47.4000	***	22.2739
Dissolved chromium	mg/L	G-04A	04/18/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-04A	04/18/2022		0.0120	***	0.0050
Dissolved copper	mg/L	G-04A	04/18/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-04A	04/18/2022		20.2000	***	10.1743
Dissolved lead	mg/L	G-04A	04/18/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-04A	04/18/2022		28.1000		39.0100
Dissolved manganese	mg/L	G-04A	04/18/2022		6.7900		14.6168
Dissolved nickel	mg/L	G-04A	04/18/2022		0.0150		0.0380
Dissolved potassium	mg/L	G-04A	04/18/2022		2.2200		2.6424
Dissolved selenium	mg/L	G-04A	04/18/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-04A	04/18/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-04A	04/18/2022		15.2000		119.6575
Dissolved thallium	mg/L	G-04A	04/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-04A	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-04A	04/18/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-04A	04/18/2022	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-04A	04/18/2022		0.0030		0.0092
pH	std units	G-04A	04/18/2022		5.4800	*	6.60 - 9.39
Sulfate	mg/L	G-04A	04/18/2022		31.4000		333.1762
Total dissolved solids	mg/L	G-04A	04/18/2022		350.0000		360.0000
Total organic carbon	mg/L	G-04A	04/18/2022		11.0000		14.0000
Alkalinity (as caco3)	mg/L	G-08D1	10/18/2022		160.0000		230.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Ammonia nitrogen	mg-N/L	G-08D1	10/18/2022		0.1040		9.5594
Bicarbonate	mg/L	G-08D1	10/18/2022		110.0000		210.0000
Chemical oxygen demand	mg/L	G-08D1	10/18/2022	ND	10.0000		18.0000
Chloride	mg/L	G-08D1	10/18/2022		2.5200		16.4155
Conductivity	umhos/cm	G-08D1	10/18/2022		440.0000		540.0000
Dissolved antimony	mg/L	G-08D1	10/18/2022	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-08D1	10/18/2022		0.0012		0.0045
Dissolved barium	mg/L	G-08D1	10/18/2022	ND	0.0050		14.1185
Dissolved beryllium	mg/L	G-08D1	10/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-08D1	10/18/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-08D1	10/18/2022		0.6400		22.2739
Dissolved chromium	mg/L	G-08D1	10/18/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-08D1	10/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D1	10/18/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-08D1	10/18/2022	ND	0.0300		10.1743
Dissolved lead	mg/L	G-08D1	10/18/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-08D1	10/18/2022	ND	0.0500		39.0100
Dissolved manganese	mg/L	G-08D1	10/18/2022	ND	0.0100		14.6168
Dissolved nickel	mg/L	G-08D1	10/18/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-08D1	10/18/2022	ND	0.3000		2.6424
Dissolved selenium	mg/L	G-08D1	10/18/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-08D1	10/18/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-08D1	10/18/2022		112.0000		119.6575
Dissolved thallium	mg/L	G-08D1	10/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-08D1	10/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-08D1	10/18/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-08D1	10/18/2022		0.2900		1.3000
Nitrite nitrogen	mg-N/L	G-08D1	10/18/2022		0.0190	*	0.0092
pH	std units	G-08D1	10/18/2022		9.1000		6.60 - 9.39
Sulfate	mg/L	G-08D1	10/18/2022		44.3000		333.1762
Total dissolved solids	mg/L	G-08D1	10/18/2022		260.0000		360.0000
Total organic carbon	mg/L	G-08D1	10/18/2022		0.5600		14.0000
Alkalinity (as caco3)	mg/L	G-09S	10/19/2022		340.0000	*	230.0000
Ammonia nitrogen	mg-N/L	G-09S	10/19/2022		0.0370		9.5594
Bicarbonate	mg/L	G-09S	10/19/2022		340.0000	*	210.0000
Chemical oxygen demand	mg/L	G-09S	10/19/2022	ND	10.0000		18.0000
Chloride	mg/L	G-09S	10/19/2022		4.3900		16.4155
Conductivity	umhos/cm	G-09S	10/19/2022		930.0000	***	540.0000
Dissolved antimony	mg/L	G-09S	10/19/2022	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-09S	10/19/2022		0.0007		0.0045
Dissolved barium	mg/L	G-09S	10/19/2022	ND	0.0050		14.1185
Dissolved beryllium	mg/L	G-09S	10/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-09S	10/19/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-09S	10/19/2022		68.6000	*	22.2739
Dissolved chromium	mg/L	G-09S	10/19/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-09S	10/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09S	10/19/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-09S	10/19/2022	ND	0.0300		10.1743
Dissolved lead	mg/L	G-09S	10/19/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-09S	10/19/2022		27.2000		39.0100
Dissolved manganese	mg/L	G-09S	10/19/2022		0.0160		14.6168
Dissolved nickel	mg/L	G-09S	10/19/2022		0.0140		0.0380
Dissolved potassium	mg/L	G-09S	10/19/2022		3.5000	*	2.6424
Dissolved selenium	mg/L	G-09S	10/19/2022		0.0010	*	0.0004
Dissolved silver	mg/L	G-09S	10/19/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-09S	10/19/2022		88.5000	**	119.6575
Dissolved thallium	mg/L	G-09S	10/19/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-09S	10/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-09S	10/19/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-09S	10/19/2022	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-09S	10/19/2022	ND	0.0030		0.0092
pH	std units	G-09S	10/19/2022		6.1200	***	6.60 - 9.39
Sulfate	mg/L	G-09S	10/19/2022		184.0000		333.1762
Total dissolved solids	mg/L	G-09S	10/19/2022		610.0000	***	360.0000
Total organic carbon	mg/L	G-09S	10/19/2022		3.7000		14.0000
Alkalinity (as caco3)	mg/L	G-10S	10/19/2022		460.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-10S	10/19/2022		0.2240		9.5594

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-10S	10/19/2022		460.0000	***	210.0000
Chemical oxygen demand	mg/L	G-10S	10/19/2022		18.0000		18.0000
Chloride	mg/L	G-10S	10/19/2022		8.6900		16.4155
Conductivity	umhos/cm	G-10S	10/19/2022		1400.0000	***	540.0000
Dissolved antimony	mg/L	G-10S	10/19/2022	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-10S	10/19/2022		0.0058	***	0.0045
Dissolved barium	mg/L	G-10S	10/19/2022		0.0096		14.1185
Dissolved beryllium	mg/L	G-10S	10/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-10S	10/19/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-10S	10/19/2022		94.4000	***	22.2739
Dissolved chromium	mg/L	G-10S	10/19/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-10S	10/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10S	10/19/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-10S	10/19/2022		9.9700	**	10.1743
Dissolved lead	mg/L	G-10S	10/19/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-10S	10/19/2022		23.2000		39.0100
Dissolved manganese	mg/L	G-10S	10/19/2022		3.1300		14.6168
Dissolved nickel	mg/L	G-10S	10/19/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-10S	10/19/2022		2.1200	**	2.6424
Dissolved selenium	mg/L	G-10S	10/19/2022		0.0003		0.0004
Dissolved silver	mg/L	G-10S	10/19/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-10S	10/19/2022		152.0000	***	119.6575
Dissolved thallium	mg/L	G-10S	10/19/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10S	10/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-10S	10/19/2022	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-10S	10/19/2022		0.0440		1.3000
Nitrite nitrogen	mg-N/L	G-10S	10/19/2022		0.0140	*	0.0092
pH	std units	G-10S	10/19/2022		6.4600	***	6.60 - 9.39
Sulfate	mg/L	G-10S	10/19/2022		310.0000		333.1762
Total dissolved solids	mg/L	G-10S	10/19/2022		900.0000	***	360.0000
Total organic carbon	mg/L	G-10S	10/19/2022		4.0000	**	14.0000
Alkalinity (as caco3)	mg/L	G-11S	10/18/2022		76.0000		230.0000
Ammonia nitrogen	mg-N/L	G-11S	10/18/2022		0.0290		9.5594
Bicarbonate	mg/L	G-11S	10/18/2022		76.0000		210.0000
Chemical oxygen demand	mg/L	G-11S	10/18/2022	ND	10.0000		18.0000
Chloride	mg/L	G-11S	10/18/2022		3.4900		16.4155
Conductivity	umhos/cm	G-11S	10/18/2022		220.0000		540.0000
Dissolved antimony	mg/L	G-11S	10/18/2022	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-11S	10/18/2022		0.0004		0.0045
Dissolved barium	mg/L	G-11S	10/18/2022	ND	0.0050		14.1185
Dissolved beryllium	mg/L	G-11S	10/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-11S	10/18/2022	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-11S	10/18/2022		7.9700		22.2739
Dissolved chromium	mg/L	G-11S	10/18/2022	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-11S	10/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-11S	10/18/2022	ND	0.0200		0.1150
Dissolved iron	mg/L	G-11S	10/18/2022	ND	0.0300		10.1743
Dissolved lead	mg/L	G-11S	10/18/2022	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-11S	10/18/2022		1.8000		39.0100
Dissolved manganese	mg/L	G-11S	10/18/2022		0.0480		14.6168
Dissolved nickel	mg/L	G-11S	10/18/2022	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-11S	10/18/2022		0.7000		2.6424
Dissolved selenium	mg/L	G-11S	10/18/2022	ND	0.0003		0.0004
Dissolved silver	mg/L	G-11S	10/18/2022	ND	0.0001		0.0002
Dissolved sodium	mg/L	G-11S	10/18/2022		37.2000		119.6575
Dissolved thallium	mg/L	G-11S	10/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-11S	10/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-11S	10/18/2022		0.0320	*	0.0300
Nitrate nitrogen	mg-N/L	G-11S	10/18/2022	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-11S	10/18/2022	ND	0.0030		0.0092
pH	std units	G-11S	10/18/2022		6.1200	***	6.60 - 9.39
Sulfate	mg/L	G-11S	10/18/2022		23.5000		333.1762
Total dissolved solids	mg/L	G-11S	10/18/2022		140.0000		360.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Total organic carbon	mg/L	G-11S	10/18/2022		1.6000		14.0000

* - Current value failed - awaiting verification.
** - Current value passed - previous exceedance not verified.
*** - Current value failed - exceedance verified.
**** - Current value passed - awaiting one more verification.
***** - Insufficient background data to compute prediction limit.
ND = Not Detected, Result = detection limit.

Table 5

Summary Statistics and Prediction Limits

Constituent	Units	Detect	N	Mean	SD	alpha	Factor	Pred Limit	Type		Conf
Alkalinity (as caco3)	mg/L	64	64					230.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	41	64	-2.4752	1.9674	0.0100	2.4056	9.5594	lognor		
Bicarbonate	mg/L	64	64					210.0000	nonpar		0.99
Chemical oxygen demand	mg/L	7	64					18.0000	nonpar		0.99
Chloride	mg/L	64	64	1.3747	0.5918	0.0100	2.4056	16.4155	lognor		
Conductivity	umhos/cm	63	63					540.0000	nonpar		0.99
Dissolved antimony	mg/L	25	61					0.0006	nonpar		0.99
Dissolved arsenic	mg/L	64	64	0.0016	0.0012	0.0100	2.4056	0.0045	normal		
Dissolved barium	mg/L	43	62	-4.0734	2.7908	0.0100	2.4082	14.1185	lognor		
Dissolved beryllium	mg/L	0	64					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	20	63					0.0010	nonpar		0.99
Dissolved calcium	mg/L	61	61	6.5987	6.5053	0.0100	2.4096	22.2739	normal		
Dissolved chromium	mg/L	21	64					0.0150	nonpar		0.99
Dissolved cobalt	mg/L	4	64					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	25	63					0.1150	nonpar		0.99
Dissolved iron	mg/L	42	64	-1.7254	1.6816	0.0100	2.4056	10.1743	lognor		
Dissolved lead	mg/L	23	62					0.0027	nonpar		0.99
Dissolved magnesium	mg/L	52	63	-0.1030	1.5650	0.0100	2.4069	39.0100	lognor		
Dissolved manganese	mg/L	43	64	-3.4342	2.5426	0.0100	2.4056	14.6168	lognor		
Dissolved nickel	mg/L	18	64					0.0380	nonpar		0.99
Dissolved potassium	mg/L	53	63	-0.5291	0.6235	0.0100	2.4069	2.6424	lognor		
Dissolved selenium	mg/L	2	60					0.0004	nonpar		0.99
Dissolved silver	mg/L	2	62					0.0002	nonpar		0.99
Dissolved sodium	mg/L	64	64	89.0359	12.7295	0.0100	2.4056	119.6575	normal		
Dissolved thallium	mg/L	3	64					0.0000	nonpar		0.99
Dissolved vanadium	mg/L	0	64					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	23	64					0.0300	nonpar		0.99
Nitrate nitrogen	mg-N/L	56	64					1.3000	nonpar		0.99
Nitrite nitrogen	mg-N/L	33	62	0.0023	0.0029	0.0100	2.4082	0.0092	normal		
pH	std units	65	65					6.60- 9.39	nonpar		0.99
Sulfate	mg/L	63	63	3.6851	0.8823	0.0100	2.4069	333.1762	lognor		
Total dissolved solids	mg/L	64	64					360.0000	nonpar		0.99
Total organic carbon	mg/L	59	64					14.0000	nonpar		0.99

Conf = confidence level for passing initial test or one of two verification resamples at all downgradient wells for a single constituent (nonparametric test only).
* - Insufficient Data.
** - Calculated limit raised to Manual Reporting Limit.
*** - Nonparametric limit based on ND value.
For transformed data, mean and SD in transformed units and prediction limit in original units.
All sample sizes and statistics are based on outlier free data.
For nonparametric limits, median reporting limits are substituted for extreme reporting limit values.

Deep Wells

Groundwater Analytical Summary - Deep Wells: First Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09D					G-10D				
						1/26/22	D	V	Tr	Ch	1/26/22	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)															
Alkalinity (as CaCO3)	nonpar	56	56	280	--	190					530		V		
Ammonia Nitrogen	lognor	53	53	0.2927	--	0.15			I	N	0.35		V		
Bicarbonate	nonpar	56	56	280	--	120			D	N	530		V		
Calcium, Dissolved	nonpar	53	53	6.32	--	1.44			D	N	20.6		V	D	N
Chemical Oxygen Demand	nonpar	55	10	28	--	10	U				10	U			
Chloride	nonpar	56	55	8.7455	250	5.31		P			15.9		V	D	N
Conductivity (umhos/cm)	nonpar	56	56	530	700	620		V			1500		V		
Magnesium, Dissolved	nonpar	54	39	2.33	--	0.15					1.82			D	N
Nitrate Nitrogen (mg-N/L)	nonpar	55	14	0.21	10	0.13					0.023				
Nitrite Nitrogen (mg-N/L)	nonpar	56	23	0.054	1	0.03					0.003	U			
pH (std units)	nonpar	56	56	6.02-9.88	6.5-8.5	9.09					6.80				
Potassium, Dissolved	lognor	56	45	1.849	--	0.42					1.54				
Sodium, Dissolved	normal	55	55	130.7721	20	164		V			315		V		
Sulfate	nonpar	56	56	66.05	250	102		V			265		V	D	N
Total Dissolved Solids	nonpar	56	56	460	500	390					980		V		
Total Organic Carbon	nonpar	56	56	26	--	3.1					21.0				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony	nonpar	54	7	0.0008	0.006	0.0003	U				0.0003	U			
Arsenic	nonpar	55	44	0.0021	0.00005	0.00303		V	D	N	0.0015				
Barium	nonpar	55	14	0.0046	1	0.005	U				0.005	U			
Beryllium	nonpar	50	0	0.0005	0.004	0.005	U				0.005	U			
Cadmium	nonpar	54	8	0.0001	0.005	0.00005	U				0.00005	U			
Chromium	nonpar	56	6	0.0136	0.05	0.01	U				0.01	U			
Cobalt	nonpar	56	2	0.005	--	0.01	U				0.01	U			
Copper	nonpar	53	8	0.055	1	0.02	U				0.02	U			
Iron	lognor	55	28	19.6852	0.3	0.03					0.542				
Lead	nonpar	56	18	0.0023	0.05	0.0001	U		D	N	0.0001	U			
Manganese	normal	54	36	13.3342	0.05	0.005	U				0.347			D	N
Nickel	nonpar	56	3	0.026	0.1	0.01	U				0.01	U			
Selenium	nonpar	55	15	0.0014	0.01	0.00055					0.00052				
Silver	nonpar	54	1	0.0001	0.05	0.00005	U				0.00005	U			
Thallium	nonpar	56	4	0.0001	0.002	0.00005	U				0.00005	U			
Vanadium	nonpar	56	1	0.01	--	0.01	U				0.01	U			
Zinc	nonpar	56	14	0.012	5	0.01	U				0.01	U			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony					0.006	0.0003	U				0.0003	U			
Arsenic					0.00005	0.00298					0.0013				
Barium					1	0.0067					0.005	U			
Beryllium					0.004	0.005	U				0.005	U			
Cadmium					0.005	0.00005	U				0.00005	U			
Chromium					0.05	0.01	U				0.01	U			
Cobalt					--	0.01	U				0.01	U			
Copper					1	0.012					0.01	U			
Iron					0.3	1.42					0.581				
Lead					0.05	0.00151					0.0001	U			
Manganese					0.05	0.0967					0.371				
Nickel					0.1	0.01	U				0.01	U			
Selenium					0.01	0.0003					0.0003	U			
Silver					0.05	0.0001	U				0.0001	U			
Thallium					0.002	0.0001	U				0.0001	U			
Vanadium					--	0.02	U				0.02	U			
Zinc					5	0.01	U				0.01	U			
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L)															
1,1,1-Trichloroethane					200	1	U				1	U			
1,1,2,2-Tetrachloroethane					--	1	U				1	U			
1,1,2-Trichloroethane					--	1	U				1	U			
1,1-Dichloroethane					1	1	U				1	U			

Groundwater Analytical Summary - Deep Wells: First Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09D					G-10D				
						1/26/22	D	V	Tr	Ch	1/26/22	D	V	Tr	Ch
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L) (cont.)															
1,1-Dichloroethylene					--	1	U				1	U			
1,2,3-Trichloropropane					--	1	U				1	U			
1,2-Dibromo-3-chloropropane					0.2	0.05	U				0.05	U			
1,2-Dibromoethane					0.001	0.01	U				0.01	U			
1,2-Dichlorobenzene					--	1	U				1	U			
1,2-Dichloroethane					0.5	0.03	U				0.03	U			
1,2-Dichloropropane					0.6	0.02	U				0.02	U			
1,4-Dichlorobenzene					4	1	U				1	U			
2-Butanone					--	5	U				5	U			
2-Hexanone					--	5	U				5	U			
4-Methyl-2-Pentanone (MIBK)					--	5	U				5	U			
Acetone					--	5	U				**7.0**				
Acrylonitrile					0.07	0.03	U				0.03	U			
Benzene					1	1	U				1	U			
Bromodichloromethane					0.3	0.02	U				0.02	U			
Bromoform					5	1	U				1	U			
Bromomethane					--	1	U				1	U			
Carbon Disulfide					--	1	U				1	U			
Carbon Tetrachloride					0.3	0.02	U				0.02	U			
Chlorobenzene					--	0.03	U				0.03	U			
Chlorodibromomethane					0.5	0.5	U				0.5	U			
Chloroethane					--	1	U				1	U			
Chloroform					7	1	U				1	U			
Chloromethane					--	2	U				2	U			
cis-1,2-Dichloroethene					--	0.02	U				0.02	U			
cis-1,3-Dichloropropene					0.2	0.03	U				0.03	U			
Dibromomethane					--	0.02	U				0.02	U			
Ethyl Benzene					--	1	U				1	U			
m,p-Xylene					--	1	U				1	U			
Methyl Iodide					--	1	U				1	U			
Methylene Chloride					5	2	U				**3.7**				
o-Xylene					--	1	U				1	U			
Styrene					--	1	U				1	U			
Tetrachloroethylene					0.8	0.02	U				0.02	U			
Toluene					--	2	U				2	U			
trans-1,2-Dichloroethene					--	1	U				1	U			
trans-1,3-Dichloropropene					0.2	0.02	U				0.02	U			
trans-1,4-Dichloro-2-butene					--	5	U				5	U			
Trichlorethene (1,1,2-Trichloroethylene)					3	1	U				1	U			
Trichlorofluoromethane					--	1	U				1	U			
Vinyl Acetate					--	5	U				5	U			
Vinyl Chloride					0.02	0.15					0.01	U			

D: U = Indicates compound was not detected at the given reporting limit; X indicates that the compound was detected in the trip blank and contamination is suspected.

V: E= Exceedance, waiting verification based on subsequent lab data; V= Exceedance verified based on previous lab data; P=Passed, previous exceedance not verified based on current lab data.

Tr: I=increasing Trend, D=Decreasing Trend;

Ch: Y indicates a change in trend from previous quarter; N means no change in trend.

Values in **purple** exceed the prediction limit; indicates that a value exceeded the Groundwater Standards

The groundwater standards listed are based on the Washington Administrative Code (WAC) 173-200 groundwater limits as modified by the TMS 91-11 standards.

B = Methylene chloride was measured in the lab blank at a similar concentration - contamination during analysis suspected.

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Alkalinity (as caco3)	mg/L	G-01D	10/19/2021		230.0000	**	280.0000
Ammonia nitrogen	mg-N/L	G-01D	10/19/2021		0.1600		0.2805
Bicarbonate	mg/L	G-01D	10/19/2021		230.0000		280.0000
Chemical oxygen demand	mg/L	G-01D	10/19/2021	ND	10.0000		28.0000
Chloride	mg/L	G-01D	10/19/2021		7.6100	***	6.8600
Conductivity	umhos/cm	G-01D	10/19/2021		590.0000	***	530.0000
Dissolved antimony	mg/L	G-01D	10/19/2021	ND	0.0003		0.0008
Dissolved arsenic	mg/L	G-01D	10/19/2021		0.0007		0.0021
Dissolved barium	mg/L	G-01D	10/19/2021	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-01D	10/19/2021	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-01D	10/19/2021	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-01D	10/19/2021		1.0400		6.3200
Dissolved chromium	mg/L	G-01D	10/19/2021	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-01D	10/19/2021	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01D	10/19/2021	ND	0.0200		0.0080
Dissolved iron	mg/L	G-01D	10/19/2021	ND	0.0200		20.0602
Dissolved lead	mg/L	G-01D	10/19/2021	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-01D	10/19/2021	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-01D	10/19/2021	ND	0.0050		0.0121
Dissolved nickel	mg/L	G-01D	10/19/2021	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-01D	10/19/2021		0.4600		1.9862
Dissolved selenium	mg/L	G-01D	10/19/2021	ND	0.0005		0.0014
Dissolved silver	mg/L	G-01D	10/19/2021	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-01D	10/19/2021		140.0000	***	131.1936
Dissolved thallium	mg/L	G-01D	10/19/2021	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-01D	10/19/2021	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-01D	10/19/2021	ND	0.0100	**	0.0120
Nitrate nitrogen	mg-N/L	G-01D	10/19/2021	ND	0.0100		0.2100
Nitrite nitrogen	mg-N/L	G-01D	10/19/2021		0.0470		0.0540
pH	std units	G-01D	10/19/2021		8.9800		7.27 - 9.88
Sulfate	mg/L	G-01D	10/19/2021		51.4000		74.7000
Total dissolved solids	mg/L	G-01D	10/19/2021		340.0000	**	460.0000
Total organic carbon	mg/L	G-01D	10/19/2021		1.3000		25.0000
Alkalinity (as caco3)	mg/L	G-02D	10/19/2021		96.0000		280.0000
Ammonia nitrogen	mg-N/L	G-02D	10/19/2021	ND	0.0200		0.2805
Bicarbonate	mg/L	G-02D	10/19/2021		96.0000		280.0000
Chemical oxygen demand	mg/L	G-02D	10/19/2021	ND	10.0000		28.0000
Chloride	mg/L	G-02D	10/19/2021		5.4600		6.8600
Conductivity	umhos/cm	G-02D	10/19/2021		340.0000		530.0000
Dissolved antimony	mg/L	G-02D	10/19/2021	ND	0.0003		0.0008
Dissolved arsenic	mg/L	G-02D	10/19/2021		0.0036	***	0.0021
Dissolved barium	mg/L	G-02D	10/19/2021	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-02D	10/19/2021	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-02D	10/19/2021	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-02D	10/19/2021		0.4200		6.3200
Dissolved chromium	mg/L	G-02D	10/19/2021	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-02D	10/19/2021	ND	0.0100		0.0050
Dissolved copper	mg/L	G-02D	10/19/2021	ND	0.0200		0.0080
Dissolved iron	mg/L	G-02D	10/19/2021		0.0290		20.0602
Dissolved lead	mg/L	G-02D	10/19/2021	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-02D	10/19/2021	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-02D	10/19/2021	ND	0.0050		0.0121
Dissolved nickel	mg/L	G-02D	10/19/2021	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-02D	10/19/2021		0.2400		1.9862
Dissolved selenium	mg/L	G-02D	10/19/2021	ND	0.0005		0.0014
Dissolved silver	mg/L	G-02D	10/19/2021	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-02D	10/19/2021		80.8000		131.1936
Dissolved thallium	mg/L	G-02D	10/19/2021	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-02D	10/19/2021	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-02D	10/19/2021	ND	0.0100		0.0120
Nitrate nitrogen	mg-N/L	G-02D	10/19/2021	ND	0.0100	**	0.2100
Nitrite nitrogen	mg-N/L	G-02D	10/19/2021		0.0140		0.0540
pH	std units	G-02D	10/19/2021		7.0500	*	7.27 - 9.88
Sulfate	mg/L	G-02D	10/19/2021		57.3000		74.7000
Total dissolved solids	mg/L	G-02D	10/19/2021		200.0000		460.0000
Total organic carbon	mg/L	G-02D	10/19/2021		0.6000		25.0000
Alkalinity (as caco3)	mg/L	G-06B	10/19/2021		270.0000		280.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Ammonia nitrogen	mg-N/L	G-06B	10/19/2021		0.0780		0.2805
Bicarbonate	mg/L	G-06B	10/19/2021		270.0000		280.0000
Chemical oxygen demand	mg/L	G-06B	10/19/2021	ND	10.0000		28.0000
Chloride	mg/L	G-06B	10/19/2021		7.1200	***	6.8600
Conductivity	umhos/cm	G-06B	10/19/2021		660.0000	***	530.0000
Dissolved antimony	mg/L	G-06B	10/19/2021	ND	0.0003		0.0008
Dissolved arsenic	mg/L	G-06B	10/19/2021		0.0034	***	0.0021
Dissolved barium	mg/L	G-06B	10/19/2021	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-06B	10/19/2021	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-06B	10/19/2021	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-06B	10/19/2021		1.0500		6.3200
Dissolved chromium	mg/L	G-06B	10/19/2021	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-06B	10/19/2021	ND	0.0100		0.0050
Dissolved copper	mg/L	G-06B	10/19/2021	ND	0.0200		0.0080
Dissolved iron	mg/L	G-06B	10/19/2021		0.0350		20.0602
Dissolved lead	mg/L	G-06B	10/19/2021	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-06B	10/19/2021	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-06B	10/19/2021	ND	0.0050		0.0121
Dissolved nickel	mg/L	G-06B	10/19/2021	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-06B	10/19/2021		0.4200		1.9862
Dissolved selenium	mg/L	G-06B	10/19/2021	ND	0.0005		0.0014
Dissolved silver	mg/L	G-06B	10/19/2021	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-06B	10/19/2021		181.0000	***	131.1936
Dissolved thallium	mg/L	G-06B	10/19/2021	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-06B	10/19/2021	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-06B	10/19/2021	ND	0.0100		0.0120
Nitrate nitrogen	mg-N/L	G-06B	10/19/2021		0.1900		0.2100
Nitrite nitrogen	mg-N/L	G-06B	10/19/2021		0.0110		0.0540
pH	std units	G-06B	10/19/2021		7.6700		7.27 - 9.88
Sulfate	mg/L	G-06B	10/19/2021		63.5000		74.7000
Total dissolved solids	mg/L	G-06B	10/19/2021		410.0000		460.0000
Total organic carbon	mg/L	G-06B	10/19/2021		2.2000		25.0000
Alkalinity (as caco3)	mg/L	G-08D2	10/19/2021		180.0000		280.0000
Ammonia nitrogen	mg-N/L	G-08D2	10/19/2021		0.1830		0.2805
Bicarbonate	mg/L	G-08D2	10/19/2021		180.0000		280.0000
Chemical oxygen demand	mg/L	G-08D2	10/19/2021	ND	10.0000		28.0000
Chloride	mg/L	G-08D2	10/19/2021		2.5350		6.8600
Conductivity	umhos/cm	G-08D2	10/19/2021		480.0000		530.0000
Dissolved antimony	mg/L	G-08D2	10/19/2021	ND	0.0003		0.0008
Dissolved arsenic	mg/L	G-08D2	10/19/2021		0.0005		0.0021
Dissolved barium	mg/L	G-08D2	10/19/2021	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-08D2	10/19/2021	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-08D2	10/19/2021	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-08D2	10/19/2021		0.5550		6.3200
Dissolved chromium	mg/L	G-08D2	10/19/2021	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-08D2	10/19/2021	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D2	10/19/2021	ND	0.0200		0.0080
Dissolved iron	mg/L	G-08D2	10/19/2021	ND	0.0200		20.0602
Dissolved lead	mg/L	G-08D2	10/19/2021	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-08D2	10/19/2021	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-08D2	10/19/2021	ND	0.0050		0.0121
Dissolved nickel	mg/L	G-08D2	10/19/2021	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-08D2	10/19/2021		0.2550		1.9862
Dissolved selenium	mg/L	G-08D2	10/19/2021	ND	0.0005		0.0014
Dissolved silver	mg/L	G-08D2	10/19/2021	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-08D2	10/19/2021		114.5000		131.1936
Dissolved thallium	mg/L	G-08D2	10/19/2021	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-08D2	10/19/2021	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-08D2	10/19/2021	ND	0.0100		0.0120
Nitrate nitrogen	mg-N/L	G-08D2	10/19/2021	ND	0.0100		0.2100
Nitrite nitrogen	mg-N/L	G-08D2	10/19/2021		0.0635	*	0.0540
pH	std units	G-08D2	10/19/2021		9.2700	**	7.27 - 9.88
Sulfate	mg/L	G-08D2	10/19/2021		43.8000		74.7000
Total dissolved solids	mg/L	G-08D2	10/19/2021		295.0000		460.0000
Total organic carbon	mg/L	G-08D2	10/19/2021		0.5900		25.0000
Alkalinity (as caco3)	mg/L	G-09D	01/26/2022		195.0000		280.0000
Ammonia nitrogen	mg-N/L	G-09D	01/26/2022		0.1555		0.2805

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-09D	01/26/2022		120.0000		280.0000
Chemical oxygen demand	mg/L	G-09D	01/26/2022	ND	10.0000		28.0000
Chloride	mg/L	G-09D	01/26/2022		5.0900	**	6.8600
Conductivity	umhos/cm	G-09D	01/26/2022		615.0000	***	530.0000
Dissolved antimony	mg/L	G-09D	01/26/2022	ND	0.0003		0.0008
Dissolved arsenic	mg/L	G-09D	01/26/2022		0.0035	***	0.0021
Dissolved barium	mg/L	G-09D	01/26/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-09D	01/26/2022	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-09D	01/26/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-09D	01/26/2022		1.3000		6.3200
Dissolved chromium	mg/L	G-09D	01/26/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-09D	01/26/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09D	01/26/2022	ND	0.0200		0.0080
Dissolved iron	mg/L	G-09D	01/26/2022		0.0290		20.0602
Dissolved lead	mg/L	G-09D	01/26/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-09D	01/26/2022		0.1000		2.3300
Dissolved manganese	mg/L	G-09D	01/26/2022	ND	0.0050		0.0121
Dissolved nickel	mg/L	G-09D	01/26/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-09D	01/26/2022		0.4800		1.9862
Dissolved selenium	mg/L	G-09D	01/26/2022		0.0006		0.0014
Dissolved silver	mg/L	G-09D	01/26/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-09D	01/26/2022		166.0000	***	131.1936
Dissolved thallium	mg/L	G-09D	01/26/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-09D	01/26/2022	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-09D	01/26/2022	ND	0.0100		0.0120
Nitrate nitrogen	mg-N/L	G-09D	01/26/2022		0.1300		0.2100
Nitrite nitrogen	mg-N/L	G-09D	01/26/2022		0.0275		0.0540
pH	std units	G-09D	01/26/2022		9.0900		7.27 - 9.88
Sulfate	mg/L	G-09D	01/26/2022		100.8500	***	74.7000
Total dissolved solids	mg/L	G-09D	01/26/2022		390.0000		460.0000
Total organic carbon	mg/L	G-09D	01/26/2022		3.7000		25.0000
Alkalinity (as caco3)	mg/L	G-10D	01/26/2022		530.0000	***	280.0000
Ammonia nitrogen	mg-N/L	G-10D	01/26/2022		0.3500	***	0.2805
Bicarbonate	mg/L	G-10D	01/26/2022		530.0000	***	280.0000
Chemical oxygen demand	mg/L	G-10D	01/26/2022	ND	10.0000		28.0000
Chloride	mg/L	G-10D	01/26/2022		15.9000	***	6.8600
Conductivity	umhos/cm	G-10D	01/26/2022		1500.0000	***	530.0000
Dissolved antimony	mg/L	G-10D	01/26/2022	ND	0.0003		0.0008
Dissolved arsenic	mg/L	G-10D	01/26/2022		0.0015		0.0021
Dissolved barium	mg/L	G-10D	01/26/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-10D	01/26/2022	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-10D	01/26/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-10D	01/26/2022		20.6000	***	6.3200
Dissolved chromium	mg/L	G-10D	01/26/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-10D	01/26/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10D	01/26/2022	ND	0.0200		0.0080
Dissolved iron	mg/L	G-10D	01/26/2022		0.5420		20.0602
Dissolved lead	mg/L	G-10D	01/26/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-10D	01/26/2022		1.8200		2.3300
Dissolved manganese	mg/L	G-10D	01/26/2022		0.3470	***	0.0121
Dissolved nickel	mg/L	G-10D	01/26/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-10D	01/26/2022		1.5400		1.9862
Dissolved selenium	mg/L	G-10D	01/26/2022		0.0005		0.0014
Dissolved silver	mg/L	G-10D	01/26/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-10D	01/26/2022		315.0000	***	131.1936
Dissolved thallium	mg/L	G-10D	01/26/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-10D	01/26/2022	ND	0.0100	**	0.0100
Dissolved zinc	mg/L	G-10D	01/26/2022	ND	0.0100		0.0120
Nitrate nitrogen	mg-N/L	G-10D	01/26/2022		0.0230		0.2100
Nitrite nitrogen	mg-N/L	G-10D	01/26/2022	ND	0.0030		0.0540
pH	std units	G-10D	01/26/2022		6.8000	***	7.27 - 9.88
Sulfate	mg/L	G-10D	01/26/2022		265.0000	***	74.7000
Total dissolved solids	mg/L	G-10D	01/26/2022		980.0000	***	460.0000
Total organic carbon	mg/L	G-10D	01/26/2022		21.0000		25.0000
Alkalinity (as caco3)	mg/L	G-13D	10/20/2021		170.0000		280.0000
Ammonia nitrogen	mg-N/L	G-13D	10/20/2021		0.1030		0.2805
Bicarbonate	mg/L	G-13D	10/20/2021		170.0000		280.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Chemical oxygen demand	mg/L	G-13D	10/20/2021	ND	10.0000		28.0000
Chloride	mg/L	G-13D	10/20/2021		11.9000	***	6.8600
Conductivity	umhos/cm	G-13D	10/20/2021		430.0000		530.0000
Dissolved antimony	mg/L	G-13D	10/20/2021	ND	0.0003		0.0008
Dissolved arsenic	mg/L	G-13D	10/20/2021		0.0001		0.0021
Dissolved barium	mg/L	G-13D	10/20/2021	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-13D	10/20/2021	ND	0.0050		0.0005
Dissolved cadmium	mg/L	G-13D	10/20/2021	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-13D	10/20/2021		0.6200		6.3200
Dissolved chromium	mg/L	G-13D	10/20/2021	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-13D	10/20/2021	ND	0.0100	**	0.0050
Dissolved copper	mg/L	G-13D	10/20/2021	ND	0.0200		0.0080
Dissolved iron	mg/L	G-13D	10/20/2021		0.0290		20.0602
Dissolved lead	mg/L	G-13D	10/20/2021	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-13D	10/20/2021	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-13D	10/20/2021	ND	0.0050		0.0121
Dissolved nickel	mg/L	G-13D	10/20/2021		0.0200		0.0260
Dissolved potassium	mg/L	G-13D	10/20/2021		0.2600		1.9862
Dissolved selenium	mg/L	G-13D	10/20/2021	ND	0.0005		0.0014
Dissolved silver	mg/L	G-13D	10/20/2021	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-13D	10/20/2021		104.0000		131.1936
Dissolved thallium	mg/L	G-13D	10/20/2021	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-13D	10/20/2021	ND	0.0100		0.0100
Dissolved zinc	mg/L	G-13D	10/20/2021	ND	0.0100		0.0120
Nitrate nitrogen	mg-N/L	G-13D	10/20/2021	ND	0.0100		0.2100
Nitrite nitrogen	mg-N/L	G-13D	10/20/2021		0.0030		0.0540
pH	std units	G-13D	10/20/2021		8.8400		7.27 - 9.88
Sulfate	mg/L	G-13D	10/20/2021		35.1000		74.7000
Total dissolved solids	mg/L	G-13D	10/20/2021		330.0000		460.0000
Total organic carbon	mg/L	G-13D	10/20/2021		1.0000		25.0000

* - Current value failed - awaiting verification.
** - Current value passed - previous exceedance not verified.
*** - Current value failed - exceedance verified.
**** - Current value passed - awaiting one more verification.
***** - Insufficient background data to compute prediction limit.
ND = Not Detected, Result = detection limit.

Table 5

Summary Statistics and Prediction Limits

Constituent	Units	Detect	N	Mean	SD	alpha	Factor	Pred Limit	Type		Conf
Alkalinity (as caco3)	mg/L	56	56					280.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	53	53	-2.2254	0.3938	0.0100	2.4227	0.2805	lognor		
Bicarbonate	mg/L	56	56					280.0000	nonpar		0.99
Chemical oxygen demand	mg/L	10	55					28.0000	nonpar		0.99
Chloride	mg/L	55	56					6.8600	nonpar		0.99
Conductivity	umhos/cm	56	56					530.0000	nonpar		0.99
Dissolved antimony	mg/L	7	54					0.0008	nonpar		0.99
Dissolved arsenic	mg/L	44	55					0.0021	nonpar		0.99
Dissolved barium	mg/L	14	55					0.0046	nonpar		0.99
Dissolved beryllium	mg/L	0	50					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	8	54					0.0001	nonpar		0.99
Dissolved calcium	mg/L	53	53					6.3200	nonpar		0.99
Dissolved chromium	mg/L	6	56					0.0136	nonpar		0.99
Dissolved cobalt	mg/L	2	56					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	8	53					0.0080	nonpar		0.99
Dissolved iron	mg/L	28	55	-1.5761	1.8912	0.0100	2.4191	20.0602	lognor		
Dissolved lead	mg/L	18	56					0.0007	nonpar		0.99
Dissolved magnesium	mg/L	39	54					2.3300	nonpar		0.99
Dissolved manganese	mg/L	36	54	0.0032	0.0037	0.0100	2.4209	0.0121	normal		
Dissolved nickel	mg/L	3	56					0.0260	nonpar		0.99
Dissolved potassium	mg/L	45	56	-1.0740	0.7282	0.0100	2.4173	1.9862	lognor		
Dissolved selenium	mg/L	15	55					0.0014	nonpar		0.99
Dissolved silver	mg/L	1	54					0.0001	nonpar	***	0.99
Dissolved sodium	mg/L	55	55	109.2364	9.0767	0.0100	2.4191	131.1936	normal		
Dissolved thallium	mg/L	4	56					0.0001	nonpar		0.99
Dissolved vanadium	mg/L	1	56					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	14	56					0.0120	nonpar		0.99
Nitrate nitrogen	mg-N/L	14	55					0.2100	nonpar		0.99
Nitrite nitrogen	mg-N/L	23	56					0.0540	nonpar		0.99
pH	std units	56	56					7.27- 9.88	nonpar		0.99
Sulfate	mg/L	56	56					74.7000	nonpar		0.99
Total dissolved solids	mg/L	56	56					460.0000	nonpar		0.99
Total organic carbon	mg/L	56	56					25.0000	nonpar		0.99

Conf = confidence level for passing initial test or one of two verification resamples at all downgradient wells for a single constituent (nonparametric test only).
* - Insufficient Data.
** - Calculated limit raised to Manual Reporting Limit.
*** - Nonparametric limit based on ND value.
For transformed data, mean and SD in transformed units and prediction limit in original units.
All sample sizes and statistics are based on outlier free data.
For nonparametric limits, median reporting limits are substituted for extreme reporting limit values.

Groundwater Analytical Summary - Deep Wells: Second Quarter 2022
Cathcart Landfill, Snohomish County, WA

						Downgradient Wells																												Upgradient Wells					
						G-01D					G-02D					G-06B					G-08D2					G-09D					G-10D					G-13D					G-14D					G-24D				
	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/19/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)																																													
Alkalinity (as CaCO3)	nonpar	55	55	280	--	220					91					260					170					190					520		V	I	Y	170					240					210				
Ammonia Nitrogen	nonpar	53	53	0.249	--	0.125				Y	0.02	U				0.056					0.187					0.136			I	N	0.340		V			0.089					0.159					0.109				Y
Bicarbonate	nonpar	55	55	280	--	150			D	N	91					240					69					120			D	N	520		V	I	Y	120					140					190				
Calcium, Dissolved	nonpar	52	52	1.59	--	0.88					0.43			D	N	0.98					0.5					1.13			D	N	20.3		V	D	N	0.54					0.60					0.62				
Chemical Oxygen Demand	nonpar	55	10	28	--	10	U				10	U				10	U				10	U				10	U				10	U				10	U				10	U				10	U			
Chloride	nonpar	54	54	6.86	250	6.26		P	D	N	5.35			D	N	6.42		P	D	N	2.7			D	N	5.3					16.4		V	D	N	11.4		V			0.22					4.42				
Conductivity (umhos/cm)	nonpar	55	55	530	700	580		V			350			D	N	680		V			470					640		V			1500		V			450					480					500				
Magnesium, Dissolved	nonpar	53	36	2.33	--	0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				1.7			D	N	0.05	U				0.05	U				0.05	U			
Nitrate Nitrogen (mg-N/L)	nonpar	54	15	0.28	10	0.01	U				0.08			D	N	0.14					0.01	U				0.13					0.01	U				0.01	U				0.01	U				0.01	U			
Nitrite Nitrogen (mg-N/L)	nonpar	55	22	0.042	1	0.003	U	P			0.013					0.01					0.003		P			0.005					0.003	U				0.003					0.004					0.003	U			
pH (std units)	nonpar	55	55	7.27-9.88	6.5-8.5	9.01			I	N	7.14		E	D	Y	7.60			I	Y	9.32				Y	8.89					6.74		V			8.76				Y	9.11					8.06			I	N
Potassium, Dissolved	lognor	55	41	2.3419	--	0.41					0.34					0.46					0.3					0.50					1.57					0.35					0.3	U				0.3	U			
Sodium, Dissolved	normal	54	54	133.7466	20	141		V			83.3			D	N	171		V			114			I	Y	158		V			326		V			111					121					128			I	Y
Sulfate	nonpar	53	53	66.05	250	49.5					59.8					62.3			D	N	41.0			I	Y	105		V	D	Y	270		V	D	N	32.7			D	N	0.31				Y	37.2				
Total Dissolved Solids	nonpar	55	55	355	500	350					200			D	N	400		V			300					390		V	D	Y	980		V			290					270					320				
Total Organic Carbon	nonpar	53	53	25	--	4.5					7.5					4.6					3.2					6.9					18.0					5.9					7.3					6.3				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)																																													
Antimony	nonpar	54	6	0.0008	0.006	0.0001	U				0.00025					0.00016					0.0001	U				0.00013					0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Arsenic	nonpar	54	43	0.0015	0.00005	0.000922					0.00406		V			0.00445		V	I	N	0.00149			I	N	0.00325		V	D	N	0.00142					0.000198					0.000786					0.000076				
Barium	nonpar	54	14	0.0046	1	0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U			
Beryllium	nonpar	55	0	0.0005	0.004	0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U			
Cadmium	nonpar	53	5	0.0001	0.005	0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Chromium	nonpar	55	5	0.0136	0.05	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Cobalt	nonpar	52	2	0.005	--	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Copper	nonpar	55	9	0.055	1	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Iron	nonpar	54	26	0.871	0.3	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.482					0.03	U				0.03	U				0.03	U			
Lead	nonpar	53	14	0.0007	0.05	0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U		D	N	0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Manganese	normal	53	33	0.0121	0.05	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.324		V	D	N	0.01	U				0.01	U				0.01	U			
Nickel	nonpar	55	3	0.026	0.1	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Selenium	nonpar	54	16	0.0014	0.01	0.0003	U				0.0003	U				0.00034					0.0003	U				0.00058					0.00076					0.00055					0.0004					0.0003	U			
Silver	nonpar	53	1	0.0001	0.05	0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Thallium	nonpar	55	3	0.0001	0.002	0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Vanadium	nonpar	55	1	0.01	--	0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U			
Zinc	nonpar	55	12	0.012	5	0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)																																													
Antimony	--	--	--	--	0.006	0.0003	U				0.00032					0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.00142				
Arsenic	--	--	--	--	0.00005	0.00101					0.00463					0.00286					0.00247					0.0034					0.00138					0.000197					0.00101					0.155				
Barium	--	--	--	--	1	0.019					0.0129					0.005	U				0.0477					0.0062					0.005	U				0.005	U				0.0253					0.005	U			
Beryllium	--	--	--	--	0.004	0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U			
Cadmium	--	--	--	--	0.005	0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Chromium	--	--	--	--	0.05	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01					0.01	U			
Cobalt	--	--	--	--	--	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Copper	--	--	--	--	1	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Iron	--	--	--	--	0.3	3.98					1.46					0.839					12.0					1.06					0.535					0.328					5.26					0.487				
Lead	--	--	--	--	0.05	0.000723					0.000768					0.0005	U				0.00183					0.00131					0.0005	U				0.0005	U				0.000702					0.0005	U			
Manganese	--	--	--	--	0.05	0.064					0.0195					0.0325					0.234					0.068					0.344					0.007					0.0729					0.0065				
Nickel	--	--	--	--	0.1	0.01					0.01	U				0.011					0.019					0.01	U				0.012					0.01	U				0.011					0.01	U			
Selenium	--	--	--	--	0.01	0.001	U				0.001	U				0.001	U				0.001	U				0.001	U				0.001	U				0.001	U				0.001	U				0.001	U			
Silver	--	--	--	--	0.05	0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Thallium	--	--	--	--	0.002	0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Vanadium	--	--	--	--	--	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Zinc	--	--	--	--	5	0.0136					0.0103					0.01	U				0.0284					0.01	U				0.01	U				0.01	U				0.0166					0.01	U			
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L)																																													
1,1,1-Trichloroethane	--	--	--	--	200	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,1,2,2-Tetrachloroethane	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,1,2-Trichloroethane	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,1-Dichloroethane	--	--	--	--	1	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			

Groundwater Analytical Summary - Deep Wells: Second Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	Downgradient Wells																										Upgradient Wells									
						G-01D					G-02D					G-06B					G-08D2					G-09D					G-10D					G-13D					G-14D					G-24D				
						4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/19/22	D	V	Tr	Ch	4/19/22	D	V	Tr	Ch	4/19/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch	4/18/22	D	V	Tr	Ch
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L) (cont.)																																																
1,1-Dichloroethylene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,2,3-Trichloropropane	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,2-Dibromo-3-chloropropane	--	--	--	--	0.2	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
1,2-Dibromoethane	--	--	--	--	0.001	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
1,2-Dichlorobenzene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,2-Dichloroethane	--	--	--	--	0.5	0.03	U				0.03	U				0.03	U				0.03	U				0.59					0.03	U				0.03	U				0.03	U				0.03	U			
1,2-Dichloropropane	--	--	--	--	0.6	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
1,4-Dichlorobenzene	--	--	--	--	4	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
2-Butanone	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
2-Hexanone	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
4-Methyl-2-Pentanone (MIBK)	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
Acetone	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
Acrylonitrile	--	--	--	--	0.07	0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U			
Benzene	--	--	--	--	1	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Bromodichloromethane	--	--	--	--	0.3	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Bromoform	--	--	--	--	5	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Bromomethane	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Carbon Disulfide	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Carbon Tetrachloride	--	--	--	--	0.3	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Chlorobenzene	--	--	--	--	--	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Chlorodibromomethane	--	--	--	--	0.5	0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U			
Chloroethane	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Chloroform	--	--	--	--	7	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Chloromethane	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
cis-1,2-Dichloroethene	--	--	--	--	--	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
cis-1,3-Dichloropropene	--	--	--	--	0.2	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Dibromomethane	--	--	--	--	--	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Ethyl Benzene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
m,p-Xylene	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Methyl Iodide	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Methylene Chloride	--	--	--	--	5	4	U				4	U				4	U				4	U				4	U				4	U				4	U				4	U				4	U			
o-Xylene	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				2	U				2	U				2	U				2	U				1.5	U			
Styrene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Tetrachloroethylene	--	--	--	--	0.8	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Toluene	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
trans-1,2-Dichloroethene	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
trans-1,3-Dichloropropene	--	--	--	--	0.2	0.03	U				0.03	U				0.03	U				0.03	U				0.02	U				0.02	U				0.02	U				0.02	U				0.03	U			
trans-1,4-Dichloro-2-butene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Trichloroethene (1,1,2-Trichloro	--	--	--	--	3	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Trichlorofluoromethane	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
Vinyl Acetate	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
Vinyl Chloride	--	--	--	--	0.02	0.05	U				0.05	U				0.05	U				0.05	U				0.56					0.05	U				0.05	U				0.05	U				0.05	U			

D: U = Indicates compound was not detected at the given reporting limit; X indicates that the compound was detected in the trip blank and contamination is suspected.

