Cathcart Landfill Environmental Monitoring Report

Second Semiannual and Annual Summary

2023

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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 2023 and the annual 2023 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 2023). 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 2023 were performed by Snohomish County personnel on July 11 and October 17 and 18, 2023.

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 2023 Groundwater Measurements** and comparison with the previous monitoring event elevation data (*delta*) are shown in *Table 1* below.

Table 1 – Second Semiannual 2023 Groundwater Measurements

Well Number	Sample Date	Top of Casing Elevation (feet above MSL)	Water Elevation (feet above MSL)	Delta* (feet)
Shallow Wells – Third Quarter 2023				
G-09S	7/11/23	273.08	241.84	-1.73
G-10S	7/11/23	266.94	242.92	-1.77
Shallow Wells – Fourth Quarter 2023				
G-01A	10/17/23	229.00	220.38	-0.47
G-04A	10/17/23	286.52	DRY	--
G-08D1	10/17/23	222.02	194.41	-4.40
G-09S	10/18/23	273.08	240.71	-1.13
G-10S	10/18/23	266.94	242.53	-0.39
G-11S	10/18/23	250.74	232.86	0.14
G-14S	10/17/23	328.76	311.75	-7.91
G-24S	10/17/23	321.13	306.51	-1.38
Deep Wells – Third Quarter 2023				
G-09D	7/11/23	274.60	220.63	-2.72
G-10D	7/11/23	268.32	237.35	-1.61
Deep Wells – Fourth Quarter 2023				
G-01D	10/17/23	229.96	205.98	-0.86
G-02D	10/18/23	242.10	210.45	-2.63
G-06B	10/17/23	246.24	210.35	-2.59
G-08D2	10/17/23	221.62	211.93	-7.18
G-09D	10/18/23	274.60	220.72	0.09
G-10D	10/18/23	268.32	237.51	0.16
G-13D	10/18/23	232.17	221.88	0.19
G-14D	10/17/23	329.58	297.93	-1.15
G-24D	10/17/23	320.51	301.41	-0.22

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 2023 (*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 16 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 2023 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 2023 sampling events.
- The VOCs detected in shallow wells during the 2023 sampling events include:
  - Cis-1,2-Dichloroethene – well G-10S (*first quarter*)
  - 1,2-Dichlorobenzene – well G-09S (*second quarter*)

Table 2 – Summary of Annual 2023 Shallow Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Downgradient	G-01A	4/18/23	pH	std units	6.28	6.5-8.5
			Arsenic	mg/L	0.00016	0.00005
		10/17/23	pH	std units	4.77	6.5-8.5
			Arsenic	mg/L	0.00022	0.00005
	G-04A	4/18/23	pH	std units	6.18	6.5-8.5
			Arsenic	mg/L	0.00241	0.00005
			Iron	mg/L	0.823	0.3
			Manganese	mg/L	7.56	0.05
		10/17/23	Insufficient water for sampling			
	G-08D1	4/18/23	pH	std units	9.65	6.5-8.5
			Sodium	mg/L	110	20
			Arsenic	mg/L	0.00132	0.00005
		10/17/23	pH	std units	8.77	6.5-8.5
			Sodium	mg/L	106	20
			Arsenic	mg/L	0.0017	0.00005
	G-09S	1/10/23	Conductivity	µmhos/cm	920	700
			pH	std units	6.00	6.5-8.5
			Sodium	mg/L	90.1	20
			TDS	mg/L	590	500
			Arsenic	mg/L	0.000782	0.00005
		4/19/23	Conductivity	µmhos/cm	940	700
			pH	std units	6.41	6.5-8.5
			Sodium	mg/L	100	20
			TDS	mg/L	610	500
			Arsenic	mg/L	0.00085	0.00005
			Manganese	µg/L	0.061	0.05

Table 2 – Summary of Annual 2023 Shallow Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Downgradient	G-09S	7/11/23	Conductivity	µmhos/cm	950	700
			pH	std units	6.20	6.5-8.5
			Sodium	mg/L	93.4	20
			TDS	mg/L	630	500
			Arsenic	mg/L	0.000802	0.00005
		10/18/23	Conductivity	µmhos/cm	940	700
			pH	std units	6.00	6.5-8.5
			Sodium	mg/L	96	20
			TDS	mg/L	660	500
			Arsenic	mg/L	0.000857	0.00005
	G-10S	1/10/23	Conductivity	µmhos/cm	1600	700
			pH	std units	6.45	6.5-8.5
			Sodium	mg/L	190	20
			Sulfate	mg/L	295	250
			TDS	mg/L	870	500
			Arsenic	mg/L	0.00318	0.00005
			Iron	mg/L	3.06	0.3
			Manganese	mg/L	3.09	0.05
		4/19/23	Conductivity	µmhos/cm	1300	700
			Sodium	mg/L	187	20
			Sulfate	mg/L	288	250
			TDS	mg/L	970	500
			Arsenic	mg/L	0.00355	0.00005
			Iron	mg/L	3.35	0.3
			Manganese	mg/L	3.26	0.05
		7/11/23	Conductivity	µmhos/cm	1300	700
			Sodium	mg/L	174	20
			TDS	mg/L	980	500
			Arsenic	mg/L	0.00589	0.00005
			Iron	mg/L	9.51	0.3
			Manganese	mg/L	3.15	0.05
		10/18/23	Conductivity	µmhos/cm	1300	700
			pH	std units	6.30	6.5-8.5
			Sodium	mg/L	180	20
			Sulfate	mg/L	270	250
			TDS	mg/L	840	500
			Arsenic	mg/L	0.00715	0.00005
			Iron	mg/L	3.09	0.3
			Manganese	mg/L	3.07	0.05
	G-11S	4/19/23	Sodium	mg/L	41.4	20
			Arsenic	mg/L	0.00045	0.00005
		10/18/23	pH	std units	5.89	6.5-8.5
			Sodium	mg/L	41.2	20
			Arsenic	mg/L	0.000424	0.00005
			Manganese	mg/L	0.128	0.05
Upgradient	G-14S	4/18/23	pH	std units	9.17	6.5-8.5
			Sodium	mg/L	108.0	20
			Arsenic	mg/L	0.00306	0.00005

Table 2 – Summary of Annual 2023 Shallow Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Upgradient	G-14S	10/17/23	Sodium Arsenic	mg/L mg/L	99.4 0.00318	20 0.00005
	G-24S	4/18/23	Sodium Arsenic	mg/L mg/L	90.7 0.000678	20 0.00005
	G-24S	10/17/23	Sodium Arsenic	mg/L mg/L	86.2 0.000702	20 0.00005

2.3.2 Deep Wells

- The calcium concentrations detected in wells G-01D and G-02D during the second quarter 2023 were historical lows for those wells.
- The VOCs detected in deep wells during the 2023 sampling events include:
    - 1,2-dichloropropane (0.17 µg/L) and vinyl chloride (0.23 µg/L) were detected in deep zone well G-09D during the first quarter 2023 monitoring event. Vinyl chloride was also detected in the third quarter sample from well G-09D at a concentration of 0.24 µg/L. Only the vinyl chloride concentrations exceeded the groundwater standard of 0.02 µg/L. No groundwater standard is established for 1,2-dichloropropane.
    - Acetone was detected in well G-08D2 at a concentration of 5.2 µg/L during the second quarter. No groundwater standard is established for acetone.

Table 3 – Summary of Annual 2023 Deep Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Downgradient	G-01D	4/18/23	pH Sodium Arsenic	std units mg/L mg/L	9.49 150 0.00105	6.5-8.5 20 0.00005
		10/17/23	pH Sodium Arsenic	std units mg/L mg/L	8.65 136 0.00122	6.5-8.5 20 0.00005
	G-02D	4/18/23	Sodium Arsenic	mg/L mg/L	184 0.00529	20 0.00005
		10/18/23	Sodium Arsenic	mg/L mg/L	87.8 0.00471	20 0.00005
	G-06B	4/18/23	Sodium Arsenic	mg/L mg/L	184 0.00529	20 0.00005
		10/18/23	Sodium Arsenic	mg/L mg/L	165 0.00472	20 0.00005
	G-08D2	4/18/23	pH Sodium Arsenic	std units mg/L mg/L	9.91 118 0.00125	6.5-8.5 20 0.00005
		10/17/23	pH Sodium Arsenic	std units mg/L mg/L	9.01 104 0.000625	6.5-8.5 20 0.00005

Table 3 – Summary of Annual 2023 Deep Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Downgradient	G-09D	1/10/23	pH	std units	8.93	6.5-8.5
			Sodium	mg/L	163	20
			Arsenic	mg/L	0.00303	0.00005
			Vinyl chloride	µg/L	0.23	0.02
		4/19/23	pH	std units	9.33	6.5-8.5
			Sodium	mg/L	165	20
			Arsenic	mg/L	0.00328	0.00005
		7/11/23	pH	std units	8.63	6.5-8.5
			Sodium	mg/L	154	20
			Arsenic	mg/L	0.00365	0.00005
			Vinyl chloride	µg/L	0.24	0.05
		10/18/23	Conductivity	µmhos/cm	830	700
			pH	std units	8.64	6.5-8.5
			Sodium	mg/L	204	20
			TDS	mg/L	510	500
			Arsenic	mg/L	0.00232	0.00005
	G-10D	1/10/23	Conductivity	µmhos/cm	1600	700
			Sodium	mg/L	358	20
			Sulfate	mg/L	267	250
			TDS	mg/L	980	500
			Arsenic	mg/L	0.00117	0.00005
			Manganese	mg/L	0.329	0.05
		4/19/23	Conductivity	µmhos/cm	1500	700
			Sodium	mg/L	361	20
			Sulfate	mg/L	263	250
			TDS	mg/L	940	500
			Arsenic	mg/L	0.00138	0.00005
			Manganese	mg/L	0.318	0.05
		7/11/23	Conductivity	µmhos/cm	1500	700
			Sodium	mg/L	333	20
			TDS	mg/L	1100	500
			Arsenic	mg/L	0.00109	0.00005
			Manganese	mg/L	0.304	0.05
		10/18/23	Conductivity	µmhos/cm	1500	700
			Sodium	mg/L	337	20
			TDS	mg/L	950	500
			Arsenic	mg/L	0.00126	0.00005
			Iron	mg/L	0.416	0.3
			Manganese	mg/L	0.272	0.05
	G-13D	4/19/23	pH	std units	9.41	6.5-8.5
			Sodium	mg/L	118	20
			Arsenic	mg/L	0.000161	0.00005
		10/18/23	Sodium	mg/L	111	20
			Arsenic	mg/L	0.000203	0.00005
Upgradient	G-14D	4/18/23	pH	std units	9.72	6.5-8.5
			Sodium	mg/L	128	20
			Arsenic	mg/L	0.000941	0.00005

Table 3 – Summary of Annual 2023 Deep Well Standard Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Groundwater Standard
Upgradient	G-14D	10/17/23	pH Sodium Arsenic	std units mg/L mg/L	8.80 114 0.000936	6.5-8.5 20 0.00005
Upgradient	G-24D	4/18/23	pH Sodium	mg/L mg/L	8.70 132	20 0.00005
		10/17/23	Sodium	mg/L	122	20

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 2023 Shallow Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-01A	4/18/23	pH	std units	6.28	6.60-9.39
		10/17/23	pH	std units	4.77	6.60-9.39
	G-04A	4/18/23	Bicarbonate Calcium Chloride Conductivity pH Potassium Cobalt	mg/L mg/L mg/L µmhos/cm std units mg/L mg/L	220 53.9 28.2 600 6.18 2.67 0.014	210 21.065 16.8276 540 6.60-9.39 2.64 0.005
			Not sampled due to insufficient water			
	G-08D1	4/18/23	pH	std units	9.65	6.60-9.39
		10/17/23	Nitrite nitrogen	mg/L	0.034	0.0093

Table 4 – Summary of Annual 2023 Shallow Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-09S	1/10/23	Alkalinity	mg/L	350	230
			Bicarbonate	mg/L	350	210
			Calcium	mg/L	74.9	22.8736
			COD	mg/L	26	18
			Conductivity	µmhos/cm	920	540
			pH	std units	6.00	6.60-9.39
			Potassium	mg/L	4.63	2.6065
			TDS	mg/L	590	381.4928
			TOC	mg/L	58.0	14
			Selenium	mg/L	0.00121	0.0004
		4/19/23	Alkalinity	mg/L	340	230
			Bicarbonate	mg/L	340	210
			Calcium	mg/L	82.4	21.056
			Conductivity	µmhos/cm	940	540
			pH	std units	6.41	6.60-9.39
			Potassium	mg/L	6.16	2.64
			TDS	mg/L	610	373.9926
			Selenium	mg/L	0.00101	0.0004
		7/11/23	Alkalinity	mg/L	360	230
			Bicarbonate	mg/L	360	210
			Calcium	mg/L	82.8	21.056
			Conductivity	µmhos/cm	950	540
			pH	std units	6.20	6.60-9.39
			Potassium	mg/L	5.71	2.64
			TDS	mg/L	630	373.9926
			Selenium	mg/L	0.00097	0.0004
		10/18/23	Alkalinity	mg/L	350	230
			Bicarbonate	mg/L	350	210
			Calcium	mg/L	84.0	21.056
			Conductivity	µmhos/cm	940	540
			pH	std units	6.00	6.60-9.39
			Potassium	mg/L	5.65	2.64
			TDS	mg/L	660	373.9926
			Selenium	mg/L	0.001	0.0004
	G-10S	1/10/23	Alkalinity	mg/L	460	230
			Bicarbonate	mg/L	460	210
			Calcium	mg/L	101	22.8736
			COD	mg/L	21	18
			Conductivity	µmhos/cm	1600	540
			Nitrite	mg/L	0.015	0.009
			pH	std units	6.45	6.60-9.39
			Potassium	mg/L	4.57	2.6065
			Sodium	mg/L	190	119.6577
			TDS	mg/L	870	381.4928

Table 4 – Summary of Annual 2023 Shallow Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-10S	4/19/23	Alkalinity	mg/L	440	230
			Bicarbonate	mg/L	440	210
			Calcium	mg/L	103	21.056
			COD	mg/L	21	18
			Conductivity	µmhos/cm	1300	540
			Potassium	mg/L	4.62	2.64
			Sodium	mg/L	187	120.347
			TDS	mg/L	970	373.9926
		7/11/23	Alkalinity	mg/L	460	230
			Bicarbonate	mg/L	460	210
			Calcium	mg/L	101	21.056
			COD	mg/L	38	18
			Conductivity	µmhos/cm	1300	540
			Potassium	mg/L	4.05	2.64
			Sodium	mg/L	174	120.347
			TDS	mg/L	980	373.9926
			Arsenic	mg/L	0.00589	0.0045
		10/18/23	Alkalinity	mg/L	470	230
			Bicarbonate	mg/L	470	210
			Calcium	mg/L	100	21.056
			Conductivity	µmhos/cm	1300	540
			Nitrite	mg/L	0.027	0.0093
			pH	std units	6.30	6.60-9.39
			Potassium	mg/L	4.04	2.64
			Sodium	mg/L	180	120.347
			TDS	mg/L	840	373.9926
			Arsenic	mg/L	0.00715	0.0045
	G-11S	4/19/22	None	--	--	--
		10/18/23	pH	std units	5.89	6.60-9.39
Upgradient	G-14S	4/19/22	None	--	--	--
		10/17/23	Nitrite nitrogen	mg/L	0.035	0.0093
	G-24S	4/18/22	Potassium	mg/L	99.1	2.64
		10/17/23	None	--	--	--

Significant increasing and decreasing concentration trends for the second semiannual 2023 monitoring events and for 2023 overall were noted in shallow groundwater, as summarized in ***Table 5*** below.

Table 5 – Significant Trends, Shallow Wells 2023

Well	Date	Significant Trends			
		Second Semiannual 2023		2023 Overall	
		Increasing	Decreasing	Increasing	Decreasing
Downgradient Wells					
G-01A	10/17/23	None	**Sodium**	None	None
G-04A	10/17/23	NS	NS	Calcium, chloride, conductivity, magnesium, potassium, sodium, manganese	None
G-08D1	10/17/23	Sodium	Chloride	Sodium	Chloride
G-09S	7/11/23	None	Sulfate, TDS, **manganese**	None	Calcium, conductivity, sulfate, TDS, manganese
G-09S	10/18/23	None	Sulfate, manganese		
G-10S	7/11/23	None	Chloride	Alkalinity, bicarbonate, TOC	Chloride, sulfate, TDS
G-10S	10/18/23	None	Chloride		
G-11S	10/18/23	Calcium, magnesium, manganese	Alkalinity, bicarbonate, sodium, sulfate, **arsenic**	Calcium, magnesium, manganese	Alkalinity, bicarbonate, conductivity, sodium, sulfate, arsenic
Upgradient Wells					
G-14S	10/17/23	Arsenic	Chloride, nitrate	Arsenic	Chloride, nitrate, sulfate
G-24S	10/17/23	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

NS = Not sampled due to insufficient water

Decreasing trends in the shallow wells outnumbered increasing trends during all four 2023 sampling events, including the first quarter sampling event (*8 decreasing/2 increasing*), second quarter sampling event (*19 decreasing/13 increasing*), third quarter sampling event (*4 decreasing/0 increasing*), and fourth quarter sampling event (*17 decreasing/5 increasing*). Two increasing trends in arsenic were noted in upgradient well G-14S during the 2023 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 2023 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 2023 Deep Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-01D	4/18/23	Conductivity	µmhos/cm	570	530
			Sodium	mg/L	150	137.1404
		10/17/23	Chloride	mg/L	7.71	6.86
			Conductivity	µmhos/cm	590	530
	G-02D	4/18/23	Arsenic	mg/L	0.00425	0.0015
		10/18/23	pH	std units	6.96	7.42-9.88
			Arsenic	mg/L	0.00471	0.0015
	G-06B	4/18/23	Conductivity	µmhos/cm	650	530
			Nitrate	mg/L	0.58	0.28
			Sodium	mg/L	184	137.1404
			TDS	mg/L	400	355
			Arsenic	mg/L	0.00529	0.0015
		10/17/23	Chloride	mg/L	7.18	6.86
			Conductivity	µmhos/cm	660	530
			Nitrate	mg/L	0.3	0.28
			pH	std units	7.32	7.42-9.88
			Sodium	mg/L	165	137.1404
			TDS	mg/L	370	355
			Arsenic	mg/L	0.00472	0.0015
	G-08D2	4/18/23	pH	std units	9.91	7.42-9.88
		10/17/23	Nitrite	mg/L	0.068	0.042
	G-09D	1/10/23	Conductivity	µmhos/cm	660	530
			Sodium	mg/L	163	133.7466
			Sulfate	mg/L	123	66.05
			TDS	mg/L	400	355
			Arsenic	mg/L	0.00303	0.0015
		4/19/23	Conductivity	µmhos/cm	630	530
			Sodium	mg/L	165	137.1404
			Sulfate	mg/L	107	66.05
			Arsenic	mg/L	0.00328	0.0015
		7/11/23	Conductivity	µmhos/cm	650	530
			Nitrite	mg/L	0.065	0.042
			Sodium	mg/L	154	137.1404
			Sulfate	mg/L	108	66.05
			TDS	mg/L	410	355
			Arsenic	mg/L	0.00365	0.0015

Table 6 – Summary of Annual 2023 Deep Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-09D	10/18/23	Calcium	mg/L	1.96	1.59
			Chloride	mg/L	13.1	6.86
			Conductivity	µmhos/cm	830	530
			Sodium	mg/L	204	137.1404
			Sulfate	mg/L	171	66.05
			TDS	mg/L	510	355
			Arsenic	mg/L	0.00232	0.0015
	G-10D	1/10/23	Alkalinity	mg/L	520	280
			Ammonia	mg/L	0.383	0.249
			Bicarbonate	mg/L	520	280
			Calcium	mg/L	20.3	1.59
			Chloride	mg/L	14.4	6.86
			Conductivity	µmhos/cm	1600	530
			Sodium	mg/L	358	133.7466
			Sulfate	mg/L	267	66.05
			TDS	mg/L	980	355
			Manganese	mg/L	0.329	0.0121
		4/19/23	Alkalinity	mg/L	510	280
			Ammonia	mg/L	0.33	0.249
			Bicarbonate	mg/L	510	280
			Calcium	mg/L	20.3	1.59
			Chloride	mg/L	14.6	6.86
			Conductivity	µmhos/cm	1500	530
			pH	std units	7.14	7.42-9.88
			Sodium	mg/L	361	133.7466
			Sulfate	mg/L	263	66.05
			TDS	mg/L	940	355
			Manganese	mg/L	0.318	0.012
		7/11/23	Alkalinity	mg/L	520	280
			Ammonia	mg/L	0.345	0.249
			Bicarbonate	mg/L	520	280
			Calcium	mg/L	18.5	1.59
			COD	mg/L	36	28
			Chloride	mg/L	15.3	6.86
			Conductivity	µmhos/cm	1500	530
			pH	std units	7.01	7.42-9.88
			Sodium	mg/L	333	137.1404
			Sulfate	mg/L	229	66.05
			TDS	mg/L	1100	355
			Manganese	mg/L	0.304	0.012

Table 6 – Summary of Annual 2023 Deep Well Prediction Limit Exceedances

Well Type	Well ID	Sample Date	Parameter	Units	Result	Prediction Limit
Downgradient	G-10D	10/18/23	Alkalinity	mg/L	460	280
			Ammonia	mg/L	0.31	0.249
			Bicarbonate	mg/L	460	280
			Calcium	mg/L	17.6	1.59
			Chloride	mg/L	19.3	6.86
			Conductivity	µmhos/cm	1500	530
			pH	std units	6.78	7.42-9.88
			Sodium	mg/L	337	137.1404
			Sulfate	mg/L	250	66.05
			TDS	mg/L	950	355
			Manganese	mg/L	0.272	0.012
	G-13D	4/19/23	Chloride	mg/L	12.2	6.86
		10/18/23	Chloride	mg/L	11.8	6.86
Upgradient	G-14D	4/18/23	None	--	--	--
		10/17/23	Nitrite	mg/L	0.065	0.042
	G-24D	4/18/23	None	--	--	--
		10/17/23	None	--	--	--

The trends noted in deep wells 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 2023 sampling events, including the first quarter sampling event (*7 decreasing/2 increasing*), second quarter event (*23 decreasing/9 increasing*), third quarter sampling event (*8 decreasing/2 increasing*), and fourth quarter sampling event (*20 decreasing/7 increasing*). Two of the increasing trends were noted in upgradient well G-24D during the fourth quarter event.

Table 7 – Significant Trends, Deep Wells 2023

Well	Date	Significant Trends			
		Second Semiannual 2023		2023 Overall	
		Increasing	Decreasing	Increasing	Decreasing
Downgradient Wells					
G-01D	10/17/23	None	Alkalinity, bicarbonate, calcium, **sodium**	pH	Alkalinity, bicarbonate, calcium, chloride, sodium, sulfate, TDS
G-02D	10/18/23	None	Calcium, chloride, conductivity, nitrate, pH, **sulfate**, TDS	None	Calcium, chloride, conductivity, nitrate, pH, sodium, TDS
G-06B	10/17/23	Arsenic	None	Arsenic	None
G-08D2	10/17/23	Sodium, arsenic	Chloride	Sodium, arsenic	Chloride

Table 7 – Significant Trends, Deep Wells 2023

Well	Date	Significant Trends			
		Second Semiannual 2023		2023 Overall	
		Increasing	Decreasing	Increasing	Decreasing
G-09D	7/11/23	None	**Calcium**, lead	None	Calcium, arsenic, lead
	10/18/23	None	Lead		
G-10D	7/11/23	Alkalinity, bicarbonate	Calcium, chloride, magnesium, sulfate, **iron**, manganese	Alkalinity, bicarbonate	Calcium, chloride, magnesium, sulfate, iron, manganese
	10/18/23	Alkalinity, bicarbonate	Calcium, chloride, magnesium, sulfate, iron, manganese		
G-13D	10/18/23	None	Sulfate	None	Sulfate
Upgradient Wells					
G-14D	10/17/23	None	None	None	Chloride
G-24D	10/17/23	Magnesium, sodium	None	Magnesium, 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 2023 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 31, 2023 and from two locations on July 11, 2023 in accordance with the **SAP** procedures. The 2023 surface water analytical results were compared to applicable criteria in **Chapter 173-201A WAC** as summarized ***Table 8*** below.

Table 8 – Semiannual 2023 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	1/31/23	42	120	1.4	**6.70**
CC-B1	1/31/23	3	140	1.1	**6.84**
CC-D	1/31/23	NS	NS	NS	NS
CC-F	1/31/23	32	140	1.2	**6.87**
CC-NSDP	1/31/23	ND<1	180	1.0	6.34
Third Quarter					
CC-A1	7/11/23	NS	NS	NS	NS
CC-B1	7/11/23	NS	NS	NS	NS
CC-D	7/11/23	NS	NS	NS	NS
CC-F	7/11/23	NS	NS	NS	NS
CC-NSDP	7/11/23	5	450	ND<0.01	**6.79**

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

Except for sample point CC-NSDP during the first quarter sampling event, all the pH concentrations detected during the 2023 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 2023 surface water sampling events.

4.0 LANDFILL GAS MONITORING

Landfill gas readings were collected from eight gas probes in accordance with the SAP on August 18 and November 28, 2023. Landfill gas readings were also collected from seven vaults, six barhole probes, and two lift station vaults on those dates. The 2023 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 2023.

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 the leak detection vaults during 2023.

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 2023, 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, 2023

Month	Total (gallons)
January	725,760
February	145,650
March	173,280
April	87,420
May	115,080
June	77,040
July	1,167,210
August	30,120
September	27,090
October	21,660
November	306,600
December	543,456
Maximum:	1,167,210
Minimum:	21,660
Monthly Average:	285,031
2023 Total:	**3,420,366**

5.1 LEACHATE SAMPLING

On January 26, 2023, 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 and 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
- 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 13. 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 PAHs, 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	1/31/23	6.60	35	810	308
SP-4	1/31/23	6.40	3.8	590	3

Table 11 – Leachate Vault Results – Metals

Location ID	Date	Antimony (200.8)	Arsenic (200.8)	Barium (200.7)	Iron (200.7)	Lead (200.8)	Manganese (200.7)	Nickel (200.7)	Selenium (200.8)	Vanadium (200.7)	Zinc (200.7)
Units		µg/L	µg/L	mg/L	mg/L	µg/L	mg/L	mg/L	µg/L	mg/L	mg/L
SP-1	1/31/23	0.62	14.6	0.516	140	0.678	0.725	0.011	2.24	0.045	0.206
Location ID	Date	Antimony (200.8)	Arsenic (200.8)	Barium (200.7)	Iron (200.7)	Lead (200.8)	Mercury (245.1)	Nickel (200.7)	Selenium (200.8)	Vanadium (200.7)	Zinc (200.7)
Units			µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L
SP-4	1/31/23	--	--	--	--	--	0.00041	ND<0.01	--	--	0.024

Table 12 – Leachate Vault Results – VOCs

Location ID	Date	1,4-Dichlorobenzene	Acetone
Units		µg/L	µg/L
SP-1	1/31/23	1.2	9.4
SP-4	1/31/23	--	--

-- = Not analyzed

Table 13 – Leachate Vault Results – SVOCs

Location ID	Date	bis(2-Ethylhexyl) Phthalate	Diethyl Phthalate	Dimethyl Phthalate	Di-n-butyl phthalate
Units		µg/L	µg/L	µg/L	µg/L
SP-1	1/31/23	10.6	2.28	2.25	1.27
SP-4	1/31/23	--	--	--	

-- = Not analyzed

6.0 SUMMARY AND RECOMMENDATIONS

6.1 SUMMARY

The groundwater, surface water, leachate, and landfill gas monitoring data collected during the 2023 monitoring events indicate the following:

- The groundwater elevations, flow direction, and gradient measured during the 2023 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 2023 monitoring event.
- Overall, significantly more decreasing trends were noted in both zones during all four monitoring events (*48 decreasing/20 increasing trends in the shallow zone, and 58 decreasing/20 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 – 21 of 36 decreasing trends in shallow downgradient wells and 42 of 43 decreasing trends in deep downgradient wells. Five of the increasing trends noted during the second quarter and fourth quarter occurred in upgradient wells G-14S, 14D, 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 and third quarter samples from deep well G-09D. Low concentrations of 1,2-dichloropropane, cis-1,2-dichloroethane, and 1,2-dichlorobenzene were also detected in the first quarter 2023 samples from wells G-09D, G-10S, and G-09S, respectively. In addition, the second quarter sample from well G-08D2 contained a low concentration of acetone.
- Slight exceedances of the surface water quality goals for pH were noted in four of the five surface water samples collected during 2023. 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 2023.
- 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.

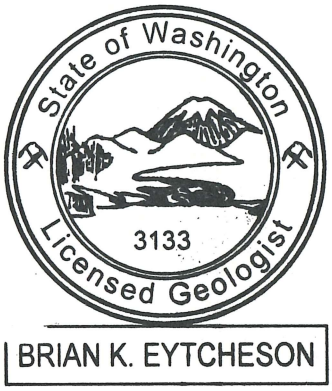
6.4 SIGNATURES AND LICENSES

Brian K. Eytcheson

2/8/24

Brian K. Eytcheson, LG
SCPW – Solid Waste Division

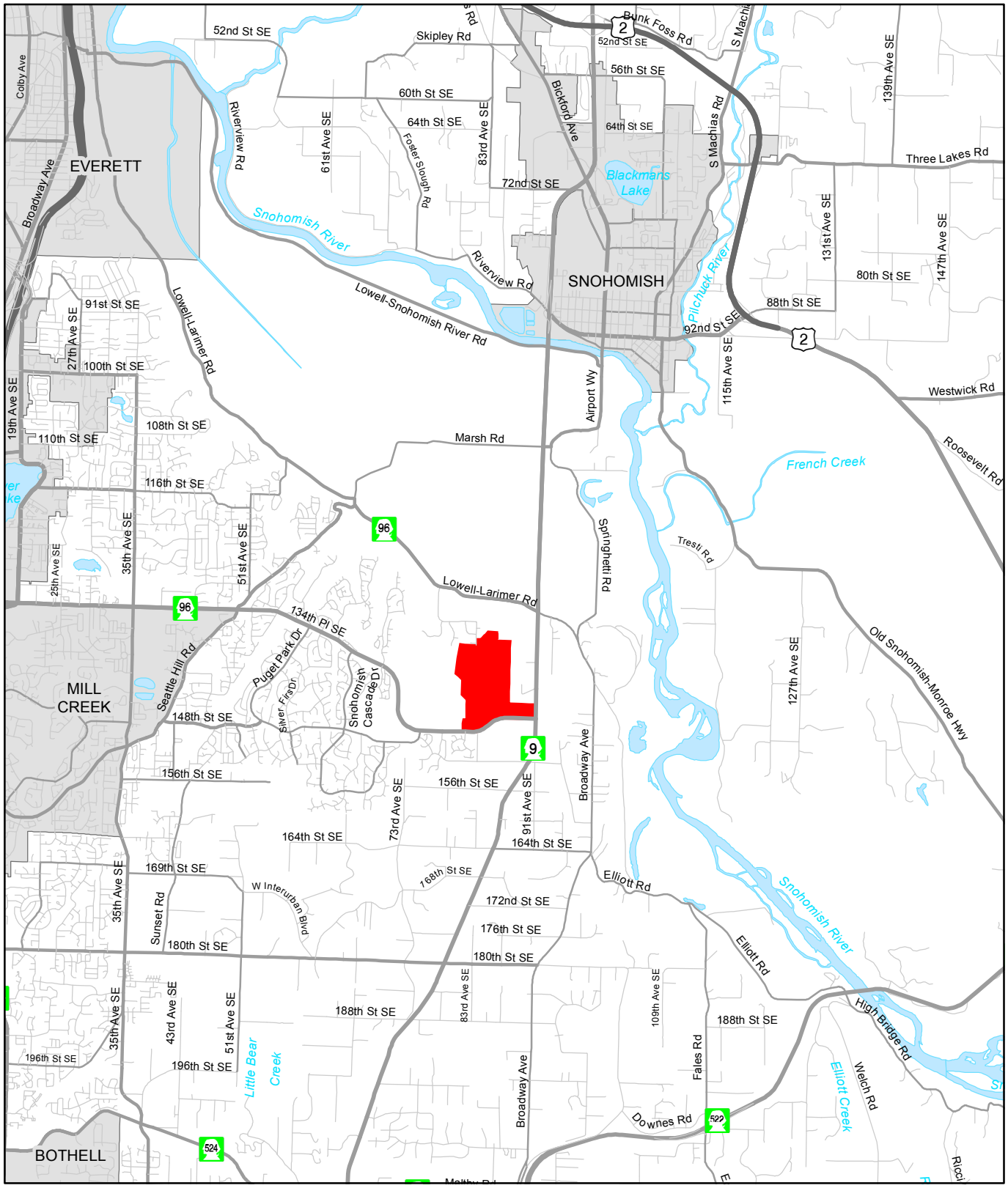
Date



Figures

Figure 1

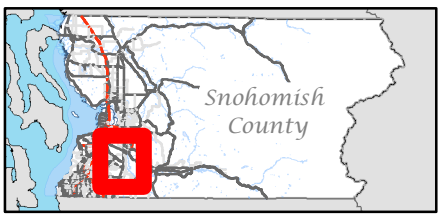
Cathcart Landfill Vicinity Map



0 0.5 1 2 Miles

0 0.5 1 2 3 Kilometers

N W E S



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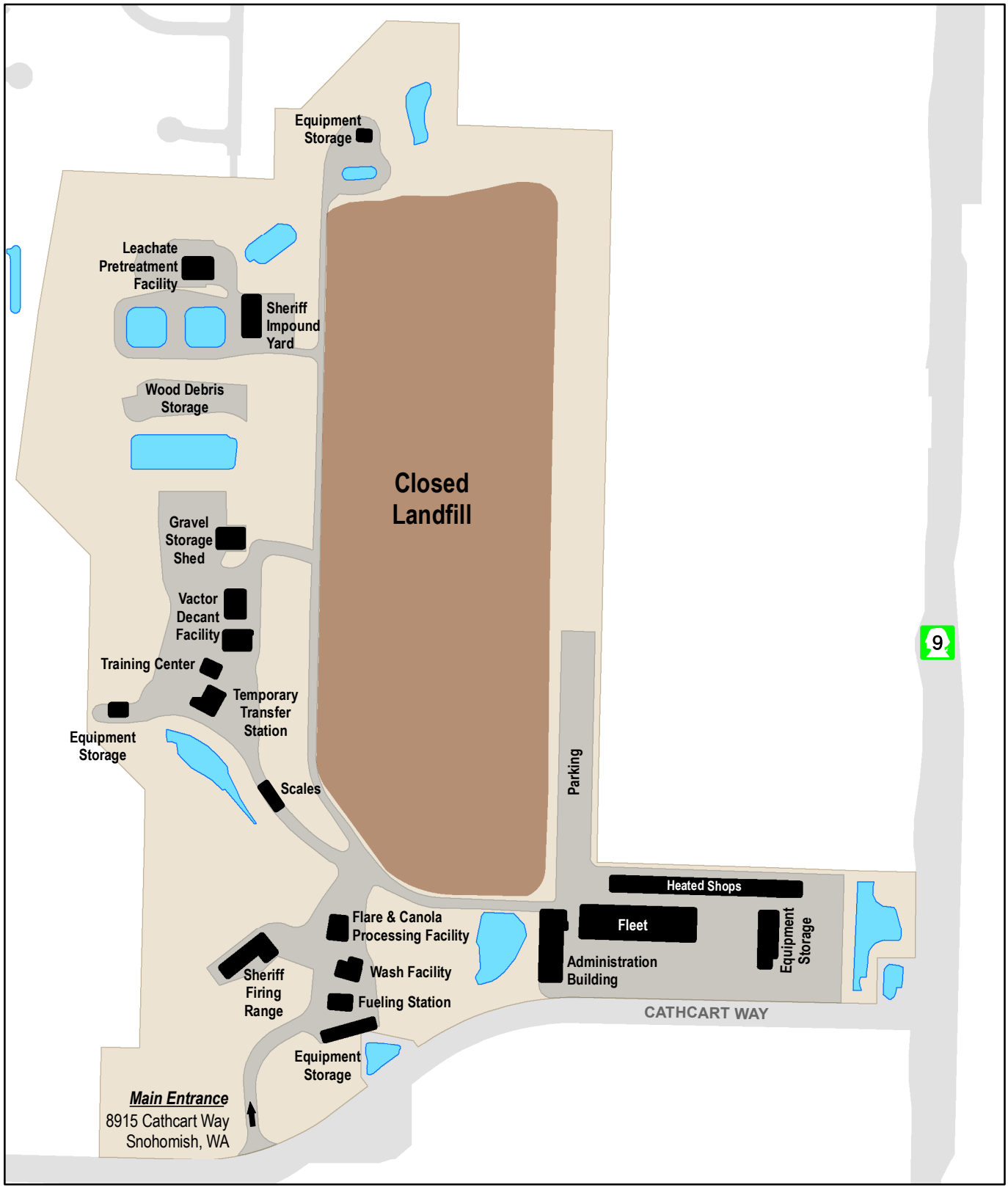
Solid Waste Division
March 16, 2010

Figure 2

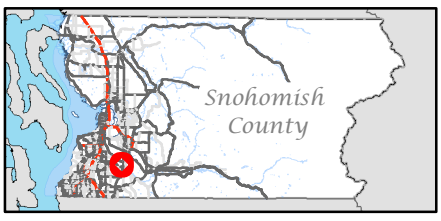
Cathcart Landfill Site Map



0 0.045 0.09 0.18 Miles

0 180 360 720 1,080 Feet

N W E S



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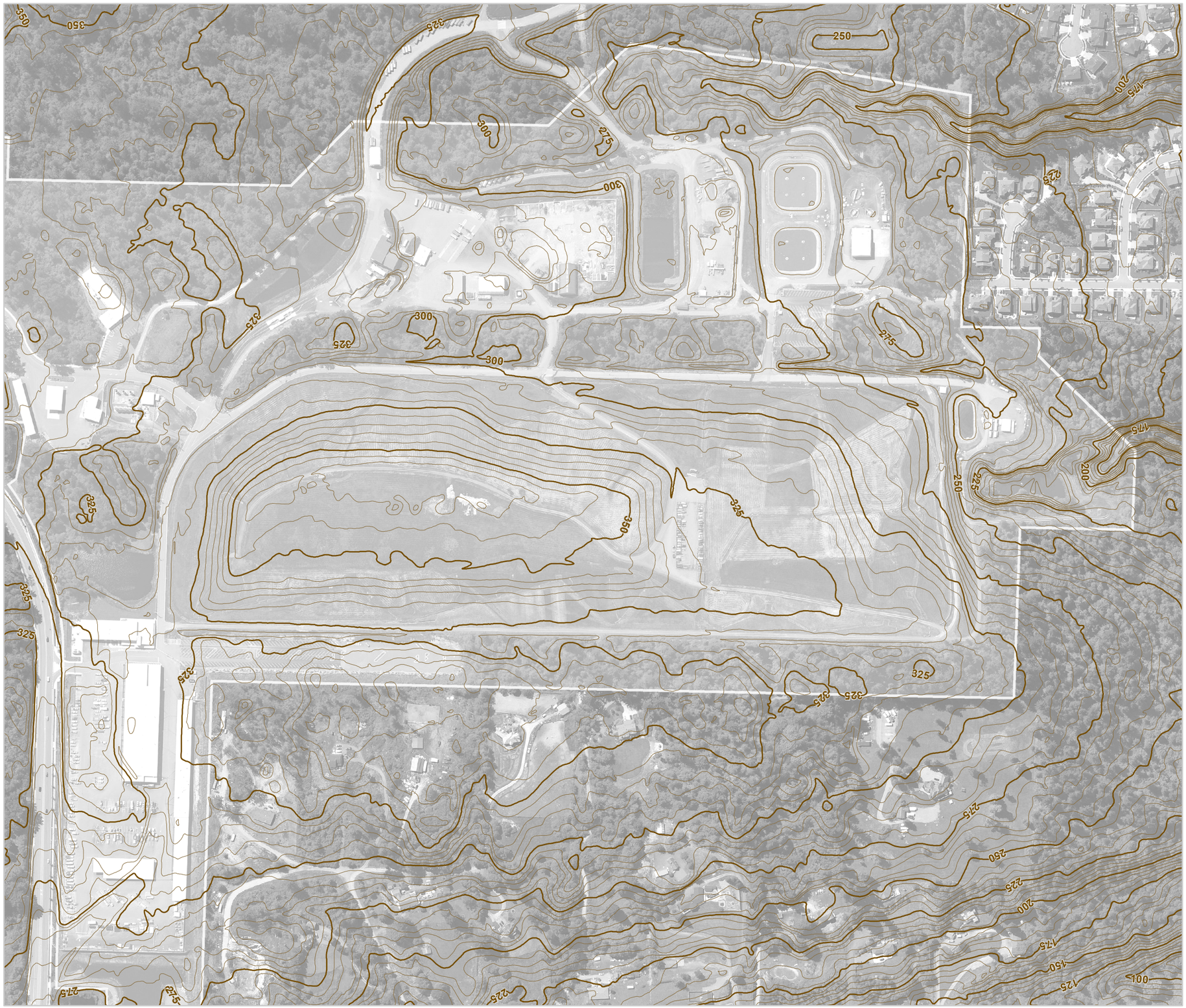
March 16, 2010

Figure 3

Cathcart Landfill

Topography



Map Features

- Parcel Boundary
- Subject Property Boundary
- 5 Foot Contours

N

W

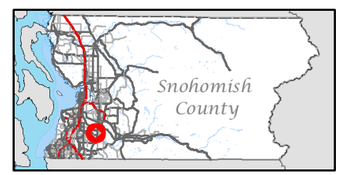
E

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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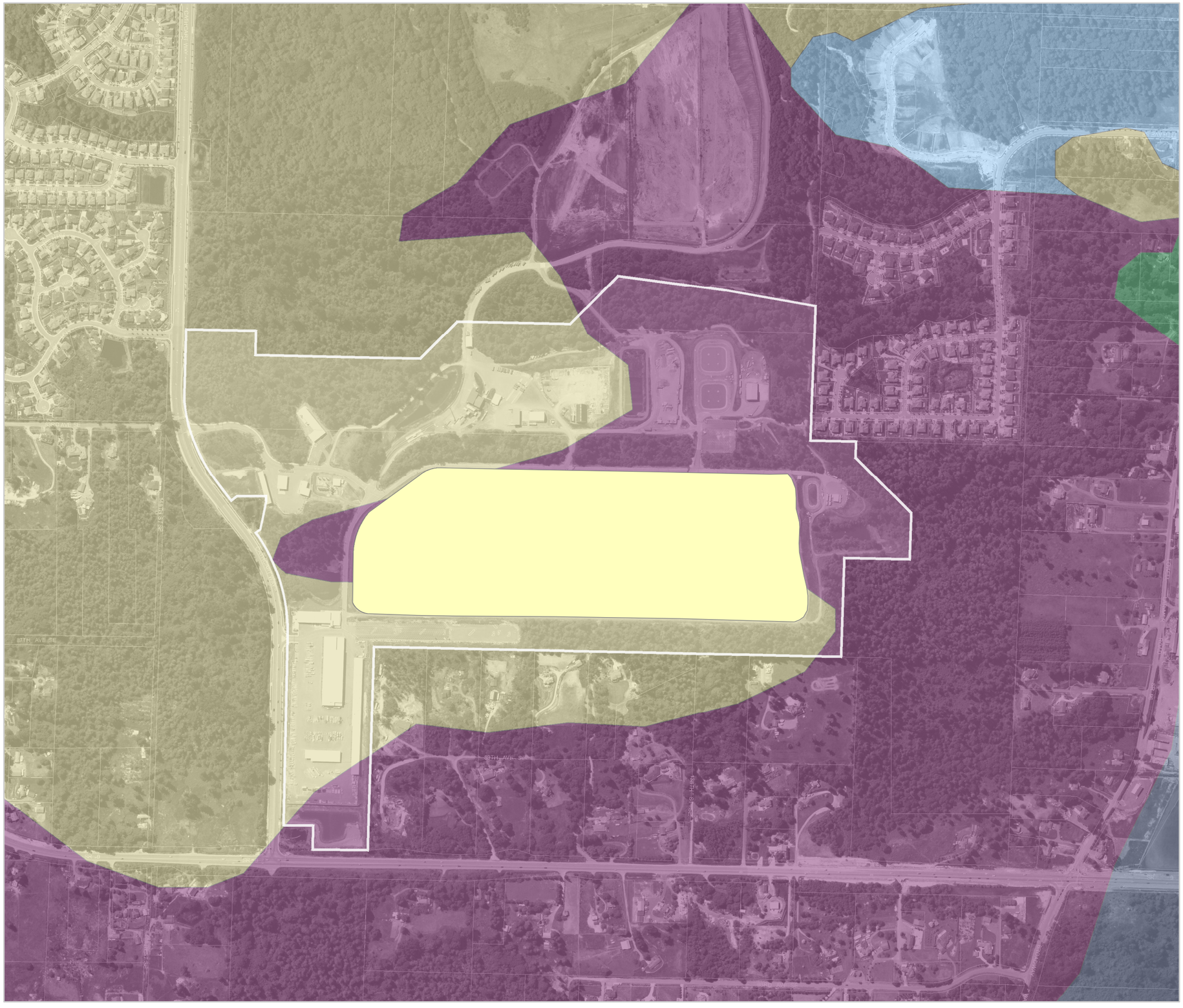
March 24, 2010

Figure 4

Cathcart Landfill

Geologic Map



Map Features

- Parcel Boundary
- Subject Property Boundary

Geologic Description

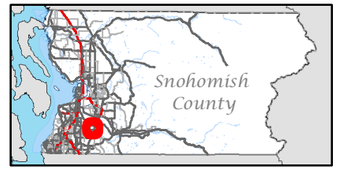
- Recent Alluvium (Qyal)
- Vashon Recessional Outwash (Qvr)
- Vashon Glacial Till (Qvt)
- Vashon Advance Outwash (Qva)
- Transitional Beds (Qtb)
- Modified Land

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



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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

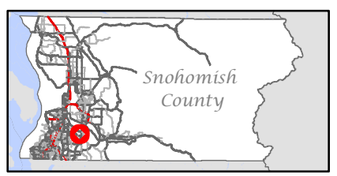
Inactive / Removed Wells

- Abandoned / Decommissioned
- Inactive

Additional Sampling Points

- Gas Probe
- Surface Water Sample Locations

0 125 250 500 750 1,000 Feet



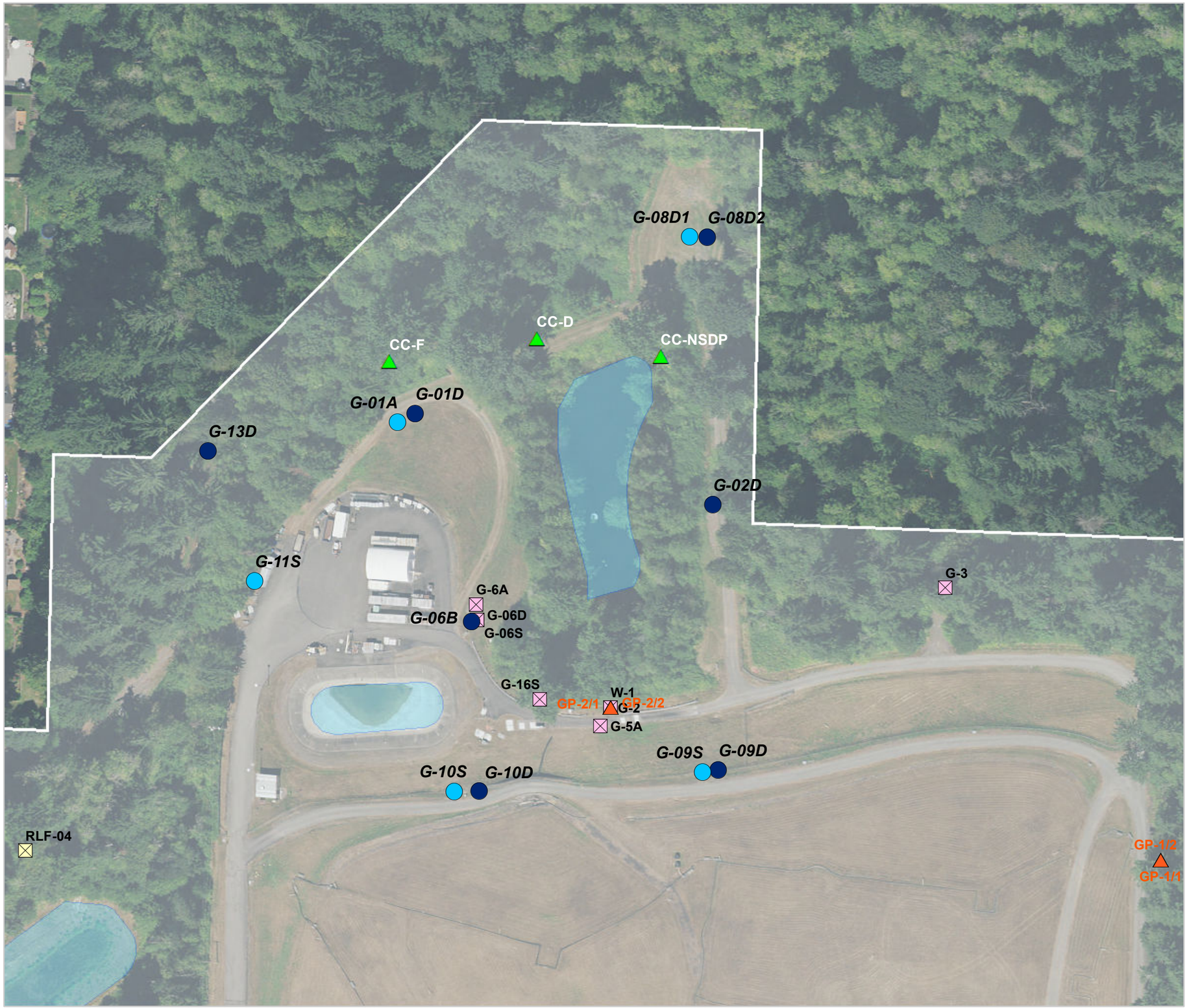
N

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

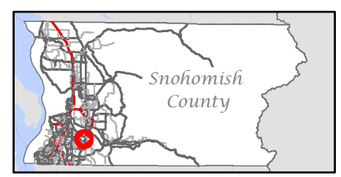
Inactive / Removed Wells

- Abandoned / Decommissioned
- Inactive

Additional Sampling Points

- Gas Probe
- Water Sample Locations

0 37.5 75 150 225 300 Feet



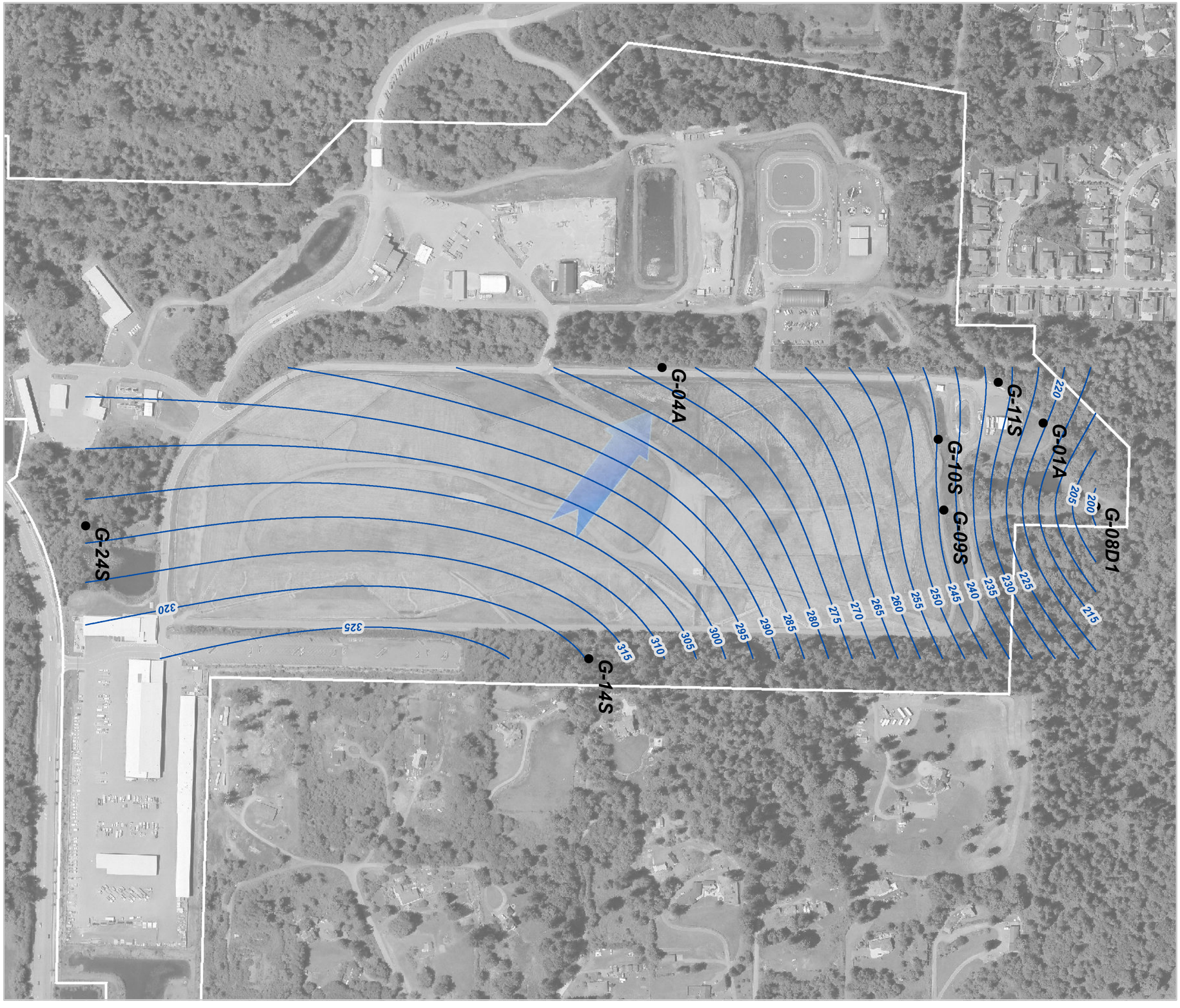
N

Snohomish County
Public Works
Solid Waste Division
November 12, 2019

Figure 6a

Cathcart Landfill

Shallow Aquifer Groundwater Elevation Contours Second Quarter 2023



DIRECTION OF GROUNDWATER FLOW
0.00336 ft / day
0.134 ft / year
124.26 degrees to the positive x - axis

PARCEL BOUNDARY

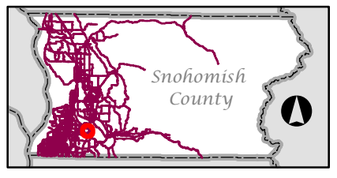
SUBJECT PROPERTY BOUNDARY

5 FT CONTOUR

WELL LOCATION

WELL ID	DATE	ELEVATION
G-01A	4/18/2023	220.85
G-04A	4/18/2023	272.52
G-08D1	4/18/2023	198.81
G-09S	4/18/2023	243.57
G-10S	4/18/2023	244.69
G-11S	4/18/2023	232.72
G-14S	4/18/2023	319.66
G-24S	4/18/2023	307.89

0 125 250 500 750 1,000
Feet



N

Snohomish County
Public Works
Solid Waste Division
Date: 8/28/2023

Document Path: I:\pw\sw\Projects\Groundwater\ArcMaps\GroundwaterContours_Cathcart_Shallow1.mxd

Figure 6b

Cathcart Landfill

Deep Aquifer Groundwater Elevation Contours Second Quarter 2023

DIRECTION OF GROUNDWATER FLOW
0.0115 ft / day
4.21 ft / year
139.09 degrees to the positive x - axis

PARCEL BOUNDARY

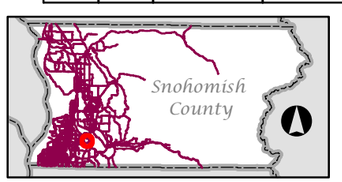
SUBJECT PROPERTY BOUNDARY

5 FT CONTOUR

WELL LOCATION

WELL ID	DATE	ELEVATION
G-01D	4/18/2023	206.84
G-02D	4/18/2023	213.08
G-06B	4/18/2023	212.94
G-08D2	4/18/2023	219.11
G-09D	4/18/2023	223.35
G-10D	4/18/2023	238.96
G-13D	4/18/2023	221.69
G-14D	4/18/2023	299.08
G-24D	4/18/2023	301.63

0 120 240 480 720 960
Feet



N

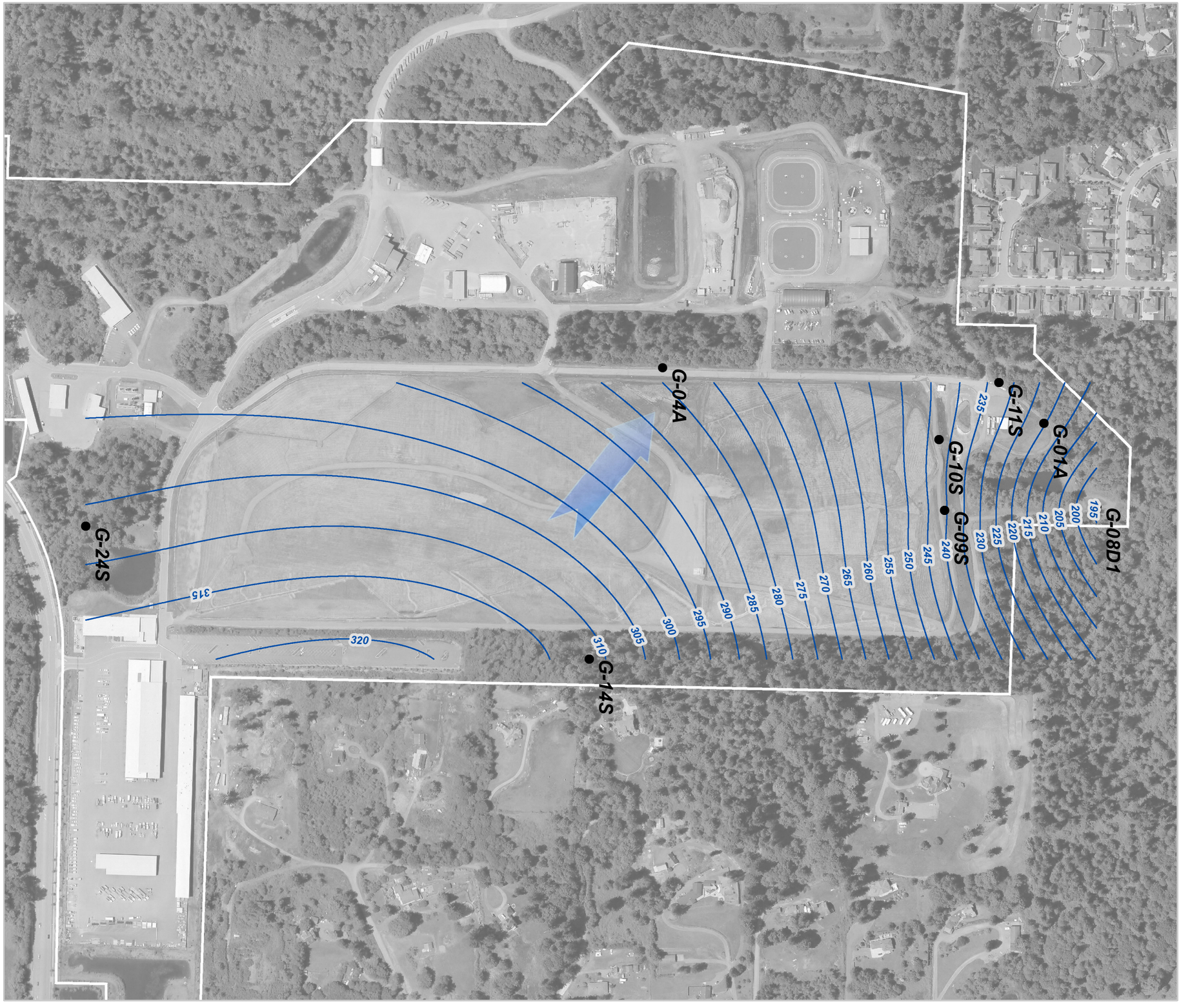
Snohomish County
Public Works
Solid Waste Division
Date: 8/28/2023