V: E= Exceedance, waiting verification based on subsequent lab data; V= Exceedance verified based on previous lab data; P=Passed, previous exceedance not verified based on current lab data.

Tr: I=increasing Trend, D=Decreasing Trend;

Ch: Y indicates a change in trend from previous quarter; N means no change in trend.

Values in **purple** exceed the prediction limit; indicates that a value exceeded the Groundwater Standards

The groundwater standards listed are based on the Washington Administrative Code (WAC) 173-200 groundwater limits or WAC 246-290, whichever is more protective of groundwater quality.

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Alkalinity (as caco3)	mg/L	G-01D	04/18/2022		220.0000		280.0000
Ammonia nitrogen	mg-N/L	G-01D	04/18/2022		0.1250		0.2490
Bicarbonate	mg/L	G-01D	04/18/2022		150.0000		280.0000
Chemical oxygen demand	mg/L	G-01D	04/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-01D	04/18/2022		6.2600	**	6.8600
Conductivity	umhos/cm	G-01D	04/18/2022		580.0000	***	530.0000
Dissolved antimony	mg/L	G-01D	04/18/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-01D	04/18/2022		0.0009		0.0015
Dissolved barium	mg/L	G-01D	04/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-01D	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-01D	04/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-01D	04/18/2022		0.8800		1.5900
Dissolved chromium	mg/L	G-01D	04/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-01D	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01D	04/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-01D	04/18/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-01D	04/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-01D	04/18/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-01D	04/18/2022	ND	0.0100		0.0121
Dissolved nickel	mg/L	G-01D	04/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-01D	04/18/2022		0.4100		2.3419
Dissolved selenium	mg/L	G-01D	04/18/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-01D	04/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-01D	04/18/2022		141.0000	***	133.7466
Dissolved thallium	mg/L	G-01D	04/18/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-01D	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-01D	04/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-01D	04/18/2022	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-01D	04/18/2022	ND	0.0030	**	0.0420
pH	std units	G-01D	04/18/2022		9.0100		7.27 - 9.88
Sulfate	mg/L	G-01D	04/18/2022		49.5000		66.0500
Total dissolved solids	mg/L	G-01D	04/18/2022		350.0000		355.0000
Total organic carbon	mg/L	G-01D	04/18/2022		4.5000		25.0000
Alkalinity (as caco3)	mg/L	G-02D	04/18/2022		91.0000		280.0000
Ammonia nitrogen	mg-N/L	G-02D	04/18/2022	ND	0.0200		0.2490
Bicarbonate	mg/L	G-02D	04/18/2022		91.0000		280.0000
Chemical oxygen demand	mg/L	G-02D	04/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-02D	04/18/2022		5.3500		6.8600
Conductivity	umhos/cm	G-02D	04/18/2022		350.0000		530.0000
Dissolved antimony	mg/L	G-02D	04/18/2022		0.0003		0.0008
Dissolved arsenic	mg/L	G-02D	04/18/2022		0.0041	***	0.0015
Dissolved barium	mg/L	G-02D	04/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-02D	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-02D	04/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-02D	04/18/2022		0.4300		1.5900
Dissolved chromium	mg/L	G-02D	04/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-02D	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-02D	04/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-02D	04/18/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-02D	04/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-02D	04/18/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-02D	04/18/2022	ND	0.0100		0.0121
Dissolved nickel	mg/L	G-02D	04/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-02D	04/18/2022		0.3400		2.3419
Dissolved selenium	mg/L	G-02D	04/18/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-02D	04/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-02D	04/18/2022		83.3000		133.7466
Dissolved thallium	mg/L	G-02D	04/18/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-02D	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-02D	04/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-02D	04/18/2022		0.0800		0.2800
Nitrite nitrogen	mg-N/L	G-02D	04/18/2022		0.0130		0.0420
pH	std units	G-02D	04/18/2022		7.1400	*	7.27 - 9.88
Sulfate	mg/L	G-02D	04/18/2022		59.8000		66.0500
Total dissolved solids	mg/L	G-02D	04/18/2022		200.0000		355.0000
Total organic carbon	mg/L	G-02D	04/18/2022		7.5000		25.0000
Alkalinity (as caco3)	mg/L	G-06B	04/18/2022		260.0000		280.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Ammonia nitrogen	mg-N/L	G-06B	04/18/2022		0.0560		0.2490
Bicarbonate	mg/L	G-06B	04/18/2022		240.0000		280.0000
Chemical oxygen demand	mg/L	G-06B	04/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-06B	04/18/2022		6.4200	**	6.8600
Conductivity	umhos/cm	G-06B	04/18/2022		680.0000	***	530.0000
Dissolved antimony	mg/L	G-06B	04/18/2022		0.0002		0.0008
Dissolved arsenic	mg/L	G-06B	04/18/2022		0.0045	***	0.0015
Dissolved barium	mg/L	G-06B	04/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-06B	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-06B	04/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-06B	04/18/2022		0.9800		1.5900
Dissolved chromium	mg/L	G-06B	04/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-06B	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-06B	04/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-06B	04/18/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-06B	04/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-06B	04/18/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-06B	04/18/2022	ND	0.0100		0.0121
Dissolved nickel	mg/L	G-06B	04/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-06B	04/18/2022		0.4600		2.3419
Dissolved selenium	mg/L	G-06B	04/18/2022		0.0003		0.0014
Dissolved silver	mg/L	G-06B	04/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-06B	04/18/2022		171.0000	***	133.7466
Dissolved thallium	mg/L	G-06B	04/18/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-06B	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-06B	04/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-06B	04/18/2022		0.1400		0.2800
Nitrite nitrogen	mg-N/L	G-06B	04/18/2022		0.0100		0.0420
pH	std units	G-06B	04/18/2022		7.6000		7.27 - 9.88
Sulfate	mg/L	G-06B	04/18/2022		62.3000		66.0500
Total dissolved solids	mg/L	G-06B	04/18/2022		400.0000	***	355.0000
Total organic carbon	mg/L	G-06B	04/18/2022		4.6000		25.0000
Alkalinity (as caco3)	mg/L	G-08D2	04/18/2022		170.0000		280.0000
Ammonia nitrogen	mg-N/L	G-08D2	04/18/2022		0.1825		0.2490
Bicarbonate	mg/L	G-08D2	04/18/2022		44.5000		280.0000
Chemical oxygen demand	mg/L	G-08D2	04/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-08D2	04/18/2022		2.6900		6.8600
Conductivity	umhos/cm	G-08D2	04/18/2022		470.0000		530.0000
Dissolved antimony	mg/L	G-08D2	04/18/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-08D2	04/18/2022		0.0014		0.0015
Dissolved barium	mg/L	G-08D2	04/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-08D2	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-08D2	04/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-08D2	04/18/2022		0.4550		1.5900
Dissolved chromium	mg/L	G-08D2	04/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-08D2	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D2	04/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-08D2	04/18/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-08D2	04/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-08D2	04/18/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-08D2	04/18/2022	ND	0.0100		0.0121
Dissolved nickel	mg/L	G-08D2	04/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-08D2	04/18/2022		0.3000		2.3419
Dissolved selenium	mg/L	G-08D2	04/18/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-08D2	04/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-08D2	04/18/2022		112.5000		133.7466
Dissolved thallium	mg/L	G-08D2	04/18/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-08D2	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-08D2	04/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-08D2	04/18/2022	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-08D2	04/18/2022		0.0030	**	0.0420
pH	std units	G-08D2	04/18/2022		9.3200		7.27 - 9.88
Sulfate	mg/L	G-08D2	04/18/2022		41.2500		66.0500
Total dissolved solids	mg/L	G-08D2	04/18/2022		310.0000		355.0000
Total organic carbon	mg/L	G-08D2	04/18/2022		2.8000		25.0000
Alkalinity (as caco3)	mg/L	G-09D	04/19/2022		190.0000		280.0000
Ammonia nitrogen	mg-N/L	G-09D	04/19/2022		0.1360		0.2490

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-09D	04/19/2022		120.0000		280.0000
Chemical oxygen demand	mg/L	G-09D	04/19/2022	ND	10.0000		28.0000
Chloride	mg/L	G-09D	04/19/2022		5.3000		6.8600
Conductivity	umhos/cm	G-09D	04/19/2022		640.0000	***	530.0000
Dissolved antimony	mg/L	G-09D	04/19/2022		0.0001		0.0008
Dissolved arsenic	mg/L	G-09D	04/19/2022		0.0033	***	0.0015
Dissolved barium	mg/L	G-09D	04/19/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-09D	04/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-09D	04/19/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-09D	04/19/2022		1.1300		1.5900
Dissolved chromium	mg/L	G-09D	04/19/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-09D	04/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09D	04/19/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-09D	04/19/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-09D	04/19/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-09D	04/19/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-09D	04/19/2022	ND	0.0100		0.0121
Dissolved nickel	mg/L	G-09D	04/19/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-09D	04/19/2022		0.5000		2.3419
Dissolved selenium	mg/L	G-09D	04/19/2022		0.0006		0.0014
Dissolved silver	mg/L	G-09D	04/19/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-09D	04/19/2022		158.0000	***	133.7466
Dissolved thallium	mg/L	G-09D	04/19/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-09D	04/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-09D	04/19/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-09D	04/19/2022		0.1300		0.2800
Nitrite nitrogen	mg-N/L	G-09D	04/19/2022		0.0050		0.0420
pH	std units	G-09D	04/19/2022		8.8900		7.27 - 9.88
Sulfate	mg/L	G-09D	04/19/2022		105.0000	***	66.0500
Total dissolved solids	mg/L	G-09D	04/19/2022		390.0000	***	355.0000
Total organic carbon	mg/L	G-09D	04/19/2022		6.9000		25.0000
Alkalinity (as caco3)	mg/L	G-10D	04/19/2022		520.0000	***	280.0000
Ammonia nitrogen	mg-N/L	G-10D	04/19/2022		0.3400	***	0.2490
Bicarbonate	mg/L	G-10D	04/19/2022		520.0000	***	280.0000
Chemical oxygen demand	mg/L	G-10D	04/19/2022	ND	10.0000		28.0000
Chloride	mg/L	G-10D	04/19/2022		16.4000	***	6.8600
Conductivity	umhos/cm	G-10D	04/19/2022		1500.0000	***	530.0000
Dissolved antimony	mg/L	G-10D	04/19/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-10D	04/19/2022		0.0014		0.0015
Dissolved barium	mg/L	G-10D	04/19/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-10D	04/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-10D	04/19/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-10D	04/19/2022		20.3000	***	1.5900
Dissolved chromium	mg/L	G-10D	04/19/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-10D	04/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10D	04/19/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-10D	04/19/2022		0.4820		0.8710
Dissolved lead	mg/L	G-10D	04/19/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-10D	04/19/2022		1.7000		2.3300
Dissolved manganese	mg/L	G-10D	04/19/2022		0.3240	***	0.0121
Dissolved nickel	mg/L	G-10D	04/19/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-10D	04/19/2022		1.5700		2.3419
Dissolved selenium	mg/L	G-10D	04/19/2022		0.0008		0.0014
Dissolved silver	mg/L	G-10D	04/19/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-10D	04/19/2022		326.0000	***	133.7466
Dissolved thallium	mg/L	G-10D	04/19/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-10D	04/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-10D	04/19/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-10D	04/19/2022	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-10D	04/19/2022	ND	0.0030		0.0420
pH	std units	G-10D	04/19/2022		6.7400	***	7.27 - 9.88
Sulfate	mg/L	G-10D	04/19/2022		270.0000	***	66.0500
Total dissolved solids	mg/L	G-10D	04/19/2022		980.0000	***	355.0000
Total organic carbon	mg/L	G-10D	04/19/2022		12.4500		25.0000
Alkalinity (as caco3)	mg/L	G-13D	04/19/2022		170.0000		280.0000
Ammonia nitrogen	mg-N/L	G-13D	04/19/2022		0.0890		0.2490
Bicarbonate	mg/L	G-13D	04/19/2022		120.0000		280.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Chemical oxygen demand	mg/L	G-13D	04/19/2022	ND	10.0000		28.0000
Chloride	mg/L	G-13D	04/19/2022		11.4000	***	6.8600
Conductivity	umhos/cm	G-13D	04/19/2022		450.0000		530.0000
Dissolved antimony	mg/L	G-13D	04/19/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-13D	04/19/2022		0.0002		0.0015
Dissolved barium	mg/L	G-13D	04/19/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-13D	04/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-13D	04/19/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-13D	04/19/2022		0.5400		1.5900
Dissolved chromium	mg/L	G-13D	04/19/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-13D	04/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-13D	04/19/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-13D	04/19/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-13D	04/19/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-13D	04/19/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-13D	04/19/2022	ND	0.0100		0.0121
Dissolved nickel	mg/L	G-13D	04/19/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-13D	04/19/2022		0.3500		2.3419
Dissolved selenium	mg/L	G-13D	04/19/2022		0.0006		0.0014
Dissolved silver	mg/L	G-13D	04/19/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-13D	04/19/2022		111.0000		133.7466
Dissolved thallium	mg/L	G-13D	04/19/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-13D	04/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-13D	04/19/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-13D	04/19/2022	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-13D	04/19/2022		0.0030		0.0420
pH	std units	G-13D	04/19/2022		8.7600		7.27 - 9.88
Sulfate	mg/L	G-13D	04/19/2022		32.7000		66.0500
Total dissolved solids	mg/L	G-13D	04/19/2022		290.0000		355.0000
Total organic carbon	mg/L	G-13D	04/19/2022		5.9000		25.0000

* - Current value failed - awaiting verification.
** - Current value passed - previous exceedance not verified.
*** - Current value failed - exceedance verified.
**** - Current value passed - awaiting one more verification.
***** - Insufficient background data to compute prediction limit.
ND = Not Detected, Result = detection limit.

Table 5

Summary Statistics and Prediction Limits

Constituent	Units	Detect	N	Mean	SD	alpha	Factor	Pred Limit	Type		Conf
Alkalinity (as caco3)	mg/L	55	55					280.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	53	53					0.2490	nonpar		0.99
Bicarbonate	mg/L	55	55					280.0000	nonpar		0.99
Chemical oxygen demand	mg/L	10	55					28.0000	nonpar		0.99
Chloride	mg/L	54	54					6.8600	nonpar		0.99
Conductivity	umhos/cm	55	55					530.0000	nonpar		0.99
Dissolved antimony	mg/L	6	54					0.0008	nonpar		0.99
Dissolved arsenic	mg/L	43	54					0.0015	nonpar		0.99
Dissolved barium	mg/L	14	54					0.0046	nonpar		0.99
Dissolved beryllium	mg/L	0	55					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	5	53					0.0001	nonpar		0.99
Dissolved calcium	mg/L	52	52					1.5900	nonpar		0.99
Dissolved chromium	mg/L	5	55					0.0136	nonpar		0.99
Dissolved cobalt	mg/L	2	52					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	9	55					0.0550	nonpar		0.99
Dissolved iron	mg/L	26	54					0.8710	nonpar		0.99
Dissolved lead	mg/L	14	53					0.0007	nonpar		0.99
Dissolved magnesium	mg/L	36	53					2.3300	nonpar		0.99
Dissolved manganese	mg/L	33	53	0.0031	0.0037	0.0100	2.4227	0.0121	normal		
Dissolved nickel	mg/L	3	55					0.0260	nonpar		0.99
Dissolved potassium	mg/L	41	55	-0.9774	0.7558	0.0100	2.4191	2.3419	lognor		
Dissolved selenium	mg/L	16	54					0.0014	nonpar		0.99
Dissolved silver	mg/L	1	53					0.0001	nonpar	***	0.99
Dissolved sodium	mg/L	54	54	109.9074	9.8474	0.0100	2.4209	133.7466	normal		
Dissolved thallium	mg/L	3	55					0.0001	nonpar		0.99
Dissolved vanadium	mg/L	1	55					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	12	55					0.0120	nonpar		0.99
Nitrate nitrogen	mg-N/L	15	54					0.2800	nonpar		0.99
Nitrite nitrogen	mg-N/L	22	55					0.0420	nonpar		0.99
pH	std units	55	55					7.27- 9.88	nonpar		0.99
Sulfate	mg/L	53	53					66.0500	nonpar		0.99
Total dissolved solids	mg/L	55	55					355.0000	nonpar		0.99
Total organic carbon	mg/L	53	53					25.0000	nonpar		0.99

Conf = confidence level for passing initial test or one of two verification resamples at all downgradient wells for a single constituent (nonparametric test only).
* - Insufficient Data.
** - Calculated limit raised to Manual Reporting Limit.
*** - Nonparametric limit based on ND value.
For transformed data, mean and SD in transformed units and prediction limit in original units.
All sample sizes and statistics are based on outlier free data.
For nonparametric limits, median reporting limits are substituted for extreme reporting limit values.

Groundwater Analytical Summary - Deep Wells: Third Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09D					G-10D				
						7/13/22	D	V	Tr	Ch	7/13/22	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)															
Alkalinity (as CaCO3)	nonpar	55	55	280	--	350					490			I	N
Ammonia Nitrogen	nonpar	53	53	0.249	--	0.02	U			Y	0.344				
Bicarbonate	nonpar	55	55	280	--	350				Y	490			I	N
Calcium, Dissolved	nonpar	52	52	1.59	--	71.6			D	N	17.2			D	N
Chemical Oxygen Demand	nonpar	55	10	28	--	10	U				10	U			
Chloride	nonpar	54	54	6.86	250	4.2					15.8			D	N
Conductivity (umhos/cm)	nonpar	55	55	530	700	960					1500				
Magnesium, Dissolved	nonpar	53	36	2.33	--	29.0					1.51			D	N
Nitrate Nitrogen (mg-N/L)	nonpar	54	15	0.28	10	0.01	U				0.027				
Nitrite Nitrogen (mg-N/L)	nonpar	55	22	0.042	1	0.003	U				0.003	U			
pH (std units)	nonpar	55	55	7.27-9.88	6.5-8.5	8.64					6.75				
Potassium, Dissolved	lognor	55	41	2.3419	--	5.19					1.80				
Sodium, Dissolved	normal	54	54	133.7466	20	97.7					338				
Sulfate	nonpar	53	53	66.05	250	163					259			D	N
Total Dissolved Solids	nonpar	55	55	355	500	670					980				
Total Organic Carbon	nonpar	53	53	25	--	27.0					12.0				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony	nonpar	54	6	0.0008	0.006	0.0001	U				0.0001	U			
Arsenic	nonpar	54	43	0.0015	0.00005	0.000649			D	N	0.000984				
Barium	nonpar	54	14	0.0046	1	0.005	U				0.005	U			
Beryllium	nonpar	55	0	0.0005	0.004	0.006	U				0.006	U			
Cadmium	nonpar	53	5	0.0001	0.005	0.00005	U				0.00005	U			
Chromium	nonpar	55	5	0.0136	0.05	0.01	U				0.01	U			
Cobalt	nonpar	52	2	0.005	--	0.01	U				0.01	U			
Copper	nonpar	55	9	0.055	1	0.02	U				0.02	U			
Iron	nonpar	54	26	0.871	0.3	0.03	U				0.464				
Lead	nonpar	53	14	0.0007	0.05	0.0001	U		D	N	0.0001	U			
Manganese	normal	53	33	0.0121	0.05	0.028					0.282			D	N
Nickel	nonpar	55	3	0.026	0.1	0.019					0.011				
Selenium	nonpar	54	16	0.0014	0.01	0.0003	U				0.00062				
Silver	nonpar	53	1	0.0001	0.05	0.00005	U				0.00005	U			
Thallium	nonpar	55	3	0.0001	0.002	0.00005	U				0.00005	U			
Vanadium	nonpar	55	1	0.01	--	0.015	U				0.015	U			
Zinc	nonpar	55	12	0.012	5	0.015	U				0.015	U			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony					0.006	0.0003	U				0.0003	U			
Arsenic					0.00005	0.000785					0.00109				
Barium					1	0.005	U				0.005	U			
Beryllium					0.004	0.005	U				0.005	U			
Cadmium					0.005	0.0001	U				0.0001	U			
Chromium					0.05	0.01	U				0.01	U			
Cobalt					--	0.01	U				0.01	U			
Copper					1	0.01	U				0.01	U			
Iron					0.3	0.171					0.5				
Lead					0.05	0.0005	U				0.0005	U			
Manganese					0.05	0.0815					0.317				
Nickel					0.1	0.043					0.01	U			
Selenium					0.01	0.001	U				0.001	U			
Silver					0.05	0.0002	U				0.0002	U			
Thallium					0.002	0.0002	U				0.0002	U			
Vanadium					--	0.02	U				0.02	U			
Zinc					5	0.01	U				0.01	U			
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L)															
1,1,1-Trichloroethane					200	1	U				1	U			
1,1,2,2-Tetrachloroethane					--	1	U				1	U			
1,1,2-Trichloroethane					--	1	U				1	U			
1,1-Dichloroethane					1	1	U				1	U			

Groundwater Analytical Summary - Deep Wells: Third Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09D					G-10D				
						7/13/22	D	V	Tr	Ch	7/13/22	D	V	Tr	Ch
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L) (cont.)															
1,1-Dichloroethylene					--	1	U				1	U			
1,2,3-Trichloropropane					--	1	U				1	U			
1,2-Dibromo-3-chloropropane					0.2	0.03	U				0.03	U			
1,2-Dibromoethane					0.001	0.01	U				0.01	U			
1,2-Dichlorobenzene					--	1	U				1	U			
1,2-Dichloroethane					0.5	0.03	U				**0.36**				
1,2-Dichloropropane					0.6	0.02	U				0.02	U			
1,4-Dichlorobenzene					4	1	U				1	U			
2-Butanone					--	5	U				5	U			
2-Hexanone					--	5	U				5	U			
4-Methyl-2-Pentanone (MIBK)					--	5	U				5	U			
Acetone					--	5	U				5	U			
Acrylonitrile					0.07	0.05	U				0.05	U			
Benzene					1	1.5	U				1.5	U			
Bromodichloromethane					0.3	0.02	U				0.02	U			
Bromoform					5	1	U				1	U			
Bromomethane					--	3	U				3	U			
Carbon Disulfide					--	3	U				3	U			
Carbon Tetrachloride					0.3	0.02	U				0.02	U			
Chlorobenzene					--	0.03	U				0.03	U			
Chlorodibromomethane					0.5	0.5	U				0.5	U			
Chloroethane					--	1.5	U				1.5	U			
Chloroform					7	1	U				1	U			
Chloromethane					--	1.5	U				1.5	U			
cis-1,2-Dichloroethene					--	0.03	U				0.03	U			
cis-1,3-Dichloropropene					0.2	0.03	U				0.03	U			
Dibromomethane					--	0.02	U				0.02	U			
Ethyl Benzene					--	1	U				1	U			
m,p-Xylene					--	1.5	U				1.5	U			
Methyl Iodide					--	1	U				1	U			
Methylene Chloride					5	4	U				4	U			
o-Xylene					--	1.5	U				1.5	U			
Styrene					--	1	U				1	U			
Tetrachloroethylene					0.8	0.03	U				0.03	U			
Toluene					--	2	U				2	U			
trans-1,2-Dichloroethene					--	1.5	U				1.5	U			
trans-1,3-Dichloropropene					0.2	0.03	U				0.03	U			
trans-1,4-Dichloro-2-butene					--	1	U				1	U			
Trichlorethene (1,1,2-Trichloroethylene)					3	1.5	U				1.5	U			
Trichlorofluoromethane					--	2	U				2	U			
Vinyl Acetate					--	5	U				5	U			
Vinyl Chloride					0.02	0.05	U				0.05	U			

D: U = Indicates compound was not detected at the given reporting limit; X indicates that the compound was detected in the trip blank and contamination is suspected.

V: E= Exceedance, waiting verification based on subsequent lab data; V= Exceedance verified based on previous lab data; P=Passed, previous exceedance not verified based on current lab data.

Tr: I=increasing Trend, D=Decreasing Trend;

Ch: Y indicates a change in trend from previous quarter; N means no change in trend.

Values in **purple** exceed the prediction limit; indicates that a value exceeded the Groundwater Standards

The groundwater standards listed are based on the Washington Administrative Code (WAC) 173-200 groundwater limits as modified by the TMS 91-11 standards.

B = Methylene chloride was measured in the lab blank at a similar concentration - contamination during analysis suspected.

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Alkalinity (as caco3)	mg/L	G-01D	04/18/2022		220.0000		280.0000
Ammonia nitrogen	mg-N/L	G-01D	04/18/2022		0.1250		0.2490
Bicarbonate	mg/L	G-01D	04/18/2022		150.0000		280.0000
Chemical oxygen demand	mg/L	G-01D	04/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-01D	04/18/2022		6.2600	**	6.8600
Conductivity	umhos/cm	G-01D	04/18/2022		580.0000	***	530.0000
Dissolved antimony	mg/L	G-01D	04/18/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-01D	04/18/2022		0.0009		0.0015
Dissolved barium	mg/L	G-01D	04/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-01D	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-01D	04/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-01D	04/18/2022		0.8800		1.5900
Dissolved chromium	mg/L	G-01D	04/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-01D	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01D	04/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-01D	04/18/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-01D	04/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-01D	04/18/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-01D	04/18/2022	ND	0.0100		0.0121
Dissolved nickel	mg/L	G-01D	04/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-01D	04/18/2022		0.4100		2.3419
Dissolved selenium	mg/L	G-01D	04/18/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-01D	04/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-01D	04/18/2022		141.0000	***	133.7466
Dissolved thallium	mg/L	G-01D	04/18/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-01D	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-01D	04/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-01D	04/18/2022	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-01D	04/18/2022	ND	0.0030	**	0.0420
pH	std units	G-01D	04/18/2022		9.0100		7.27 - 9.88
Sulfate	mg/L	G-01D	04/18/2022		49.5000		66.0500
Total dissolved solids	mg/L	G-01D	04/18/2022		350.0000		355.0000
Total organic carbon	mg/L	G-01D	04/18/2022		4.5000		25.0000
Alkalinity (as caco3)	mg/L	G-02D	04/18/2022		91.0000		280.0000
Ammonia nitrogen	mg-N/L	G-02D	04/18/2022	ND	0.0200		0.2490
Bicarbonate	mg/L	G-02D	04/18/2022		91.0000		280.0000
Chemical oxygen demand	mg/L	G-02D	04/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-02D	04/18/2022		5.3500		6.8600
Conductivity	umhos/cm	G-02D	04/18/2022		350.0000		530.0000
Dissolved antimony	mg/L	G-02D	04/18/2022		0.0003		0.0008
Dissolved arsenic	mg/L	G-02D	04/18/2022		0.0041	***	0.0015
Dissolved barium	mg/L	G-02D	04/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-02D	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-02D	04/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-02D	04/18/2022		0.4300		1.5900
Dissolved chromium	mg/L	G-02D	04/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-02D	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-02D	04/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-02D	04/18/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-02D	04/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-02D	04/18/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-02D	04/18/2022	ND	0.0100		0.0121
Dissolved nickel	mg/L	G-02D	04/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-02D	04/18/2022		0.3400		2.3419
Dissolved selenium	mg/L	G-02D	04/18/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-02D	04/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-02D	04/18/2022		83.3000		133.7466
Dissolved thallium	mg/L	G-02D	04/18/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-02D	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-02D	04/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-02D	04/18/2022		0.0800		0.2800
Nitrite nitrogen	mg-N/L	G-02D	04/18/2022		0.0130		0.0420
pH	std units	G-02D	04/18/2022		7.1400	*	7.27 - 9.88
Sulfate	mg/L	G-02D	04/18/2022		59.8000		66.0500
Total dissolved solids	mg/L	G-02D	04/18/2022		200.0000		355.0000
Total organic carbon	mg/L	G-02D	04/18/2022		7.5000		25.0000
Alkalinity (as caco3)	mg/L	G-06B	04/18/2022		260.0000		280.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Ammonia nitrogen	mg-N/L	G-06B	04/18/2022		0.0560		0.2490
Bicarbonate	mg/L	G-06B	04/18/2022		240.0000		280.0000
Chemical oxygen demand	mg/L	G-06B	04/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-06B	04/18/2022		6.4200	**	6.8600
Conductivity	umhos/cm	G-06B	04/18/2022		680.0000	***	530.0000
Dissolved antimony	mg/L	G-06B	04/18/2022		0.0002		0.0008
Dissolved arsenic	mg/L	G-06B	04/18/2022		0.0045	***	0.0015
Dissolved barium	mg/L	G-06B	04/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-06B	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-06B	04/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-06B	04/18/2022		0.9800		1.5900
Dissolved chromium	mg/L	G-06B	04/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-06B	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-06B	04/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-06B	04/18/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-06B	04/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-06B	04/18/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-06B	04/18/2022	ND	0.0100		0.0121
Dissolved nickel	mg/L	G-06B	04/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-06B	04/18/2022		0.4600		2.3419
Dissolved selenium	mg/L	G-06B	04/18/2022		0.0003		0.0014
Dissolved silver	mg/L	G-06B	04/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-06B	04/18/2022		171.0000	***	133.7466
Dissolved thallium	mg/L	G-06B	04/18/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-06B	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-06B	04/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-06B	04/18/2022		0.1400		0.2800
Nitrite nitrogen	mg-N/L	G-06B	04/18/2022		0.0100		0.0420
pH	std units	G-06B	04/18/2022		7.6000		7.27 - 9.88
Sulfate	mg/L	G-06B	04/18/2022		62.3000		66.0500
Total dissolved solids	mg/L	G-06B	04/18/2022		400.0000	***	355.0000
Total organic carbon	mg/L	G-06B	04/18/2022		4.6000		25.0000
Alkalinity (as caco3)	mg/L	G-08D2	04/18/2022		170.0000		280.0000
Ammonia nitrogen	mg-N/L	G-08D2	04/18/2022		0.1825		0.2490
Bicarbonate	mg/L	G-08D2	04/18/2022		44.5000		280.0000
Chemical oxygen demand	mg/L	G-08D2	04/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-08D2	04/18/2022		2.6900		6.8600
Conductivity	umhos/cm	G-08D2	04/18/2022		470.0000		530.0000
Dissolved antimony	mg/L	G-08D2	04/18/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-08D2	04/18/2022		0.0014		0.0015
Dissolved barium	mg/L	G-08D2	04/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-08D2	04/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-08D2	04/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-08D2	04/18/2022		0.4550		1.5900
Dissolved chromium	mg/L	G-08D2	04/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-08D2	04/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D2	04/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-08D2	04/18/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-08D2	04/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-08D2	04/18/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-08D2	04/18/2022	ND	0.0100		0.0121
Dissolved nickel	mg/L	G-08D2	04/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-08D2	04/18/2022		0.3000		2.3419
Dissolved selenium	mg/L	G-08D2	04/18/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-08D2	04/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-08D2	04/18/2022		112.5000		133.7466
Dissolved thallium	mg/L	G-08D2	04/18/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-08D2	04/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-08D2	04/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-08D2	04/18/2022	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-08D2	04/18/2022		0.0030	**	0.0420
pH	std units	G-08D2	04/18/2022		9.3200		7.27 - 9.88
Sulfate	mg/L	G-08D2	04/18/2022		41.2500		66.0500
Total dissolved solids	mg/L	G-08D2	04/18/2022		310.0000		355.0000
Total organic carbon	mg/L	G-08D2	04/18/2022		2.8000		25.0000
Alkalinity (as caco3)	mg/L	G-09D	07/13/2022		345.0000	*	280.0000
Ammonia nitrogen	mg-N/L	G-09D	07/13/2022		0.0210		0.2490

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-09D	07/13/2022		345.0000	*	280.0000
Chemical oxygen demand	mg/L	G-09D	07/13/2022	ND	10.0000		28.0000
Chloride	mg/L	G-09D	07/13/2022		4.1350		6.8600
Conductivity	umhos/cm	G-09D	07/13/2022		965.0000	***	530.0000
Dissolved antimony	mg/L	G-09D	07/13/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-09D	07/13/2022		0.0006	**	0.0015
Dissolved barium	mg/L	G-09D	07/13/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-09D	07/13/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-09D	07/13/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-09D	07/13/2022		70.3500	*	1.5900
Dissolved chromium	mg/L	G-09D	07/13/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-09D	07/13/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09D	07/13/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-09D	07/13/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-09D	07/13/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-09D	07/13/2022		28.4000	*	2.3300
Dissolved manganese	mg/L	G-09D	07/13/2022		0.0380	*	0.0121
Dissolved nickel	mg/L	G-09D	07/13/2022		0.0190		0.0260
Dissolved potassium	mg/L	G-09D	07/13/2022		5.0900	*	2.3419
Dissolved selenium	mg/L	G-09D	07/13/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-09D	07/13/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-09D	07/13/2022		95.1500	**	133.7466
Dissolved thallium	mg/L	G-09D	07/13/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-09D	07/13/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-09D	07/13/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-09D	07/13/2022	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-09D	07/13/2022	ND	0.0030		0.0420
pH	std units	G-09D	07/13/2022		8.6400		7.27 - 9.88
Sulfate	mg/L	G-09D	07/13/2022		164.0000	***	66.0500
Total dissolved solids	mg/L	G-09D	07/13/2022		640.0000	***	355.0000
Total organic carbon	mg/L	G-09D	07/13/2022		33.5000	*	25.0000
Alkalinity (as caco3)	mg/L	G-10D	07/13/2022		490.0000	***	280.0000
Ammonia nitrogen	mg-N/L	G-10D	07/13/2022		0.3440	***	0.2490
Bicarbonate	mg/L	G-10D	07/13/2022		490.0000	***	280.0000
Chemical oxygen demand	mg/L	G-10D	07/13/2022	ND	10.0000		28.0000
Chloride	mg/L	G-10D	07/13/2022		15.8000	***	6.8600
Conductivity	umhos/cm	G-10D	07/13/2022		1500.0000	***	530.0000
Dissolved antimony	mg/L	G-10D	07/13/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-10D	07/13/2022		0.0010		0.0015
Dissolved barium	mg/L	G-10D	07/13/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-10D	07/13/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-10D	07/13/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-10D	07/13/2022		17.2000	***	1.5900
Dissolved chromium	mg/L	G-10D	07/13/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-10D	07/13/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10D	07/13/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-10D	07/13/2022		0.4640		0.8710
Dissolved lead	mg/L	G-10D	07/13/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-10D	07/13/2022		1.5100		2.3300
Dissolved manganese	mg/L	G-10D	07/13/2022		0.2820	***	0.0121
Dissolved nickel	mg/L	G-10D	07/13/2022		0.0110		0.0260
Dissolved potassium	mg/L	G-10D	07/13/2022		1.8000		2.3419
Dissolved selenium	mg/L	G-10D	07/13/2022		0.0006		0.0014
Dissolved silver	mg/L	G-10D	07/13/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-10D	07/13/2022		338.0000	***	133.7466
Dissolved thallium	mg/L	G-10D	07/13/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-10D	07/13/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-10D	07/13/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-10D	07/13/2022		0.0270		0.2800
Nitrite nitrogen	mg-N/L	G-10D	07/13/2022	ND	0.0030		0.0420
pH	std units	G-10D	07/13/2022		6.7500	***	7.27 - 9.88
Sulfate	mg/L	G-10D	07/13/2022		259.0000	***	66.0500
Total dissolved solids	mg/L	G-10D	07/13/2022		980.0000	***	355.0000
Total organic carbon	mg/L	G-10D	07/13/2022		12.0000		25.0000
Alkalinity (as caco3)	mg/L	G-13D	04/19/2022		170.0000		280.0000
Ammonia nitrogen	mg-N/L	G-13D	04/19/2022		0.0890		0.2490
Bicarbonate	mg/L	G-13D	04/19/2022		120.0000		280.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Chemical oxygen demand	mg/L	G-13D	04/19/2022	ND	10.0000		28.0000
Chloride	mg/L	G-13D	04/19/2022		11.4000	***	6.8600
Conductivity	umhos/cm	G-13D	04/19/2022		450.0000		530.0000
Dissolved antimony	mg/L	G-13D	04/19/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-13D	04/19/2022		0.0002		0.0015
Dissolved barium	mg/L	G-13D	04/19/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-13D	04/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-13D	04/19/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-13D	04/19/2022		0.5400		1.5900
Dissolved chromium	mg/L	G-13D	04/19/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-13D	04/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-13D	04/19/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-13D	04/19/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-13D	04/19/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-13D	04/19/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-13D	04/19/2022	ND	0.0100		0.0121
Dissolved nickel	mg/L	G-13D	04/19/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-13D	04/19/2022		0.3500		2.3419
Dissolved selenium	mg/L	G-13D	04/19/2022		0.0006		0.0014
Dissolved silver	mg/L	G-13D	04/19/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-13D	04/19/2022		111.0000		133.7466
Dissolved thallium	mg/L	G-13D	04/19/2022	ND	0.0001		0.0001
Dissolved vanadium	mg/L	G-13D	04/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-13D	04/19/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-13D	04/19/2022	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-13D	04/19/2022		0.0030		0.0420
pH	std units	G-13D	04/19/2022		8.7600		7.27 - 9.88
Sulfate	mg/L	G-13D	04/19/2022		32.7000		66.0500
Total dissolved solids	mg/L	G-13D	04/19/2022		290.0000		355.0000
Total organic carbon	mg/L	G-13D	04/19/2022		5.9000		25.0000

* - Current value failed - awaiting verification.
** - Current value passed - previous exceedance not verified.
*** - Current value failed - exceedance verified.
**** - Current value passed - awaiting one more verification.
***** - Insufficient background data to compute prediction limit.
ND = Not Detected, Result = detection limit.

Table 5

Summary Statistics and Prediction Limits

Constituent	Units	Detect	N	Mean	SD	alpha	Factor	Pred Limit	Type		Conf
Alkalinity (as caco3)	mg/L	55	55					280.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	53	53					0.2490	nonpar		0.99
Bicarbonate	mg/L	55	55					280.0000	nonpar		0.99
Chemical oxygen demand	mg/L	10	55					28.0000	nonpar		0.99
Chloride	mg/L	54	54					6.8600	nonpar		0.99
Conductivity	umhos/cm	55	55					530.0000	nonpar		0.99
Dissolved antimony	mg/L	6	54					0.0008	nonpar		0.99
Dissolved arsenic	mg/L	43	54					0.0015	nonpar		0.99
Dissolved barium	mg/L	14	54					0.0046	nonpar		0.99
Dissolved beryllium	mg/L	0	55					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	5	53					0.0001	nonpar		0.99
Dissolved calcium	mg/L	52	52					1.5900	nonpar		0.99
Dissolved chromium	mg/L	5	55					0.0136	nonpar		0.99
Dissolved cobalt	mg/L	2	52					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	9	55					0.0550	nonpar		0.99
Dissolved iron	mg/L	26	54					0.8710	nonpar		0.99
Dissolved lead	mg/L	14	53					0.0007	nonpar		0.99
Dissolved magnesium	mg/L	36	53					2.3300	nonpar		0.99
Dissolved manganese	mg/L	33	53	0.0031	0.0037	0.0100	2.4227	0.0121	normal		
Dissolved nickel	mg/L	3	55					0.0260	nonpar		0.99
Dissolved potassium	mg/L	41	55	-0.9774	0.7558	0.0100	2.4191	2.3419	lognor		
Dissolved selenium	mg/L	16	54					0.0014	nonpar		0.99
Dissolved silver	mg/L	1	53					0.0001	nonpar	***	0.99
Dissolved sodium	mg/L	54	54	109.9074	9.8474	0.0100	2.4209	133.7466	normal		
Dissolved thallium	mg/L	3	55					0.0001	nonpar		0.99
Dissolved vanadium	mg/L	1	55					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	12	55					0.0120	nonpar		0.99
Nitrate nitrogen	mg-N/L	15	54					0.2800	nonpar		0.99
Nitrite nitrogen	mg-N/L	22	55					0.0420	nonpar		0.99
pH	std units	55	55					7.27- 9.88	nonpar		0.99
Sulfate	mg/L	53	53					66.0500	nonpar		0.99
Total dissolved solids	mg/L	55	55					355.0000	nonpar		0.99
Total organic carbon	mg/L	53	53					25.0000	nonpar		0.99

Conf = confidence level for passing initial test or one of two verification resamples at all downgradient wells for a single constituent (nonparametric test only).
* - Insufficient Data.
** - Calculated limit raised to Manual Reporting Limit.
*** - Nonparametric limit based on ND value.
For transformed data, mean and SD in transformed units and prediction limit in original units.
All sample sizes and statistics are based on outlier free data.
For nonparametric limits, median reporting limits are substituted for extreme reporting limit values.

Groundwater Analytical Summary - Deep Wells: Fourth Quarter 2022
Cathcart Landfill, Snohomish County, WA

						Downgradient Wells																												Upgradient Wells									
	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-01D					G-02D					G-06B					G-08D2					G-09D					G-10D					G-13D					G-14D					G-24D				
						10/18/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)																																												
Alkalinity (as CaCO3)	nonpar	55	55	280	--	220					90					260					170					180		P			460		V	I	N	160					210					210				
Ammonia Nitrogen	nonpar	53	53	0.249	--	0.138				Y	0.061					0.075					0.164					0.139			I	N	0.291		V			0.061					0.147					0.105				Y
Bicarbonate	nonpar	55	55	280	--	170			D	N	90					230					110					130		P	D	N	460		V	I	N	110					61					210				
Calcium, Dissolved	nonpar	51	51	1.59	--	0.9					0.42			D	N	0.93					0.58					1.25		P	D	N	17.5		V	D	N	0.68					0.20	U				0.62				
Chemical Oxygen Demand	nonpar	55	9	28	--	10	U				10	U				10	U				10	U				12					10	U				12					10	U				10	U			
Chloride	nonpar	54	54	6.86	250	6.53			D	N	5.16			D	N	5.6			D	N	2.65			D	N	6.38					16.8		V	D	N	9.7		V			1.93					5.47				
Conductivity (umhos/cm)	nonpar	55	55	530	700	580		V			340			D	N	640		V			470					670		V			150		P			460					480					500				
Magnesium, Dissolved	nonpar	53	35	2.33	--	0.05	U				0.05					0.05	U				0.05	U				0.05		P			1.57			D	N	0.05	U				0.05	U				0.05	U			
Nitrate Nitrogen (mg-N/L)	nonpar	54	16	0.28	10	0.01	U				0.037			D	N	0.12					0.01	U				0.14					0.031					0.01	U				0.027					0.01	U			
Nitrite Nitrogen (mg-N/L)	nonpar	55	23	0.042	1	0.017					0.019					0.01					0.056		E			0.032					0.003	U				0.003					0.009					0.003	U			
pH (std units)	nonpar	55	55	7.27-9.88	6.5-8.5	8.99			I	N	7.16		V	D	Y	7.69			I	Y	9.33				Y	8.84					7.02		V			8.89				Y	9.15					8.20			I	N
Potassium, Dissolved	lognor	55	39	2.3419	--	0.3	U				0.33					0.3	U				0.3	U				0.3	U	P			0.34					0.3	U				0.3	U				0.3	U			
Sodium, Dissolved	normal	54	54	133.7466	20	146		V			80.5			D	N	171		V			111			I	Y	170		E			282		V			116					104					130			I	Y
Sulfate	nonpar	53	53	66.05	250	48.2					57.0					52.0			D	N	42.3			I	Y	142		V	D	Y	289		V	D	N	32.2			D	N	2.86				Y	31.7				
Total Dissolved Solids	nonpar	55	55	355	500	380		E			200			D	N	420		V			280					440		V	D	Y	90		P			340					320					320				
Total Organic Carbon	nonpar	53	53	25	--	1.7					0.5	U				2.0					1.2					2.0		P			3.3					1.0					1.4					1.9				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)																																												
Antimony	nonpar	54	4	0.0008	0.006	0.0001	U				0.0003					0.00014					0.0001	U				0.00013					0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Arsenic	nonpar	54	42	0.0015	0.00005	0.000906					0.00294		V			0.00368		V	I	N	0.000681			I	N	0.00312		E	D	N	0.00112					0.000156					0.000693					0.00007	U			
Barium	nonpar	54	13	0.0046	1	0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U			
Beryllium	nonpar	55	0	0.0005	0.004	0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U				0.006	U			
Cadmium	nonpar	53	4	0.0001	0.005	0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Chromium	nonpar	55	5	0.0136	0.05	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Cobalt	nonpar	52	2	0.005	--	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Copper	nonpar	55	9	0.055	1	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Iron	nonpar	54	26	0.871	0.3	0.03	U				0.056					0.03	U				0.03	U				0.03	U				0.365					0.03	U				0.03	U				0.03	U			
Lead	nonpar	53	12	0.0007	0.05	0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U		D	N	0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Manganese	normal	53	31	0.0121	0.05	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U	P			0.288		V	D	N	0.01	U				0.01	U				0.01	U			
Nickel	nonpar	55	3	0.026	0.1	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01					0.01	U				0.01	U				0.01	U			
Selenium	nonpar	54	15	0.0014	0.01	0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.00032					0.00057					0.0003	U				0.0003	U				0.0003	U			
Silver	nonpar	53	0	0.0001	0.05	0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Thallium	nonpar	55	2	0.0001	0.002	0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Vanadium	nonpar	55	1	0.01	--	0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U			
Zinc	nonpar	55	10	0.012	5	0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)																																												
Antimony	--	--	--	--	0.006	0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U			
Arsenic	--	--	--	--	0.00005	0.000281					0.00463					0.00132					0.000766					0.00334					0.00111					0.00021					0.0007					0.0001	U			
Barium	--	--	--	--	1	0.005	U				0.0067					0.005	U				0.0114					0.005	U				0.005	U				0.005	U				0.0105					0.005	U			
Beryllium	--	--	--	--	0.004	0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U				0.005	U			
Cadmium	--	--	--	--	0.005	0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Chromium	--	--	--	--	0.05	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Cobalt	--	--	--	--	--	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Copper	--	--	--	--	1	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Iron	--	--	--	--	0.3	0.535					0.889					0.441					3.1					0.484					0.213					0.491					2.87					0.03	U			
Lead	--	--	--	--	0.05	0.0005	U				0.000758					0.0005	U				0.000659					0.00164					0.0005	U				0.0005	U				0.0005	U				0.0005	U			
Manganese	--	--	--	--	0.05	0.0107					0.0141					0.0273					0.0754					0.0804					0.288					0.0133					0.0447					0.005	U			
Nickel	--	--	--	--	0.1	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.012					0.01	U				0.01	U				0.01	U			
Selenium	--	--	--	--	0.01	0.001	U				0.001	U				0.001	U				0.00171					0.001	U				0.001	U				0.001	U				0.001	U				0.001	U			
Silver	--	--	--	--	0.05	0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Thallium	--	--	--	--	0.002	0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Vanadium	--	--	--	--	--	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Zinc	--	--	--	--	5	0.0121					0.0115					0.0108					0.0144					0.01	U				0.01	U				0.01	U				0.0122					0.01	U			
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L)																																												
1,1,1-Trichloroethane	--	--	--	--	200	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,1,2,2-Tetrachloroethane	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,1,2-Trichloroethane	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,1-Dichloroethane	--	--	--	--	1	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			

Groundwater Analytical Summary - Deep Wells: Fourth Quarter 2022
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	Downgradient Wells																										Upgradient Wells									
						G-01D					G-02D					G-06B					G-08D2					G-09D					G-10D					G-13D					G-14D					G-24D				
						10/18/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/19/22	D	V	Tr	Ch	10/18/22	D	V	Tr	Ch
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L) (cont.																																																
1,1-Dichloroethylene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,2,3-Trichloropropane	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,2-Dibromo-3-chloropropane	--	--	--	--	0.2	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
1,2-Dibromoethane	--	--	--	--	0.001	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
1,2-Dichlorobenzene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,2-Dichloroethane	--	--	--	--	0.5	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
1,2-Dichloropropane	--	--	--	--	0.6	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
1,4-Dichlorobenzene	--	--	--	--	4	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
2-Butanone	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
2-Hexanone	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
4-Methyl-2-Pentanone (MIBK)	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
Acetone	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
Acrylonitrile	--	--	--	--	0.07	0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				0.05	U			
Benzene	--	--	--	--	1	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Bromodichloromethane	--	--	--	--	0.3	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Bromoform	--	--	--	--	5	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Bromomethane	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Carbon Disulfide	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Carbon Tetrachloride	--	--	--	--	0.3	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Chlorobenzene	--	--	--	--	--	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Chlorodibromomethane	--	--	--	--	0.5	0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U				0.5	U			
Chloroethane	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Chloroform	--	--	--	--	7	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Chloromethane	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
cis-1,2-Dichloroethene	--	--	--	--	--	0.03	U				0.03	U				0.03	U				0.03	U				**0.16**					0.03	U				0.03	U				0.03	U				0.03	U			
cis-1,3-Dichloropropene	--	--	--	--	0.2	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Dibromomethane	--	--	--	--	--	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Ethyl Benzene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
m,p-Xylene	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Methyl Iodide	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Methylene Chloride	--	--	--	--	5	4	U				4	U				4	U				4	U				4	U				4	U				4	U				4	U				4	U			
o-Xylene	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Styrene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Tetrachloroethylene	--	--	--	--	0.8	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
Toluene	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
trans-1,2-Dichloroethene	--	--	--	--	--	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
trans-1,3-Dichloropropene	--	--	--	--	0.2	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.03	U			
trans-1,4-Dichloro-2-butene	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Trichloroethene (1,1,2-Trichloro	--	--	--	--	3	1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Trichlorofluoromethane	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
Vinyl Acetate	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
Vinyl Chloride	--	--	--	--	0.02	0.05	U				0.05	U				0.05	U				0.05	U				0.24					0.05	U				0.05	U				0.05	U				0.05	U			

D: U = Indicates compound was not detected at the given reporting limit; X indicates that the compound was detected in the trip blank and contamination is suspected.