Document Path: I:\pw\sw\Projects\Groundwater\ArcMaps\GroundwaterContours_Cathcart_Deepa.mxd

Figure 6c

Cathcart Landfill

Shallow Aquifer Groundwater Elevation Contours Fourth Quarter 2023



DIRECTION OF GROUNDWATER FLOW
0.00379 ft / day
0.138 ft / year
131.25 degrees to the positive x - axis

PARCEL BOUNDARY

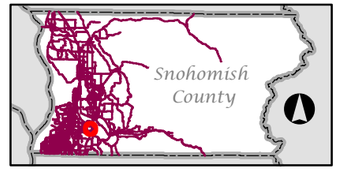
SUBJECT PROPERTY BOUNDARY

5 FT CONTOUR

WELL LOCATION

WELL ID	DATE	ELEVATION
G-04A	10/17/2023	DRY
G-08D1	10/17/2023	194.41
G-09S	10/17/2023	240.71
G-10S	10/17/2023	242.53
G-11S	10/17/2023	232.86
G-14S	10/17/2023	311.75
G-24S	10/17/2023	306.51

0 125 250 500 750 1,000
Feet



N

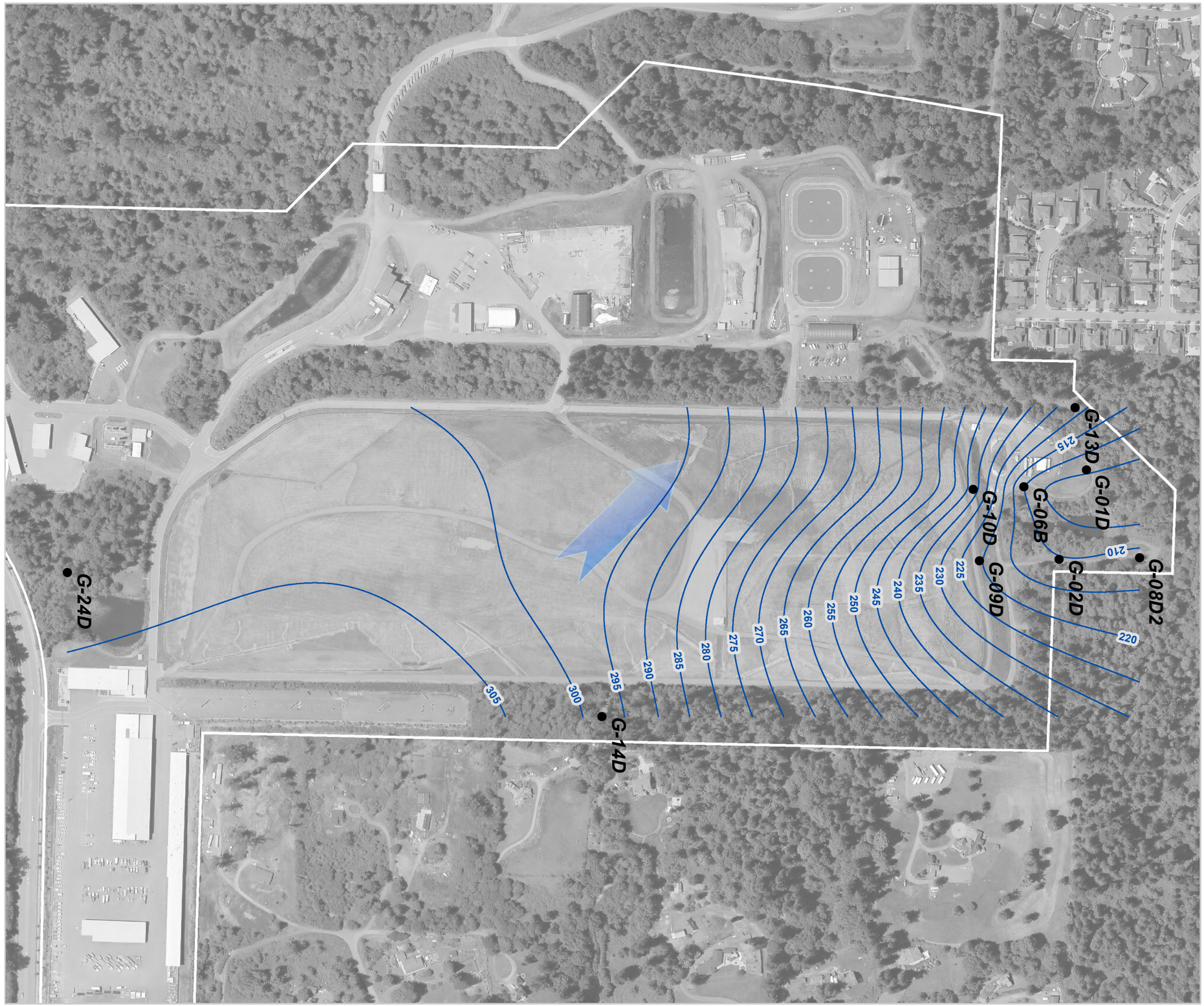
Snohomish County
Public Works
Solid Waste Division
Date: 2/7/2024

Document Path: I:\pw\sw\Projects\Groundwater\ArcMaps\GroundwaterContours_Cathcart_Shallow1.mxd

Figure 6d

Cathcart Landfill

Deep Aquifer Groundwater Elevation Contours Fourth Quarter 2023



DIRECTION OF GROUNDWATER FLOW
0.0109 ft / day
3.97 ft / year
132.74 degrees to the positive x - axis

PARCEL BOUNDARY

SUBJECT PROPERTY BOUNDARY

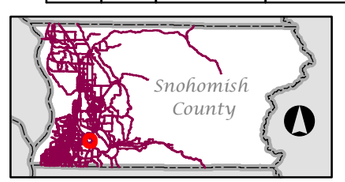
5 FT CONTOUR

WELL LOCATION

WELL ID	DATE	ELEVATION
G-01D	10/17/2023	205.98
G-02D	10/17/2023	210.45
G-06B	10/17/2023	210.35
G-08D2	10/17/2023	211.93
G-09D	10/17/2023	220.72
G-10D	10/17/2023	237.51
G-13D	10/17/2023	221.88
G-14D	10/17/2023	297.91
G-24D	10/17/2023	301.41

0 120 240 480 720 960

Feet



N

Snohomish County
Public Works
Solid Waste Division
Date: 2/7/2024

Document Path: I:\pw\sw\Projects\Groundwater\ArcMaps\GroundwaterContours_Cathcart_Deepa.mxd

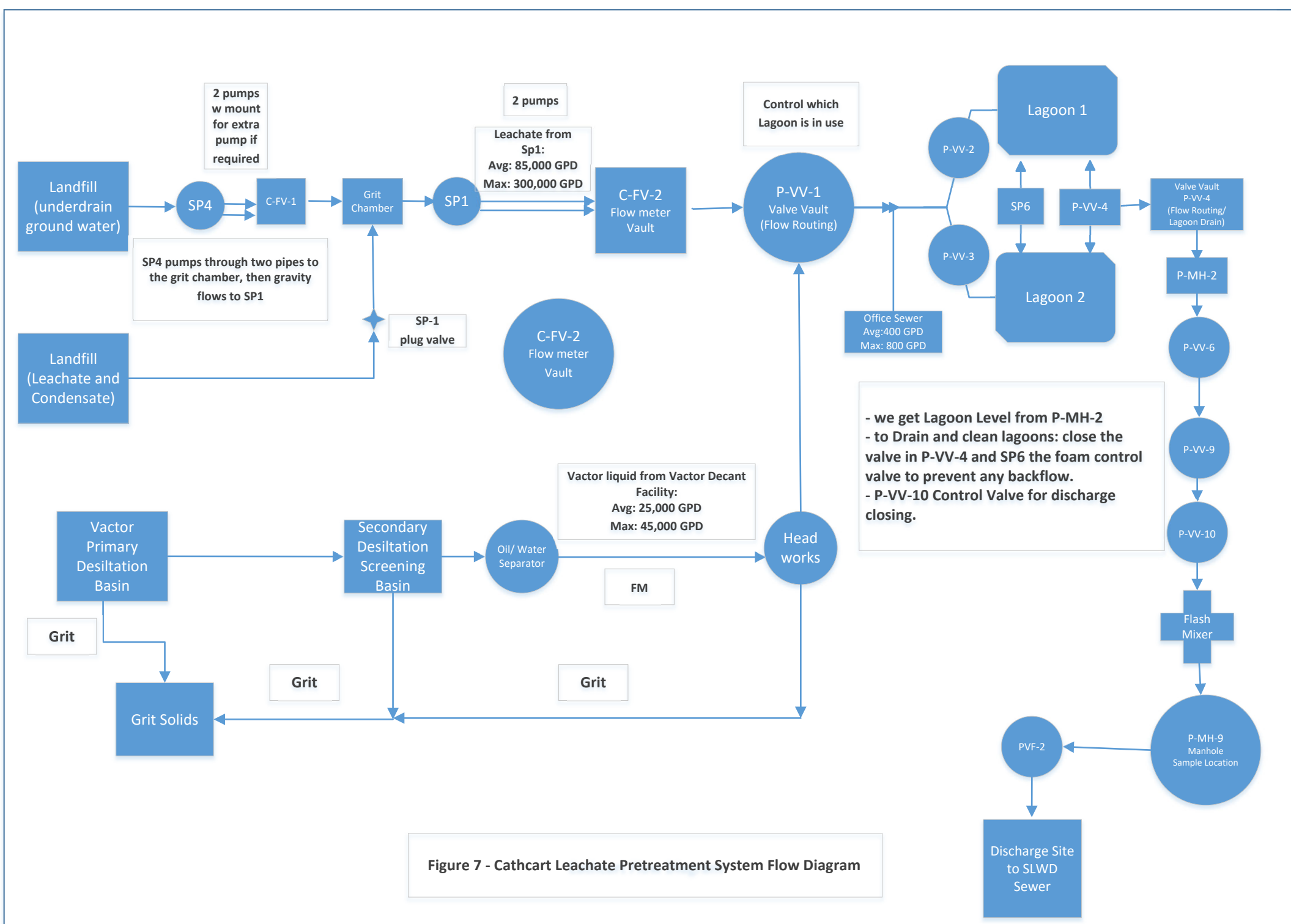


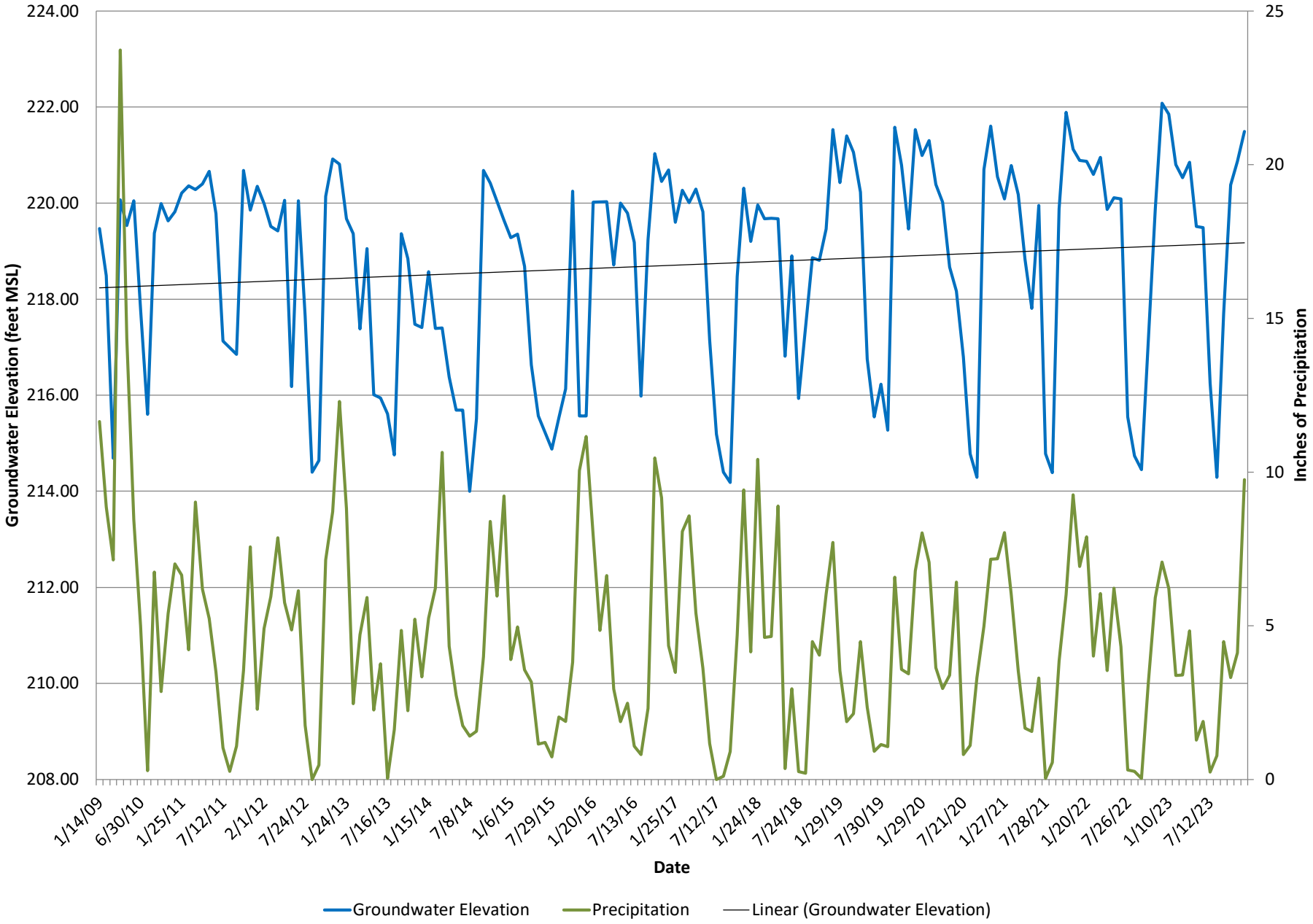
Figure 7 - Cathcart Leachate Pretreatment System Flow Diagram

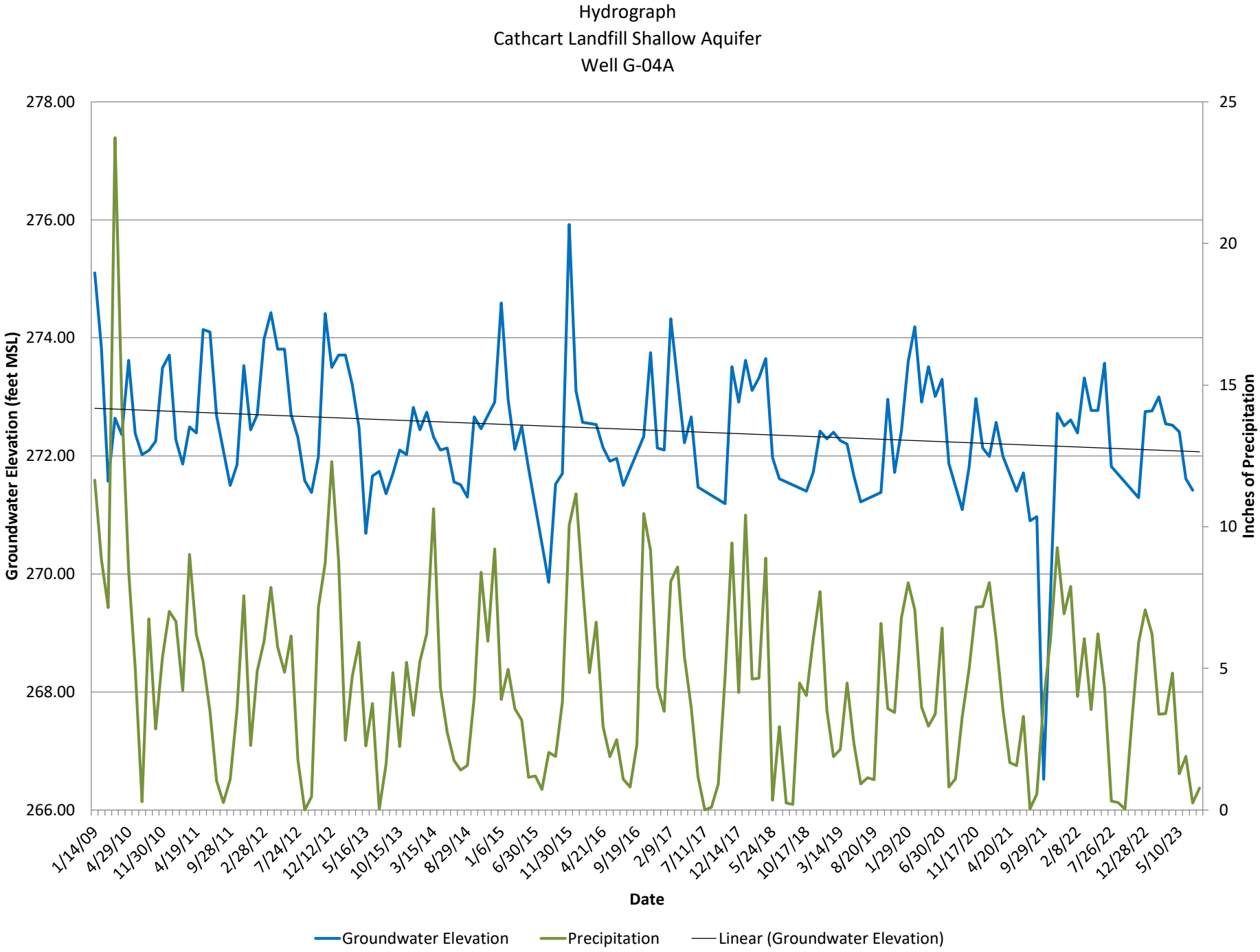
Appendix A

Hydrographs

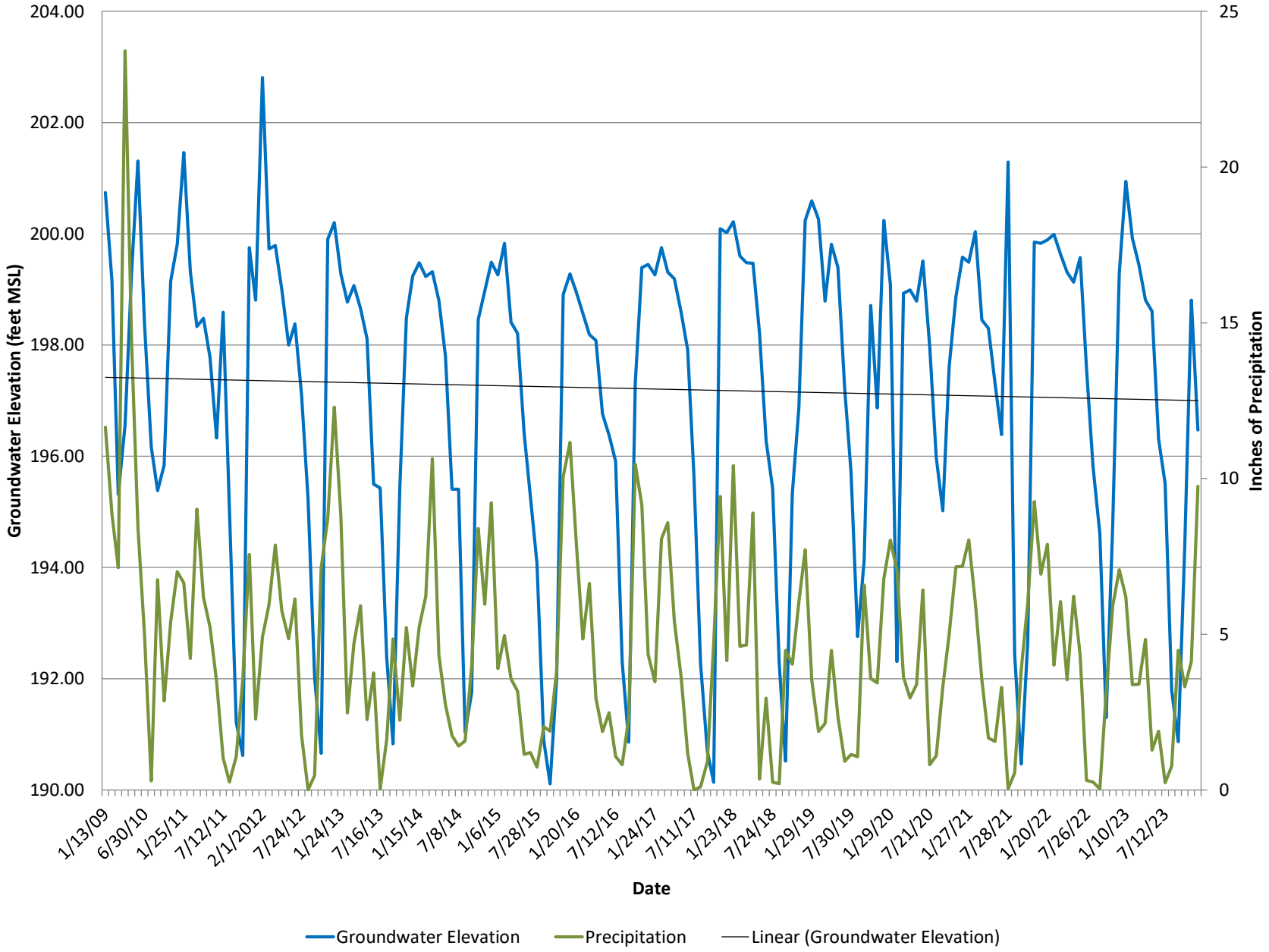
Shallow Wells

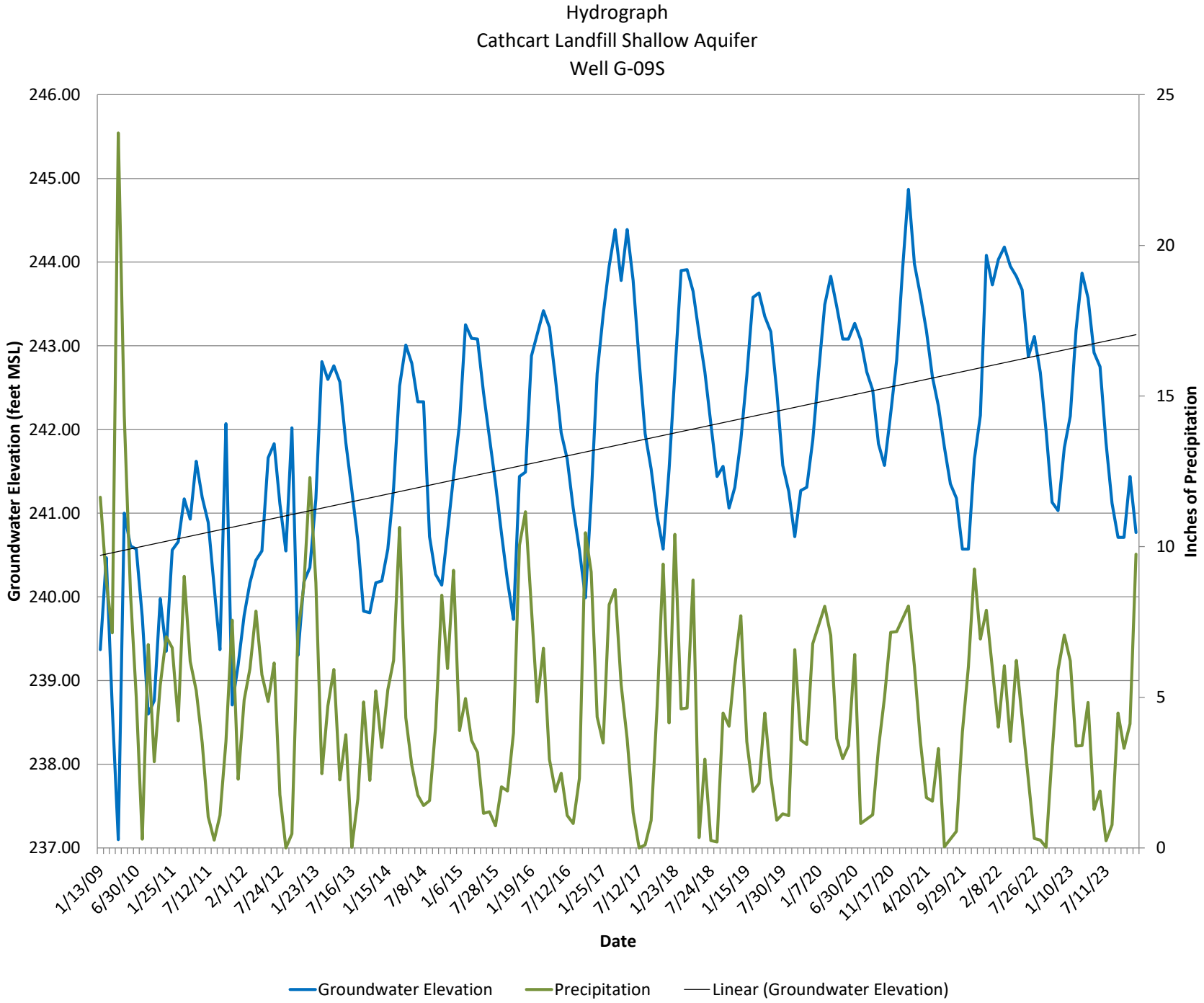
Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-01A



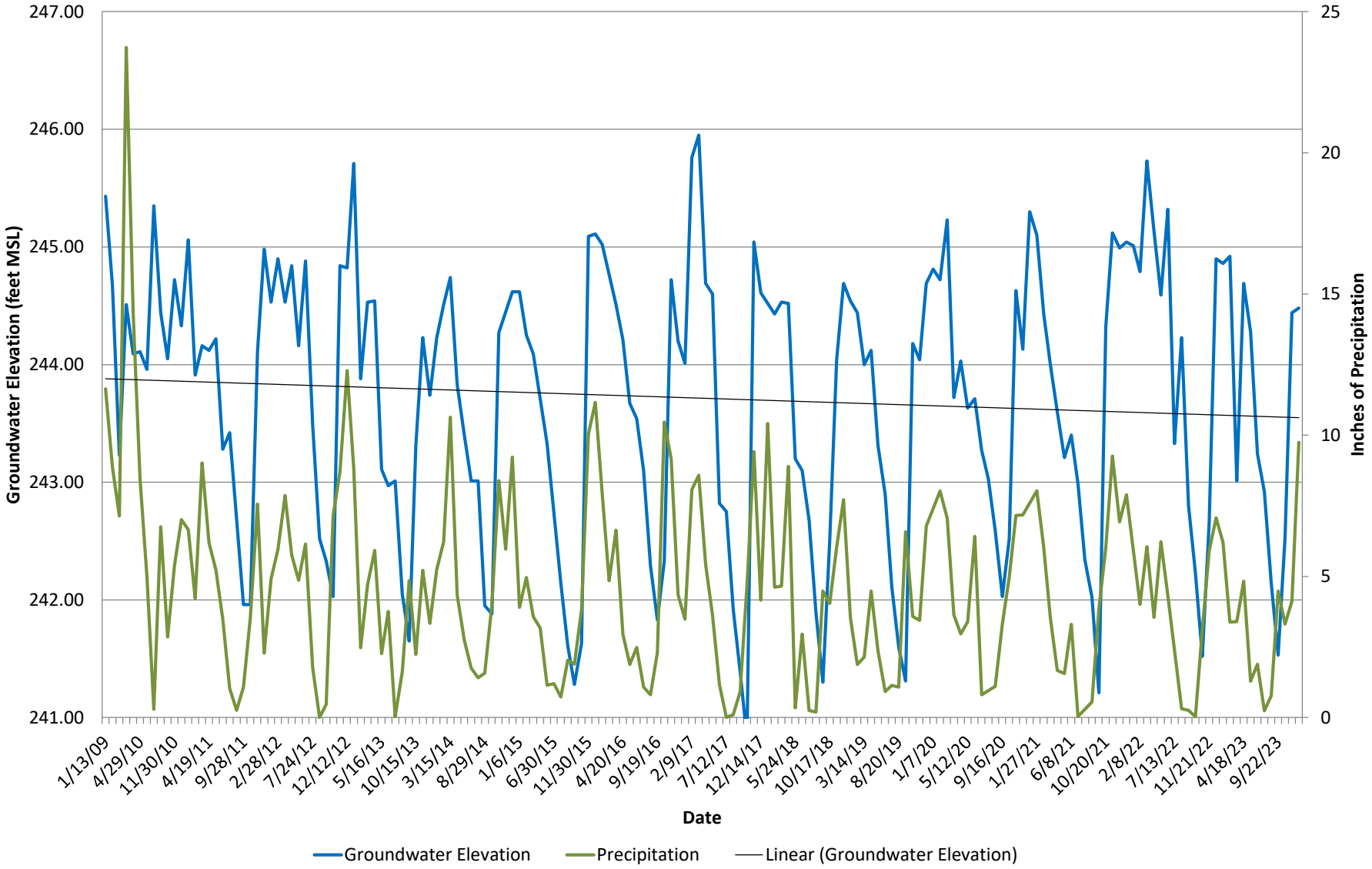

Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-04A
Groundwater Elevation (feet MSL)
278.00
276.00
274.00
272.00
270.00
268.00
266.00
Inches of Precipitation
25
20
15
10
5
0
1/14/09
4/29/10
11/30/10
4/19/11
9/28/11
2/28/12
7/24/12
12/12/12
5/16/13
10/15/13
3/15/14
8/29/14
1/6/15
6/30/15
11/30/15
4/21/16
9/19/16
2/9/17
7/11/17
12/14/17
5/24/18
10/17/18
3/14/19
8/20/19
1/29/20
6/30/20
11/17/20
4/20/21
9/29/21
2/8/22
7/26/22
12/28/22
5/10/23
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-08D1

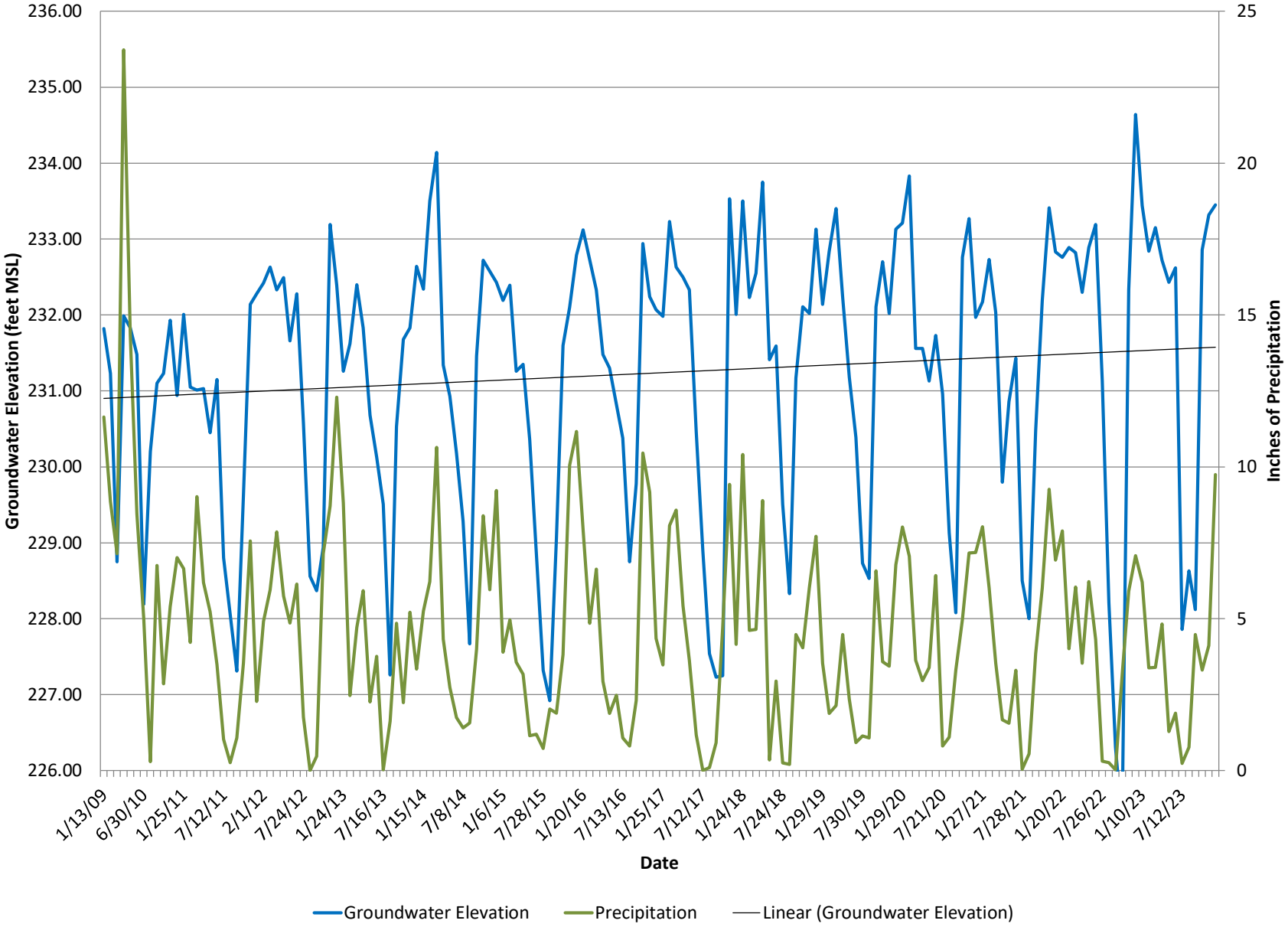



Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-09S
Groundwater Elevation (feet MSL)
246.00
245.00
244.00
243.00
242.00
241.00
240.00
239.00
238.00
237.00
Inches of Precipitation
25
20
15
10
5
0
1/13/09
6/30/10
1/25/11
7/12/11
2/1/12
7/24/12
1/23/13
7/16/13
1/15/14
7/8/14
1/6/15
7/28/15
1/19/16
7/12/16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

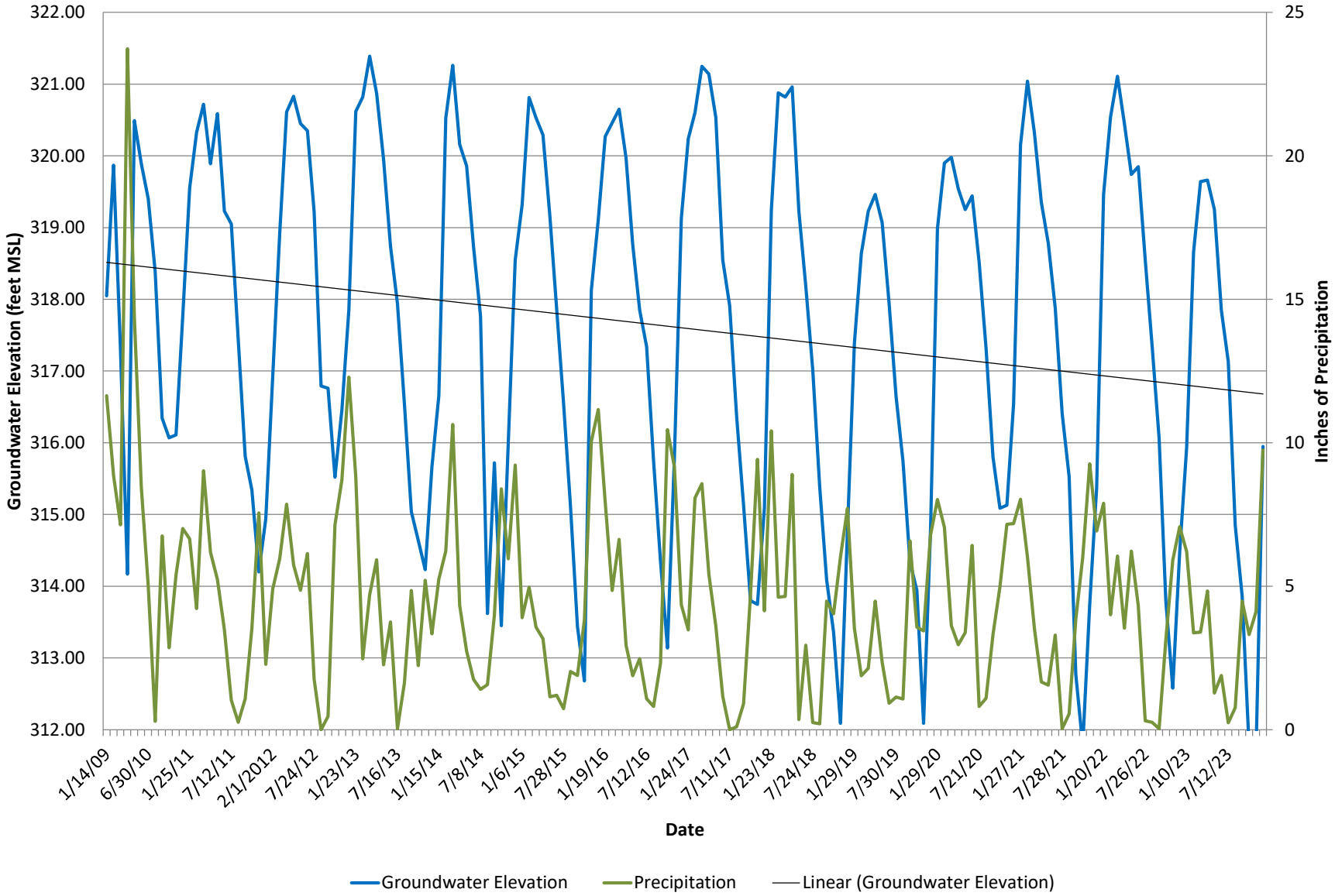
Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-10S

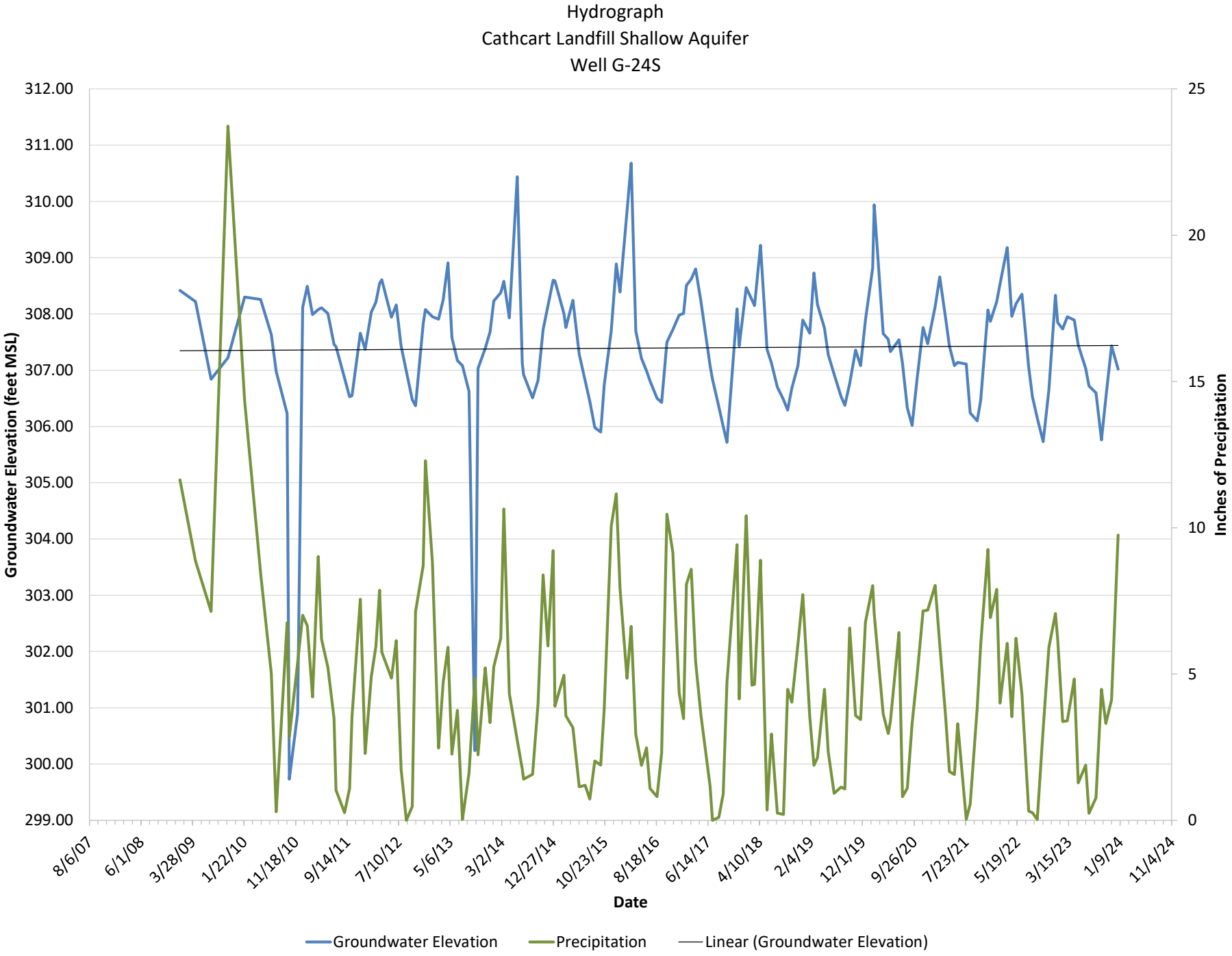


Hydrograph
Cathcart Landfill Shallow Aquifer
Well G-11S



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
11/4/24
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

Site: **Cathcart Landfill - Shallow Aquifer**

Measurement Date: **4/18/2023**

	[**X**] matrix		[**D**] matrix
Well ID	**X-axis**	**Y-axis**	**GW Elev.**	D
G-01A	413.12	3968.37	**220.85**	1
G-04A	213.73	2603.52	**272.52**	1
G-08D1	710.11	4157.06	**198.81**	1
G-09S	723.45	3612.73	**243.57**	1
G-10S	470.79	3595.13	**244.69**	1
G-11S	267.66	3807.05	**232.72**	1
G-14S	1256.30	2341.04	**319.66**	1
G-24S	778.15	538.89	**307.89**	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	723.5	470.79	267.7	1256	778.2
3968.37	2603.52	4157.06	3613	3595.13	3807	2341	538.9
220.85	272.52	198.81	243.6	244.69	232.7	319.7	307.9

{[P]t[P]}

3721076.974	13833394.8	1285532
13833394.8	86048702.88	5972268
1285531.839	5972268.254	532904.2

{[P]t[P]}'

1.65903E-06	4.97766E-08	-4.6E-06
4.97766E-08	5.38019E-08	-7.2E-07
-4.55995E-06	-7.2304E-07	2.1E-05

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

-0.000124154	-0.0007585	0.000478	3E-04	-0.000155765	-4E-04	7E-04	-9E-05
7.43871E-05	-4.6329E-05	0.000115	5E-05	3.99395E-05	5E-05	-4E-05	-2E-04
-0.000119733	0.002860327	-0.00207	-8E-04	0.000387315	9E-04	-7E-04	0.003

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

A	-6.1235E-05
B	8.98862E-05
C	0.002969775

Groundwater Gradient:	**0.0366**	
Conductivity (ft/day):	**0.001**	
Effective porosity:	**10%**	
GW velocity:	**0.000366**	**ft/day**
	0.134	**ft/year**
Flow direction:	**124.26**	**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: **10/17/2023**

	[**X**] matrix			[**D**] matrix
Well ID	**X-axis**	**Y-axis**	**GW Elev.**	D
G-01A	413.12	3968.37	**220.38**	1
G-08D1	710.11	4157.06	**194.41**	1
G-09S	723.45	3612.73	**240.71**	1
G-10S	470.79	3595.13	**242.53**	1
G-11S	267.66	3807.05	**232.86**	1
G-14S	1256.30	2341.04	**311.75**	1
G-24S	778.15	538.89	**306.51**	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

413.12	710.11	723.45	470.8	267.66	1256	778.2	0
3968.37	4157.06	3612.73	3595	3807.05	2341	538.9	0
220.38	194.41	240.71	242.5	232.86	311.8	306.5	0

{[P]t[P]}

3675396.461	13276944.47	1209908
13276944.47	79270386.49	5205775
1209907.808	5205774.589	448484.9

{[P]t[P]}'

2.6307E-06	1.07076E-07	-8.3E-06
1.07076E-07	5.74241E-08	-9.6E-07
-8.3399E-06	-9.5542E-07	3.58E-05

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

-0.000326234	0.000691849	0.000283	-4E-04	-0.00083025	1E-03	-5E-04	0
6.1561E-05	0.000129009	5.49E-05	3E-05	2.47984E-05	-3E-05	-2E-04	0
0.000656922	-0.00293043	-0.00086	0.001	0.00247119	-0.002	0.004	0

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

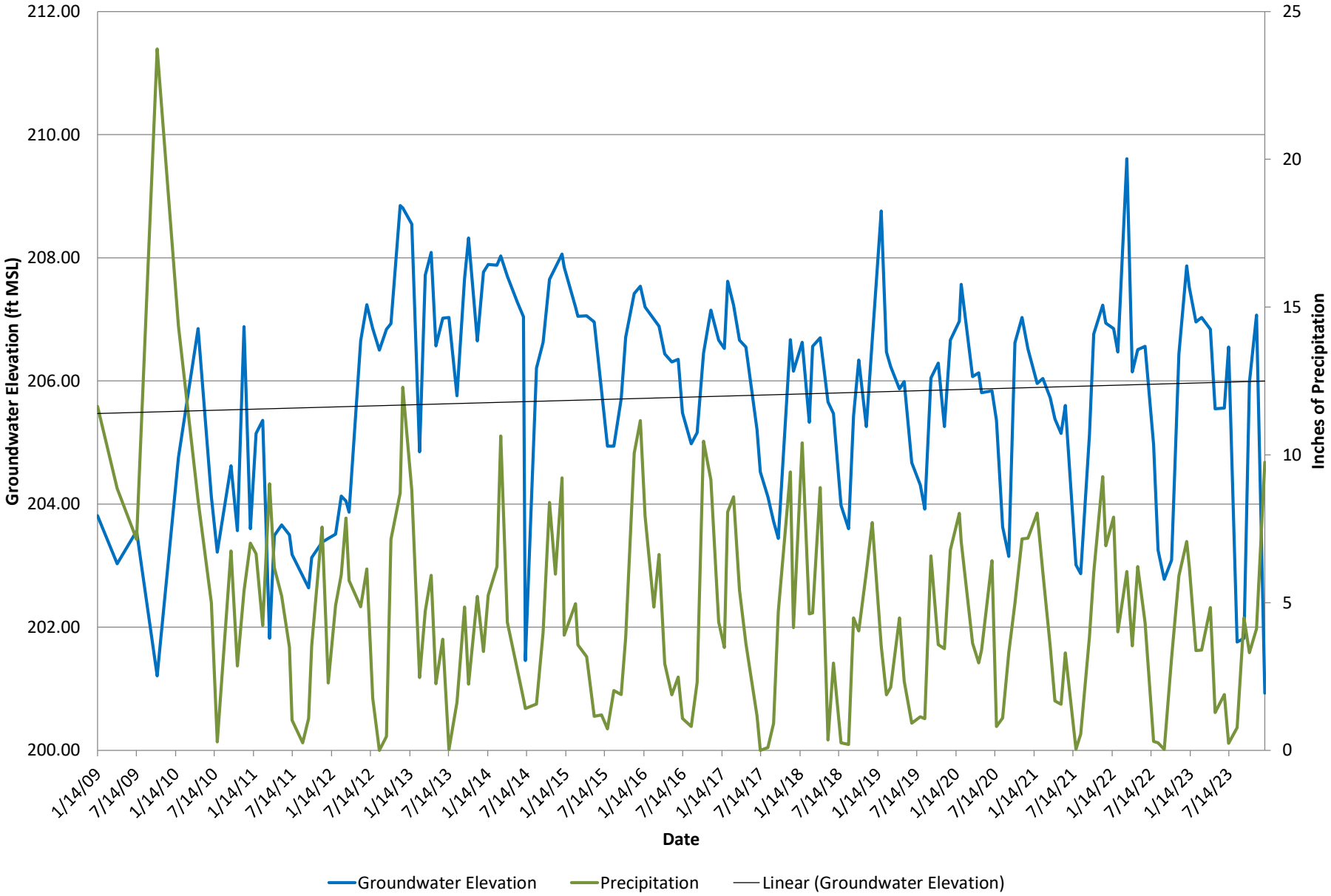
A	-7.7158E-05
B	8.7977E-05
C	0.003087096

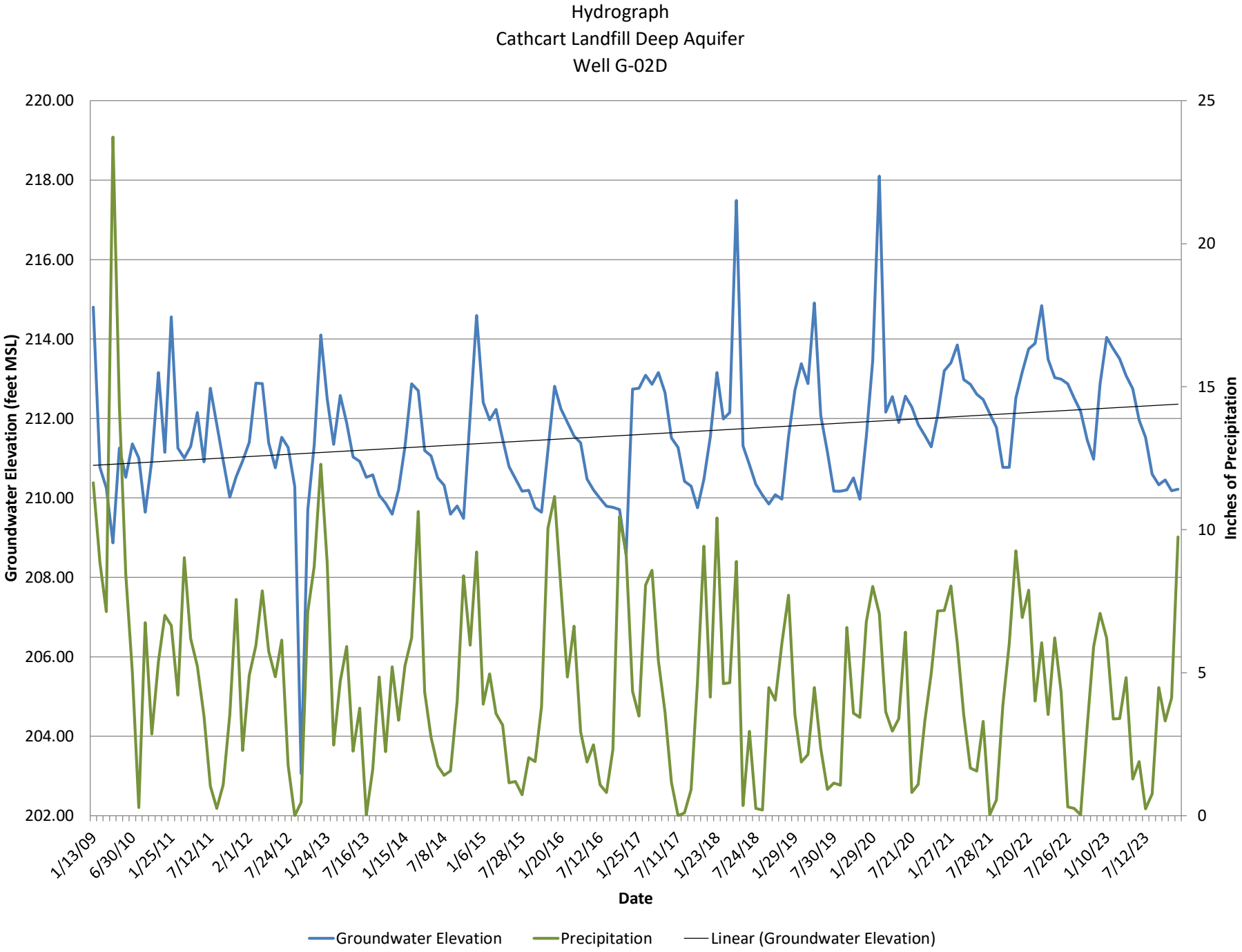
Groundwater Gradient:	**0.0379**	
Conductivity (ft/day):	**0.001**	
Effective porosity:	**10%**	
GW velocity:	**0.000379**	**ft/day**
	0.138	**ft/year**
Flow direction:	**131.25**	**degrees from the positive x-axis**

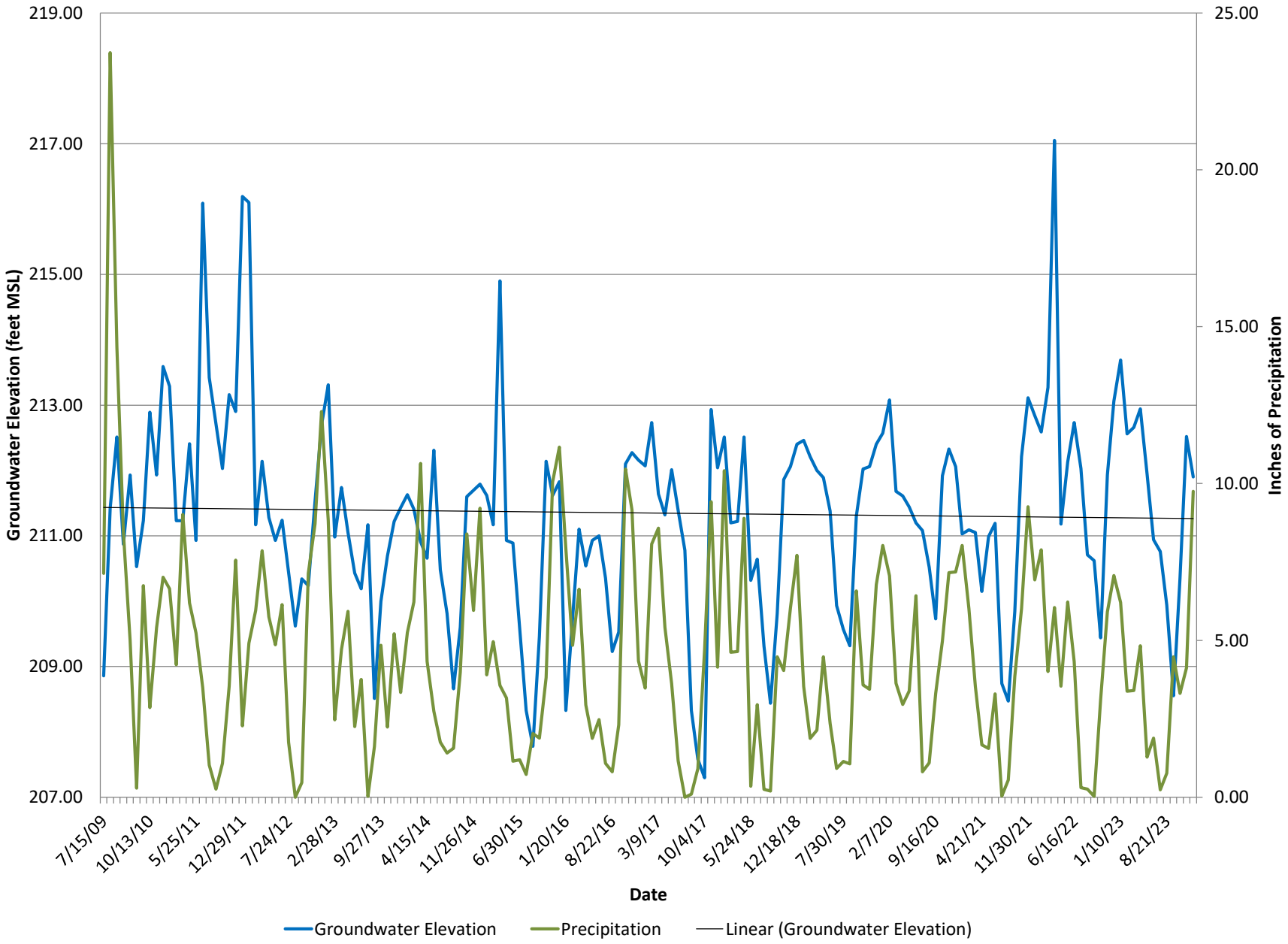
This spreadsheet is from the paper, "A Spreadsheet Method For Estimating Hydraulic Gradient With Heads From Multiple Wells" submitted to Ground Water, March, 2002. To use the program, enter the coordinates for the well locations in the columns labeled x and y (part of the [**X**] matrix), and the water 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