V: E= Exceedance, waiting verification based on subsequent lab data; V= Exceedance verified based on previous lab data; P=Passed, previous exceedance not verified based on current lab data.

Tr: I=increasing Trend, D=Decreasing Trend;

Ch: Y indicates a change in trend from previous quarter; N means no change in trend.

Values in **purple** exceed the prediction limit; indicates that a value exceeded the Groundwater Standards

The groundwater standards listed are based on the Washington Administrative Code (WAC) 173-200 groundwater limits or WAC 246-290, whichever is more protective of groundwater quality.

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Alkalinity (as caco3)	mg/L	G-01D	10/18/2022		220.0000		280.0000
Ammonia nitrogen	mg-N/L	G-01D	10/18/2022		0.1380		0.2490
Bicarbonate	mg/L	G-01D	10/18/2022		170.0000		280.0000
Chemical oxygen demand	mg/L	G-01D	10/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-01D	10/18/2022		6.5300		6.8600
Conductivity	umhos/cm	G-01D	10/18/2022		580.0000	***	530.0000
Dissolved antimony	mg/L	G-01D	10/18/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-01D	10/18/2022		0.0009		0.0015
Dissolved barium	mg/L	G-01D	10/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-01D	10/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-01D	10/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-01D	10/18/2022		0.9000		1.5900
Dissolved chromium	mg/L	G-01D	10/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-01D	10/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01D	10/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-01D	10/18/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-01D	10/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-01D	10/18/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-01D	10/18/2022	ND	0.0100		0.0122
Dissolved nickel	mg/L	G-01D	10/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-01D	10/18/2022	ND	0.3000		2.5708
Dissolved selenium	mg/L	G-01D	10/18/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-01D	10/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-01D	10/18/2022		146.0000	***	134.8400
Dissolved thallium	mg/L	G-01D	10/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-01D	10/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-01D	10/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-01D	10/18/2022	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-01D	10/18/2022		0.0170		0.0420
pH	std units	G-01D	10/18/2022		8.9900		7.42 - 9.88
Sulfate	mg/L	G-01D	10/18/2022		48.2000		66.0500
Total dissolved solids	mg/L	G-01D	10/18/2022		380.0000	*	355.0000
Total organic carbon	mg/L	G-01D	10/18/2022		1.7000		25.0000
Alkalinity (as caco3)	mg/L	G-02D	10/18/2022		90.0000		280.0000
Ammonia nitrogen	mg-N/L	G-02D	10/18/2022		0.0610		0.2490
Bicarbonate	mg/L	G-02D	10/18/2022		90.0000		280.0000
Chemical oxygen demand	mg/L	G-02D	10/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-02D	10/18/2022		5.1600		6.8600
Conductivity	umhos/cm	G-02D	10/18/2022		340.0000		530.0000
Dissolved antimony	mg/L	G-02D	10/18/2022		0.0003		0.0008
Dissolved arsenic	mg/L	G-02D	10/18/2022		0.0029	***	0.0015
Dissolved barium	mg/L	G-02D	10/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-02D	10/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-02D	10/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-02D	10/18/2022		0.4200		1.5900
Dissolved chromium	mg/L	G-02D	10/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-02D	10/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-02D	10/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-02D	10/18/2022		0.0560		0.8710
Dissolved lead	mg/L	G-02D	10/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-02D	10/18/2022		0.0500		2.3300
Dissolved manganese	mg/L	G-02D	10/18/2022	ND	0.0100		0.0122
Dissolved nickel	mg/L	G-02D	10/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-02D	10/18/2022		0.3300		2.5708
Dissolved selenium	mg/L	G-02D	10/18/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-02D	10/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-02D	10/18/2022		80.5000		134.8400
Dissolved thallium	mg/L	G-02D	10/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-02D	10/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-02D	10/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-02D	10/18/2022		0.0370		0.2800
Nitrite nitrogen	mg-N/L	G-02D	10/18/2022		0.0190		0.0420
pH	std units	G-02D	10/18/2022		7.1600	***	7.42 - 9.88
Sulfate	mg/L	G-02D	10/18/2022		57.0000		66.0500
Total dissolved solids	mg/L	G-02D	10/18/2022		200.0000		355.0000
Total organic carbon	mg/L	G-02D	10/18/2022	ND	0.5000		25.0000
Alkalinity (as caco3)	mg/L	G-06B	10/18/2022		250.0000		280.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Ammonia nitrogen	mg-N/L	G-06B	10/18/2022		0.0735		0.2490
Bicarbonate	mg/L	G-06B	10/18/2022		225.0000		280.0000
Chemical oxygen demand	mg/L	G-06B	10/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-06B	10/18/2022		5.5600		6.8600
Conductivity	umhos/cm	G-06B	10/18/2022		635.0000	***	530.0000
Dissolved antimony	mg/L	G-06B	10/18/2022		0.0001		0.0008
Dissolved arsenic	mg/L	G-06B	10/18/2022		0.0036	***	0.0015
Dissolved barium	mg/L	G-06B	10/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-06B	10/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-06B	10/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-06B	10/18/2022		0.9150		1.5900
Dissolved chromium	mg/L	G-06B	10/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-06B	10/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-06B	10/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-06B	10/18/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-06B	10/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-06B	10/18/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-06B	10/18/2022	ND	0.0100		0.0122
Dissolved nickel	mg/L	G-06B	10/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-06B	10/18/2022	ND	0.3000		2.5708
Dissolved selenium	mg/L	G-06B	10/18/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-06B	10/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-06B	10/18/2022		173.5000	***	134.8400
Dissolved thallium	mg/L	G-06B	10/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-06B	10/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-06B	10/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-06B	10/18/2022		0.1350		0.2800
Nitrite nitrogen	mg-N/L	G-06B	10/18/2022		0.0100		0.0420
pH	std units	G-06B	10/18/2022		7.6900		7.42 - 9.88
Sulfate	mg/L	G-06B	10/18/2022		52.0000		66.0500
Total dissolved solids	mg/L	G-06B	10/18/2022		420.0000	***	355.0000
Total organic carbon	mg/L	G-06B	10/18/2022		1.8500		25.0000
Alkalinity (as caco3)	mg/L	G-08D2	10/18/2022		170.0000		280.0000
Ammonia nitrogen	mg-N/L	G-08D2	10/18/2022		0.1640		0.2490
Bicarbonate	mg/L	G-08D2	10/18/2022		110.0000		280.0000
Chemical oxygen demand	mg/L	G-08D2	10/18/2022	ND	10.0000		28.0000
Chloride	mg/L	G-08D2	10/18/2022		2.6500		6.8600
Conductivity	umhos/cm	G-08D2	10/18/2022		470.0000		530.0000
Dissolved antimony	mg/L	G-08D2	10/18/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-08D2	10/18/2022		0.0007		0.0015
Dissolved barium	mg/L	G-08D2	10/18/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-08D2	10/18/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-08D2	10/18/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-08D2	10/18/2022		0.5800		1.5900
Dissolved chromium	mg/L	G-08D2	10/18/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-08D2	10/18/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D2	10/18/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-08D2	10/18/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-08D2	10/18/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-08D2	10/18/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-08D2	10/18/2022	ND	0.0100		0.0122
Dissolved nickel	mg/L	G-08D2	10/18/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-08D2	10/18/2022	ND	0.3000		2.5708
Dissolved selenium	mg/L	G-08D2	10/18/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-08D2	10/18/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-08D2	10/18/2022		111.0000		134.8400
Dissolved thallium	mg/L	G-08D2	10/18/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-08D2	10/18/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-08D2	10/18/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-08D2	10/18/2022	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-08D2	10/18/2022		0.0560	*	0.0420
pH	std units	G-08D2	10/18/2022		9.3300		7.42 - 9.88
Sulfate	mg/L	G-08D2	10/18/2022		42.3000		66.0500
Total dissolved solids	mg/L	G-08D2	10/18/2022		280.0000		355.0000
Total organic carbon	mg/L	G-08D2	10/18/2022		1.2000		25.0000
Alkalinity (as caco3)	mg/L	G-09D	10/19/2022		180.0000	**	280.0000
Ammonia nitrogen	mg-N/L	G-09D	10/19/2022		0.1390		0.2490

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-09D	10/19/2022		130.0000	**	280.0000
Chemical oxygen demand	mg/L	G-09D	10/19/2022		12.0000		28.0000
Chloride	mg/L	G-09D	10/19/2022		6.3800		6.8600
Conductivity	umhos/cm	G-09D	10/19/2022		670.0000	***	530.0000
Dissolved antimony	mg/L	G-09D	10/19/2022		0.0001		0.0008
Dissolved arsenic	mg/L	G-09D	10/19/2022		0.0031	*	0.0015
Dissolved barium	mg/L	G-09D	10/19/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-09D	10/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-09D	10/19/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-09D	10/19/2022		1.2500	**	1.5900
Dissolved chromium	mg/L	G-09D	10/19/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-09D	10/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09D	10/19/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-09D	10/19/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-09D	10/19/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-09D	10/19/2022		0.0500	**	2.3300
Dissolved manganese	mg/L	G-09D	10/19/2022	ND	0.0100	**	0.0122
Dissolved nickel	mg/L	G-09D	10/19/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-09D	10/19/2022	ND	0.3000	**	2.5708
Dissolved selenium	mg/L	G-09D	10/19/2022		0.0003		0.0014
Dissolved silver	mg/L	G-09D	10/19/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-09D	10/19/2022		170.0000	*	134.8400
Dissolved thallium	mg/L	G-09D	10/19/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-09D	10/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-09D	10/19/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-09D	10/19/2022		0.1400		0.2800
Nitrite nitrogen	mg-N/L	G-09D	10/19/2022		0.0320		0.0420
pH	std units	G-09D	10/19/2022		8.8400		7.42 - 9.88
Sulfate	mg/L	G-09D	10/19/2022		142.0000	***	66.0500
Total dissolved solids	mg/L	G-09D	10/19/2022		440.0000	***	355.0000
Total organic carbon	mg/L	G-09D	10/19/2022		2.0000	**	25.0000
Alkalinity (as caco3)	mg/L	G-10D	10/19/2022		460.0000	***	280.0000
Ammonia nitrogen	mg-N/L	G-10D	10/19/2022		0.2910	***	0.2490
Bicarbonate	mg/L	G-10D	10/19/2022		460.0000	***	280.0000
Chemical oxygen demand	mg/L	G-10D	10/19/2022	ND	10.0000		28.0000
Chloride	mg/L	G-10D	10/19/2022		16.8000	***	6.8600
Conductivity	umhos/cm	G-10D	10/19/2022		150.0000	**	530.0000
Dissolved antimony	mg/L	G-10D	10/19/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-10D	10/19/2022		0.0011		0.0015
Dissolved barium	mg/L	G-10D	10/19/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-10D	10/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-10D	10/19/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-10D	10/19/2022		17.5000	***	1.5900
Dissolved chromium	mg/L	G-10D	10/19/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-10D	10/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10D	10/19/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-10D	10/19/2022		0.3650		0.8710
Dissolved lead	mg/L	G-10D	10/19/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-10D	10/19/2022		1.5700		2.3300
Dissolved manganese	mg/L	G-10D	10/19/2022		0.2880	***	0.0122
Dissolved nickel	mg/L	G-10D	10/19/2022		0.0100		0.0260
Dissolved potassium	mg/L	G-10D	10/19/2022		0.3400		2.5708
Dissolved selenium	mg/L	G-10D	10/19/2022		0.0006		0.0014
Dissolved silver	mg/L	G-10D	10/19/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-10D	10/19/2022		282.0000	***	134.8400
Dissolved thallium	mg/L	G-10D	10/19/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10D	10/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-10D	10/19/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-10D	10/19/2022		0.0310		0.2800
Nitrite nitrogen	mg-N/L	G-10D	10/19/2022	ND	0.0030		0.0420
pH	std units	G-10D	10/19/2022		7.0200	***	7.42 - 9.88
Sulfate	mg/L	G-10D	10/19/2022		289.0000	***	66.0500
Total dissolved solids	mg/L	G-10D	10/19/2022		90.0000	**	355.0000
Total organic carbon	mg/L	G-10D	10/19/2022		3.3000		25.0000
Alkalinity (as caco3)	mg/L	G-13D	10/19/2022		160.0000		280.0000
Ammonia nitrogen	mg-N/L	G-13D	10/19/2022		0.0610		0.2490
Bicarbonate	mg/L	G-13D	10/19/2022		110.0000		280.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Chemical oxygen demand	mg/L	G-13D	10/19/2022		12.0000		28.0000
Chloride	mg/L	G-13D	10/19/2022		9.7000	***	6.8600
Conductivity	umhos/cm	G-13D	10/19/2022		460.0000		530.0000
Dissolved antimony	mg/L	G-13D	10/19/2022	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-13D	10/19/2022		0.0002		0.0015
Dissolved barium	mg/L	G-13D	10/19/2022	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-13D	10/19/2022	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-13D	10/19/2022	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-13D	10/19/2022		0.6800		1.5900
Dissolved chromium	mg/L	G-13D	10/19/2022	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-13D	10/19/2022	ND	0.0100		0.0050
Dissolved copper	mg/L	G-13D	10/19/2022	ND	0.0200		0.0550
Dissolved iron	mg/L	G-13D	10/19/2022	ND	0.0300		0.8710
Dissolved lead	mg/L	G-13D	10/19/2022	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-13D	10/19/2022	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-13D	10/19/2022	ND	0.0100		0.0122
Dissolved nickel	mg/L	G-13D	10/19/2022	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-13D	10/19/2022	ND	0.3000		2.5708
Dissolved selenium	mg/L	G-13D	10/19/2022	ND	0.0003		0.0014
Dissolved silver	mg/L	G-13D	10/19/2022	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-13D	10/19/2022		116.0000		134.8400
Dissolved thallium	mg/L	G-13D	10/19/2022	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-13D	10/19/2022	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-13D	10/19/2022	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-13D	10/19/2022	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-13D	10/19/2022		0.0030		0.0420
pH	std units	G-13D	10/19/2022		8.8900		7.42 - 9.88
Sulfate	mg/L	G-13D	10/19/2022		32.2000		66.0500
Total dissolved solids	mg/L	G-13D	10/19/2022		340.0000		355.0000
Total organic carbon	mg/L	G-13D	10/19/2022		1.0000		25.0000

* - Current value failed - awaiting verification.
** - Current value passed - previous exceedance not verified.
*** - Current value failed - exceedance verified.
**** - Current value passed - awaiting one more verification.
***** - Insufficient background data to compute prediction limit.
ND = Not Detected, Result = detection limit.

Table 5

Summary Statistics and Prediction Limits

Constituent	Units	Detect	N	Mean	SD	alpha	Factor	Pred Limit	Type		Conf
Alkalinity (as caco3)	mg/L	55	55					280.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	53	53					0.2490	nonpar		0.99
Bicarbonate	mg/L	55	55					280.0000	nonpar		0.99
Chemical oxygen demand	mg/L	9	55					28.0000	nonpar		0.99
Chloride	mg/L	54	54					6.8600	nonpar		0.99
Conductivity	umhos/cm	55	55					530.0000	nonpar		0.99
Dissolved antimony	mg/L	4	54					0.0008	nonpar		0.99
Dissolved arsenic	mg/L	42	54					0.0015	nonpar		0.99
Dissolved barium	mg/L	13	54					0.0046	nonpar		0.99
Dissolved beryllium	mg/L	0	55					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	4	53					0.0001	nonpar		0.99
Dissolved calcium	mg/L	51	51					1.5900	nonpar		0.99
Dissolved chromium	mg/L	5	55					0.0136	nonpar		0.99
Dissolved cobalt	mg/L	2	52					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	9	55					0.0550	nonpar		0.99
Dissolved iron	mg/L	26	54					0.8710	nonpar		0.99
Dissolved lead	mg/L	12	53					0.0007	nonpar		0.99
Dissolved magnesium	mg/L	35	53					2.3300	nonpar		0.99
Dissolved manganese	mg/L	31	53	0.0030	0.0038	0.0100	2.4227	0.0122	normal		
Dissolved nickel	mg/L	3	55					0.0260	nonpar		0.99
Dissolved potassium	mg/L	39	55	-0.9277	0.7738	0.0100	2.4191	2.5708	lognor		
Dissolved selenium	mg/L	15	54					0.0014	nonpar		0.99
Dissolved silver	mg/L	0	53					0.0001	nonpar	***	0.99
Dissolved sodium	mg/L	54	54	110.1111	10.2150	0.0100	2.4209	134.8400	normal		
Dissolved thallium	mg/L	2	55					0.0000	nonpar		0.99
Dissolved vanadium	mg/L	1	55					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	10	55					0.0120	nonpar		0.99
Nitrate nitrogen	mg-N/L	16	54					0.2800	nonpar		0.99
Nitrite nitrogen	mg-N/L	23	55					0.0420	nonpar		0.99
pH	std units	55	55					7.42- 9.88	nonpar		0.99
Sulfate	mg/L	53	53					66.0500	nonpar		0.99
Total dissolved solids	mg/L	55	55					355.0000	nonpar		0.99
Total organic carbon	mg/L	53	53					25.0000	nonpar		0.99

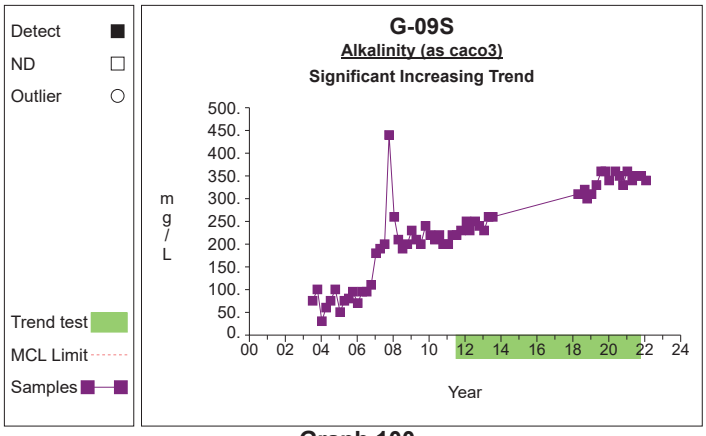
Conf = confidence level for passing initial test or one of two verification resamples at all downgradient wells for a single constituent (nonparametric test only).
* - Insufficient Data.
** - Calculated limit raised to Manual Reporting Limit.
*** - Nonparametric limit based on ND value.
For transformed data, mean and SD in transformed units and prediction limit in original units.
All sample sizes and statistics are based on outlier free data.
For nonparametric limits, median reporting limits are substituted for extreme reporting limit values.

Appendix C

Groundwater Statistical Analyses

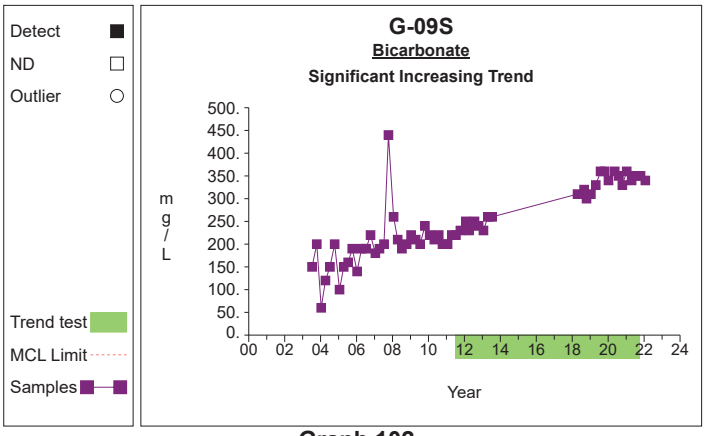
Shallow Wells

Time Series



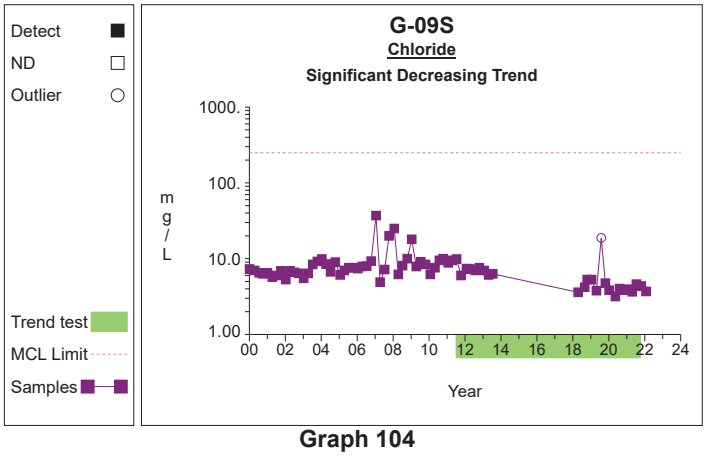
Graph 100

Time Series



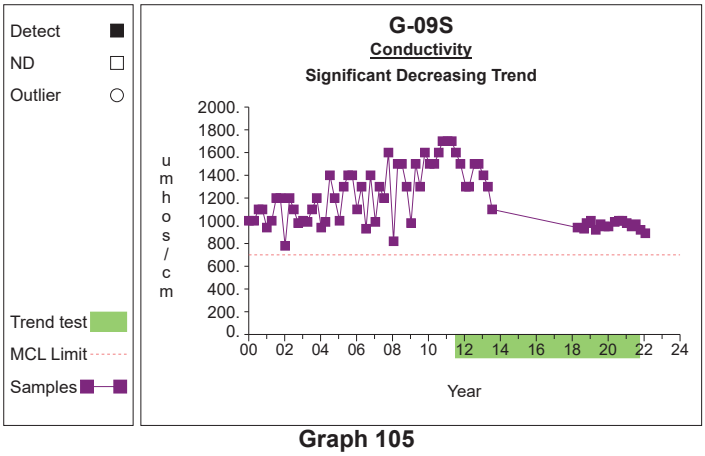
Graph 102

Time Series



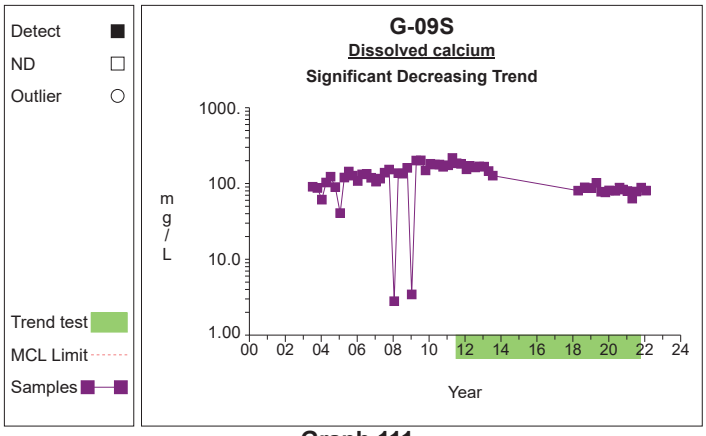
Graph 104

Time Series



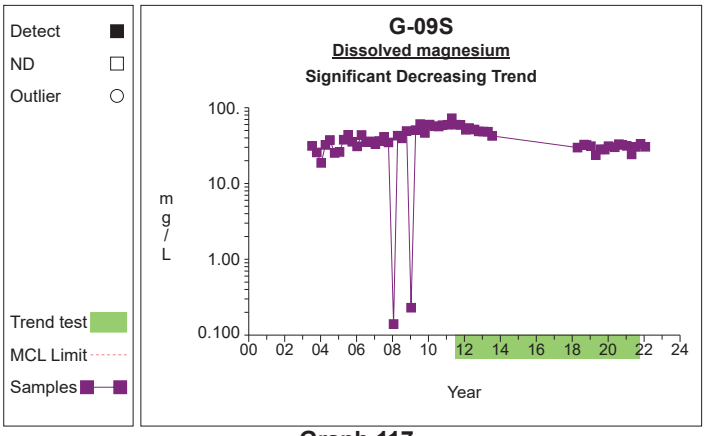
Graph 105

Time Series



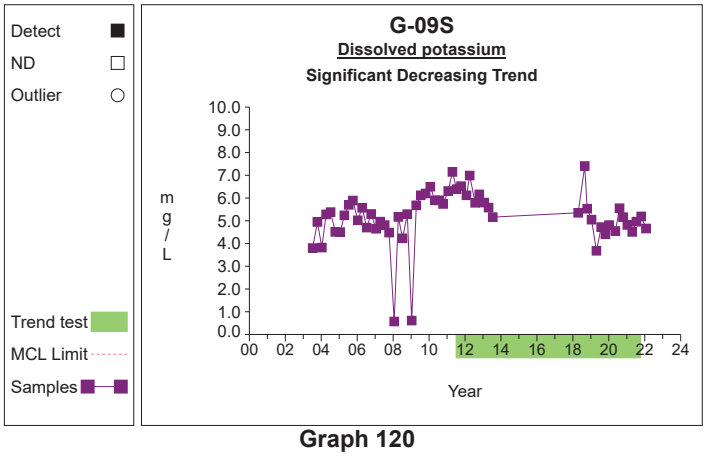
Graph 111

Time Series



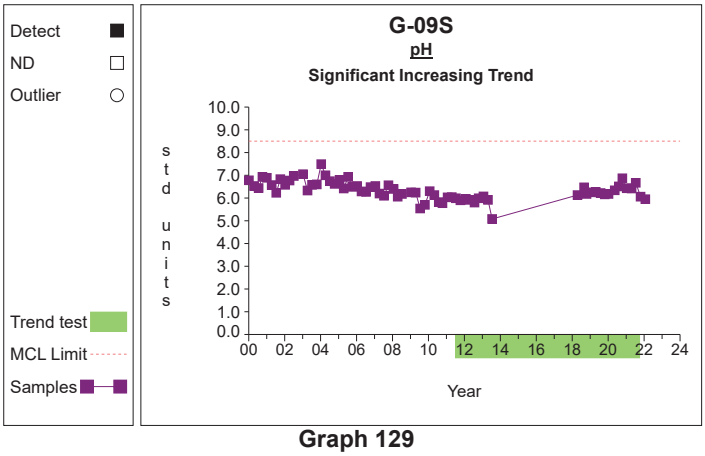
Graph 117

Time Series



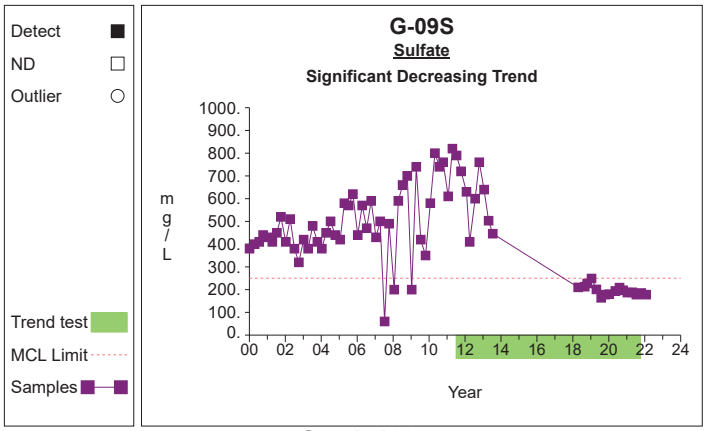
Graph 120

Time Series



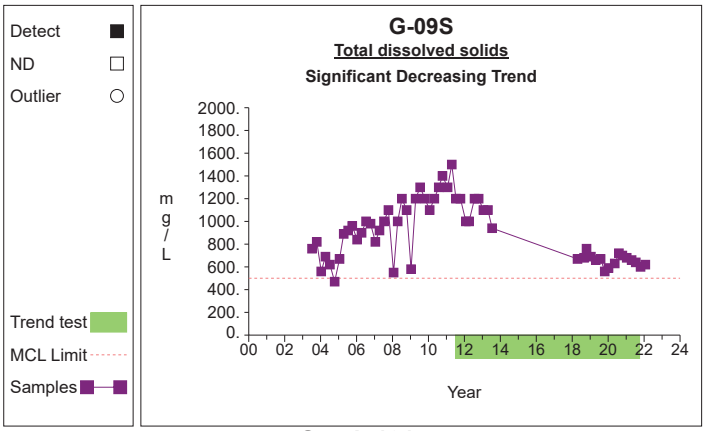
Graph 129

Time Series



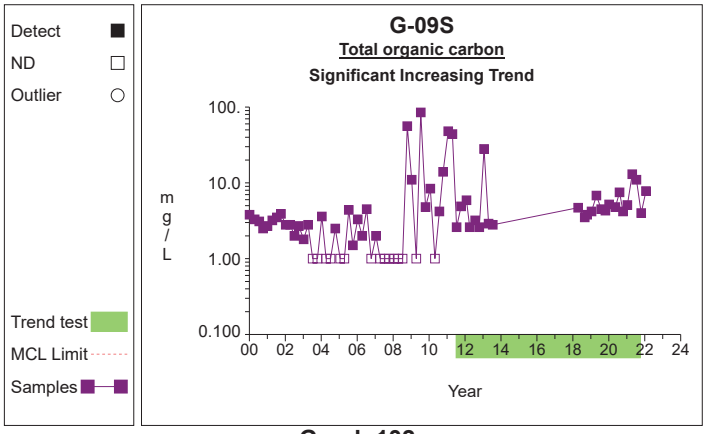
Graph 130

Time Series



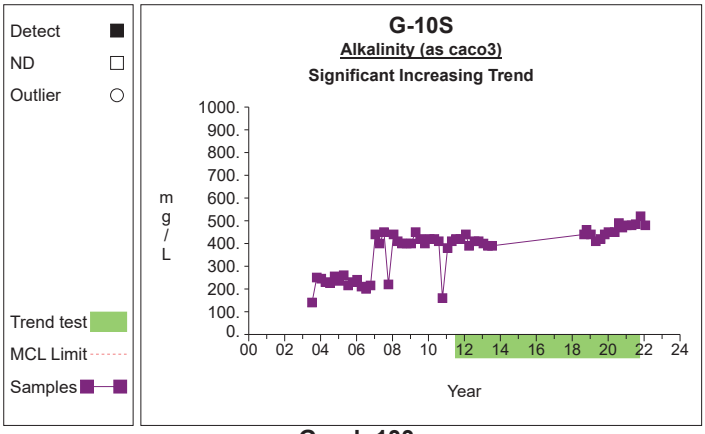
Graph 131

Time Series



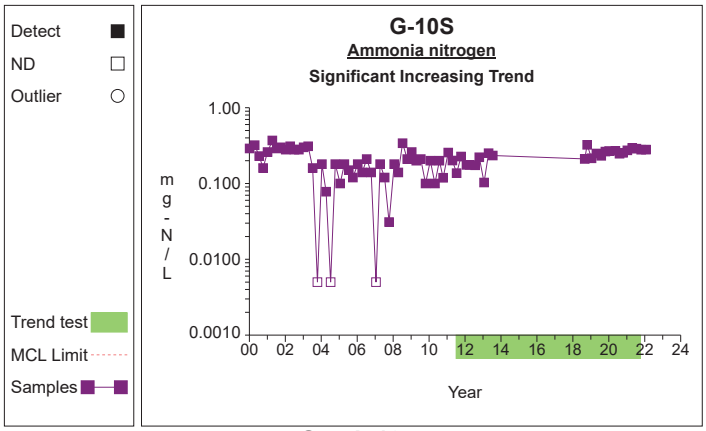
Graph 132

Time Series



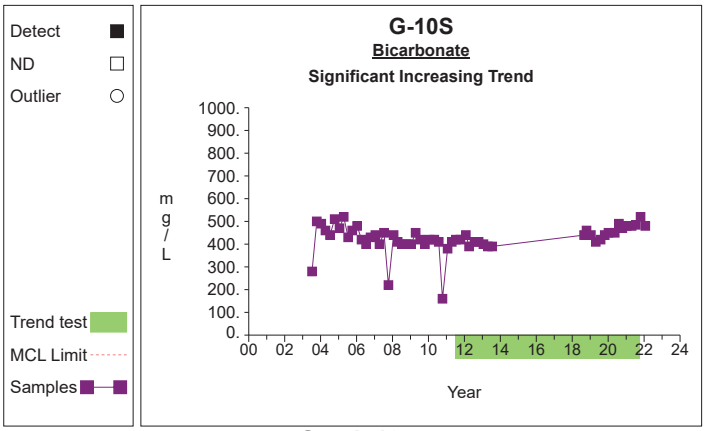
Graph 133

Time Series



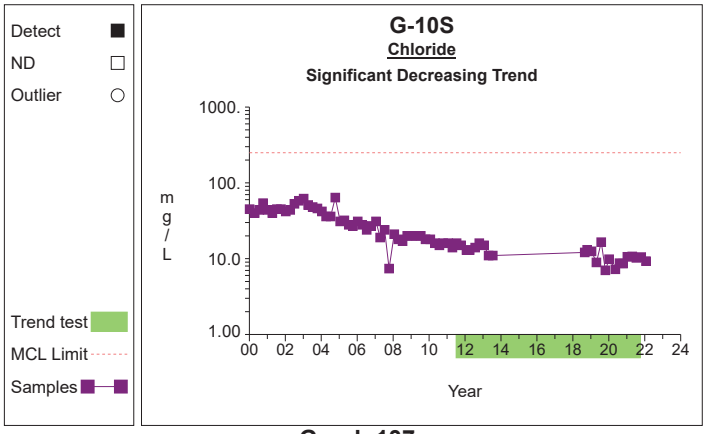
Graph 134

Time Series



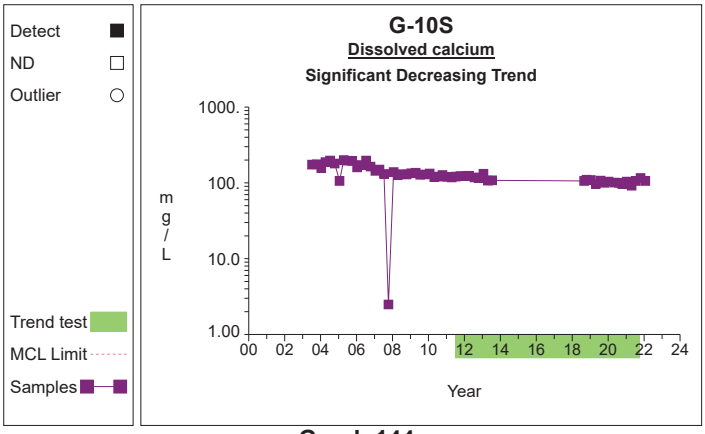
Graph 135

Time Series



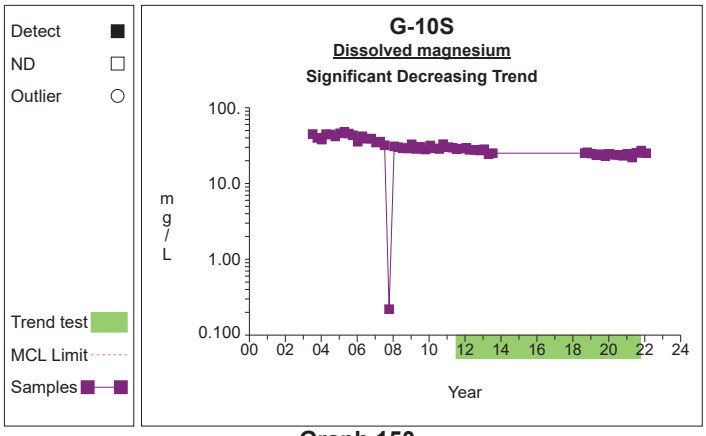
Graph 137

Time Series



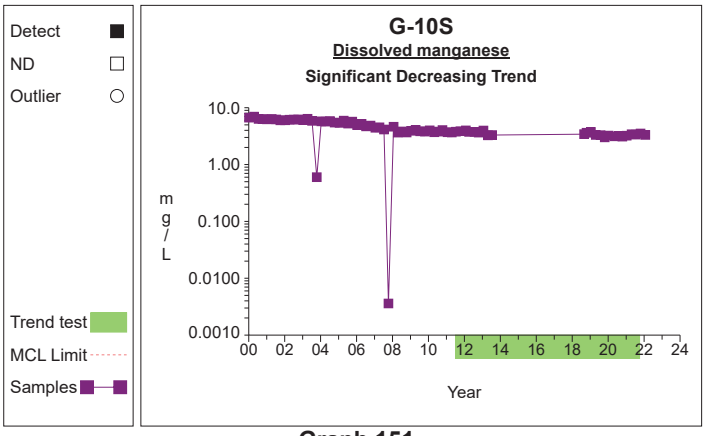
Graph 144

Time Series



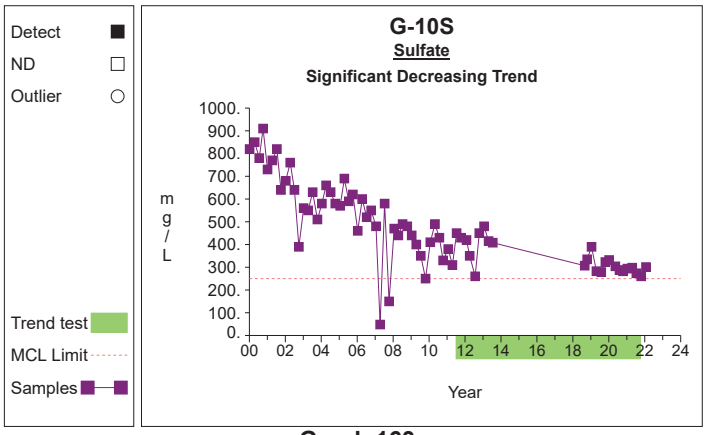
Graph 150

Time Series



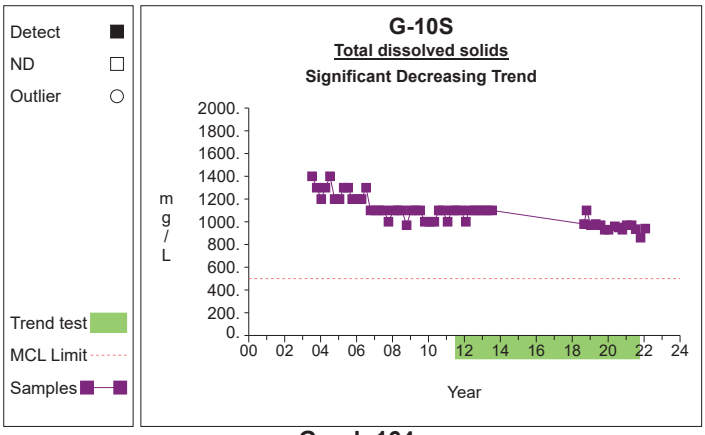
Graph 151

Time Series



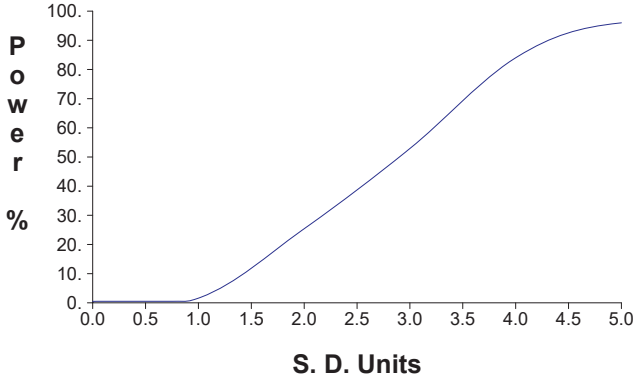
Graph 163

Time Series

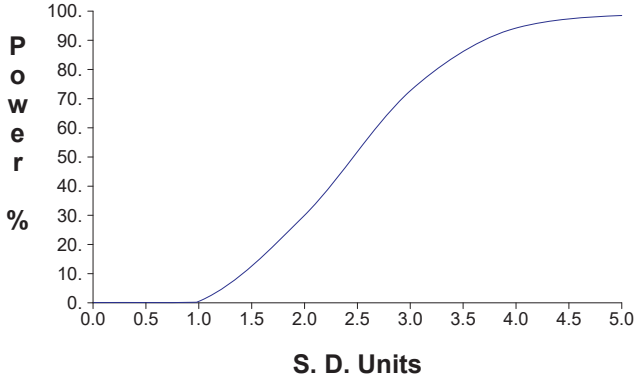


Graph 164

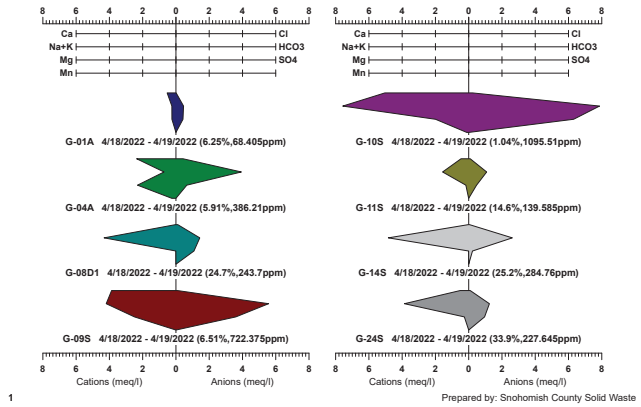
False Positive and False Negative Rates for Current Intra-Well Prediction Limits Monitoring Program



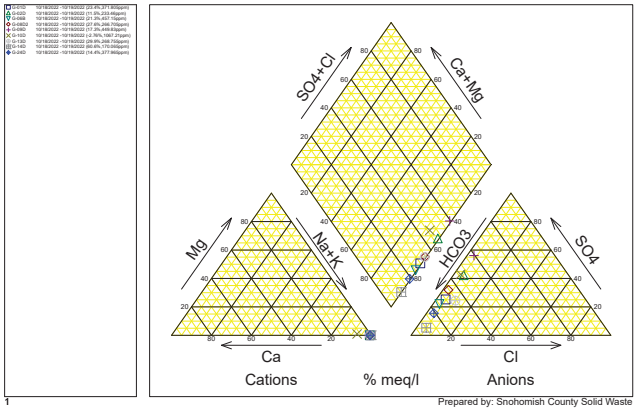
False Positive and False Negative Rates for Current Upgradient vs. Downgradient Monitoring Program