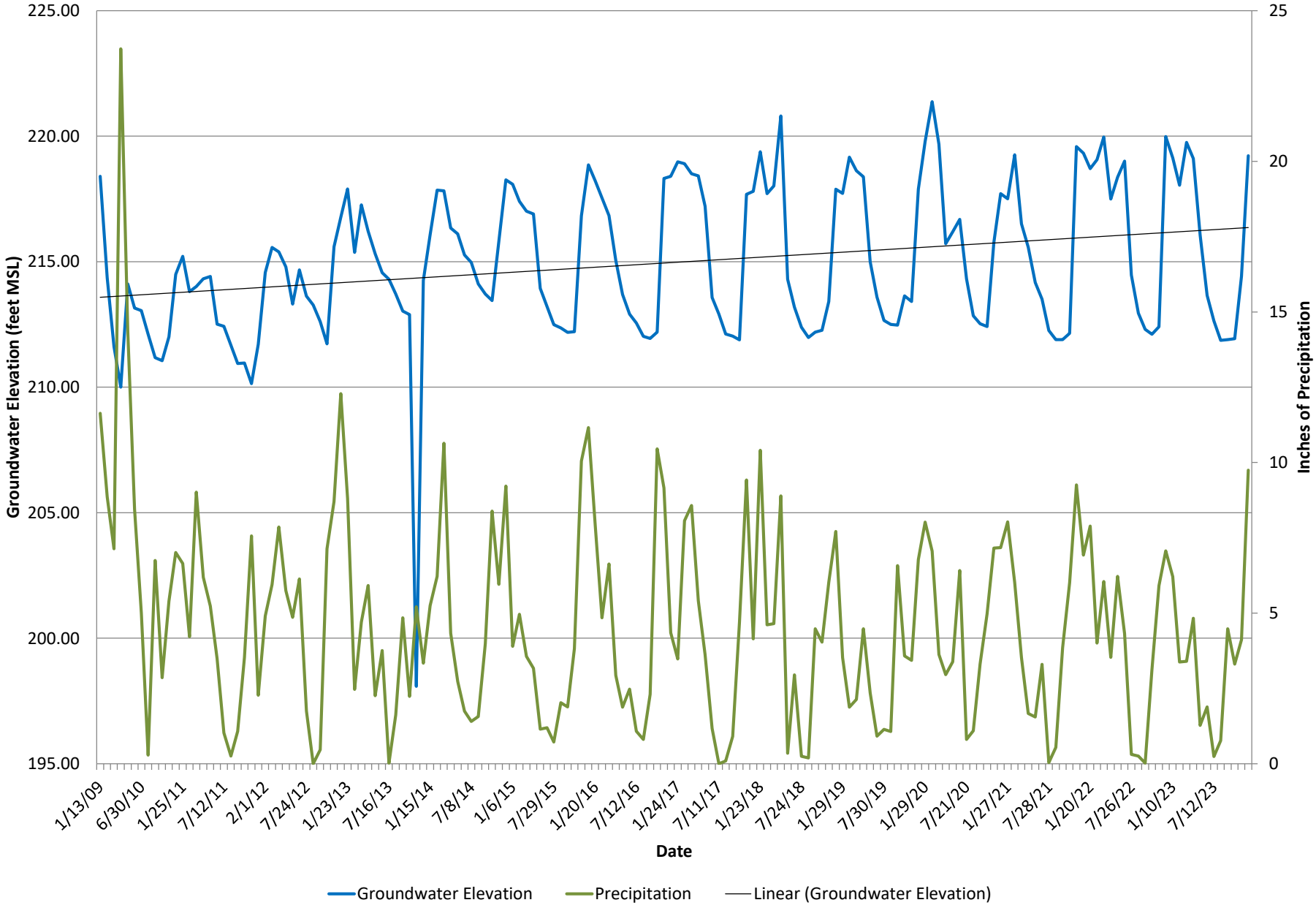
Hydrograph
Cathcart Landfill Deep Aquifer
Well G-01D



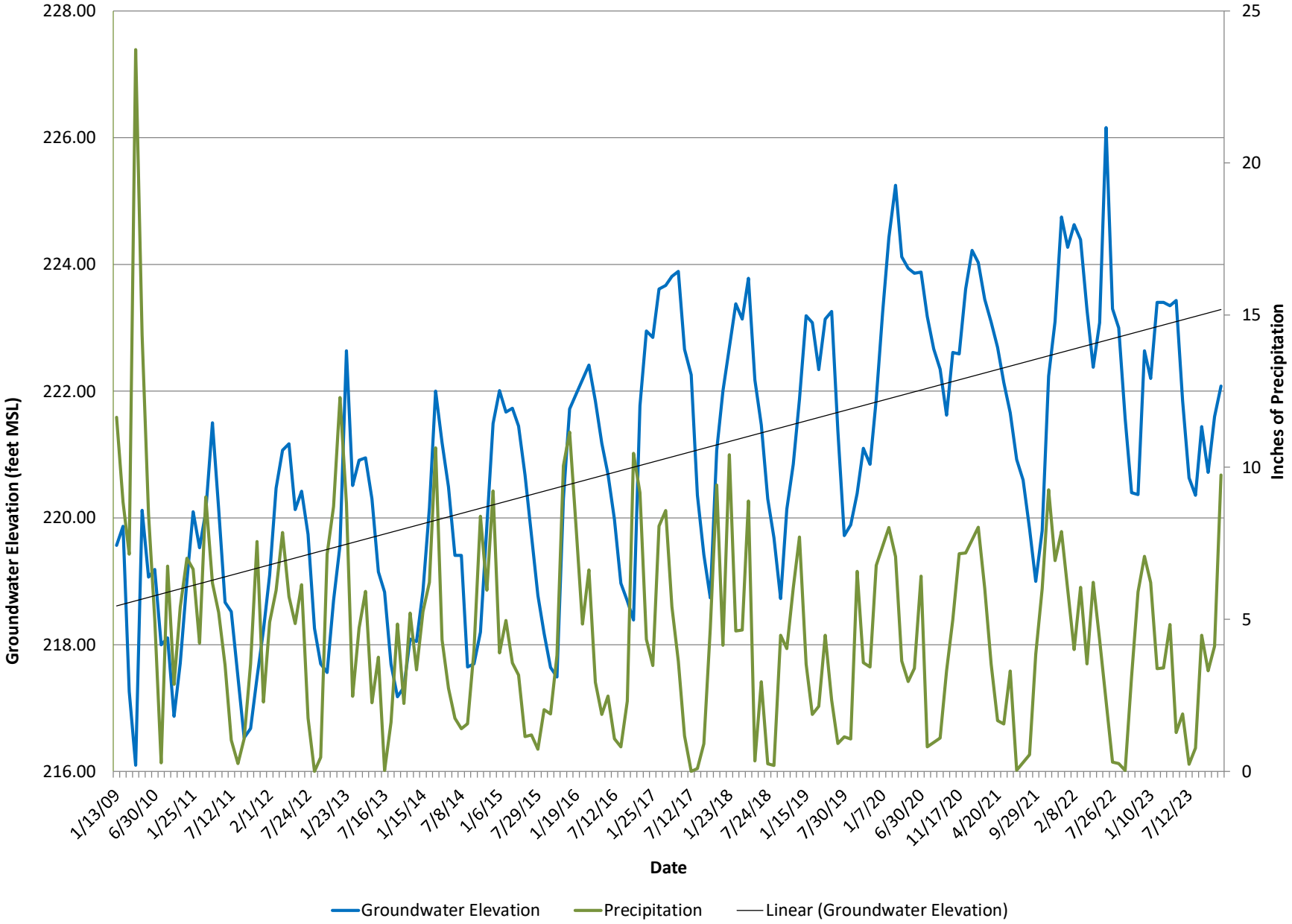

Hydrograph
Cathcart Landfill Deep Aquifer
Well G-02D
Groundwater Elevation (feet MSL)
Inches of Precipitation
220.00
218.00
216.00
214.00
212.00
210.00
208.00
206.00
204.00
202.00
25
20
15
10
5
0
1/13/09
6/30/10
1/25/11
7/12/11
2/1/12
7/24/12
1/24/13
7/16/13
1/15/14
7/8/14
1/6/15
7/28/15
1/20/16
7/12/16
1/25/17
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
1/10/23
7/12/23
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

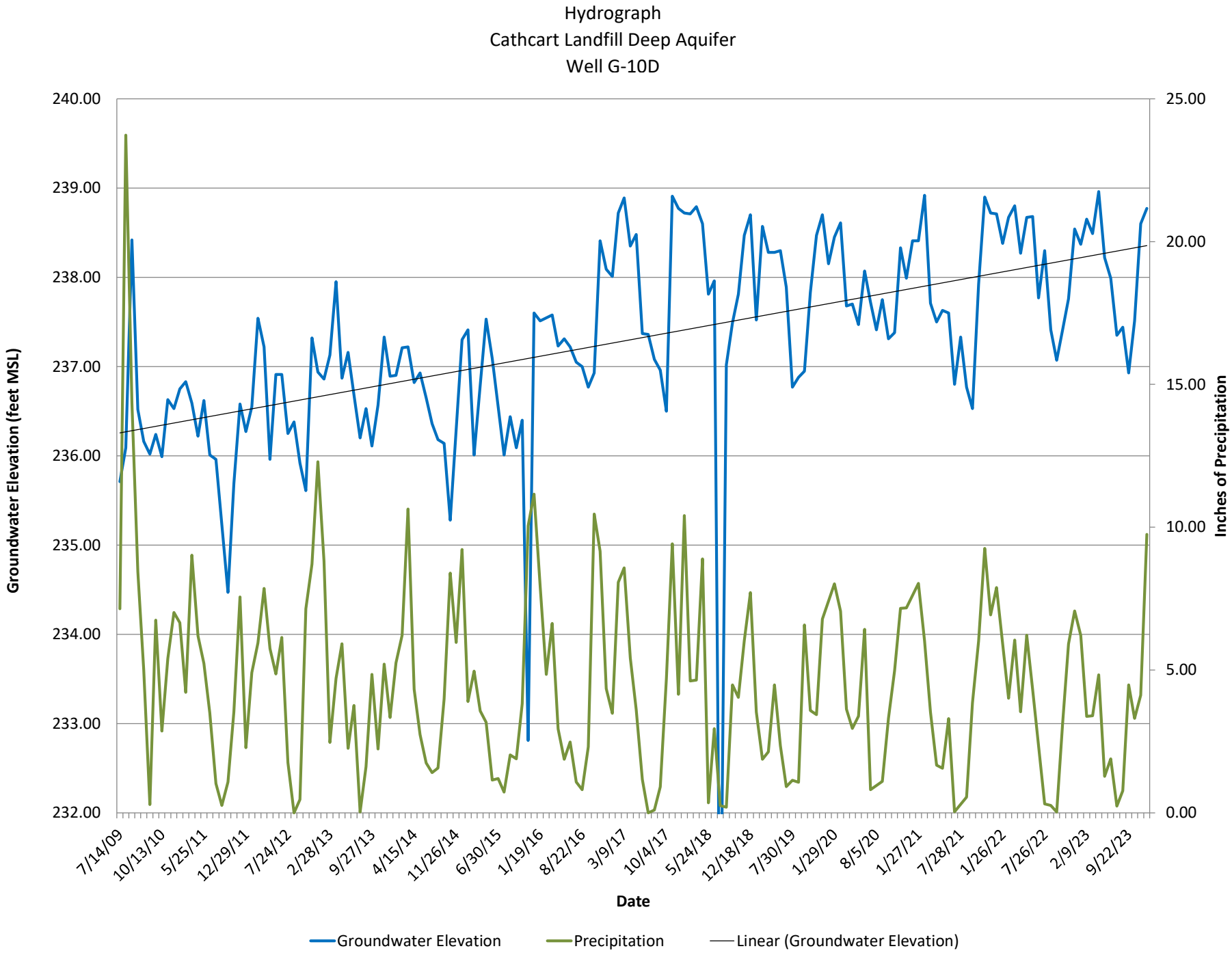

Hydrograph
Cathcart Landfill Deep Aquifer
Well G-06B
Groundwater Elevation (feet MSL)
Inches of Precipitation
219.00
217.00
215.00
213.00
211.00
209.00
207.00
25.00
20.00
15.00
10.00
5.00
0.00
7/15/09
10/13/10
5/25/11
12/29/11
7/24/12
2/28/13
9/27/13
4/15/14
11/26/14
6/30/15
1/20/16
8/22/16
3/9/17
10/4/17
5/24/18
12/18/18
7/30/19
2/7/20
9/16/20
4/21/21
11/30/21
6/16/22
1/10/23
8/21/23
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

Hydrograph
Cathcart Landfill Deep Aquifer
Well G-08D2

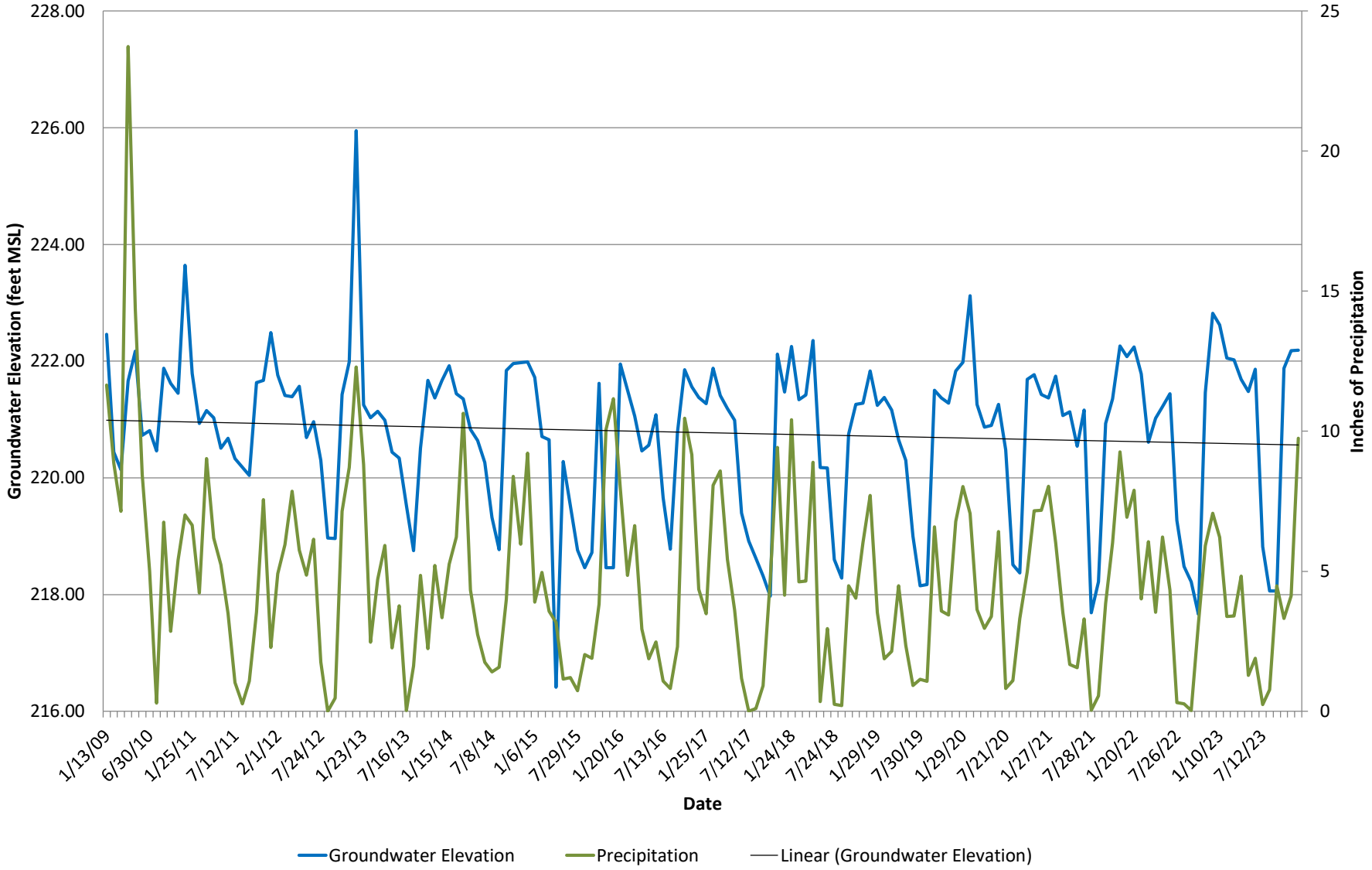


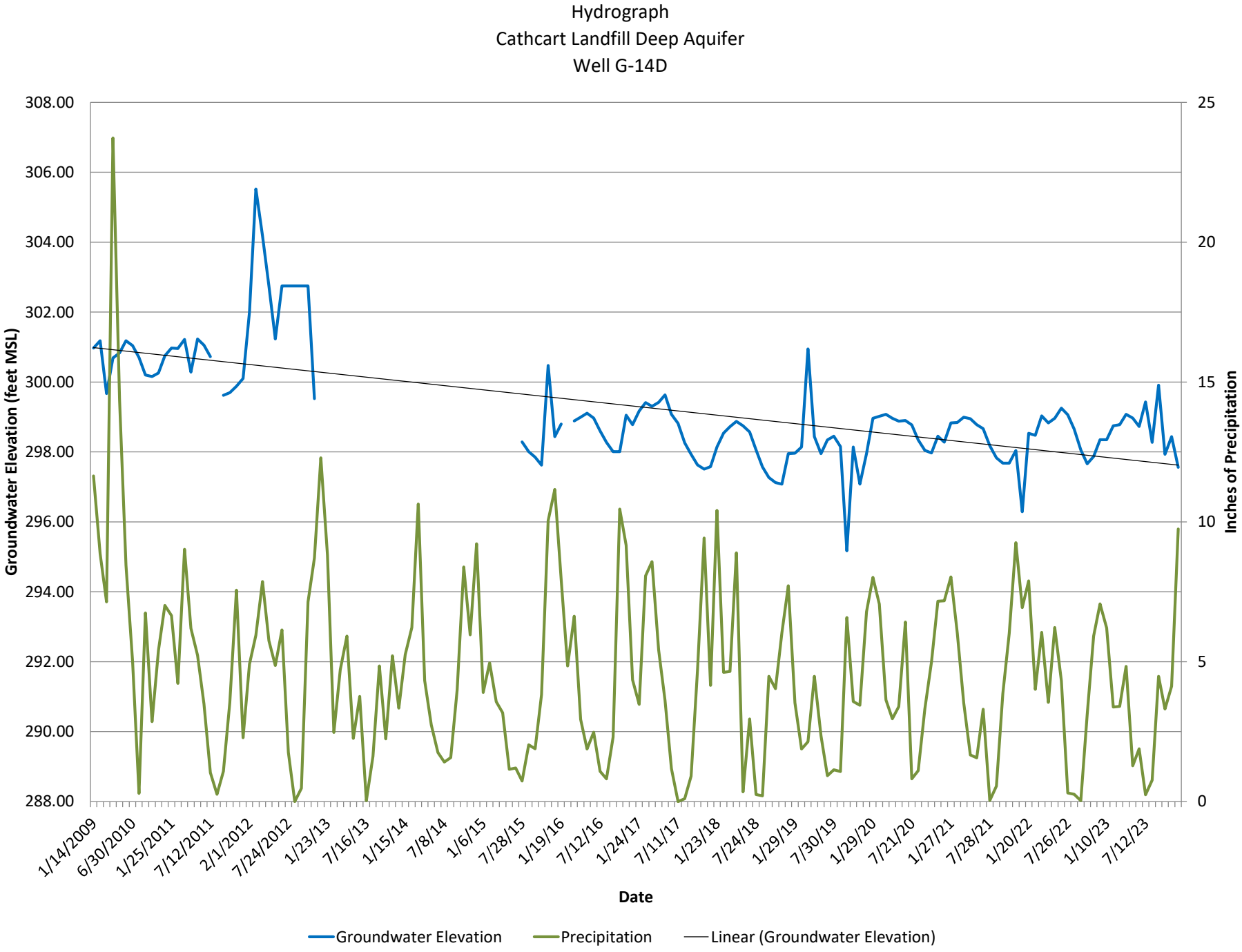
Hydrograph
Cathcart Landfill Deep Aquifer
Well G-09D

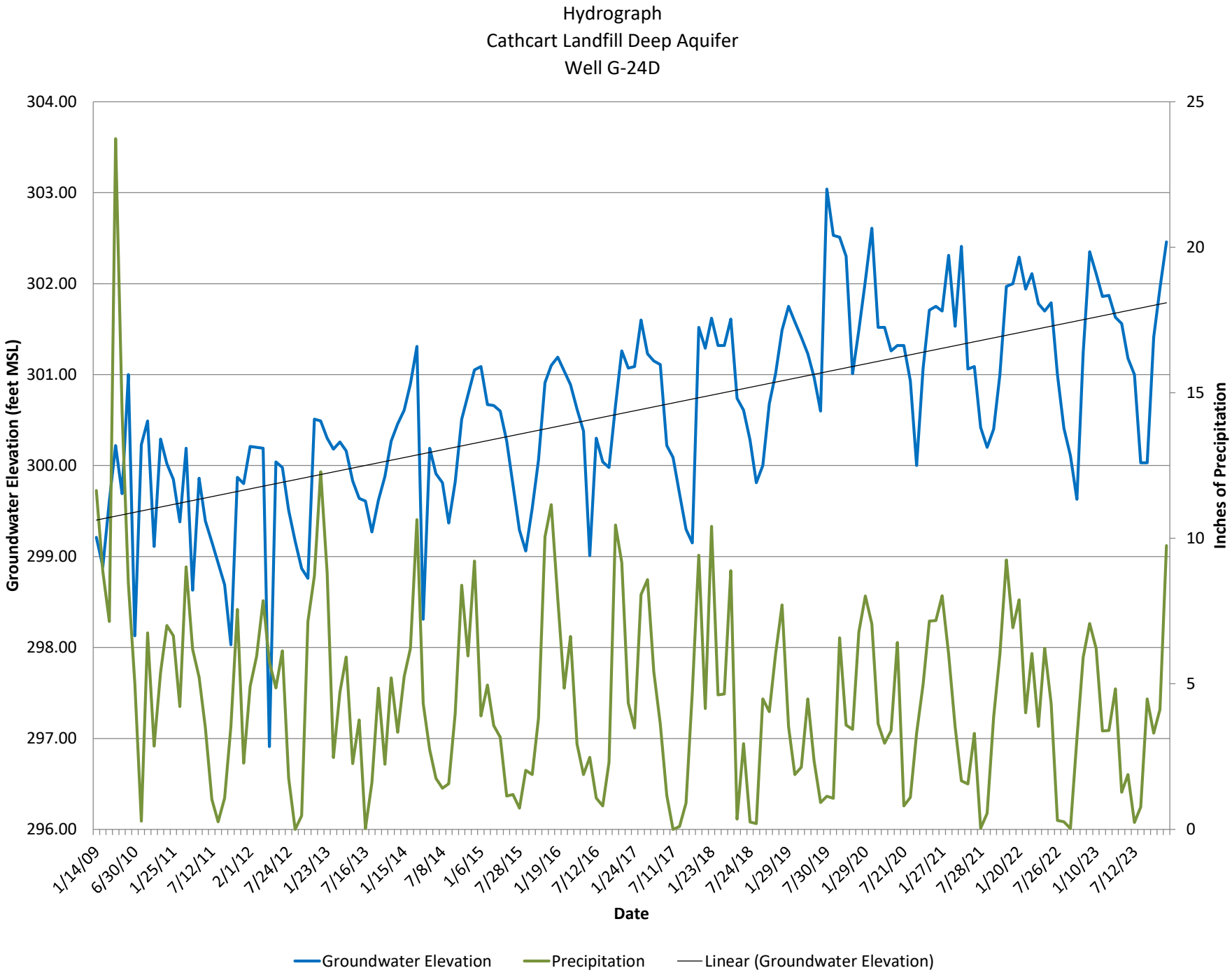



Hydrograph
Cathcart Landfill Deep Aquifer
Well G-10D
Groundwater Elevation (feet MSL)
240.00
239.00
238.00
237.00
236.00
235.00
234.00
233.00
232.00
Inches of Precipitation
25.00
20.00
15.00
10.00
5.00
0.00
7/14/09
10/13/10
5/25/11
12/29/11
7/24/12
2/28/13
9/27/13
4/15/14
11/26/14
6/30/15
1/19/16
8/22/16
3/9/17
10/4/17
5/24/18
12/18/18
7/30/19
1/29/20
8/5/20
1/27/21
7/28/21
1/26/22
7/26/22
2/9/23
9/22/23
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
1/10/23
7/12/23
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)


Hydrograph
Cathcart Landfill Deep Aquifer
Well G-24D
Groundwater Elevation (feet MSL)
304.00
303.00
302.00
301.00
300.00
299.00
298.00
297.00
296.00
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
1/23/13
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
1/10/23
7/12/23
Date
Groundwater Elevation
Precipitation
Linear (Groundwater Elevation)

Site: **Cathcart Landfill - Deep Aquifer**

Measurement Date: **4/18/2023**

	[**X**] matrix		[**D**] matrix
Well ID	**X-axis**	**Y-axis**	**GW Elev.**	D
G-01D	431.12	3977.30	**206.84**	1
G-02D	733.79	3884.79	**213.08**	1
G-06B	488.43	3765.90	**212.94**	1
G-08D2	728.12	4156.36	**219.11**	1
G-09D	739.20	3614.85	**223.35**	1
G-10D	495.97	3593.41	**238.96**	1
G-13D	220.31	3939.18	**221.69**	1
G-14D	1266.00	2337.53	**299.08**	1
G-24D	780.99	528.85	**301.63**	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
206.84	213.08	212.94	219.1	223.35	239	221.7	299.1	301.6

{[P]t[P]}

4546675.575	18125521.98	1455737
18125521.98	109608443.7	6761007
1455736.62	6761006.884	518101.6

{[P]t[P]}'

2.37577E-06	9.68111E-08	-7.94E-06
9.68111E-08	5.07173E-08	-9.34E-07
-7.93868E-06	-9.33855E-07	3.64E-05

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

-0.000232746	0.000427836	-0.000165	4E-04	0.000333026	-4E-04	-9E-04	9E-04	-5E-04
5.02967E-05	6.90794E-05	3.94E-05	8E-05	4.63218E-05	7E-06	1E-05	-4E-05	-2E-04
0.000396833	-0.0016923	0.000361	-0.002	-0.001109107	0.001	0.003	-0.001	0.004

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

A	-9.87336E-05
B	8.55643E-05
C	0.003284895

Groundwater Gradient:	**0.0398**	
Conductivity (ft/day):	**0.029**	
Effective porosity:	**10%**	
GW velocity:	**0.0115**	**ft/day**
	4.21	**ft/year**
Flow direction:	**139.09**	**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: **10/17/2023**

		[**X**] matrix		[**D**] matrix
Well ID	**X-axis**	**Y-axis**	**GW Elev.**	D
G-01D	431.12	3977.30	**205.98**	1
G-02D	733.79	3884.79	**210.45**	1
G-06B	488.43	3765.90	**210.35**	1
G-08D2	728.12	4156.36	**211.93**	1
G-09D	739.20	3614.85	**220.72**	1
G-10D	495.97	3593.41	**237.51**	1
G-13D	220.31	3939.18	**221.88**	1
G-14D	1266.00	2337.53	**297.93**	1
G-24D	780.99	528.85	**301.41**	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
205.98	210.45	210.35	211.9	220.72	237.5	221.9	297.9	301.4

{[P]t[P]}

4546675.575	18125521.98	1442694
18125521.98	109608443.7	6691000
1442693.943	6690999.5	509847.7

{[P]t[P]}'

2.30192E-06	8.52922E-08	-7.63E-06
8.52922E-08	4.90341E-08	-8.85E-07
-7.63298E-06	-8.84848E-07	3.52E-05

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

-0.000240604	0.000414108	-0.00016	4E-04	0.000325147	-4E-04	-9E-04	8E-04	-5E-04
4.95335E-05	6.68575E-05	4.02E-05	8E-05	4.49953E-05	8E-06	2E-05	-4E-05	-2E-04
0.000434777	-0.00163642	0.000338	-0.002	-0.001077638	0.001	0.003	-0.001	0.004

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

A	-8.19793E-05
B	8.87304E-05
C	0.003222013

Groundwater Gradient:	**0.0375**	
Conductivity (ft/day):	**0.029**	
Effective porosity:	**10%**	
GW velocity:	**0.0109**	**ft/day**
	3.97	**ft/year**
Flow direction:	**132.74**	**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 2023
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09S					G-10S				
						1/10/23	D	V	Tr	Ch	1/10/23	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)															
Alkalinity (as CaCO3)	nonpar	62	62	230	--	350		E			460		V	I	N
Ammonia Nitrogen	lognor	62	39	10.6815	--	0.02	U				0.297				Y
Bicarbonate	nonpar	62	62	210	--	350		E			460		V	I	N
Calcium, Dissolved	normal	59	59	22.8736	--	74.9		E	D	N	101		V		Y
Chemical Oxygen Demand	nonpar	62	7	18	--	26		E			21		E		
Chloride	lognor	62	62	18.3	250	3.96				Y	8.06			D	N
Conductivity (umhos/cm)	nonpar	61	61	540	700	920		V	D	N	1600		V		
Magnesium, Dissolved	lognor	61	50	42.7765	--	28.1					23.6				
Nitrate Nitrogen (mg-N/L)	nonpar	62	54	1.3	10	0.11					0.016				
Nitrite Nitrogen (mg-N/L)	normal	60	33	0.009	1	0.003	U				0.015		E		
pH (std units)	nonpar	63	63	6.60-9.39	6.5-8.5	6.00		V			6.45		V		
Potassium, Dissolved	lognor	61	51	2.6065	--	4.63		E			4.57		E		
Sodium, Dissolved	normal	62	62	119.6577	20	90.1					190		V		
Sulfate	lognor	61	61	333.9057	250	156			D	N	295			D	N
Total Dissolved Solids	nonpar	62	62	381.4928	500	590		V	D	N	870		V	D	N
Total Organic Carbon	nonpar	62	57	14	--	58.0		E		Y	6.9				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony	nonpar	60	25	0.0006	0.006	0.0001	U				0.0001	U			
Arsenic	normal	62	62	0.0043	0.00005	0.000782					0.00318		P		
Barium	lognor	60	41	9.8945	1	0.005	U				0.005	U			
Beryllium	nonpar	62	0	0.0005	0.004	0.006	U				0.006	U			
Cadmium	nonpar	61	18	0.001	0.005	0.00005	U				0.00005	U			
Chromium	nonpar	62	20	0.015	0.05	0.01	U				0.01	U			
Cobalt	nonpar	62	3	0.005	--	0.01	U				0.01	U			
Copper	nonpar	61	23	0.115	1	0.02	U				0.02	U			
Iron	lognor	62	41	9.6403	0.3	0.03	U				3.06				
Lead	nonpar	60	21	0.0027	0.05	0.0001	U				0.0001	U			
Manganese	lognor	62	41	11.9194	0.05	0.029			D	N	3.09				
Nickel	nonpar	62	17	0.038	0.1	0.015					0.01	U			
Selenium	nonpar	60	2	0.0004	0.01	0.00121		E			0.0003	U			
Silver	nonpar	60	1	0.0002	0.05	0.00005	U				0.00005	U			
Thallium	nonpar	62	2	0.00009	0.002	0.00005	U				0.00005	U			
Vanadium	nonpar	62	0	0.01	--	0.015	U				0.015	U			
Zinc	nonpar	62	21	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	0.000408					0.00513				
Barium	--	--	--	--	1	0.0052					0.0055				
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	0.338					10.5				
Lead	--	--	--	--	0.05	0.0005	U				0.0005	U			
Manganese	--	--	--	--	0.05	0.0715					3.18				
Nickel	--	--	--	--	0.1	0.029					0.011				
Selenium	--	--	--	--	0.01	0.001	U				0.001	U			
Silver	--	--	--	--	0.05	0.00141					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: First Quarter 2023
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09S					G-10S				
						1/10/23	D	V	Tr	Ch	1/10/23	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**	0.05	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				**0.22**				
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-Trichloroet	--	--	--	--	**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		10.0026
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		16.3912
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		15.9703
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		21.7552
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		10.1406
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		37.5929
Dissolved manganese	mg/L	G-01A	04/18/2022	ND	0.0100		15.7947
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		2.6585
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		0.0001
Dissolved sodium	mg/L	G-01A	04/18/2022		5.0600		119.5595
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		0.0093
pH	std units	G-01A	04/18/2022		5.7200	***	6.60 - 9.39
Sulfate	mg/L	G-01A	04/18/2022		20.3000		327.6006
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		10.0026
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		16.3912
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		15.9703
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	***	21.7552
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	***	10.1406
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		37.5929
Dissolved manganese	mg/L	G-04A	04/18/2022		6.7900		15.7947
Dissolved nickel	mg/L	G-04A	04/18/2022		0.0150		0.0380
Dissolved potassium	mg/L	G-04A	04/18/2022		2.2200		2.6585
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		0.0001
Dissolved sodium	mg/L	G-04A	04/18/2022		15.2000		119.5595
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		0.0093
pH	std units	G-04A	04/18/2022		5.4800	*	6.60 - 9.39
Sulfate	mg/L	G-04A	04/18/2022		31.4000		327.6006
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		10.0026
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		16.3912
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		15.9703
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		21.7552
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		10.1406
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		37.5929
Dissolved manganese	mg/L	G-08D1	10/18/2022	ND	0.0100		15.7947
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		2.6585
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		0.0001
Dissolved sodium	mg/L	G-08D1	10/18/2022		112.0000		119.5595
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	*	0.0093
pH	std units	G-08D1	10/18/2022		9.1000		6.60 - 9.39
Sulfate	mg/L	G-08D1	10/18/2022		44.3000		327.6006
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	01/10/2023		350.0000	*	230.0000
Ammonia nitrogen	mg-N/L	G-09S	01/10/2023	ND	0.0200		10.0026
Bicarbonate	mg/L	G-09S	01/10/2023		350.0000	*	210.0000
Chemical oxygen demand	mg/L	G-09S	01/10/2023		26.0000	*	18.0000
Chloride	mg/L	G-09S	01/10/2023		3.9600		16.3912
Conductivity	umhos/cm	G-09S	01/10/2023		920.0000	***	540.0000
Dissolved antimony	mg/L	G-09S	01/10/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-09S	01/10/2023		0.0008		0.0045
Dissolved barium	mg/L	G-09S	01/10/2023	ND	0.0050		15.9703
Dissolved beryllium	mg/L	G-09S	01/10/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-09S	01/10/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-09S	01/10/2023		74.9000	*	21.7552
Dissolved chromium	mg/L	G-09S	01/10/2023	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-09S	01/10/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09S	01/10/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-09S	01/10/2023	ND	0.0300		10.1406
Dissolved lead	mg/L	G-09S	01/10/2023	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-09S	01/10/2023		28.1000		37.5929
Dissolved manganese	mg/L	G-09S	01/10/2023		0.0290		15.7947
Dissolved nickel	mg/L	G-09S	01/10/2023		0.0150		0.0380
Dissolved potassium	mg/L	G-09S	01/10/2023		4.6300	*	2.6585
Dissolved selenium	mg/L	G-09S	01/10/2023		0.0012	*	0.0004
Dissolved silver	mg/L	G-09S	01/10/2023	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-09S	01/10/2023		90.1000		119.5595
Dissolved thallium	mg/L	G-09S	01/10/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-09S	01/10/2023	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-09S	01/10/2023	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-09S	01/10/2023		0.1100		1.3000
Nitrite nitrogen	mg-N/L	G-09S	01/10/2023	ND	0.0030		0.0093
pH	std units	G-09S	01/10/2023		6.0000	***	6.60 - 9.39
Sulfate	mg/L	G-09S	01/10/2023		156.0000		327.6006
Total dissolved solids	mg/L	G-09S	01/10/2023		590.0000	***	360.0000
Total organic carbon	mg/L	G-09S	01/10/2023		58.0000	*	14.0000
Alkalinity (as caco3)	mg/L	G-10S	01/10/2023		460.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-10S	01/10/2023		0.2965		10.0026

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-10S	01/10/2023		460.0000	***	210.0000
Chemical oxygen demand	mg/L	G-10S	01/10/2023		22.5000	*	18.0000
Chloride	mg/L	G-10S	01/10/2023		8.3300		16.3912
Conductivity	umhos/cm	G-10S	01/10/2023		1550.0000	***	540.0000
Dissolved antimony	mg/L	G-10S	01/10/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-10S	01/10/2023		0.0032	**	0.0045
Dissolved barium	mg/L	G-10S	01/10/2023	ND	0.0050		15.9703
Dissolved beryllium	mg/L	G-10S	01/10/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-10S	01/10/2023		0.0005		0.0010
Dissolved calcium	mg/L	G-10S	01/10/2023		101.0000	***	21.7552
Dissolved chromium	mg/L	G-10S	01/10/2023	ND	0.0100		0.0150
Dissolved cobalt	mg/L	G-10S	01/10/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10S	01/10/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-10S	01/10/2023		3.1000		10.1406
Dissolved lead	mg/L	G-10S	01/10/2023	ND	0.0001		0.0027
Dissolved magnesium	mg/L	G-10S	01/10/2023		23.7000		37.5929
Dissolved manganese	mg/L	G-10S	01/10/2023		3.1000		15.7947
Dissolved nickel	mg/L	G-10S	01/10/2023	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-10S	01/10/2023		4.5400	*	2.6585
Dissolved selenium	mg/L	G-10S	01/10/2023	ND	0.0003		0.0004
Dissolved silver	mg/L	G-10S	01/10/2023	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-10S	01/10/2023		189.5000	***	119.5595
Dissolved thallium	mg/L	G-10S	01/10/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10S	01/10/2023	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-10S	01/10/2023	ND	0.0150		0.0300
Nitrate nitrogen	mg-N/L	G-10S	01/10/2023		0.0130		1.3000
Nitrite nitrogen	mg-N/L	G-10S	01/10/2023		0.0160	*	0.0093
pH	std units	G-10S	01/10/2023		6.4500	***	6.60 - 9.39
Sulfate	mg/L	G-10S	01/10/2023		295.0000		327.6006
Total dissolved solids	mg/L	G-10S	01/10/2023		915.0000	***	360.0000
Total organic carbon	mg/L	G-10S	01/10/2023		6.7000		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		10.0026
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		16.3912
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		15.9703
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		21.7552
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		10.1406
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		37.5929
Dissolved manganese	mg/L	G-11S	10/18/2022		0.0480		15.7947
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		2.6585
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		0.0001
Dissolved sodium	mg/L	G-11S	10/18/2022		37.2000		119.5595
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		0.0093
pH	std units	G-11S	10/18/2022		6.1200	***	6.60 - 9.39
Sulfate	mg/L	G-11S	10/18/2022		23.5000		327.6006
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	62	62					230.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	39	62	-2.4012	1.9533	0.0100	2.4082	10.0026	lognor		
Bicarbonate	mg/L	62	62					210.0000	nonpar		0.99
Chemical oxygen demand	mg/L	7	62					18.0000	nonpar		0.99
Chloride	mg/L	62	62	1.3689	0.5929	0.0100	2.4082	16.3912	lognor		
Conductivity	umhos/cm	61	61					540.0000	nonpar		0.99
Dissolved antimony	mg/L	25	60					0.0006	nonpar		0.99
Dissolved arsenic	mg/L	62	62	0.0016	0.0012	0.0100	2.4082	0.0045	normal		
Dissolved barium	mg/L	41	60	-4.0178	2.8156	0.0100	2.4110	15.9703	lognor		
Dissolved beryllium	mg/L	0	62					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	18	61					0.0010	nonpar		0.99
Dissolved calcium	mg/L	59	59	6.4712	6.3353	0.0100	2.4125	21.7552	normal		
Dissolved chromium	mg/L	20	62					0.0150	nonpar		0.99
Dissolved cobalt	mg/L	3	62					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	23	61					0.1150	nonpar		0.99
Dissolved iron	mg/L	41	62	-1.7228	1.6773	0.0100	2.4082	10.1406	lognor		
Dissolved lead	mg/L	21	60					0.0027	nonpar		0.99
Dissolved magnesium	mg/L	50	61	-0.0953	1.5447	0.0100	2.4096	37.5929	lognor		
Dissolved manganese	mg/L	41	62	-3.3509	2.5374	0.0100	2.4082	15.7947	lognor		
Dissolved nickel	mg/L	17	62					0.0380	nonpar		0.99
Dissolved potassium	mg/L	51	61	-0.5256	0.6239	0.0100	2.4096	2.6585	lognor		
Dissolved selenium	mg/L	2	60					0.0004	nonpar		0.99
Dissolved silver	mg/L	1	60					0.0001	nonpar		0.99
Dissolved sodium	mg/L	62	62	89.1355	12.6335	0.0100	2.4082	119.5595	normal		
Dissolved thallium	mg/L	2	62					0.0000	nonpar		0.99
Dissolved vanadium	mg/L	0	62					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	21	62					0.0300	nonpar		0.99
Nitrate nitrogen	mg-N/L	54	62					1.3000	nonpar		0.99
Nitrite nitrogen	mg-N/L	33	60	0.0024	0.0029	0.0100	2.4110	0.0093	normal		
pH	std units	63	63					6.60- 9.39	nonpar		0.99
Sulfate	mg/L	61	61	3.6614	0.8841	0.0100	2.4096	327.6006	lognor		
Total dissolved solids	mg/L	62	62					360.0000	nonpar		0.99
Total organic carbon	mg/L	57	62					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 2023
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				
						4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)																																											
Alkalinity (as CaCO3)	nonpar	62	62	230	--	27					220		P			160					340		V		Y	440		V		Y	66			D	N	190					120				
Ammonia Nitrogen	lognor	62	41	8.0717	--	0.02	U				0.196					0.115					0.02	U				0.252				Y	0.02	U				0.029					0.033				
Bicarbonate	nonpar	62	62	210	--	27					220		V			160					340		V		Y	440		V		Y	66			D	N	190					120				
Calcium, Dissolved	normal	58	58	21.0560	--	10.7					53.9		V	I	Y	0.2					82.4		V	D	N	103		V		Y	8.87			I	N	0.2	U				13.0			D	N
Chemical Oxygen Demand	nonpar	62	7	18	--	10	U				10	U				10	U				12		P			21		E			15					10	U				10	U			
Chloride	lognor	62	62	16.8276	250	1.0	U				28.2		E	I	N	2.7			D	N	3.51				Y	7.34			D	N	4.38					1.99			D	N	11.5			D	N
Conductivity (umhos/cm)	nonpar	61	61	540	700	110					600		E	I	Y	430					940		V		Y	1300		V			210			D	N	400					410				
Magnesium, Dissolved	lognor	61	49	34.4414	--	3.02					31.0			I	Y	0.05	U				31.7				Y	24.3					2.05			I	N	0.05	U				4.16			D	N
Nitrate Nitrogen (mg-N/L)	nonpar	62	54	1.3	10	0.058					0.084					0.068					0.01	U				0.033					0.072					0.041			D	N	0.078				
Nitrite Nitrogen (mg-N/L)	normal	60	33	0.0093	1	0.002	U				0.002	U				0.002	U	P			0.002	U				0.002	U	P			0.002	U				0.002	U				0.002	U			
pH (std units)	nonpar	63	63	6.60-9.39	6.5-8.5	6.28		V			6.18		E			9.65		E			6.41		V			6.68		P			6.78		P			9.17					7.83				
Potassium, Dissolved	lognor	60	49	2.64	--	0.98					2.67		E	I	N	0.5	U				6.16		V		Y	4.62		E			1.18					0.5	U				99.1			D	N
Sodium, Dissolved	normal	62	62	120.347	20	4.88					15.1			I	Y	110			I	N	100					187		V			41.4			D	N	108.0					90.7				
Sulfate	lognor	61	61	310.7689	250	25.7					32.8					47.0					171			D	N	288				Y	30.2			D	N	12.3			D	Y	70.7			D	N
Total Dissolved Solids	normal	62	62	373.9926	500	75					360					250					610		V	D	N	970		V	D	N	140					220					250				
Total Organic Carbon	nonpar	62	57	14	--	3.8					9.5					1.1					4.8		P		Y	5.1			I	Y	2.4					2.1					3.1				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)																																											
Antimony	nonpar	57	26	0.0006	0.006	0.00017					0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.00027					0.00024				
Arsenic	normal	62	62	0.0045	0.00005	0.00016					0.00241		P		Y	0.00132					0.00085					0.00355					0.00045					0.00306			I	N	0.000678				
Barium	lognor	60	40	19.3066	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			
Beryllium	nonpar	62	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	61	16	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	62	19	0.015	0.05	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Cobalt	nonpar	62	3	0.005	--	0.01	U				0.014		V			0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Copper	nonpar	61	22	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	62	40	10.5013	0.3	0.03	U				0.823		P		Y	0.03	U				0.03	U				3.35					0.03	U				0.03	U				0.03	U			
Lead	nonpar	62	22	0.0027	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			
Manganese	lognor	62	40	17.4234	0.05	0.01	U				7.56			I	N	0.01	U				0.061				Y	3.26					0.037			I	N	0.01	U				0.01				
Nickel	nonpar	62	17	0.038	0.1	0.01	U				0.016					0.01	U				0.025					0.01	U				0.01					0.01	U				0.015				
Selenium	nonpar	60	2	0.0004	0.01	0.0005	U				0.0005	U				0.0005	U				0.00101		V			0.0005	U				0.0005	U				0.0005	U				0.0005	U			
Silver	nonpar	58	1	0.0001	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			
Thallium	nonpar	62	1	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	62	0	0.01	--	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	nonpar	62	20	0.03	5	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U	P			0.02	U				0.02	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	0.000323					0.0142					0.00146					0.000912					0.00532					0.00059					0.00343					0.000691				
Barium	--	--	--	--	1	0.01	U				0.0105					0.0351					0.01	U				0.01	U				0.01	U				0.0613					0.01	U			
Beryllium	--	--	--	--	0.004	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	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	0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Cobalt	--	--	--	--	--	0.01	U				0.017					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	0.159					22.5					5.85					0.362					11.3					0.046					6.73					0.344				
Lead	--	--	--	--	0.05	0.0002	U				0.000342					0.00143					0.00034					0.0002	U				0.0002	U				0.00146					0.00031				
Manganese	--	--	--	--	0.05	0.01	U				7.25					0.0888					0.106					3.41					0.201					0.17					0.0479				
Nickel	--	--	--	--	0.1	0.01	U				0.022					0.022					0.027					0.01	U				0.011					0.027					0.014				
Selenium	--	--	--	--	0.01	0.001	U				0.00149					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				0.00131					0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Thallium	--	--	--	--	0.002	0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	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			
Zinc	--	--	--	--	5	0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.0177					0.015	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			
1,1,2,2-Tetrachloroethane	--	--	--	--	--	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
1,1,2-Trichloroethane	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	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 2023
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				
						4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/18/23	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**					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			
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	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
4-Methyl-2-Pentanone (MIBK)	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	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	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	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	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
Bromomethane	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	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	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Chloroform	--	--	--	--	7	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Chloromethane	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	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	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
Methyl Iodide	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Methylene Chloride	--	--	--	--	5	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	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			
Styrene	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	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	U				1	U				1	U				1	U				1	U				1	U				1	U				1	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			
trans-1,4-Dichloro-2-butene	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
Trichlorethene (1,1,2-Trichloroe	--	--	--	--	3	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
Trichlorofluoromethane	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
Vinyl Acetate	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Vinyl Chloride	--	--	--	--	0.02	0.05	U				0.05	U				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	04/18/2023		27.0000		230.0000
Ammonia nitrogen	mg-N/L	G-01A	04/18/2023	ND	0.0200		8.0717
Bicarbonate	mg/L	G-01A	04/18/2023		27.0000		210.0000
Chemical oxygen demand	mg/L	G-01A	04/18/2023	ND	10.0000		18.0000
Chloride	mg/L	G-01A	04/18/2023	ND	0.1000		16.8276
Conductivity	umhos/cm	G-01A	04/18/2023		110.0000		540.0000
Dissolved antimony	mg/L	G-01A	04/18/2023		0.0002		0.0006
Dissolved arsenic	mg/L	G-01A	04/18/2023		0.0002		0.0045
Dissolved barium	mg/L	G-01A	04/18/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-01A	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-01A	04/18/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-01A	04/18/2023		10.7000		21.0560
Dissolved chromium	mg/L	G-01A	04/18/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-01A	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01A	04/18/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-01A	04/18/2023	ND	0.0300		10.5013
Dissolved lead	mg/L	G-01A	04/18/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-01A	04/18/2023		3.0200		34.4414
Dissolved manganese	mg/L	G-01A	04/18/2023	ND	0.0100		17.4234
Dissolved nickel	mg/L	G-01A	04/18/2023	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-01A	04/18/2023		0.9800		2.6400
Dissolved selenium	mg/L	G-01A	04/18/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-01A	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-01A	04/18/2023		4.8800		120.3470
Dissolved thallium	mg/L	G-01A	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-01A	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-01A	04/18/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-01A	04/18/2023		0.0580		1.3000
Nitrite nitrogen	mg-N/L	G-01A	04/18/2023	ND	0.0020		0.0093
pH	std units	G-01A	04/18/2023		6.2800	***	6.60 - 9.39
Sulfate	mg/L	G-01A	04/18/2023		25.7000		310.7689
Total dissolved solids	mg/L	G-01A	04/18/2023		75.0000		373.9926
Total organic carbon	mg/L	G-01A	04/18/2023		3.8000		14.0000
Alkalinity (as caco3)	mg/L	G-04A	04/18/2023		220.0000	**	230.0000
Ammonia nitrogen	mg-N/L	G-04A	04/18/2023		0.1960		8.0717
Bicarbonate	mg/L	G-04A	04/18/2023		220.0000	***	210.0000
Chemical oxygen demand	mg/L	G-04A	04/18/2023	ND	10.0000		18.0000
Chloride	mg/L	G-04A	04/18/2023		28.2000	*	16.8276
Conductivity	umhos/cm	G-04A	04/18/2023		600.0000	*	540.0000
Dissolved antimony	mg/L	G-04A	04/18/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-04A	04/18/2023		0.0024	**	0.0045
Dissolved barium	mg/L	G-04A	04/18/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-04A	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-04A	04/18/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-04A	04/18/2023		53.9000	***	21.0560
Dissolved chromium	mg/L	G-04A	04/18/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-04A	04/18/2023		0.0140	***	0.0050
Dissolved copper	mg/L	G-04A	04/18/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-04A	04/18/2023		0.8230	**	10.5013
Dissolved lead	mg/L	G-04A	04/18/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-04A	04/18/2023		31.0000		34.4414
Dissolved manganese	mg/L	G-04A	04/18/2023		7.5600		17.4234
Dissolved nickel	mg/L	G-04A	04/18/2023		0.0160		0.0380
Dissolved potassium	mg/L	G-04A	04/18/2023		2.6700	*	2.6400
Dissolved selenium	mg/L	G-04A	04/18/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-04A	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-04A	04/18/2023		15.1000		120.3470
Dissolved thallium	mg/L	G-04A	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-04A	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-04A	04/18/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-04A	04/18/2023		0.0840		1.3000
Nitrite nitrogen	mg-N/L	G-04A	04/18/2023	ND	0.0020		0.0093
pH	std units	G-04A	04/18/2023		6.1800	*	6.60 - 9.39
Sulfate	mg/L	G-04A	04/18/2023		32.8000		310.7689
Total dissolved solids	mg/L	G-04A	04/18/2023		360.0000		373.9926
Total organic carbon	mg/L	G-04A	04/18/2023		9.5000		14.0000
Alkalinity (as caco3)	mg/L	G-08D1	04/18/2023		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	04/18/2023		0.1150		8.0717
Bicarbonate	mg/L	G-08D1	04/18/2023		160.0000		210.0000
Chemical oxygen demand	mg/L	G-08D1	04/18/2023	ND	10.0000		18.0000
Chloride	mg/L	G-08D1	04/18/2023		2.7000		16.8276
Conductivity	umhos/cm	G-08D1	04/18/2023		430.0000		540.0000
Dissolved antimony	mg/L	G-08D1	04/18/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-08D1	04/18/2023		0.0013		0.0045
Dissolved barium	mg/L	G-08D1	04/18/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-08D1	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-08D1	04/18/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-08D1	04/18/2023		0.2000		21.0560
Dissolved chromium	mg/L	G-08D1	04/18/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-08D1	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D1	04/18/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-08D1	04/18/2023	ND	0.0300		10.5013
Dissolved lead	mg/L	G-08D1	04/18/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-08D1	04/18/2023	ND	0.0500		34.4414
Dissolved manganese	mg/L	G-08D1	04/18/2023	ND	0.0100		17.4234
Dissolved nickel	mg/L	G-08D1	04/18/2023	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-08D1	04/18/2023	ND	0.5000		2.6400
Dissolved selenium	mg/L	G-08D1	04/18/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-08D1	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-08D1	04/18/2023		110.0000		120.3470
Dissolved thallium	mg/L	G-08D1	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-08D1	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-08D1	04/18/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-08D1	04/18/2023		0.0680		1.3000
Nitrite nitrogen	mg-N/L	G-08D1	04/18/2023	ND	0.0020	**	0.0093
pH	std units	G-08D1	04/18/2023		9.6500	*	6.60 - 9.39
Sulfate	mg/L	G-08D1	04/18/2023		47.0000		310.7689
Total dissolved solids	mg/L	G-08D1	04/18/2023		250.0000		373.9926
Total organic carbon	mg/L	G-08D1	04/18/2023		1.1000		14.0000
Alkalinity (as caco3)	mg/L	G-09S	04/19/2023		340.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-09S	04/19/2023	ND	0.0200		8.0717
Bicarbonate	mg/L	G-09S	04/19/2023		340.0000	***	210.0000
Chemical oxygen demand	mg/L	G-09S	04/19/2023		12.0000	**	18.0000
Chloride	mg/L	G-09S	04/19/2023		3.5100		16.8276
Conductivity	umhos/cm	G-09S	04/19/2023		940.0000	***	540.0000
Dissolved antimony	mg/L	G-09S	04/19/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-09S	04/19/2023		0.0009		0.0045
Dissolved barium	mg/L	G-09S	04/19/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-09S	04/19/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-09S	04/19/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-09S	04/19/2023		82.4000	***	21.0560
Dissolved chromium	mg/L	G-09S	04/19/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-09S	04/19/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09S	04/19/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-09S	04/19/2023	ND	0.0300		10.5013
Dissolved lead	mg/L	G-09S	04/19/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-09S	04/19/2023		31.7000		34.4414
Dissolved manganese	mg/L	G-09S	04/19/2023		0.0610		17.4234
Dissolved nickel	mg/L	G-09S	04/19/2023		0.0250		0.0380
Dissolved potassium	mg/L	G-09S	04/19/2023		6.1600	***	2.6400
Dissolved selenium	mg/L	G-09S	04/19/2023		0.0010	***	0.0004
Dissolved silver	mg/L	G-09S	04/19/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-09S	04/19/2023		100.0000		120.3470
Dissolved thallium	mg/L	G-09S	04/19/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-09S	04/19/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-09S	04/19/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-09S	04/19/2023	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-09S	04/19/2023	ND	0.0020		0.0093
pH	std units	G-09S	04/19/2023		6.4100	***	6.60 - 9.39
Sulfate	mg/L	G-09S	04/19/2023		171.0000		310.7689
Total dissolved solids	mg/L	G-09S	04/19/2023		610.0000	***	373.9926
Total organic carbon	mg/L	G-09S	04/19/2023		4.8000	**	14.0000
Alkalinity (as caco3)	mg/L	G-10S	04/19/2023		440.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-10S	04/19/2023		0.2520		8.0717

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-10S	04/19/2023		440.0000	***	210.0000
Chemical oxygen demand	mg/L	G-10S	04/19/2023		21.0000	*	18.0000
Chloride	mg/L	G-10S	04/19/2023		7.3400		16.8276
Conductivity	umhos/cm	G-10S	04/19/2023		1300.0000	***	540.0000
Dissolved antimony	mg/L	G-10S	04/19/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-10S	04/19/2023		0.0036		0.0045
Dissolved barium	mg/L	G-10S	04/19/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-10S	04/19/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-10S	04/19/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-10S	04/19/2023		103.0000	***	21.0560
Dissolved chromium	mg/L	G-10S	04/19/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-10S	04/19/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10S	04/19/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-10S	04/19/2023		3.3500		10.5013
Dissolved lead	mg/L	G-10S	04/19/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-10S	04/19/2023		24.3000		34.4414
Dissolved manganese	mg/L	G-10S	04/19/2023		3.2600		17.4234
Dissolved nickel	mg/L	G-10S	04/19/2023	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-10S	04/19/2023		4.6200	*	2.6400
Dissolved selenium	mg/L	G-10S	04/19/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-10S	04/19/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-10S	04/19/2023		187.0000	***	120.3470
Dissolved thallium	mg/L	G-10S	04/19/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10S	04/19/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-10S	04/19/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-10S	04/19/2023		0.0330		1.3000
Nitrite nitrogen	mg-N/L	G-10S	04/19/2023	ND	0.0020	**	0.0093
pH	std units	G-10S	04/19/2023		6.6800	**	6.60 - 9.39
Sulfate	mg/L	G-10S	04/19/2023		288.0000		310.7689
Total dissolved solids	mg/L	G-10S	04/19/2023		970.0000	***	373.9926
Total organic carbon	mg/L	G-10S	04/19/2023		5.1000		14.0000
Alkalinity (as caco3)	mg/L	G-11S	04/19/2023		66.0000		230.0000
Ammonia nitrogen	mg-N/L	G-11S	04/19/2023	ND	0.0200		8.0717
Bicarbonate	mg/L	G-11S	04/19/2023		66.0000		210.0000
Chemical oxygen demand	mg/L	G-11S	04/19/2023		15.0000		18.0000
Chloride	mg/L	G-11S	04/19/2023		4.3800		16.8276
Conductivity	umhos/cm	G-11S	04/19/2023		210.0000		540.0000
Dissolved antimony	mg/L	G-11S	04/19/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-11S	04/19/2023		0.0005		0.0045
Dissolved barium	mg/L	G-11S	04/19/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-11S	04/19/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-11S	04/19/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-11S	04/19/2023		8.8700		21.0560
Dissolved chromium	mg/L	G-11S	04/19/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-11S	04/19/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-11S	04/19/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-11S	04/19/2023	ND	0.0300		10.5013
Dissolved lead	mg/L	G-11S	04/19/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-11S	04/19/2023		2.0500		34.4414
Dissolved manganese	mg/L	G-11S	04/19/2023		0.0370		17.4234
Dissolved nickel	mg/L	G-11S	04/19/2023		0.0100		0.0380
Dissolved potassium	mg/L	G-11S	04/19/2023		1.1800		2.6400
Dissolved selenium	mg/L	G-11S	04/19/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-11S	04/19/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-11S	04/19/2023		41.4000		120.3470
Dissolved thallium	mg/L	G-11S	04/19/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-11S	04/19/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-11S	04/19/2023	ND	0.0200	**	0.0300
Nitrate nitrogen	mg-N/L	G-11S	04/19/2023		0.0720		1.3000
Nitrite nitrogen	mg-N/L	G-11S	04/19/2023	ND	0.0020		0.0093
pH	std units	G-11S	04/19/2023		6.7800	**	6.60 - 9.39
Sulfate	mg/L	G-11S	04/19/2023		30.2000		310.7689
Total dissolved solids	mg/L	G-11S	04/19/2023		140.0000		373.9926

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Total organic carbon	mg/L	G-11S	04/19/2023		2.4000		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	62	62					230.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	41	62	-2.5133	1.9108	0.0100	2.4082	8.0717	lognor		
Bicarbonate	mg/L	62	62					210.0000	nonpar		0.99
Chemical oxygen demand	mg/L	7	62					18.0000	nonpar		0.99
Chloride	mg/L	62	62	1.3821	0.5983	0.0100	2.4082	16.8276	lognor		
Conductivity	umhos/cm	61	61					540.0000	nonpar		0.99
Dissolved antimony	mg/L	26	57					0.0006	nonpar		0.99
Dissolved arsenic	mg/L	62	62	0.0016	0.0012	0.0100	2.4082	0.0045	normal		
Dissolved barium	mg/L	40	60	-3.9336	2.8594	0.0100	2.4110	19.3066	lognor		
Dissolved beryllium	mg/L	0	62					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	16	61					0.0010	nonpar		0.99
Dissolved calcium	mg/L	58	58	6.4140	6.0653	0.0100	2.4141	21.0560	normal		
Dissolved chromium	mg/L	19	62					0.0150	nonpar		0.99
Dissolved cobalt	mg/L	3	62					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	22	61					0.1150	nonpar		0.99
Dissolved iron	mg/L	40	62	-1.6580	1.6649	0.0100	2.4082	10.5013	lognor		
Dissolved lead	mg/L	22	62					0.0027	nonpar		0.99
Dissolved magnesium	mg/L	49	61	-0.0527	1.4907	0.0100	2.4096	34.4414	lognor		
Dissolved manganese	mg/L	40	62	-3.2335	2.5294	0.0100	2.4082	17.4234	lognor		
Dissolved nickel	mg/L	17	62					0.0380	nonpar		0.99
Dissolved potassium	mg/L	49	60	-0.5055	0.6123	0.0100	2.4110	2.6400	lognor		
Dissolved selenium	mg/L	2	60					0.0004	nonpar		0.99
Dissolved silver	mg/L	1	58					0.0001	nonpar		0.99
Dissolved sodium	mg/L	62	62	89.8258	12.6738	0.0100	2.4082	120.3470	normal		
Dissolved thallium	mg/L	1	62					0.0000	nonpar		0.99
Dissolved vanadium	mg/L	0	62					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	20	62					0.0300	nonpar		0.99
Nitrate nitrogen	mg-N/L	54	62					1.3000	nonpar		0.99
Nitrite nitrogen	mg-N/L	33	60	0.0024	0.0029	0.0100	2.4110	0.0093	normal		
pH	std units	63	63					6.60- 9.39	nonpar		0.99
Sulfate	mg/L	61	61	3.6636	0.8613	0.0100	2.4096	310.7689	lognor		
Total dissolved solids	mg/L	62	62	265.0000	45.2588	0.0100	2.4082	373.9926	normal		
Total organic carbon	mg/L	57	62					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: Third Quarter 2023
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09S					G-10S				
						7/11/23	D	V	Tr	Ch	7/11/23	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)															
Alkalinity (as CaCO3)	nonpar	62	62	230	--	360		V			460		V		
Ammonia Nitrogen	lognor	62	41	8.0717	--	0.02	U				0.265				
Bicarbonate	nonpar	62	62	210	--	360		V			460		V		
Calcium, Dissolved	normal	58	58	21.056	--	82.8		V		Y	101		V		
Chemical Oxygen Demand	nonpar	62	7	18	--	15					38		V		
Chloride	lognor	62	62	16.8276	250	3.68					7.35			D	N
Conductivity (umhos/cm)	nonpar	61	61	540	700	950		V			1300		V		
Magnesium, Dissolved	lognor	61	49	34.4414	--	29.9					23.2				
Nitrate Nitrogen (mg-N/L)	nonpar	62	54	1.3	10	0.01	U				0.068				
Nitrite Nitrogen (mg-N/L)	normal	60	33	0.0093	1	0.004					0.006				
pH (std units)	nonpar	63	63	6.60-9.39	6.5-8.5	6.20		V			6.67				
Potassium, Dissolved	lognor	60	49	2.64	--	5.71		V			4.05		V		
Sodium, Dissolved	normal	62	62	120.347	20	93.4					174		V		
Sulfate	lognor	61	61	310.7689	250	152			D	N	241				
Total Dissolved Solids	nonpar	62	62	373.9926	500	630		V	D	N	980		V		Y
Total Organic Carbon	nonpar	62	57	14	--	4.4					4.2				Y
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony	nonpar	57	26	0.0006	0.006	0.0001	U				0.0001	U			
Arsenic	normal	62	62	0.0045	0.00005	0.000802					0.00589		E		
Barium	lognor	60	40	19.3066	1	0.01	U				0.01	U			
Beryllium	nonpar	62	0	0.0005	0.004	0.2	U				0.2	U			
Cadmium	nonpar	61	16	0.001	0.005	0.00005	U				0.00005	U			
Chromium	nonpar	62	19	0.015	0.05	0.02	U				0.02	U			
Cobalt	nonpar	62	3	0.005	--	0.01	U				0.01	U			
Copper	nonpar	61	22	0.115	1	0.02	U				0.02	U			
Iron	lognor	62	40	10.5013	0.3	0.03	U				9.51				
Lead	nonpar	62	22	0.0027	0.05	0.0002	U				0.0002	U			
Manganese	lognor	62	40	17.4234	0.05	0.024			D	Y	3.15				
Nickel	nonpar	62	17	0.038	0.1	0.017					0.01	U			
Selenium	nonpar	60	2	0.0004	0.01	0.00097		V			0.0005	U			
Silver	nonpar	58	1	0.0001	0.05	0.0002	U				0.0002	U			
Thallium	nonpar	62	1	0.00009	0.002	0.00005	U				0.00005	U			
Vanadium	nonpar	62	0	0.01	--	0.02	U				0.02	U			
Zinc	nonpar	62	20	0.03	5	0.02	U				0.02	U			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony	--	--	--	--	0.006	0.0003	U				0.0003	U			
Arsenic	--	--	--	--	0.00005	0.000868					0.00642				
Barium	--	--	--	--	1	0.01	U				0.01	U			
Beryllium	--	--	--	--	0.004	0.3	U				0.3	U			
Cadmium	--	--	--	--	0.005	0.0001	U				0.0001	U			
Chromium	--	--	--	--	0.05	0.02	U				0.02	U			
Cobalt	--	--	--	--	--	0.01	U				0.01	U			
Copper	--	--	--	--	1	0.01	U				0.01	U			
Iron	--	--	--	--	0.3	0.774					11.1				
Lead	--	--	--	--	0.05	0.00061					0.237				
Manganese	--	--	--	--	0.05	0.0958					3.21				
Nickel	--	--	--	--	0.1	0.025					0.01	U			
Selenium	--	--	--	--	0.01	0.001	U				0.001	U			
Silver	--	--	--	--	0.05	0.002					0.0002	U			
Thallium	--	--	--	--	0.002	0.0001	U				0.0001	U			
Vanadium	--	--	--	--	--	0.02	U				0.02	U			
Zinc	--	--	--	--	5	0.015	U				0.015	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	--	--	--	--	--	2	U				2	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				0.03	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 2023
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09S					G-10S				
						7/11/23	D	V	Tr	Ch	7/11/23	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	--	--	--	--	**--**	2	U				2	U			
4-Methyl-2-Pentanone (MIBK)	--	--	--	--	**--**	3	U				3	U			
Acetone	--	--	--	--	**--**	5	U				5	U			
Acrylonitrile	--	--	--	--	**0.07**	0.05	U				0.05	U			
Benzene	--	--	--	--	**1**	0.5	U				0.5	U			
Bromodichloromethane	--	--	--	--	**0.3**	0.02	U				0.02	U			
Bromoform	--	--	--	--	**5**	2	U				2	U			
Bromomethane	--	--	--	--	**--**	2	U				2	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	--	--	--	--	**--**	3	U				3	U			
Chloroform	--	--	--	--	**7**	1	U				1	U			
Chloromethane	--	--	--	--	**--**	2	U				2	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	--	--	--	--	**--**	5	U				5	U			
Methyl Iodide	--	--	--	--	**--**	3	U				3	U			
Methylene Chloride	--	--	--	--	**5**	3	U				3	U			
o-Xylene	--	--	--	--	**--**	1.5	U				1.5	U			
Styrene	--	--	--	--	**--**	2	U				2	U			
Tetrachloroethylene	--	--	--	--	**0.8**	0.03	U				0.03	U			
Toluene	--	--	--	--	**--**	2	U				2	U			
trans-1,2-Dichloroethene	--	--	--	--	**--**	1	U				1	U			
trans-1,3-Dichloropropene	--	--	--	--	**0.2**	0.03	U				0.03	U			
trans-1,4-Dichloro-2-butene	--	--	--	--	**--**	2	U				2	U			
Trichlorethene (1,1,2-Trichloroet	--	--	--	--	**3**	2	U				2	U			
Trichlorofluoromethane	--	--	--	--	**--**	2	U				2	U			
Vinyl Acetate	--	--	--	--	**--**	3	U				3	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	04/18/2023		27.0000		230.0000
Ammonia nitrogen	mg-N/L	G-01A	04/18/2023	ND	0.0200		8.0717
Bicarbonate	mg/L	G-01A	04/18/2023		27.0000		210.0000
Chemical oxygen demand	mg/L	G-01A	04/18/2023	ND	10.0000		18.0000
Chloride	mg/L	G-01A	04/18/2023	ND	0.1000		16.8276
Conductivity	umhos/cm	G-01A	04/18/2023		110.0000		540.0000
Dissolved antimony	mg/L	G-01A	04/18/2023		0.0002		0.0006
Dissolved arsenic	mg/L	G-01A	04/18/2023		0.0002		0.0045
Dissolved barium	mg/L	G-01A	04/18/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-01A	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-01A	04/18/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-01A	04/18/2023		10.7000		21.0560
Dissolved chromium	mg/L	G-01A	04/18/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-01A	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01A	04/18/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-01A	04/18/2023	ND	0.0300		10.5013
Dissolved lead	mg/L	G-01A	04/18/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-01A	04/18/2023		3.0200		34.4414
Dissolved manganese	mg/L	G-01A	04/18/2023	ND	0.0100		17.4234
Dissolved nickel	mg/L	G-01A	04/18/2023	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-01A	04/18/2023		0.9800		2.6400
Dissolved selenium	mg/L	G-01A	04/18/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-01A	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-01A	04/18/2023		4.8800		120.3470
Dissolved thallium	mg/L	G-01A	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-01A	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-01A	04/18/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-01A	04/18/2023		0.0580		1.3000
Nitrite nitrogen	mg-N/L	G-01A	04/18/2023	ND	0.0020		0.0093
pH	std units	G-01A	04/18/2023		6.2800	***	6.60 - 9.39
Sulfate	mg/L	G-01A	04/18/2023		25.7000		310.7689
Total dissolved solids	mg/L	G-01A	04/18/2023		75.0000		373.9926
Total organic carbon	mg/L	G-01A	04/18/2023		3.8000		14.0000
Alkalinity (as caco3)	mg/L	G-04A	04/18/2023		220.0000	**	230.0000
Ammonia nitrogen	mg-N/L	G-04A	04/18/2023		0.1960		8.0717
Bicarbonate	mg/L	G-04A	04/18/2023		220.0000	***	210.0000
Chemical oxygen demand	mg/L	G-04A	04/18/2023	ND	10.0000		18.0000
Chloride	mg/L	G-04A	04/18/2023		28.2000	*	16.8276
Conductivity	umhos/cm	G-04A	04/18/2023		600.0000	*	540.0000
Dissolved antimony	mg/L	G-04A	04/18/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-04A	04/18/2023		0.0024	**	0.0045
Dissolved barium	mg/L	G-04A	04/18/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-04A	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-04A	04/18/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-04A	04/18/2023		53.9000	***	21.0560
Dissolved chromium	mg/L	G-04A	04/18/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-04A	04/18/2023		0.0140	***	0.0050
Dissolved copper	mg/L	G-04A	04/18/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-04A	04/18/2023		0.8230	**	10.5013
Dissolved lead	mg/L	G-04A	04/18/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-04A	04/18/2023		31.0000		34.4414
Dissolved manganese	mg/L	G-04A	04/18/2023		7.5600		17.4234
Dissolved nickel	mg/L	G-04A	04/18/2023		0.0160		0.0380
Dissolved potassium	mg/L	G-04A	04/18/2023		2.6700	*	2.6400
Dissolved selenium	mg/L	G-04A	04/18/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-04A	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-04A	04/18/2023		15.1000		120.3470
Dissolved thallium	mg/L	G-04A	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-04A	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-04A	04/18/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-04A	04/18/2023		0.0840		1.3000
Nitrite nitrogen	mg-N/L	G-04A	04/18/2023	ND	0.0020		0.0093
pH	std units	G-04A	04/18/2023		6.1800	*	6.60 - 9.39
Sulfate	mg/L	G-04A	04/18/2023		32.8000		310.7689
Total dissolved solids	mg/L	G-04A	04/18/2023		360.0000		373.9926
Total organic carbon	mg/L	G-04A	04/18/2023		9.5000		14.0000
Alkalinity (as caco3)	mg/L	G-08D1	04/18/2023		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	04/18/2023		0.1150		8.0717
Bicarbonate	mg/L	G-08D1	04/18/2023		160.0000		210.0000
Chemical oxygen demand	mg/L	G-08D1	04/18/2023	ND	10.0000		18.0000
Chloride	mg/L	G-08D1	04/18/2023		2.7000		16.8276
Conductivity	umhos/cm	G-08D1	04/18/2023		430.0000		540.0000
Dissolved antimony	mg/L	G-08D1	04/18/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-08D1	04/18/2023		0.0013		0.0045
Dissolved barium	mg/L	G-08D1	04/18/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-08D1	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-08D1	04/18/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-08D1	04/18/2023		0.2000		21.0560
Dissolved chromium	mg/L	G-08D1	04/18/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-08D1	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D1	04/18/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-08D1	04/18/2023	ND	0.0300		10.5013
Dissolved lead	mg/L	G-08D1	04/18/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-08D1	04/18/2023	ND	0.0500		34.4414
Dissolved manganese	mg/L	G-08D1	04/18/2023	ND	0.0100		17.4234
Dissolved nickel	mg/L	G-08D1	04/18/2023	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-08D1	04/18/2023	ND	0.5000		2.6400
Dissolved selenium	mg/L	G-08D1	04/18/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-08D1	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-08D1	04/18/2023		110.0000		120.3470
Dissolved thallium	mg/L	G-08D1	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-08D1	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-08D1	04/18/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-08D1	04/18/2023		0.0680		1.3000
Nitrite nitrogen	mg-N/L	G-08D1	04/18/2023	ND	0.0020	**	0.0093
pH	std units	G-08D1	04/18/2023		9.6500	*	6.60 - 9.39
Sulfate	mg/L	G-08D1	04/18/2023		47.0000		310.7689
Total dissolved solids	mg/L	G-08D1	04/18/2023		250.0000		373.9926
Total organic carbon	mg/L	G-08D1	04/18/2023		1.1000		14.0000
Alkalinity (as caco3)	mg/L	G-09S	07/11/2023		360.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-09S	07/11/2023	ND	0.0200		8.0717
Bicarbonate	mg/L	G-09S	07/11/2023		360.0000	***	210.0000
Chemical oxygen demand	mg/L	G-09S	07/11/2023		15.0000		18.0000
Chloride	mg/L	G-09S	07/11/2023		3.6800		16.8276
Conductivity	umhos/cm	G-09S	07/11/2023		950.0000	***	540.0000
Dissolved antimony	mg/L	G-09S	07/11/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-09S	07/11/2023		0.0008		0.0045
Dissolved barium	mg/L	G-09S	07/11/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-09S	07/11/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-09S	07/11/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-09S	07/11/2023		82.8000	***	21.0560
Dissolved chromium	mg/L	G-09S	07/11/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-09S	07/11/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09S	07/11/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-09S	07/11/2023	ND	0.0300		10.5013
Dissolved lead	mg/L	G-09S	07/11/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-09S	07/11/2023		29.9000		34.4414
Dissolved manganese	mg/L	G-09S	07/11/2023		0.0240		17.4234
Dissolved nickel	mg/L	G-09S	07/11/2023		0.0170		0.0380
Dissolved potassium	mg/L	G-09S	07/11/2023		5.7100	***	2.6400
Dissolved selenium	mg/L	G-09S	07/11/2023		0.0010	***	0.0004
Dissolved silver	mg/L	G-09S	07/11/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-09S	07/11/2023		93.4000		120.3470
Dissolved thallium	mg/L	G-09S	07/11/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-09S	07/11/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-09S	07/11/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-09S	07/11/2023	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-09S	07/11/2023		0.0040		0.0093
pH	std units	G-09S	07/11/2023		6.2000	***	6.60 - 9.39
Sulfate	mg/L	G-09S	07/11/2023		152.0000		310.7689
Total dissolved solids	mg/L	G-09S	07/11/2023		630.0000	***	373.9926
Total organic carbon	mg/L	G-09S	07/11/2023		4.4000		14.0000
Alkalinity (as caco3)	mg/L	G-10S	07/11/2023		460.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-10S	07/11/2023		0.2650		8.0717

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-10S	07/11/2023		460.0000	***	210.0000
Chemical oxygen demand	mg/L	G-10S	07/11/2023		38.0000	***	18.0000
Chloride	mg/L	G-10S	07/11/2023		7.3500		16.8276
Conductivity	umhos/cm	G-10S	07/11/2023		1300.0000	***	540.0000
Dissolved antimony	mg/L	G-10S	07/11/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-10S	07/11/2023		0.0059	*	0.0045
Dissolved barium	mg/L	G-10S	07/11/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-10S	07/11/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-10S	07/11/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-10S	07/11/2023		101.0000	***	21.0560
Dissolved chromium	mg/L	G-10S	07/11/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-10S	07/11/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10S	07/11/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-10S	07/11/2023		9.5100		10.5013
Dissolved lead	mg/L	G-10S	07/11/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-10S	07/11/2023		23.2000		34.4414
Dissolved manganese	mg/L	G-10S	07/11/2023		3.1500		17.4234
Dissolved nickel	mg/L	G-10S	07/11/2023	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-10S	07/11/2023		4.0500	***	2.6400
Dissolved selenium	mg/L	G-10S	07/11/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-10S	07/11/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-10S	07/11/2023		174.0000	***	120.3470
Dissolved thallium	mg/L	G-10S	07/11/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10S	07/11/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-10S	07/11/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-10S	07/11/2023		0.0680		1.3000
Nitrite nitrogen	mg-N/L	G-10S	07/11/2023		0.0060		0.0093
pH	std units	G-10S	07/11/2023		6.6700		6.60 - 9.39
Sulfate	mg/L	G-10S	07/11/2023		241.0000		310.7689
Total dissolved solids	mg/L	G-10S	07/11/2023		980.0000	***	373.9926
Total organic carbon	mg/L	G-10S	07/11/2023		4.2000		14.0000
Alkalinity (as caco3)	mg/L	G-11S	04/19/2023		66.0000		230.0000
Ammonia nitrogen	mg-N/L	G-11S	04/19/2023	ND	0.0200		8.0717
Bicarbonate	mg/L	G-11S	04/19/2023		66.0000		210.0000
Chemical oxygen demand	mg/L	G-11S	04/19/2023		15.0000		18.0000
Chloride	mg/L	G-11S	04/19/2023		4.3800		16.8276
Conductivity	umhos/cm	G-11S	04/19/2023		210.0000		540.0000
Dissolved antimony	mg/L	G-11S	04/19/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-11S	04/19/2023		0.0005		0.0045
Dissolved barium	mg/L	G-11S	04/19/2023	ND	0.0100		19.3066
Dissolved beryllium	mg/L	G-11S	04/19/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-11S	04/19/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-11S	04/19/2023		8.8700		21.0560
Dissolved chromium	mg/L	G-11S	04/19/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-11S	04/19/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-11S	04/19/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-11S	04/19/2023	ND	0.0300		10.5013
Dissolved lead	mg/L	G-11S	04/19/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-11S	04/19/2023		2.0500		34.4414
Dissolved manganese	mg/L	G-11S	04/19/2023		0.0370		17.4234
Dissolved nickel	mg/L	G-11S	04/19/2023		0.0100		0.0380
Dissolved potassium	mg/L	G-11S	04/19/2023		1.1800		2.6400
Dissolved selenium	mg/L	G-11S	04/19/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-11S	04/19/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-11S	04/19/2023		41.4000		120.3470
Dissolved thallium	mg/L	G-11S	04/19/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-11S	04/19/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-11S	04/19/2023	ND	0.0200	**	0.0300
Nitrate nitrogen	mg-N/L	G-11S	04/19/2023		0.0720		1.3000
Nitrite nitrogen	mg-N/L	G-11S	04/19/2023	ND	0.0020		0.0093
pH	std units	G-11S	04/19/2023		6.7800	**	6.60 - 9.39
Sulfate	mg/L	G-11S	04/19/2023		30.2000		310.7689
Total dissolved solids	mg/L	G-11S	04/19/2023		140.0000		373.9926

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Total organic carbon	mg/L	G-11S	04/19/2023		2.4000		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	62	62					230.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	41	62	-2.5133	1.9108	0.0100	2.4082	8.0717	lognor		
Bicarbonate	mg/L	62	62					210.0000	nonpar		0.99
Chemical oxygen demand	mg/L	7	62					18.0000	nonpar		0.99
Chloride	mg/L	62	62	1.3821	0.5983	0.0100	2.4082	16.8276	lognor		
Conductivity	umhos/cm	61	61					540.0000	nonpar		0.99
Dissolved antimony	mg/L	26	57					0.0006	nonpar		0.99
Dissolved arsenic	mg/L	62	62	0.0016	0.0012	0.0100	2.4082	0.0045	normal		
Dissolved barium	mg/L	40	60	-3.9336	2.8594	0.0100	2.4110	19.3066	lognor		
Dissolved beryllium	mg/L	0	62					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	16	61					0.0010	nonpar		0.99
Dissolved calcium	mg/L	58	58	6.4140	6.0653	0.0100	2.4141	21.0560	normal		
Dissolved chromium	mg/L	19	62					0.0150	nonpar		0.99
Dissolved cobalt	mg/L	3	62					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	22	61					0.1150	nonpar		0.99
Dissolved iron	mg/L	40	62	-1.6580	1.6649	0.0100	2.4082	10.5013	lognor		
Dissolved lead	mg/L	22	62					0.0027	nonpar		0.99
Dissolved magnesium	mg/L	49	61	-0.0527	1.4907	0.0100	2.4096	34.4414	lognor		
Dissolved manganese	mg/L	40	62	-3.2335	2.5294	0.0100	2.4082	17.4234	lognor		
Dissolved nickel	mg/L	17	62					0.0380	nonpar		0.99
Dissolved potassium	mg/L	49	60	-0.5055	0.6123	0.0100	2.4110	2.6400	lognor		
Dissolved selenium	mg/L	2	60					0.0004	nonpar		0.99
Dissolved silver	mg/L	1	58					0.0001	nonpar		0.99
Dissolved sodium	mg/L	62	62	89.8258	12.6738	0.0100	2.4082	120.3470	normal		
Dissolved thallium	mg/L	1	62					0.0000	nonpar		0.99
Dissolved vanadium	mg/L	0	62					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	20	62					0.0300	nonpar		0.99
Nitrate nitrogen	mg-N/L	54	62					1.3000	nonpar		0.99
Nitrite nitrogen	mg-N/L	33	60	0.0024	0.0029	0.0100	2.4110	0.0093	normal		
pH	std units	63	63					6.60- 9.39	nonpar		0.99
Sulfate	mg/L	61	61	3.6636	0.8613	0.0100	2.4096	310.7689	lognor		
Total dissolved solids	mg/L	62	62	265.0000	45.2588	0.0100	2.4082	373.9926	normal		
Total organic carbon	mg/L	57	62					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 2023
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				
						10/17/23	D	V	Tr	Ch		D	V	Tr	Ch	10/17/23	D	V	Tr	Ch	10/18/23	D	V	Tr	Ch	10/18/23	D	V	Tr	Ch	10/18/23	D	V	Tr	Ch	10/17/23	D	V	Tr	Ch	10/17/23	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)																																											
Alkalinity (as CaCO3)	nonpar	60	60	230	--	28					Not sampled - insufficient water					170					350		V			470		V			90			D	N	190					140				
Ammonia Nitrogen	lognor	60	41	8.0717	--	0.02	U									0.116					0.02	U				0.239					0.02	U				0.02					0.02	U			
Bicarbonate	nonpar	60	60	210	--	28										170					350		V			470		V			90			D	N	190					140				
Calcium, Dissolved	normal	56	56	21.0560	--	15.4										0.83					84.0				Y	100		V			16.9			I	N	0.69					9.29			D	N
Chemical Oxygen Demand	nonpar	60	7	18	--	10	U									10	U				15					12		P			12					10	U				10	U			
Chloride	lognor	60	60	16.8276	250	1.96										2.97			D	N	3.99					7.76			D	N	9.12					2.06			D	N	4.35			D	N
Conductivity (umhos/cm)	nonpar	59	59	540	700	160										440					940		V			1300		V			270				Y	490					440				
Magnesium, Dissolved	lognor	59	46	34.4414	--	4.1										0.05	U				31.0					23.4					3.67			I	N	0.05	U				2.7			D	N
Nitrate Nitrogen (mg-N/L)	nonpar	60	52	1.3	10	0.19										0.12					0.01	U				0.012					0.065					0.01	U		D	N	0.019				
Nitrite Nitrogen (mg-N/L)	lognor	58	33	0.0093	1	0.002	U									0.034					0.002	U				0.027		V			0.002	U				0.035					0.009				
pH (std units)	nonpar	61	61	6.60-9.39	6.5-8.5	4.77		V								8.77		P			6.00		V			6.30		E			5.89		E			8.21					6.89				
Potassium, Dissolved	lognor	58	46	2.64	--	1.44										0.5	U				5.65		V			4.04		V			1.33					0.5	U				0.78			D	N
Sodium, Dissolved	nonpar	60	60	120.347	20	6.5			D	Y						106			I	N	96					180		V			41.2			D	N	99.4					86.2				
Sulfate	lognor	59	59	310.7689	250	40.4										47.9					164			D	N	270					44.8			D	N	13.8				Y	82.9			D	N
Total Dissolved Solids	nonpar	60	60	373.9926	500	100										260					660		V		Y	840		V		Y	160					220					260				
Total Organic Carbon	nonpar	60	55	14	--	5.5										0.58					5.6				Y	4.3				Y	2.6					1.4					0.69				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)																																											
Antimony	nonpar	54	23	0.0006	0.006	0.00015					Not sampled - insufficient water					0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0002					0.00017				
Arsenic	normal	60	60	0.0045	0.00005	0.00022										0.0017					0.000857					0.00715		E			0.000424			D	Y	0.00318				I	N	0.000702				
Barium	nonpar	59	37	19.3066	1	0.01	U									0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Beryllium	nonpar	60	0	0.0005	0.004	0.2	U									0.2	U				0.2	U				0.2	U				0.2	U				0.2	U				0.2	U			
Cadmium	nonpar	59	14	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			
Chromium	nonpar	60	16	0.015	0.05	0.02	U									0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Cobalt	nonpar	60	3	0.005	--	0.01	U									0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.01	U			
Copper	nonpar	59	19	0.115	1	0.02	U									0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Iron	lognor	60	36	10.5013	0.3	0.03	U									0.03	U				0.03	U				3.09					0.03	U				0.03	U				0.03	U			
Lead	nonpar	60	22	0.0027	0.05	0.0002	U									0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Manganese	lognor	60	36	17.4234	0.05	0.01	U									0.01	U				0.011			D	Y	3.07					0.128			I	N	0.01	U				0.01	U			
Nickel	nonpar	60	15	0.038	0.1	0.01	U									0.01	U				0.015					0.01	U				0.01	U				0.01	U				0.01	U			
Selenium	nonpar	58	2	0.0004	0.01	0.0005	U									0.0005	U				0.001		V			0.0005	U				0.0005	U				0.0005	U				0.0005	U			
Silver	nonpar	54	0	0.0001	0.05	0.0002	U									0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Thallium	nonpar	60	1	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			
Vanadium	nonpar	60	0	0.01	--	0.02	U									0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Zinc	nonpar	60	19	0.03	5	0.02	U									0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)																																											
Antimony	--	--	--	--	0.006	0.0003	U				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	0.000307										0.00164					0.00108					0.0074					0.000573					0.00397					0.00108				
Barium	--	--	--	--	1	0.01	U									0.0173					0.01	U				0.01	U				0.01	U				0.0543					0.01	U			
Beryllium	--	--	--	--	0.004	0.3	U									0.3	U				0.3	U				0.3	U				0.3	U				0.3	U				0.3	U			
Cadmium	--	--	--	--	0.005	0.0001	U									0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.000904				
Chromium	--	--	--	--	0.05	0.02	U									0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Cobalt	--	--	--	--	--	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			
Iron	--	--	--	--	0.3	0.111										2.74					0.776					11.2					0.058					6.05					0.489				
Lead	--	--	--	--	0.05	0.0002	U									0.000763					0.000779					0.0002	U				0.0002	U				0.00125					0.000472				
Manganese	--	--	--	--	0.05	0.01	U									0.0437					0.0927					3.29					0.265					0.168					0.0567				
Nickel	--	--	--	--	0.1	0.01	U									0.01	U				0.025					0.01	U				0.01	U				0.018					0.012				
Selenium	--	--	--	--	0.01	0.001	U									0.00108					0.001	U				0.001	U				0.001	U				0.00106					0.001	U			
Silver	--	--	--	--	0.05	0.0002	U									0.0002	U				0.00227					0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Thallium	--	--	--	--	0.002	0.0001	U									0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Vanadium	--	--	--	--	--	0.02	U									0.02	U				0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Zinc	--	--	--	--	5	0.015	U									0.015	U				0.015	U				0.015	U				0.015	U				0.0165					0.015	U			
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L)																																											
1,1,1-Trichloroethane	--	--	--	--	200	1	U				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	U			
1,1,2-Trichloroethane	--	--	--	--	--	2	U									2	U				2	U				2	U				2	U				2	U				2	U			
1,1-Dichloroethane	--	--	--	--	1	1	U									1	U				1	U				1	U				1	U				1	U				1	U			

Groundwater Analytical Summary - Shallow Wells: Fourth Quarter 2023
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				
						10/17/23	D	V	Tr	Ch		D	V	Tr	Ch	10/17/23	D	V	Tr	Ch	10/18/23	D	V	Tr	Ch	10/18/23	D	V	Tr	Ch	10/18/23	D	V	Tr	Ch	10/17/23	D	V	Tr	Ch	10/17/23	D	V	Tr	Ch
VOLATILE ORGANIC COMPOUNDS (VOCs) EPA Method 8260 (µg/L) (cont.)																																											
1,1-Dichloroethylene	--	--	--	--	--	1	U				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	--	--	--	--	--	2	U									2	U				2	U				2	U				2	U				2	U			
4-Methyl-2-Pentanone (MIBK)	--	--	--	--	--	3	U									3	U				3	U				3	U				3	U				3	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	0.5	U									0.5	U				1	U				0.5	U				0.5	U				0.5	U			
Bromodichloromethane	--	--	--	--	0.3	0.02	U									0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Bromoform	--	--	--	--	5	2	U									2	U				2	U				2	U				2	U				2	U			
Bromomethane	--	--	--	--	--	2	U									2	U				2	U				2	U				2	U				2	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	--	--	--	--	--	3	U									3	U				3	U				3	U				3	U				3	U			
Chloroform	--	--	--	--	7	1	U									1	U				1	U				1	U				1	U				1	U			
Chloromethane	--	--	--	--	--	2	U									2	U				2	U				2	U				2	U				2	U			
cis-1,2-Dichloroethene	--	--	--	--	--	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			
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	--	--	--	--	--	5	U									5	U				5	U				5	U				5	U				5	U			
Methyl Iodide	--	--	--	--	--	3	U									3	U				3	U				3	U				3	U				3	U			
Methylene Chloride	--	--	--	--	5	3	U									3	U				3	U				3	U				3	U				3	U			
o-Xylene	--	--	--	--	--	1.5	U									1.5	U				1.5	U				1.5	U				1.5	U				1.5	U			
Styrene	--	--	--	--	--	2	U									2	U				2	U				2	U				2	U				2	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	U									1	U				1	U				1	U				1	U				1	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	--	--	--	--	--	2	U									2	U				2	U				2	U				2	U				2	U			
Trichlorethene (1,1,2-Trichloroe	--	--	--	--	3	2	U									2	U				2	U				2	U				2	U				2	U			
Trichlorofluoromethane	--	--	--	--	--	2	U									2	U				2	U				2	U				2	U				2	U			
Vinyl Acetate	--	--	--	--	--	3	U									3	U				3	U				3	U				3	U				3	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	10/17/2023		28.0000		230.0000
Ammonia nitrogen	mg-N/L	G-01A	10/17/2023	ND	0.0200		7.0363
Bicarbonate	mg/L	G-01A	10/17/2023		28.0000		210.0000
Chemical oxygen demand	mg/L	G-01A	10/17/2023	ND	10.0000		18.0000
Chloride	mg/L	G-01A	10/17/2023		1.9600		16.8873
Conductivity	umhos/cm	G-01A	10/17/2023		160.0000		540.0000
Dissolved antimony	mg/L	G-01A	10/17/2023		0.0001		0.0006
Dissolved arsenic	mg/L	G-01A	10/17/2023		0.0002		0.0047
Dissolved barium	mg/L	G-01A	10/17/2023	ND	0.0100		28.0087
Dissolved beryllium	mg/L	G-01A	10/17/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-01A	10/17/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-01A	10/17/2023		15.4000		20.7266
Dissolved chromium	mg/L	G-01A	10/17/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-01A	10/17/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01A	10/17/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-01A	10/17/2023	ND	0.0300		10.1308
Dissolved lead	mg/L	G-01A	10/17/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-01A	10/17/2023		4.1000		30.1727
Dissolved manganese	mg/L	G-01A	10/17/2023	ND	0.0100		24.5415
Dissolved nickel	mg/L	G-01A	10/17/2023	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-01A	10/17/2023		1.4400		2.6349
Dissolved selenium	mg/L	G-01A	10/17/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-01A	10/17/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-01A	10/17/2023		6.5000		114.0000
Dissolved thallium	mg/L	G-01A	10/17/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-01A	10/17/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-01A	10/17/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-01A	10/17/2023		0.1900		1.3000
Nitrite nitrogen	mg-N/L	G-01A	10/17/2023	ND	0.0020		37.7852
pH	std units	G-01A	10/17/2023		4.7700	***	6.60 - 9.39
Sulfate	mg/L	G-01A	10/17/2023		40.4000		314.0652
Total dissolved solids	mg/L	G-01A	10/17/2023		100.0000		360.0000
Total organic carbon	mg/L	G-01A	10/17/2023		5.5000		14.0000
Alkalinity (as caco3)	mg/L	G-04A	04/18/2023		220.0000	**	230.0000
Ammonia nitrogen	mg-N/L	G-04A	04/18/2023		0.1960		7.0363
Bicarbonate	mg/L	G-04A	04/18/2023		220.0000	***	210.0000
Chemical oxygen demand	mg/L	G-04A	04/18/2023	ND	10.0000		18.0000
Chloride	mg/L	G-04A	04/18/2023		28.2000	*	16.8873
Conductivity	umhos/cm	G-04A	04/18/2023		600.0000	*	540.0000
Dissolved antimony	mg/L	G-04A	04/18/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-04A	04/18/2023		0.0024	**	0.0047
Dissolved barium	mg/L	G-04A	04/18/2023	ND	0.0100		28.0087
Dissolved beryllium	mg/L	G-04A	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-04A	04/18/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-04A	04/18/2023		53.9000	***	20.7266
Dissolved chromium	mg/L	G-04A	04/18/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-04A	04/18/2023		0.0140	***	0.0050
Dissolved copper	mg/L	G-04A	04/18/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-04A	04/18/2023		0.8230	**	10.1308
Dissolved lead	mg/L	G-04A	04/18/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-04A	04/18/2023		31.0000	*	30.1727
Dissolved manganese	mg/L	G-04A	04/18/2023		7.5600		24.5415
Dissolved nickel	mg/L	G-04A	04/18/2023		0.0160		0.0380
Dissolved potassium	mg/L	G-04A	04/18/2023		2.6700	*	2.6349
Dissolved selenium	mg/L	G-04A	04/18/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-04A	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-04A	04/18/2023		15.1000		114.0000
Dissolved thallium	mg/L	G-04A	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-04A	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-04A	04/18/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-04A	04/18/2023		0.0840		1.3000
Nitrite nitrogen	mg-N/L	G-04A	04/18/2023	ND	0.0020		37.7852
pH	std units	G-04A	04/18/2023		6.1800	*	6.60 - 9.39
Sulfate	mg/L	G-04A	04/18/2023		32.8000		314.0652
Total dissolved solids	mg/L	G-04A	04/18/2023		360.0000		360.0000
Total organic carbon	mg/L	G-04A	04/18/2023		9.5000		14.0000
Alkalinity (as caco3)	mg/L	G-08D1	10/17/2023		170.0000		230.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Ammonia nitrogen	mg-N/L	G-08D1	10/17/2023		0.1160		7.0363
Bicarbonate	mg/L	G-08D1	10/17/2023		170.0000		210.0000
Chemical oxygen demand	mg/L	G-08D1	10/17/2023	ND	10.0000		18.0000
Chloride	mg/L	G-08D1	10/17/2023		2.9700		16.8873
Conductivity	umhos/cm	G-08D1	10/17/2023		440.0000		540.0000
Dissolved antimony	mg/L	G-08D1	10/17/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-08D1	10/17/2023		0.0017		0.0047
Dissolved barium	mg/L	G-08D1	10/17/2023	ND	0.0100		28.0087
Dissolved beryllium	mg/L	G-08D1	10/17/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-08D1	10/17/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-08D1	10/17/2023		0.8300		20.7266
Dissolved chromium	mg/L	G-08D1	10/17/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-08D1	10/17/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D1	10/17/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-08D1	10/17/2023	ND	0.0300		10.1308
Dissolved lead	mg/L	G-08D1	10/17/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-08D1	10/17/2023	ND	0.0500		30.1727
Dissolved manganese	mg/L	G-08D1	10/17/2023	ND	0.0100		24.5415
Dissolved nickel	mg/L	G-08D1	10/17/2023	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-08D1	10/17/2023	ND	0.5000		2.6349
Dissolved selenium	mg/L	G-08D1	10/17/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-08D1	10/17/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-08D1	10/17/2023		106.0000		114.0000
Dissolved thallium	mg/L	G-08D1	10/17/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-08D1	10/17/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-08D1	10/17/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-08D1	10/17/2023		0.1200		1.3000
Nitrite nitrogen	mg-N/L	G-08D1	10/17/2023		0.0340		37.7852
pH	std units	G-08D1	10/17/2023		8.7700	**	6.60 - 9.39
Sulfate	mg/L	G-08D1	10/17/2023		47.9000		314.0652
Total dissolved solids	mg/L	G-08D1	10/17/2023		260.0000		360.0000
Total organic carbon	mg/L	G-08D1	10/17/2023		0.5800		14.0000
Alkalinity (as caco3)	mg/L	G-09S	10/18/2023		350.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-09S	10/18/2023	ND	0.0200		7.0363
Bicarbonate	mg/L	G-09S	10/18/2023		350.0000	***	210.0000
Chemical oxygen demand	mg/L	G-09S	10/18/2023		15.0000		18.0000
Chloride	mg/L	G-09S	10/18/2023		3.9900		16.8873
Conductivity	umhos/cm	G-09S	10/18/2023		940.0000	***	540.0000
Dissolved antimony	mg/L	G-09S	10/18/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-09S	10/18/2023		0.0009		0.0047
Dissolved barium	mg/L	G-09S	10/18/2023	ND	0.0100		28.0087
Dissolved beryllium	mg/L	G-09S	10/18/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-09S	10/18/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-09S	10/18/2023		84.0000	***	20.7266
Dissolved chromium	mg/L	G-09S	10/18/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-09S	10/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09S	10/18/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-09S	10/18/2023	ND	0.0300		10.1308
Dissolved lead	mg/L	G-09S	10/18/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-09S	10/18/2023		31.0000	*	30.1727
Dissolved manganese	mg/L	G-09S	10/18/2023		0.0110		24.5415
Dissolved nickel	mg/L	G-09S	10/18/2023		0.0150		0.0380
Dissolved potassium	mg/L	G-09S	10/18/2023		5.6500	***	2.6349
Dissolved selenium	mg/L	G-09S	10/18/2023		0.0010	***	0.0004
Dissolved silver	mg/L	G-09S	10/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-09S	10/18/2023		96.0000		114.0000
Dissolved thallium	mg/L	G-09S	10/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-09S	10/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-09S	10/18/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-09S	10/18/2023	ND	0.0100		1.3000
Nitrite nitrogen	mg-N/L	G-09S	10/18/2023	ND	0.0020		37.7852
pH	std units	G-09S	10/18/2023		6.0000	***	6.60 - 9.39
Sulfate	mg/L	G-09S	10/18/2023		164.0000		314.0652
Total dissolved solids	mg/L	G-09S	10/18/2023		660.0000	***	360.0000
Total organic carbon	mg/L	G-09S	10/18/2023		5.6000		14.0000
Alkalinity (as caco3)	mg/L	G-10S	10/18/2023		470.0000	***	230.0000
Ammonia nitrogen	mg-N/L	G-10S	10/18/2023		0.2390		7.0363

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-10S	10/18/2023		470.0000	***	210.0000
Chemical oxygen demand	mg/L	G-10S	10/18/2023		12.0000	**	18.0000
Chloride	mg/L	G-10S	10/18/2023		7.7600		16.8873
Conductivity	umhos/cm	G-10S	10/18/2023		1300.0000	***	540.0000
Dissolved antimony	mg/L	G-10S	10/18/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-10S	10/18/2023		0.0072	*	0.0047
Dissolved barium	mg/L	G-10S	10/18/2023	ND	0.0100		28.0087
Dissolved beryllium	mg/L	G-10S	10/18/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-10S	10/18/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-10S	10/18/2023		100.0000	***	20.7266
Dissolved chromium	mg/L	G-10S	10/18/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-10S	10/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10S	10/18/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-10S	10/18/2023		3.0900		10.1308
Dissolved lead	mg/L	G-10S	10/18/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-10S	10/18/2023		23.4000		30.1727
Dissolved manganese	mg/L	G-10S	10/18/2023		3.0700		24.5415
Dissolved nickel	mg/L	G-10S	10/18/2023	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-10S	10/18/2023		4.0400	***	2.6349
Dissolved selenium	mg/L	G-10S	10/18/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-10S	10/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-10S	10/18/2023		180.0000	***	114.0000
Dissolved thallium	mg/L	G-10S	10/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10S	10/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-10S	10/18/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-10S	10/18/2023		0.0120		1.3000
Nitrite nitrogen	mg-N/L	G-10S	10/18/2023		0.0270		37.7852
pH	std units	G-10S	10/18/2023		6.3000	*	6.60 - 9.39
Sulfate	mg/L	G-10S	10/18/2023		270.0000		314.0652
Total dissolved solids	mg/L	G-10S	10/18/2023		840.0000	***	360.0000
Total organic carbon	mg/L	G-10S	10/18/2023		4.3000		14.0000
Alkalinity (as caco3)	mg/L	G-11S	10/18/2023		90.0000		230.0000
Ammonia nitrogen	mg-N/L	G-11S	10/18/2023	ND	0.0200		7.0363
Bicarbonate	mg/L	G-11S	10/18/2023		90.0000		210.0000
Chemical oxygen demand	mg/L	G-11S	10/18/2023		12.0000		18.0000
Chloride	mg/L	G-11S	10/18/2023		9.1200		16.8873
Conductivity	umhos/cm	G-11S	10/18/2023		270.0000		540.0000
Dissolved antimony	mg/L	G-11S	10/18/2023	ND	0.0001		0.0006
Dissolved arsenic	mg/L	G-11S	10/18/2023		0.0004		0.0047
Dissolved barium	mg/L	G-11S	10/18/2023	ND	0.0100		28.0087
Dissolved beryllium	mg/L	G-11S	10/18/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-11S	10/18/2023	ND	0.0001		0.0010
Dissolved calcium	mg/L	G-11S	10/18/2023		16.9000		20.7266
Dissolved chromium	mg/L	G-11S	10/18/2023	ND	0.0200		0.0150
Dissolved cobalt	mg/L	G-11S	10/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-11S	10/18/2023	ND	0.0200		0.1150
Dissolved iron	mg/L	G-11S	10/18/2023	ND	0.0300		10.1308
Dissolved lead	mg/L	G-11S	10/18/2023	ND	0.0002		0.0027
Dissolved magnesium	mg/L	G-11S	10/18/2023		3.6700		30.1727
Dissolved manganese	mg/L	G-11S	10/18/2023		0.1280		24.5415
Dissolved nickel	mg/L	G-11S	10/18/2023	ND	0.0100		0.0380
Dissolved potassium	mg/L	G-11S	10/18/2023		1.3300		2.6349
Dissolved selenium	mg/L	G-11S	10/18/2023	ND	0.0005		0.0004
Dissolved silver	mg/L	G-11S	10/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-11S	10/18/2023		41.2000		114.0000
Dissolved thallium	mg/L	G-11S	10/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-11S	10/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-11S	10/18/2023	ND	0.0200		0.0300
Nitrate nitrogen	mg-N/L	G-11S	10/18/2023		0.0650		1.3000
Nitrite nitrogen	mg-N/L	G-11S	10/18/2023	ND	0.0020		37.7852
pH	std units	G-11S	10/18/2023		5.8900	*	6.60 - 9.39
Sulfate	mg/L	G-11S	10/18/2023		44.8000		314.0652
Total dissolved solids	mg/L	G-11S	10/18/2023		160.0000		360.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Total organic carbon	mg/L	G-11S	10/18/2023		2.6000		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	60	60					230.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	41	60	-2.6064	1.8903	0.0100	2.4110	7.0363	lognor		
Bicarbonate	mg/L	60	60					210.0000	nonpar		0.99
Chemical oxygen demand	mg/L	7	60					18.0000	nonpar		0.99
Chloride	mg/L	60	60	1.3665	0.6056	0.0100	2.4110	16.8873	lognor		
Conductivity	umhos/cm	59	59					540.0000	nonpar		0.99
Dissolved antimony	mg/L	23	54					0.0006	nonpar		0.99
Dissolved arsenic	mg/L	60	60	0.0017	0.0012	0.0100	2.4110	0.0047	normal		
Dissolved barium	mg/L	37	59	-3.6738	2.9041	0.0100	2.4125	28.0087	lognor		
Dissolved beryllium	mg/L	0	60					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	14	59					0.0010	nonpar		0.99
Dissolved calcium	mg/L	56	56	6.3013	5.9675	0.0100	2.4173	20.7266	normal		
Dissolved chromium	mg/L	16	60					0.0150	nonpar		0.99
Dissolved cobalt	mg/L	3	60					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	19	59					0.1150	nonpar		0.99
Dissolved iron	mg/L	36	60	-1.4269	1.5522	0.0100	2.4110	10.1308	lognor		
Dissolved lead	mg/L	22	60					0.0027	nonpar		0.99
Dissolved magnesium	mg/L	46	59	0.0126	1.4070	0.0100	2.4125	30.1727	lognor		
Dissolved manganese	mg/L	36	60	-3.0019	2.5725	0.0100	2.4110	24.5415	lognor		
Dissolved nickel	mg/L	15	60					0.0380	nonpar		0.99
Dissolved potassium	mg/L	46	58	-0.4765	0.5987	0.0100	2.4141	2.6349	lognor		
Dissolved selenium	mg/L	2	58					0.0004	nonpar		0.99
Dissolved silver	mg/L	0	54					0.0001	nonpar	***	0.99
Dissolved sodium	mg/L	60	60					114.0000	nonpar		0.99
Dissolved thallium	mg/L	1	60					0.0000	nonpar		0.99
Dissolved vanadium	mg/L	0	60					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	19	60					0.0300	nonpar		0.99
Nitrate nitrogen	mg-N/L	52	60					1.3000	nonpar		0.99
Nitrite nitrogen	mg-N/L	33	58	-3.1294	2.8008	0.0100	2.4141	37.7852	lognor		
pH	std units	61	61					6.60- 9.39	nonpar		0.99
Sulfate	mg/L	59	59	3.6322	0.8777	0.0100	2.4125	314.0652	lognor		
Total dissolved solids	mg/L	60	60					360.0000	nonpar		0.99
Total organic carbon	mg/L	55	60					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 2023
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09D					G-10D				
						1/10/23	D	V	Tr	Ch	1/10/23	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)															
Alkalinity (as CaCO3)	nonpar	54	54	280	--	190					520		V	I	N
Ammonia Nitrogen	nonpar	52	52	0.249	--	0.165					0.383		V		
Bicarbonate	nonpar	54	54	280	--	190					520		V	I	N
Calcium, Dissolved	nonpar	50	50	1.59	--	1.36				Y	20.3		V	D	N
Chemical Oxygen Demand	nonpar	54	9	28	--	18					21				
Chloride	nonpar	53	53	6.86	250	6.31					14.4		V	D	N
Conductivity (umhos/cm)	nonpar	54	54	530	700	660		V			1600		E		
Magnesium, Dissolved	nonpar	52	34	2.33	--	0.05	U				1.72			D	N
Nitrate Nitrogen (mg-N/L)	nonpar	53	16	0.28	10	0.13					0.025				
Nitrite Nitrogen (mg-N/L)	nonpar	54	23	0.042	1	0.031					0.003	U			
pH (std units)	nonpar	54	54	7.27-9.88	6.5-8.5	8.93					6.76				
Potassium, Dissolved	lognor	54	38	2.3419	--	0.53					2.16				
Sodium, Dissolved	normal	53	53	133.7466	20	163		E			358		V		
Sulfate	nonpar	52	52	66.05	250	123		V			267		V	D	N
Total Dissolved Solids	nonpar	54	54	355	500	400		V			980		E		
Total Organic Carbon	nonpar	52	52	25	--	2.2					3.8				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony	nonpar	53	4	0.0008	0.006	0.0001	U				0.0001	U			
Arsenic	nonpar	53	41	0.0015	0.00005	0.00303		E	D	N	0.00117				
Barium	nonpar	53	12	0.0046	1	0.005	U				0.005	U			
Beryllium	nonpar	54	0	0.0005	0.004	0.006	U				0.006	U			
Cadmium	nonpar	52	4	0.0001	0.005	0.00005	U				0.00005	U			
Chromium	nonpar	54	5	0.0136	0.05	0.01	U				0.01	U			
Cobalt	nonpar	51	2	0.005	--	0.01	U				0.01	U			
Copper	nonpar	54	8	0.055	1	0.02	U				0.02	U			
Iron	nonpar	53	26	0.871	0.3	0.03	U				0.03	U			
Lead	nonpar	52	11	0.0007	0.05	0.0001	U		D	N	0.0001	U			
Manganese	normal	52	30	0.0121	0.05	0.01	U				0.329		V	D	N
Nickel	nonpar	54	3	0.026	0.1	0.01	U				0.01	U			
Selenium	nonpar	53	14	0.0014	0.01	0.00048					0.00038				
Silver	nonpar	52	0	0.0001	0.05	0.00005	U				0.00005	U			
Thallium	nonpar	54	1	0.0001	0.002	0.00005	U				0.00005	U			
Vanadium	nonpar	54	1	0.01	--	0.015	U				0.015	U			
Zinc	nonpar	54	9	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	0.00233					0.000813				
Barium	--	--	--	--	1	0.0069					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	1.52					0.451				
Lead	--	--	--	--	0.05	0.00132					0.0005	U			
Manganese	--	--	--	--	0.05	0.0789					0.319				
Nickel	--	--	--	--	0.1	0.015					0.014				
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: First Quarter 2023
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09D					G-10D				
						1/10/23	D	V	Tr	Ch	1/10/23	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				0.03	U			
1,2-Dichloropropane	--	--	--	--	0.6	**0.17**					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-Trichloroet	--	--	--	--	3	1.5	U				1.5	U			
Trichlorofluoromethane	--	--	--	--	--	2	U				2	U			
Vinyl Acetate	--	--	--	--	--	5	U				5	U			
Vinyl Chloride	--	--	--	--	0.02	0.23					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	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		2.6251
Dissolved selenium	mg/L	G-01D	10/18/2022	ND	0.0003		0.0010
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	***	135.0970
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		2.6251
Dissolved selenium	mg/L	G-02D	10/18/2022	ND	0.0003		0.0010
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		135.0970
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

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Alkalinity (as caco3)	mg/L	G-06B	10/18/2022		250.0000		280.0000
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		2.6251
Dissolved selenium	mg/L	G-06B	10/18/2022	ND	0.0003		0.0010
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	***	135.0970
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		2.6251
Dissolved selenium	mg/L	G-08D2	10/18/2022	ND	0.0003		0.0010
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		135.0970
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