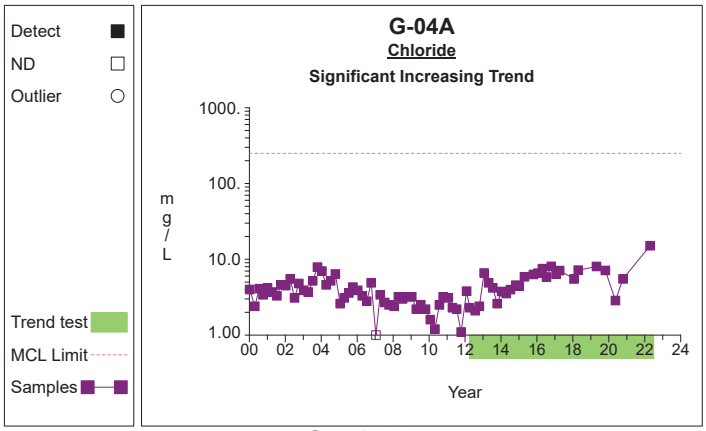
Cathcart Landfill



Cathcart Landfill

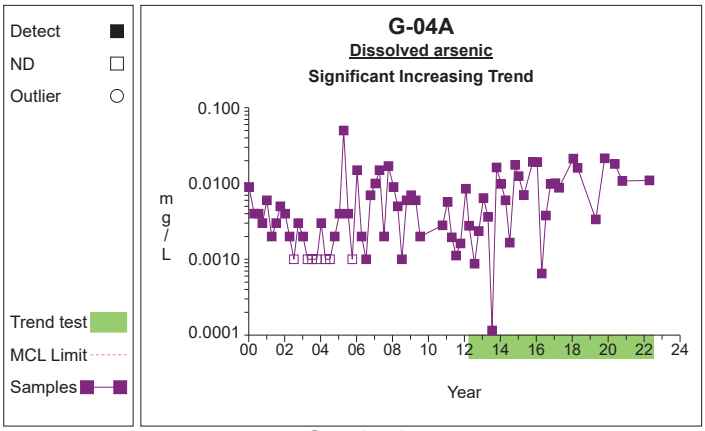


Time Series



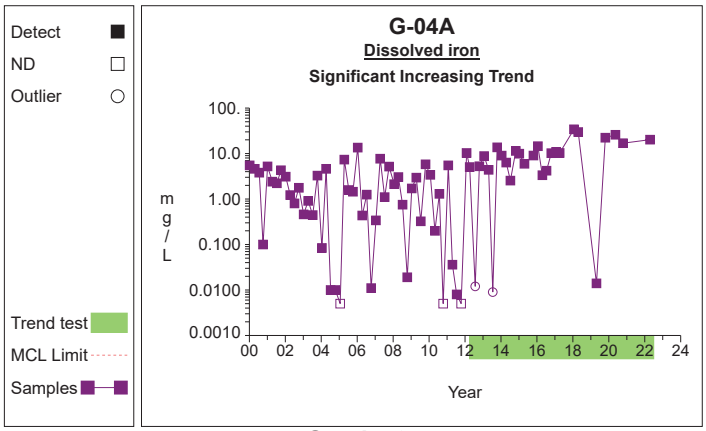
Graph 38

Time Series



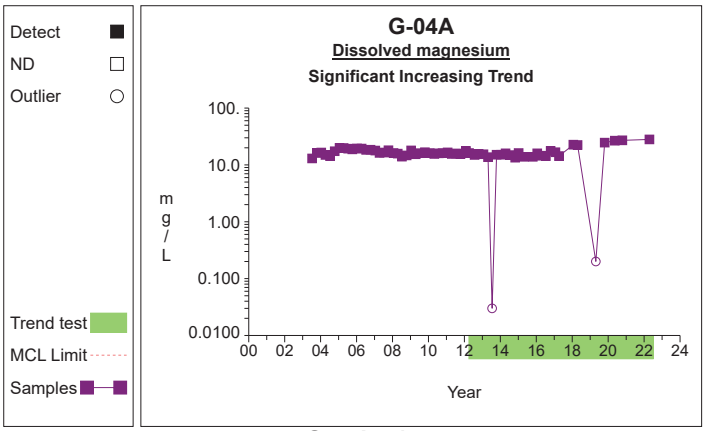
Graph 41

Time Series



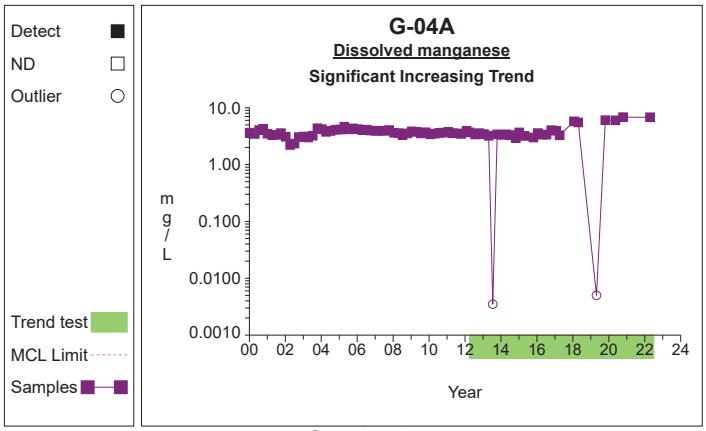
Graph 49

Time Series



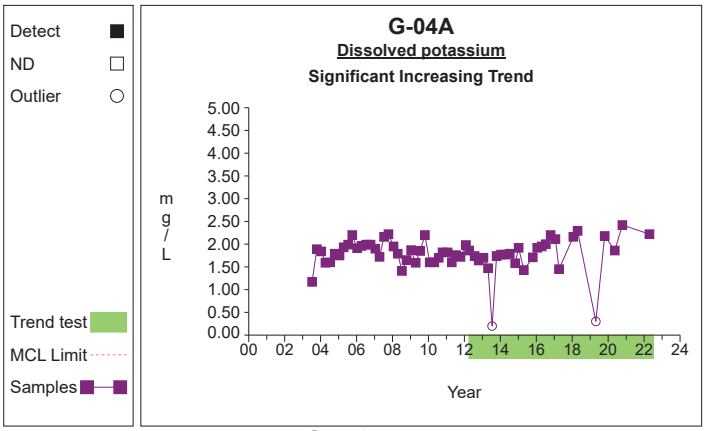
Graph 51

Time Series



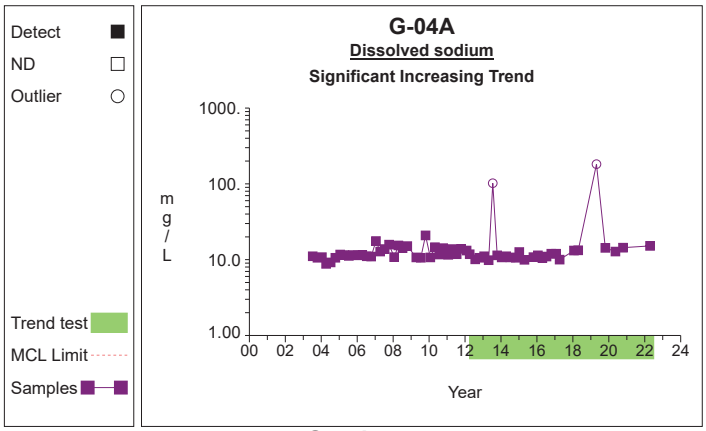
Graph 52

Time Series



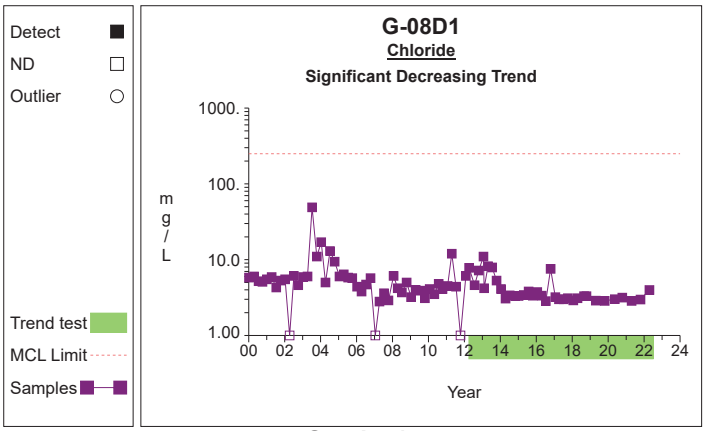
Graph 54

Time Series



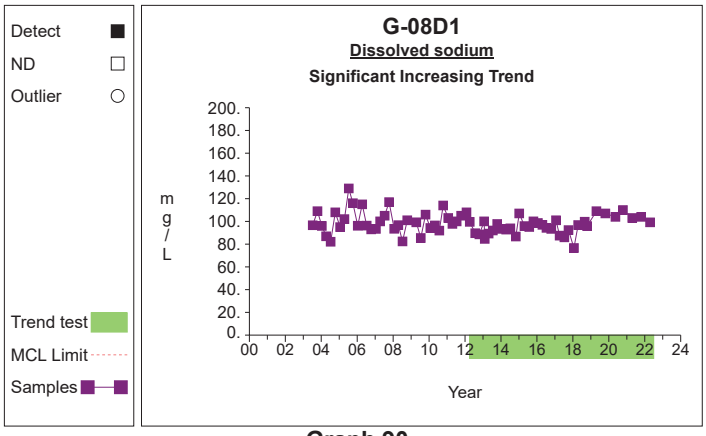
Graph 57

Time Series



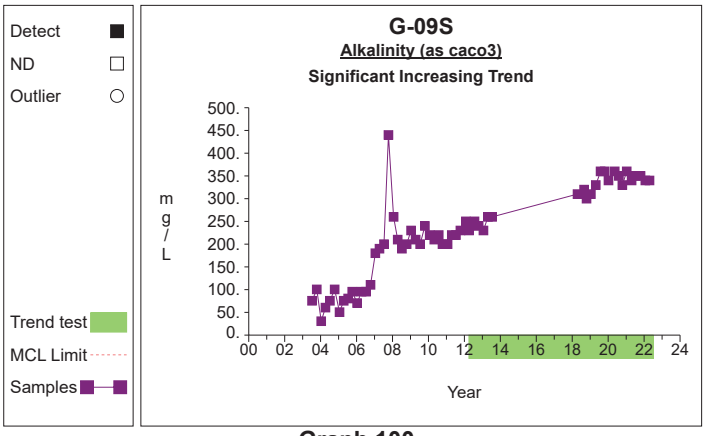
Graph 71

Time Series



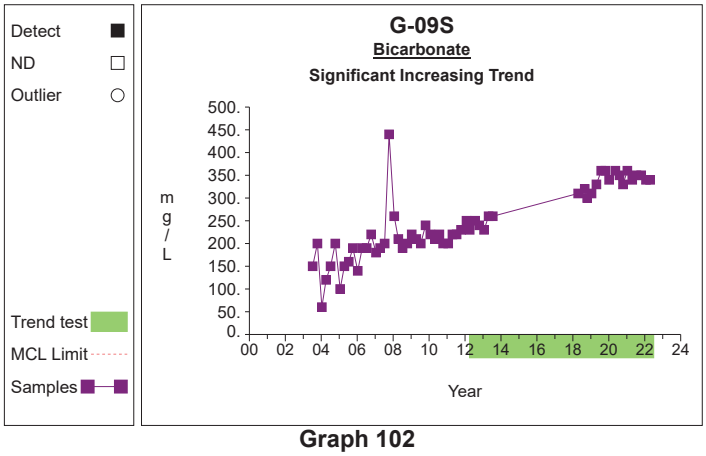
Graph 90

Time Series



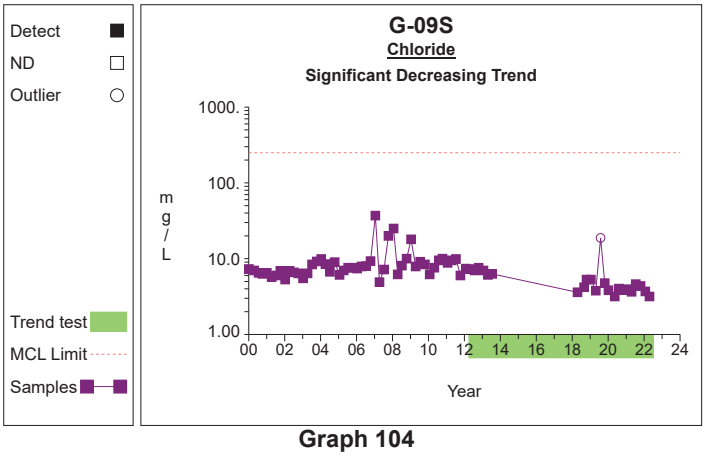
Graph 100

Time Series



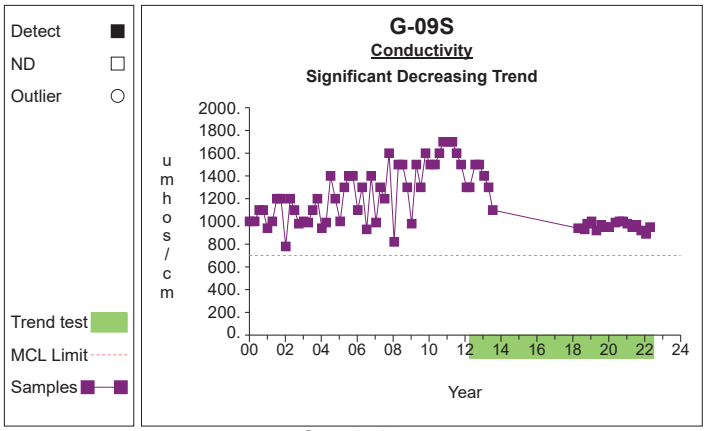
Graph 102

Time Series



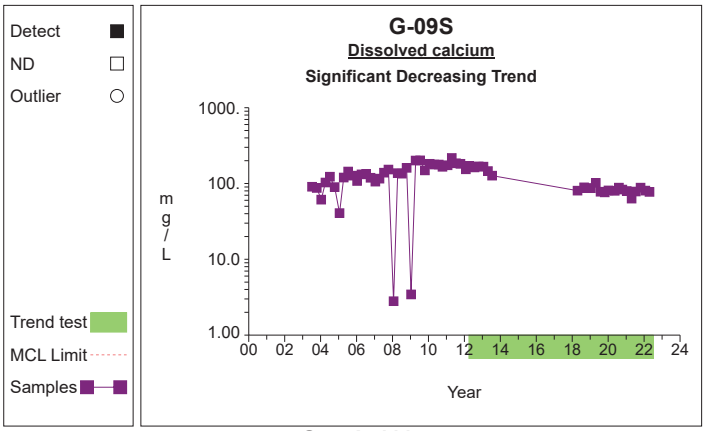
Graph 104

Time Series



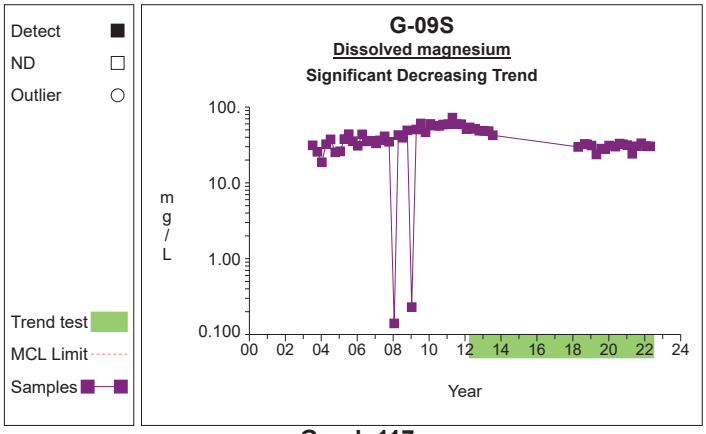
Graph 105

Time Series



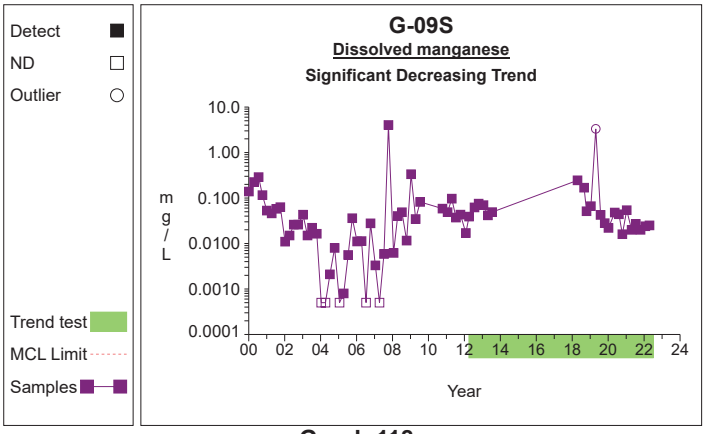
Graph 111

Time Series



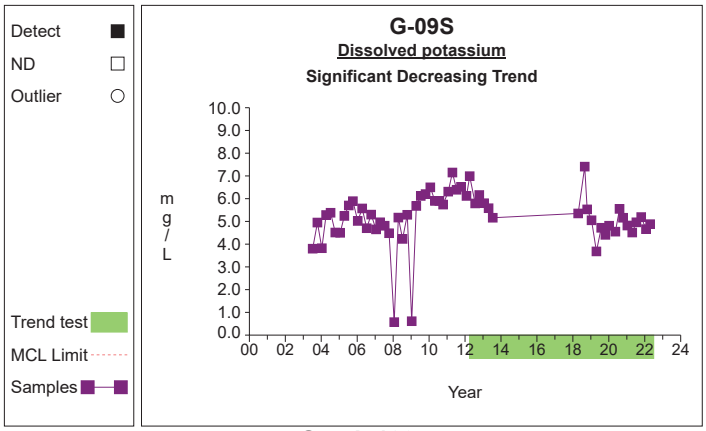
Graph 117

Time Series



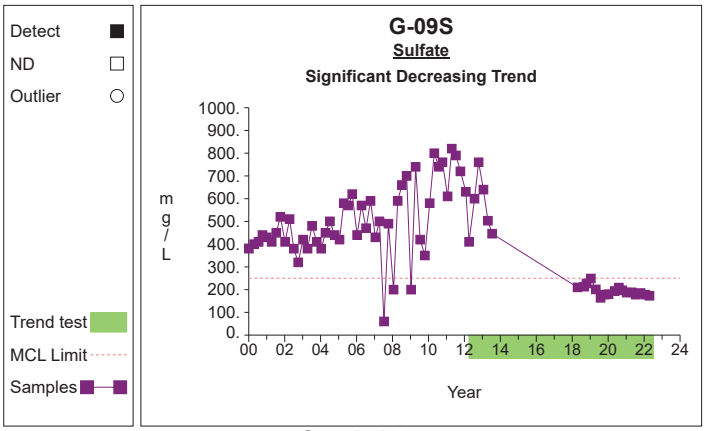
Graph 118

Time Series



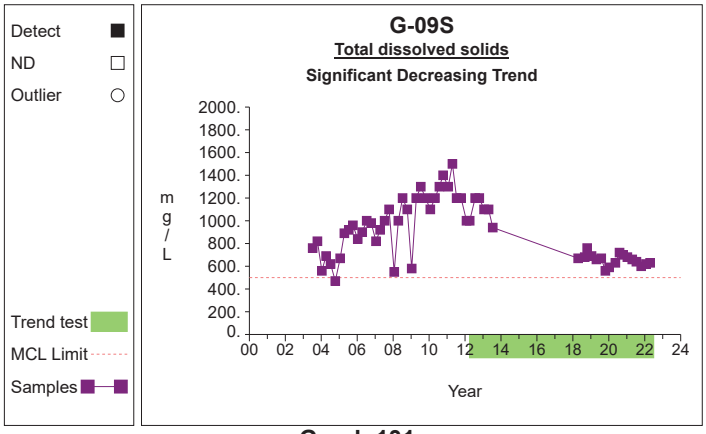
Graph 120

Time Series



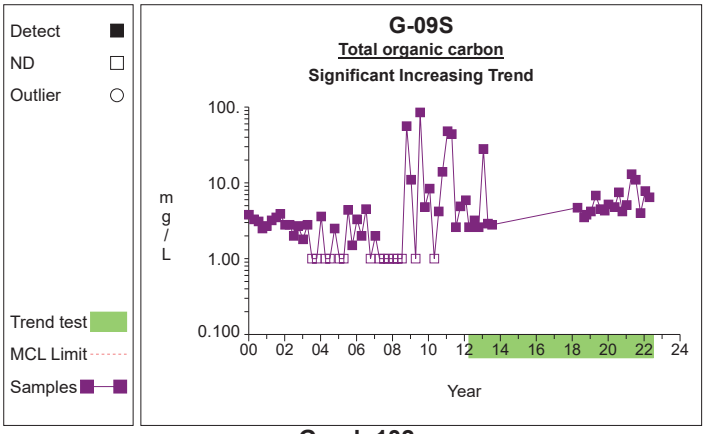
Graph 130

Time Series



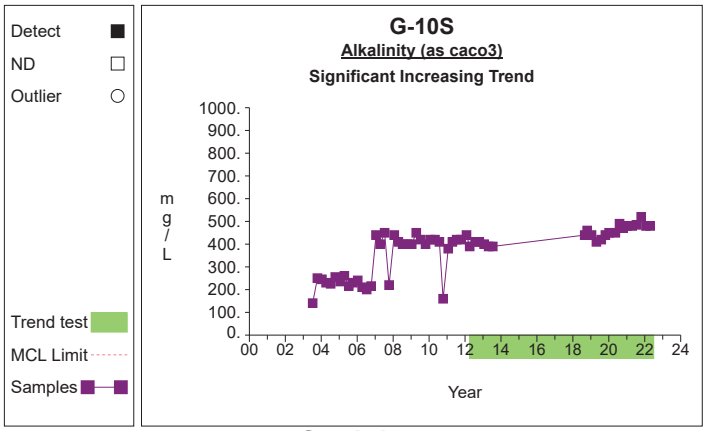
Graph 131

Time Series



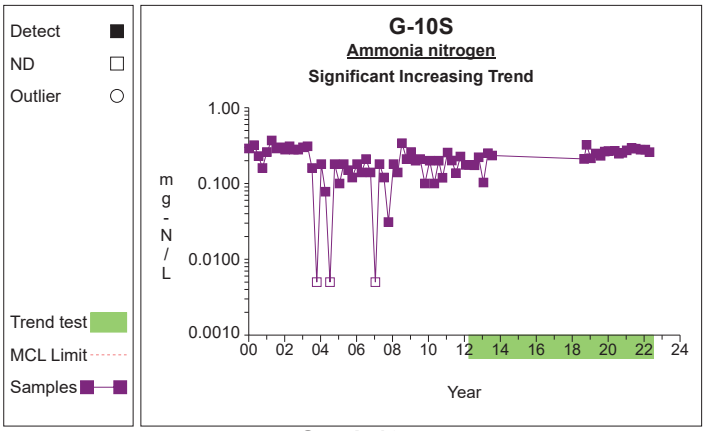
Graph 132

Time Series



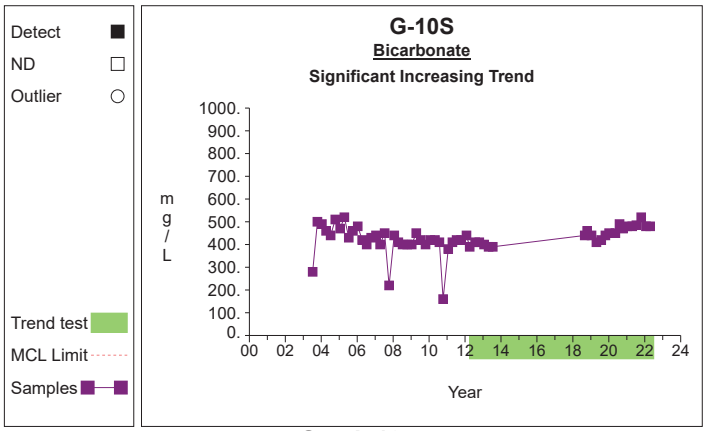
Graph 133

Time Series



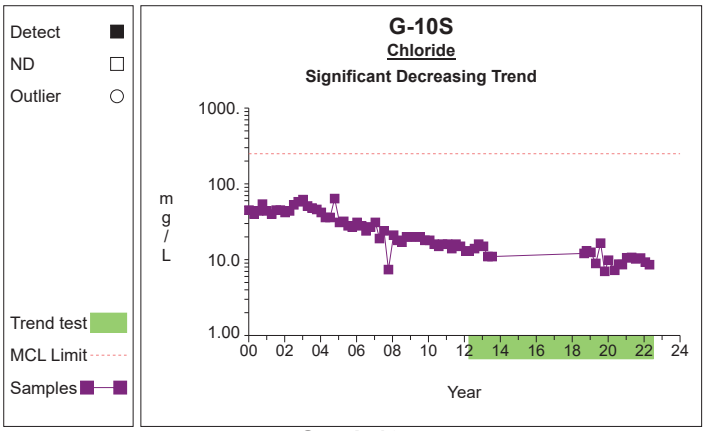
Graph 134

Time Series



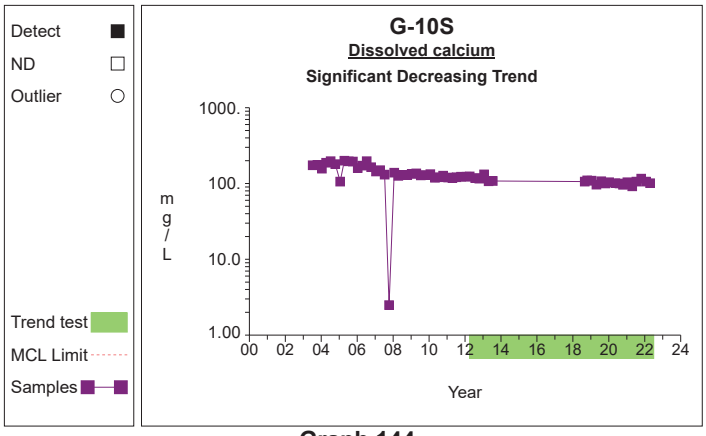
Graph 135

Time Series



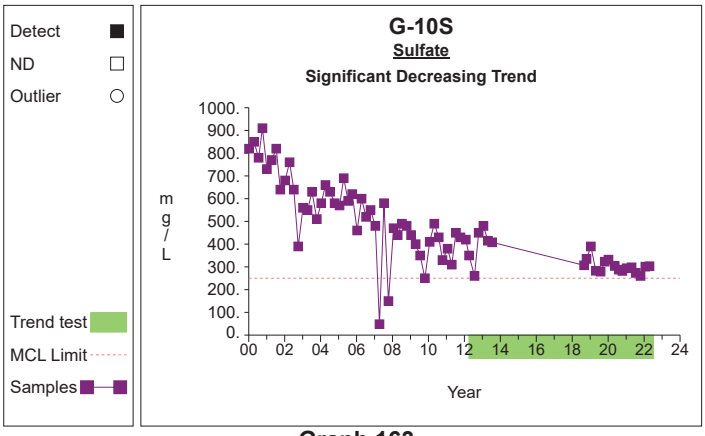
Graph 137

Time Series



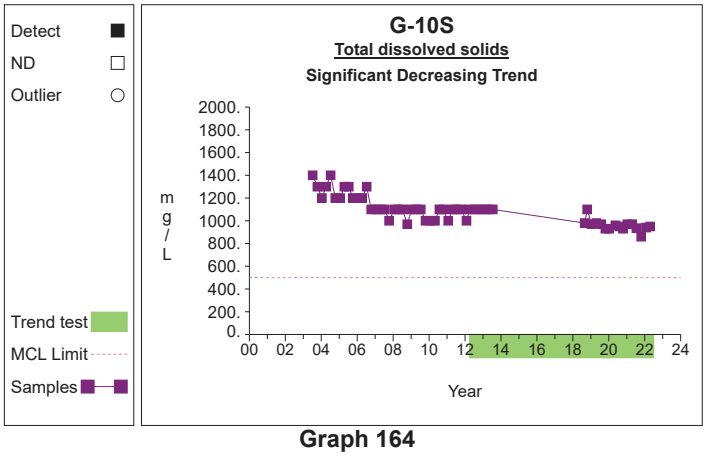
Graph 144

Time Series



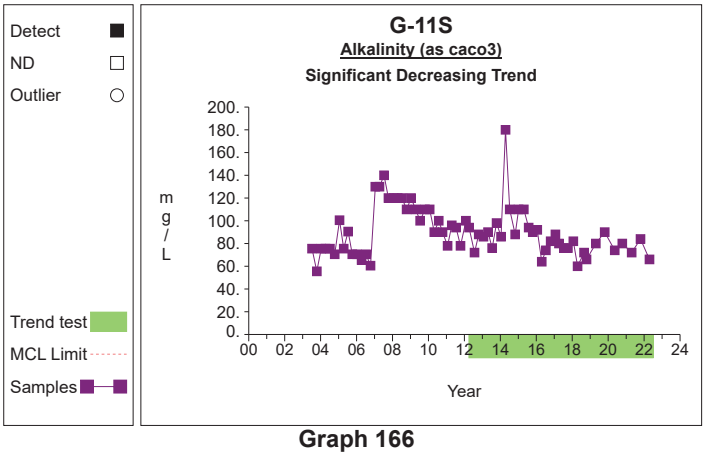
Graph 163

Time Series



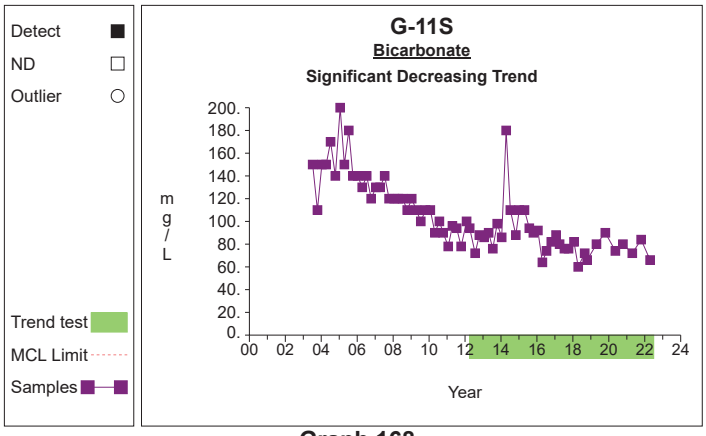
Graph 164

Time Series



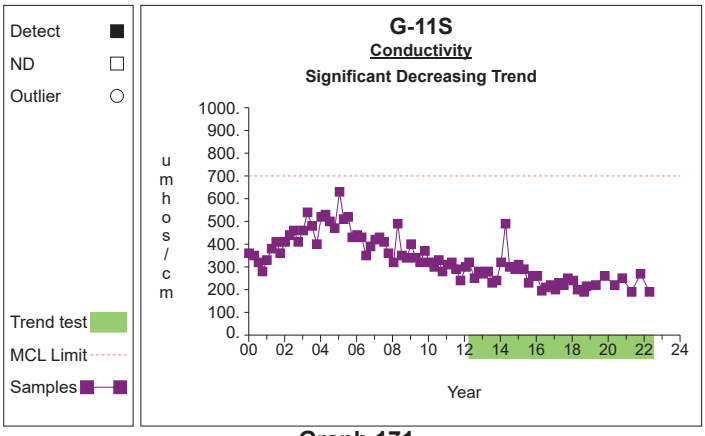
Graph 166

Time Series



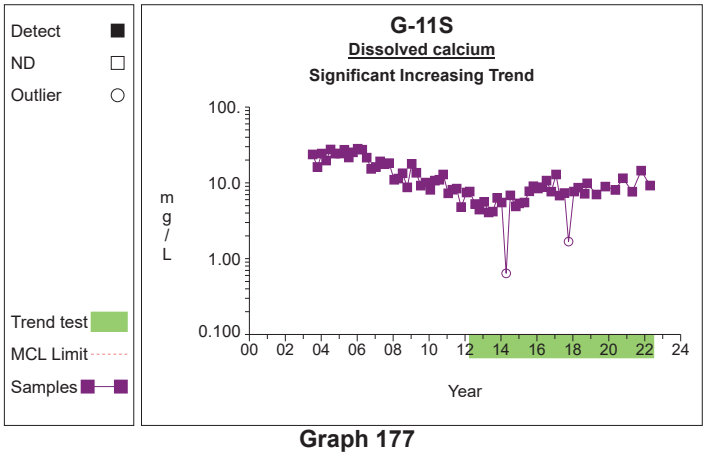
Graph 168

Time Series



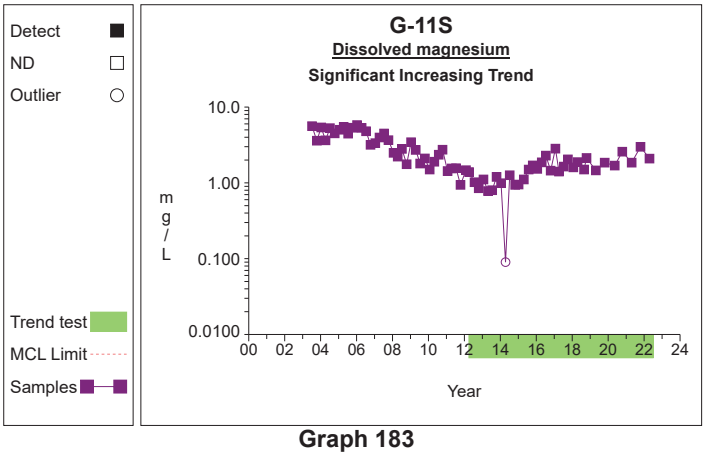
Graph 171

Time Series



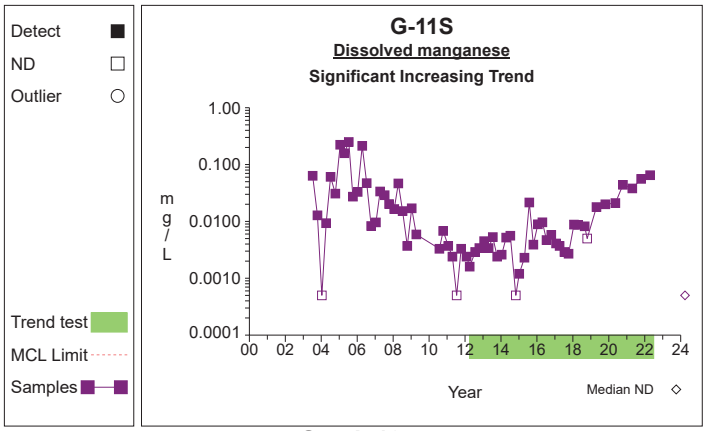
Graph 177

Time Series



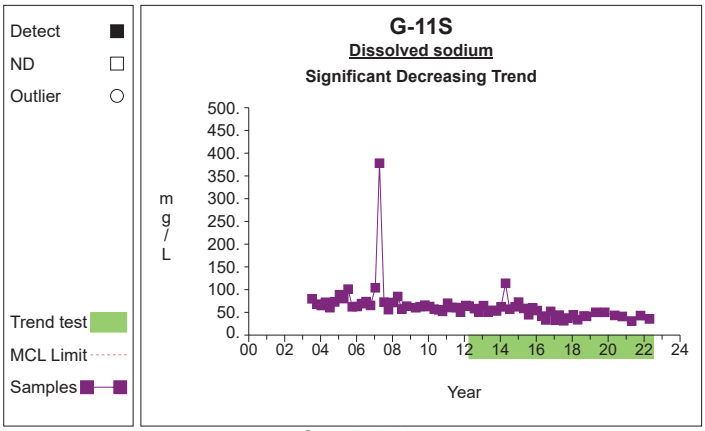
Graph 183

Time Series



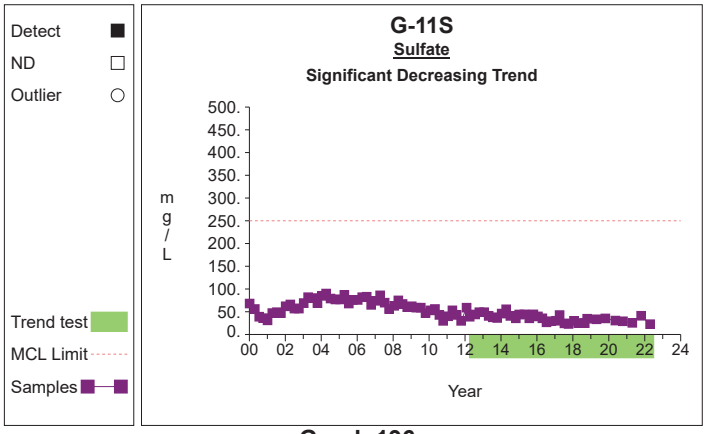
Graph 184

Time Series



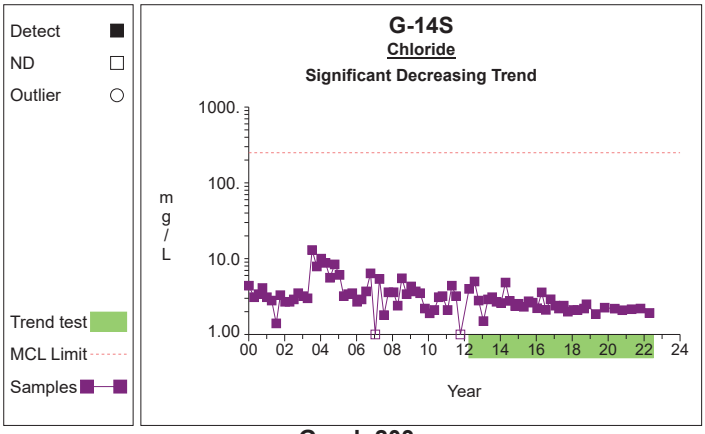
Graph 189

Time Series



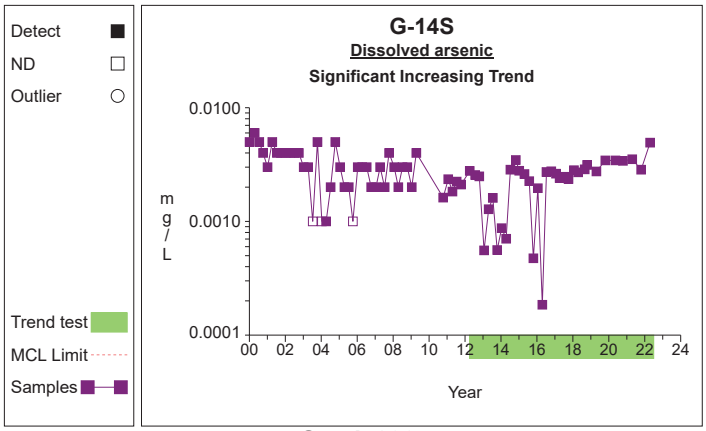
Graph 196

Time Series



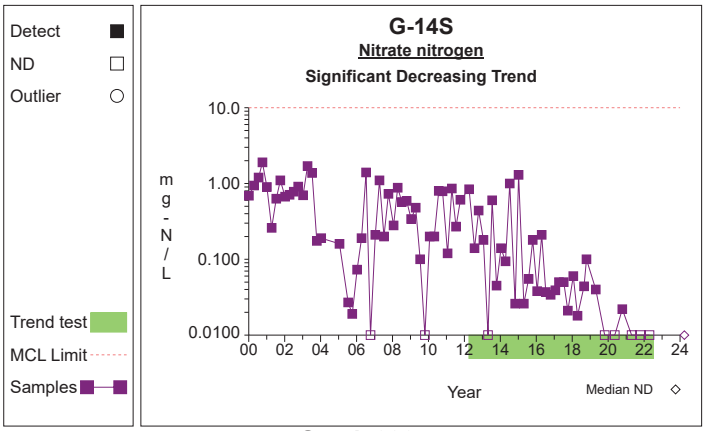
Graph 203

Time Series



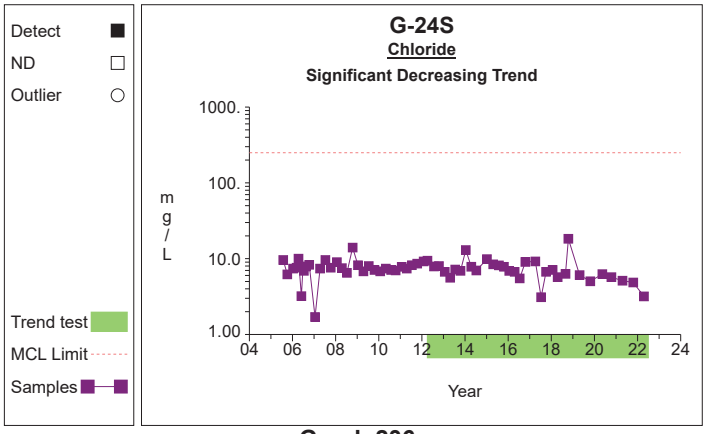
Graph 206

Time Series



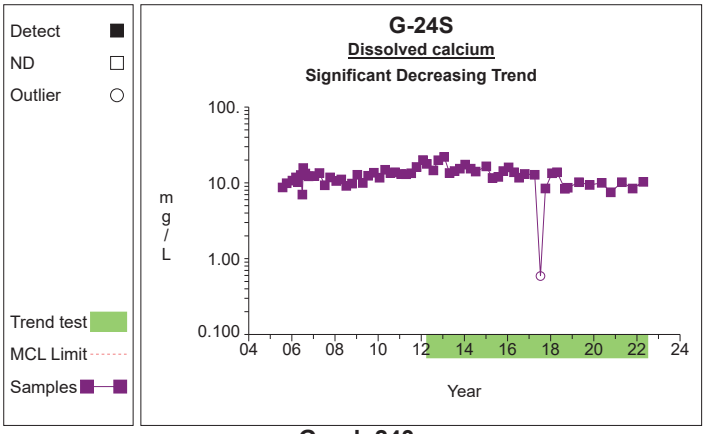
Graph 226

Time Series



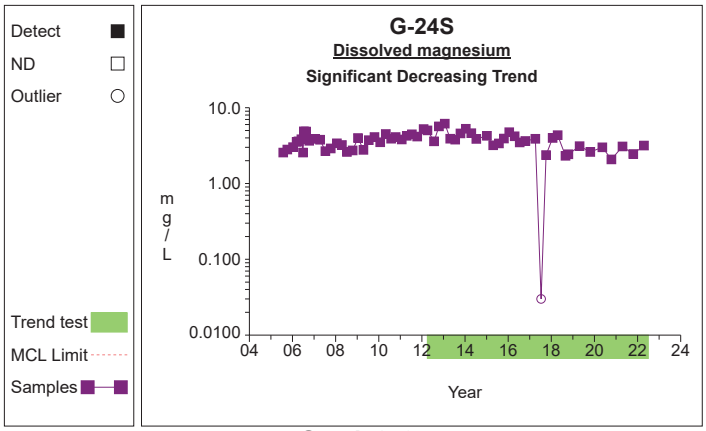
Graph 236

Time Series



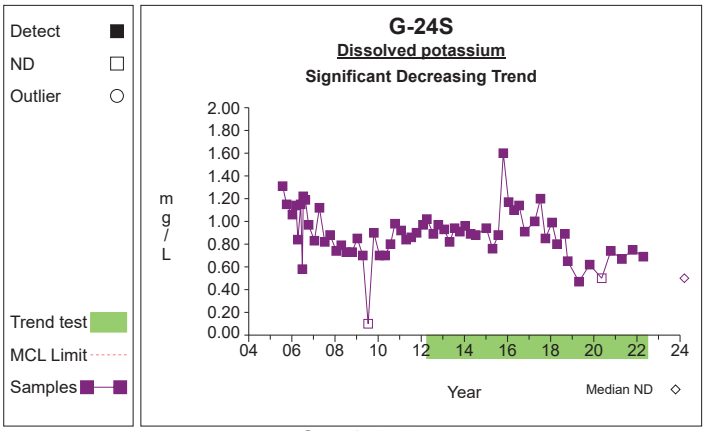
Graph 243

Time Series



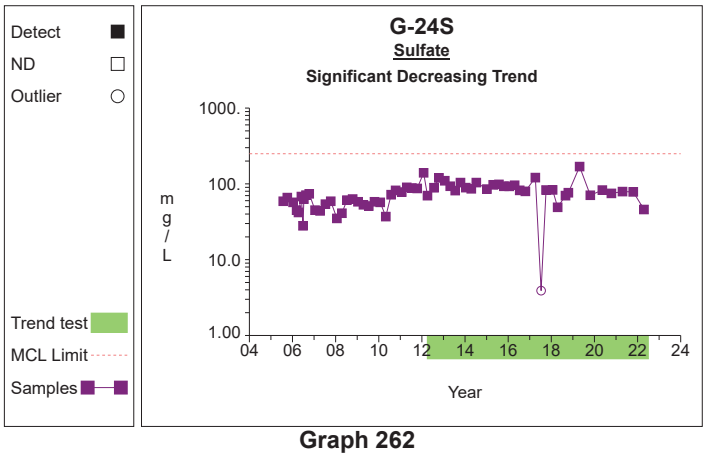
Graph 249

Time Series



Graph 252

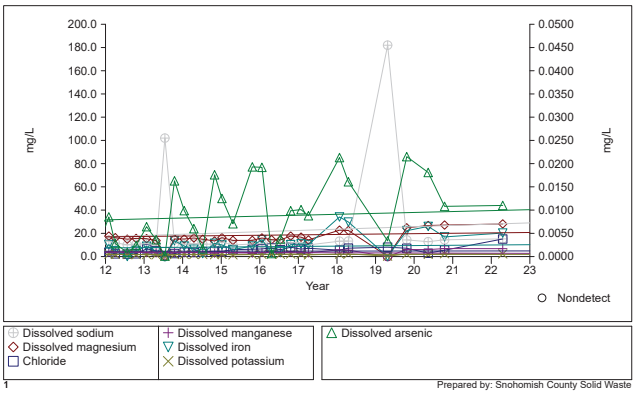
Time Series



Graph 262

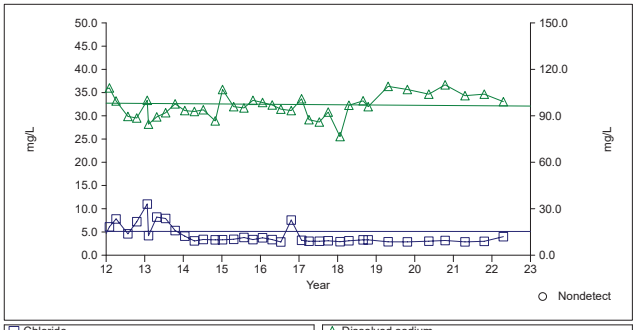
Cathcart Landfill

Time Series Plot for G-04A



Cathcart Landfill

Time Series Plot for G-08D1



Chloride

Dissolved sodium

1

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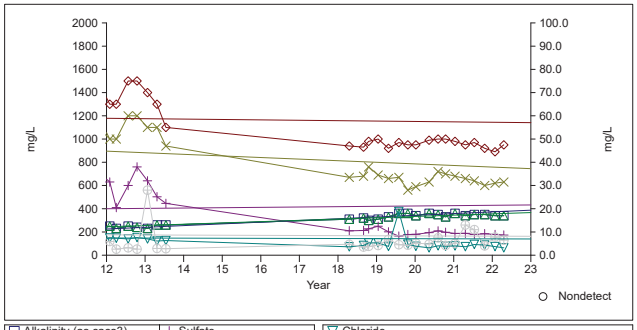
Cathcart Landfill

Time Series Plot for G-09S



Alkalinity (as caco3)
Bicarbonate
Conductivity

Sulfate
Total dissolved solids

Chloride
Total organic carbon

1

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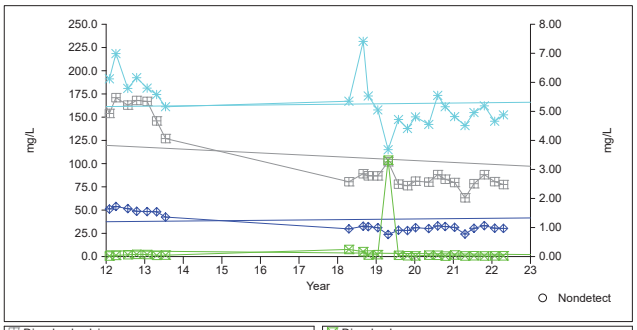
Cathcart Landfill

Time Series Plot for G-09S



Dissolved calcium
Dissolved magnesium

Dissolved manganese
Dissolved potassium

1

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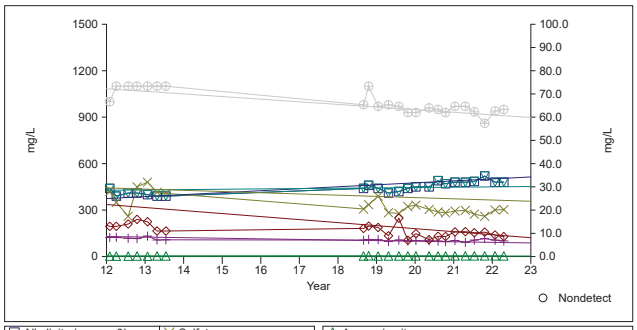
Cathcart Landfill

Time Series Plot for G-10S



Alkalinity (as caco3)
Bicarbonate
Dissolved calcium

Sulfate
Total dissolved solids

Ammonia nitrogen
Chloride

1

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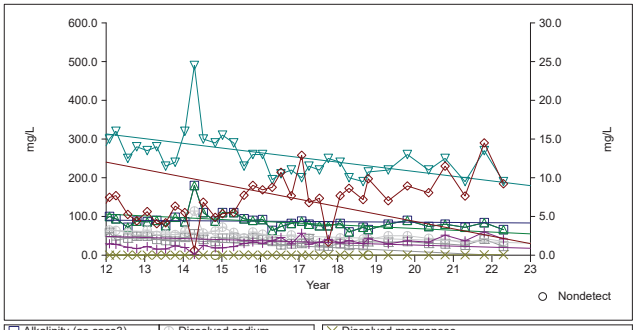
Cathcart Landfill

Time Series Plot for G-11S



1

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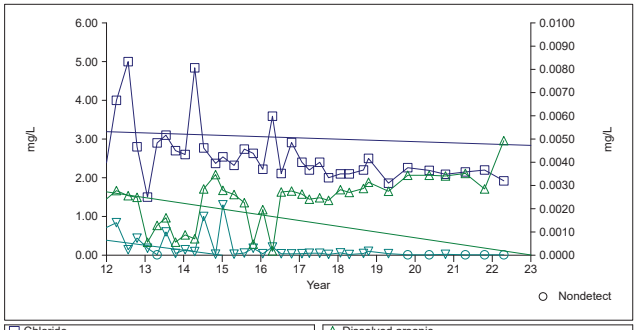
Cathcart Landfill

Time Series Plot for G-14S



1

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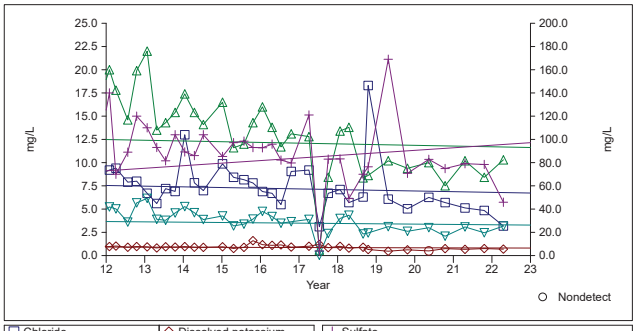
Cathcart Landfill

Time Series Plot for G-24S



1

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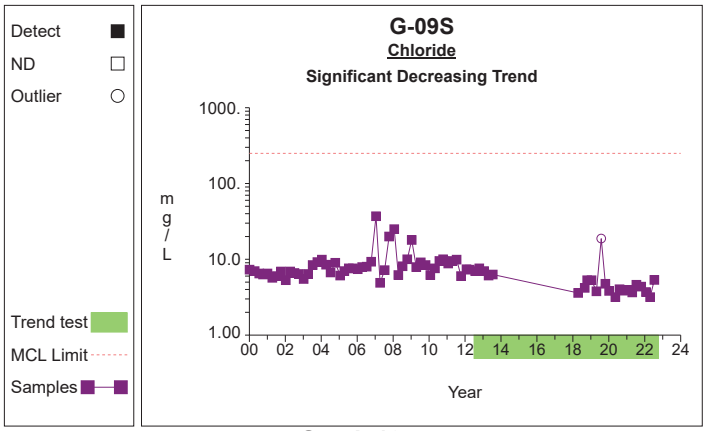
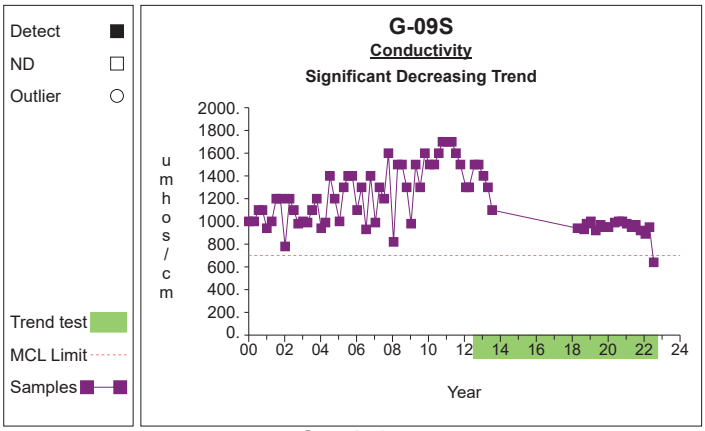
Time Series