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Alkalinity (as caco3)	mg/L	G-09D	01/10/2023		190.0000		280.0000
Ammonia nitrogen	mg-N/L	G-09D	01/10/2023		0.1650		0.2490
Bicarbonate	mg/L	G-09D	01/10/2023		190.0000		280.0000
Chemical oxygen demand	mg/L	G-09D	01/10/2023		18.0000		28.0000
Chloride	mg/L	G-09D	01/10/2023		6.3100		6.8600
Conductivity	umhos/cm	G-09D	01/10/2023		660.0000	***	530.0000
Dissolved antimony	mg/L	G-09D	01/10/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-09D	01/10/2023		0.0030	*	0.0015
Dissolved barium	mg/L	G-09D	01/10/2023	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-09D	01/10/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-09D	01/10/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-09D	01/10/2023		1.3600		1.5900
Dissolved chromium	mg/L	G-09D	01/10/2023	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-09D	01/10/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09D	01/10/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-09D	01/10/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-09D	01/10/2023	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-09D	01/10/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-09D	01/10/2023	ND	0.0100		0.0122
Dissolved nickel	mg/L	G-09D	01/10/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-09D	01/10/2023		0.5300		2.6251
Dissolved selenium	mg/L	G-09D	01/10/2023		0.0005		0.0010
Dissolved silver	mg/L	G-09D	01/10/2023	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-09D	01/10/2023		163.0000	*	135.0970
Dissolved thallium	mg/L	G-09D	01/10/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-09D	01/10/2023	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-09D	01/10/2023	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-09D	01/10/2023		0.1300		0.2800
Nitrite nitrogen	mg-N/L	G-09D	01/10/2023		0.0310		0.0420
pH	std units	G-09D	01/10/2023		8.9300		7.42 - 9.88
Sulfate	mg/L	G-09D	01/10/2023		123.0000	***	66.0500
Total dissolved solids	mg/L	G-09D	01/10/2023		400.0000	***	355.0000
Total organic carbon	mg/L	G-09D	01/10/2023		2.2000		25.0000
Alkalinity (as caco3)	mg/L	G-10D	01/10/2023		520.0000	***	280.0000
Ammonia nitrogen	mg-N/L	G-10D	01/10/2023		0.3830	***	0.2490
Bicarbonate	mg/L	G-10D	01/10/2023		520.0000	***	280.0000
Chemical oxygen demand	mg/L	G-10D	01/10/2023		21.0000		28.0000
Chloride	mg/L	G-10D	01/10/2023		14.4000	***	6.8600
Conductivity	umhos/cm	G-10D	01/10/2023		1600.0000	*	530.0000
Dissolved antimony	mg/L	G-10D	01/10/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-10D	01/10/2023		0.0012		0.0015
Dissolved barium	mg/L	G-10D	01/10/2023	ND	0.0050		0.0046
Dissolved beryllium	mg/L	G-10D	01/10/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-10D	01/10/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-10D	01/10/2023		20.3000	***	1.5900
Dissolved chromium	mg/L	G-10D	01/10/2023	ND	0.0100		0.0136
Dissolved cobalt	mg/L	G-10D	01/10/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10D	01/10/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-10D	01/10/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-10D	01/10/2023	ND	0.0001		0.0007
Dissolved magnesium	mg/L	G-10D	01/10/2023		1.7200		2.3300
Dissolved manganese	mg/L	G-10D	01/10/2023		0.3290	***	0.0122
Dissolved nickel	mg/L	G-10D	01/10/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-10D	01/10/2023		2.1600		2.6251
Dissolved selenium	mg/L	G-10D	01/10/2023		0.0004		0.0010
Dissolved silver	mg/L	G-10D	01/10/2023	ND	0.0001		0.0001
Dissolved sodium	mg/L	G-10D	01/10/2023		358.0000	***	135.0970
Dissolved thallium	mg/L	G-10D	01/10/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10D	01/10/2023	ND	0.0150		0.0100
Dissolved zinc	mg/L	G-10D	01/10/2023	ND	0.0150		0.0120
Nitrate nitrogen	mg-N/L	G-10D	01/10/2023		0.0250		0.2800
Nitrite nitrogen	mg-N/L	G-10D	01/10/2023	ND	0.0030		0.0420
pH	std units	G-10D	01/10/2023		6.7600	***	7.42 - 9.88
Sulfate	mg/L	G-10D	01/10/2023		267.0000	***	66.0500
Total dissolved solids	mg/L	G-10D	01/10/2023		980.0000	*	355.0000
Total organic carbon	mg/L	G-10D	01/10/2023		3.8000		25.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
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
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		2.6251
Dissolved selenium	mg/L	G-13D	10/19/2022	ND	0.0003		0.0010
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		135.0970
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	54	54					280.0000	nonpar		0.99
Ammonia nitrogen	mg-N/L	52	52					0.2490	nonpar		0.99
Bicarbonate	mg/L	54	54					280.0000	nonpar		0.99
Chemical oxygen demand	mg/L	9	54					28.0000	nonpar		0.99
Chloride	mg/L	53	53					6.8600	nonpar		0.99
Conductivity	umhos/cm	54	54					530.0000	nonpar		0.99
Dissolved antimony	mg/L	4	53					0.0008	nonpar		0.99
Dissolved arsenic	mg/L	41	53					0.0015	nonpar		0.99
Dissolved barium	mg/L	12	53					0.0046	nonpar		0.99
Dissolved beryllium	mg/L	0	54					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	4	52					0.0001	nonpar		0.99
Dissolved calcium	mg/L	50	50					1.5900	nonpar		0.99
Dissolved chromium	mg/L	5	54					0.0136	nonpar		0.99
Dissolved cobalt	mg/L	2	51					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	8	54					0.0550	nonpar		0.99
Dissolved iron	mg/L	26	53					0.8710	nonpar		0.99
Dissolved lead	mg/L	11	52					0.0007	nonpar		0.99
Dissolved magnesium	mg/L	34	52					2.3300	nonpar		0.99
Dissolved manganese	mg/L	30	52	0.0029	0.0038	0.0100	2.4246	0.0122	normal		
Dissolved nickel	mg/L	3	54					0.0260	nonpar		0.99
Dissolved potassium	mg/L	38	54	-0.9184	0.7780	0.0100	2.4209	2.6251	lognor		
Dissolved selenium	mg/L	14	53					0.0010	nonpar		0.99
Dissolved silver	mg/L	0	52					0.0001	nonpar	***	0.99
Dissolved sodium	mg/L	53	53	110.2642	10.2500	0.0100	2.4227	135.0970	normal		
Dissolved thallium	mg/L	1	54					0.0000	nonpar	***	0.99
Dissolved vanadium	mg/L	1	54					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	9	54					0.0120	nonpar		0.99
Nitrate nitrogen	mg-N/L	16	53					0.2800	nonpar		0.99
Nitrite nitrogen	mg-N/L	23	54					0.0420	nonpar		0.99
pH	std units	54	54					7.42- 9.88	nonpar		0.99
Sulfate	mg/L	52	52					66.0500	nonpar		0.99
Total dissolved solids	mg/L	54	54					355.0000	nonpar		0.99
Total organic carbon	mg/L	52	52					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 2023
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				
						4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)																																														
Alkalinity (as CaCO3)	nonpar	55	55	280	--	230			D	Y	93					260					170					200					510		V	I	N	180					240					210				
Ammonia Nitrogen	nonpar	53	53	0.249	--	0.129					0.02	U				0.02					0.174					0.125				Y	0.33		V			0.068					0.16					0.114				
Bicarbonate	nonpar	55	55	280	--	230			D	N	93					260					170					200				Y	510		V	I	N	180					240					210				
Calcium, Dissolved	nonpar	49	49	1.59	--	0.32			D	Y	0.2	U		D	N	0.62					0.2	U				0.68				Y	20.3		V	D	N	0.2	U				0.2	U				0.2	U			
Chemical Oxygen Demand	nonpar	55	9	28	--	10	U				10	U				10	U				10	U				12					12					10	U				10	U				10	U			
Chloride	nonpar	54	54	6.86	250	6.59			D	N	5.74			D	N	6.5				Y	2.91			D	N	4.63					14.6		V	D	N	12.2		V			2.23			D	Y	4.86				
Conductivity (umhos/cm)	nonpar	55	55	530	700	570		V			350			D	N	650		V			470					630		V			1500		E			450					490					500				
Magnesium, Dissolved	nonpar	53	33	2.33	--	0.05	U				0.05	U				0.05	U				0.05	U				0.05	U				1.74			D	N	0.05	U				0.05	U				0.05	U		I	Y
Nitrate Nitrogen (mg-N/L)	nonpar	54	17	0.28	10	0.01	U				0.056			D	N	0.58		E			0.02					0.12					0.031					0.01	U				0.025					0.01	U			
Nitrite Nitrogen (mg-N/L)	nonpar	55	23	0.042	1	0.002	U				0.002	U				0.002	U				0.002	U	P			0.002	U				0.002	U				0.002	U				0.002	U				0.002	U			
pH (std units)	nonpar	55	55	7.42-9.88	6.5-8.5	9.49			I	N	7.85		P	D	N	7.99				Y	9.91		E			9.33					7.14		V			9.41					9.72					8.70			I	N
Potassium, Dissolved	lognor	55	37	2.7583	--	0.5	U				0.5	U				0.62					0.5	U				0.57					2.3					0.5	U				0.5	U				0.5	U			
Sodium, Dissolved	normal	54	54	137.1404	20	150		V			84.9			D	N	184		V			118			I	N	165		V			361		V			118					128					132			I	N
Sulfate	nonpar	53	53	66.05	250	50.4			D	Y	62.6					62.3				Y	43.5				Y	107		V		Y	263		V	D	N	34.4			D	N	4.38					36.3				
Total Dissolved Solids	nonpar	55	55	355	500	310		P	D	Y	200			D	N	400		V			340					340		P		Y	940		E			300					270					300				
Total Organic Carbon	nonpar	53	53	25	--	2.1					0.84					2.4					1.2					2.1					3.5					1.5					2.3					3.2				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)																																														
Antimony	nonpar	54	4	0.0008	0.006	0.0001	U				0.00033					0.00029					0.0001	U				0.00018					0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Arsenic	nonpar	54	41	0.0015	0.00005	0.00105					0.00425		V			0.00529		V	I	N	0.00125			I	N	0.00328		V	D	N	0.00138					0.000161					0.000941					0.00008	U			
Barium	nonpar	54	12	0.0046	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			
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	0.02	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			
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	7	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	25	0.871	0.3	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.259					0.03	U				0.03	U				0.03	U			
Lead	nonpar	53	11	0.0007	0.05	0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U		D	N	0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Manganese	normal	53	29	0.012	0.05	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.318		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				0.012					0.01	U				0.01	U				0.01	U			
Selenium	nonpar	54	14	0.001	0.01	0.0005	U				0.0005	U				0.0005	U				0.0005	U				0.0005	U				0.0005	U				0.0005	U				0.0005	U				0.0005	U			
Silver	nonpar	52	0	0.0001	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	nonpar	55	0	0.00009	0.002	0.00005	U				0.00005	U				0.00005	U				0.00005	U				0.000062					0.00005	U				0.00005	U				0.00005	U				0.00005	U			
Vanadium	nonpar	55	1	0.01	--	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	nonpar	55	9	0.012	5	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			
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	0.000548					0.00453					0.00313					0.002					0.00266					0.00112					0.000126					0.000968					0.0001	U			
Barium	--	--	--	--	1	0.0189					0.0191					0.01	U				0.0461					0.01	U				0.01	U				0.01	U				0.0202					0.01	U			
Beryllium	--	--	--	--	0.004	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			
Cadmium	--	--	--	--	0.005	0.0001	U				0.0001	U				0.0001	U				0.00019					0.0001	U				0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Chromium	--	--	--	--	0.05	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			
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	3.13					1.48					1.19					9.57					1.11					0.501					0.334					5.93					0.03	U			
Lead	--	--	--	--	0.05	0.000571					0.000992					0.000741					0.00156					0.0014					0.0002	U				0.00031					0.00104					0.0002	U			
Manganese	--	--	--	--	0.05	0.0497					0.0213					0.068					0.194					0.0698					0.313					0.01	U				0.0925					0.01	U			
Nickel	--	--	--	--	0.1	0.015					0.012					0.016					0.028					0.01					0.012					0.01	U				0.01					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	0.0001	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			
Vanadium	--	--	--	--	--	0.02	U				0.02	U				0.02	U				0.026					0.02	U				0.02	U				0.02	U				0.02	U				0.02	U			
Zinc	--	--	--	--	5	0.015	U				0.015	U				0.015	U				0.0172					0.015	U				0.015	U				0.015	U				0.015	U				0.015	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	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	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 2023
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				
						4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/19/23	D	V	Tr	Ch	4/18/23	D	V	Tr	Ch	4/18/23	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	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
4-Methyl-2-Pentanone (MIBK)	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Acetone	--	--	--	--	--	5	U				5	U				5	U				**5.2**					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	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	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	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
Bromomethane	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	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	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Chloroform	--	--	--	--	7	1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U				1	U			
Chloromethane	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	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	--	--	--	--	--	5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U				5	U			
Methyl Iodide	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Methylene Chloride	--	--	--	--	5	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	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	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	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	U				1	U				1.0	U				1	U				1	U				1	U				1	U				1	U				1	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	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
Trichloroethene (1,1,2-Trichloroe	--	--	--	--	3	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
Trichlorofluoromethane	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U			
Vinyl Acetate	--	--	--	--	--	3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U				3	U			
Vinyl Chloride	--	--	--	--	0.02	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			

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	04/18/2023		230.0000		280.0000
Ammonia nitrogen	mg-N/L	G-01D	04/18/2023		0.1290		0.2490
Bicarbonate	mg/L	G-01D	04/18/2023		230.0000		280.0000
Chemical oxygen demand	mg/L	G-01D	04/18/2023	ND	10.0000		28.0000
Chloride	mg/L	G-01D	04/18/2023		6.5900		6.8600
Conductivity	umhos/cm	G-01D	04/18/2023		570.0000	***	530.0000
Dissolved antimony	mg/L	G-01D	04/18/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-01D	04/18/2023		0.0011		0.0015
Dissolved barium	mg/L	G-01D	04/18/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-01D	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-01D	04/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-01D	04/18/2023		0.3200		1.5900
Dissolved chromium	mg/L	G-01D	04/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-01D	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01D	04/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-01D	04/18/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-01D	04/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-01D	04/18/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-01D	04/18/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-01D	04/18/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-01D	04/18/2023	ND	0.5000		2.7583
Dissolved selenium	mg/L	G-01D	04/18/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-01D	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-01D	04/18/2023		150.0000	***	137.1404
Dissolved thallium	mg/L	G-01D	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-01D	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-01D	04/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-01D	04/18/2023	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-01D	04/18/2023	ND	0.0020		0.0420
pH	std units	G-01D	04/18/2023		9.4900		7.42 - 9.88
Sulfate	mg/L	G-01D	04/18/2023		50.4000		66.0500
Total dissolved solids	mg/L	G-01D	04/18/2023		310.0000	**	355.0000
Total organic carbon	mg/L	G-01D	04/18/2023		2.1000		25.0000
Alkalinity (as caco3)	mg/L	G-02D	04/18/2023		93.0000		280.0000
Ammonia nitrogen	mg-N/L	G-02D	04/18/2023	ND	0.0200		0.2490
Bicarbonate	mg/L	G-02D	04/18/2023		93.0000		280.0000
Chemical oxygen demand	mg/L	G-02D	04/18/2023	ND	10.0000		28.0000
Chloride	mg/L	G-02D	04/18/2023		5.7400		6.8600
Conductivity	umhos/cm	G-02D	04/18/2023		350.0000		530.0000
Dissolved antimony	mg/L	G-02D	04/18/2023		0.0003		0.0008
Dissolved arsenic	mg/L	G-02D	04/18/2023		0.0043	***	0.0015
Dissolved barium	mg/L	G-02D	04/18/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-02D	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-02D	04/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-02D	04/18/2023	ND	0.2000		1.5900
Dissolved chromium	mg/L	G-02D	04/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-02D	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-02D	04/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-02D	04/18/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-02D	04/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-02D	04/18/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-02D	04/18/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-02D	04/18/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-02D	04/18/2023	ND	0.5000		2.7583
Dissolved selenium	mg/L	G-02D	04/18/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-02D	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-02D	04/18/2023		84.9000		137.1404
Dissolved thallium	mg/L	G-02D	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-02D	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-02D	04/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-02D	04/18/2023		0.0560		0.2800
Nitrite nitrogen	mg-N/L	G-02D	04/18/2023	ND	0.0020		0.0420
pH	std units	G-02D	04/18/2023		7.8500	**	7.42 - 9.88
Sulfate	mg/L	G-02D	04/18/2023		62.6000		66.0500
Total dissolved solids	mg/L	G-02D	04/18/2023		200.0000		355.0000
Total organic carbon	mg/L	G-02D	04/18/2023		0.8400		25.0000
Alkalinity (as caco3)	mg/L	G-06B	04/18/2023		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	04/18/2023		0.0200		0.2490
Bicarbonate	mg/L	G-06B	04/18/2023		260.0000		280.0000
Chemical oxygen demand	mg/L	G-06B	04/18/2023	ND	10.0000		28.0000
Chloride	mg/L	G-06B	04/18/2023		6.5000		6.8600
Conductivity	umhos/cm	G-06B	04/18/2023		650.0000	***	530.0000
Dissolved antimony	mg/L	G-06B	04/18/2023		0.0003		0.0008
Dissolved arsenic	mg/L	G-06B	04/18/2023		0.0053	***	0.0015
Dissolved barium	mg/L	G-06B	04/18/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-06B	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-06B	04/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-06B	04/18/2023		0.6200		1.5900
Dissolved chromium	mg/L	G-06B	04/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-06B	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-06B	04/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-06B	04/18/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-06B	04/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-06B	04/18/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-06B	04/18/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-06B	04/18/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-06B	04/18/2023		0.6200		2.7583
Dissolved selenium	mg/L	G-06B	04/18/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-06B	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-06B	04/18/2023		184.0000	***	137.1404
Dissolved thallium	mg/L	G-06B	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-06B	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-06B	04/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-06B	04/18/2023		0.5800	*	0.2800
Nitrite nitrogen	mg-N/L	G-06B	04/18/2023	ND	0.0020		0.0420
pH	std units	G-06B	04/18/2023		7.9900		7.42 - 9.88
Sulfate	mg/L	G-06B	04/18/2023		62.3000		66.0500
Total dissolved solids	mg/L	G-06B	04/18/2023		400.0000	***	355.0000
Total organic carbon	mg/L	G-06B	04/18/2023		2.4000		25.0000
Alkalinity (as caco3)	mg/L	G-08D2	04/18/2023		170.0000		280.0000
Ammonia nitrogen	mg-N/L	G-08D2	04/18/2023		0.1740		0.2490
Bicarbonate	mg/L	G-08D2	04/18/2023		170.0000		280.0000
Chemical oxygen demand	mg/L	G-08D2	04/18/2023	ND	10.0000		28.0000
Chloride	mg/L	G-08D2	04/18/2023		2.9100		6.8600
Conductivity	umhos/cm	G-08D2	04/18/2023		470.0000		530.0000
Dissolved antimony	mg/L	G-08D2	04/18/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-08D2	04/18/2023		0.0013		0.0015
Dissolved barium	mg/L	G-08D2	04/18/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-08D2	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-08D2	04/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-08D2	04/18/2023	ND	0.2000		1.5900
Dissolved chromium	mg/L	G-08D2	04/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-08D2	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D2	04/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-08D2	04/18/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-08D2	04/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-08D2	04/18/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-08D2	04/18/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-08D2	04/18/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-08D2	04/18/2023	ND	0.5000		2.7583
Dissolved selenium	mg/L	G-08D2	04/18/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-08D2	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-08D2	04/18/2023		118.0000		137.1404
Dissolved thallium	mg/L	G-08D2	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-08D2	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-08D2	04/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-08D2	04/18/2023		0.0200		0.2800
Nitrite nitrogen	mg-N/L	G-08D2	04/18/2023	ND	0.0020	**	0.0420
pH	std units	G-08D2	04/18/2023		9.9100	*	7.42 - 9.88
Sulfate	mg/L	G-08D2	04/18/2023		43.5000		66.0500
Total dissolved solids	mg/L	G-08D2	04/18/2023		340.0000		355.0000
Total organic carbon	mg/L	G-08D2	04/18/2023		1.2000		25.0000
Alkalinity (as caco3)	mg/L	G-09D	04/19/2023		200.0000		280.0000
Ammonia nitrogen	mg-N/L	G-09D	04/19/2023		0.1250		0.2490

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-09D	04/19/2023		200.0000		280.0000
Chemical oxygen demand	mg/L	G-09D	04/19/2023		12.0000		28.0000
Chloride	mg/L	G-09D	04/19/2023		4.6300		6.8600
Conductivity	umhos/cm	G-09D	04/19/2023		630.0000	***	530.0000
Dissolved antimony	mg/L	G-09D	04/19/2023		0.0002		0.0008
Dissolved arsenic	mg/L	G-09D	04/19/2023		0.0033	***	0.0015
Dissolved barium	mg/L	G-09D	04/19/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-09D	04/19/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-09D	04/19/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-09D	04/19/2023		0.6800		1.5900
Dissolved chromium	mg/L	G-09D	04/19/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-09D	04/19/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09D	04/19/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-09D	04/19/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-09D	04/19/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-09D	04/19/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-09D	04/19/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-09D	04/19/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-09D	04/19/2023		0.5700		2.7583
Dissolved selenium	mg/L	G-09D	04/19/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-09D	04/19/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-09D	04/19/2023		165.0000	***	137.1404
Dissolved thallium	mg/L	G-09D	04/19/2023		0.0001	*	0.0000
Dissolved vanadium	mg/L	G-09D	04/19/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-09D	04/19/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-09D	04/19/2023		0.1200		0.2800
Nitrite nitrogen	mg-N/L	G-09D	04/19/2023	ND	0.0020		0.0420
pH	std units	G-09D	04/19/2023		9.3300		7.42 - 9.88
Sulfate	mg/L	G-09D	04/19/2023		107.0000	***	66.0500
Total dissolved solids	mg/L	G-09D	04/19/2023		340.0000	**	355.0000
Total organic carbon	mg/L	G-09D	04/19/2023		2.1000		25.0000
Alkalinity (as caco3)	mg/L	G-10D	04/19/2023		510.0000	***	280.0000
Ammonia nitrogen	mg-N/L	G-10D	04/19/2023		0.3300	***	0.2490
Bicarbonate	mg/L	G-10D	04/19/2023		510.0000	***	280.0000
Chemical oxygen demand	mg/L	G-10D	04/19/2023		12.0000		28.0000
Chloride	mg/L	G-10D	04/19/2023		14.6000	***	6.8600
Conductivity	umhos/cm	G-10D	04/19/2023		1500.0000	*	530.0000
Dissolved antimony	mg/L	G-10D	04/19/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-10D	04/19/2023		0.0014		0.0015
Dissolved barium	mg/L	G-10D	04/19/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-10D	04/19/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-10D	04/19/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-10D	04/19/2023		20.3000	***	1.5900
Dissolved chromium	mg/L	G-10D	04/19/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-10D	04/19/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10D	04/19/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-10D	04/19/2023		0.2590		0.8710
Dissolved lead	mg/L	G-10D	04/19/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-10D	04/19/2023		1.7400		2.3300
Dissolved manganese	mg/L	G-10D	04/19/2023		0.3180	***	0.0120
Dissolved nickel	mg/L	G-10D	04/19/2023		0.0120		0.0260
Dissolved potassium	mg/L	G-10D	04/19/2023		2.3000		2.7583
Dissolved selenium	mg/L	G-10D	04/19/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-10D	04/19/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-10D	04/19/2023		361.0000	***	137.1404
Dissolved thallium	mg/L	G-10D	04/19/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10D	04/19/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-10D	04/19/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-10D	04/19/2023		0.0310		0.2800
Nitrite nitrogen	mg-N/L	G-10D	04/19/2023	ND	0.0020		0.0420
pH	std units	G-10D	04/19/2023		7.1400	***	7.42 - 9.88
Sulfate	mg/L	G-10D	04/19/2023		263.0000	***	66.0500
Total dissolved solids	mg/L	G-10D	04/19/2023		940.0000	*	355.0000
Total organic carbon	mg/L	G-10D	04/19/2023		3.5000		25.0000
Alkalinity (as caco3)	mg/L	G-13D	04/19/2023		180.0000		280.0000
Ammonia nitrogen	mg-N/L	G-13D	04/19/2023		0.0680		0.2490
Bicarbonate	mg/L	G-13D	04/19/2023		180.0000		280.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Chemical oxygen demand	mg/L	G-13D	04/19/2023	ND	10.0000		28.0000
Chloride	mg/L	G-13D	04/19/2023		12.2000	***	6.8600
Conductivity	umhos/cm	G-13D	04/19/2023		450.0000		530.0000
Dissolved antimony	mg/L	G-13D	04/19/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-13D	04/19/2023		0.0002		0.0015
Dissolved barium	mg/L	G-13D	04/19/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-13D	04/19/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-13D	04/19/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-13D	04/19/2023	ND	0.2000		1.5900
Dissolved chromium	mg/L	G-13D	04/19/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-13D	04/19/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-13D	04/19/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-13D	04/19/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-13D	04/19/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-13D	04/19/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-13D	04/19/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-13D	04/19/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-13D	04/19/2023	ND	0.5000		2.7583
Dissolved selenium	mg/L	G-13D	04/19/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-13D	04/19/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-13D	04/19/2023		118.0000		137.1404
Dissolved thallium	mg/L	G-13D	04/19/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-13D	04/19/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-13D	04/19/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-13D	04/19/2023	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-13D	04/19/2023	ND	0.0020		0.0420
pH	std units	G-13D	04/19/2023		9.4100		7.42 - 9.88
Sulfate	mg/L	G-13D	04/19/2023		34.4000		66.0500
Total dissolved solids	mg/L	G-13D	04/19/2023		300.0000		355.0000
Total organic carbon	mg/L	G-13D	04/19/2023		1.5000		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	41	54					0.0015	nonpar		0.99
Dissolved barium	mg/L	12	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	49	49					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	7	55					0.0550	nonpar		0.99
Dissolved iron	mg/L	25	54					0.8710	nonpar		0.99
Dissolved lead	mg/L	11	53					0.0007	nonpar		0.99
Dissolved magnesium	mg/L	33	53					2.3300	nonpar		0.99
Dissolved manganese	mg/L	29	53	0.0028	0.0038	0.0100	2.4227	0.0120	normal		
Dissolved nickel	mg/L	3	55					0.0260	nonpar		0.99
Dissolved potassium	mg/L	37	55	-0.8672	0.7779	0.0100	2.4191	2.7583	lognor		
Dissolved selenium	mg/L	14	54					0.0010	nonpar		0.99
Dissolved silver	mg/L	0	52					0.0001	nonpar	***	0.99
Dissolved sodium	mg/L	54	54	111.0741	10.7674	0.0100	2.4209	137.1404	normal		
Dissolved thallium	mg/L	0	55					0.0000	nonpar	***	0.99
Dissolved vanadium	mg/L	1	55					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	9	55					0.0120	nonpar		0.99
Nitrate nitrogen	mg-N/L	17	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.

Groundwater Analytical Summary - Deep Wells: Third Quarter 2023
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09D					G-10D				
						7/11/23	D	V	Tr	Ch	7/11/23	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)															
Alkalinity (as CaCO3)	nonpar	55	55	280	--	190					520		V	I	N
Ammonia Nitrogen	nonpar	53	53	0.249	--	0.138					0.345		V		
Bicarbonate	nonpar	55	55	280	--	190					520		V	I	N
Calcium, Dissolved	nonpar	49	49	1.59	--	1.38			D	Y	18.5		V	D	N
Chemical Oxygen Demand	nonpar	55	9	28	--	10	U				36		E		
Chloride	nonpar	54	54	6.86	250	5.78					15.3		V	D	N
Conductivity (umhos/cm)	nonpar	55	55	530	700	650		V			1500		V		
Magnesium, Dissolved	nonpar	53	33	2.33	--	0.05	U				1.61			D	N
Nitrate Nitrogen (mg-N/L)	nonpar	54	17	0.28	10	0.28					0.043				
Nitrite Nitrogen (mg-N/L)	nonpar	55	23	0.042	1	0.065		E			0.002	U			
pH (std units)	nonpar	55	55	7.42-9.88	6.5-8.5	8.63					7.01		V		
Potassium, Dissolved	lognor	55	37	2.7583	--	0.54					2.10				
Sodium, Dissolved	normal	54	54	137.1404	20	154		V			333		V		
Sulfate	nonpar	53	53	66.05	250	108		V			229		V	D	N
Total Dissolved Solids	nonpar	55	55	355	500	410		E			1100		V		
Total Organic Carbon	nonpar	53	53	25	--	3.3					3.5				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony	nonpar	54	4	0.0008	0.006	0.00013					0.0001	U			
Arsenic	nonpar	54	41	0.0015	0.00005	0.00365		V		Y	0.00109				
Barium	nonpar	54	12	0.0046	1	0.01	U				0.01	U			
Beryllium	nonpar	55	0	0.0005	0.004	0.2	U				0.2	U			
Cadmium	nonpar	53	4	0.0001	0.005	0.00005	U				0.00005	U			
Chromium	nonpar	55	5	0.0136	0.05	0.02	U				0.02	U			
Cobalt	nonpar	52	2	0.005	--	0.01	U				0.01	U			
Copper	nonpar	55	7	0.055	1	0.02	U				0.02	U			
Iron	nonpar	54	25	0.871	0.3	0.03	U				0.242			D	Y
Lead	nonpar	53	11	0.0007	0.05	0.0002	U		D	N	0.0002	U			
Manganese	normal	53	29	0.012	0.05	0.01	U				0.304		V	D	N
Nickel	nonpar	55	3	0.026	0.1	0.01	U				0.011				
Selenium	nonpar	54	14	0.001	0.01	0.00054					0.0005	U			
Silver	nonpar	52	0	0.0001	0.05	0.0002	U				0.0002	U			
Thallium	nonpar	55	0	0.00009	0.002	0.00005	U	P			0.00005	U			
Vanadium	nonpar	55	1	0.01	--	0.02	U				0.02	U			
Zinc	nonpar	55	9	0.012	5	0.02	U				0.02	U			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)															
Antimony	--	--	--	--	0.006	0.0003	U				0.0003	U			
Arsenic	--	--	--	--	0.00005	0.003					0.00109				
Barium	--	--	--	--	1	0.0117					0.01	U			
Beryllium	--	--	--	--	0.004	0.3	U				0.3	U			
Cadmium	--	--	--	--	0.005	0.0001	U				0.0001	U			
Chromium	--	--	--	--	0.05	0.02	U				0.02	U			
Cobalt	--	--	--	--	--	0.01	U				0.01	U			
Copper	--	--	--	--	1	0.01	U				0.01	U			
Iron	--	--	--	--	0.3	2.45					0.474				
Lead	--	--	--	--	0.05	0.00227					0.0002	U			
Manganese	--	--	--	--	0.05	0.108					0.303				
Nickel	--	--	--	--	0.1	0.014					0.011				
Selenium	--	--	--	--	0.01	0.001	U				0.001	U			
Silver	--	--	--	--	0.05	0.0002	U				0.0002	U			
Thallium	--	--	--	--	0.002	0.0001	U				0.0001	U			
Vanadium	--	--	--	--	--	0.02	U				0.02	U			
Zinc	--	--	--	--	5	0.015	U				0.015	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	--	--	--	--	--	2	U				2	U			
1,1-Dichloroethane	--	--	--	--	1	1	U				1	U			

Groundwater Analytical Summary - Deep Wells: Third Quarter 2023
Cathcart Landfill, Snohomish County, WA

	Statistical Method	Number of Samples	Number of Detects	Prediction Limit	Primary GW Stds 173-200	G-09D					G-10D				
						7/11/23	D	V	Tr	Ch	7/11/23	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				0.03	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	--	--	--	--	--	2	U				2	U			
4-Methyl-2-Pentanone (MIBK)	--	--	--	--	--	3	U				3	U			
Acetone	--	--	--	--	--	5	U				5	U			
Acrylonitrile	--	--	--	--	0.07	0.05	U				0.05	U			
Benzene	--	--	--	--	1	0.5	U				0.5	U			
Bromodichloromethane	--	--	--	--	0.3	0.02	U				0.02	U			
Bromoform	--	--	--	--	5	2	U				2	U			
Bromomethane	--	--	--	--	--	2	U				2	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	--	--	--	--	--	3	U				3	U			
Chloroform	--	--	--	--	7	1	U				1	U			
Chloromethane	--	--	--	--	--	2	U				2	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	--	--	--	--	--	5	U				5	U			
Methyl Iodide	--	--	--	--	--	3	U				3	U			
Methylene Chloride	--	--	--	--	5	3	U				3	U			
o-Xylene	--	--	--	--	--	1.5	U				1.5	U			
Styrene	--	--	--	--	--	2	U				2	U			
Tetrachloroethylene	--	--	--	--	0.8	0.03	U				0.03	U			
Toluene	--	--	--	--	--	2	U				2	U			
trans-1,2-Dichloroethene	--	--	--	--	--	1	U				1	U			
trans-1,3-Dichloropropene	--	--	--	--	0.2	0.03	U				0.03	U			
trans-1,4-Dichloro-2-butene	--	--	--	--	--	2	U				2	U			
Trichlorethene (1,1,2-Trichloroet	--	--	--	--	3	2	U				2	U			
Trichlorofluoromethane	--	--	--	--	--	2	U				2	U			
Vinyl Acetate	--	--	--	--	--	3	U				3	U			
Vinyl Chloride	--	--	--	--	0.02	0.24					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	04/18/2023		230.0000		280.0000
Ammonia nitrogen	mg-N/L	G-01D	04/18/2023		0.1290		0.2490
Bicarbonate	mg/L	G-01D	04/18/2023		230.0000		280.0000
Chemical oxygen demand	mg/L	G-01D	04/18/2023	ND	10.0000		28.0000
Chloride	mg/L	G-01D	04/18/2023		6.5900		6.8600
Conductivity	umhos/cm	G-01D	04/18/2023		570.0000	***	530.0000
Dissolved antimony	mg/L	G-01D	04/18/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-01D	04/18/2023		0.0011		0.0015
Dissolved barium	mg/L	G-01D	04/18/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-01D	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-01D	04/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-01D	04/18/2023		0.3200		1.5900
Dissolved chromium	mg/L	G-01D	04/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-01D	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01D	04/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-01D	04/18/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-01D	04/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-01D	04/18/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-01D	04/18/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-01D	04/18/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-01D	04/18/2023	ND	0.5000		2.7583
Dissolved selenium	mg/L	G-01D	04/18/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-01D	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-01D	04/18/2023		150.0000	***	137.1404
Dissolved thallium	mg/L	G-01D	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-01D	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-01D	04/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-01D	04/18/2023	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-01D	04/18/2023	ND	0.0020		0.0420
pH	std units	G-01D	04/18/2023		9.4900		7.42 - 9.88
Sulfate	mg/L	G-01D	04/18/2023		50.4000		66.0500
Total dissolved solids	mg/L	G-01D	04/18/2023		310.0000	**	355.0000
Total organic carbon	mg/L	G-01D	04/18/2023		2.1000		25.0000
Alkalinity (as caco3)	mg/L	G-02D	04/18/2023		93.0000		280.0000
Ammonia nitrogen	mg-N/L	G-02D	04/18/2023	ND	0.0200		0.2490
Bicarbonate	mg/L	G-02D	04/18/2023		93.0000		280.0000
Chemical oxygen demand	mg/L	G-02D	04/18/2023	ND	10.0000		28.0000
Chloride	mg/L	G-02D	04/18/2023		5.7400		6.8600
Conductivity	umhos/cm	G-02D	04/18/2023		350.0000		530.0000
Dissolved antimony	mg/L	G-02D	04/18/2023		0.0003		0.0008
Dissolved arsenic	mg/L	G-02D	04/18/2023		0.0043	***	0.0015
Dissolved barium	mg/L	G-02D	04/18/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-02D	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-02D	04/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-02D	04/18/2023	ND	0.2000		1.5900
Dissolved chromium	mg/L	G-02D	04/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-02D	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-02D	04/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-02D	04/18/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-02D	04/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-02D	04/18/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-02D	04/18/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-02D	04/18/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-02D	04/18/2023	ND	0.5000		2.7583
Dissolved selenium	mg/L	G-02D	04/18/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-02D	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-02D	04/18/2023		84.9000		137.1404
Dissolved thallium	mg/L	G-02D	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-02D	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-02D	04/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-02D	04/18/2023		0.0560		0.2800
Nitrite nitrogen	mg-N/L	G-02D	04/18/2023	ND	0.0020		0.0420
pH	std units	G-02D	04/18/2023		7.8500	**	7.42 - 9.88
Sulfate	mg/L	G-02D	04/18/2023		62.6000		66.0500
Total dissolved solids	mg/L	G-02D	04/18/2023		200.0000		355.0000
Total organic carbon	mg/L	G-02D	04/18/2023		0.8400		25.0000
Alkalinity (as caco3)	mg/L	G-06B	04/18/2023		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	04/18/2023		0.0200		0.2490
Bicarbonate	mg/L	G-06B	04/18/2023		260.0000		280.0000
Chemical oxygen demand	mg/L	G-06B	04/18/2023	ND	10.0000		28.0000
Chloride	mg/L	G-06B	04/18/2023		6.5000		6.8600
Conductivity	umhos/cm	G-06B	04/18/2023		650.0000	***	530.0000
Dissolved antimony	mg/L	G-06B	04/18/2023		0.0003		0.0008
Dissolved arsenic	mg/L	G-06B	04/18/2023		0.0053	***	0.0015
Dissolved barium	mg/L	G-06B	04/18/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-06B	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-06B	04/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-06B	04/18/2023		0.6200		1.5900
Dissolved chromium	mg/L	G-06B	04/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-06B	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-06B	04/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-06B	04/18/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-06B	04/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-06B	04/18/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-06B	04/18/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-06B	04/18/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-06B	04/18/2023		0.6200		2.7583
Dissolved selenium	mg/L	G-06B	04/18/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-06B	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-06B	04/18/2023		184.0000	***	137.1404
Dissolved thallium	mg/L	G-06B	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-06B	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-06B	04/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-06B	04/18/2023		0.5800	*	0.2800
Nitrite nitrogen	mg-N/L	G-06B	04/18/2023	ND	0.0020		0.0420
pH	std units	G-06B	04/18/2023		7.9900		7.42 - 9.88
Sulfate	mg/L	G-06B	04/18/2023		62.3000		66.0500
Total dissolved solids	mg/L	G-06B	04/18/2023		400.0000	***	355.0000
Total organic carbon	mg/L	G-06B	04/18/2023		2.4000		25.0000
Alkalinity (as caco3)	mg/L	G-08D2	04/18/2023		170.0000		280.0000
Ammonia nitrogen	mg-N/L	G-08D2	04/18/2023		0.1740		0.2490
Bicarbonate	mg/L	G-08D2	04/18/2023		170.0000		280.0000
Chemical oxygen demand	mg/L	G-08D2	04/18/2023	ND	10.0000		28.0000
Chloride	mg/L	G-08D2	04/18/2023		2.9100		6.8600
Conductivity	umhos/cm	G-08D2	04/18/2023		470.0000		530.0000
Dissolved antimony	mg/L	G-08D2	04/18/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-08D2	04/18/2023		0.0013		0.0015
Dissolved barium	mg/L	G-08D2	04/18/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-08D2	04/18/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-08D2	04/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-08D2	04/18/2023	ND	0.2000		1.5900
Dissolved chromium	mg/L	G-08D2	04/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-08D2	04/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D2	04/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-08D2	04/18/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-08D2	04/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-08D2	04/18/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-08D2	04/18/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-08D2	04/18/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-08D2	04/18/2023	ND	0.5000		2.7583
Dissolved selenium	mg/L	G-08D2	04/18/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-08D2	04/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-08D2	04/18/2023		118.0000		137.1404
Dissolved thallium	mg/L	G-08D2	04/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-08D2	04/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-08D2	04/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-08D2	04/18/2023		0.0200		0.2800
Nitrite nitrogen	mg-N/L	G-08D2	04/18/2023	ND	0.0020	**	0.0420
pH	std units	G-08D2	04/18/2023		9.9100	*	7.42 - 9.88
Sulfate	mg/L	G-08D2	04/18/2023		43.5000		66.0500
Total dissolved solids	mg/L	G-08D2	04/18/2023		340.0000		355.0000
Total organic carbon	mg/L	G-08D2	04/18/2023		1.2000		25.0000
Alkalinity (as caco3)	mg/L	G-09D	07/11/2023		190.0000		280.0000
Ammonia nitrogen	mg-N/L	G-09D	07/11/2023		0.1355		0.2490

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-09D	07/11/2023		190.0000		280.0000
Chemical oxygen demand	mg/L	G-09D	07/11/2023	ND	10.0000		28.0000
Chloride	mg/L	G-09D	07/11/2023		5.6000		6.8600
Conductivity	umhos/cm	G-09D	07/11/2023		650.0000	***	530.0000
Dissolved antimony	mg/L	G-09D	07/11/2023		0.0001		0.0008
Dissolved arsenic	mg/L	G-09D	07/11/2023		0.0035	***	0.0015
Dissolved barium	mg/L	G-09D	07/11/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-09D	07/11/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-09D	07/11/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-09D	07/11/2023		1.3550		1.5900
Dissolved chromium	mg/L	G-09D	07/11/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-09D	07/11/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09D	07/11/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-09D	07/11/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-09D	07/11/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-09D	07/11/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-09D	07/11/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-09D	07/11/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-09D	07/11/2023		0.5550		2.7583
Dissolved selenium	mg/L	G-09D	07/11/2023		0.0005		0.0010
Dissolved silver	mg/L	G-09D	07/11/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-09D	07/11/2023		155.0000	***	137.1404
Dissolved thallium	mg/L	G-09D	07/11/2023	ND	0.0001	**	0.0000
Dissolved vanadium	mg/L	G-09D	07/11/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-09D	07/11/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-09D	07/11/2023		0.2100		0.2800
Nitrite nitrogen	mg-N/L	G-09D	07/11/2023		0.0560	*	0.0420
pH	std units	G-09D	07/11/2023		8.6300		7.42 - 9.88
Sulfate	mg/L	G-09D	07/11/2023		107.0000	***	66.0500
Total dissolved solids	mg/L	G-09D	07/11/2023		410.0000	*	355.0000
Total organic carbon	mg/L	G-09D	07/11/2023		2.8500		25.0000
Alkalinity (as caco3)	mg/L	G-10D	07/11/2023		520.0000	***	280.0000
Ammonia nitrogen	mg-N/L	G-10D	07/11/2023		0.3450	***	0.2490
Bicarbonate	mg/L	G-10D	07/11/2023		520.0000	***	280.0000
Chemical oxygen demand	mg/L	G-10D	07/11/2023		36.0000	*	28.0000
Chloride	mg/L	G-10D	07/11/2023		15.3000	***	6.8600
Conductivity	umhos/cm	G-10D	07/11/2023		1500.0000	***	530.0000
Dissolved antimony	mg/L	G-10D	07/11/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-10D	07/11/2023		0.0011		0.0015
Dissolved barium	mg/L	G-10D	07/11/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-10D	07/11/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-10D	07/11/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-10D	07/11/2023		18.5000	***	1.5900
Dissolved chromium	mg/L	G-10D	07/11/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-10D	07/11/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10D	07/11/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-10D	07/11/2023		0.2420		0.8710
Dissolved lead	mg/L	G-10D	07/11/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-10D	07/11/2023		1.6100		2.3300
Dissolved manganese	mg/L	G-10D	07/11/2023		0.3040	***	0.0120
Dissolved nickel	mg/L	G-10D	07/11/2023		0.0110		0.0260
Dissolved potassium	mg/L	G-10D	07/11/2023		2.1000		2.7583
Dissolved selenium	mg/L	G-10D	07/11/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-10D	07/11/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-10D	07/11/2023		333.0000	***	137.1404
Dissolved thallium	mg/L	G-10D	07/11/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10D	07/11/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-10D	07/11/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-10D	07/11/2023		0.0430		0.2800
Nitrite nitrogen	mg-N/L	G-10D	07/11/2023	ND	0.0020		0.0420
pH	std units	G-10D	07/11/2023		7.0100	***	7.42 - 9.88
Sulfate	mg/L	G-10D	07/11/2023		229.0000	***	66.0500
Total dissolved solids	mg/L	G-10D	07/11/2023		1100.0000	***	355.0000
Total organic carbon	mg/L	G-10D	07/11/2023		3.5000		25.0000
Alkalinity (as caco3)	mg/L	G-13D	04/19/2023		180.0000		280.0000
Ammonia nitrogen	mg-N/L	G-13D	04/19/2023		0.0680		0.2490
Bicarbonate	mg/L	G-13D	04/19/2023		180.0000		280.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Chemical oxygen demand	mg/L	G-13D	04/19/2023	ND	10.0000		28.0000
Chloride	mg/L	G-13D	04/19/2023		12.2000	***	6.8600
Conductivity	umhos/cm	G-13D	04/19/2023		450.0000		530.0000
Dissolved antimony	mg/L	G-13D	04/19/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-13D	04/19/2023		0.0002		0.0015
Dissolved barium	mg/L	G-13D	04/19/2023	ND	0.0100		0.0046
Dissolved beryllium	mg/L	G-13D	04/19/2023	ND	0.0060		0.0005
Dissolved cadmium	mg/L	G-13D	04/19/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-13D	04/19/2023	ND	0.2000		1.5900
Dissolved chromium	mg/L	G-13D	04/19/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-13D	04/19/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-13D	04/19/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-13D	04/19/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-13D	04/19/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-13D	04/19/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-13D	04/19/2023	ND	0.0100		0.0120
Dissolved nickel	mg/L	G-13D	04/19/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-13D	04/19/2023	ND	0.5000		2.7583
Dissolved selenium	mg/L	G-13D	04/19/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-13D	04/19/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-13D	04/19/2023		118.0000		137.1404
Dissolved thallium	mg/L	G-13D	04/19/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-13D	04/19/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-13D	04/19/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-13D	04/19/2023	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-13D	04/19/2023	ND	0.0020		0.0420
pH	std units	G-13D	04/19/2023		9.4100		7.42 - 9.88
Sulfate	mg/L	G-13D	04/19/2023		34.4000		66.0500
Total dissolved solids	mg/L	G-13D	04/19/2023		300.0000		355.0000
Total organic carbon	mg/L	G-13D	04/19/2023		1.5000		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	41	54					0.0015	nonpar		0.99
Dissolved barium	mg/L	12	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	49	49					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	7	55					0.0550	nonpar		0.99
Dissolved iron	mg/L	25	54					0.8710	nonpar		0.99
Dissolved lead	mg/L	11	53					0.0007	nonpar		0.99
Dissolved magnesium	mg/L	33	53					2.3300	nonpar		0.99
Dissolved manganese	mg/L	29	53	0.0028	0.0038	0.0100	2.4227	0.0120	normal		
Dissolved nickel	mg/L	3	55					0.0260	nonpar		0.99
Dissolved potassium	mg/L	37	55	-0.8672	0.7779	0.0100	2.4191	2.7583	lognor		
Dissolved selenium	mg/L	14	54					0.0010	nonpar		0.99
Dissolved silver	mg/L	0	52					0.0001	nonpar	***	0.99
Dissolved sodium	mg/L	54	54	111.0741	10.7674	0.0100	2.4209	137.1404	normal		
Dissolved thallium	mg/L	0	55					0.0000	nonpar	***	0.99
Dissolved vanadium	mg/L	1	55					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	9	55					0.0120	nonpar		0.99
Nitrate nitrogen	mg-N/L	17	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.

Groundwater Analytical Summary - Deep Wells: Fourth Quarter 2023
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				
						10/17/23	D	V	Tr	Ch	10/18/23	D	V	Tr	Ch	10/17/23	D	V	Tr	Ch	10/17/23	D	V	Tr	Ch	10/18/23	D	V	Tr	Ch	10/18/23	D	V	Tr	Ch	10/18/23	D	V	Tr	Ch	10/17/23	D	V	Tr	Ch	10/17/23	D	V	Tr	Ch
CONVENTIONAL CHEMISTRY PARAMETERS (mg/L)																																														
Alkalinity (as CaCO3)	nonpar	55	55	280	--	230			D	N	110					270					180					200					460		V	I	N	190					240					220				
Ammonia Nitrogen	nonpar	53	53	0.249	--	0.15					0.02					0.043					0.197					0.161					0.31		V			0.072					0.153					0.115				
Bicarbonate	nonpar	55	55	280	--	230			D	N	110					270					180					200					460		V	I	N	190					240					220				
Calcium, Dissolved	nonpar	50	50	1.59	--	1.01			D	N	0.47			D	N	1.06					0.61					1.96		E			17.6		V	D	N	0.57					0.65					0.7				
Chemical Oxygen Demand	nonpar	55	9	28	--	10	U				10	U				12					10	U				15					18		P			10	U				10	U				10	U			
Chloride	nonpar	54	54	6.86	250	7.71		E		Y	5.91			D	N	7.18		E			2.96			D	N	13.1		E			19.3		V	D	N	11.8		V			2.2				Y	6.58				
Conductivity (umhos/cm)	nonpar	55	55	530	700	590		V			360			D	N	660		V			470					830		V			1500		V			460					490					500				
Magnesium, Dissolved	nonpar	54	32	2.33	--	0.05	U				0.05					0.05	U				0.05	U				0.06					1.5			D	N	0.05	U				0.05	U				0.05	U		I	N
Nitrate Nitrogen (mg-N/L)	nonpar	54	17	0.28	10	0.01	U				0.035			D	N	0.3		E			0.01	U				0.029					0.043					0.01	U				0.01	U				0.01	U			
Nitrite Nitrogen (mg-N/L)	nonpar	55	24	0.042	1	0.024					0.025					0.01					0.068		E			0.037					0.002	U				0.003					0.065					0.002	U			
pH (std units)	nonpar	55	55	7.42-9.88	6.5-8.5	8.65				Y	6.96		E	D	N	7.32		E			9.01		P			8.64					6.78		V			8.50					8.80					7.85				Y
Potassium, Dissolved	nonpar	55	35	2.7583	--	0.5	U				0.5	U				0.57					0.5	U				0.64					1.94					0.5	U				0.5	U				0.5	U			
Sodium, Dissolved	nonpar	55	55	137.1404	20	136		P	D	Y	87.8				Y	165		V			104			I	N	204		V			337		V			111					114					122			I	N
Sulfate	nonpar	53	53	66.05	250	52.7				Y	62.8			D	Y	64.3					44.2					171		V			250		V	D	N	33.8			D	N	3.91					28.2				
Total Dissolved Solids	nonpar	55	55	355	500	320				Y	180			D	N	370		V			280					510		E			950		V			330					250					290				
Total Organic Carbon	nonpar	53	53	25	--	1.4					0.54					2.6					1.2					3.8					4.6					1.3					1.5					2.6				
DISSOLVED METALS EPA Methods 200.7/200.8 (mg/L)																																														
Antimony	nonpar	54	3	0.0008	0.006	0.0001	U				0.00021					0.00016					0.0001	U				0.00013					0.0001	U				0.0001	U				0.0001	U				0.0001	U			
Arsenic	nonpar	54	41	0.0015	0.00005	0.00122					0.00471		V			0.00472		V	I	N	0.000625			I	N	0.00232		V		Y	0.00126					0.000203					0.000936					0.00008	U			
Barium	nonpar	55	12	0.0046	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			
Beryllium	nonpar	55	0	0.0005	0.004	0.2	U				0.2	U				0.2	U				0.2	U				0.2	U				0.2	U				0.2	U				0.2	U				0.2	U			
Cadmium	nonpar	53	3	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	0.02	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			
Cobalt	nonpar	52	1	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	5	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	55	25	0.871	0.3	0.03	U				0.03	U				0.03	U				0.03	U				0.03	U				0.416			D	N	0.03	U				0.03	U				0.03	U			
Lead	nonpar	55	12	0.0007	0.05	0.0002	U				0.0002	U				0.0002	U				0.0002	U				0.0002	U		D	N	0.0002	U				0.0002	U				0.0002	U				0.0002	U			
Manganese	nonpar	54	28	0.012	0.05	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.272		V	D	N	0.01	U				0.01	U				0.01	U			
Nickel	nonpar	55	2	0.026	0.1	0.01	U				0.01	U				0.01	U				0.01	U				0.01	U				0.011					0.01	U				0.01	U				0.01	U			
Selenium	nonpar	54	14	0.001	0.01	0.0005	U				0.0005	U				0.0005	U				0.0005	U				0.00072					0.00067					0.0005	U				0.0005	U				0.0005	U			
Silver	nonpar	52	0	0.0001	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	nonpar	54	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				0.00005	U			
Vanadium	nonpar	55	1	0.01	--	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	nonpar	55	8	0.012	5	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			
TOTAL METALS EPA Methods 200.7/200.8 (mg/L)																																														
Antimony	--	--	--	--	0.006	0.0003	U				0.0005					0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U				0.0003	U			
Arsenic	--	--	--	--	0.00005	0.000843					0.00554					0.00373					0.00121					0.00244					0.0013					0.00019					0.00173					0.0001	U			
Barium	--	--	--	--	1	0.0122					0.0184					0.0107					0.0286					0.01	U				0.01	U				0.01	U				0.0528					0.01	U			
Beryllium	--	--	--	--	0.004	0.3	U				0.3	U				0.3	U				0.3	U				0.3	U				0.3	U				0.3	U				0.3	U				0.3	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	0.02	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			
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	2.04					1.65					1.44					6.01					0.929					0.46					0.288					9.49					0.033				
Lead	--	--	--	--	0.05	0.000463					0.00143					0.000736					0.000898					0.00137					0.0002	U				0.0002	U				0.00125					0.0002	U			
Manganese	--	--	--	--	0.05	0.0337					0.0254					0.0678					0.12					0.0841					0.295					0.01	U				0.132					0.01	U			
Nickel	--	--	--	--	0.1	0.01	U				0.01					0.015					0.013					0.01					0.011					0.01	U				0.017					0.01	U			
Selenium	--	--	--	--	0.01	0.001	U				0.001	U				0.0012					0.001	U				0.001	U				0.001	U				0.001	U				0.00162					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	0.0001	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			
Vanadium	--	--	--	--	--	0.02	U				0.02	U				0.02	U				0.021					0.02	U				0.02	U				0.02	U				0.026					0.02	U			
Zinc	--	--	--	--	5	0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.015	U				0.0192					0.015	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	--	--	--	--	--	2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	U				2	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 2023
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					
						10/17/23	D	V	Tr	Ch		10/18/23	D	V	Tr	Ch		10/17/23	D	V	Tr	Ch		10/17/23	D	V	Tr	Ch		10/18/23	D	V	Tr	Ch		10/18/23	D	V	Tr	Ch		10/18/23	D	V	Tr	Ch		10/17/23	D	V	Tr	Ch		10/17/23	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	--	--	--	--	--	2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U				
4-Methyl-2-Pentanone (MIBK)	--	--	--	--	--	3	U					3	U					3	U					3	U					3	U					3	U					3	U					3	U					3	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	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				
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	2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U				
Bromomethane	--	--	--	--	--	2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	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	--	--	--	--	--	3	U					3	U					3	U					3	U					3	U					3	U					3	U					3	U					3	U				
Chloroform	--	--	--	--	7	1	U					1	U					1	U					1	U					1	U					1	U					1	U					1	U					1	U				
Chloromethane	--	--	--	--	--	2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	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	--	--	--	--	--	5	U					5	U					5	U					5	U					5	U					5	U					5	U					5	U					5	U				
Methyl Iodide	--	--	--	--	--	3	U					3	U					3	U					3	U					3	U					3	U					3	U					3	U					3	U				
Methylene Chloride	--	--	--	--	5	3	U					3	U					3	U					3	U					3	U					3	U					3	U					3	U					3	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	--	--	--	--	--	2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	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	U					1	U					1.0	U					1	U					1	U					1	U					1	U					1	U					1	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	--	--	--	--	--	2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U				
Trichloroethene (1,1,2-Trichloroe	--	--	--	--	3	2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U				
Trichlorofluoromethane	--	--	--	--	--	2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U					2	U				
Vinyl Acetate	--	--	--	--	--	3	U					3	U					3	U					3	U					3	U					3	U					3	U					3	U					3	U				
Vinyl Chloride	--	--	--	--	0.02	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				

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	10/17/2023		230.0000		280.0000
Ammonia nitrogen	mg-N/L	G-01D	10/17/2023		0.1500		0.2452
Bicarbonate	mg/L	G-01D	10/17/2023		230.0000		280.0000
Chemical oxygen demand	mg/L	G-01D	10/17/2023	ND	10.0000		28.0000
Chloride	mg/L	G-01D	10/17/2023		7.7100	*	6.8600
Conductivity	umhos/cm	G-01D	10/17/2023		590.0000	***	530.0000
Dissolved antimony	mg/L	G-01D	10/17/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-01D	10/17/2023		0.0012		0.0015
Dissolved barium	mg/L	G-01D	10/17/2023	ND	0.0100		0.1040
Dissolved beryllium	mg/L	G-01D	10/17/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-01D	10/17/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-01D	10/17/2023		1.0100		1.5900
Dissolved chromium	mg/L	G-01D	10/17/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-01D	10/17/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-01D	10/17/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-01D	10/17/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-01D	10/17/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-01D	10/17/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-01D	10/17/2023	ND	0.0100		0.0118
Dissolved nickel	mg/L	G-01D	10/17/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-01D	10/17/2023	ND	0.5000		2.7179
Dissolved selenium	mg/L	G-01D	10/17/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-01D	10/17/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-01D	10/17/2023		136.0000	**	137.0971
Dissolved thallium	mg/L	G-01D	10/17/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-01D	10/17/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-01D	10/17/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-01D	10/17/2023	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-01D	10/17/2023		0.0240		0.0650
pH	std units	G-01D	10/17/2023		8.6500		7.42 - 9.88
Sulfate	mg/L	G-01D	10/17/2023		52.7000		66.0500
Total dissolved solids	mg/L	G-01D	10/17/2023		320.0000		355.0000
Total organic carbon	mg/L	G-01D	10/17/2023		1.4000		25.0000
Alkalinity (as caco3)	mg/L	G-02D	10/18/2023		110.0000		280.0000
Ammonia nitrogen	mg-N/L	G-02D	10/18/2023		0.0200		0.2452
Bicarbonate	mg/L	G-02D	10/18/2023		110.0000		280.0000
Chemical oxygen demand	mg/L	G-02D	10/18/2023	ND	10.0000		28.0000
Chloride	mg/L	G-02D	10/18/2023		5.9100		6.8600
Conductivity	umhos/cm	G-02D	10/18/2023		360.0000		530.0000
Dissolved antimony	mg/L	G-02D	10/18/2023		0.0002		0.0008
Dissolved arsenic	mg/L	G-02D	10/18/2023		0.0047	***	0.0015
Dissolved barium	mg/L	G-02D	10/18/2023	ND	0.0100		0.1040
Dissolved beryllium	mg/L	G-02D	10/18/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-02D	10/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-02D	10/18/2023		0.4700		1.5900
Dissolved chromium	mg/L	G-02D	10/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-02D	10/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-02D	10/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-02D	10/18/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-02D	10/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-02D	10/18/2023		0.0500		2.3300
Dissolved manganese	mg/L	G-02D	10/18/2023	ND	0.0100		0.0118
Dissolved nickel	mg/L	G-02D	10/18/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-02D	10/18/2023	ND	0.5000		2.7179
Dissolved selenium	mg/L	G-02D	10/18/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-02D	10/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-02D	10/18/2023		87.8000		137.0971
Dissolved thallium	mg/L	G-02D	10/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-02D	10/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-02D	10/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-02D	10/18/2023		0.0350		0.2800
Nitrite nitrogen	mg-N/L	G-02D	10/18/2023		0.0250		0.0650
pH	std units	G-02D	10/18/2023		6.9600	*	7.42 - 9.88
Sulfate	mg/L	G-02D	10/18/2023		62.8000		66.0500
Total dissolved solids	mg/L	G-02D	10/18/2023		180.0000		355.0000
Total organic carbon	mg/L	G-02D	10/18/2023		0.5400		25.0000
Alkalinity (as caco3)	mg/L	G-06B	10/17/2023		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	10/17/2023		0.0430		0.2452
Bicarbonate	mg/L	G-06B	10/17/2023		270.0000		280.0000
Chemical oxygen demand	mg/L	G-06B	10/17/2023		12.0000		28.0000
Chloride	mg/L	G-06B	10/17/2023		7.1800	*	6.8600
Conductivity	umhos/cm	G-06B	10/17/2023		660.0000	***	530.0000
Dissolved antimony	mg/L	G-06B	10/17/2023		0.0002		0.0008
Dissolved arsenic	mg/L	G-06B	10/17/2023		0.0047	***	0.0015
Dissolved barium	mg/L	G-06B	10/17/2023	ND	0.0100		0.1040
Dissolved beryllium	mg/L	G-06B	10/17/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-06B	10/17/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-06B	10/17/2023		1.0600		1.5900
Dissolved chromium	mg/L	G-06B	10/17/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-06B	10/17/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-06B	10/17/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-06B	10/17/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-06B	10/17/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-06B	10/17/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-06B	10/17/2023	ND	0.0100		0.0118
Dissolved nickel	mg/L	G-06B	10/17/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-06B	10/17/2023		0.5700		2.7179
Dissolved selenium	mg/L	G-06B	10/17/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-06B	10/17/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-06B	10/17/2023		165.0000	***	137.0971
Dissolved thallium	mg/L	G-06B	10/17/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-06B	10/17/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-06B	10/17/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-06B	10/17/2023		0.3000	*	0.2800
Nitrite nitrogen	mg-N/L	G-06B	10/17/2023		0.0100		0.0650
pH	std units	G-06B	10/17/2023		7.3200	*	7.42 - 9.88
Sulfate	mg/L	G-06B	10/17/2023		64.3000		66.0500
Total dissolved solids	mg/L	G-06B	10/17/2023		370.0000	***	355.0000
Total organic carbon	mg/L	G-06B	10/17/2023		2.6000		25.0000
Alkalinity (as caco3)	mg/L	G-08D2	10/17/2023		180.0000		280.0000
Ammonia nitrogen	mg-N/L	G-08D2	10/17/2023		0.1865		0.2452
Bicarbonate	mg/L	G-08D2	10/17/2023		180.0000		280.0000
Chemical oxygen demand	mg/L	G-08D2	10/17/2023	ND	10.0000		28.0000
Chloride	mg/L	G-08D2	10/17/2023		3.0800		6.8600
Conductivity	umhos/cm	G-08D2	10/17/2023		470.0000		530.0000
Dissolved antimony	mg/L	G-08D2	10/17/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-08D2	10/17/2023		0.0006		0.0015
Dissolved barium	mg/L	G-08D2	10/17/2023	ND	0.0100		0.1040
Dissolved beryllium	mg/L	G-08D2	10/17/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-08D2	10/17/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-08D2	10/17/2023		0.6150		1.5900
Dissolved chromium	mg/L	G-08D2	10/17/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-08D2	10/17/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-08D2	10/17/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-08D2	10/17/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-08D2	10/17/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-08D2	10/17/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-08D2	10/17/2023	ND	0.0100		0.0118
Dissolved nickel	mg/L	G-08D2	10/17/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-08D2	10/17/2023	ND	0.5000		2.7179
Dissolved selenium	mg/L	G-08D2	10/17/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-08D2	10/17/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-08D2	10/17/2023		104.5000		137.0971
Dissolved thallium	mg/L	G-08D2	10/17/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-08D2	10/17/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-08D2	10/17/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-08D2	10/17/2023	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-08D2	10/17/2023		0.0680	*	0.0650
pH	std units	G-08D2	10/17/2023		9.0100	**	7.42 - 9.88
Sulfate	mg/L	G-08D2	10/17/2023		44.2500		66.0500
Total dissolved solids	mg/L	G-08D2	10/17/2023		280.0000		355.0000
Total organic carbon	mg/L	G-08D2	10/17/2023		1.0850		25.0000
Alkalinity (as caco3)	mg/L	G-09D	10/18/2023		200.0000		280.0000
Ammonia nitrogen	mg-N/L	G-09D	10/18/2023		0.1610		0.2452