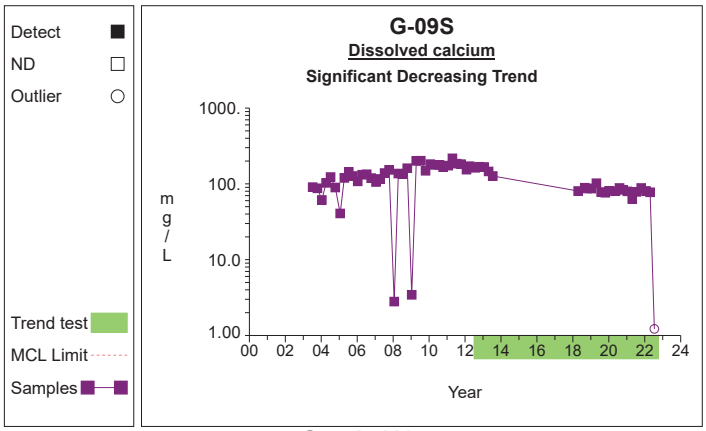
Graph 104

Time Series



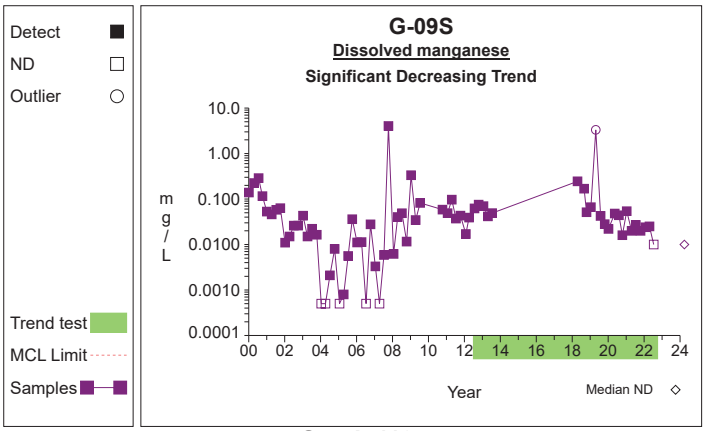
Graph 105

Time Series



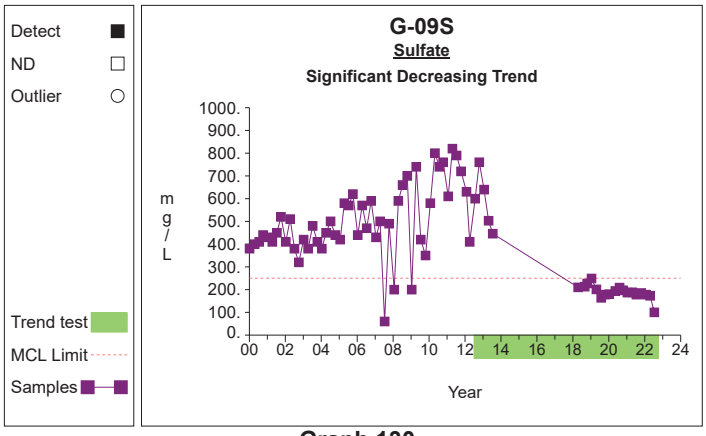
Graph 111

Time Series



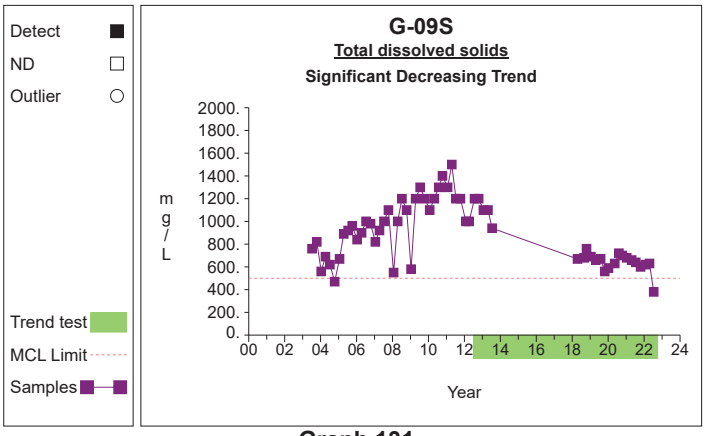
Graph 118

Time Series



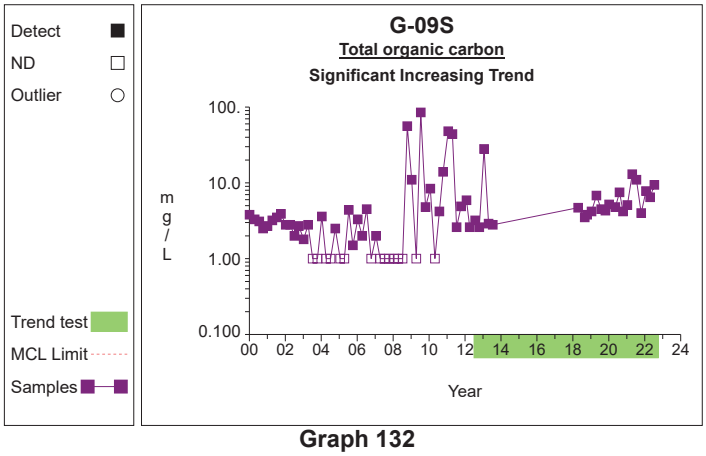
Graph 130

Time Series



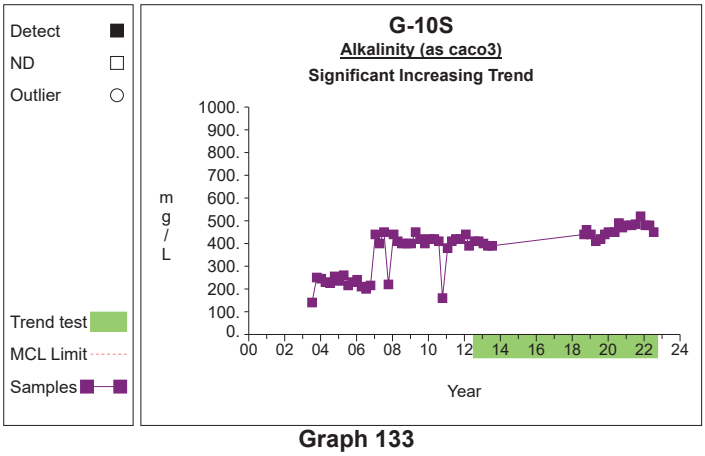
Graph 131

Time Series



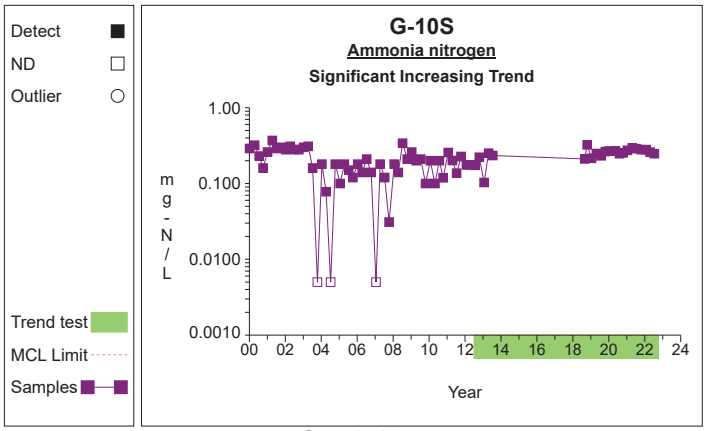
Graph 132

Time Series



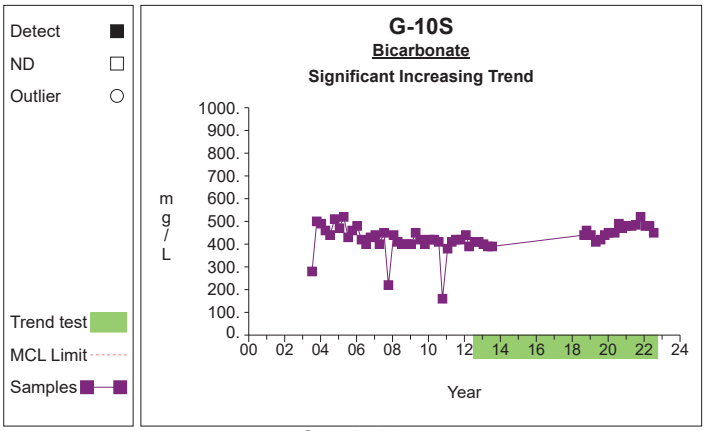
Graph 133

Time Series



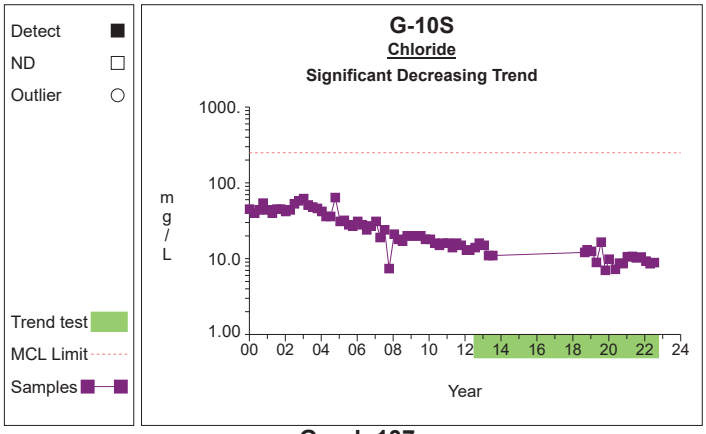
Graph 134

Time Series



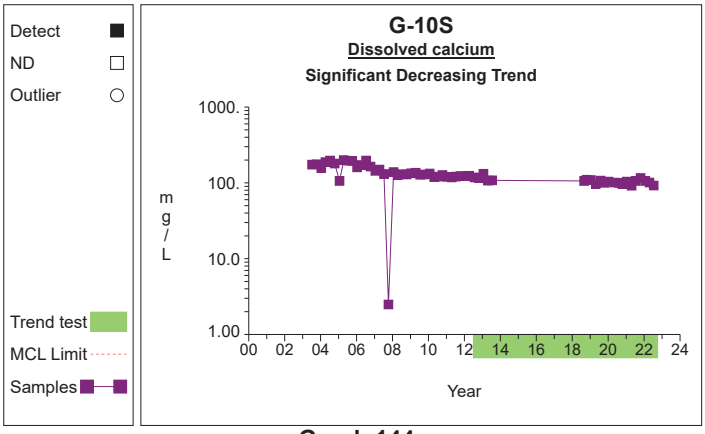
Graph 135

Time Series



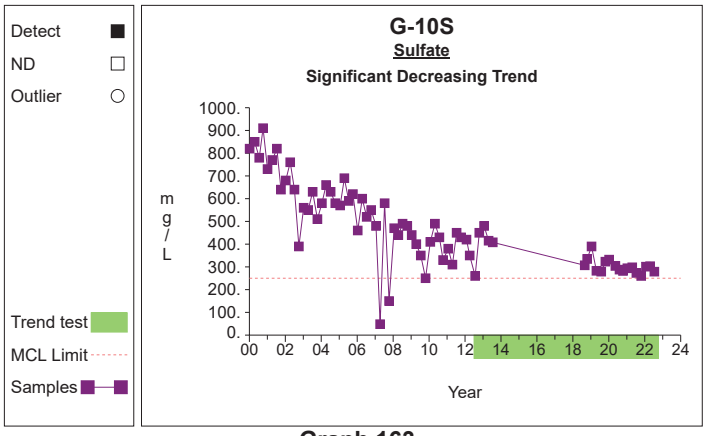
Graph 137

Time Series



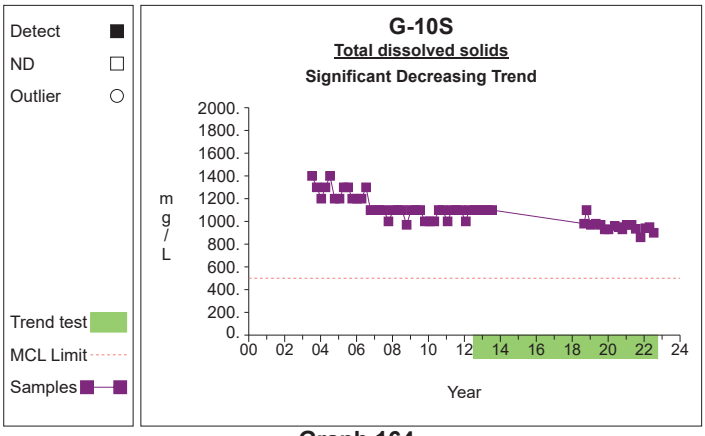
Graph 144

Time Series



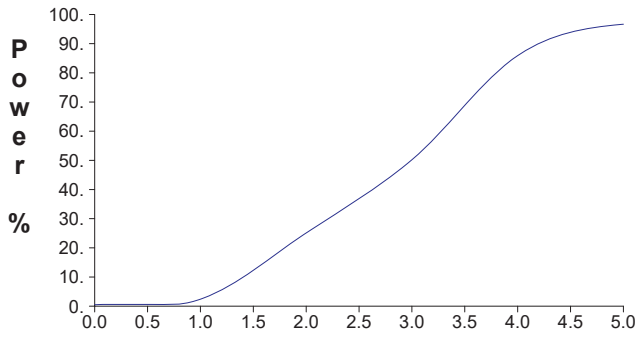
Graph 163

Time Series

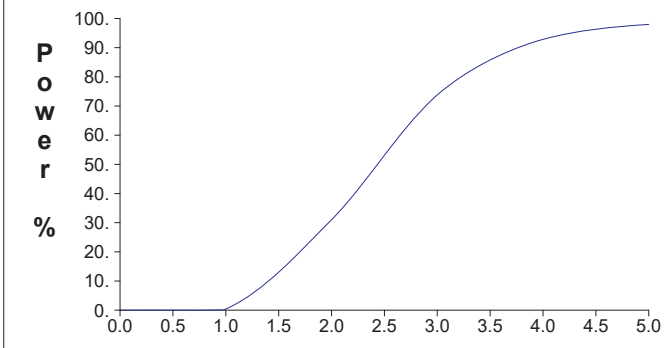


Graph 164

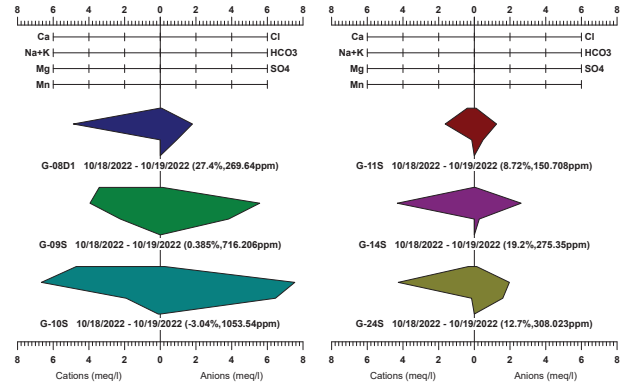
False Positive and False Negative Rates for Current Intra-Well Prediction Limits Monitoring Program



False Positive and False Negative Rates for Current Upgradient vs. Downgradient Monitoring Program



Cathcart Landfill



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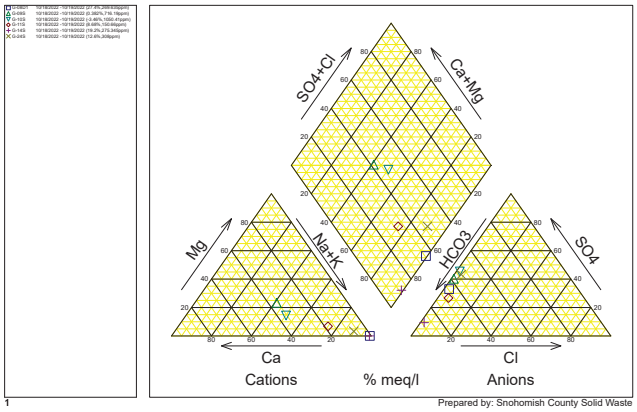
Cathcart Landfill



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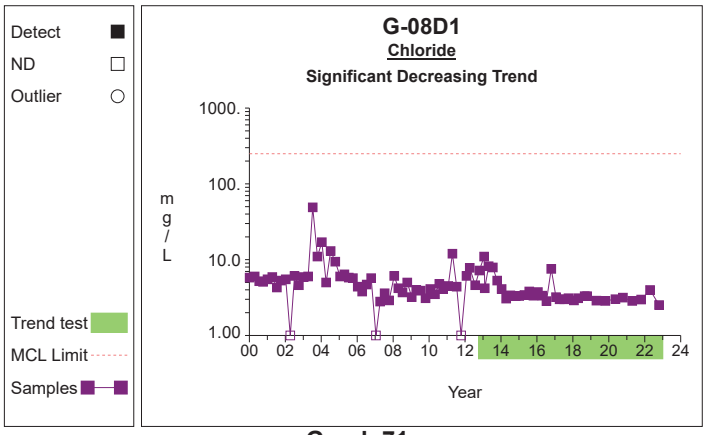
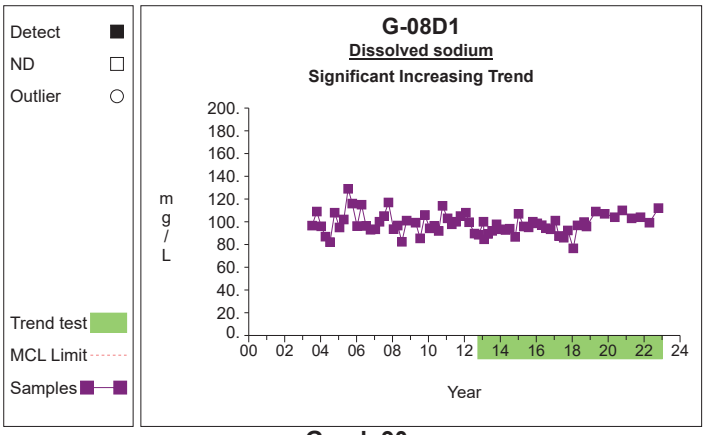
Time Series



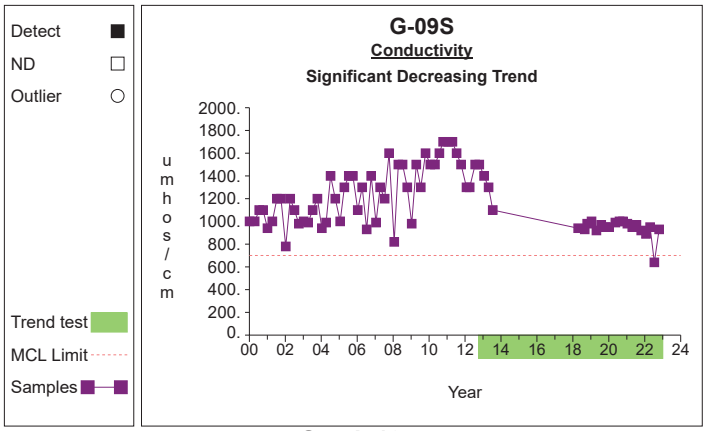
Graph 71

Time Series



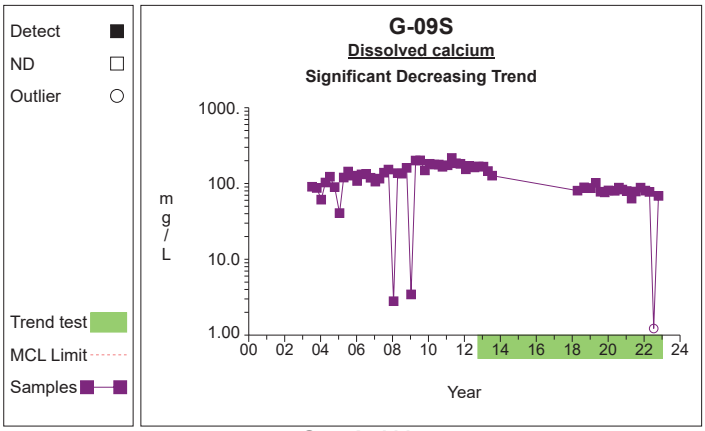
Graph 90

Time Series



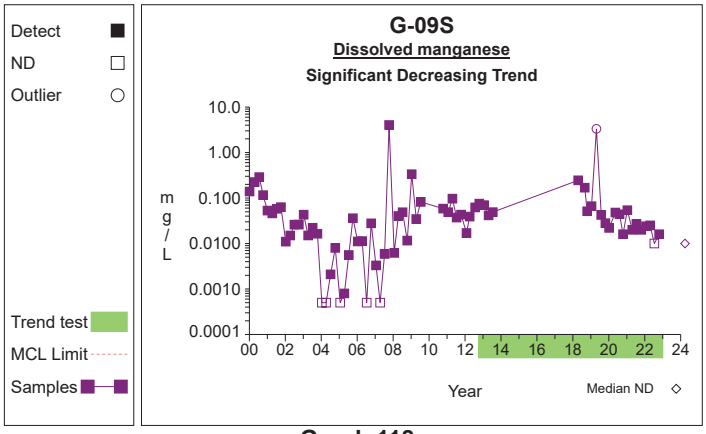
Graph 105

Time Series



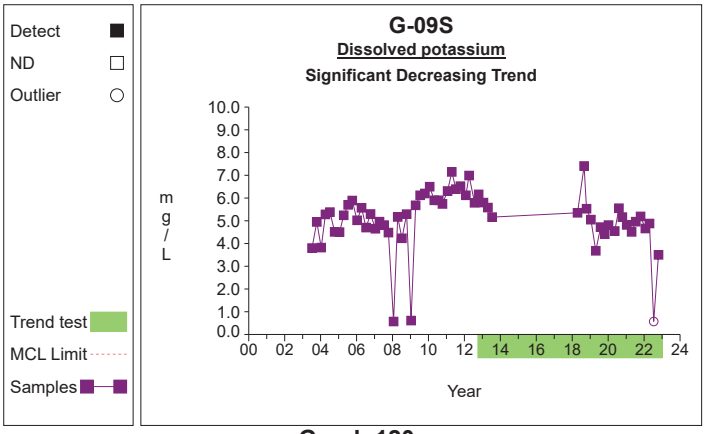
Graph 111

Time Series



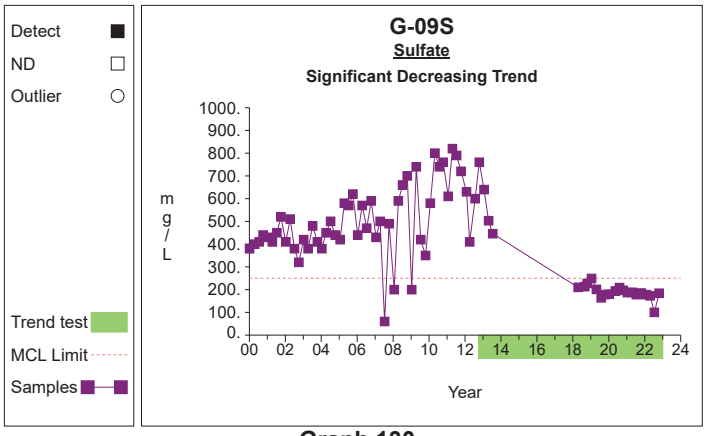
Graph 118

Time Series



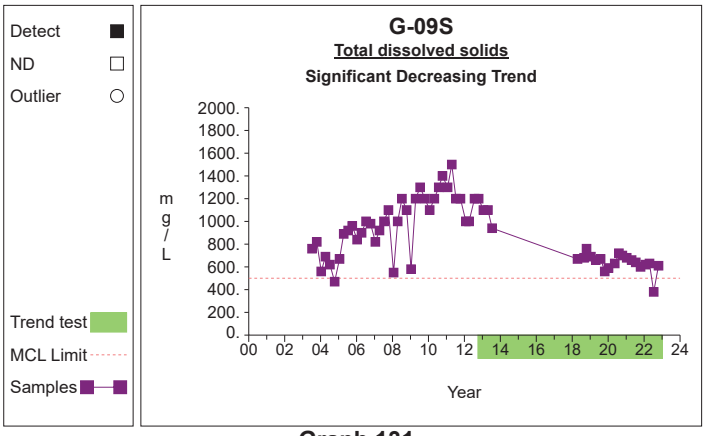
Graph 120

Time Series



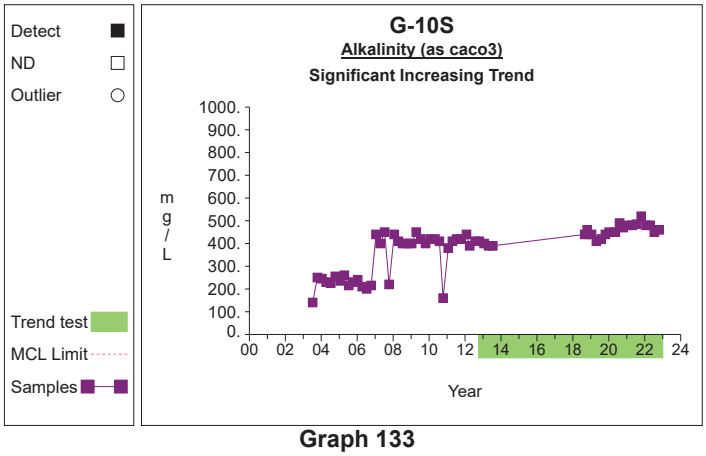
Graph 130

Time Series



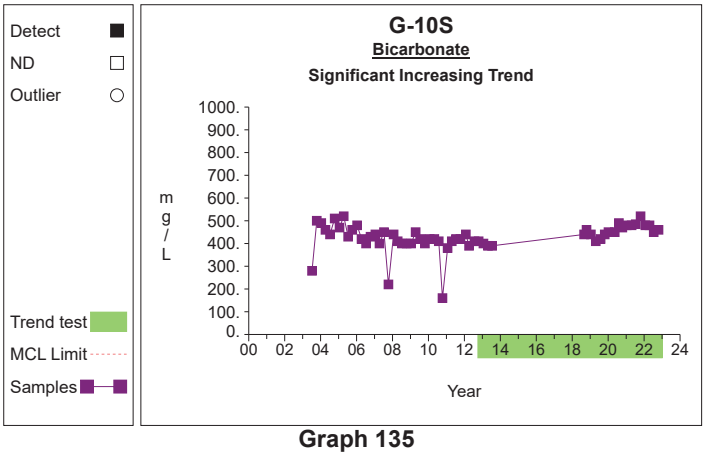
Graph 131

Time Series



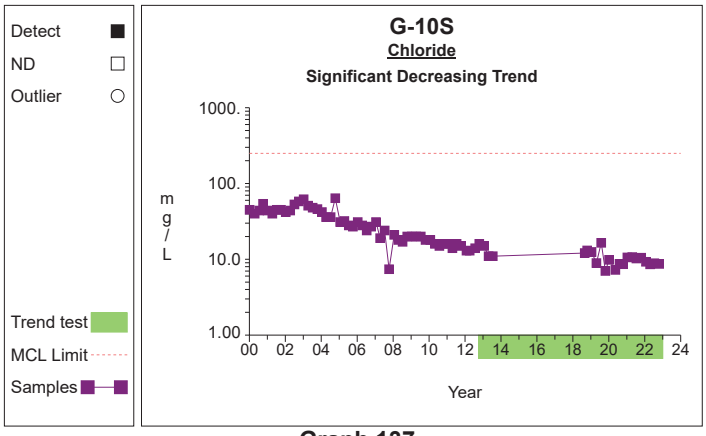
Graph 133

Time Series



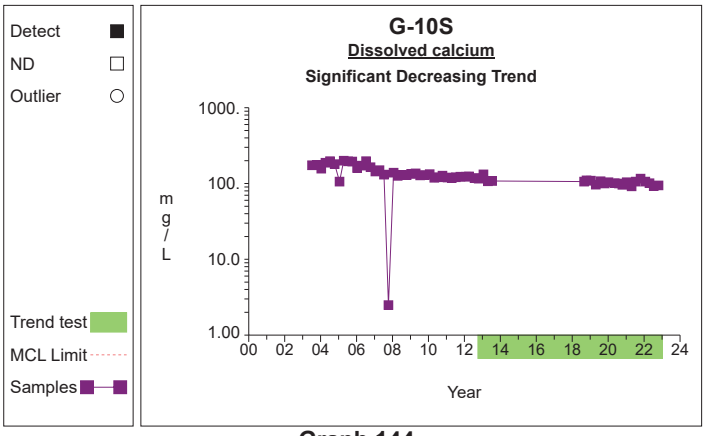
Graph 135

Time Series



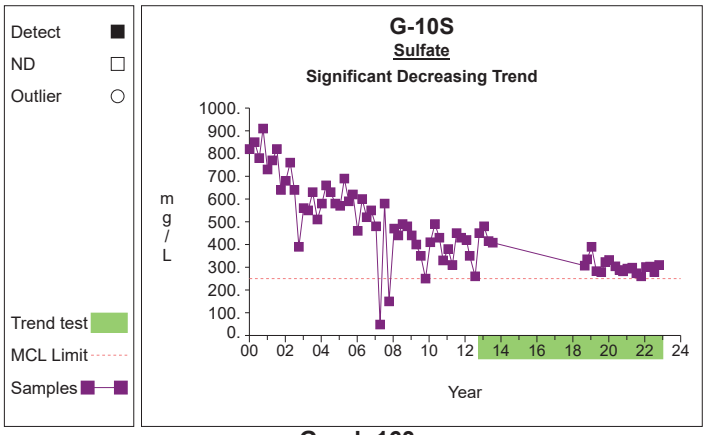
Graph 137

Time Series



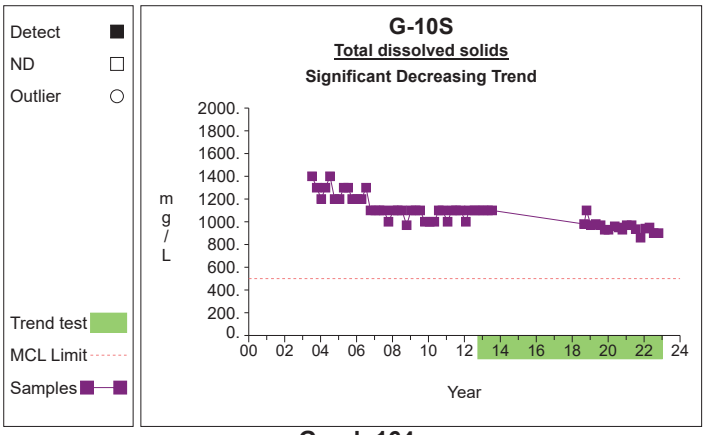
Graph 144

Time Series



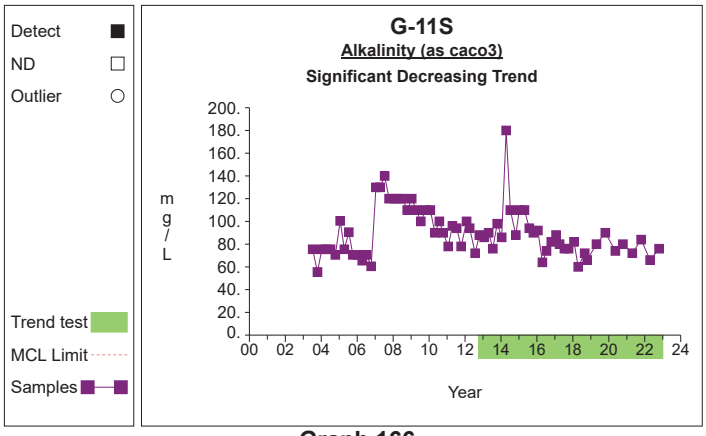
Graph 163

Time Series



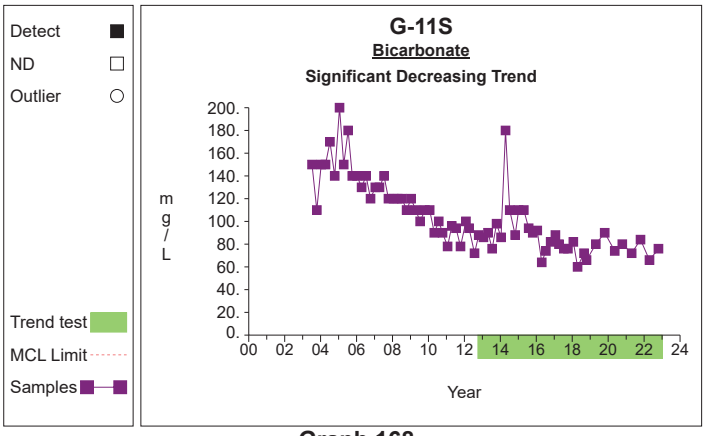
Graph 164

Time Series



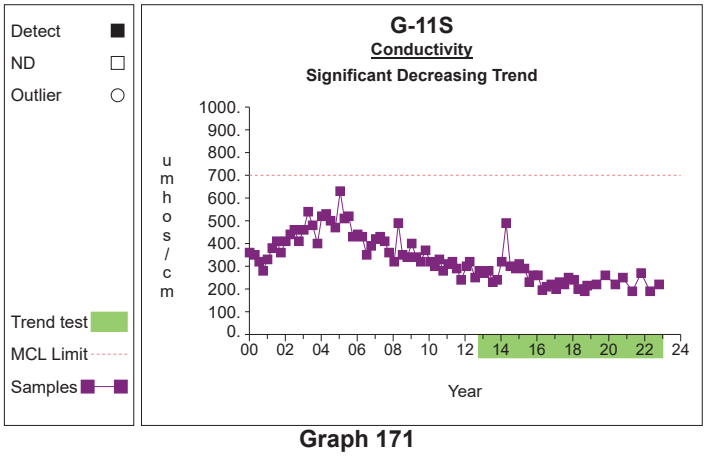
Graph 166

Time Series



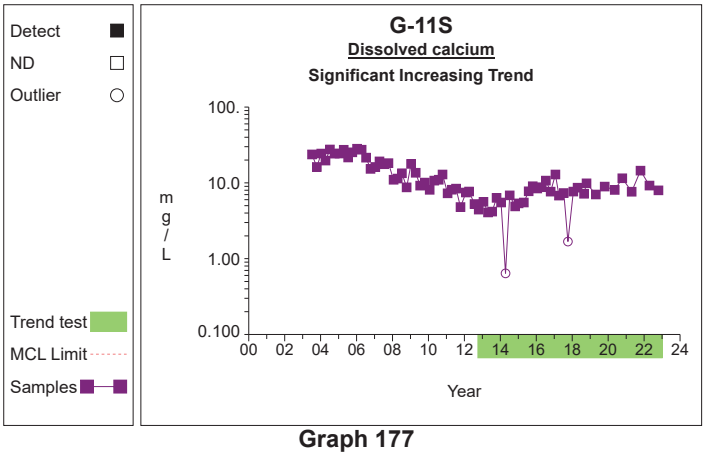
Graph 168

Time Series



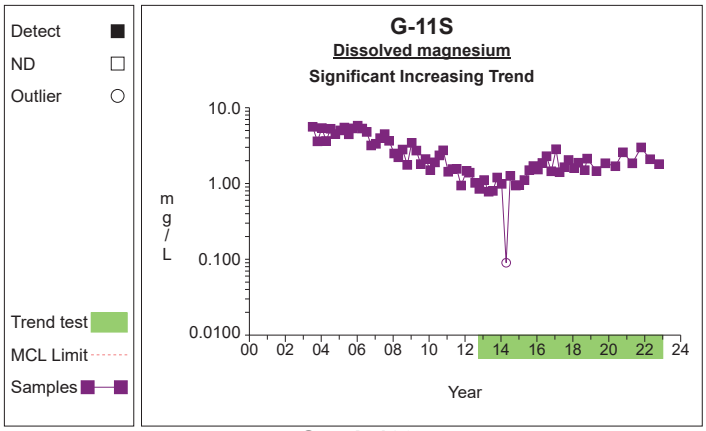
Graph 171

Time Series



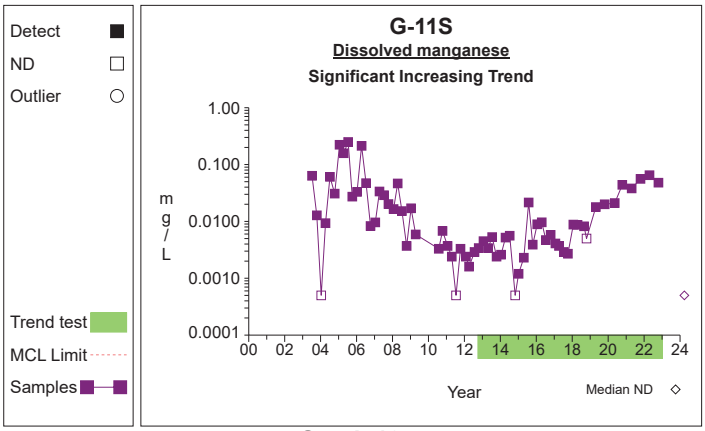
Graph 177

Time Series



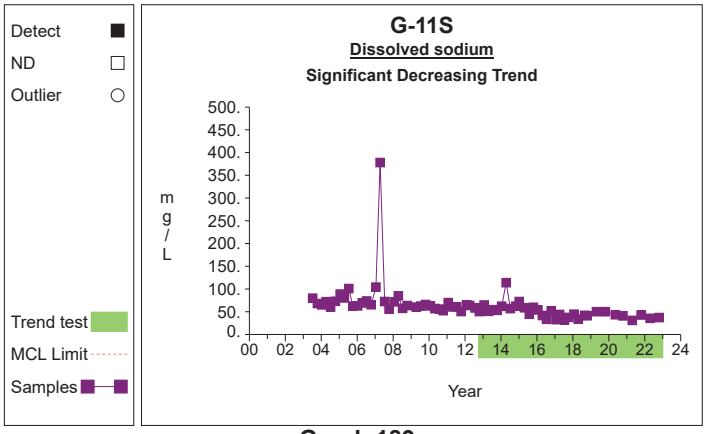
Graph 183

Time Series



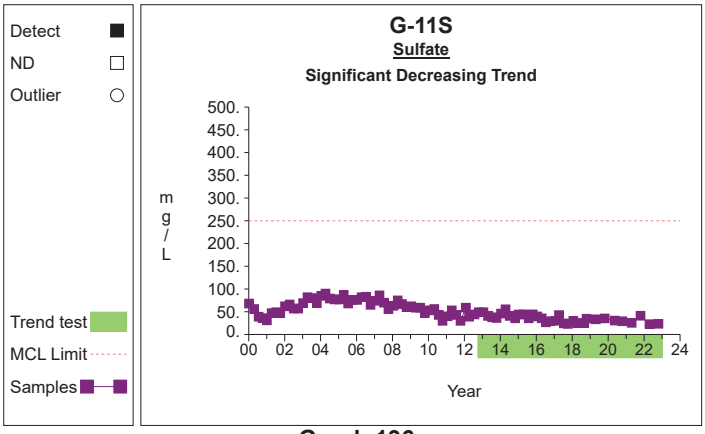
Graph 184

Time Series



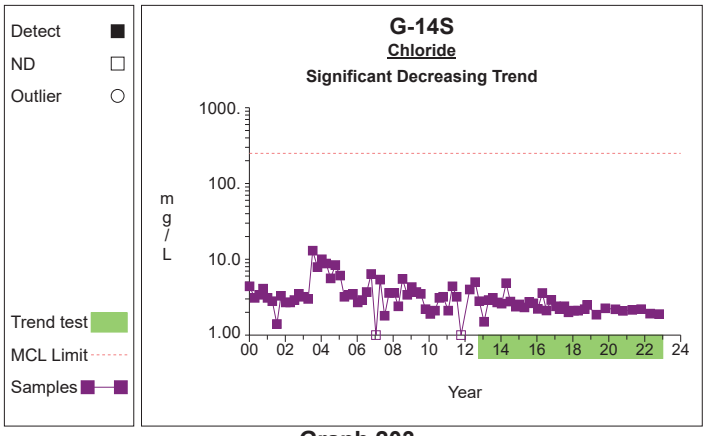
Graph 189

Time Series



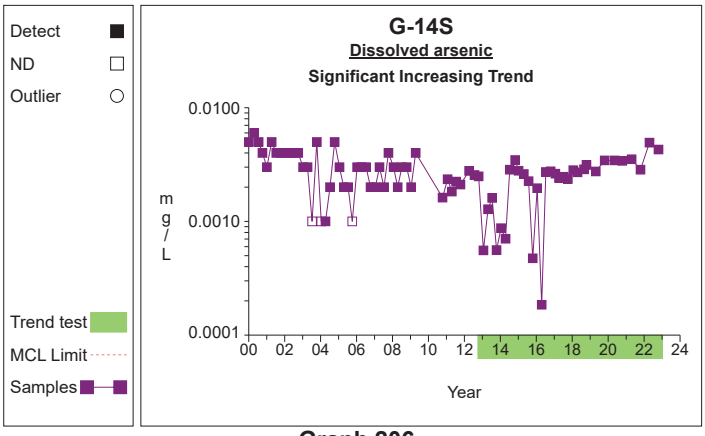
Graph 196

Time Series



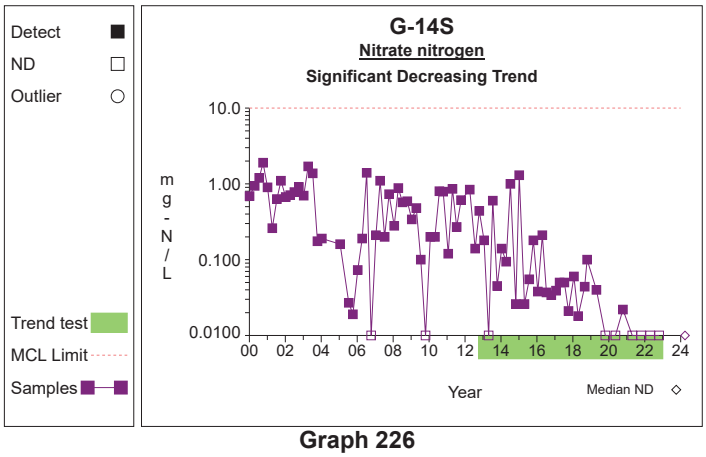
Graph 203

Time Series



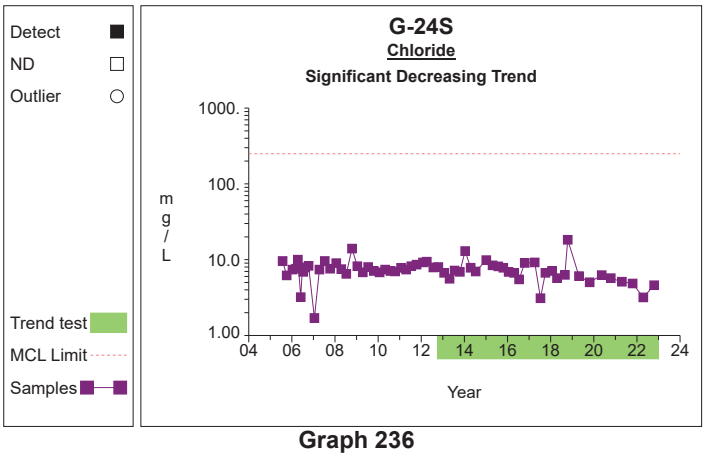
Graph 206

Time Series



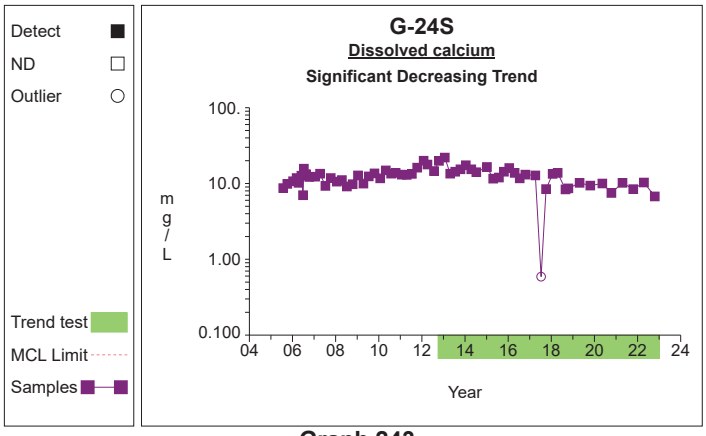
Graph 226

Time Series



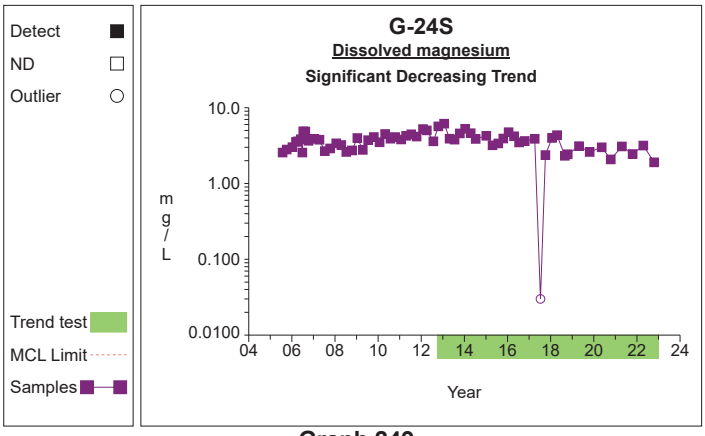
Graph 236

Time Series



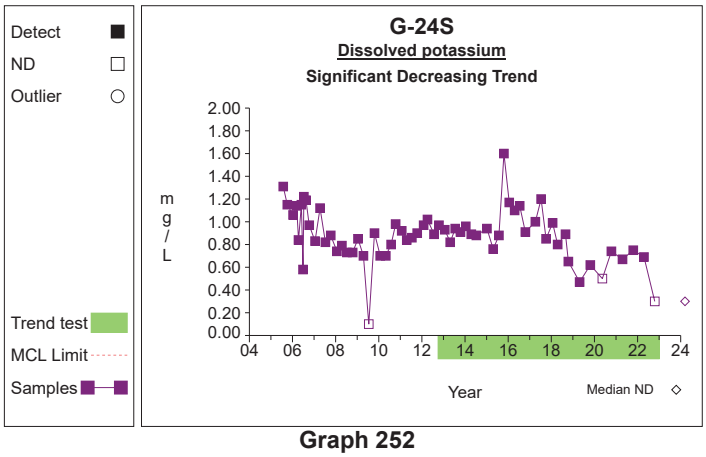
Graph 243

Time Series



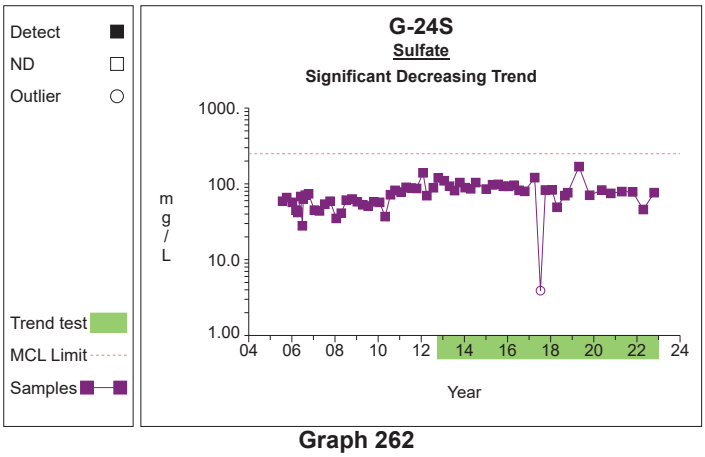
Graph 249

Time Series



Graph 252

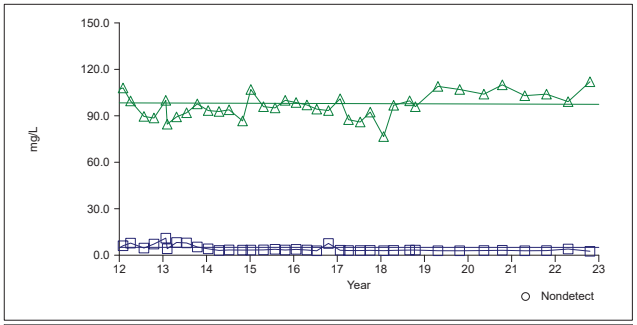
Time Series



Graph 262

Cathcart Landfill

Time Series Plot for G-08D1



Chloride
Dissolved sodium

1

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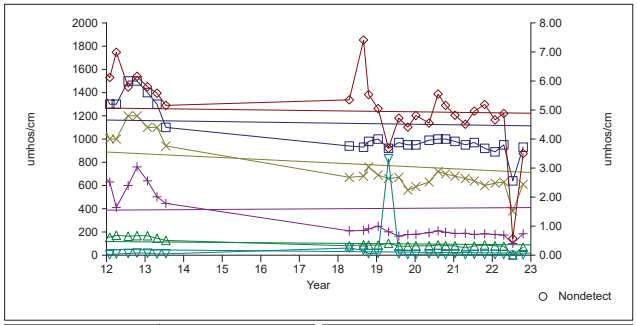
Cathcart Landfill

Time Series Plot for G-09S



Conductivity
Dissolved calcium
Sulfate
Total dissolved solids
Dissolved manganese
Dissolved potassium

1

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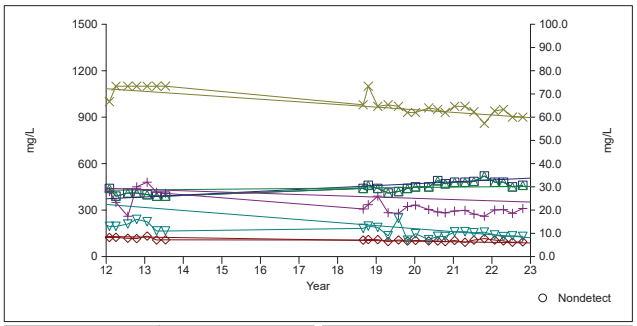
Cathcart Landfill

Time Series Plot for G-10S



Alkalinity (as caco3)
Bicarbonate
Dissolved calcium
Sulfate
Total dissolved solids
Chloride

1

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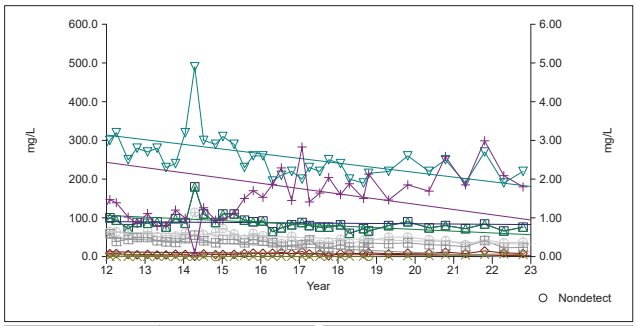
Cathcart Landfill

Time Series Plot for G-11S



Alkalinity (as caco3)
Dissolved calcium
Dissolved sodium
Bicarbonate
Conductivity
Sulfate
Dissolved manganese
Dissolved magnesium

1

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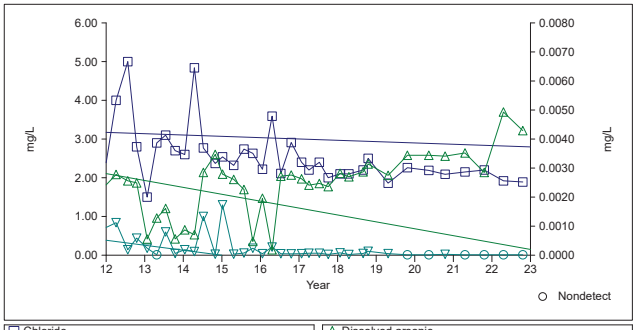
Cathcart Landfill

Time Series Plot for G-14S



□ Chloride
▽ Nitrate nitrogen

△ Dissolved arsenic

1

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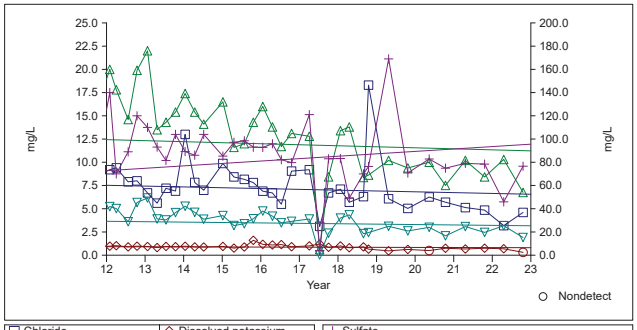
Cathcart Landfill

Time Series Plot for G-24S



□ Chloride
△ Dissolved calcium
▽ Dissolved magnesium

◇ Dissolved potassium

+ Sulfate

1

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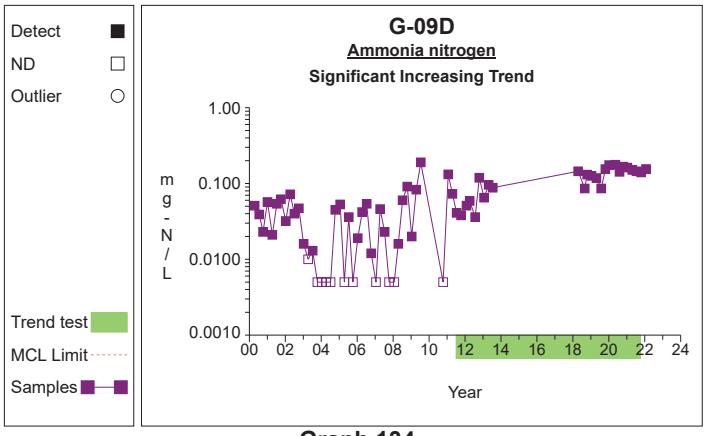
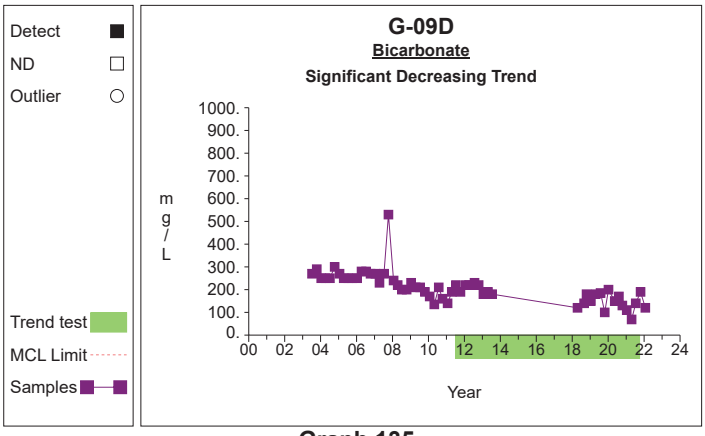
Deep Wells

Time Series



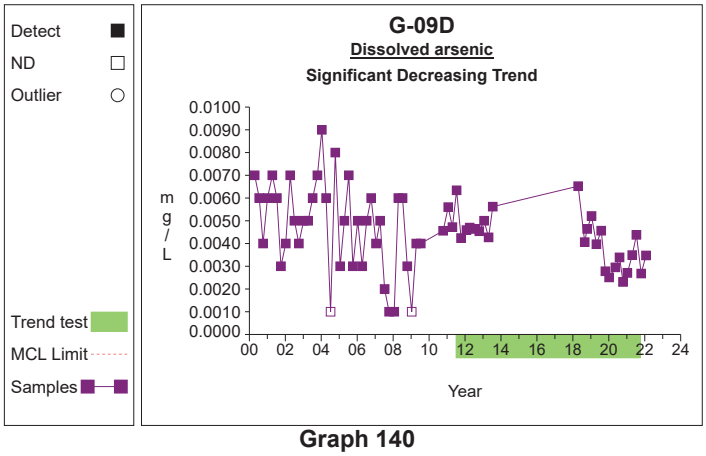
Graph 134

Time Series



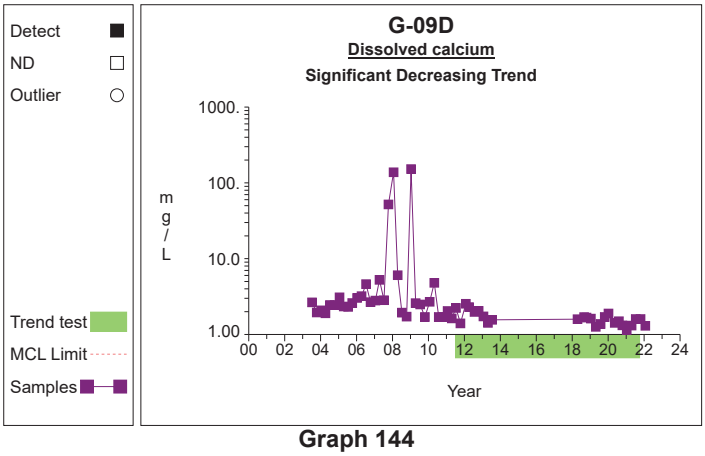
Graph 135

Time Series



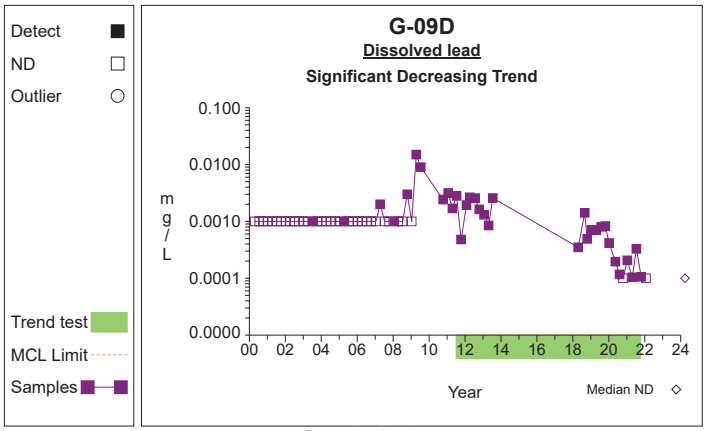
Graph 140

Time Series



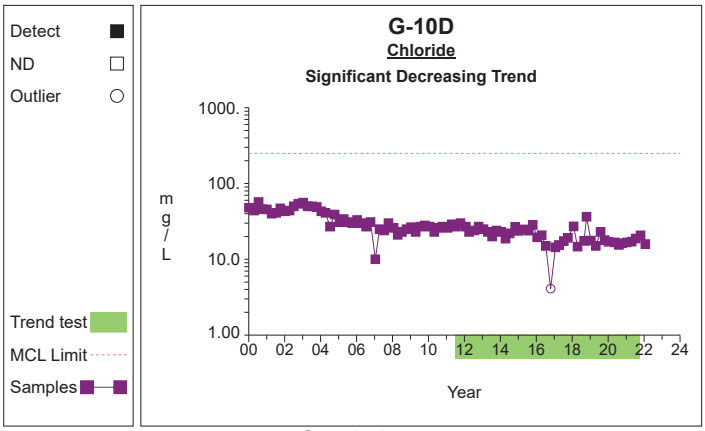
Graph 144

Time Series



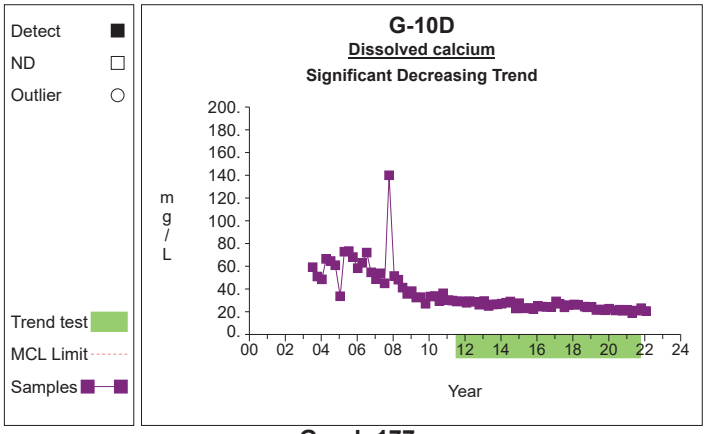
Graph 149

Time Series



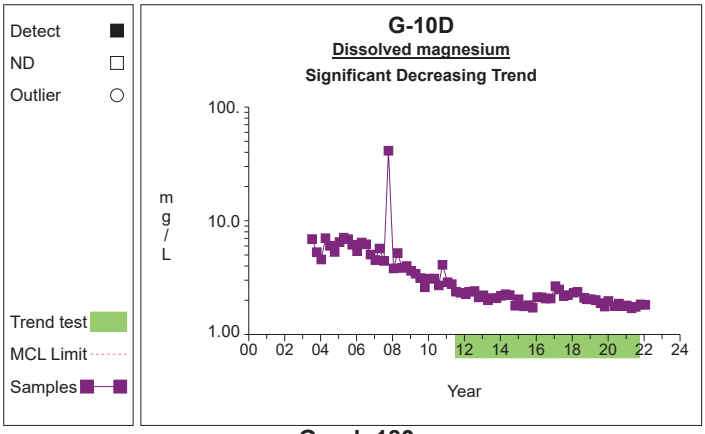
Graph 170

Time Series



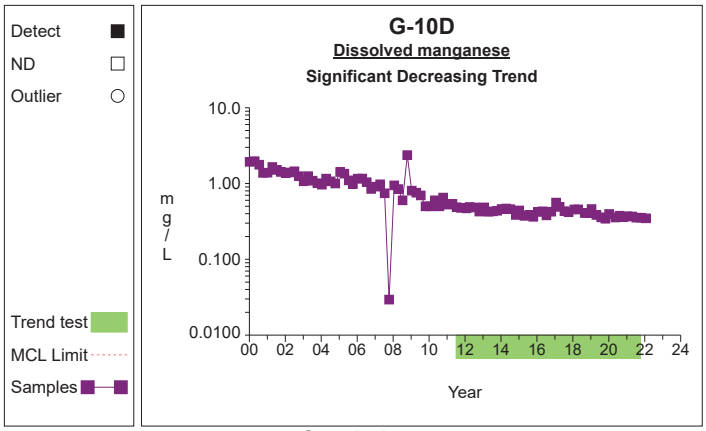
Graph 177

Time Series



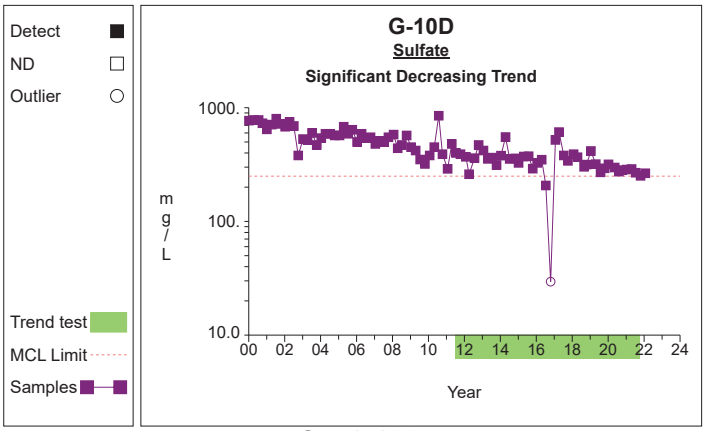
Graph 183

Time Series

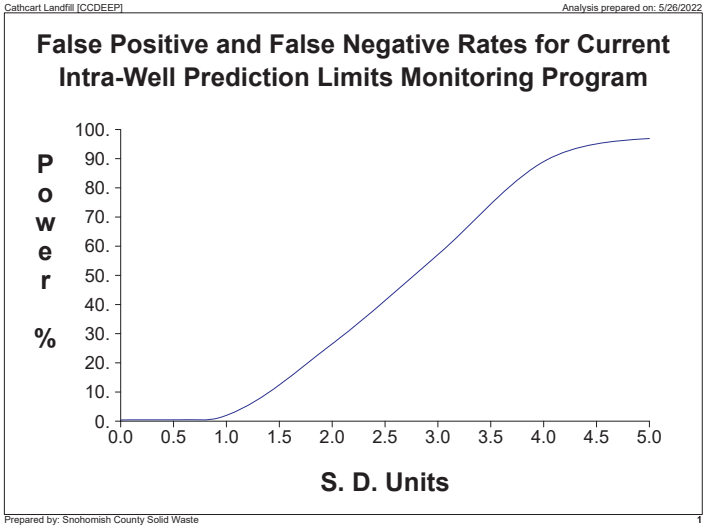


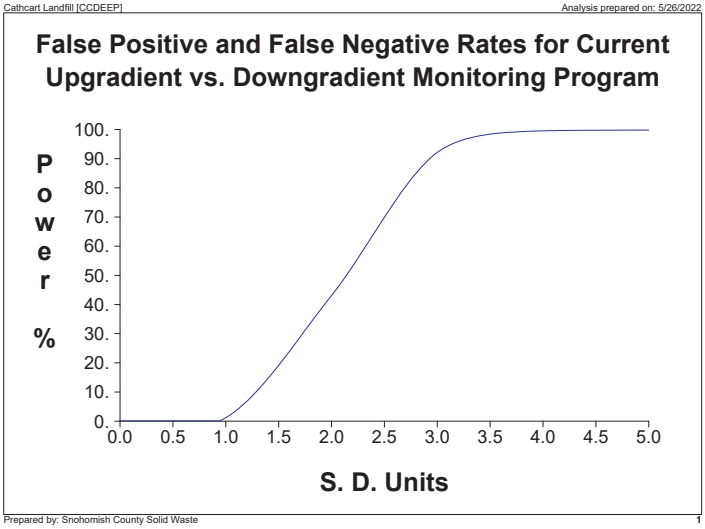
Graph 184

Time Series

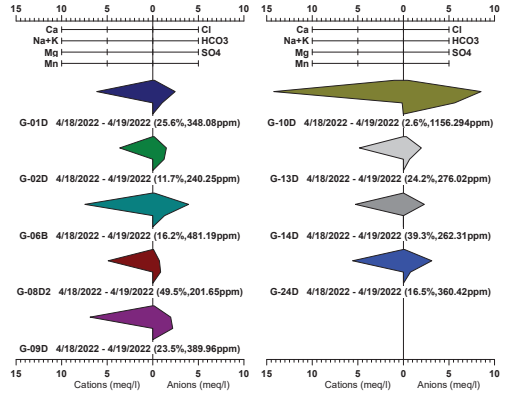


Graph 196





Cathcart Landfill



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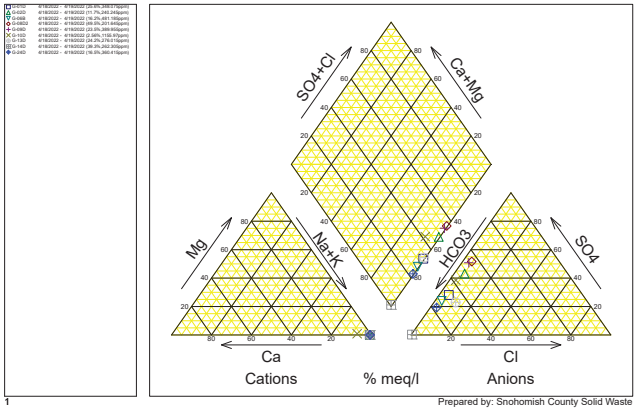
Cathcart Landfill



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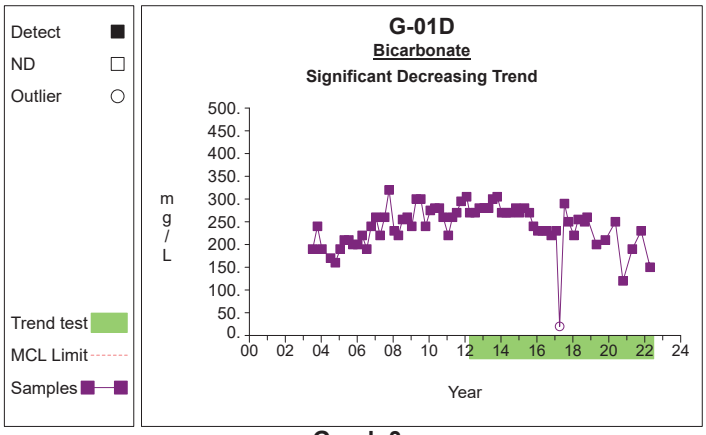
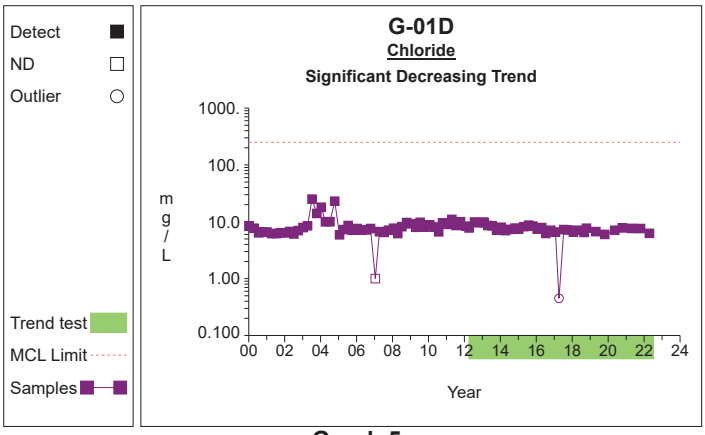
Time Series



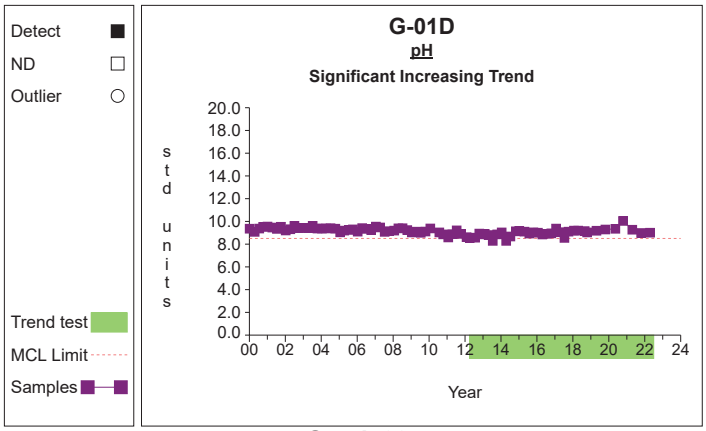
Graph 3

Time Series



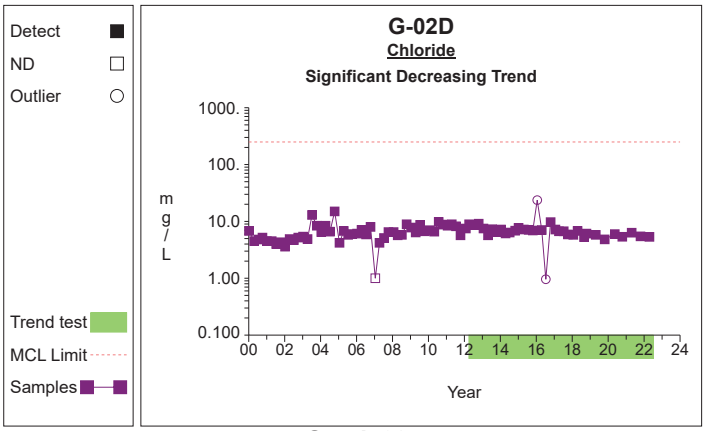
Graph 5

Time Series



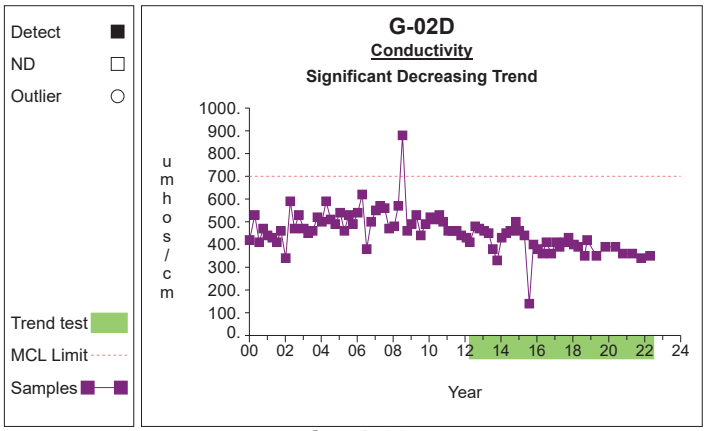
Graph 30

Time Series



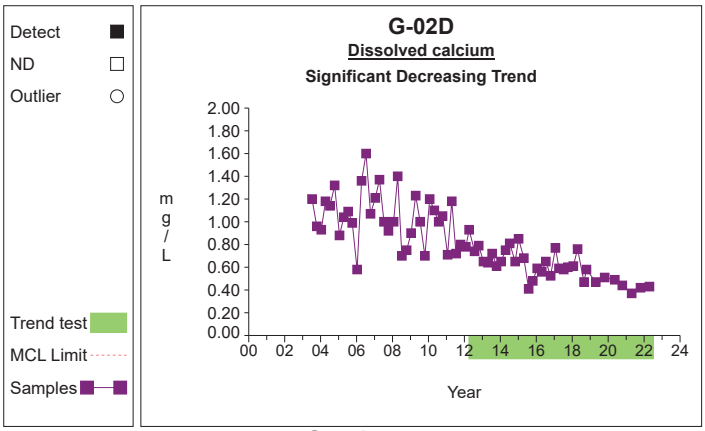
Graph 38

Time Series



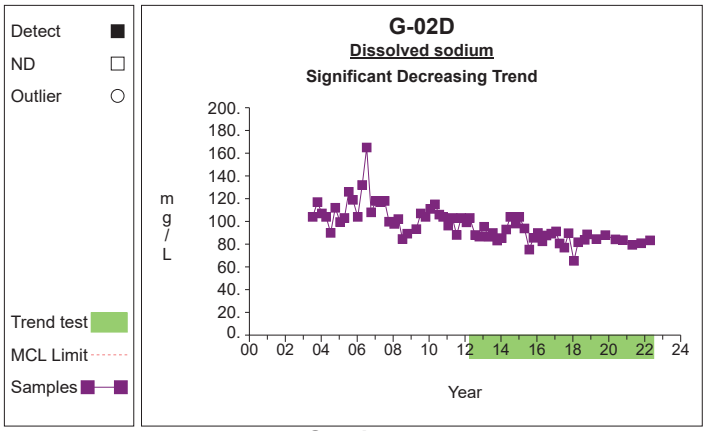
Graph 39

Time Series



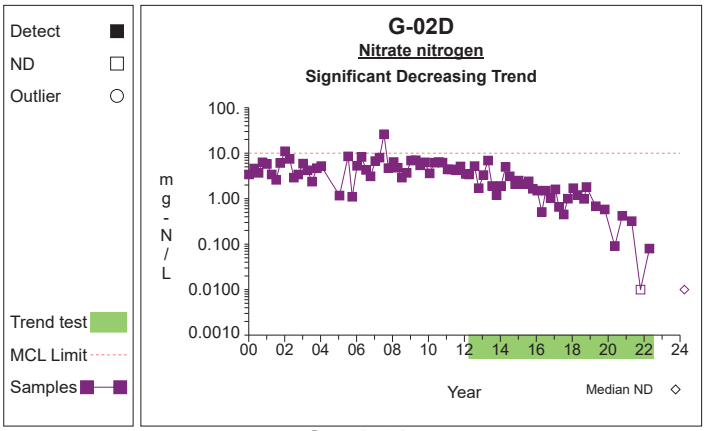
Graph 45

Time Series



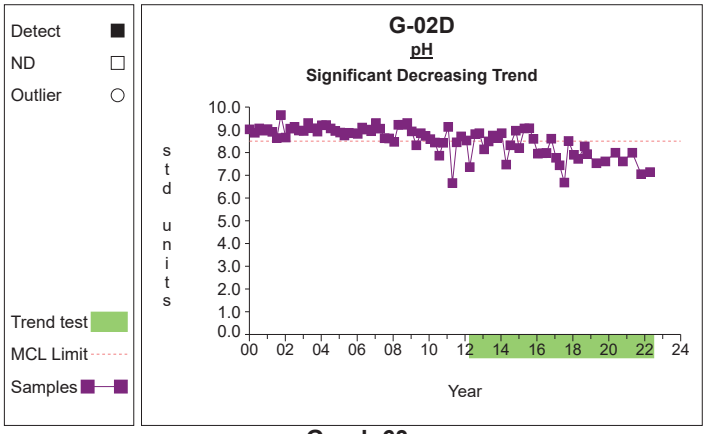
Graph 57

Time Series



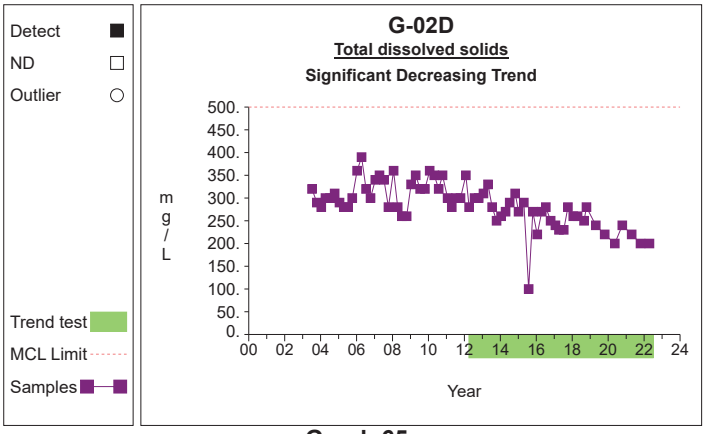
Graph 61

Time Series



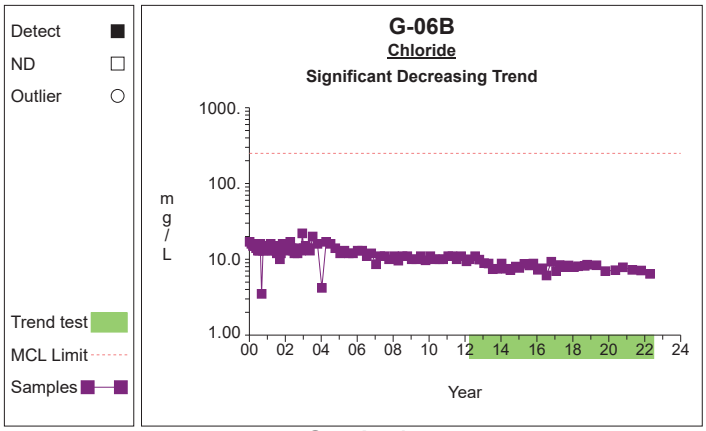
Graph 63

Time Series



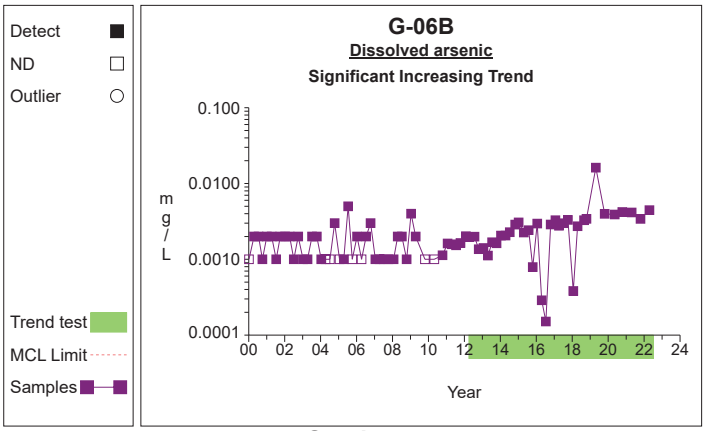
Graph 65

Time Series



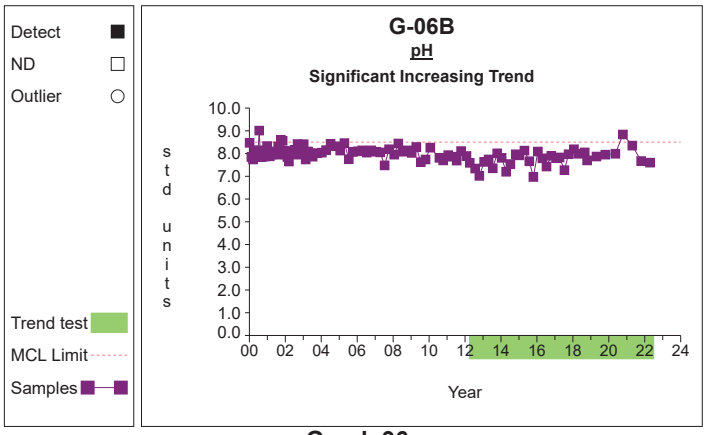
Graph 71

Time Series



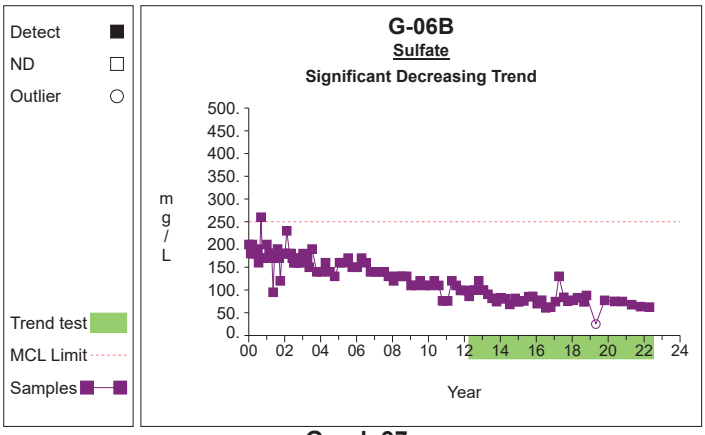
Graph 74

Time Series



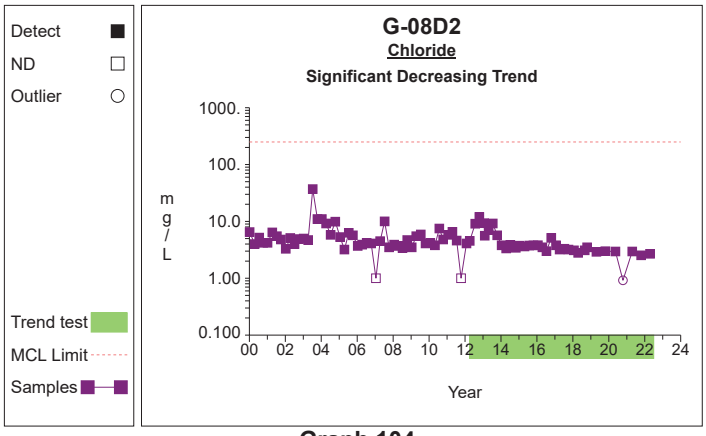
Graph 96

Time Series



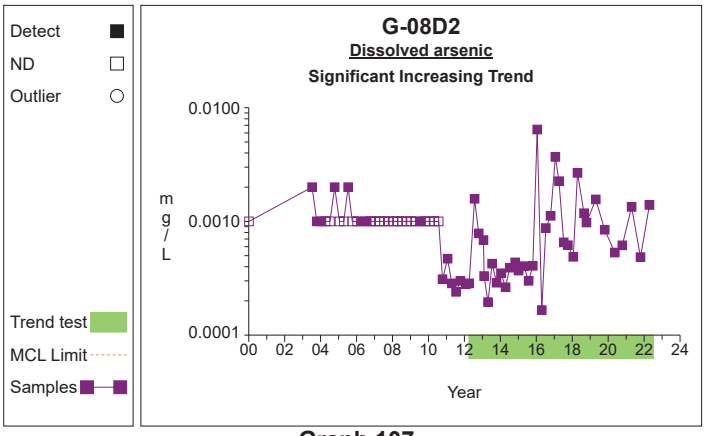
Graph 97

Time Series



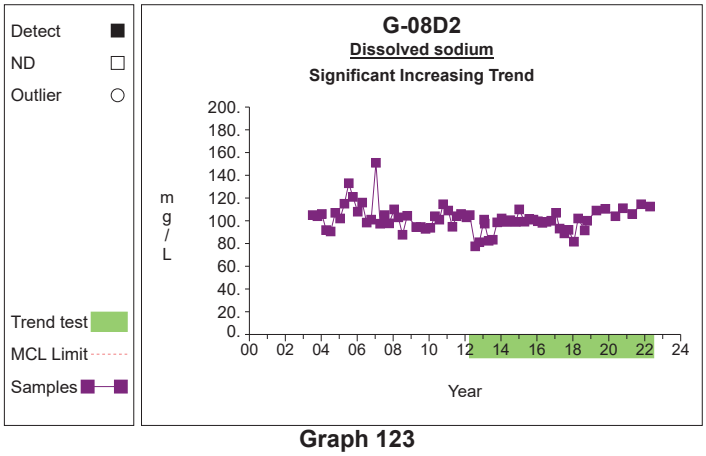
Graph 104

Time Series



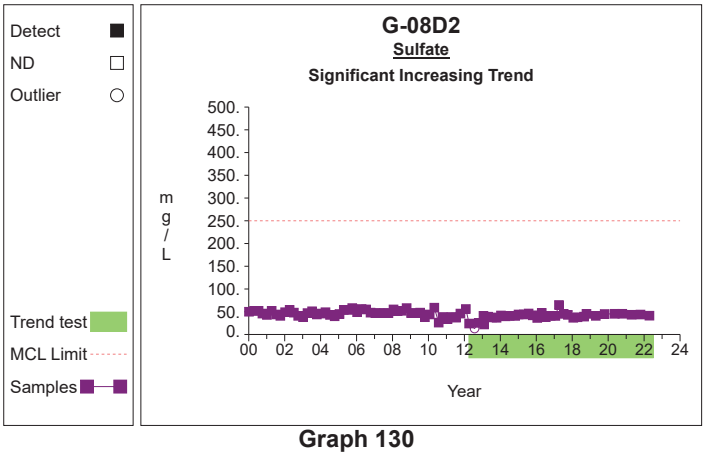
Graph 107

Time Series



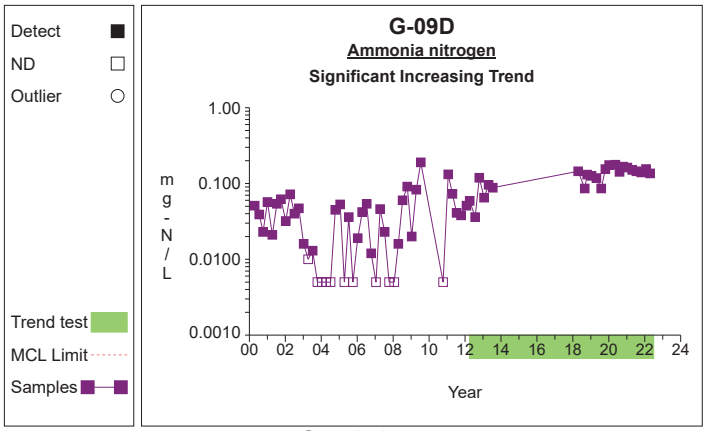
Graph 123

Time Series



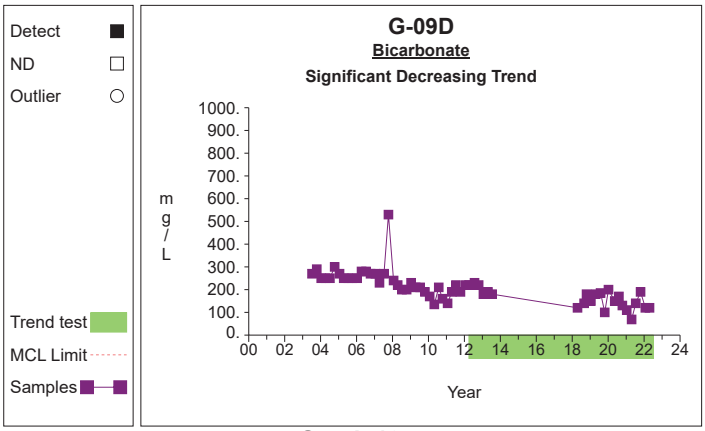
Graph 130

Time Series



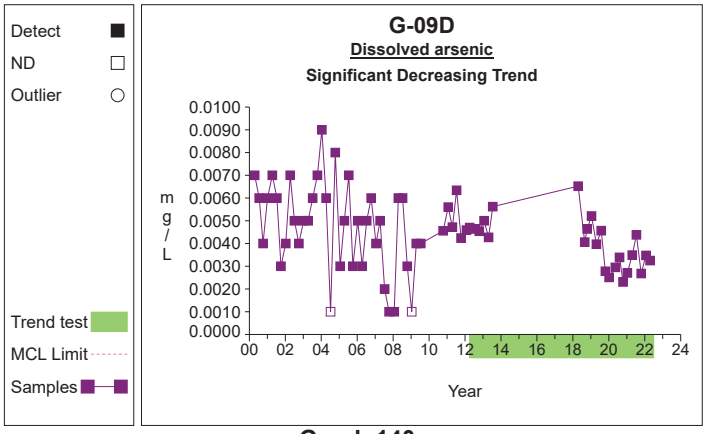
Graph 134

Time Series



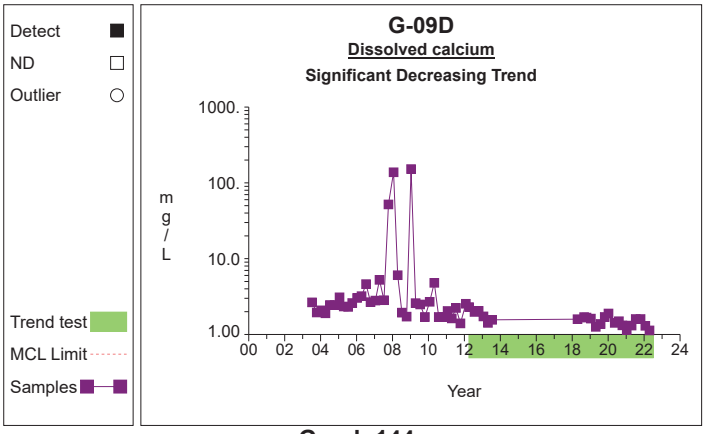
Graph 135

Time Series



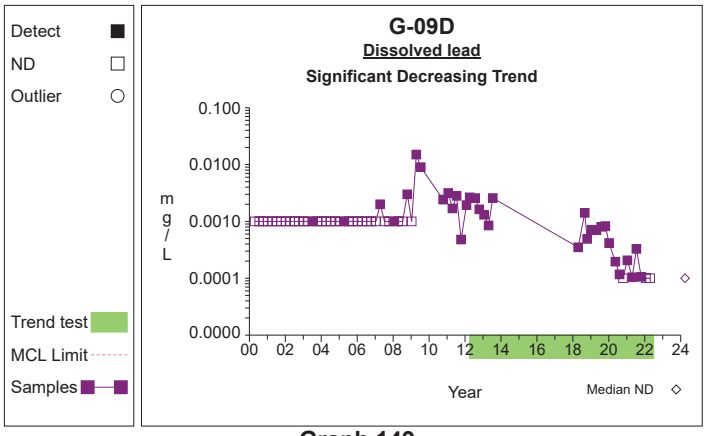
Graph 140

Time Series



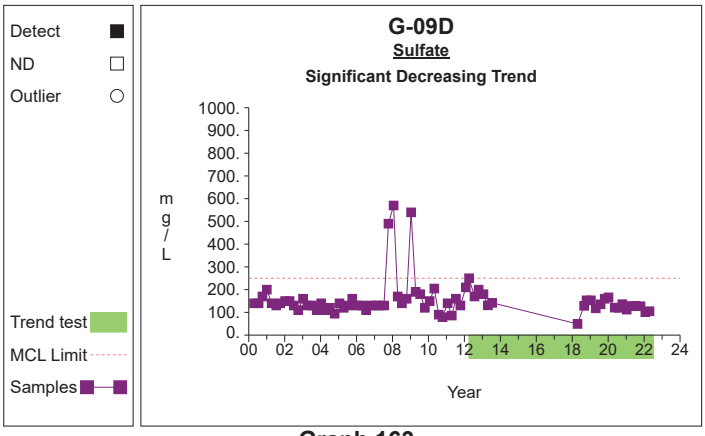
Graph 144

Time Series



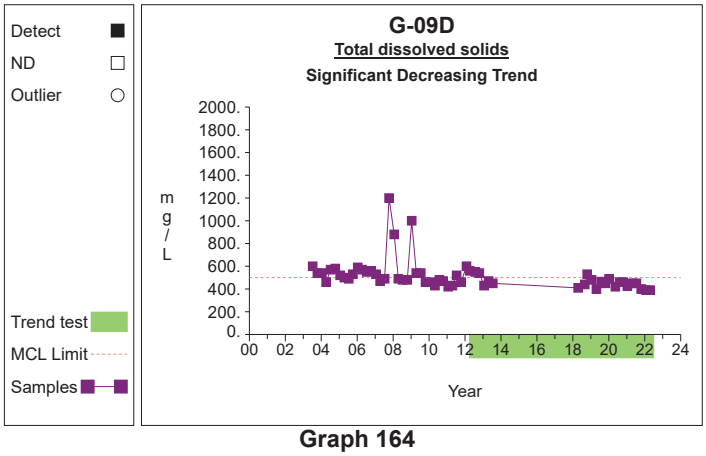
Graph 149

Time Series



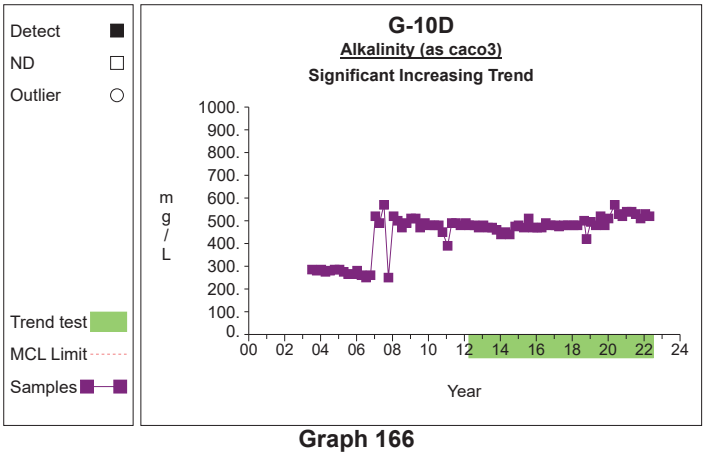
Graph 163

Time Series



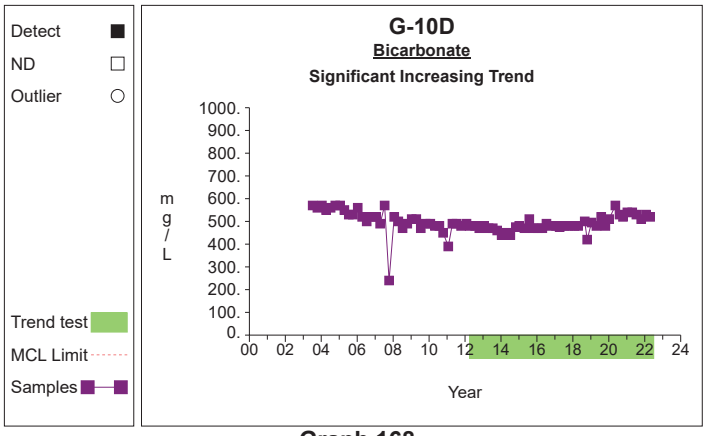
Graph 164

Time Series



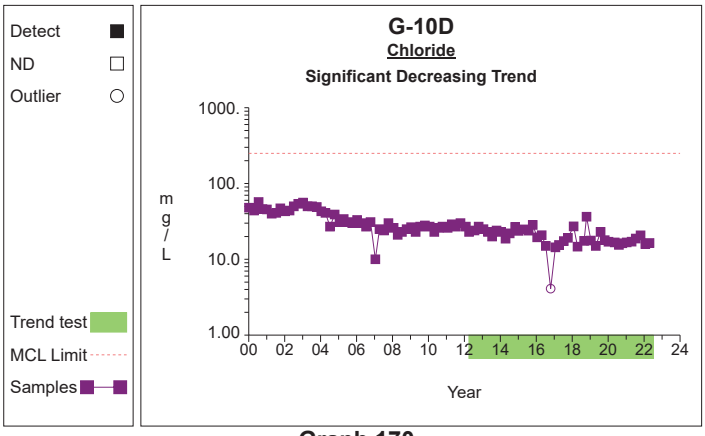
Graph 166

Time Series



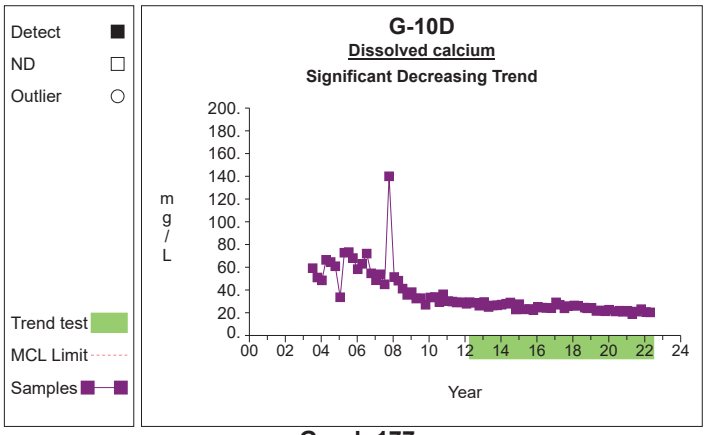
Graph 168

Time Series



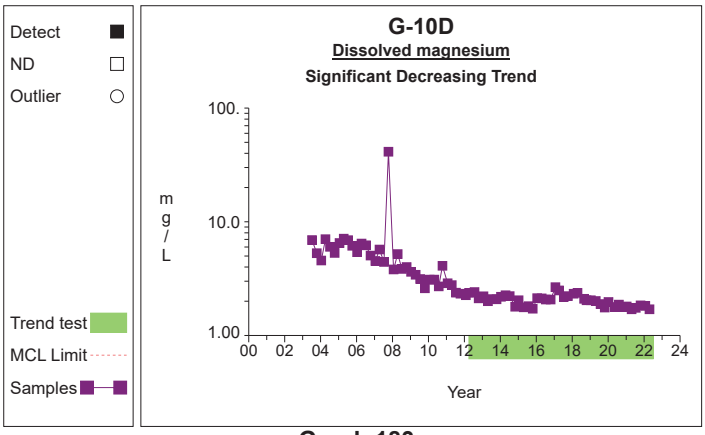
Graph 170

Time Series



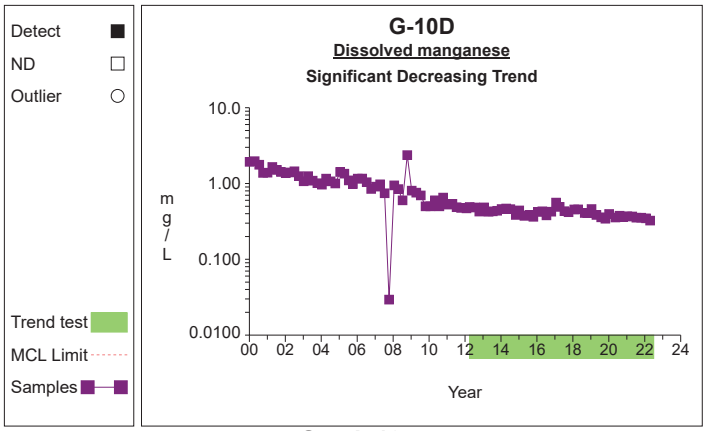
Graph 177

Time Series



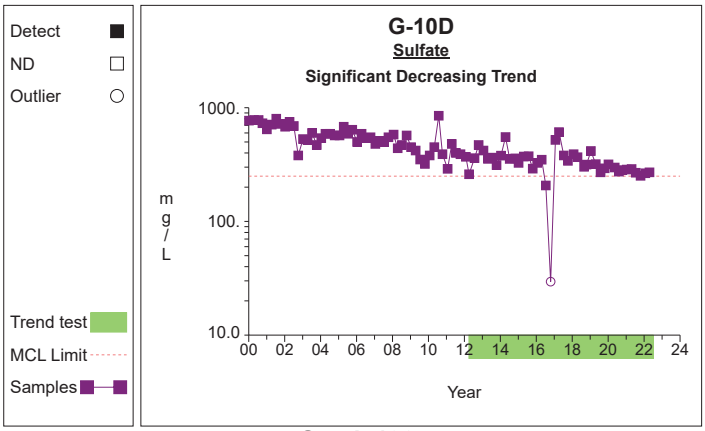
Graph 183

Time Series



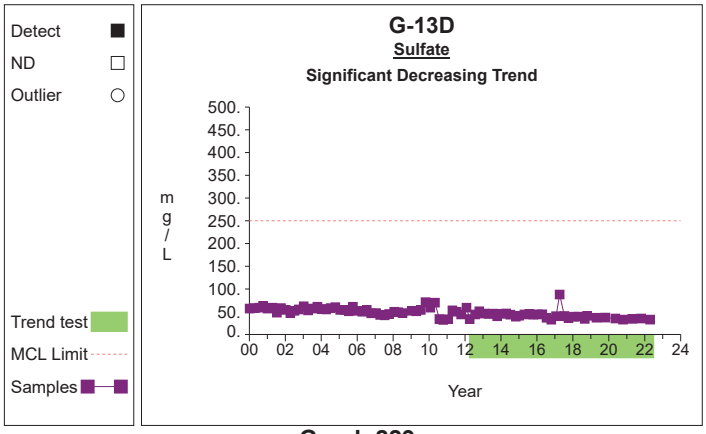
Graph 184

Time Series



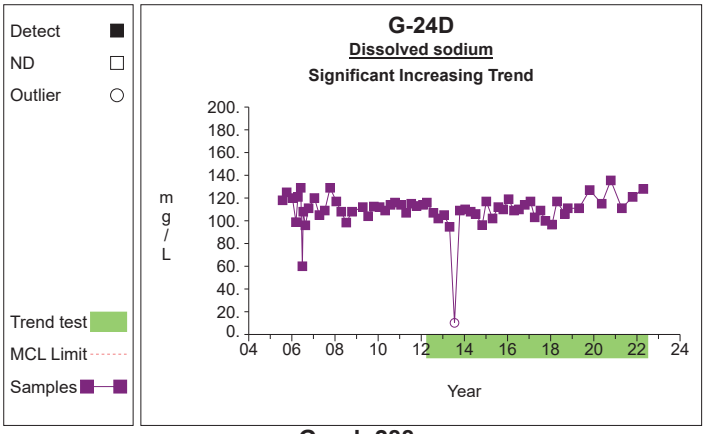
Graph 196

Time Series



Graph 229

Time Series

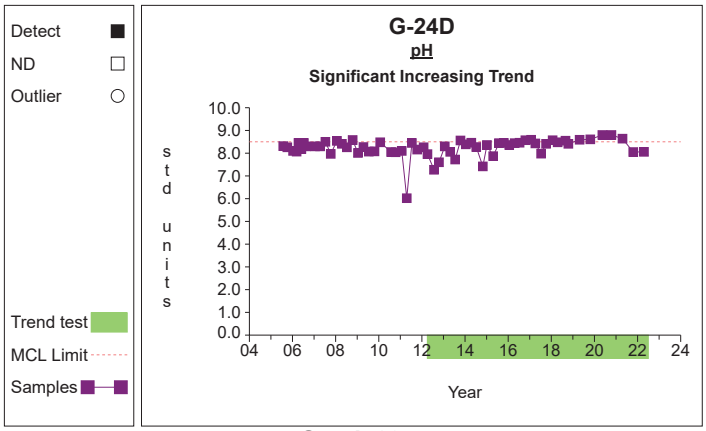


Graph 288

Cathcart Landfill [CCDEEP]