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Bicarbonate	mg/L	G-09D	10/18/2023		200.0000		280.0000
Chemical oxygen demand	mg/L	G-09D	10/18/2023		15.0000		28.0000
Chloride	mg/L	G-09D	10/18/2023		13.1000	*	6.8600
Conductivity	umhos/cm	G-09D	10/18/2023		830.0000	***	530.0000
Dissolved antimony	mg/L	G-09D	10/18/2023		0.0001		0.0008
Dissolved arsenic	mg/L	G-09D	10/18/2023		0.0023	***	0.0015
Dissolved barium	mg/L	G-09D	10/18/2023	ND	0.0100		0.1040
Dissolved beryllium	mg/L	G-09D	10/18/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-09D	10/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-09D	10/18/2023		1.9600	*	1.5900
Dissolved chromium	mg/L	G-09D	10/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-09D	10/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-09D	10/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-09D	10/18/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-09D	10/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-09D	10/18/2023		0.0600		2.3300
Dissolved manganese	mg/L	G-09D	10/18/2023	ND	0.0100		0.0118
Dissolved nickel	mg/L	G-09D	10/18/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-09D	10/18/2023		0.6400		2.7179
Dissolved selenium	mg/L	G-09D	10/18/2023		0.0007		0.0010
Dissolved silver	mg/L	G-09D	10/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-09D	10/18/2023		204.0000	***	137.0971
Dissolved thallium	mg/L	G-09D	10/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-09D	10/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-09D	10/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-09D	10/18/2023		0.0290		0.2800
Nitrite nitrogen	mg-N/L	G-09D	10/18/2023		0.0370		0.0650
pH	std units	G-09D	10/18/2023		8.6400		7.42 - 9.88
Sulfate	mg/L	G-09D	10/18/2023		171.0000	***	66.0500
Total dissolved solids	mg/L	G-09D	10/18/2023		510.0000	*	355.0000
Total organic carbon	mg/L	G-09D	10/18/2023		3.8000		25.0000
Alkalinity (as caco3)	mg/L	G-10D	10/18/2023		460.0000	***	280.0000
Ammonia nitrogen	mg-N/L	G-10D	10/18/2023		0.3100	***	0.2452
Bicarbonate	mg/L	G-10D	10/18/2023		460.0000	***	280.0000
Chemical oxygen demand	mg/L	G-10D	10/18/2023		18.0000	**	28.0000
Chloride	mg/L	G-10D	10/18/2023		19.3000	***	6.8600
Conductivity	umhos/cm	G-10D	10/18/2023		1500.0000	***	530.0000
Dissolved antimony	mg/L	G-10D	10/18/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-10D	10/18/2023		0.0013		0.0015
Dissolved barium	mg/L	G-10D	10/18/2023	ND	0.0100		0.1040
Dissolved beryllium	mg/L	G-10D	10/18/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-10D	10/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-10D	10/18/2023		17.6000	***	1.5900
Dissolved chromium	mg/L	G-10D	10/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-10D	10/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-10D	10/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-10D	10/18/2023		0.4160		0.8710
Dissolved lead	mg/L	G-10D	10/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-10D	10/18/2023		1.5000		2.3300
Dissolved manganese	mg/L	G-10D	10/18/2023		0.2720	***	0.0118
Dissolved nickel	mg/L	G-10D	10/18/2023		0.0110		0.0260
Dissolved potassium	mg/L	G-10D	10/18/2023		1.9400		2.7179
Dissolved selenium	mg/L	G-10D	10/18/2023		0.0007		0.0010
Dissolved silver	mg/L	G-10D	10/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-10D	10/18/2023		337.0000	***	137.0971
Dissolved thallium	mg/L	G-10D	10/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-10D	10/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-10D	10/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-10D	10/18/2023		0.0430		0.2800
Nitrite nitrogen	mg-N/L	G-10D	10/18/2023	ND	0.0020		0.0650
pH	std units	G-10D	10/18/2023		6.7800	***	7.42 - 9.88
Sulfate	mg/L	G-10D	10/18/2023		250.0000	***	66.0500
Total dissolved solids	mg/L	G-10D	10/18/2023		950.0000	***	355.0000
Total organic carbon	mg/L	G-10D	10/18/2023		4.6000		25.0000
Alkalinity (as caco3)	mg/L	G-13D	10/18/2023		190.0000		280.0000
Ammonia nitrogen	mg-N/L	G-13D	10/18/2023		0.0720		0.2452
Bicarbonate	mg/L	G-13D	10/18/2023		190.0000		280.0000

Table 2

Most Current Downgradient Monitoring Data

Constituent	Units	Well	Date		Result		Pred. Limit
Chemical oxygen demand	mg/L	G-13D	10/18/2023	ND	10.0000		28.0000
Chloride	mg/L	G-13D	10/18/2023		11.8000	***	6.8600
Conductivity	umhos/cm	G-13D	10/18/2023		460.0000		530.0000
Dissolved antimony	mg/L	G-13D	10/18/2023	ND	0.0001		0.0008
Dissolved arsenic	mg/L	G-13D	10/18/2023		0.0002		0.0015
Dissolved barium	mg/L	G-13D	10/18/2023	ND	0.0100		0.1040
Dissolved beryllium	mg/L	G-13D	10/18/2023	ND	0.0002		0.0005
Dissolved cadmium	mg/L	G-13D	10/18/2023	ND	0.0001		0.0001
Dissolved calcium	mg/L	G-13D	10/18/2023		0.5700		1.5900
Dissolved chromium	mg/L	G-13D	10/18/2023	ND	0.0200		0.0136
Dissolved cobalt	mg/L	G-13D	10/18/2023	ND	0.0100		0.0050
Dissolved copper	mg/L	G-13D	10/18/2023	ND	0.0200		0.0550
Dissolved iron	mg/L	G-13D	10/18/2023	ND	0.0300		0.8710
Dissolved lead	mg/L	G-13D	10/18/2023	ND	0.0002		0.0007
Dissolved magnesium	mg/L	G-13D	10/18/2023	ND	0.0500		2.3300
Dissolved manganese	mg/L	G-13D	10/18/2023	ND	0.0100		0.0118
Dissolved nickel	mg/L	G-13D	10/18/2023	ND	0.0100		0.0260
Dissolved potassium	mg/L	G-13D	10/18/2023	ND	0.5000		2.7179
Dissolved selenium	mg/L	G-13D	10/18/2023	ND	0.0005		0.0010
Dissolved silver	mg/L	G-13D	10/18/2023	ND	0.0002		0.0001
Dissolved sodium	mg/L	G-13D	10/18/2023		111.0000		137.0971
Dissolved thallium	mg/L	G-13D	10/18/2023	ND	0.0001		0.0000
Dissolved vanadium	mg/L	G-13D	10/18/2023	ND	0.0200		0.0100
Dissolved zinc	mg/L	G-13D	10/18/2023	ND	0.0200		0.0120
Nitrate nitrogen	mg-N/L	G-13D	10/18/2023	ND	0.0100		0.2800
Nitrite nitrogen	mg-N/L	G-13D	10/18/2023		0.0030		0.0650
pH	std units	G-13D	10/18/2023		8.5000		7.42 - 9.88
Sulfate	mg/L	G-13D	10/18/2023		33.8000		66.0500
Total dissolved solids	mg/L	G-13D	10/18/2023		330.0000		355.0000
Total organic carbon	mg/L	G-13D	10/18/2023		1.3000		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	-2.1318	0.2996	0.0100	2.4227	0.2452	lognor		
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	3	54					0.0008	nonpar		0.99
Dissolved arsenic	mg/L	41	54					0.0015	nonpar		0.99
Dissolved barium	mg/L	12	55					0.1040	nonpar		0.99
Dissolved beryllium	mg/L	0	55					0.0005	nonpar	***	0.99
Dissolved cadmium	mg/L	3	53					0.0001	nonpar	***	0.99
Dissolved calcium	mg/L	50	50					1.5900	nonpar		0.99
Dissolved chromium	mg/L	5	55					0.0136	nonpar		0.99
Dissolved cobalt	mg/L	1	52					0.0050	nonpar	***	0.99
Dissolved copper	mg/L	5	55					0.0550	nonpar		0.99
Dissolved iron	mg/L	25	55					0.8710	nonpar		0.99
Dissolved lead	mg/L	12	55					0.0007	nonpar		0.99
Dissolved magnesium	mg/L	32	54					2.3300	nonpar		0.99
Dissolved manganese	mg/L	28	54	0.0026	0.0038	0.0100	2.4209	0.0118	normal		
Dissolved nickel	mg/L	2	55					0.0260	nonpar		0.99
Dissolved potassium	mg/L	35	55	-0.8413	0.7611	0.0100	2.4191	2.7179	lognor		
Dissolved selenium	mg/L	14	54					0.0010	nonpar		0.99
Dissolved silver	mg/L	0	52					0.0001	nonpar	***	0.99
Dissolved sodium	mg/L	55	55	111.6236	10.5303	0.0100	2.4191	137.0971	normal		
Dissolved thallium	mg/L	0	54					0.0000	nonpar	***	0.99
Dissolved vanadium	mg/L	1	55					0.0100	nonpar	***	0.99
Dissolved zinc	mg/L	8	55					0.0120	nonpar		0.99
Nitrate nitrogen	mg-N/L	17	54					0.2800	nonpar		0.99
Nitrite nitrogen	mg-N/L	24	55					0.0650	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

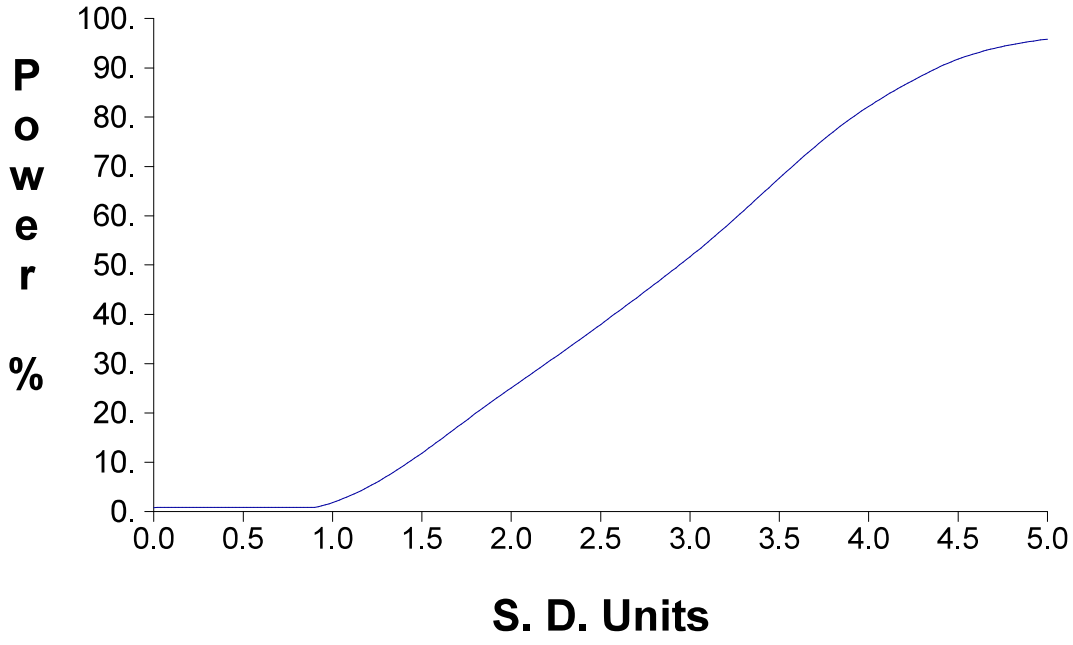
Conf = confidence level for passing initial test or one of two verification resamples at all downgradient wells for a single constituent (nonparametric test only).
* - Insufficient Data.
** - Calculated limit raised to Manual Reporting Limit.
*** - Nonparametric limit based on ND value.
For transformed 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

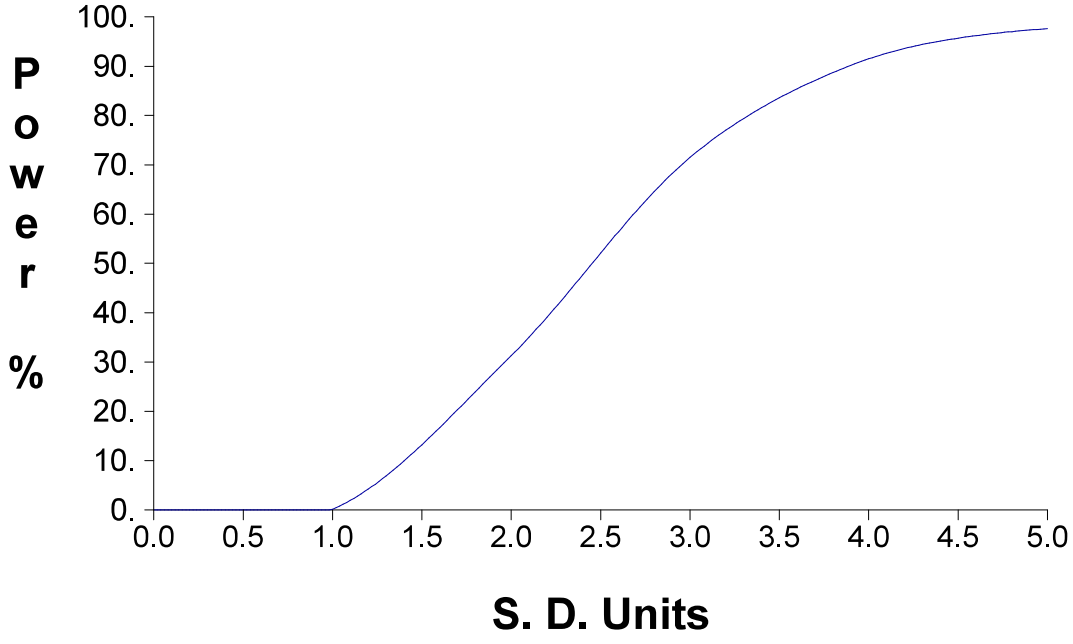
Groundwater Statistical Analyses

Shallow Wells

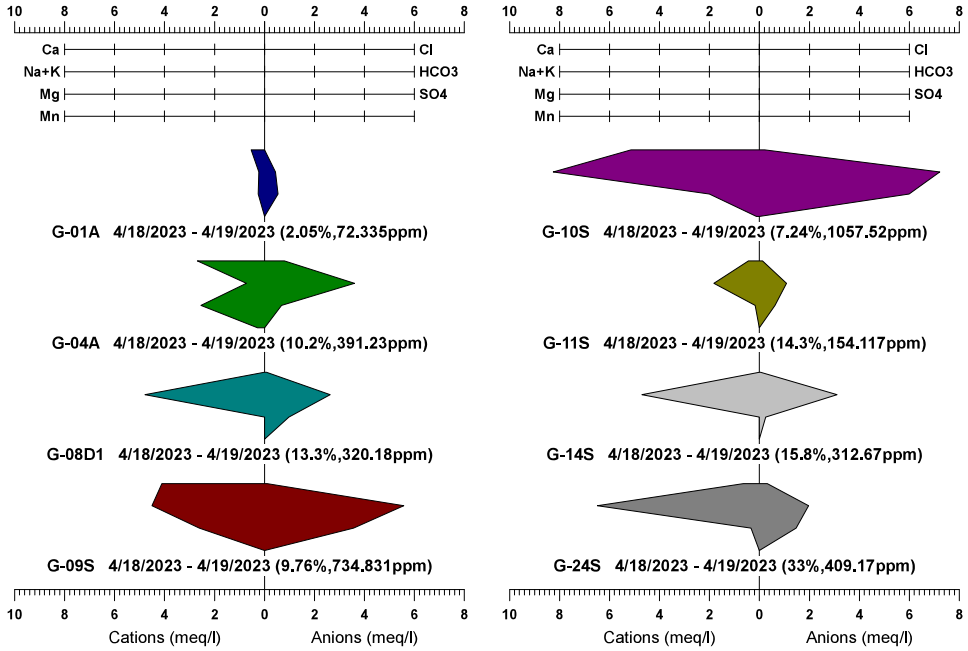
False Positive and False Negative Rates for Current Intra-Well Prediction Limits Monitoring Program



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

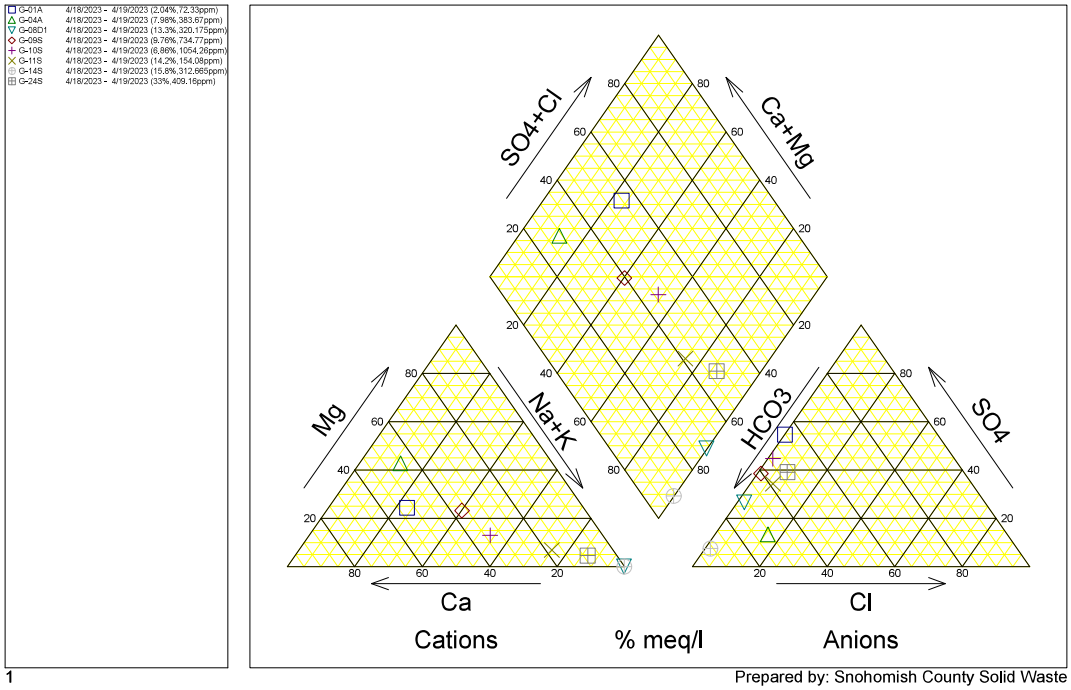


Cathcart Landfill



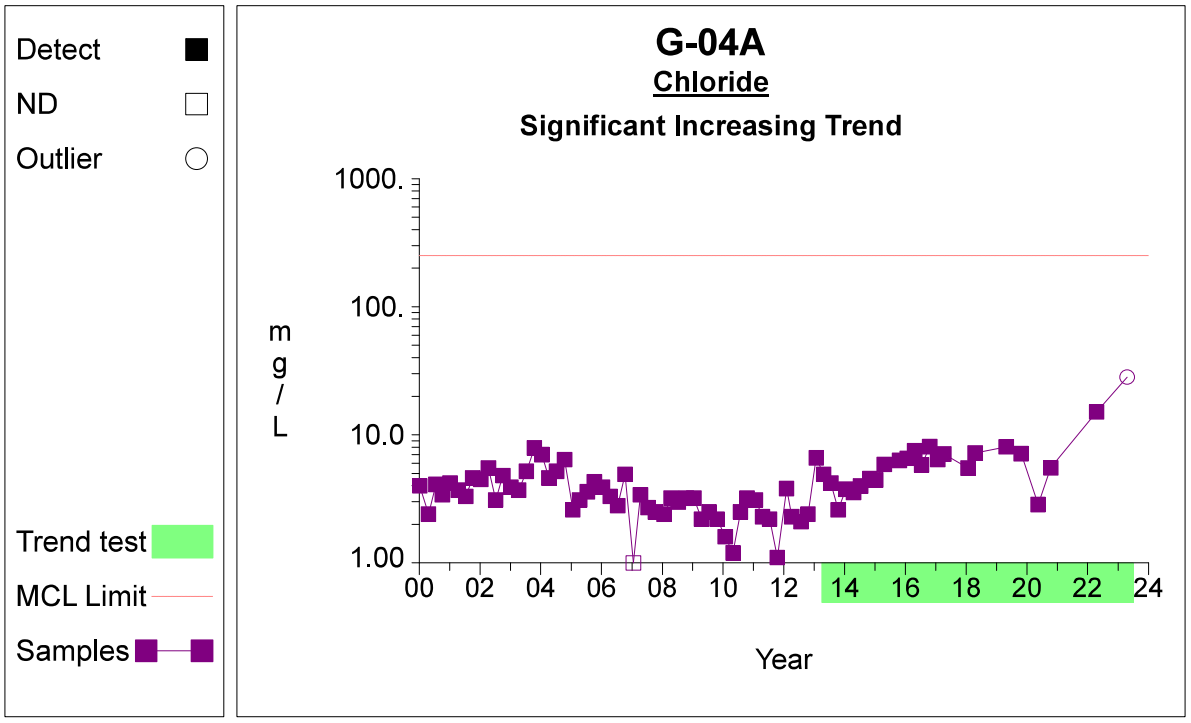
Prepared by: Snohomish County Solid Waste

Cathcart Landfill



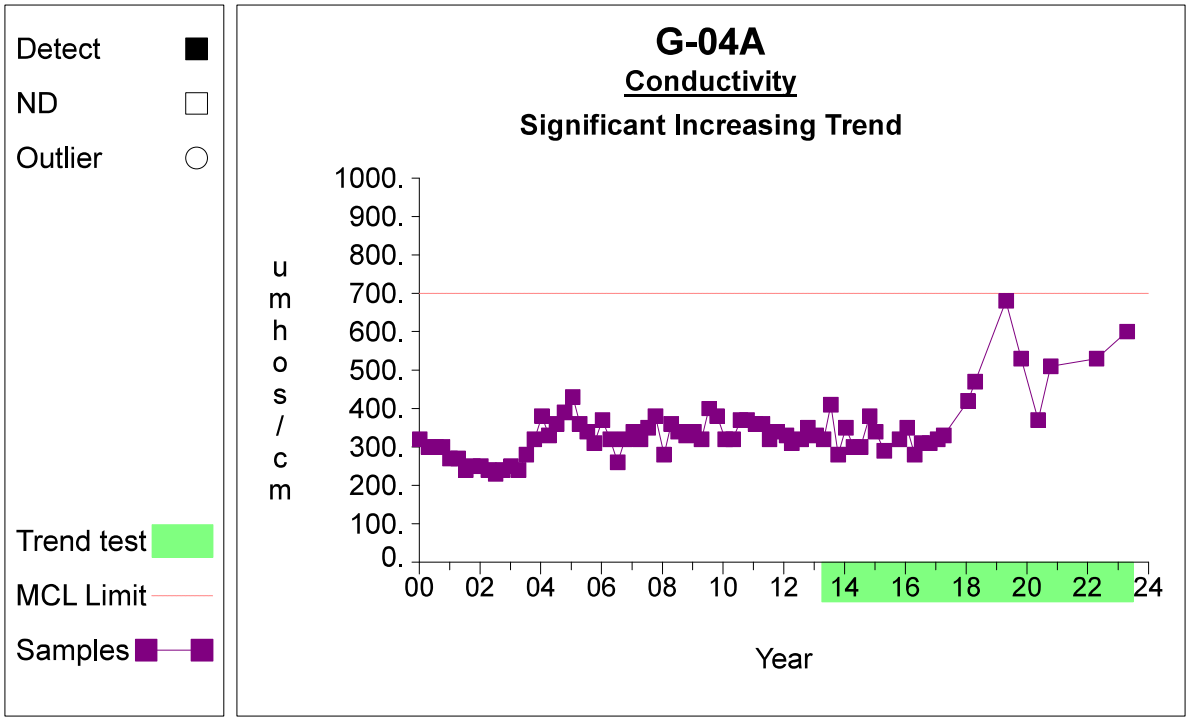
Prepared by: Snohomish County Solid Waste

Time Series



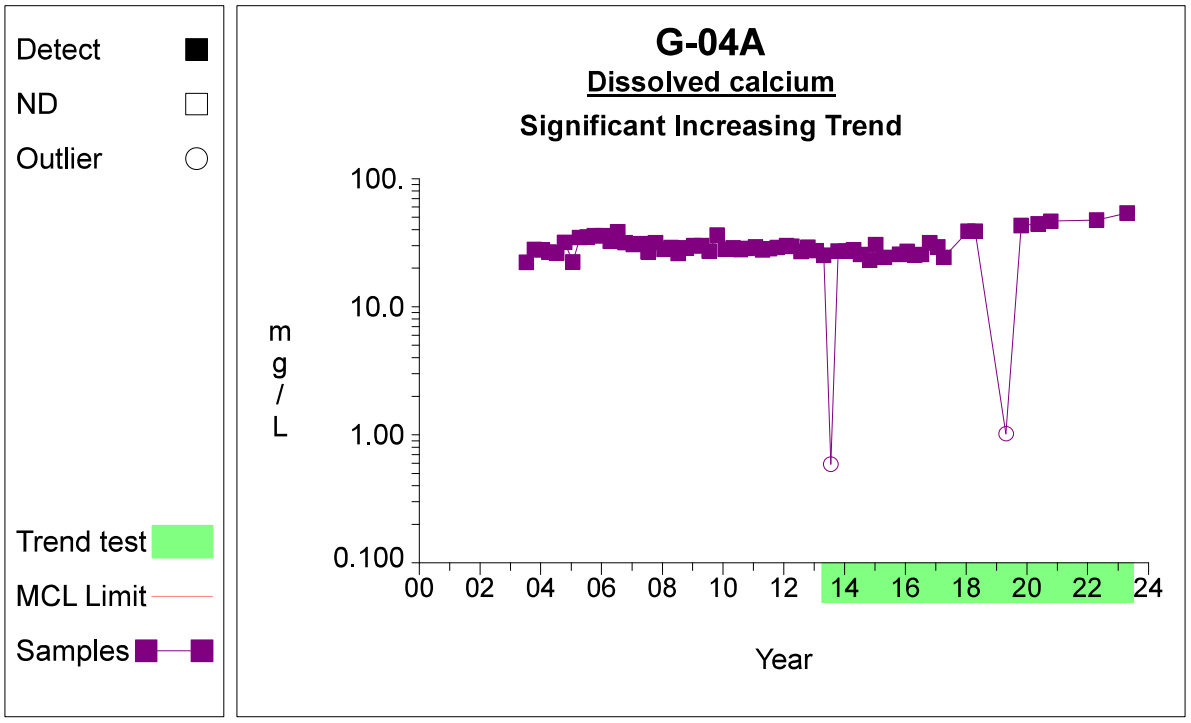
Graph 38

Time Series



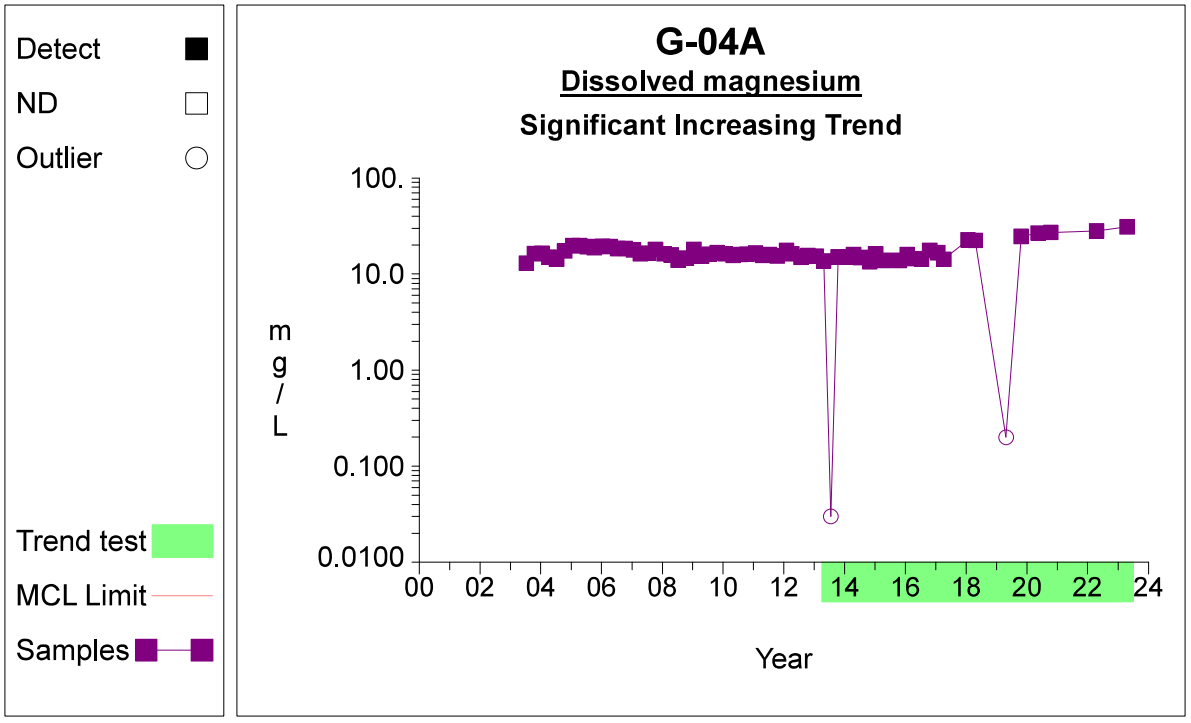
Graph 39

Time Series



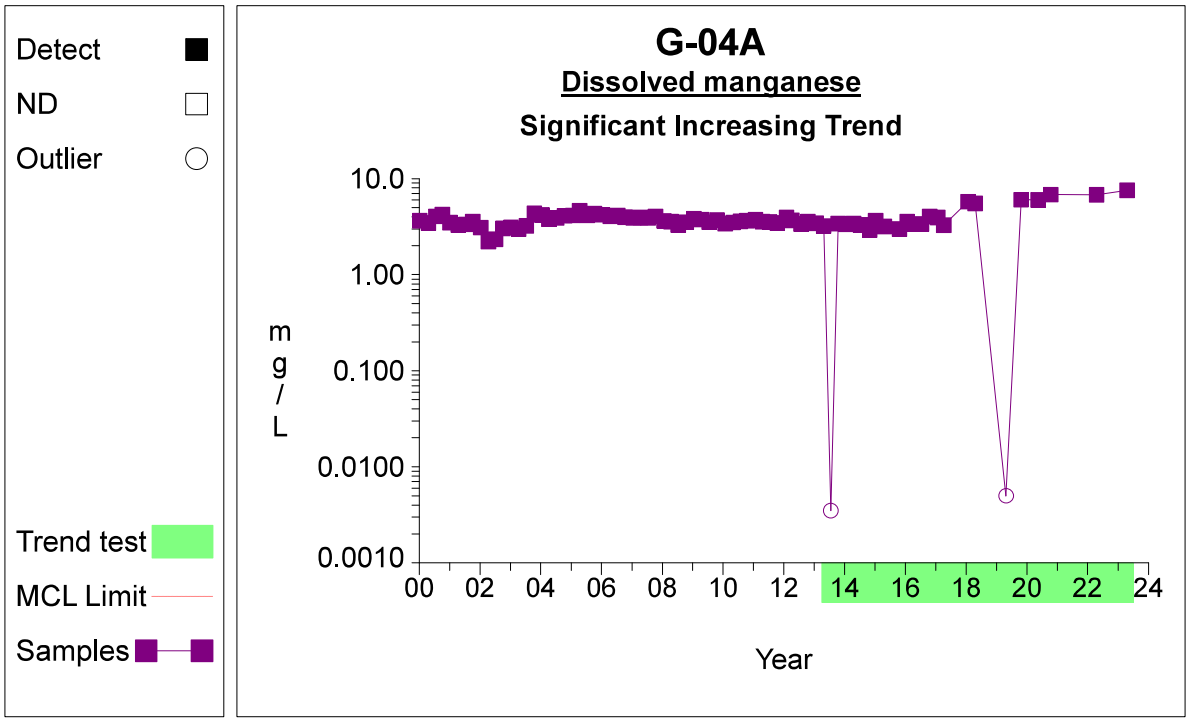
Graph 45

Time Series



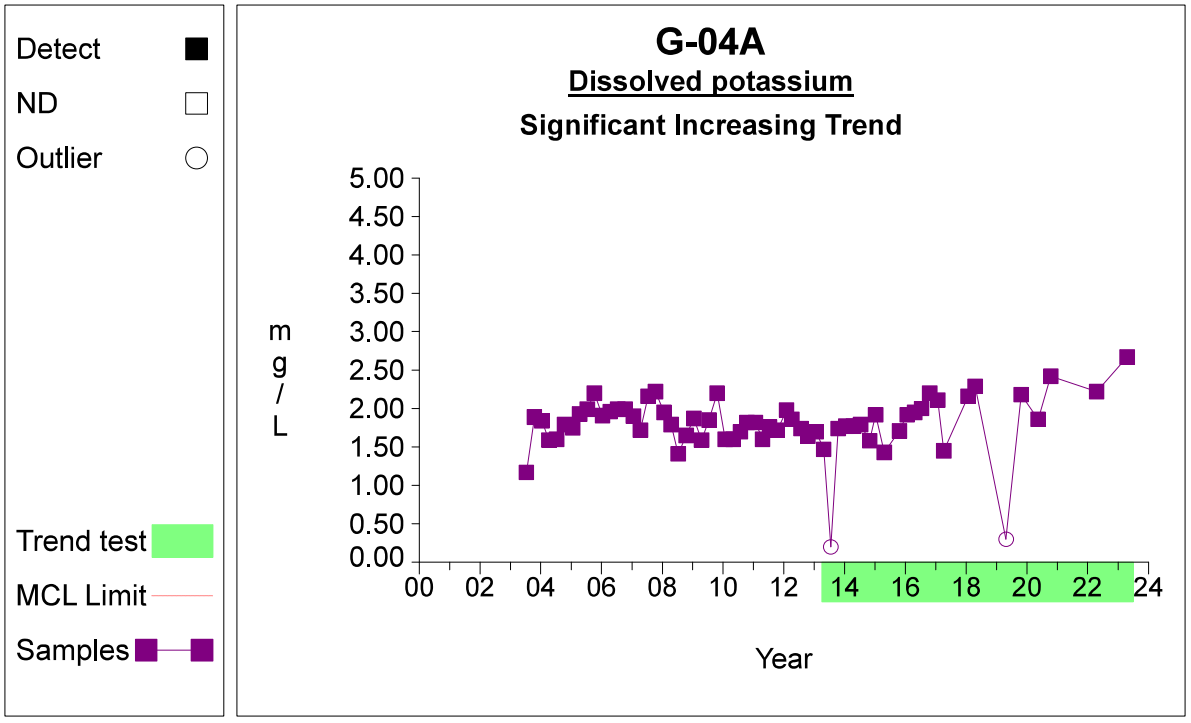
Graph 51

Time Series



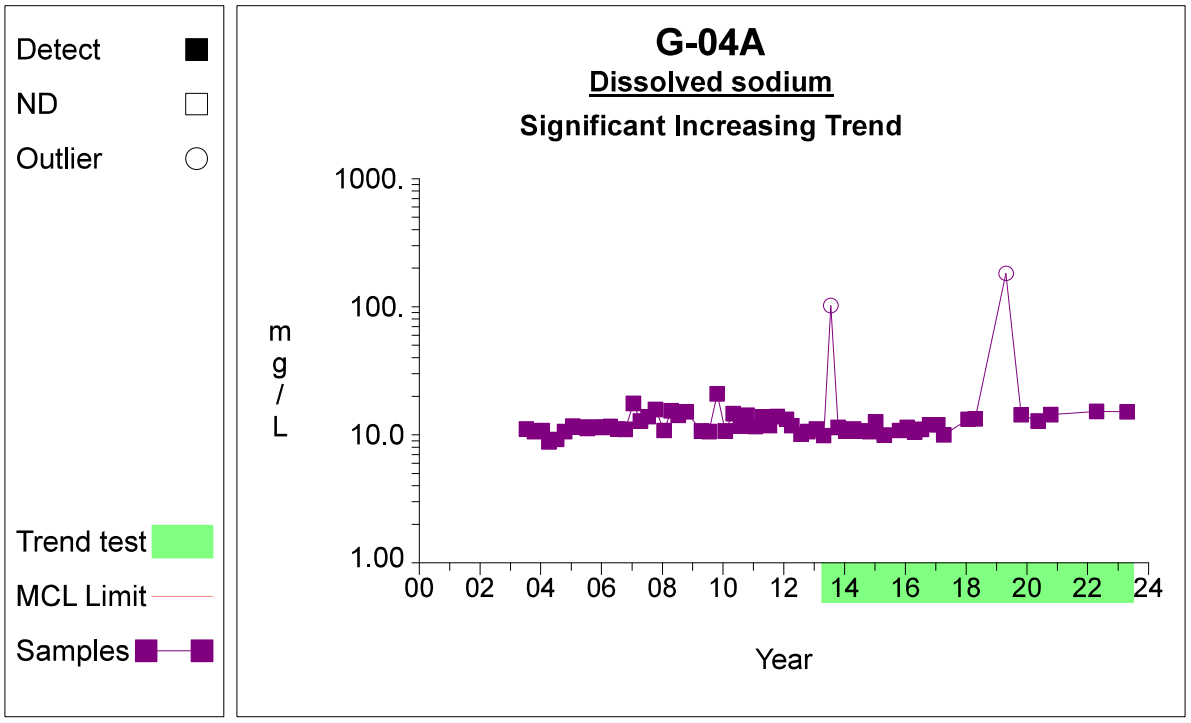
Graph 52

Time Series



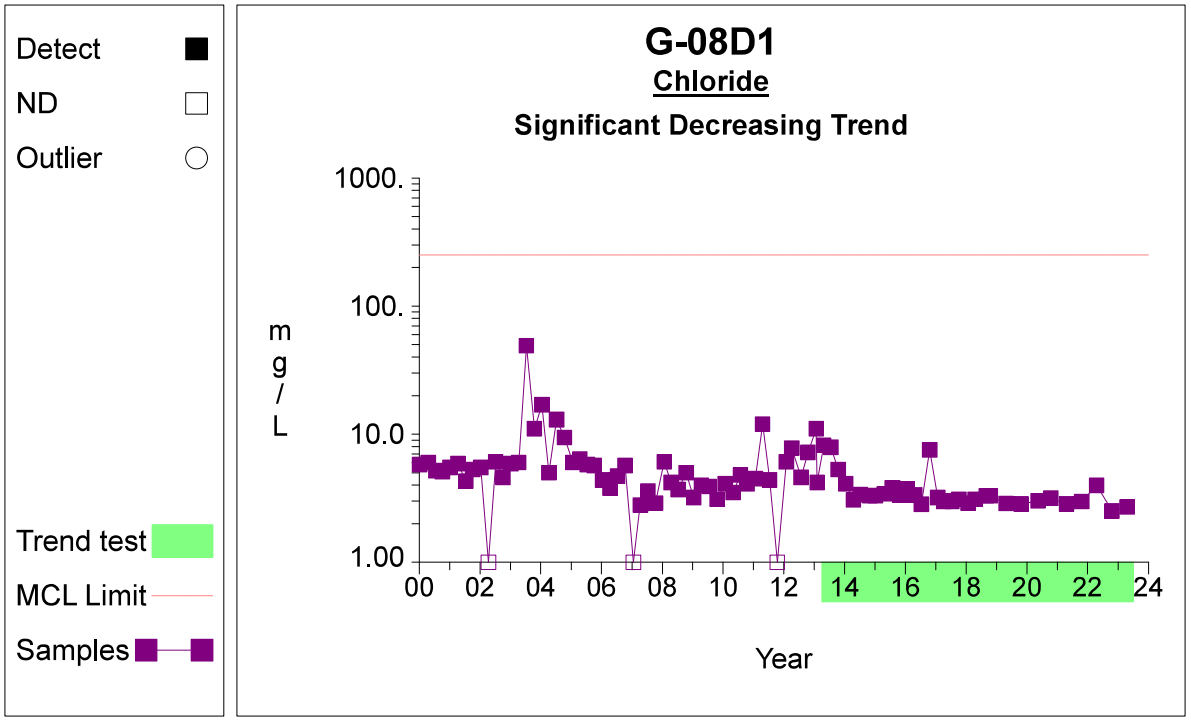
Graph 54

Time Series



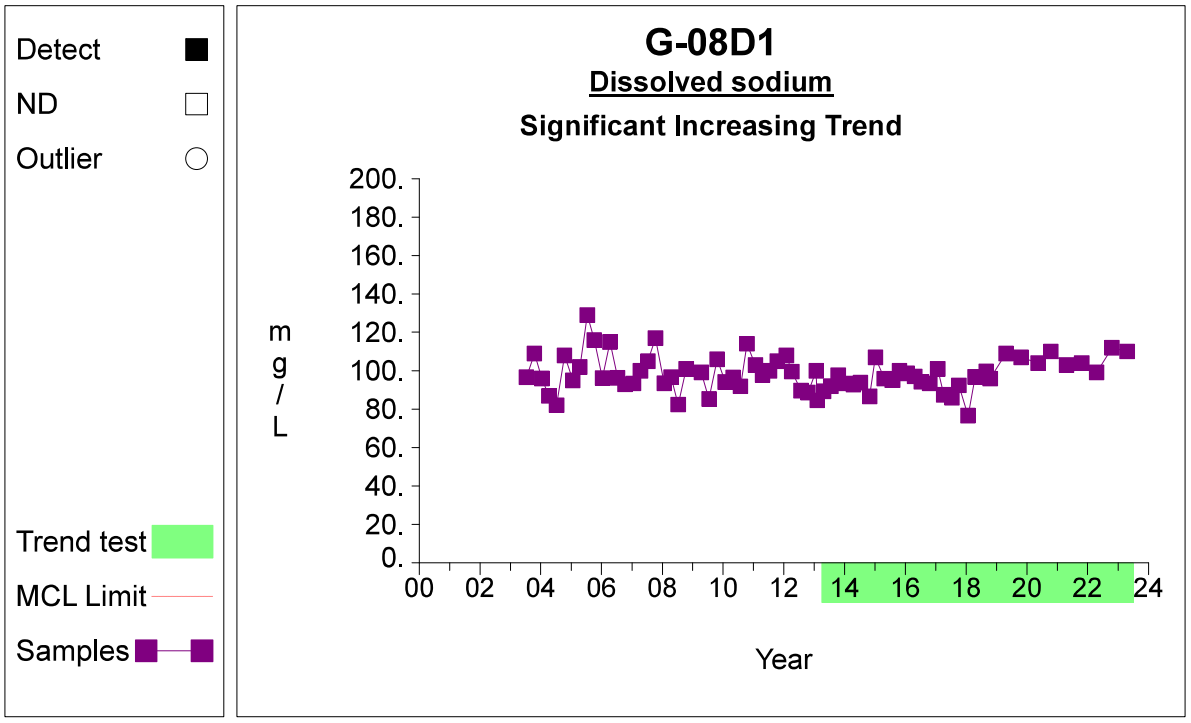
Graph 57

Time Series



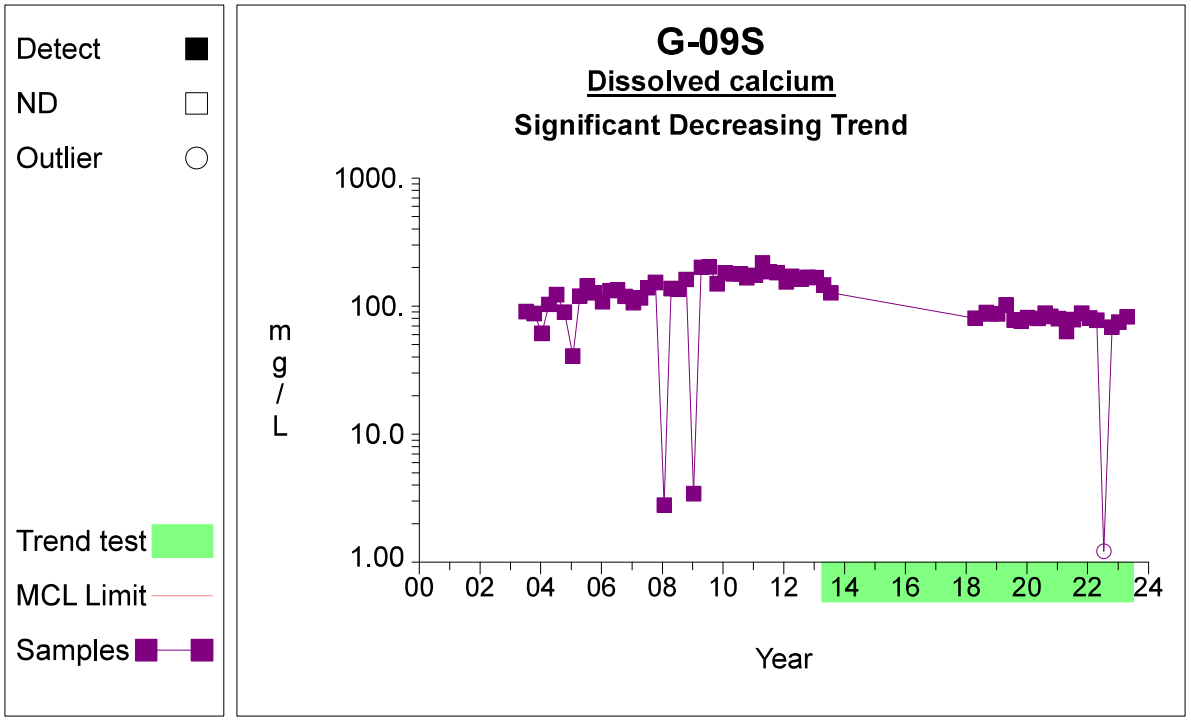
Graph 71

Time Series



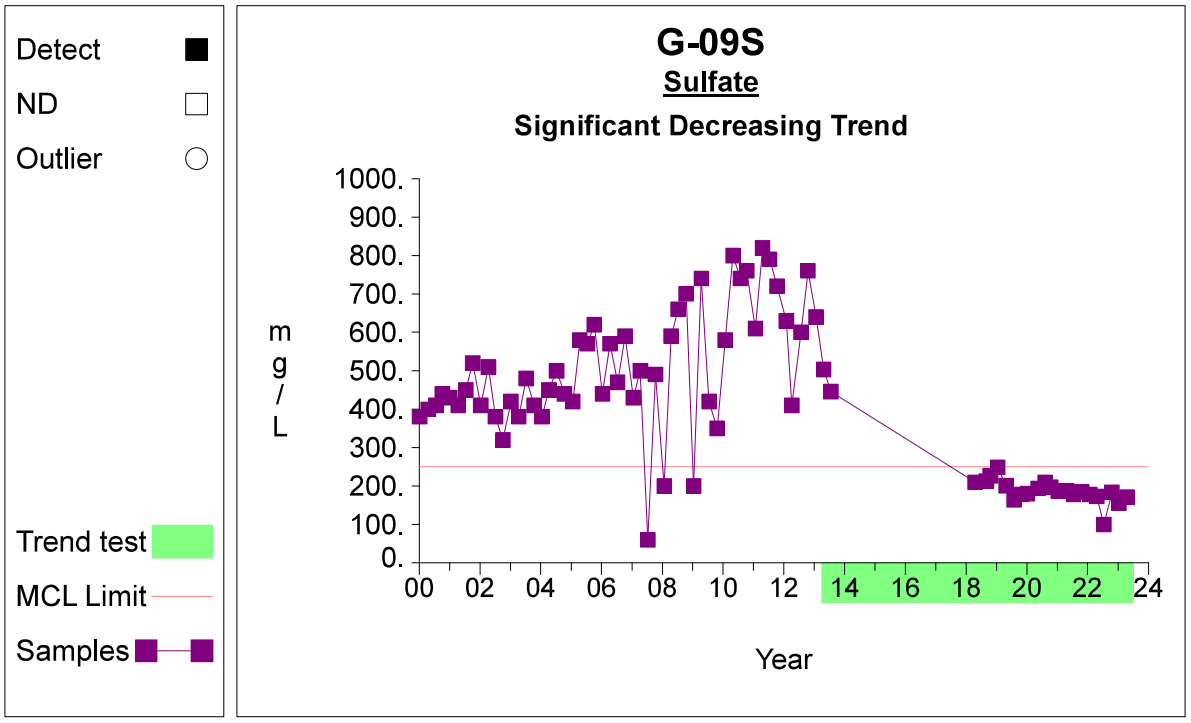
Graph 90

Time Series



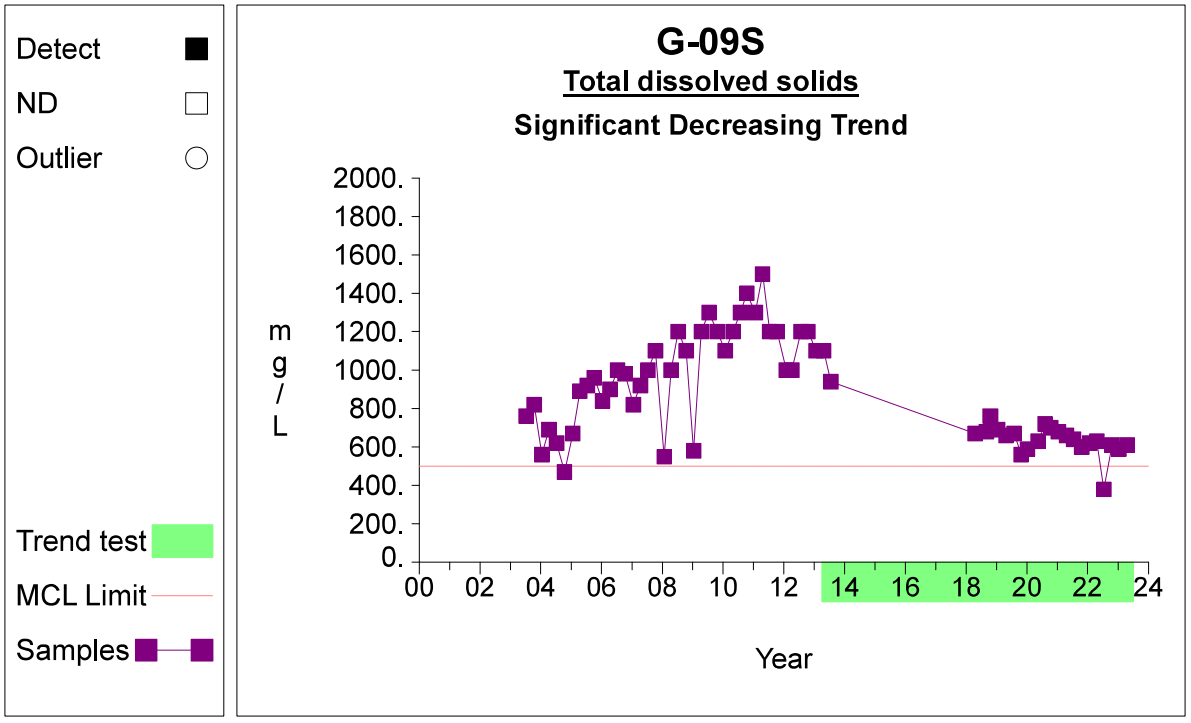
Graph 111

Time Series



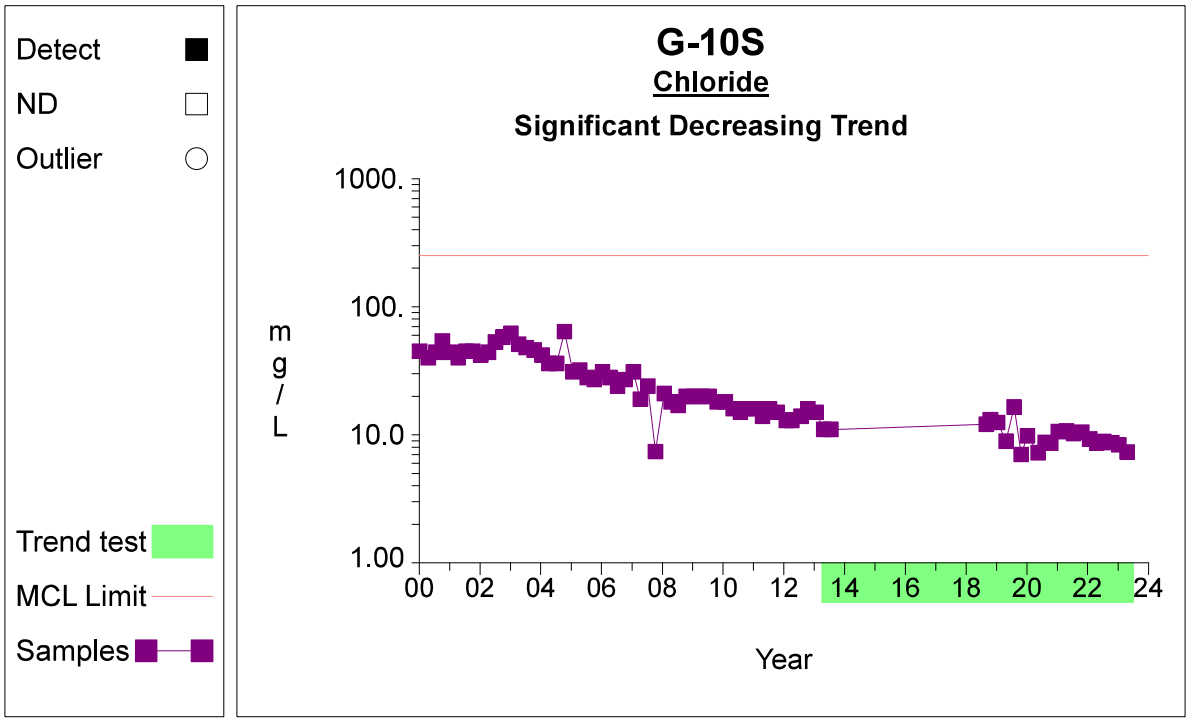
Graph 130

Time Series



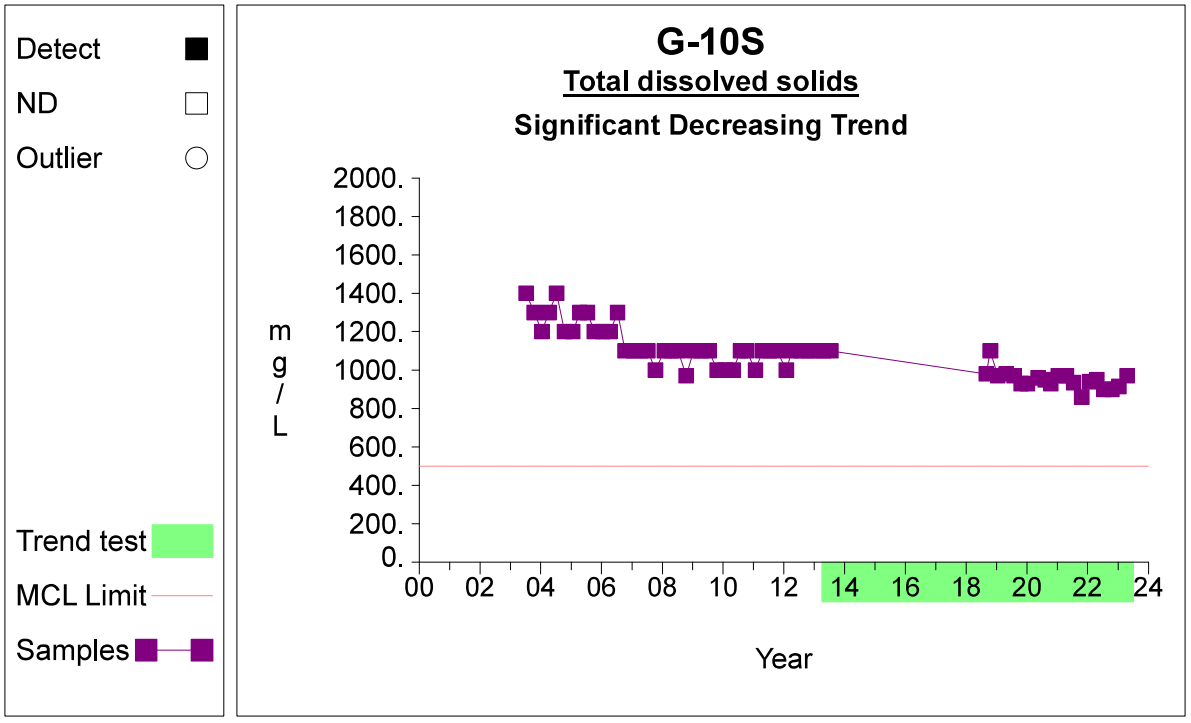
Graph 131

Time Series



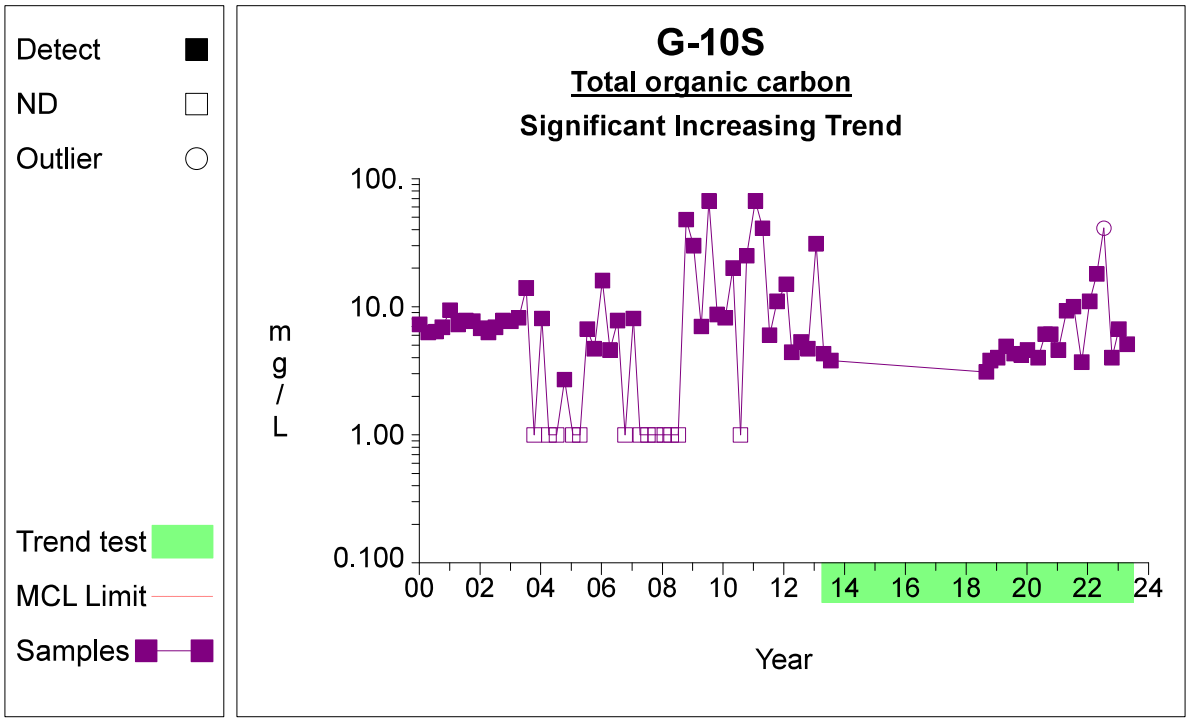
Graph 137

Time Series



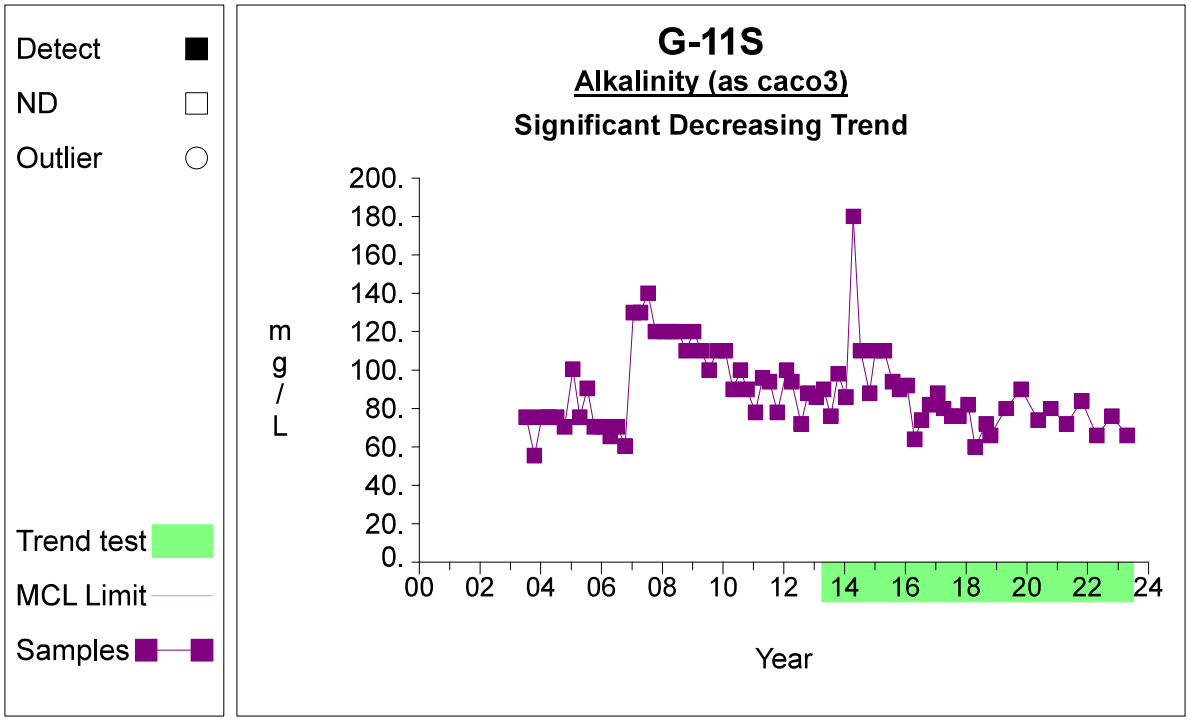
Graph 164

Time Series



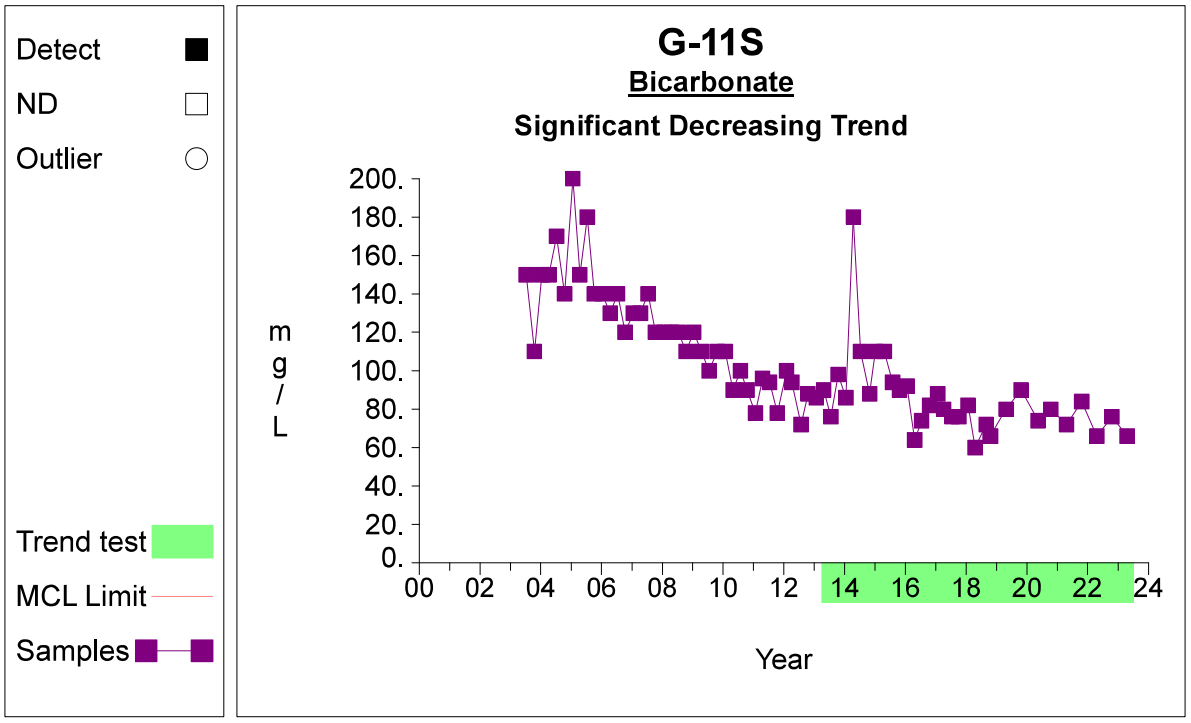
Graph 165

Time Series



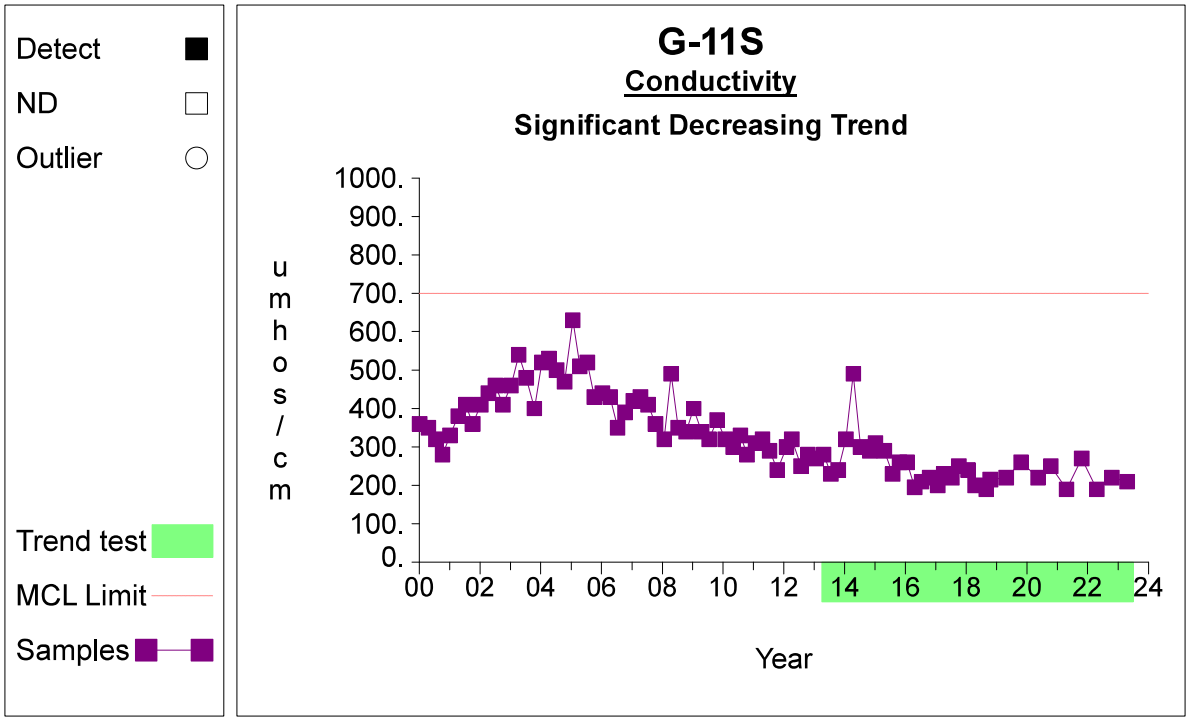
Graph 166

Time Series



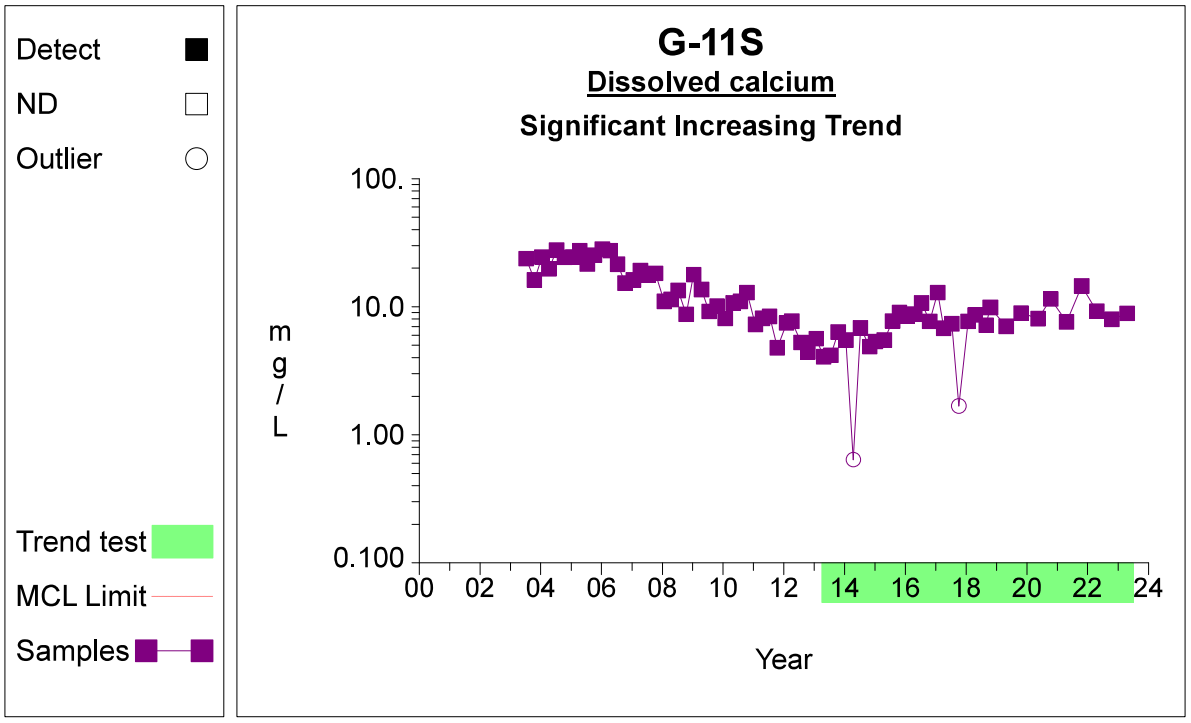
Graph 168

Time Series



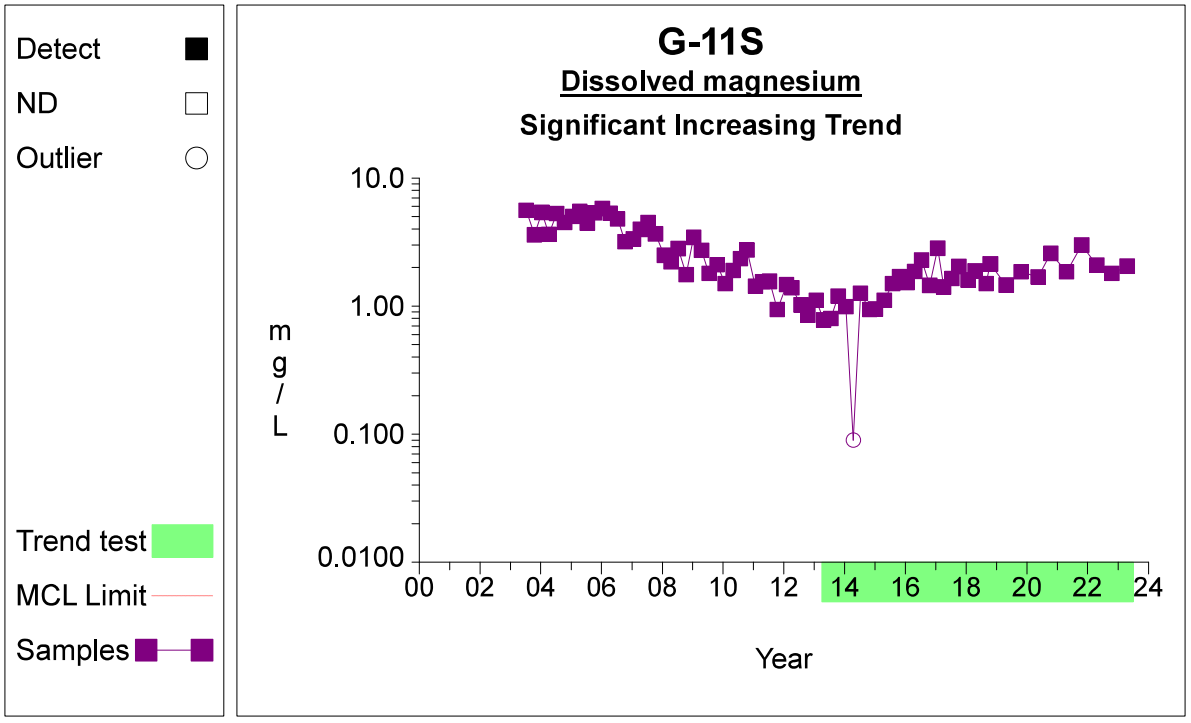
Graph 171

Time Series



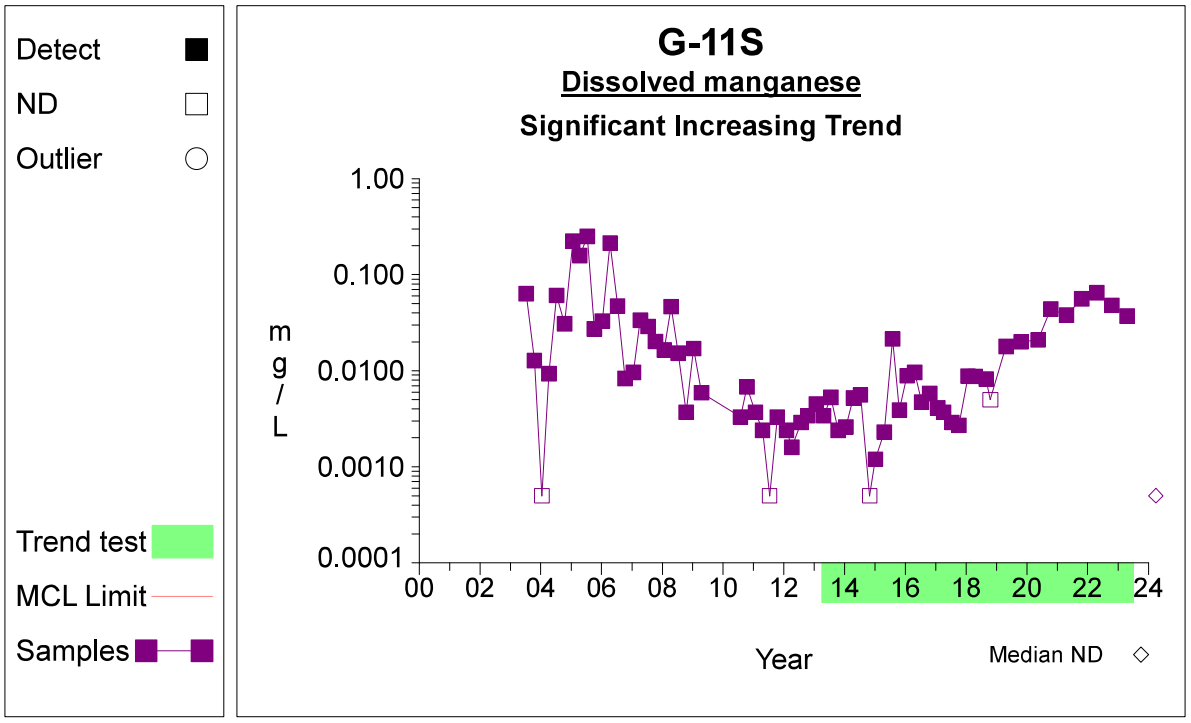
Graph 177

Time Series



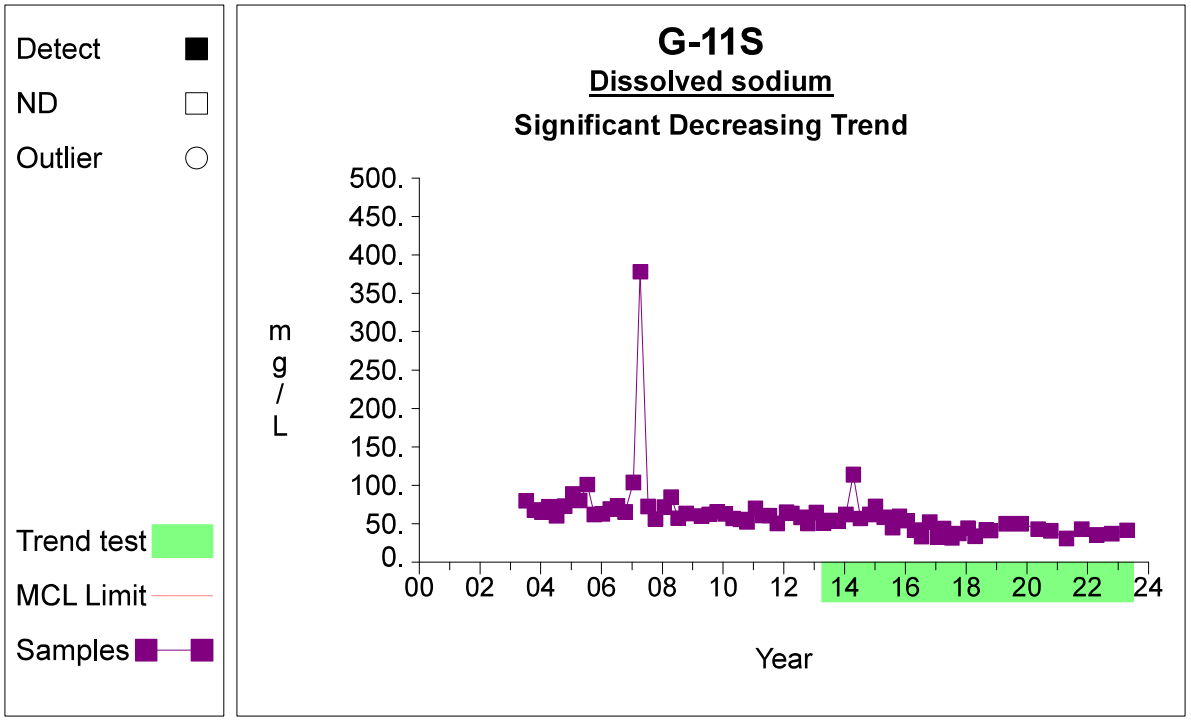
Graph 183

Time Series



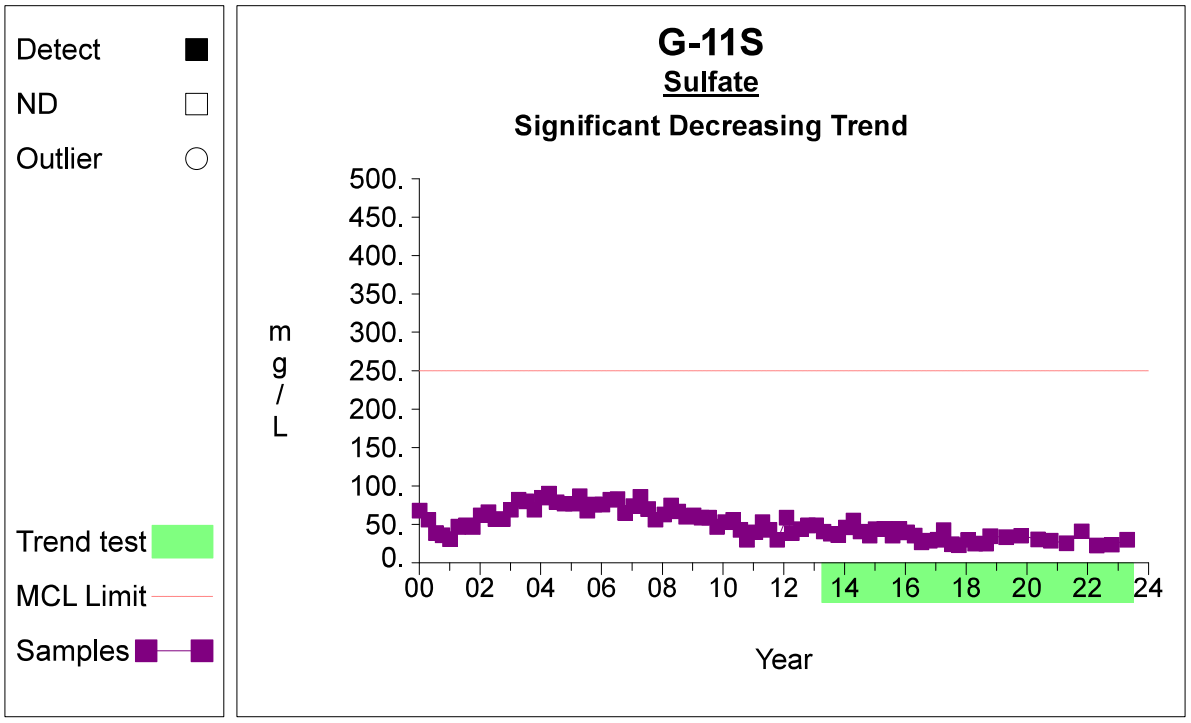
Graph 184

Time Series



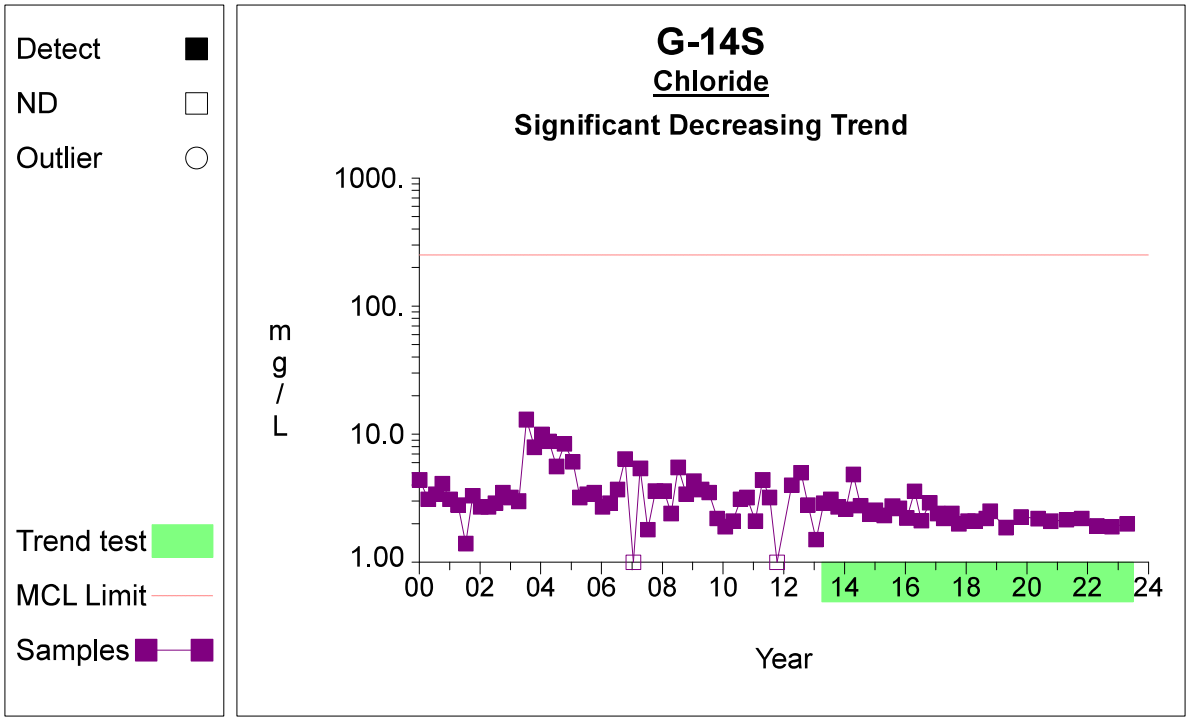
Graph 189

Time Series



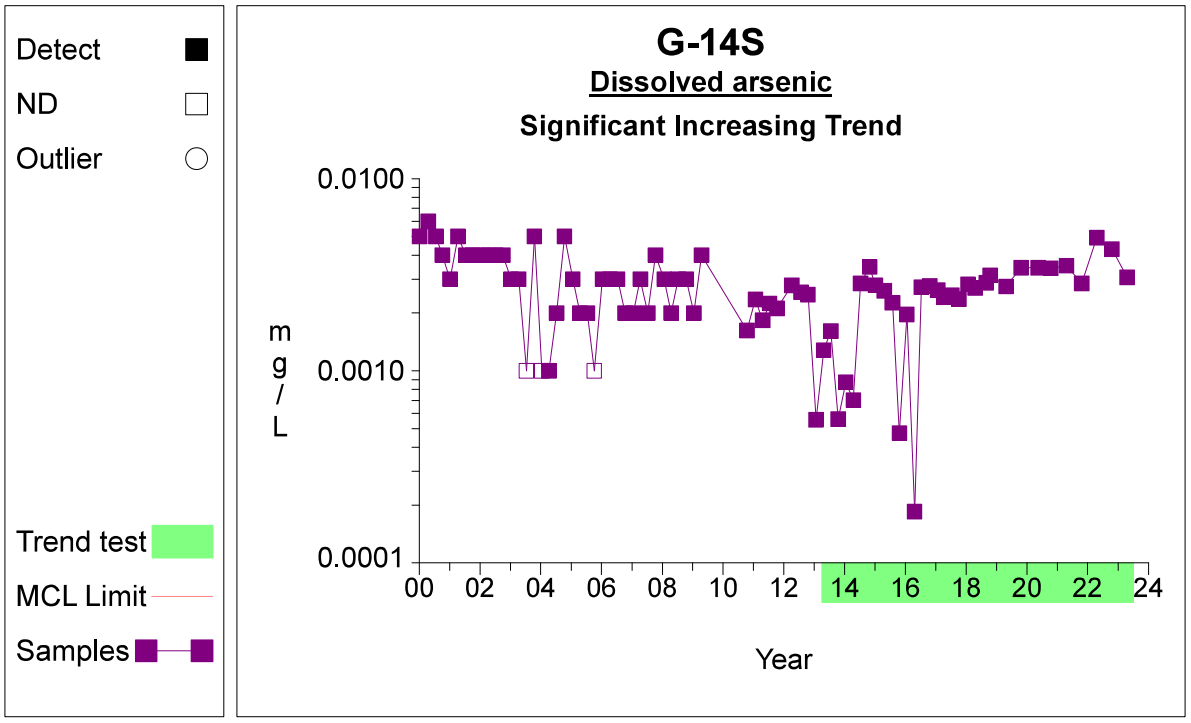
Graph 196

Time Series



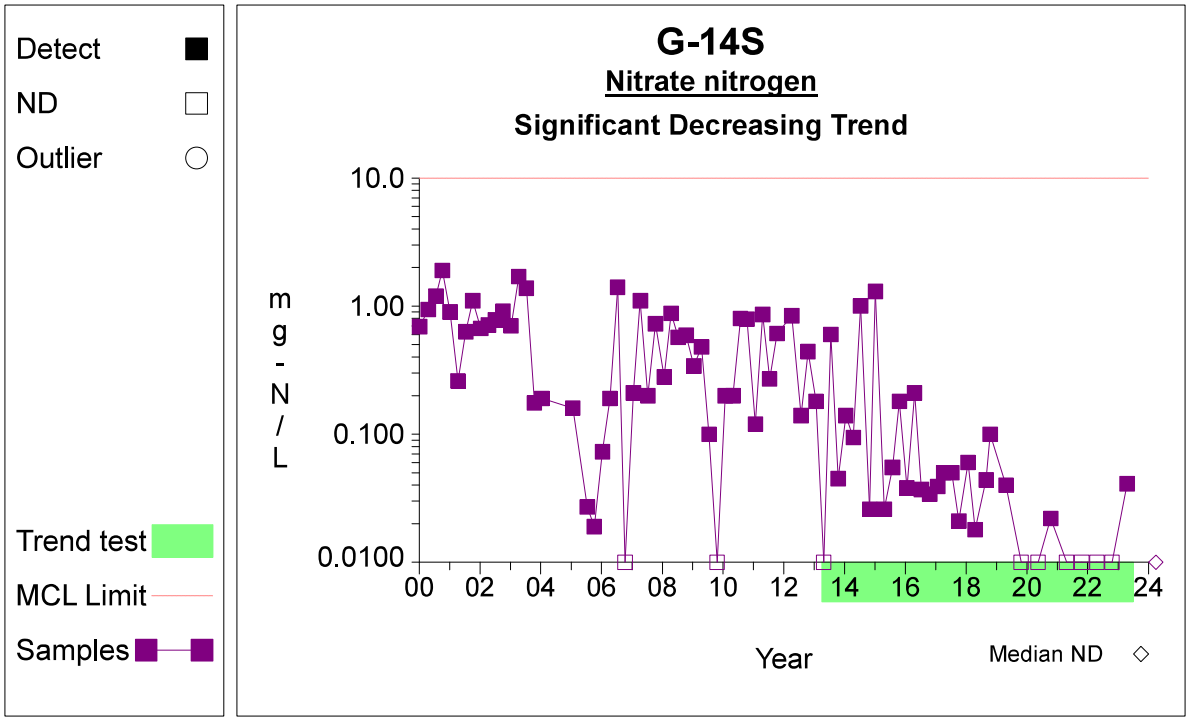
Graph 203

Time Series



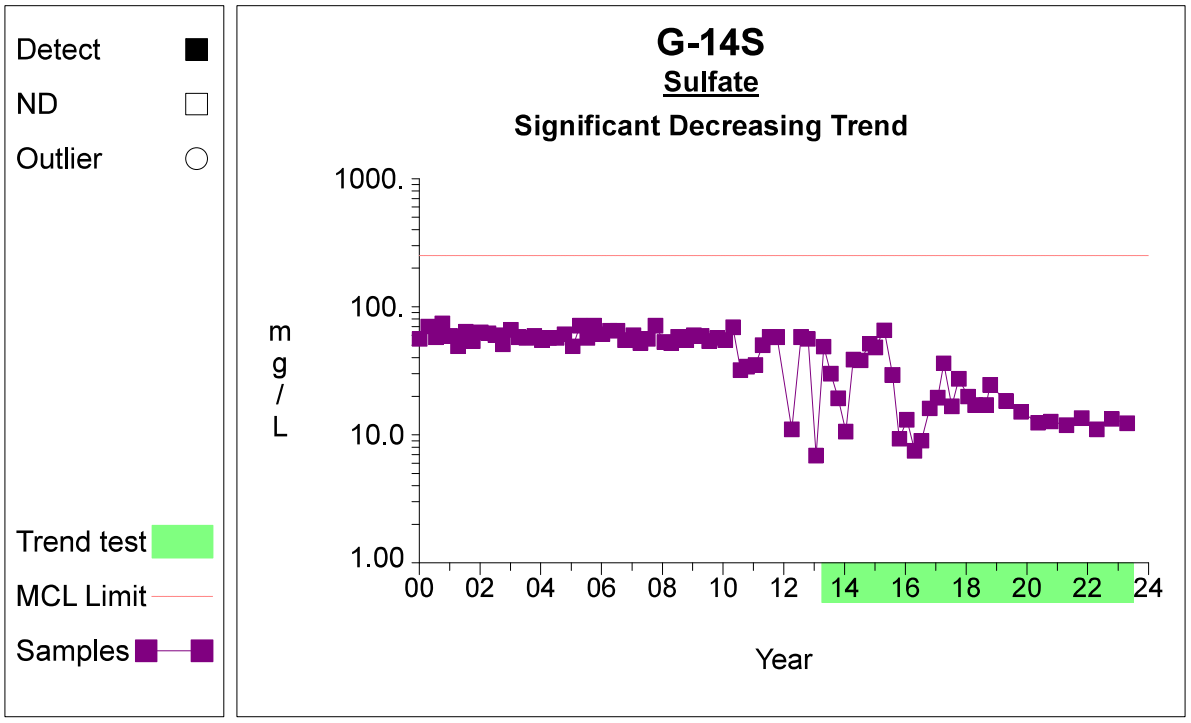
Graph 206

Time Series



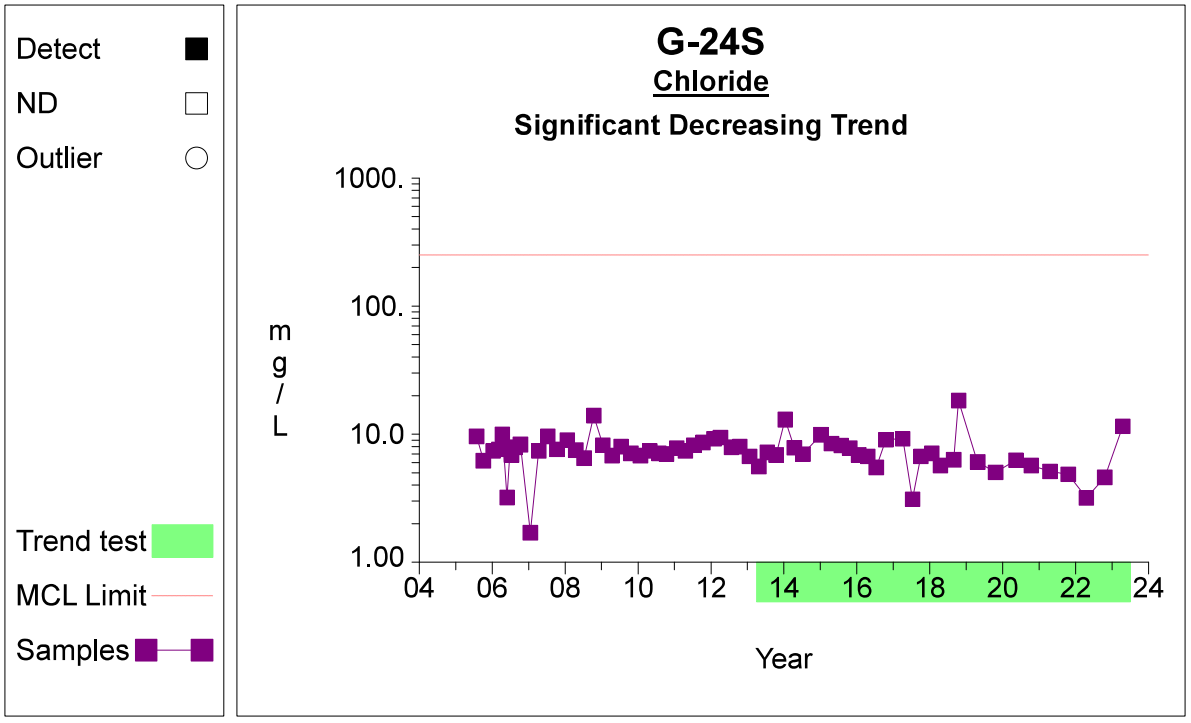
Graph 226

Time Series



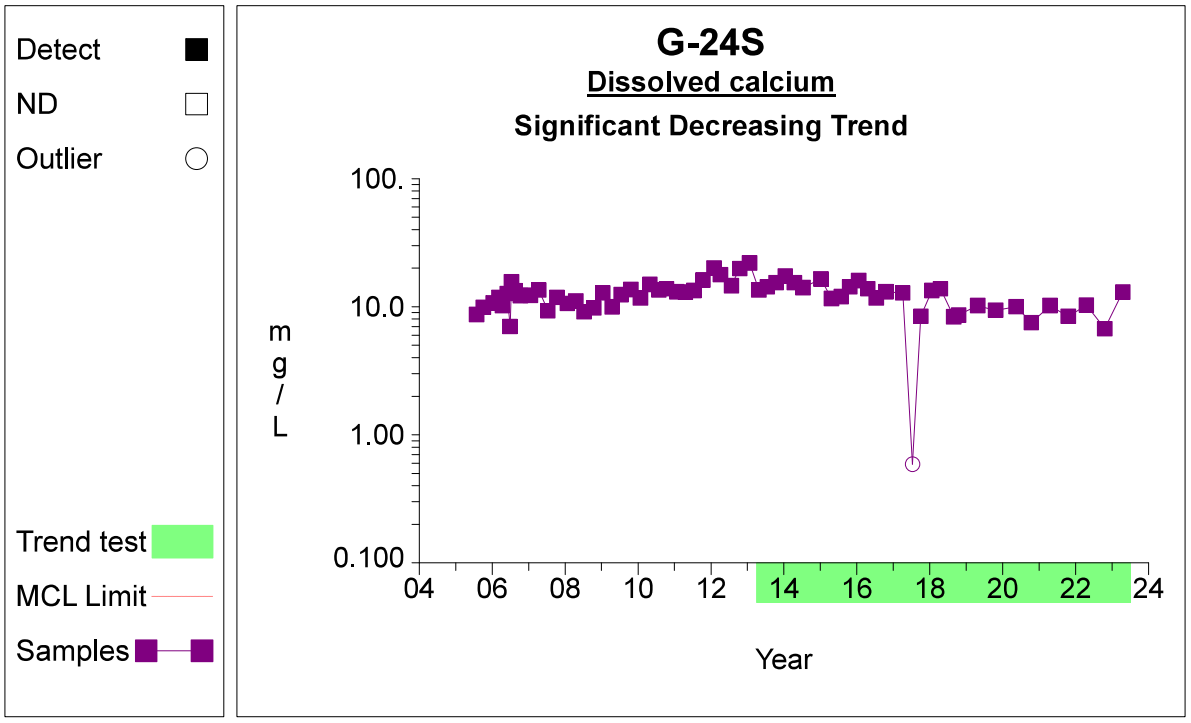
Graph 229

Time Series



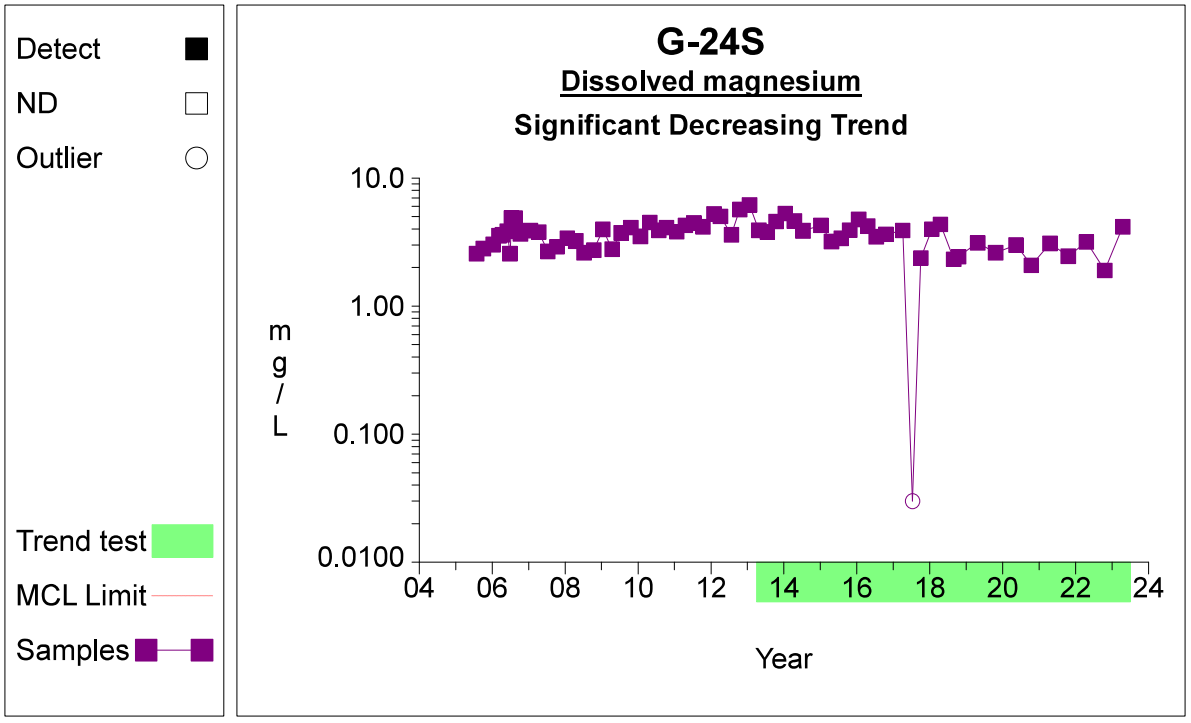
Graph 236

Time Series



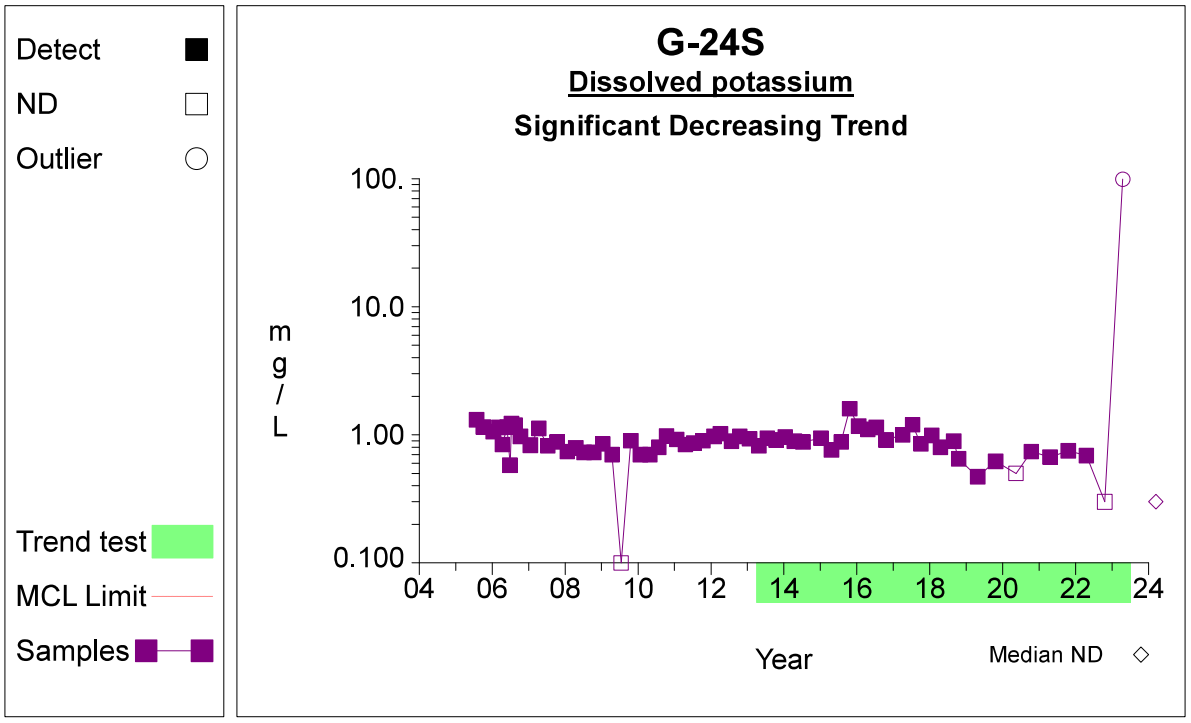
Graph 243

Time Series



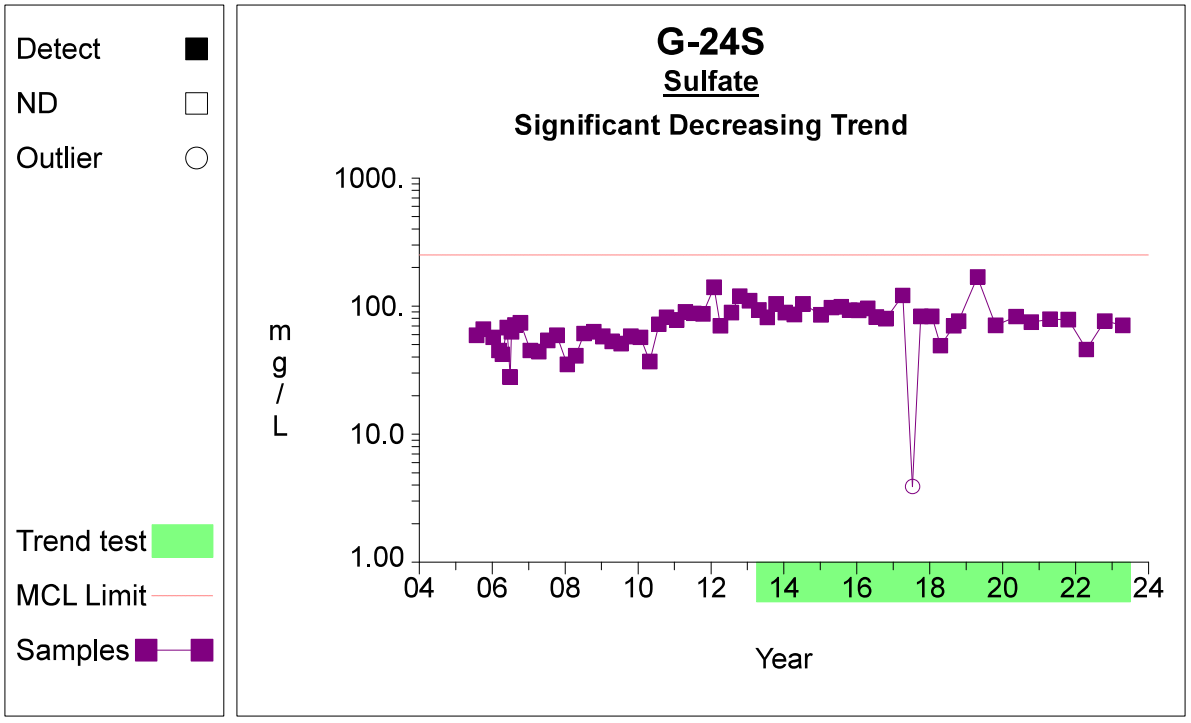
Graph 249

Time Series



Graph 252

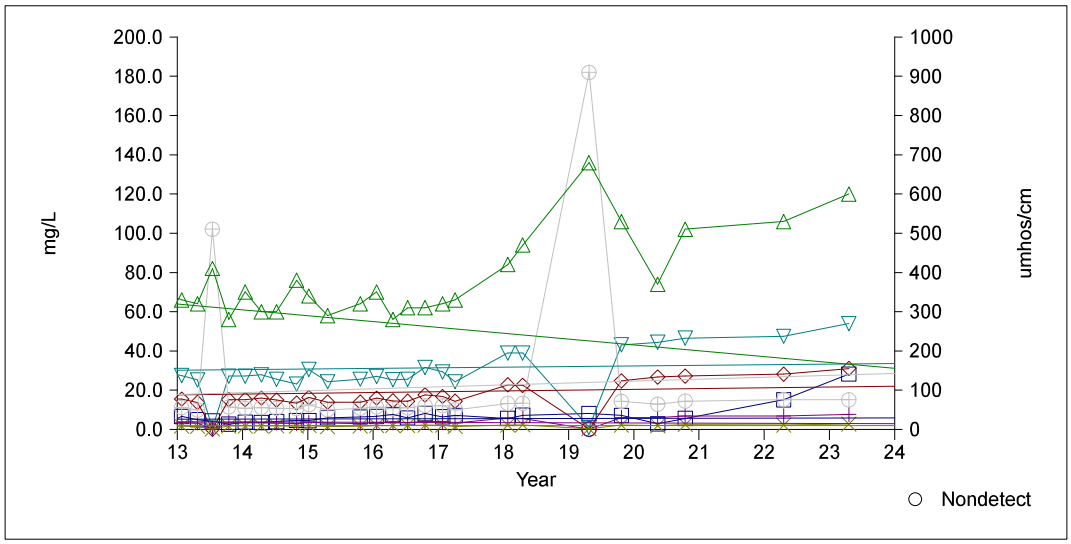
Time Series



Graph 262

Cathcart Landfill

Time Series Plot for G-04A



1

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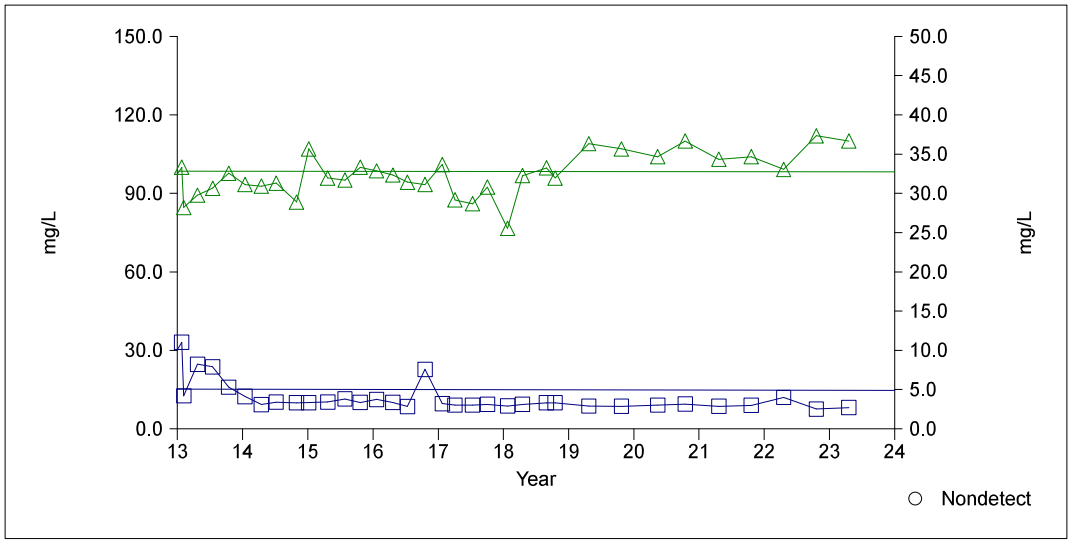
Cathcart Landfill

Time Series Plot for G-08D1



1

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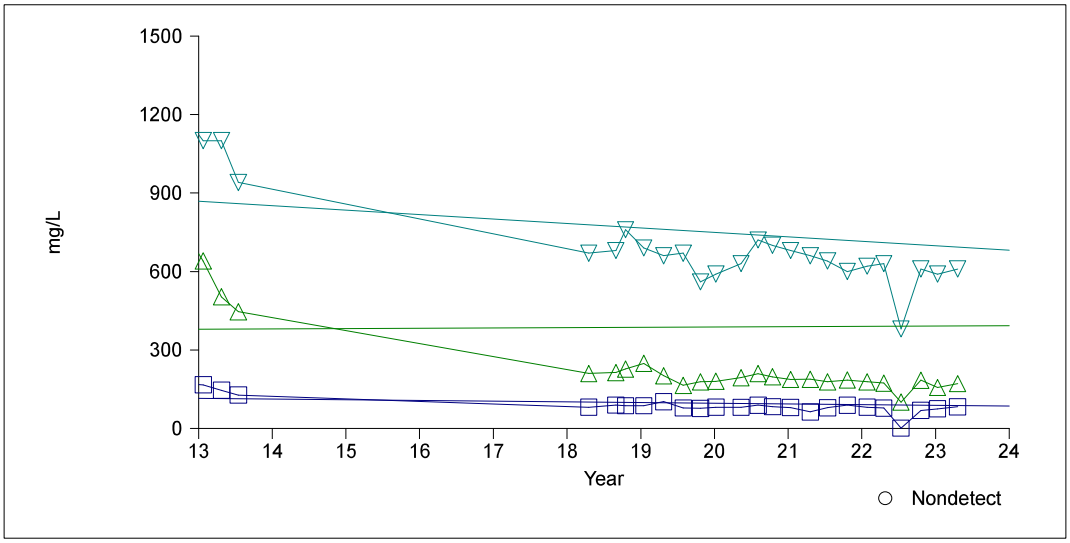
Cathcart Landfill

Time Series Plot for G-09S



1

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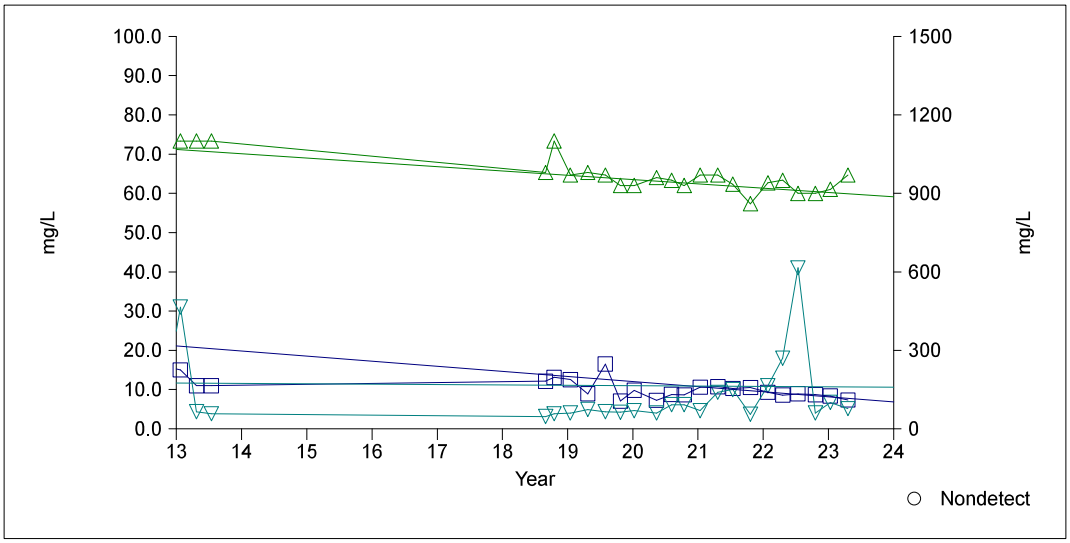
Cathcart Landfill

Time Series Plot for G-10S



1

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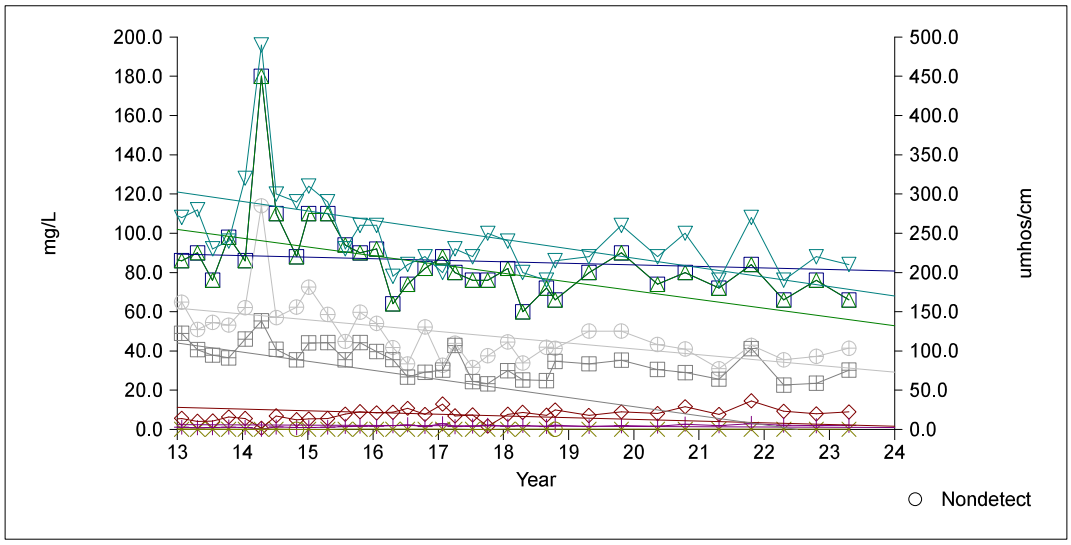
Cathcart Landfill