Analysis prepared on: 5/26/2022

Time Series



Graph 294

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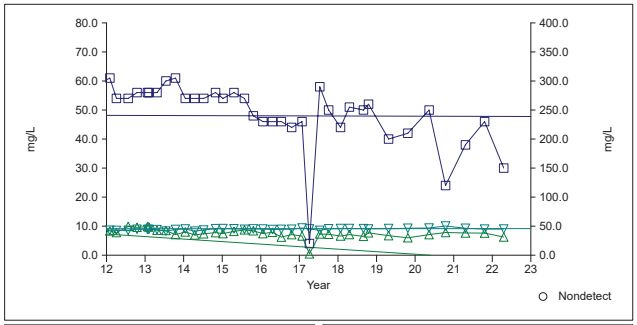
35

Cathcart Landfill

Time Series Plot for G-01D

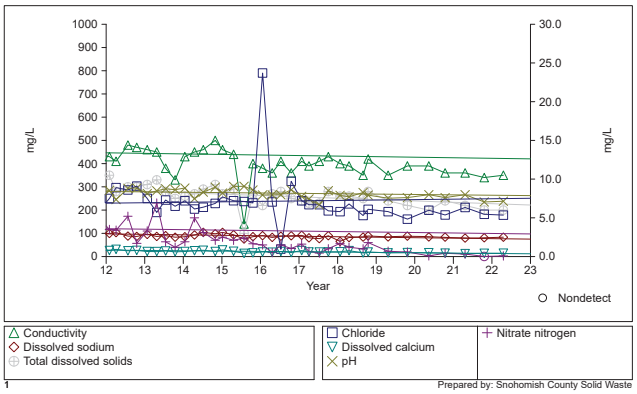


1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-02D



1

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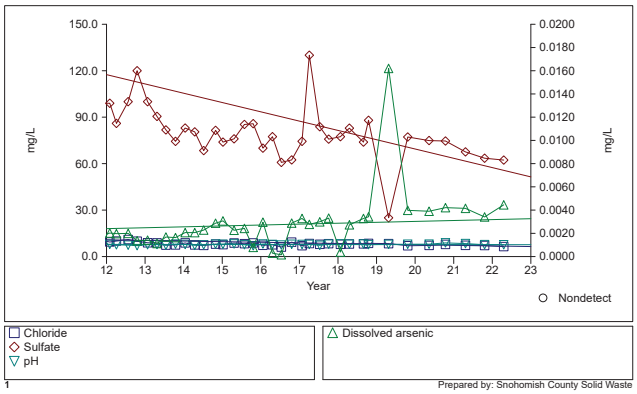
Cathcart Landfill

Time Series Plot for G-06B



1

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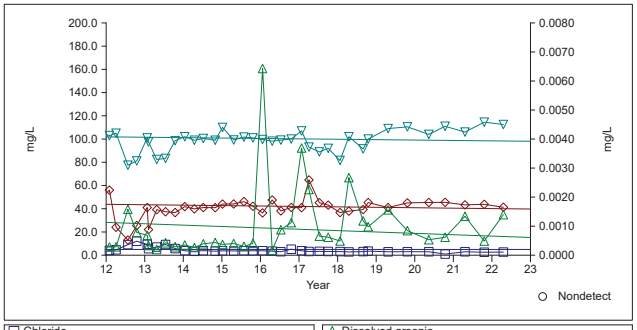
Cathcart Landfill

Time Series Plot for G-08D2



Chloride
Dissolved sodium
Sulfate
Dissolved arsenic

1

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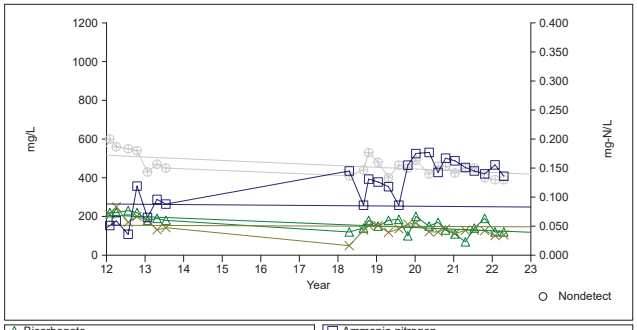
Cathcart Landfill

Time Series Plot for G-09D



Bicarbonate
Sulfate
Total dissolved solids
Ammonia nitrogen

1

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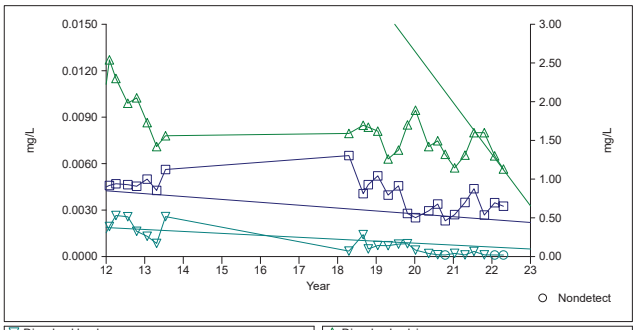
Cathcart Landfill

Time Series Plot for G-09D



Dissolved lead
Dissolved arsenic
Dissolved calcium

1

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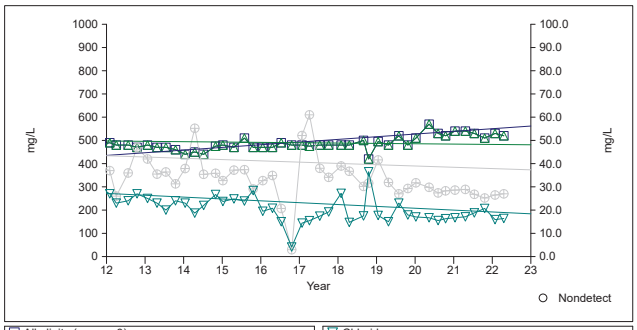
Cathcart Landfill

Time Series Plot for G-10D



Alkalinity (as caco3)
Bicarbonate
Sulfate
Chloride

1

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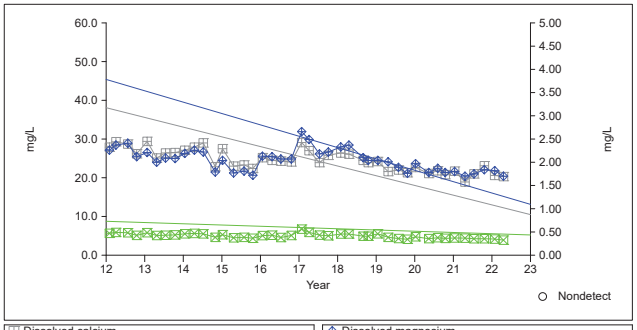
Cathcart Landfill

Time Series Plot for G-10D



1

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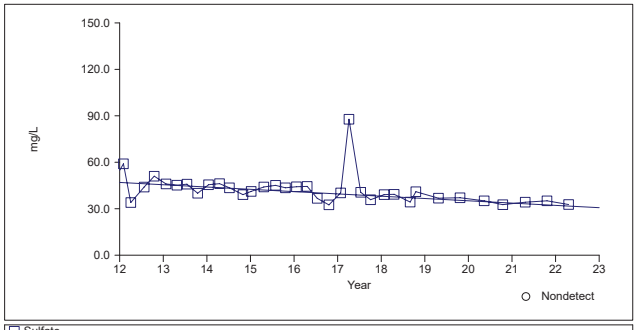
Cathcart Landfill

Time Series Plot for G-13D

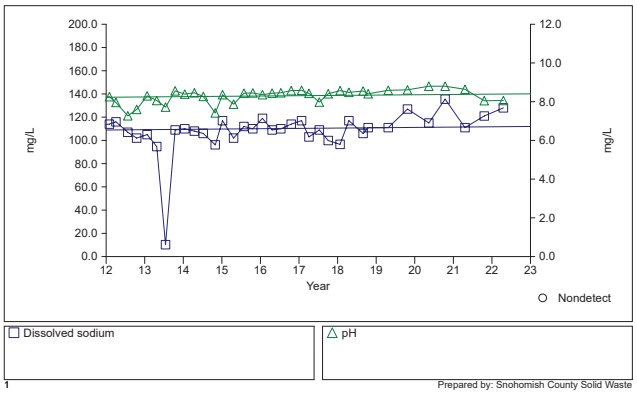


1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

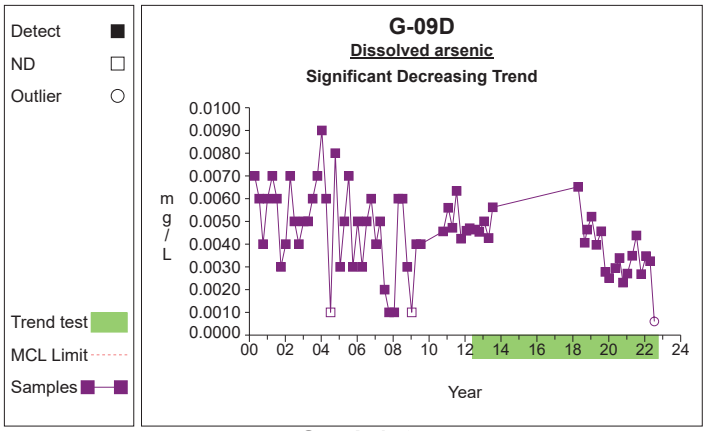
Time Series Plot for G-24D



1

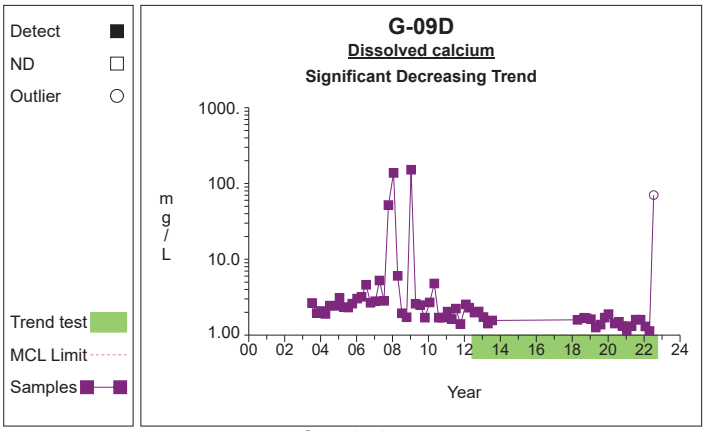
Prepared by: Snohomish County Solid Waste

Time Series



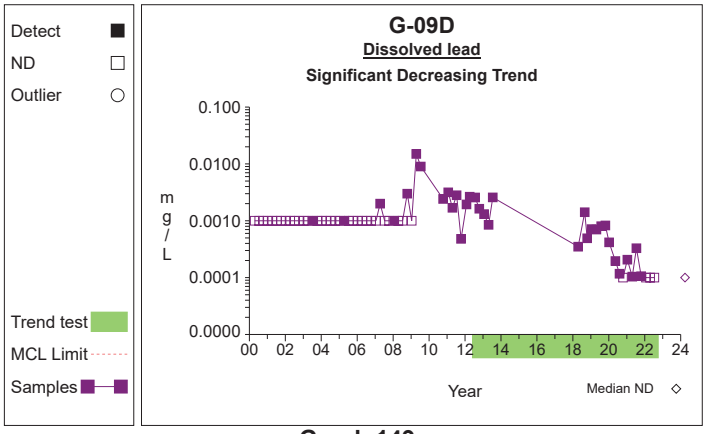
Graph 140

Time Series



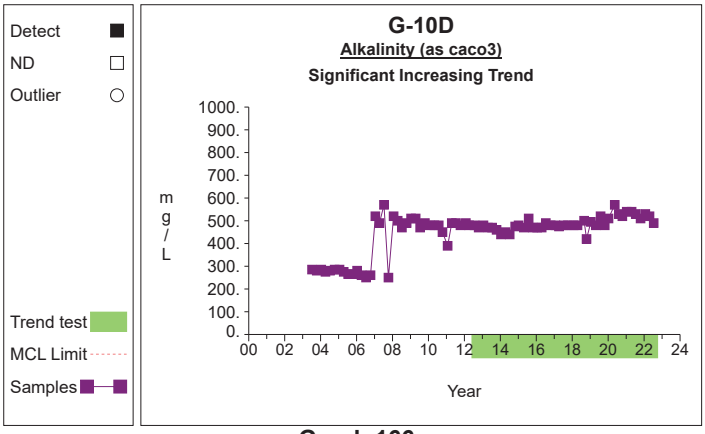
Graph 144

Time Series



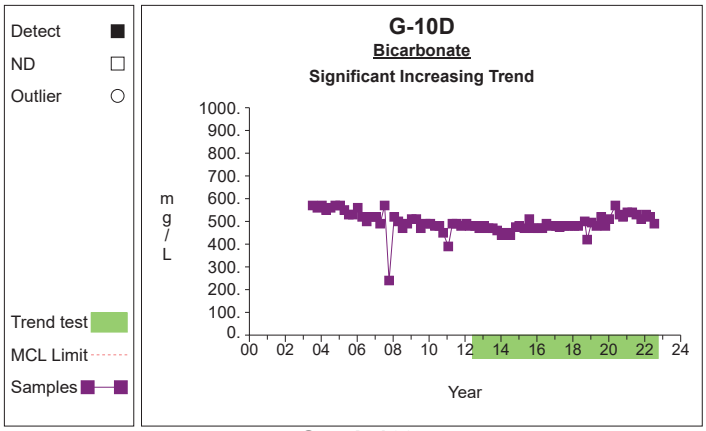
Graph 149

Time Series



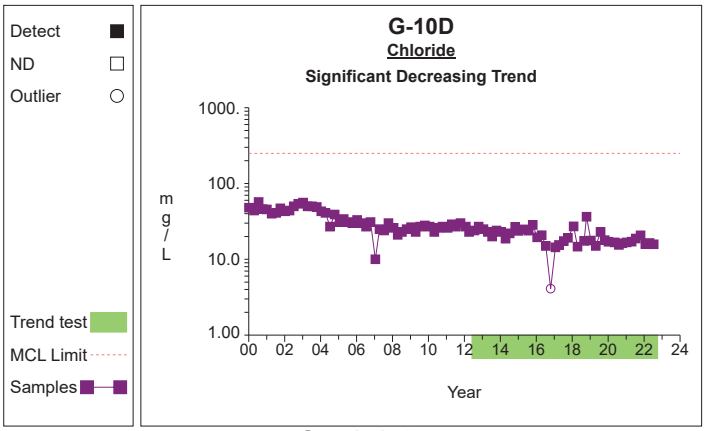
Graph 166

Time Series



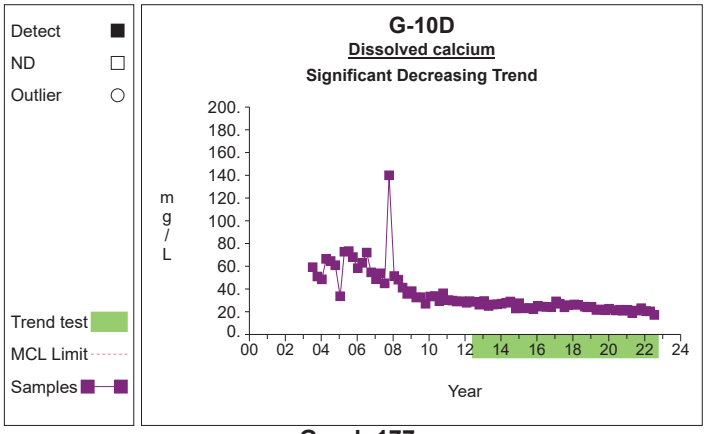
Graph 168

Time Series



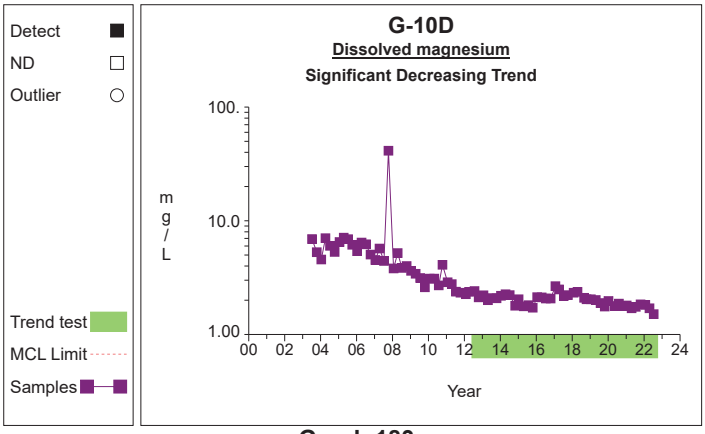
Graph 170

Time Series



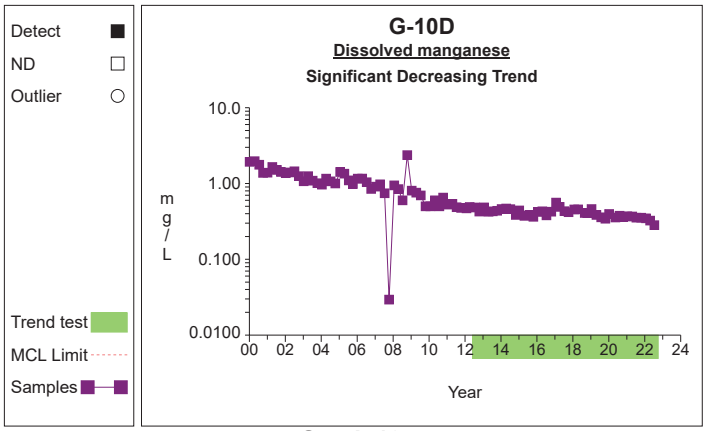
Graph 177

Time Series



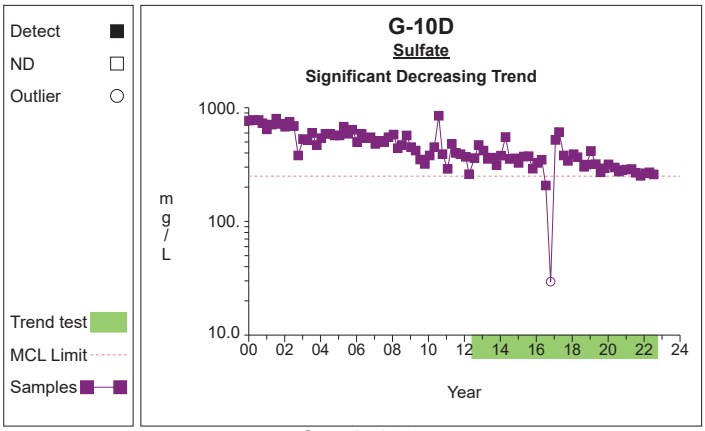
Graph 183

Time Series

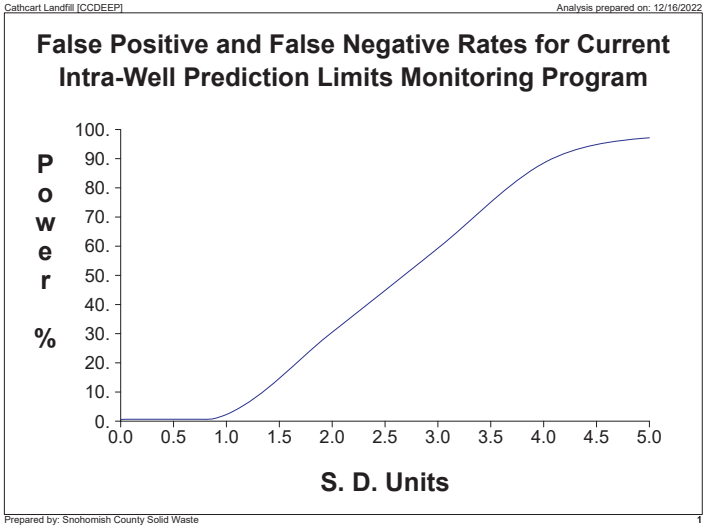


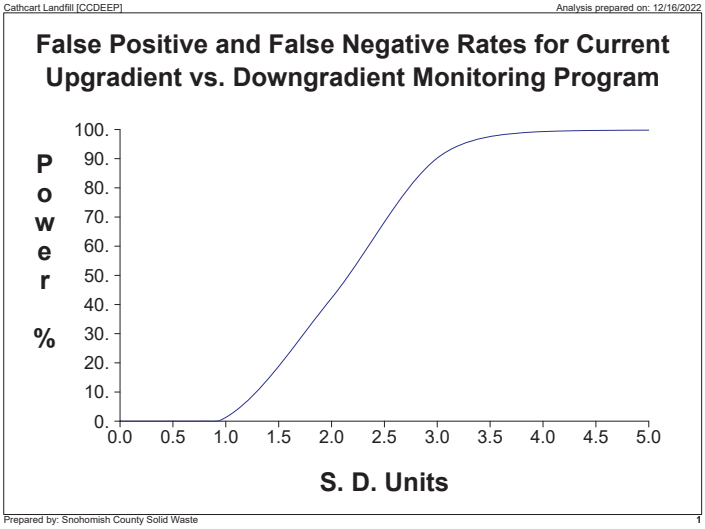
Graph 184

Time Series

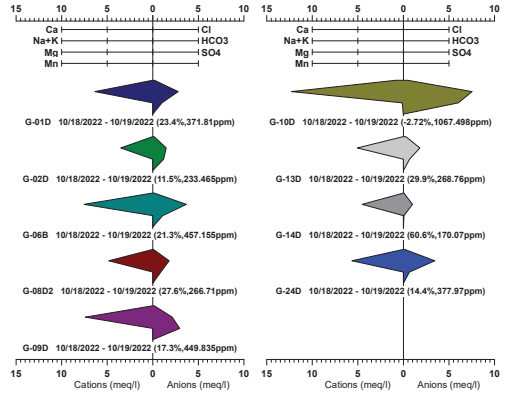


Graph 196





Cathcart Landfill



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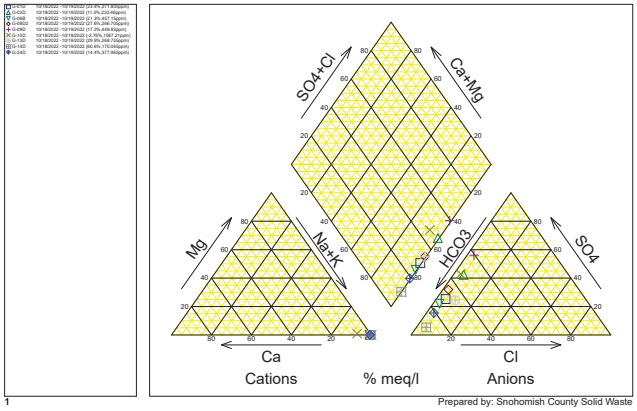
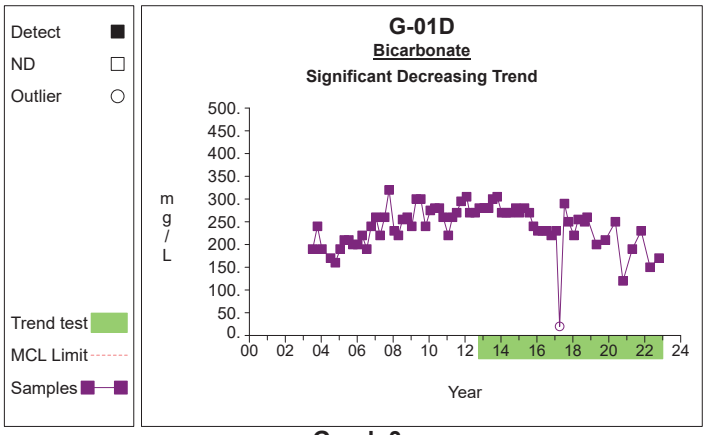
Cathcart Landfill



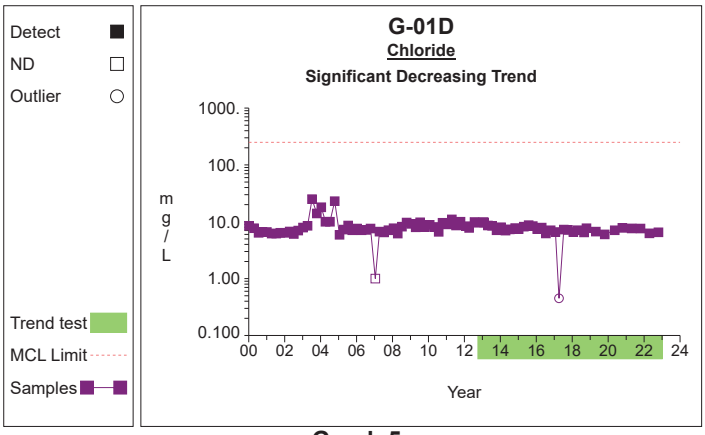
Prepared by: Snohomish County Solid Waste

Time Series



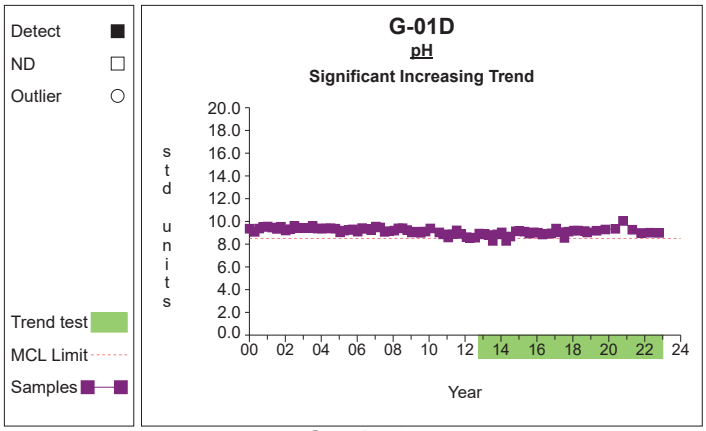
Graph 3

Time Series



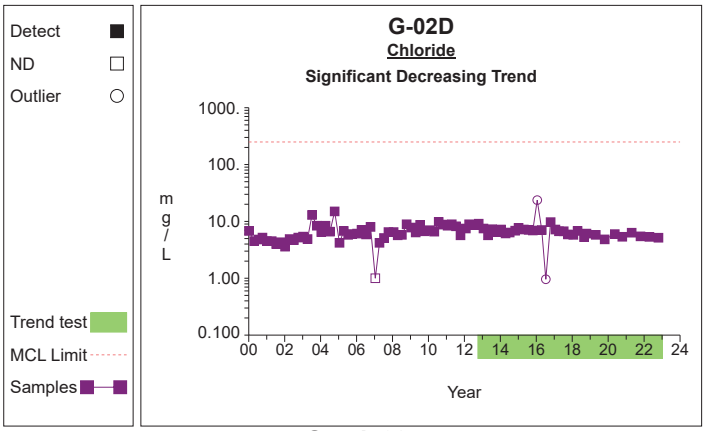
Graph 5

Time Series



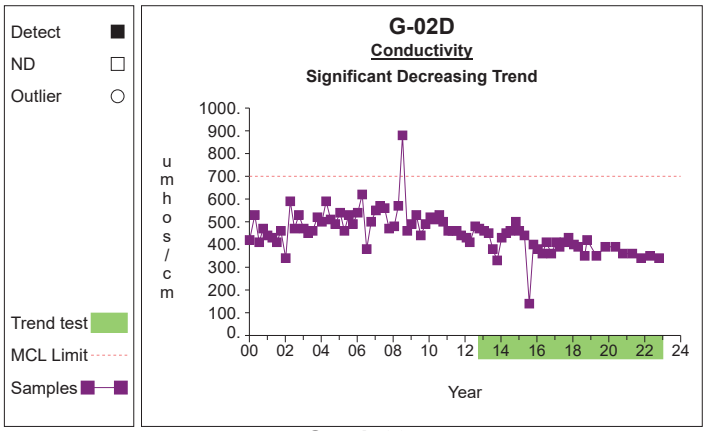
Graph 30

Time Series



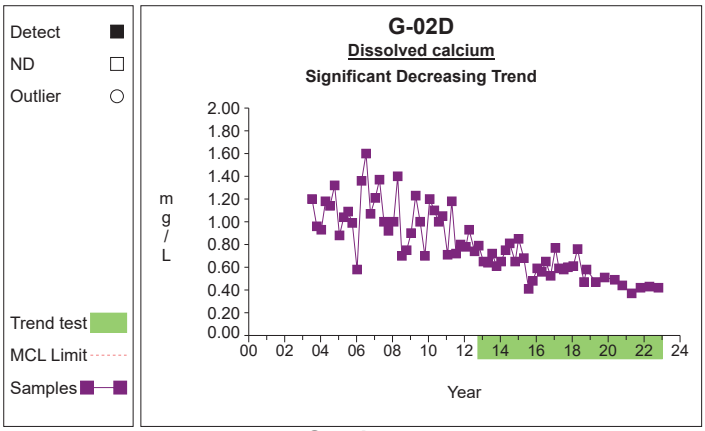
Graph 38

Time Series



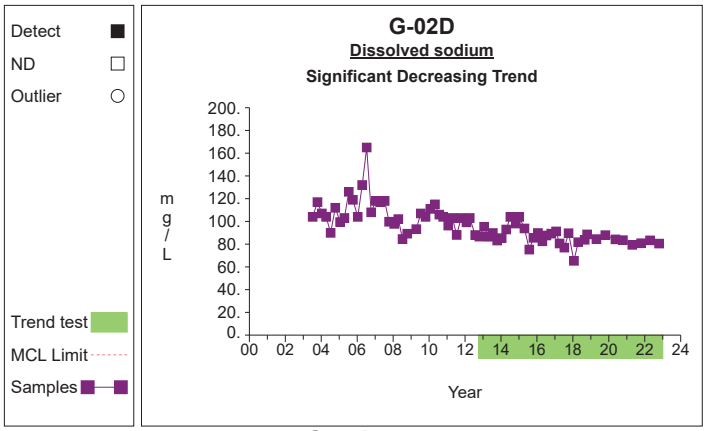
Graph 39

Time Series



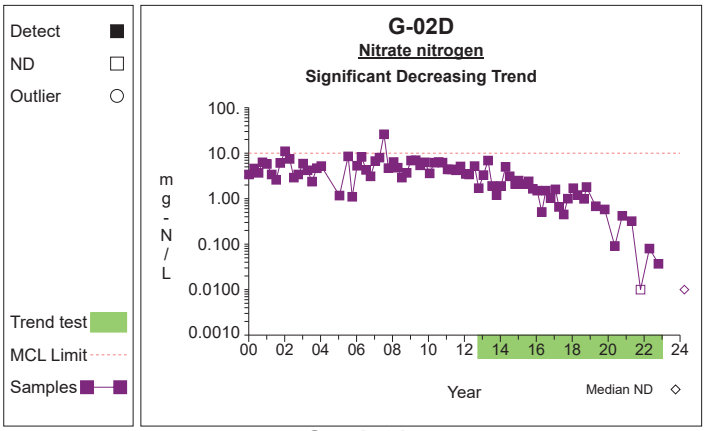
Graph 45

Time Series



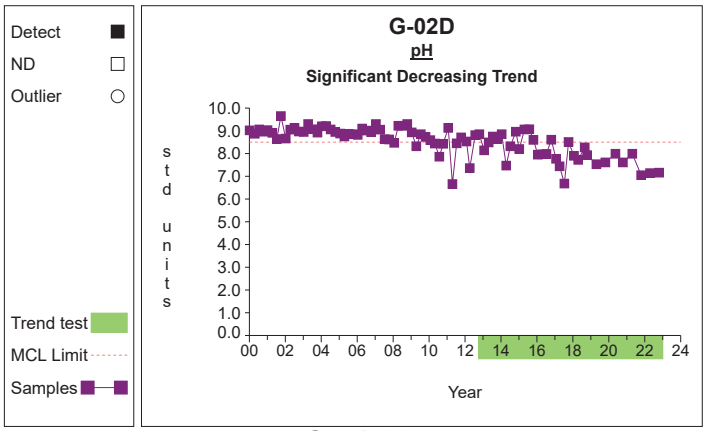
Graph 57

Time Series



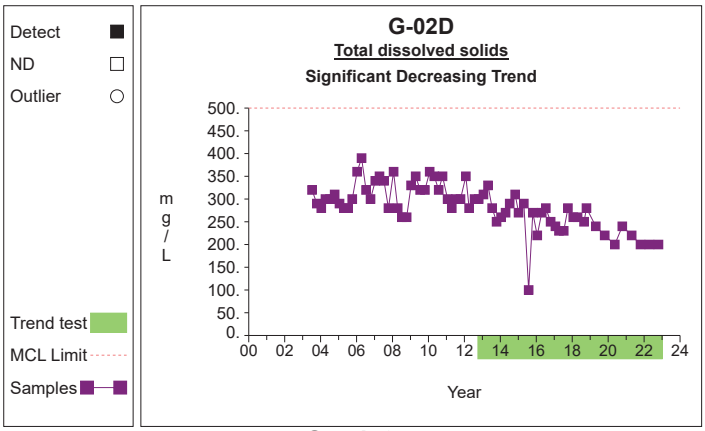
Graph 61

Time Series



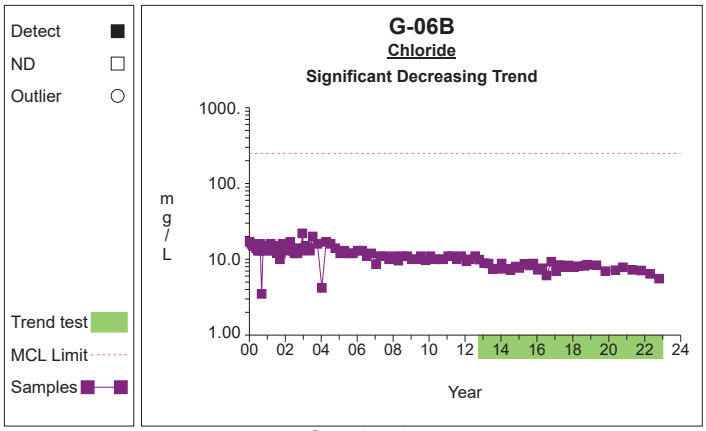
Graph 63

Time Series



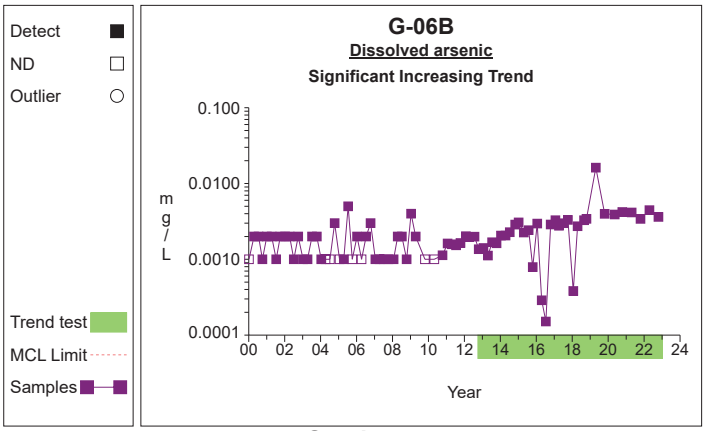
Graph 65

Time Series



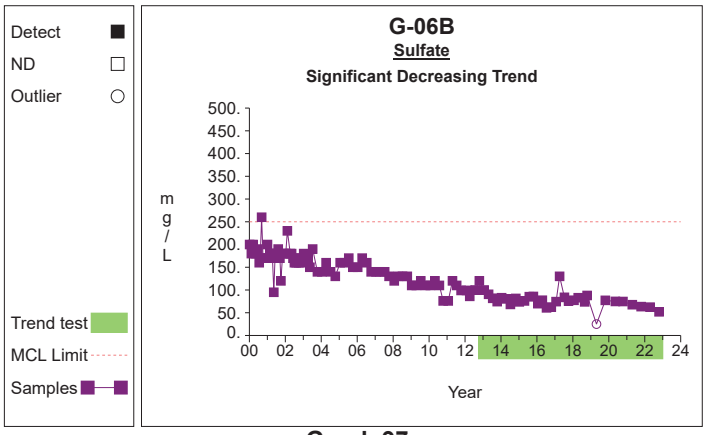
Graph 71

Time Series



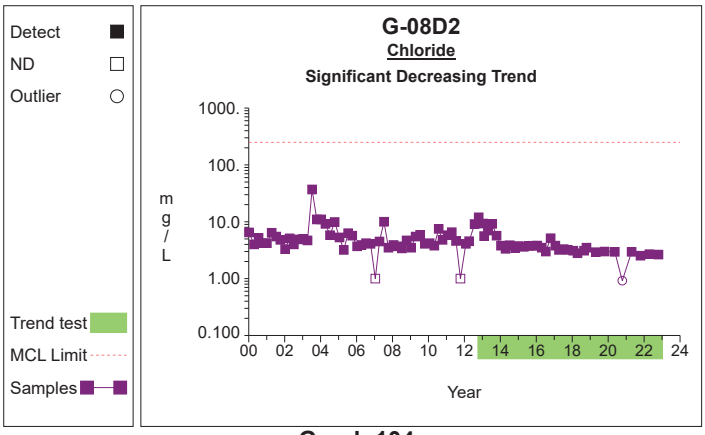
Graph 74

Time Series



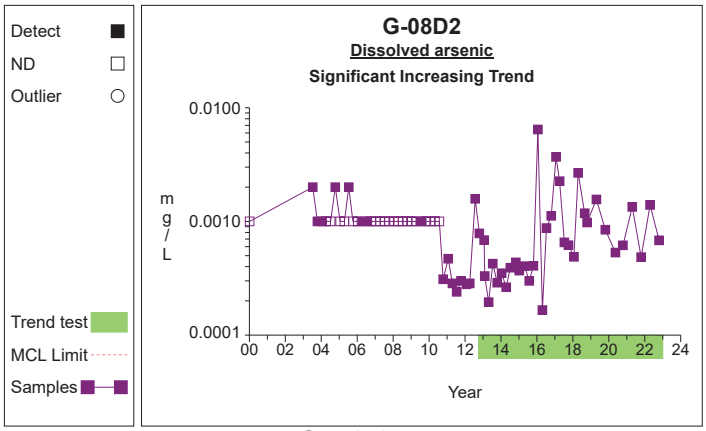
Graph 97

Time Series



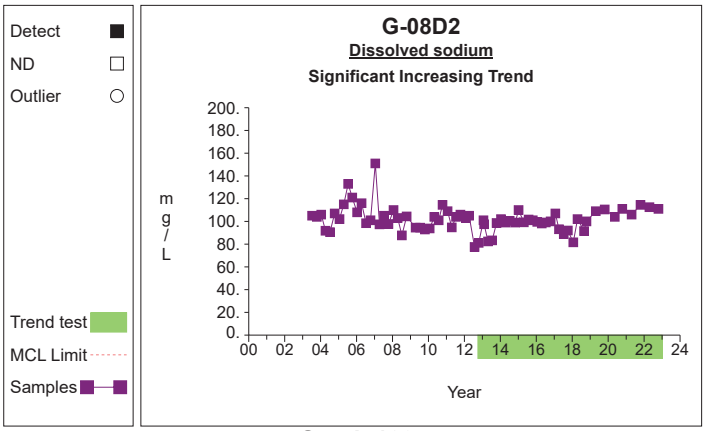
Graph 104

Time Series



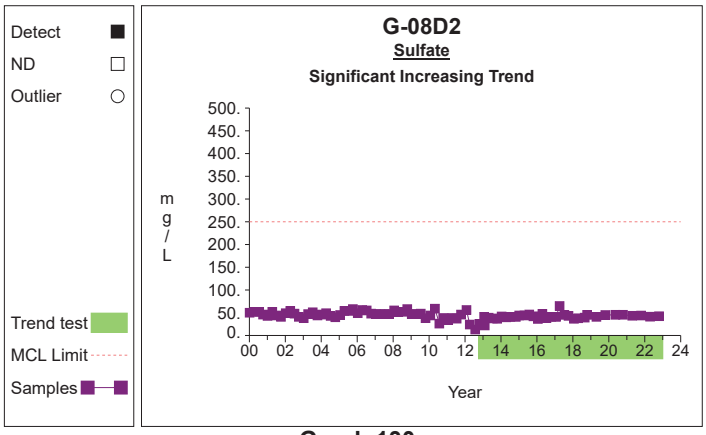
Graph 107

Time Series



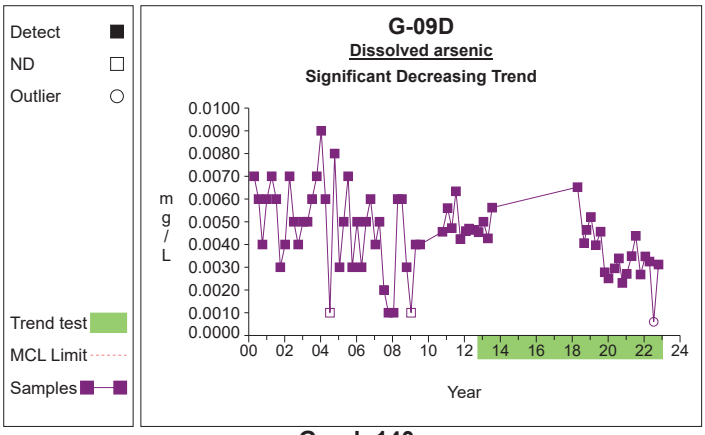
Graph 123

Time Series



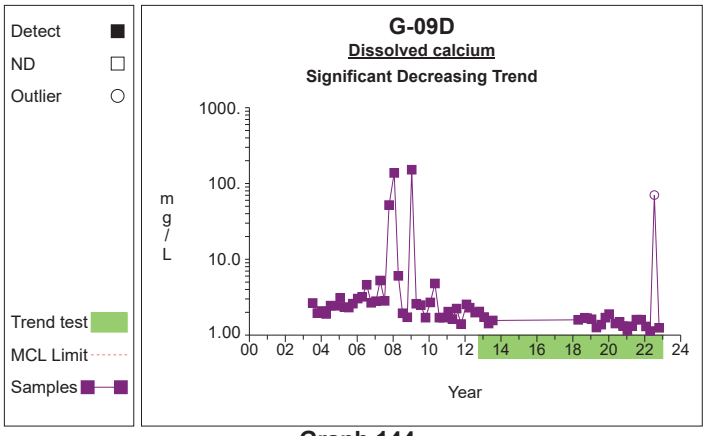
Graph 130

Time Series



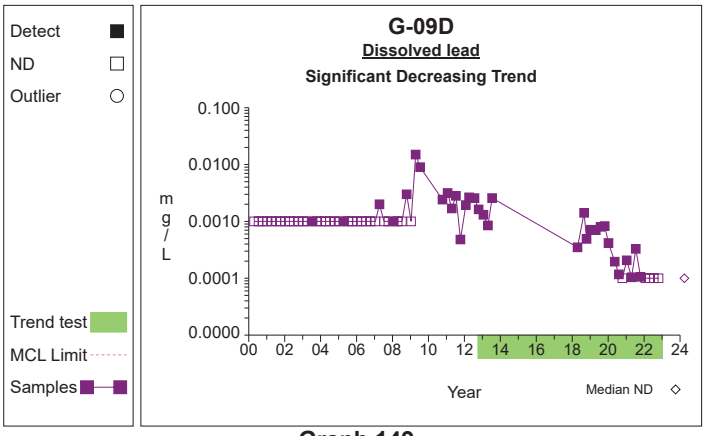
Graph 140

Time Series



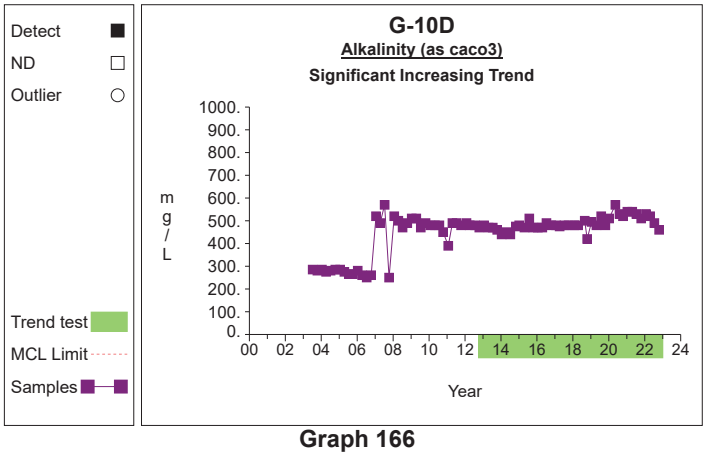
Graph 144

Time Series



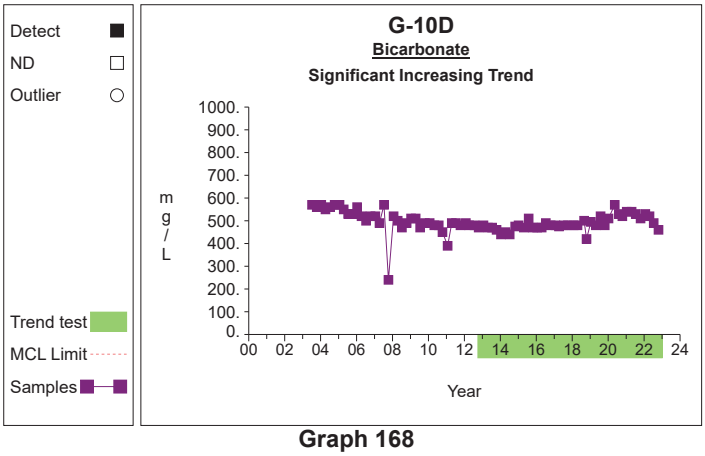
Graph 149

Time Series



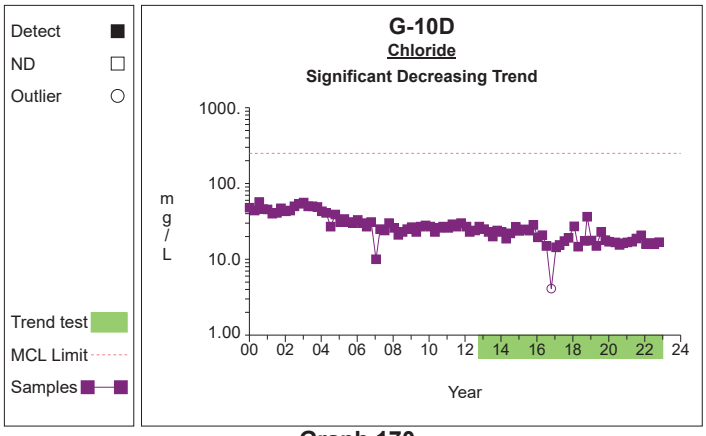
Graph 166

Time Series



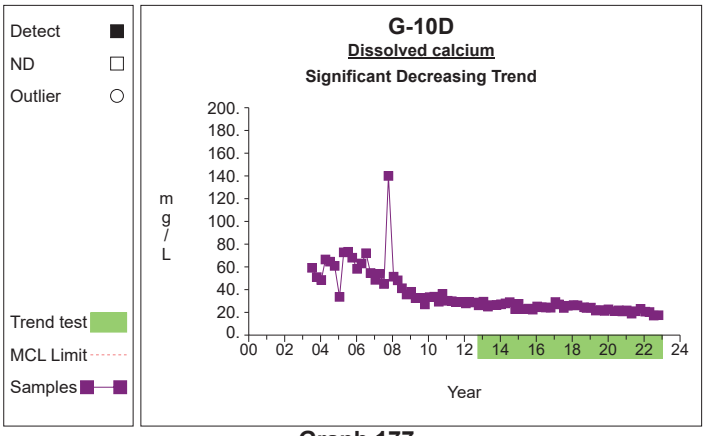
Graph 168

Time Series



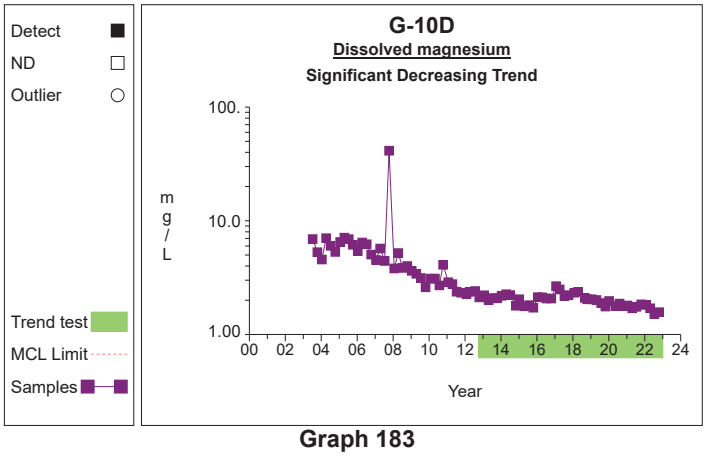
Graph 170

Time Series



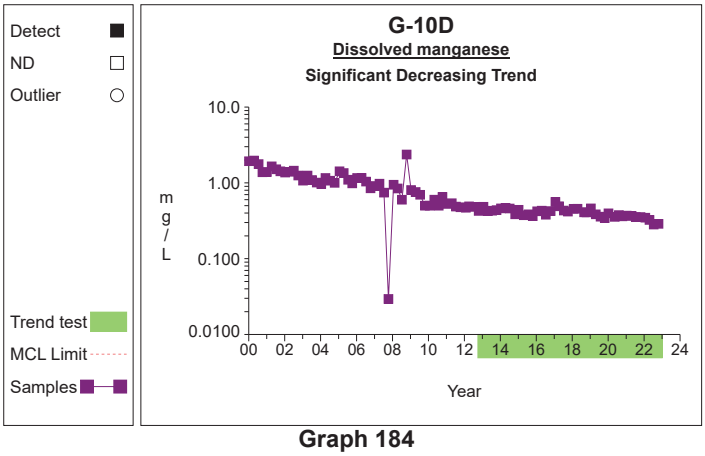
Graph 177

Time Series



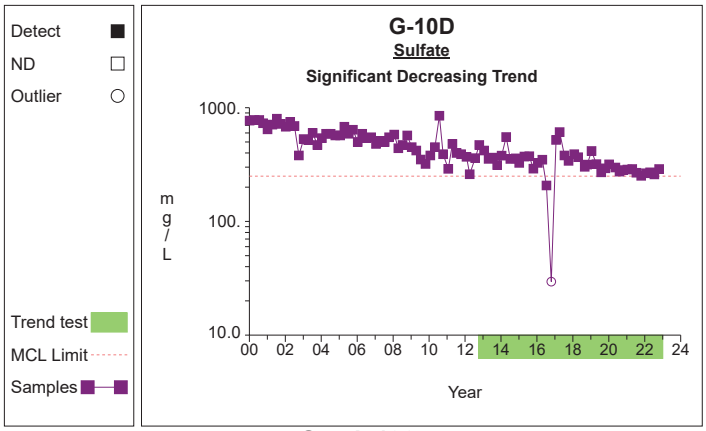
Graph 183

Time Series



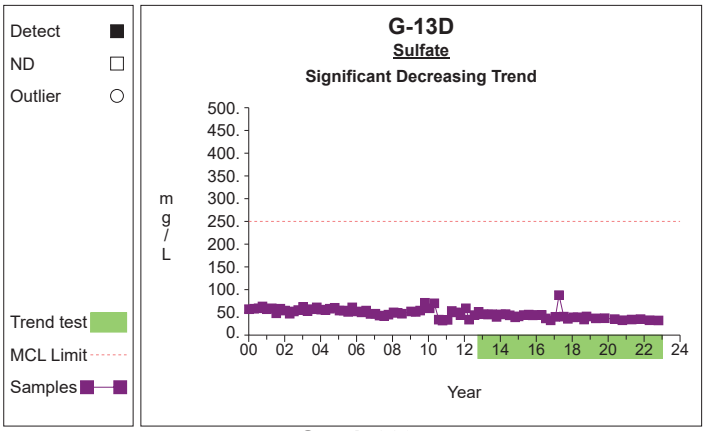
Graph 184

Time Series



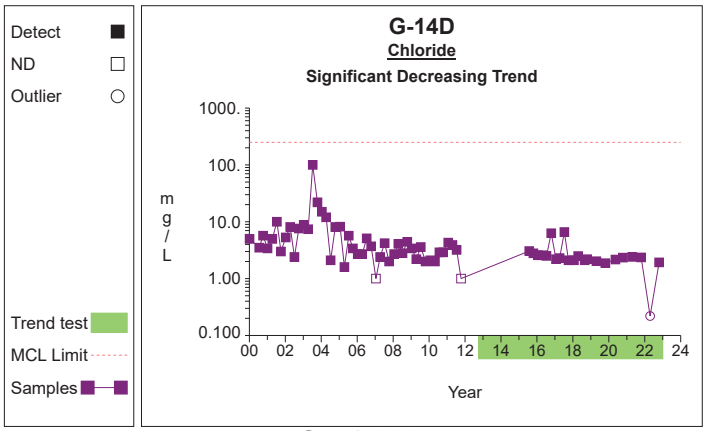
Graph 196

Time Series



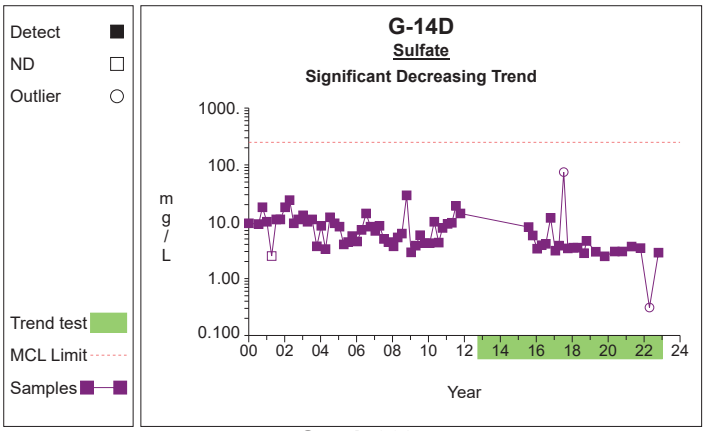
Graph 229

Time Series



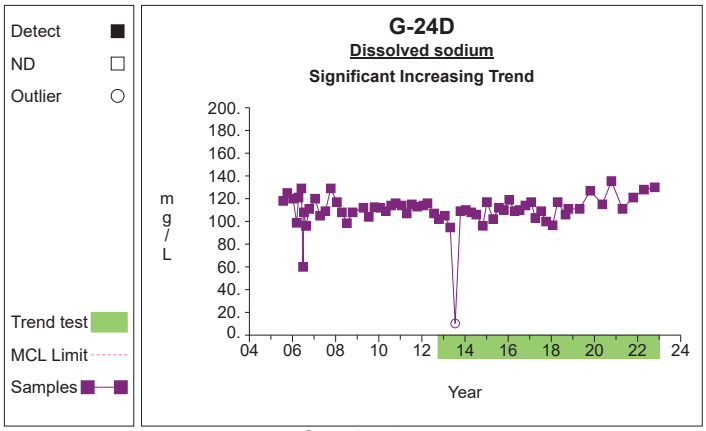
Graph 236

Time Series



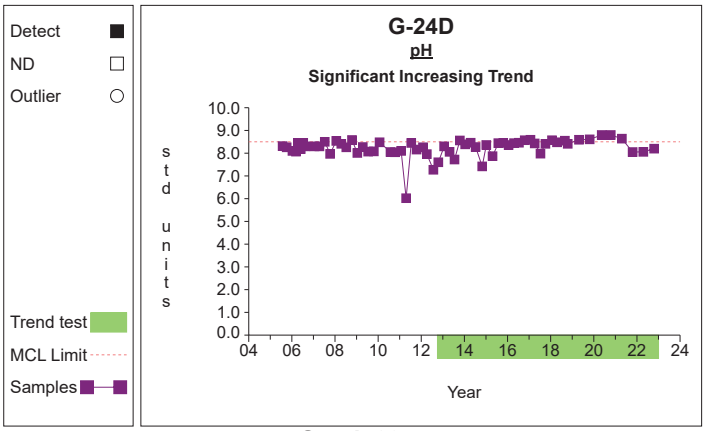
Graph 262

Time Series



Graph 288

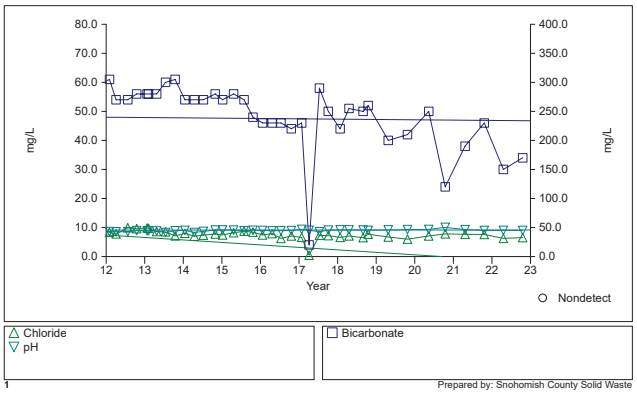
Time Series



Graph 294

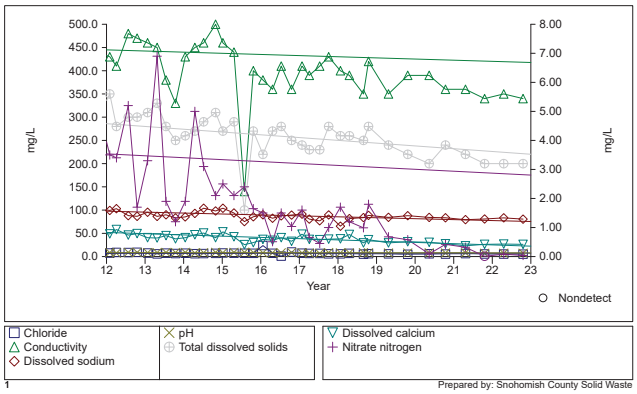
Cathcart Landfill

Time Series Plot for G-01D



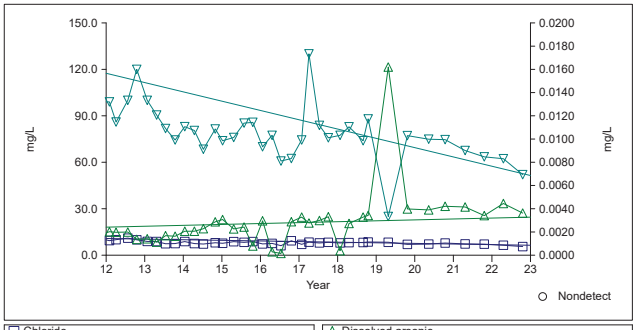
Cathcart Landfill

Time Series Plot for G-02D



Cathcart Landfill

Time Series Plot for G-06B



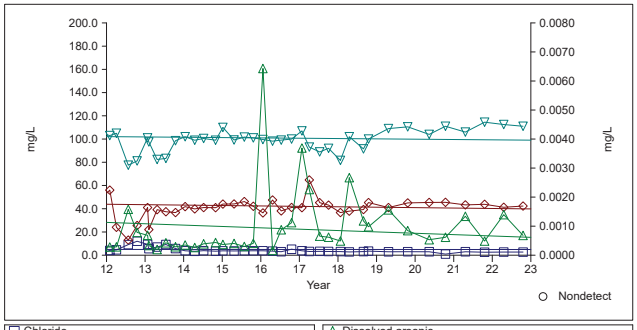
Chloride
Sulfate
Dissolved arsenic

1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-08D2



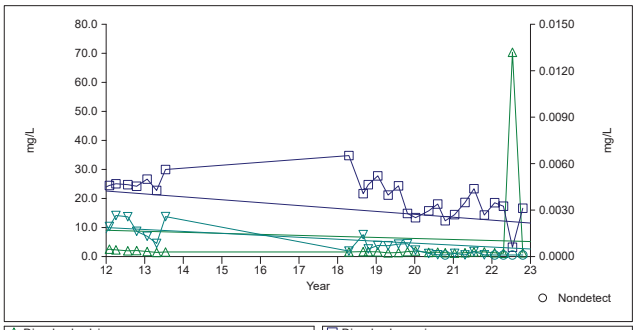
Chloride
Dissolved sodium
Sulfate
Dissolved arsenic

1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-09D



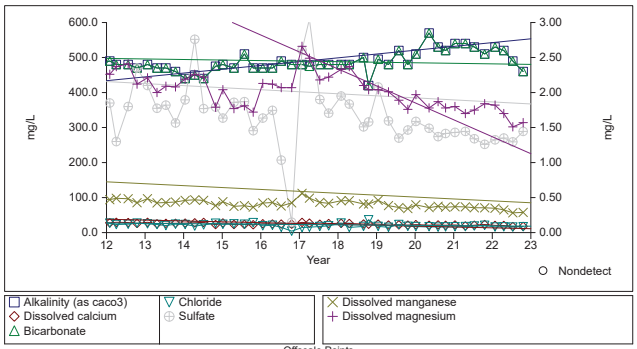
Dissolved calcium
Dissolved arsenic
Dissolved lead

1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-10D



Alkalinity (as caco3)
Dissolved calcium
Bicarbonate
Chloride
Sulfate
Dissolved manganese
Dissolved magnesium

Offscale Points

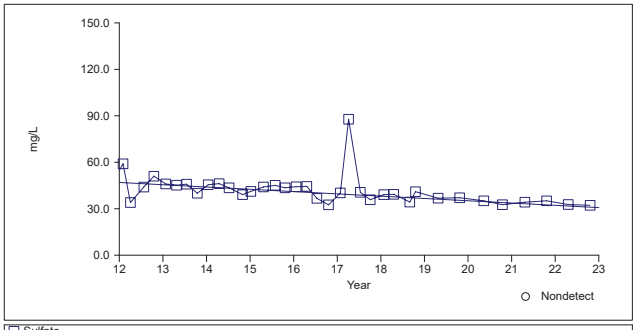
Sulfate on 4/04/2017 was 610 mg/L

1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-13D



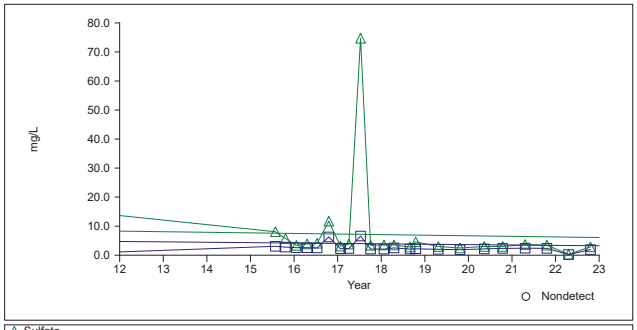
Sulfate

1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-14D



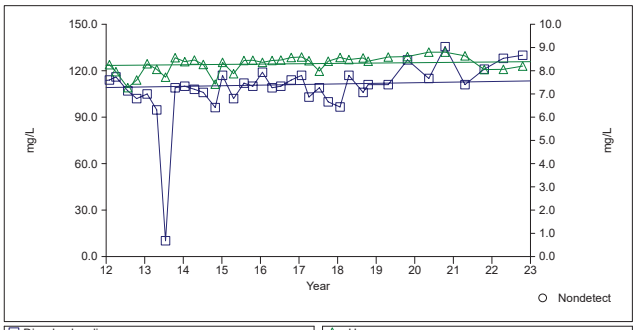
Sulfate
Chloride

1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-24D



Dissolved sodium

pH

1

Prepared by: Snohomish County Solid Waste

Appendix D

Field Monitoring Forms

Snohomish County Department of Public Works

Solid Waste Division

Gas Probe Monitoring Data

QUARTERLY GAS ROUND	
DATE:	**02/18/22**

Site	Location: Probe	Time (Military)	Methane (% VOL)	Oxygen (% VOL, % LEL, PPM)	Carbon Diox. (% VOL)	Velocity	Pressure	Comments
CATHCART	GP-4	1212	0%	21%	1%		29.96	
	GP-5(1)	1207	0%	21%	1%		"	
	GP-5(2)	1209	0%	21%	0%		"	
	GP-1(1)	1156	0%	21%	0%		"	
	GP-1(2)	1156	0%	21%	0%		"	
	GP-2(1)	1152	0%	5%	5%		"	
	GP-2(2)	1154	0%	6%	10%		"	
	GP-3	1216	0%	21%	0%		"	
	GP-6	1220	0%	21%	0%		"	
	Main Man	1130	27%	9%	15%	372	"	
Site	**Location: Barhole**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	BH-3	1211	0%	21%	0%		29.96	
	BH-4	1204	0%	18%	2%		"	
	BH-5	1202	0%	21%	0%		"	
	BH-6	1159	0%	20%	1%		"	
	BH-7	1157	0%	21%	1%		"	
	BH-8	1200	0%	21%	0%		"	
Site	**Location: Structure**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	SP-4	1150	0%	21%	0%		29.96	
	C-FV-1`	1146	0%	21%	0%		"	
	C-COV-2	1144	0%	21%	0%		"	
	C-VV-2	1142	0%	21%	0%		"	
	SP-1	1140	0%	20%	3%		"	
	C-VV-3	1138	0%	21%	0%		"	
	Grit Chamber	1136	0%	21%	2%		"	
	C-FV-2	1134	0%	21%	0%		"	
	C-VV-5	1132	0%	21%	0%		"	

Methane/Oxygen Meter Used =	GEM 5000
Technician Name =	ML
Page =	**2 of 2**

Snohomish County Department of Public Works

Solid Waste Division

Gas Probe Monitoring Data

QUARTERLY GAS ROUND	
DATE:	**04/15/22**

Site	Location: Probe	Time (Military)	Methane (% VOL)	Oxygen (% VOL, % LEL, PPM)	Carbon Diox. (% VOL)	Velocity	Pressure	Comments
CATHCART	GP-4	1355	0%	21%	0%		29.64	
	GP-5(1)	1400	0%	21%	0%		"	
	GP-5(2)	1402	0%	20%	2%		"	
	GP-1(1)	1416	0%	21%	0%		"	
	GP-1(2)	1416	0%	21%	0%		"	
	GP-2(1)	1420	0%	11%	4%		"	
	GP-2(2)	1420	0%	13%	5%		"	
	GP-3	1433	0%	21%	1%		"	
	GP-6	1430	0%	21%	0%		"	
	Main Man	0800	18%	14%	10%	260	"	
Site	**Location: Barhole**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	BH-3	1400	0%	21%	0%		29.64	
	BH-4	1405	0%	19%	2%		"	
	BH-5	1409	0%	21%	0%		"	
	BH-6	1412	0%	20%	2%		"	
	BH-7	1415	0%	20%	2%		"	
	BH-8	1410	0%	21%	0%		"	
Site	**Location: Structure**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	SP-4	1421	0%	21%	0%		29.64	
	C-FV-1`	1421	0%	21%	0%		"	
	C-COV-2	1422	0%	21%	0%		"	
	C-VV-2	1422	0%	21%	0%		"	
	SP-1	1423	0%	21%	0%		"	
	C-VV-3	1423	0%	21%	0%		"	
	Grit Chamber	1424	0%	21%	2%		"	
	C-FV-2	1425	0%	21%	0%		"	
	C-VV-5	1425	0%	21%	0%		"	

Methane/Oxygen Meter Used =	GEM 5000
Technician Name =	ML
Page =	**2 of 2**

Snohomish County Department of Public Works

Solid Waste Division

Gas Probe Monitoring Data

QUARTERLY GAS ROUND
DATE: 08/19/22

Site	Location: Probe	Time (Military)	Methane (% VOL)	Oxygen (% VOL, % LEL, PPM)	Carbon Diox. (% VOL)	Velocity	Pressure	Comments
CATHCART	GP-4	1320	0%	21%	0%		29.49	
	GP-5(1)	1326	0%	19%	3%		"	
	GP-5(2)	1327	0%	20%	0%		"	
	GP-1(1)	1338	0%	21%	0%		"	
	GP-1(2)	1338	0%	21%	0%		"	
	GP-2(1)	1342	0%	9%	6%		"	
	GP-2(2)	1342	0%	10%	6%		"	
	GP-3	1356	0%	20%	1%		"	
	GP-6	1354	0%	21%	0%		"	
	Main Man	1400	29%	7%	17%	562	"	
Site	**Location: Barhole**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	BH-3	1325	0%	21%	0%		29.49	
	BH-4	1328	0%	20%	2%		"	
	BH-5	1332	0%	20%	0%		"	
	BH-6	1336	0%	20%	1%		"	
	BH-7	1340	0%	20%	1%		"	
	BH-8	1334	0%	20%	0%		"	
Site	**Location: Structure**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	SP-4	1343	0%	21%	0%		29.49	
	C-FV-1`	1344	0%	21%	0%		"	
	C-COV-2	1345	0%	21%	0%		"	
	C-VV-2	1346	0%	21%	0%		"	
	SP-1	1347	0%	19%	3%		"	
	C-VV-3	1349	0%	21%	0%		"	
	Grit Chamber	1348	0%	20%	1%		"	
	C-FV-2	1350	0%	21%	0%		"	
	C-VV-5	1352	0%	21%	0%		"	

Methane/Oxygen Meter Used =	GEM 5000
Technician Name =	ML
Page =	**2 of 2**

Snohomish County Department of Public Works

Solid Waste Division

Gas Probe Monitoring Data

QUARTERLY GAS ROUND
DATE: 11/16/22

Site	Location: Probe	Time (Military)	Methane (% VOL)	Oxygen (% VOL, % LEL, PPM)	Carbon Diox. (% VOL)	Velocity	Pressure	Comments
CATHCART	GP-4	1314	0%	21%	0%		30.06	
	GP-5(1)	1320	0%	18%	3%		"	
	GP-5(2)	1321	0%	21%	0%		"	
	GP-1(1)	1327	0%	19%	1%		"	
	GP-1(2)	1338	0%	21%	0%		"	
	GP-2(1)	1339	0%	13%	7%		"	
	GP-2(2)	1340	0%	13%	6%		"	
	GP-3	1357	0%	21%	0%		"	
	GP-6	1354	0%	21%	0%		"	
	Main Man	1400	32%	7%	18%	350	"	
Site	**Location: Barhole**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	BH-3	1316	0%	21%	0%		30.06	
	BH-4	1323	0%	21%	1%		"	
	BH-5	1326	0%	21%	0%		"	
	BH-6	1331	0%	20%	1%		"	
	BH-7	1333	0%	21%	0%		"	
	BH-8	1327	0%	21%	0%		"	
Site	**Location: Structure**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	SP-4	1343	0%	21%	0%		30.06	
	C-FV-1`	1342	0%	21%	0%		"	
	C-COV-2	1346	0%	21%	0%		"	
	C-VV-2	1347	0%	21%	0%		"	
	SP-1	1348	0%	21%	0%		"	
	C-VV-3	1349	0%	21%	0%		"	
	Grit Chamber	1350	0%	22%	0%		"	
	C-FV-2	1351	0%	21%	1%		"	
	C-VV-5	1352	0%	21%	0%		"	

Methane/Oxygen Meter Used =	GEM 5000
Technician Name =	ML, TA, JC
Page =	**2 of 2**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21732 **Conditions:** Overcast
Date: 1/11/2022 **Site:** Cathcart
Time: 9:58 AM **Location:** CC-NSDP

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6	118	7.3	Clear	Fine				

Sampling:

Sample Depth: **Sample Type:** Standard Surface - Water

Sample Time: 10:10

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	[Undefined]	250	Clpl	None
Bottle 2	Grab	[Undefined]	250	Clpl	EDTA
Bottle 3	Grab	[Undefined]	250	Clpl	H2SO4

Notes:

Number of Bottles: 3

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21731 **Conditions:** Overcast
Date: 1/11/2022 **Site:** Cathcart
Time: 9:47 AM **Location:** CC-D

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.07	108	6.8	Clear	Fine				

Sampling:

Sample Depth: **Sample Type:** Standard Surface - Water

Sample Time: 10:00

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	[Undefined]	250	Clpl	None
Bottle 2	Grab	[Undefined]	250	Clpl	EDTA
Bottle 3	Grab	[Undefined]	250	Clpl	H2SO4

Notes:

Number of Bottles: 3

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21730 **Conditions:** Precip - rain
Date: 1/11/2022 **Site:** Cathcart
Time: 9:37 AM **Location:** CC-F

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.18	119	6.2	Clear	Fine				

Sampling:

Sample Depth: **Sample Type:** Standard Surface - Water

Sample Time: 09:45

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	[Undefined]	250	Clpl	None
Bottle 2	Grab	[Undefined]	250	Clpl	EDTA
Bottle 3	Grab	[Undefined]	250	Clpl	H2SO4

Notes:

Number of Bottles: 3

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21729 **Conditions:** Precip - rain
Date: 1/11/2022 **Site:** Cathcart
Time: 9:21 AM **Location:** CC-B1

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.33	123	6.5	Clear	Fine				

Sampling:

Sample Depth: **Sample Type:** Standard Surface - Water

Sample Time: 09:25

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	[Undefined]	250	Clpl	None
Bottle 2	Grab	[Undefined]	250	Clpl	EDTA
Bottle 3	Grab	[Undefined]	250	Clpl	H2SO4

Notes:

Number of Bottles: 3

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21728 **Conditions:** Overcast
Date: 1/11/2022 **Site:** Cathcart
Time: 9:11 AM **Location:** CC-A1

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.26	112	6.1	Clear	Fine				

Sampling:

Sample Depth: **Sample Type:** Standard Surface - Water

Sample Time: 09:15

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	[Undefined]	250	Clpl	None
Bottle 2	Grab	[Undefined]	250	Clpl	EDTA
Bottle 3	Grab	[Undefined]	250	Clpl	H2SO4

Notes:

Number of Bottles: 3

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21745 **Conditions:** Overcast
Date: 1/26/2022 **Site:** Cathcart
Time: 10:13 **Location:** G-09D

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time

Sampling:

Sample Depth: 81 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:25

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after 1 gallon of first purge. Split sample. See field data on 21744.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21744 **Conditions:** Overcast
Date: 1/26/2022 **Site:** Cathcart
Time: 10:07 **Location:** G-09D

Well Information:

Well Depth: 81 ft **Water Depth:** 50.33 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.91 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.74	741	11.2	Clear	Medium				
Test 2	Grab	9.09	702	11.3	Clear	Medium				

Sampling:

Sample Depth: 81 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:25

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after 1 gallon of second purge. Split sample with 21745.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21743 **Conditions:** Overcast
Date: 1/26/2022 **Site:** Cathcart
Time: 10:02 **Location:** G-09S

Well Information:

Well Depth: 51.5 ft **Water Depth:** 29.35 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.54 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	5.95	1025	10.3	Clear	Very Fine				

Sampling:

Sample Depth: 51.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:35

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after first purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21742 **Conditions:** Overcast
Date: 1/26/2022 **Site:** Cathcart
Time: 09:50 **Location:** G-10D

Well Information:

Well Depth: 82 ft **Water Depth:** 29.94 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.33 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.8	1561	9.9	Clear	Very Fine				

Sampling:

Sample Depth: 36.06 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:40

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21741 **Conditions:** Overcast
Date: 1/26/2022 **Site:** Cathcart
Time: 09:46 **Location:** G-10S

Well Information:

Well Depth: 44 ft **Water Depth:** 21.93 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.53 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.25	1462	10.5	Clear	Very Fine				
Test 2	Grab	6.45	1437	11.6	Clear	Very Fine				
Test 3	Grab	6.55	1431	11.8	Clear	Very Fine				

Sampling:

Sample Depth: 23.14 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:55

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21838 **Conditions:** Overcast
Date: 4/19/2022 **Site:** Cathcart
Time: 09:48 **Location:** G-10S

Well Information:

Well Depth: 44 ft **Water Depth:** 21.81 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.55 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.23	1437	10.5	Clear	Very Fine				
Test 2	Grab	6.33	1422	11.5	Clear	Very Fine				

Sampling:

Sample Depth: 44 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:05

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry two gallons into second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21837 **Conditions:** Overcast
Date: 4/19/2022 **Site:** Cathcart
Time: 09:48 **Location:** G-10D

Well Information:

Well Depth: 82 ft **Water Depth:** 30.05 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.31 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.74	1557	10.9	Clear	Very Fine				

Sampling:

Sample Depth: 35.86 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:35

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21836 **Conditions:** Overcast
Date: 4/19/2022 **Site:** Cathcart
Time: 09:20 **Location:** G-09S

Well Information:

Well Depth: 51.5 ft **Water Depth:** 29.39 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.54 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	5.8	1019	11.8	Clear	Very Fine				

Sampling:

Sample Depth: 51.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:45

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after first purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21835 **Conditions:** Overcast
Date: 4/19/2022 **Site:** Cathcart
Time: 09:20 **Location:** G-09D

Well Information:

Well Depth: 81 ft **Water Depth:** 51.58 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.71 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.84	698	12.7	Clear	Fine				
Test 2	Grab	8.89	679	12.5	Clear	Very Fine				

Sampling:

Sample Depth: 81 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:40

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after 2 gallons of second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21834 **Conditions:** Overcast
Date: 4/19/2022 **Site:** Cathcart
Time: 08:53 **Location:** G-13D

Well Information:

Well Depth: 44.9 ft **Water Depth:** 10.97 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 5.43 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.66	459	9.9	Clear	Very Fine				
Test 2	Grab	8.76	455	10.1	Clear	Very Fine				
Test 3	Grab	8.76	452	10.1	Clear	Very Fine				

Sampling:

Sample Depth: 16.17 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:05

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21833 **Conditions:** Overcast
Date: 4/19/2022 **Site:** Cathcart
Time: 08:35 **Location:** G-11S

Well Information:

Well Depth: 41.2 ft **Water Depth:** 18.63 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.61 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	5.58	204	10.2	Clear	Very Fine				
Test 2	Grab	5.82	202	10.8	Clear	Very Fine				

Sampling:

Sample Depth: 41.2 ft **Sample Type:** Standard Ground - Water
Sample Time: 08:45

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21832 **Conditions:** Overcast
Date: 4/19/2022 **Site:** Cathcart
Time: 07:53 **Location:** G-14S

Well Information:

Well Depth: 68.5 ft **Water Depth:** 8.5 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 9.6 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.28	373	10.9	Clear	Fine				
Test 2	Grab	8.34	378	11	Clear	Fine				

Sampling:

Sample Depth: 68.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 08:25

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry 2.5 gallons of second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Environmental Services Section
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Field Sampling Data

Sample Number: 21831 **Conditions:** Overcast
Date: 4/19/2022 **Site:** Cathcart
Time: 07:52 **Location:** G-14D

Well Information:

Well Depth: 110 ft **Water Depth:** 30.61 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 12.7 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.86	478	10.8	Clear	Medium				
Test 2	Grab	9.11	494	10.5	Clear	Heavy				

Sampling:

Sample Depth: 110 ft **Sample Type:** Standard Ground - Water
Sample Time: 08:20

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after 11 gallons of second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Environmental Services Section
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Field Sampling Data

Sample Number: 21830 **Conditions:** Precip - rain
Date: 4/18/2022 **Site:** Cathcart
Time: 11:47 **Location:** G-02D

Well Information:

Well Depth: 56.5 ft **Water Depth:** 28.61 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.46 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.07	355	10.8	Clear	Very Fine				
Test 2	Grab	7.14	346	10.4	Clear	Very Fine				

Sampling:

Sample Depth: 56.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:55

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after 2 gallons into second purge,

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21829 **Conditions:** Overcast
Date: 4/18/2022 **Site:** Cathcart
Time: 10:52 **Location:** G-08D1

Well Information:

Well Depth: 56.4 ft **Water Depth:** 22.71 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 5.39 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.5	443	11.1	Clear	Very Fine				
Test 2	Grab	8.98	438	10.7	Clear	Very Fine				

Sampling:

Sample Depth: 56.4 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:45

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number:	21828	**Conditions:**	Overcast
Date:	4/18/2022	**Site:**	Cathcart
Time:	10:50	**Location:**	G-08D2

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time

Sampling:

Sample Depth: 47.3 ft **Sample Type:** Standard Ground - Water

Sample Time: 11:25

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Split sample see field data on 21827.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21827 **Conditions:** Overcast
Date: 4/18/2022 **Site:** Cathcart
Time: 11:03 **Location:** G-08D2

Well Information:

Well Depth: 112.5 ft **Water Depth:** 4.12 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 17.34 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	9.3	469	10.9	Clear	Medium				
Test 2	Grab	9.34	467	10.7	Clear	Medium				
Test 3	Grab	9.32	464	10.8	Clear	Medium				

Sampling:

Sample Depth: 47.3 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:25

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Split sample with 21828.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21826 **Conditions:** Overcast
Date: 4/18/2022 **Site:** Cathcart
Time: 10:36 **Location:** G-06B

Well Information:

Well Depth: 88 ft **Water Depth:** 35.06 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.47 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.3	564	12.4	Clear	Very Fine				
Test 2	Grab	7.6	685	12.3	Clear	Very Fine				

Sampling:

Sample Depth: 88 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:50

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21825 **Conditions:** Overcast
Date: 4/18/2022 **Site:** Cathcart
Time: 09:57 **Location:** G-01D

Well Information:

Well Depth: 67.2 ft **Water Depth:** 23.81 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 6.94 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.83	581	10.8	Clear	Fine				
Test 2	Grab	8.86	576	10.9	Clear	Fine				
Test 3	Grab	9.01	575	11.2	Clear	Fine				

Sampling:

Sample Depth: 43.41 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:30

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21824 **Conditions:** Overcast
Date: 4/18/2022 **Site:** Cathcart
Time: 09:56 **Location:** G-01A

Well Information:

Well Depth: 15.65 ft **Water Depth:** 9.13 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 1.04 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	5.43	117	9.8	Clear	Very Fine				
Test 2	Grab	5.78	114	9.7	Clear	Very Fine				
Test 3	Grab	5.72	106	9.6	Clear	Very Fine				

Sampling:

Sample Depth: 12.53 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:15

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21823 **Conditions:** Precip - rain
Date: 4/18/2022 **Site:** Cathcart
Time: 09:48 **Location:** G-04A

Well Information:

Well Depth: 20 ft **Water Depth:** 13.75 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 1 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	5.48	582	10	Clear	Very Fine				

Sampling:

Sample Depth: 14.3 ft **Sample Type:** Standard Ground - Water
Sample Time: 12:25

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after first purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21822 **Conditions:** Precip - rain
Date: 4/18/2022 **Site:** Cathcart
Time: 09:14 **Location:** G-24S

Well Information:

Well Depth: 26.5 ft **Water Depth:** 13.17 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 2.13 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.33	403	10.6	Clear	Very Fine				
Test 2	Grab	6.84	444	10.8	Clear	Very Fine				

Sampling:

Sample Depth: 23.63 ft **Sample Type:** Standard Ground - Water
Sample Time: 12:15

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21821 **Conditions:** Overcast
Date: 4/18/2022 **Site:** Cathcart
Time: 09:07 **Location:** G-24D

Well Information:

Well Depth: 85 ft **Water Depth:** 18.73 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 10.6 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.01	514	11.6	Clear	Very Fine				
Test 2	Grab	8.08	504	11.5	Clear	Very Fine				
Test 3	Grab	8.06	501	11.4	Clear	Very Fine				

Sampling:

Sample Depth: 34.88 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:25

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number:	21904	**Conditions:**	Sunny
Date:	7/13/2022	**Site:**	Cathcart
Time:	8:22 AM	**Location:**	CC-A1

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time

Sampling:

Sample Depth: **Sample Type:**

Sample Time:

Sample Type	Sample Method	Volume	Bottle Type	Preservative

Notes: No flow.

Number of Bottles:

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number:	21903	**Conditions:**	Sunny
Date:	7/13/2022	**Site:**	Cathcart
Time:	8:22 AM	**Location:**	CC-B1

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time

Sampling:

Sample Depth: **Sample Type:**

Sample Time:

Sample Type	Sample Method	Volume	Bottle Type	Preservative

Notes: No flow.

Number of Bottles:

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number:	21902	**Conditions:**	Sunny
Date:	7/13/2022	**Site:**	Cathcart
Time:	8:21 AM	**Location:**	CC-D

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time

Sampling:

Sample Depth: **Sample Type:**

Sample Time:

Sample Type	Sample Method	Volume	Bottle Type	Preservative

Notes: No flow

Number of Bottles:

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21901 **Conditions:** Sunny
Date: 7/13/2022 **Site:** Cathcart
Time: 8:15 AM **Location:** CC-NSDP

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.44	247	18.6	Clear	Fine				

Sampling:

Sample Depth: **Sample Type:** Standard Surface - Water

Sample Time: 08:20

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	[Undefined]	250	Clpl	None
Bottle 2	Grab	[Undefined]	250	Clpl	EDTA
Bottle 3	Grab	[Undefined]	250	Clpl	H2SO4

Notes:

Number of Bottles: 3

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21900 **Conditions:** Sunny
Date: 7/13/2022 **Site:** Cathcart
Time: 8:05 AM **Location:** CC-F

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.28	225	15.9	Clear	Fine				

Sampling:

Sample Depth: **Sample Type:** Standard Surface - Water

Sample Time: 08:07

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	[Undefined]	250	Clpl	None
Bottle 2	Grab	[Undefined]	250	Clpl	EDTA
Bottle 3	Grab	[Undefined]	250	Clpl	H2SO4

Notes:

Number of Bottles: 3

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21909 **Conditions:** Sunny
Date: 7/13/2022 **Site:** Cathcart
Time: 9:06 AM **Location:** G-10S

Well Information:

Well Depth: 44 ft **Water Depth:** 23.61 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.26 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.15	1337	13.8	Clear	Fine				
Test 2	Grab	6.26	1385	12.8	Clear	Very Fine				

Sampling:

Sample Depth: 44 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:15

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21908 **Conditions:** Sunny
Date: 7/13/2022 **Site:** Cathcart
Time: 9:05 AM **Location:** G-10D

Well Information:

Well Depth: 82 ft **Water Depth:** 30.55 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.23 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.75	1520	14.3	Clear	Very Fine				

Sampling:

Sample Depth: 35.86 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:45

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21907 **Conditions:** Sunny
Date: 7/13/2022 **Site:** Cathcart
Time: 8:32 AM **Location:** G-09D

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time

Sampling:

Sample Depth: 81 ft **Sample Type:** Standard Ground - Water
Sample Time: 08:50

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Split sample, See field measurements on 21906. Dry after first purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21906 **Conditions:** Sunny
Date: 7/13/2022 **Site:** Cathcart
Time: 8:31 AM **Location:** G-09D

Well Information:

Well Depth: 81 ft **Water Depth:** 48.44 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 5.21 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.64	654	15.3	Clear	Medium				

Sampling:

Sample Depth: 81 ft **Sample Type:** Standard Ground - Water
Sample Time: 08:50

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Split sample with 21907. Dry after first purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21905 **Conditions:** Sunny
Date: 7/13/2022 **Site:** Cathcart
Time: 8:30 AM **Location:** G-09S

Well Information:

Well Depth: 51.5 ft **Water Depth:** 30.21 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.41 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	5.88	951	15.5	Clear	Medium				

Sampling:

Sample Depth: 51.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 08:55

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after first purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Snohomish, WA 98296

Field Sampling Data

Sample Number: 22004 **Conditions:** Overcast
Date: 10/19/2022 **Site:** Cathcart
Time: 11:09 AM **Location:** G-14D

Well Information:

Well Depth: 110 ft **Water Depth:** 31.92 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 12.49 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	9	482	11.6	Clear	Medium				
Test 2	Grab	9.15	479	11.7	Clear	Medium				

Sampling:

Sample Depth: 110 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:35

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry 9.5 gallons of second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22003 **Conditions:** Overcast
Date: 10/19/2022 **Site:** Cathcart
Time: 11:09 AM **Location:** G-14S

Well Information:

Well Depth: 68.5 ft **Water Depth:** 14.96 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.57 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.51	370	11.3	Clear	Fine				
Test 2	Grab	8.51	377	11.3	Clear	Fine				

Sampling:

Sample Depth: 68.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:40

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry 2 gallons of second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22002 **Conditions:** Overcast
Date: 10/19/2022 **Site:** Cathcart
Time: 10:47 AM **Location:** G-13D

Well Information:

Well Depth: 44.9 ft **Water Depth:** 14.51 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.86 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.83	464	10.7	Clear	Very Fine				
Test 2	Grab	8.91	458	10.5	Clear	Very Fine				
Test 3	Grab	8.89	455	10.4	Clear	Very Fine				

Sampling:

Sample Depth: 19.01 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:55

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22001 **Conditions:** Overcast
Date: 10/19/2022 **Site:** Cathcart
Time: 9:53 AM **Location:** G-10S

Well Information:

Well Depth: 44 ft **Water Depth:** 25.42 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 2.97 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.42	1411	11.8	Clear	Very Fine				
Test 2	Grab	6.46	1403	11.7	Clear	Very Fine				

Sampling:

Sample Depth: 44 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:05

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after one gallon of second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22000 **Conditions:** Overcast
Date: 10/19/2022 **Site:** Cathcart
Time: 9:53 AM **Location:** G-10D

Well Information:

Well Depth: 82 ft **Water Depth:** 30.91 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.17 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.02	1505	12.2	Clear	Very Fine				

Sampling:

Sample Depth: 36.91 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:40

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21999 **Conditions:** Overcast
Date: 10/19/2022 **Site:** Cathcart
Time: 9:20 AM **Location:** G-09D

Well Information:

Well Depth: 81 ft **Water Depth:** 54.2 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.29 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.69	674	13.6	Clear	Very Fine				
Test 2	Grab	8.84	658	13.5	Clear	Very Fine				

Sampling:

Sample Depth: 81 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:35

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after 1 gallon of second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21998 **Conditions:** Overcast
Date: 10/19/2022 **Site:** Cathcart
Time: 9:20 AM **Location:** G-09S

Well Information:

Well Depth: 51.5 ft **Water Depth:** 31.95 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.13 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.12	967	13.3	Clear	Very Fine				

Sampling:

Sample Depth: 51.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:45

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after first purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21997 **Conditions:** Sunny
Date: 10/18/2022 **Site:** Cathcart
Time: 11:25 AM **Location:** G-11S

Well Information:

Well Depth: 41.2 ft **Water Depth:** 25.45 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 2.52 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	5.99	203	11	Clear	Very Fine				
Test 2	Grab	6.12	216	10.9	Clear	Very Fine				

Sampling:

Sample Depth: 41.2 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:35

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after 2 gallons of second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21996 **Conditions:** Overcast
Date: 10/18/2022 **Site:** Cathcart
Time: 11:11 AM **Location:** G-02D

Well Information:

Well Depth: 56.5 ft **Water Depth:** 30.64 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.14 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.11	343	10.4	Clear	Very Fine				
Test 2	Grab	7.16	344	10.3	Clear	Very Fine				

Sampling:

Sample Depth: 56.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:20

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after 1 gallon of 2nd purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21995 **Conditions:** Overcast
Date: 10/18/2022 **Site:** Cathcart
Time: 10:31 AM **Location:** G-08D1

Well Information:

Well Depth: 56.4 ft **Water Depth:** 30.72 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.11 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.68	452	10.7	Clear	Medium				
Test 2	Grab	9.1	451	10.6	Clear	Medium				

Sampling:

Sample Depth: 56.4 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:05

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after 2nd purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21994 **Conditions:** Overcast
Date: 10/18/2022 **Site:** Cathcart
Time: 10:31 AM **Location:** G-08D2

Well Information:

Well Depth: 112.5 ft **Water Depth:** 9.51 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 16.48 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	9.23	474	10.9	Clear	Medium				
Test 2	Grab	9.35	469	10.6	Clear	Medium				
Test 3	Grab	9.33	464	10.6	Clear	Medium				

Sampling:

Sample Depth: 51.05 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:55

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number:	21993	**Conditions:**	Overcast
Date:	10/18/2022	**Site:**	Cathcart
Time:	10:03 AM	**Location:**	G-06B

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time

Sampling:

Sample Depth: 88 ft **Sample Type:** Standard Ground - Water

Sample Time: 10:15

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Split sample. See field measurements on 21992. Dry two gallons into 3rd purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21992 **Conditions:** Overcast
Date: 10/18/2022 **Site:** Cathcart
Time: 10:03 AM **Location:** G-06B

Well Information:

Well Depth: 88 ft **Water Depth:** 36.8 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.19 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.59	647	12.4	Clear	Very Fine				
Test 2	Grab	8.16	649	12.1	Clear	Very Fine				
Test 3	Grab	7.69	688	12.1	Clear	Very Fine				

Sampling:

Sample Depth: 88 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:15

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Split sample with 21993. Dry two gallons into 3rd purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number:	21991	**Conditions:**	Overcast
Date:	10/18/2022	**Site:**	Cathcart
Time:	9:35 AM	**Location:**	G-01A

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time

Sampling:

Sample Depth: **Sample Type:**

Sample Time:

Sample Type	Sample Method	Volume	Bottle Type	Preservative

Notes: Not enough water to sample.

Number of Bottles:

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21990 **Conditions:** Overcast
Date: 10/18/2022 **Site:** Cathcart
Time: 9:35 AM **Location:** G-01D

Well Information:

Well Depth: 67.2 ft **Water Depth:** 26.87 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 6.45 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.84	565	11.4	Clear	Very Fine				
Test 2	Grab	8.98	571	11.1	Clear	Very Fine				
Test 3	Grab	8.99	571	11	Clear	Very Fine				

Sampling:

Sample Depth: 47.41 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:55

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number:	21989	**Conditions:**	Overcast
Date:	10/18/2022	**Site:**	Cathcart
Time:	9:30 AM	**Location:**	G-04A

Well Information:

Well Depth: **Water Depth:**

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume:

Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time

Sampling:

Sample Depth: **Sample Type:**

Sample Time:

Sample Type	Sample Method	Volume	Bottle Type	Preservative

Notes: Dry, no water to sample

Number of Bottles:

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 21988 **Conditions:** Overcast
Date: 10/18/2022 **Site:** Cathcart
Time: 8:49 AM **Location:** G-24D

Well Information:

Well Depth: 85 ft **Water Depth:** 20.88 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 10.26 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.21	496	12.2	Clear	Very Fine				
Test 2	Grab	8.23	503	11.5	Clear	Very Fine				
Test 3	Grab	8.2	502	11.3	Clear	Very Fine				

Sampling:

Sample Depth: 35.55 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:15

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**

Snohomish County Solid Waste
Environmental Services Section
8915 Cathcart Way
Snohomish, WA 98296

Field Sampling Data

Sample Number: 21987 **Conditions:** Overcast
Date: 10/18/2022 **Site:** Cathcart
Time: 8:48 AM **Location:** G-24S

Well Information:

Well Depth: 26.5 ft **Water Depth:** 15.4 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 1.78 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.49	392	12.6	Clear	Very Fine				
Test 2	Grab	7.14	442	11.5	Clear	Very Fine				

Sampling:

Sample Depth: 23.05 ft **Sample Type:** Standard Ground - Water
Sample Time: 12:50

	Sample Type	Sample Method	Volume	Bottle Type	Preservative
Bottle 1	Grab	Dedicator	1000	Clpl	None
Bottle 2	Grab	Dedicator	250	Clpl	HNO3R
Bottle 3	Grab	Dedicator	250	Clpl	H2SO4
Bottle 4	Grab	Dedicator	250	Clpl	HNO3
Bottle 5	Grab	Dedicator	40	Glass	HCL
Bottle 6	Grab	Dedicator	40	Glass	HCL
Bottle 7	Grab	Dedicator	40	Glass	HCL
Bottle 8	Grab	Dedicator	40	Glass	HCL

Notes: Dry after second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Matt Lawless**