Time Series Plot for G-11S



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

1

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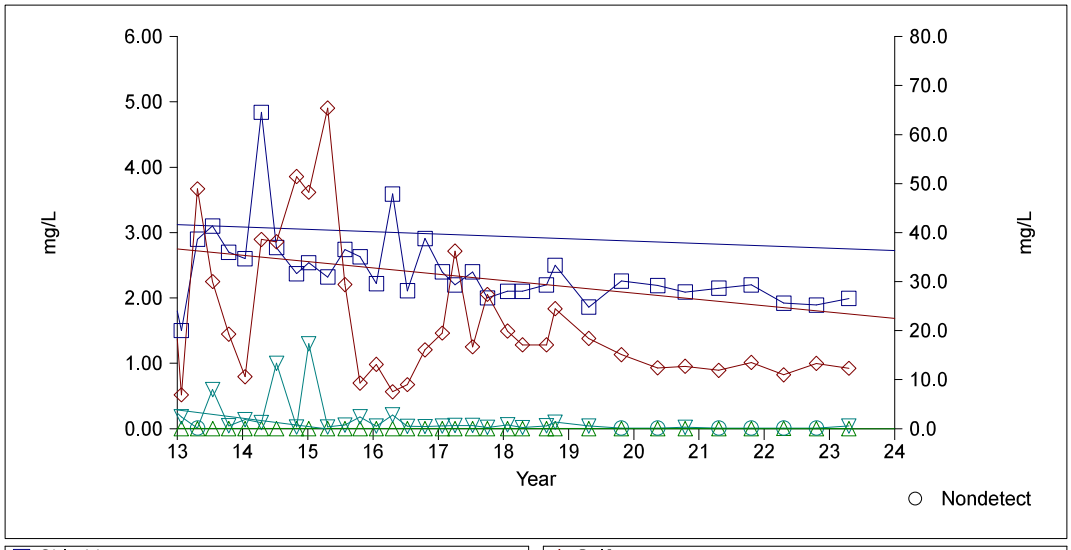
Cathcart Landfill

Time Series Plot for G-14S



- Chloride
- Dissolved arsenic
- Nitrate nitrogen
- Sulfate

1

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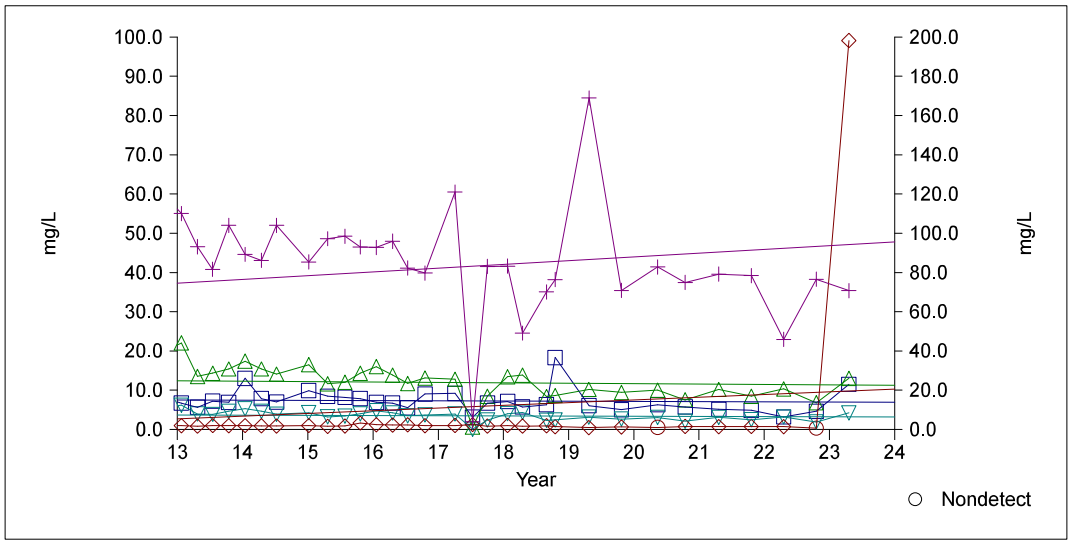
Cathcart Landfill

Time Series Plot for G-24S



Chloride
Dissolved calcium
Dissolved magnesium
Dissolved potassium
Sulfate

1

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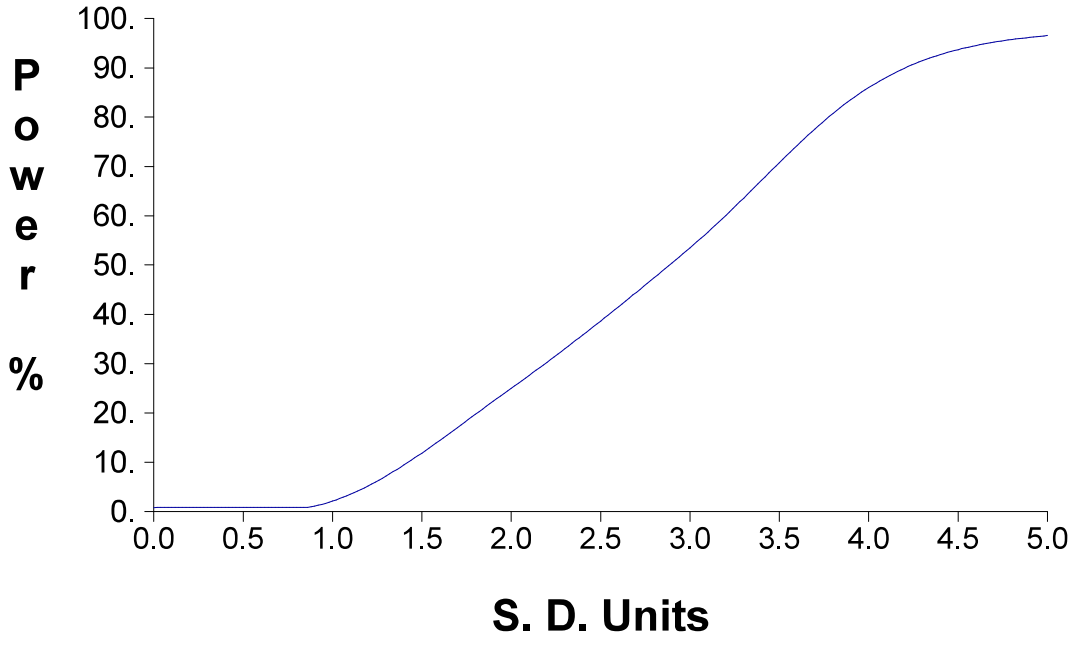
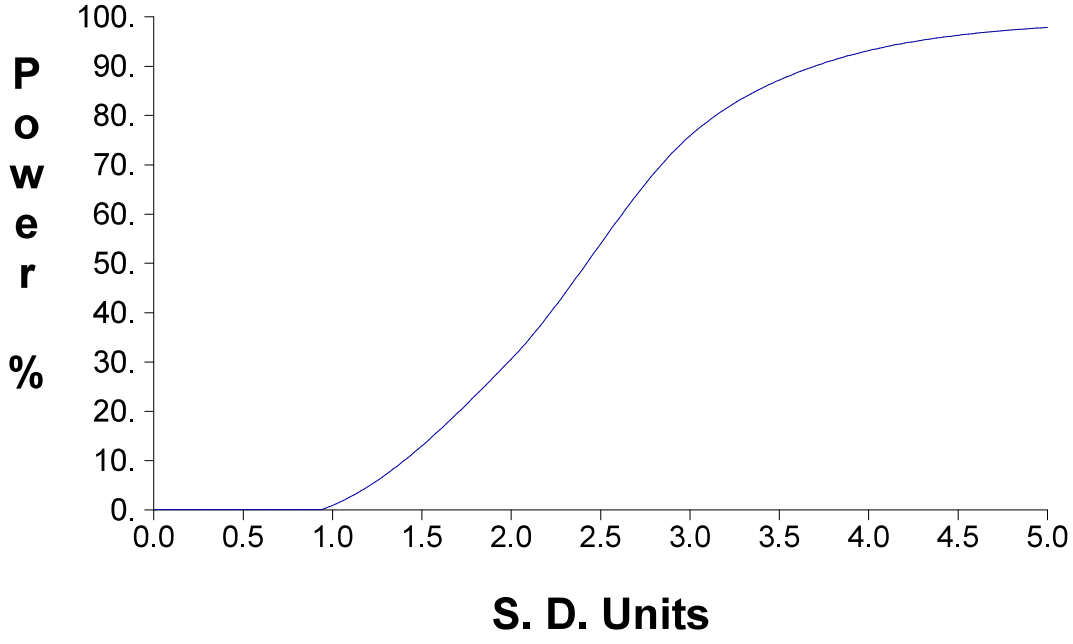
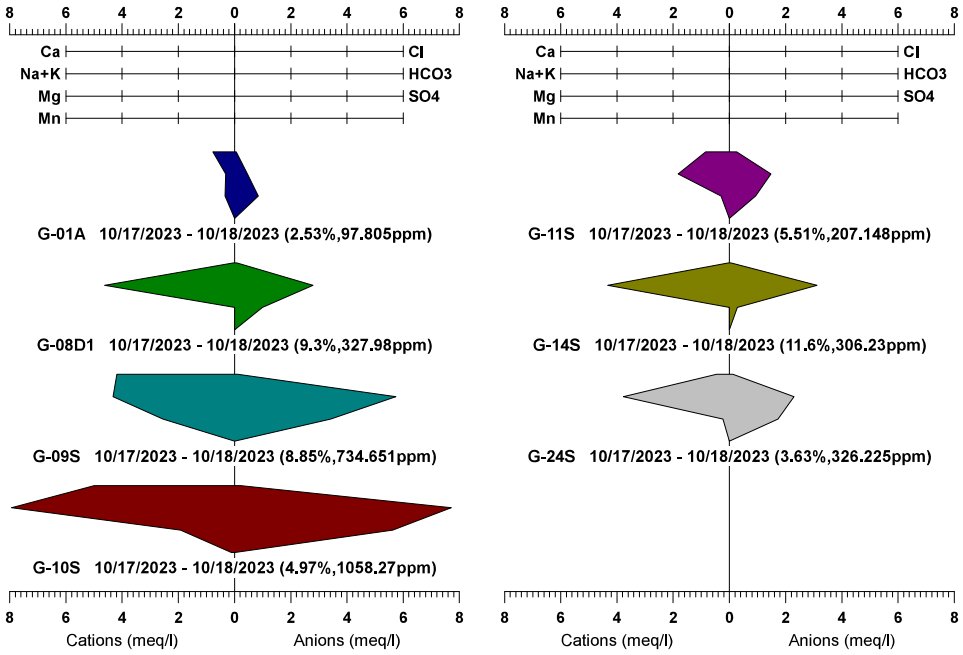
False Positive and False Negative Rates for Current Intra-Well Prediction Limits Monitoring Program



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



Cathcart Landfill



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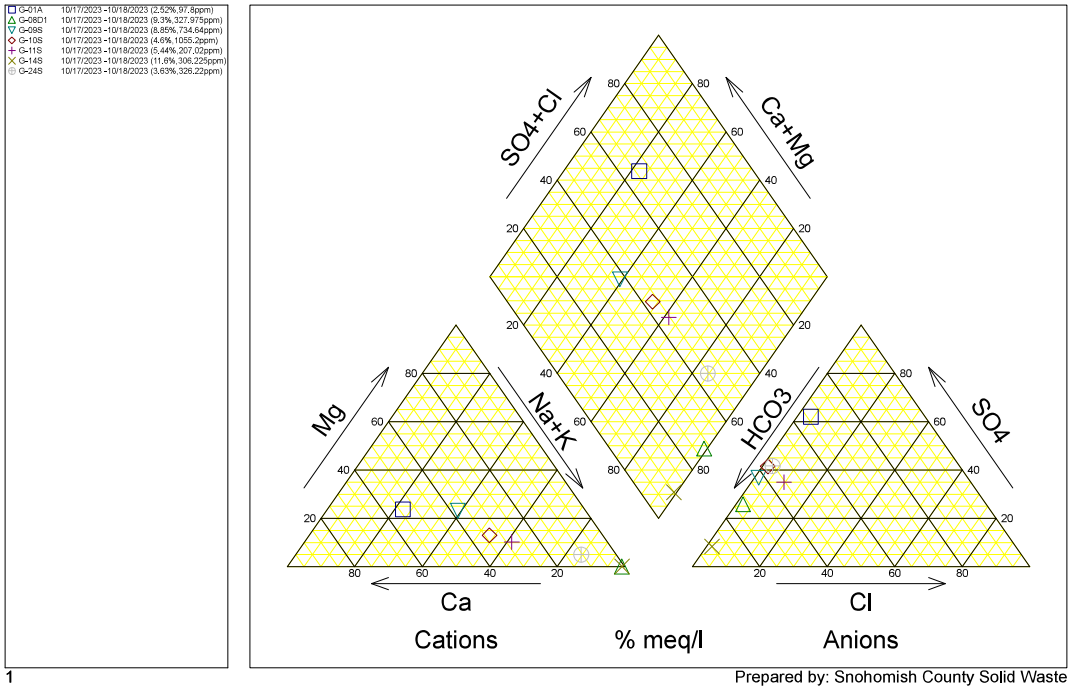
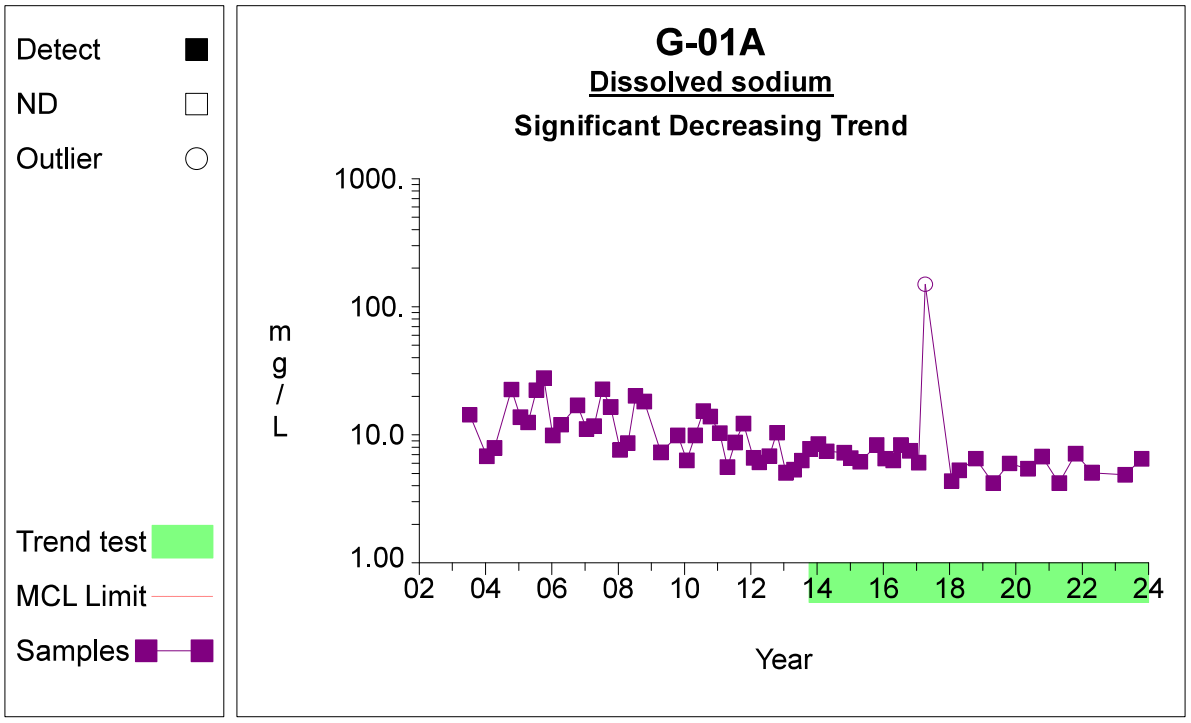
Cathcart Landfill



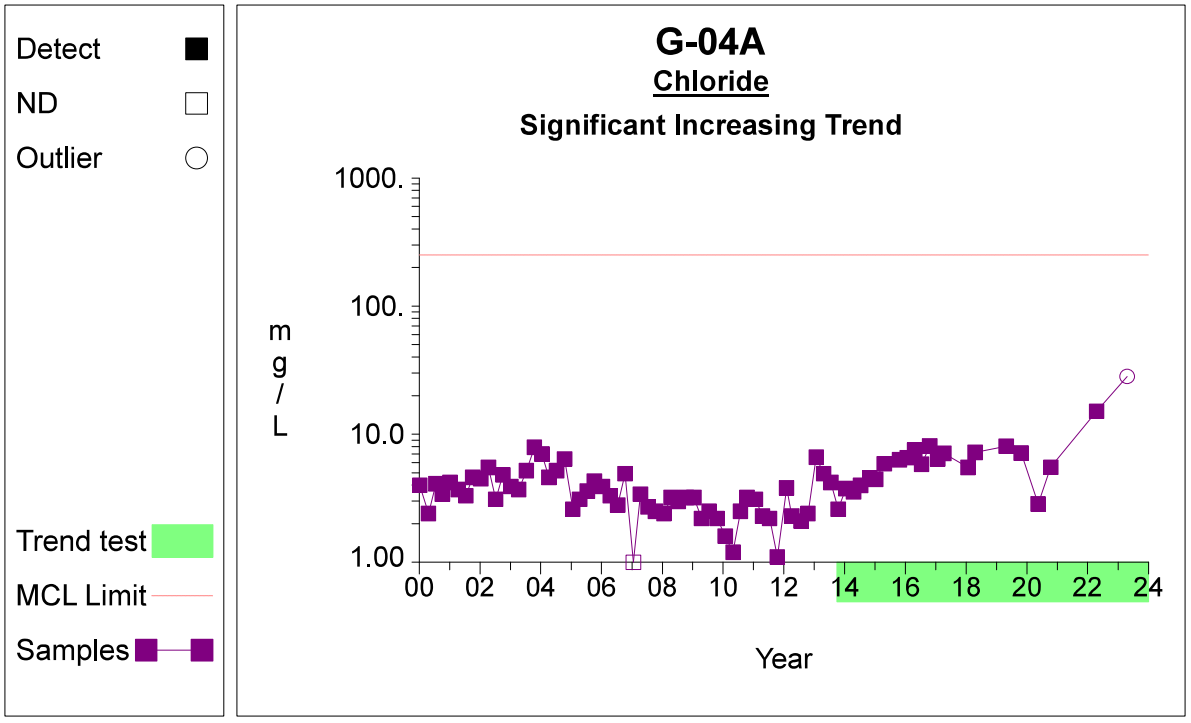
Prepared by: Snohomish County Solid Waste

Time Series



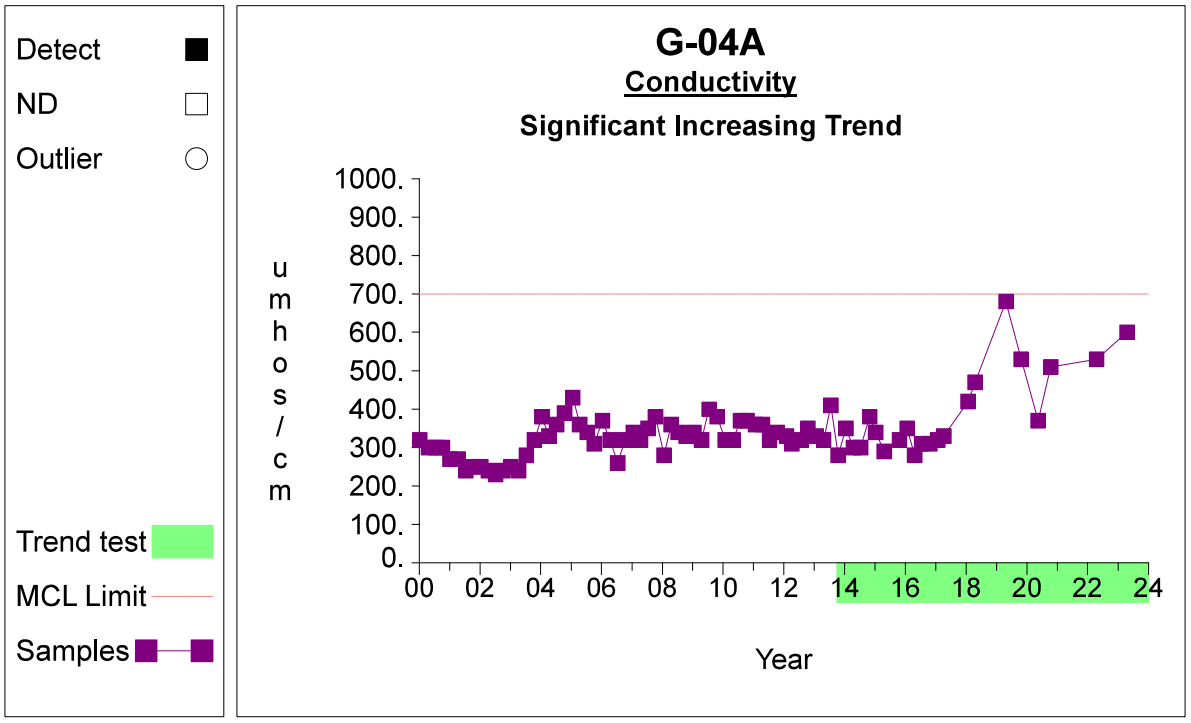
Graph 24

Time Series



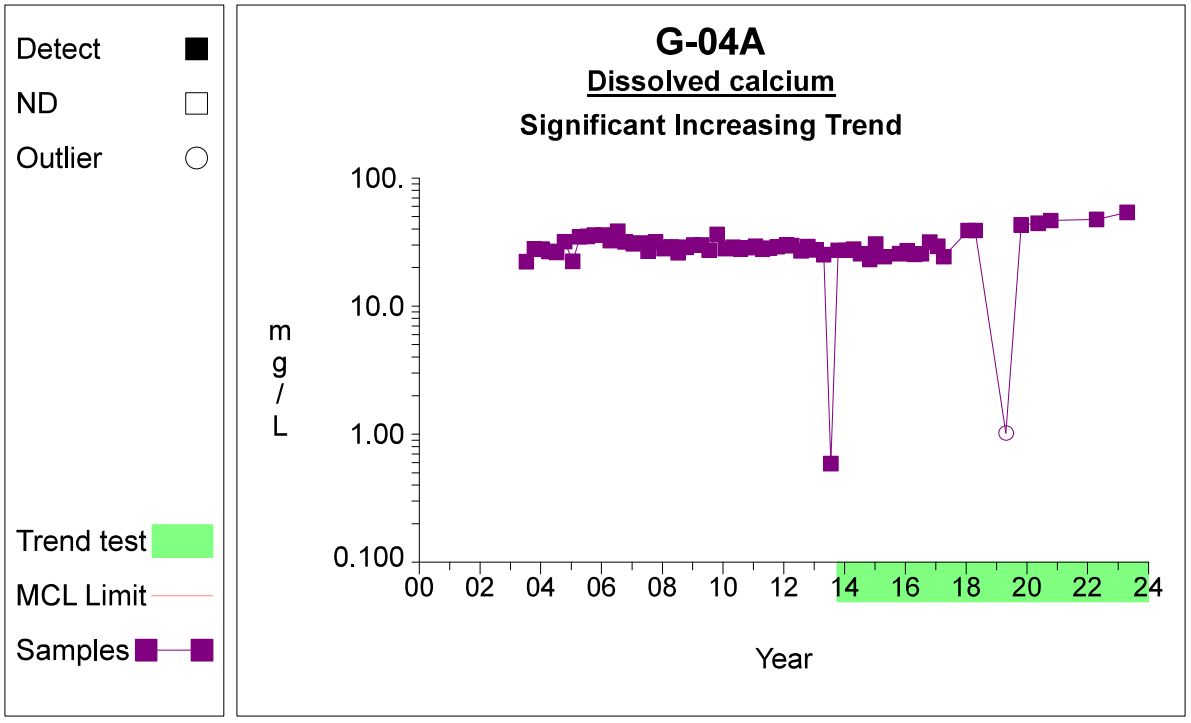
Graph 38

Time Series



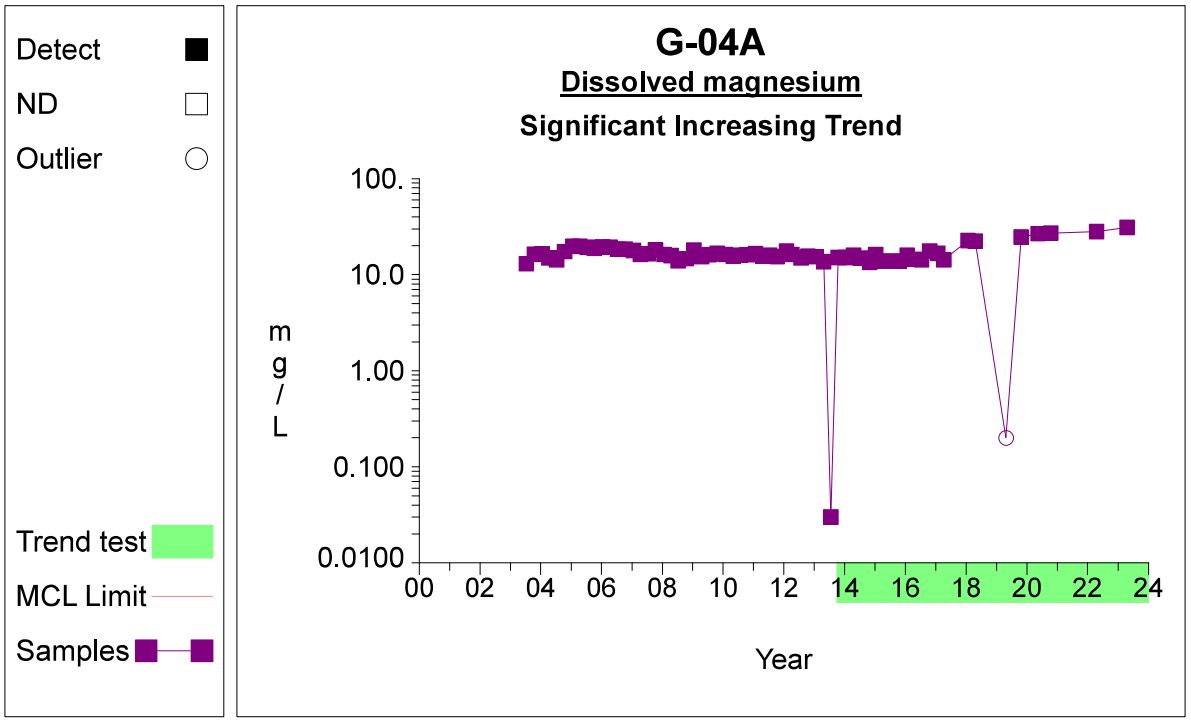
Graph 39

Time Series



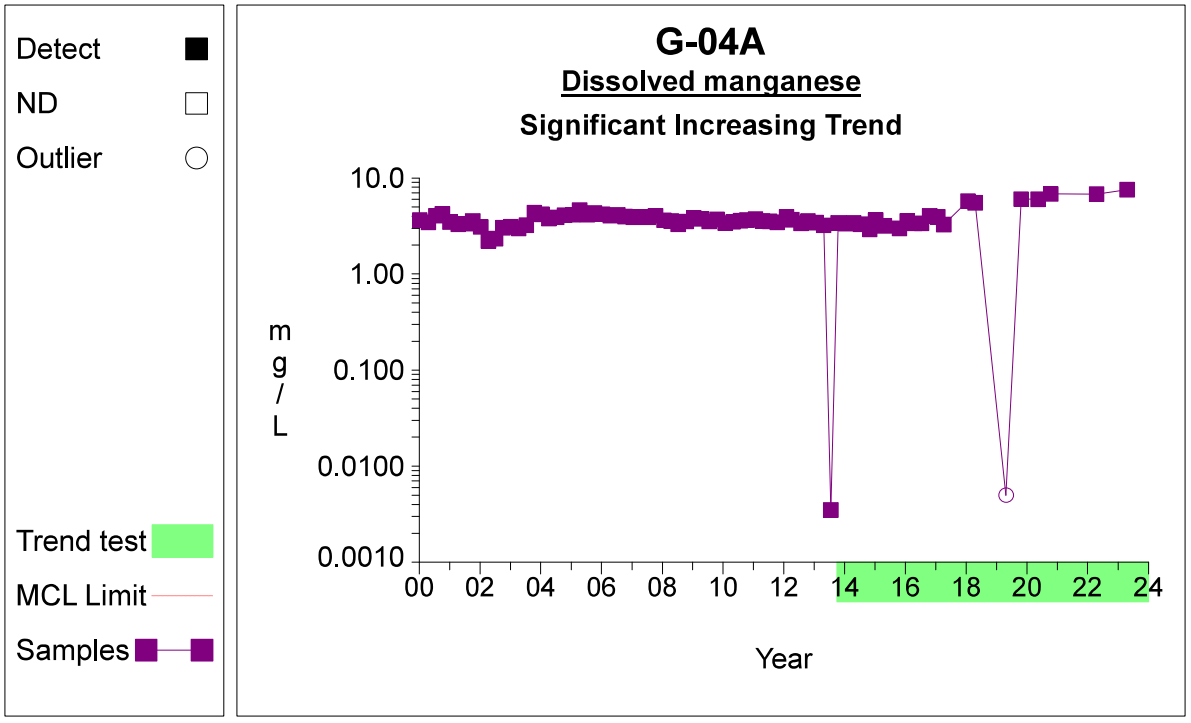
Graph 45

Time Series



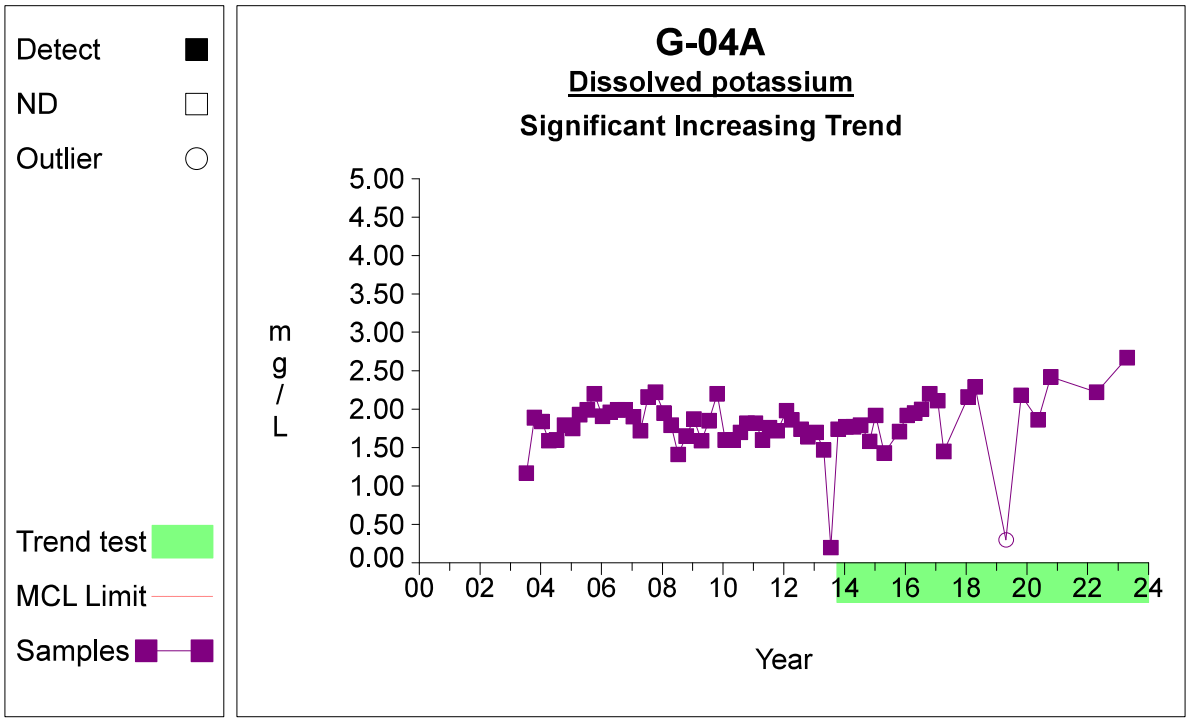
Graph 51

Time Series



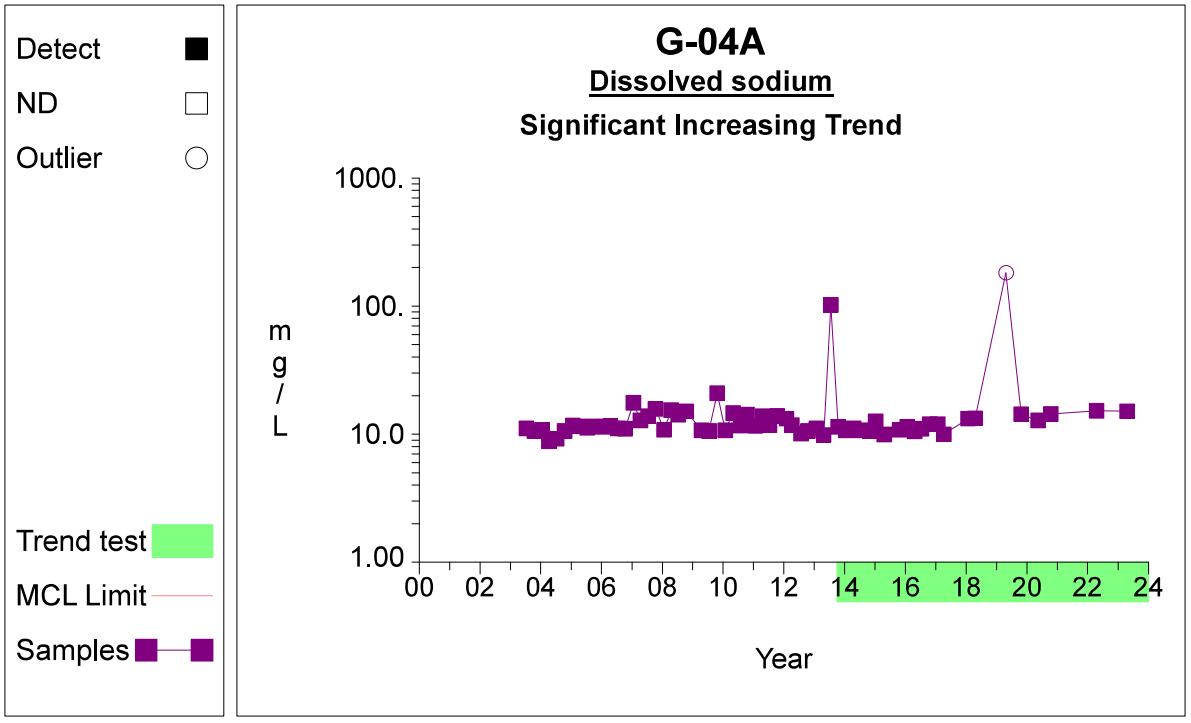
Graph 52

Time Series



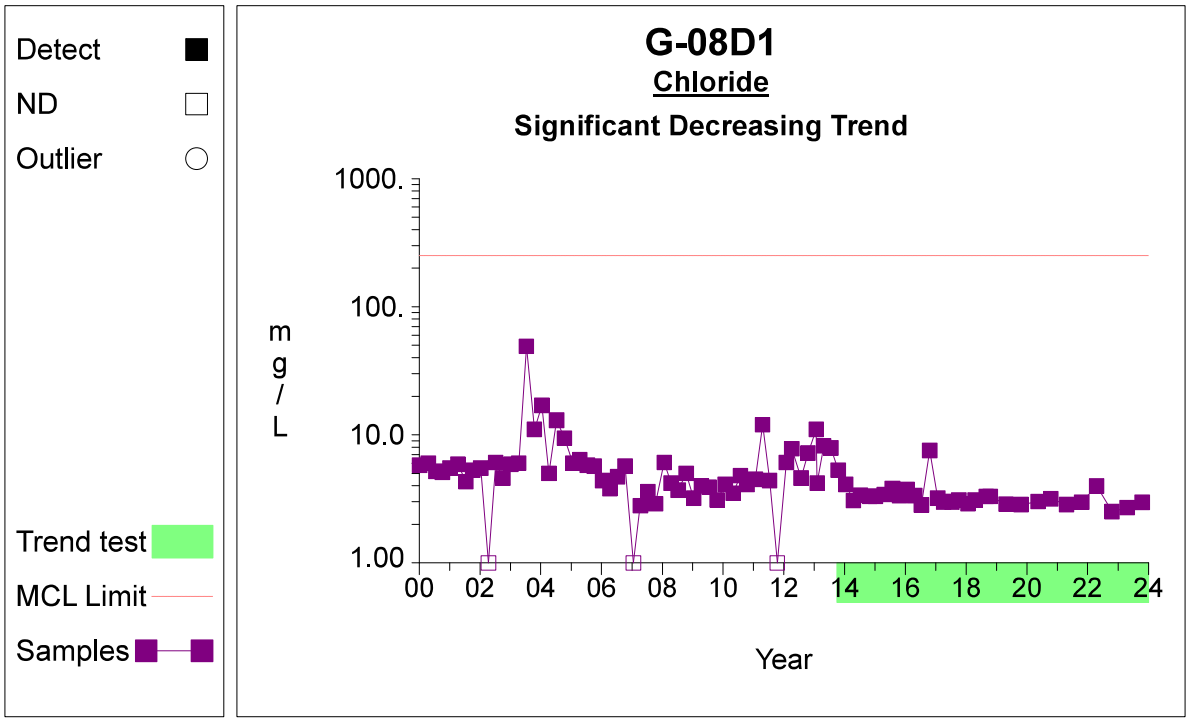
Graph 54

Time Series



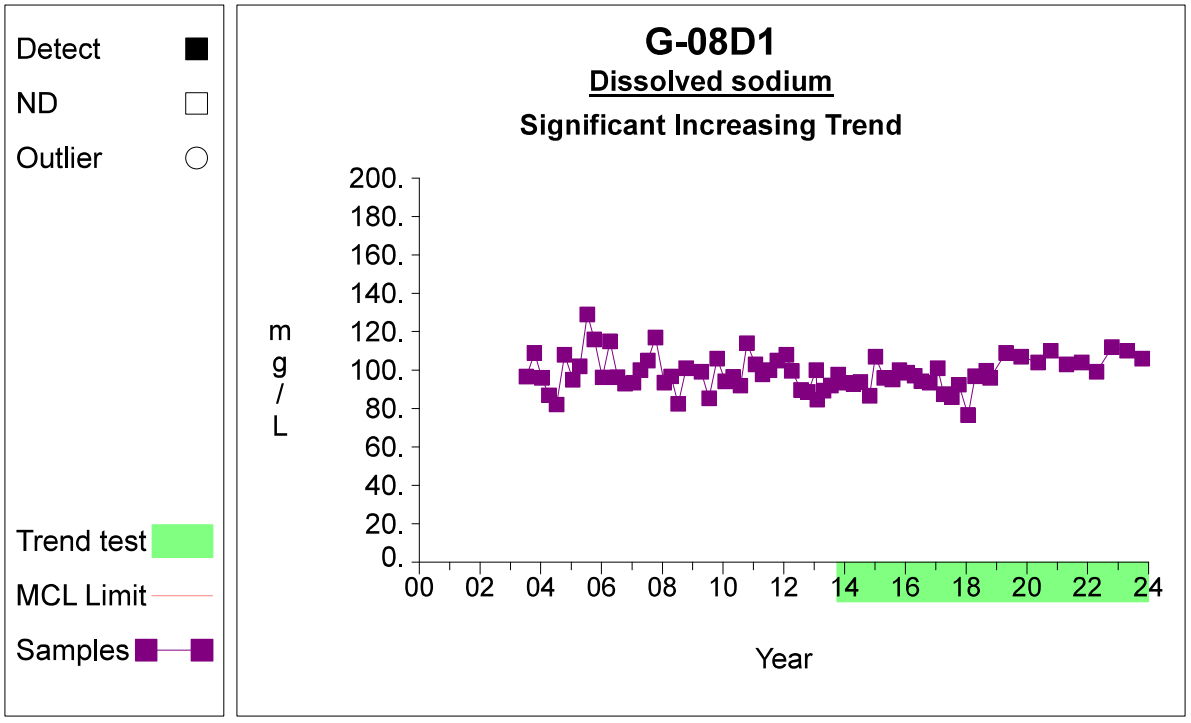
Graph 57

Time Series



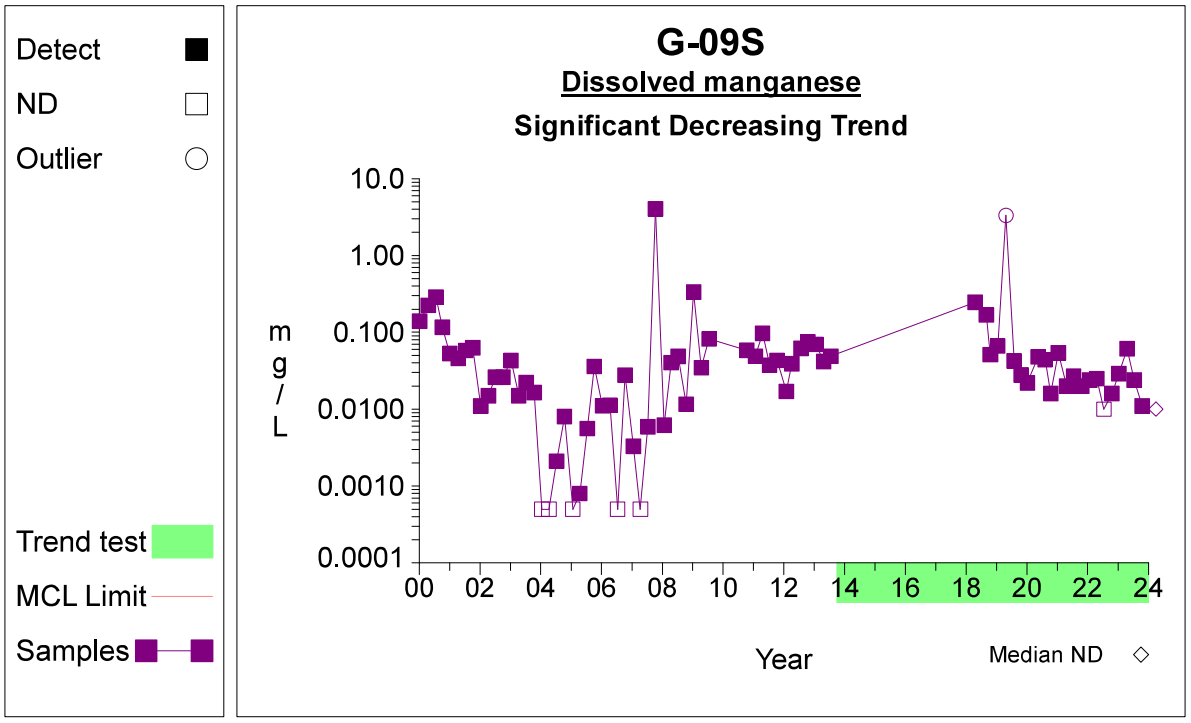
Graph 71

Time Series



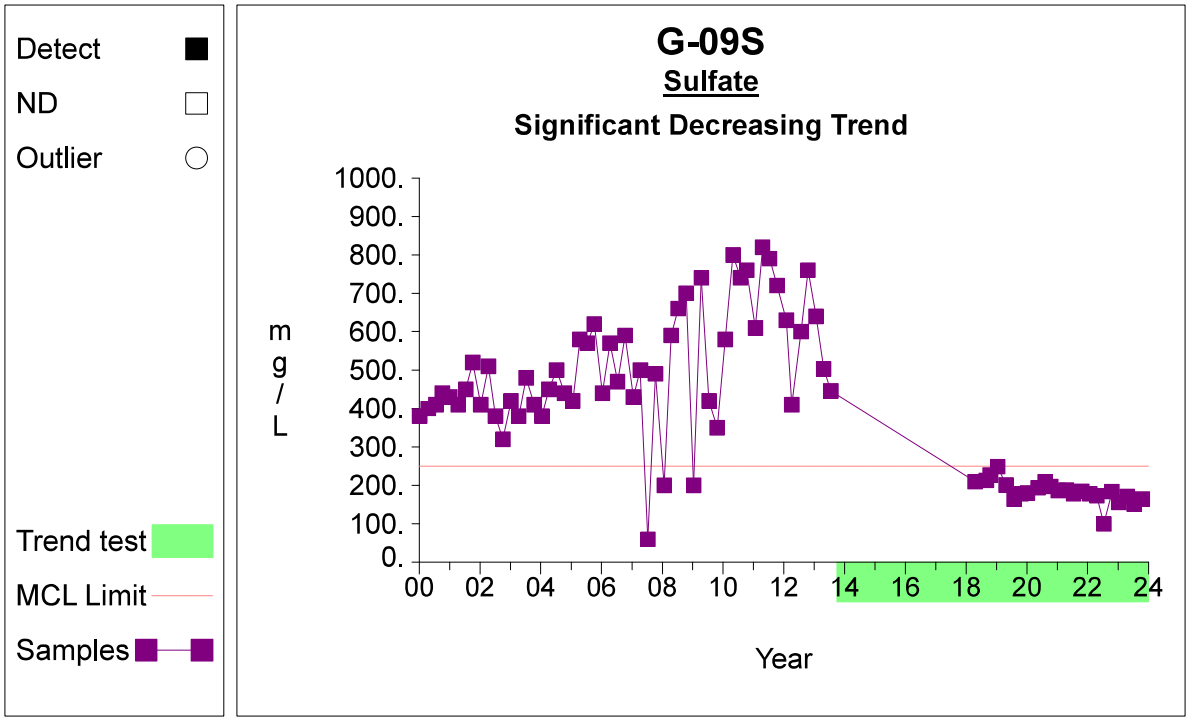
Graph 90

Time Series



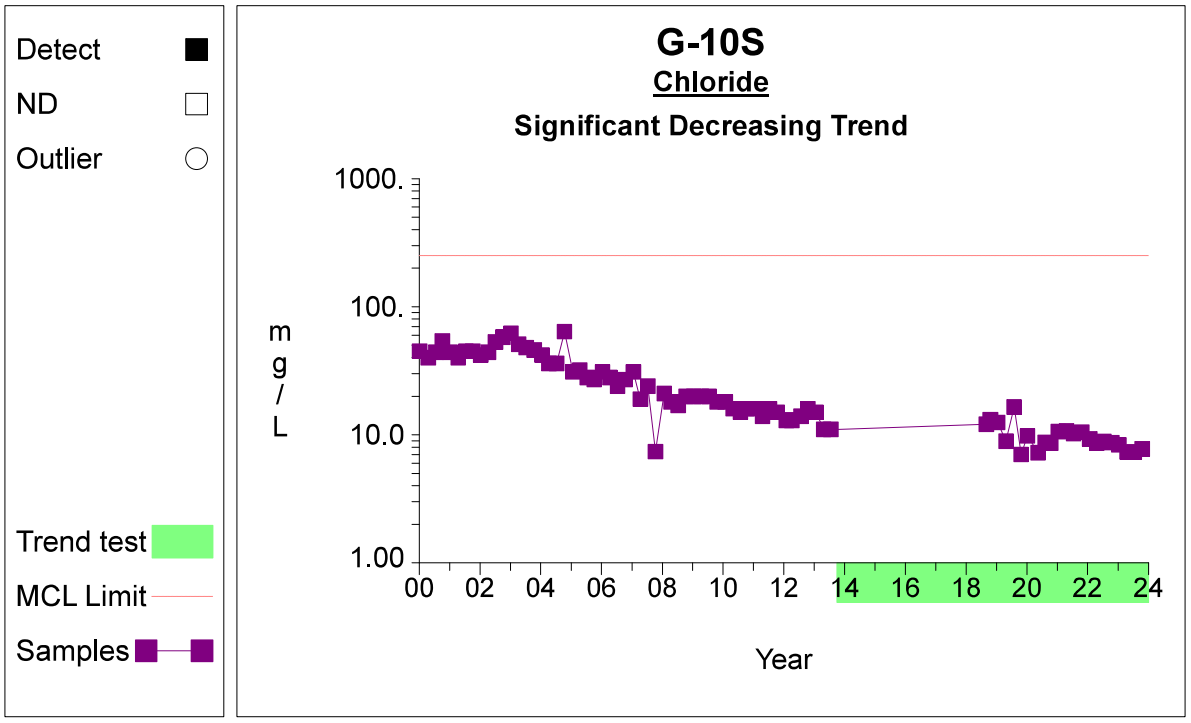
Graph 118

Time Series



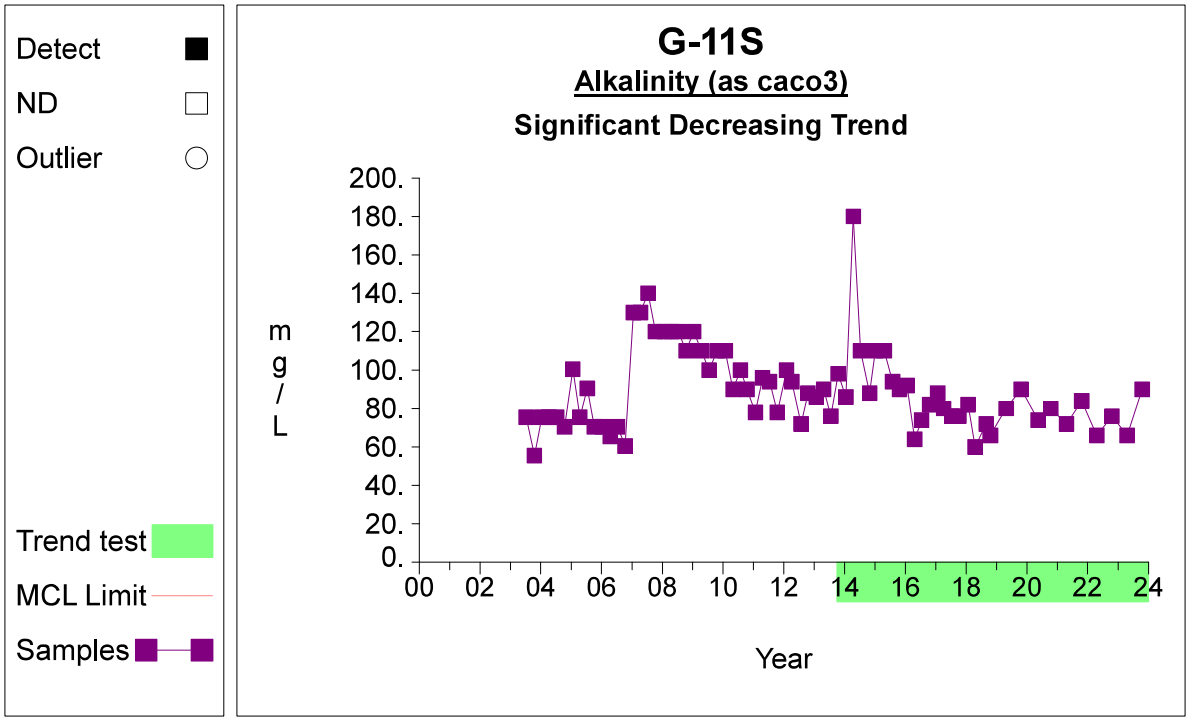
Graph 130

Time Series



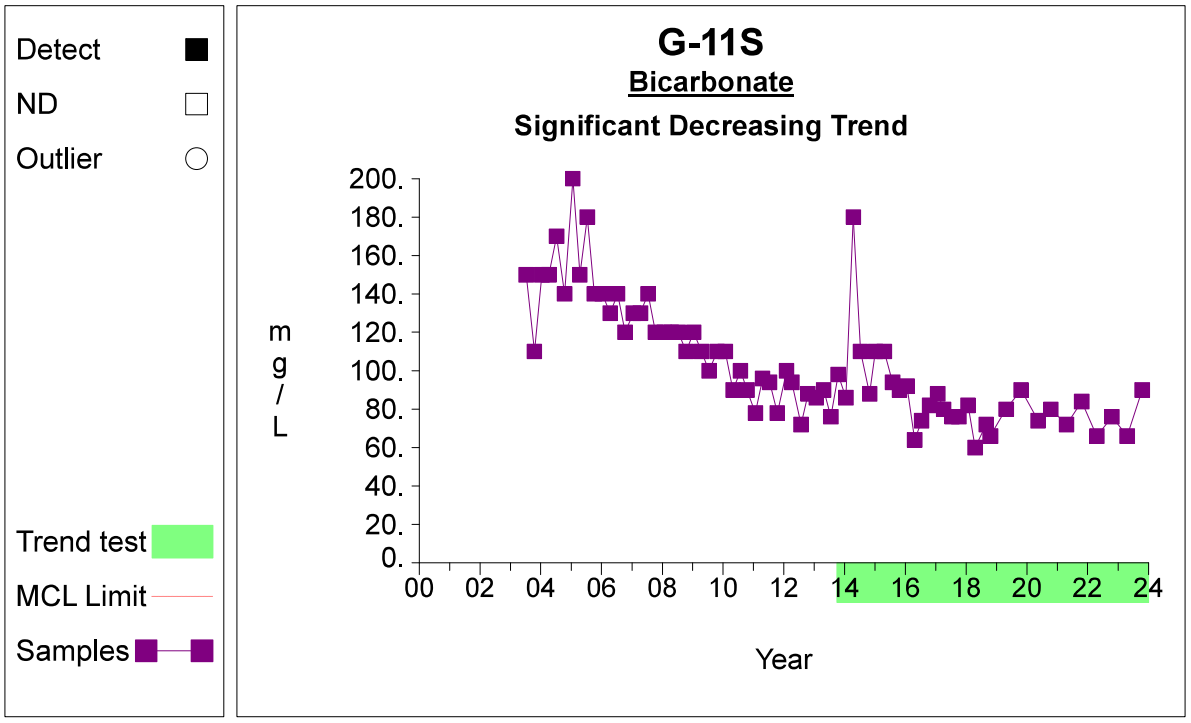
Graph 137

Time Series



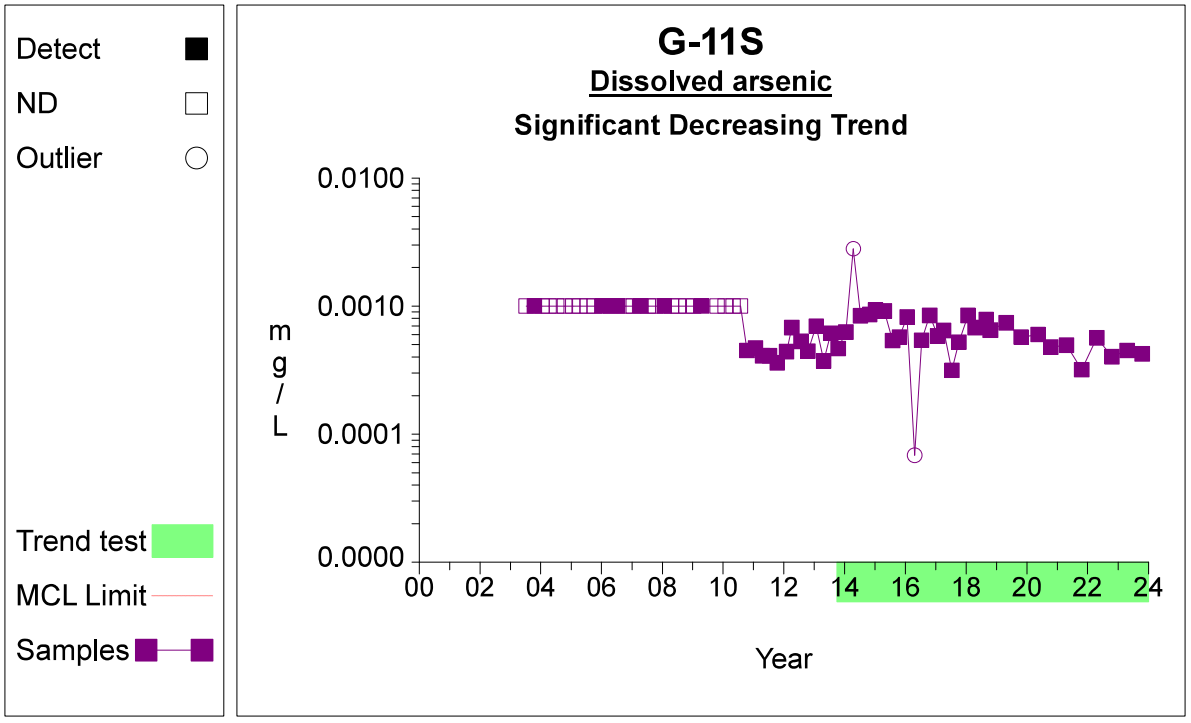
Graph 166

Time Series



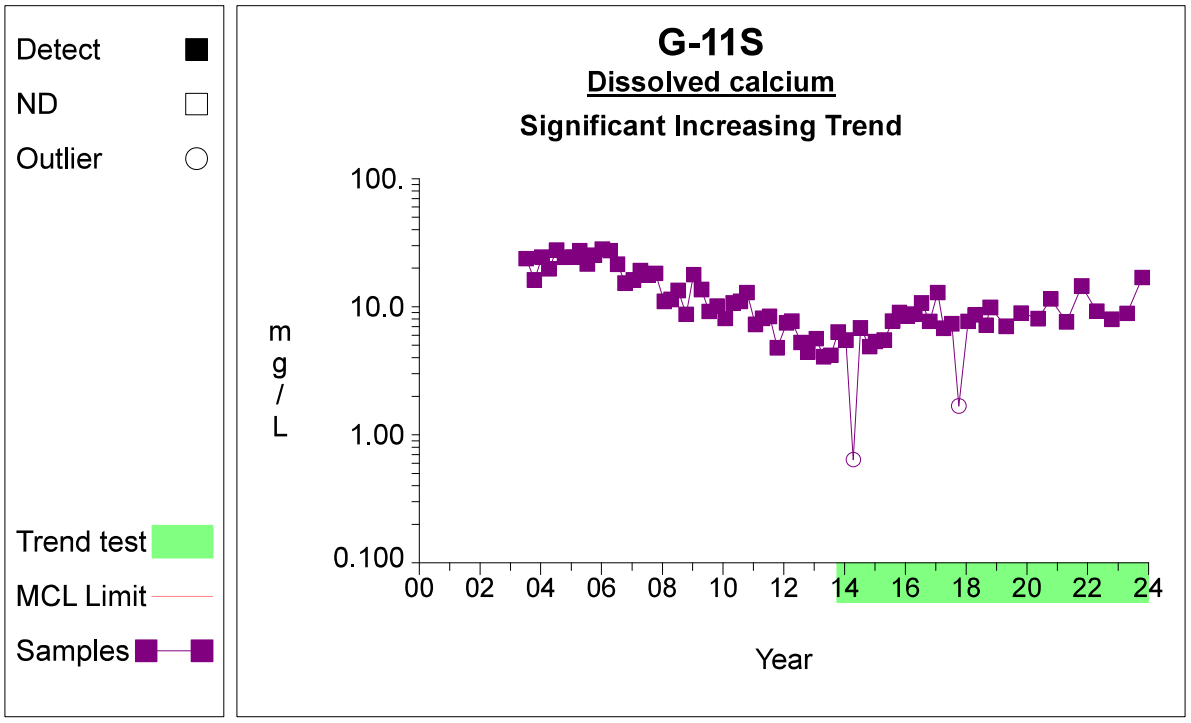
Graph 168

Time Series



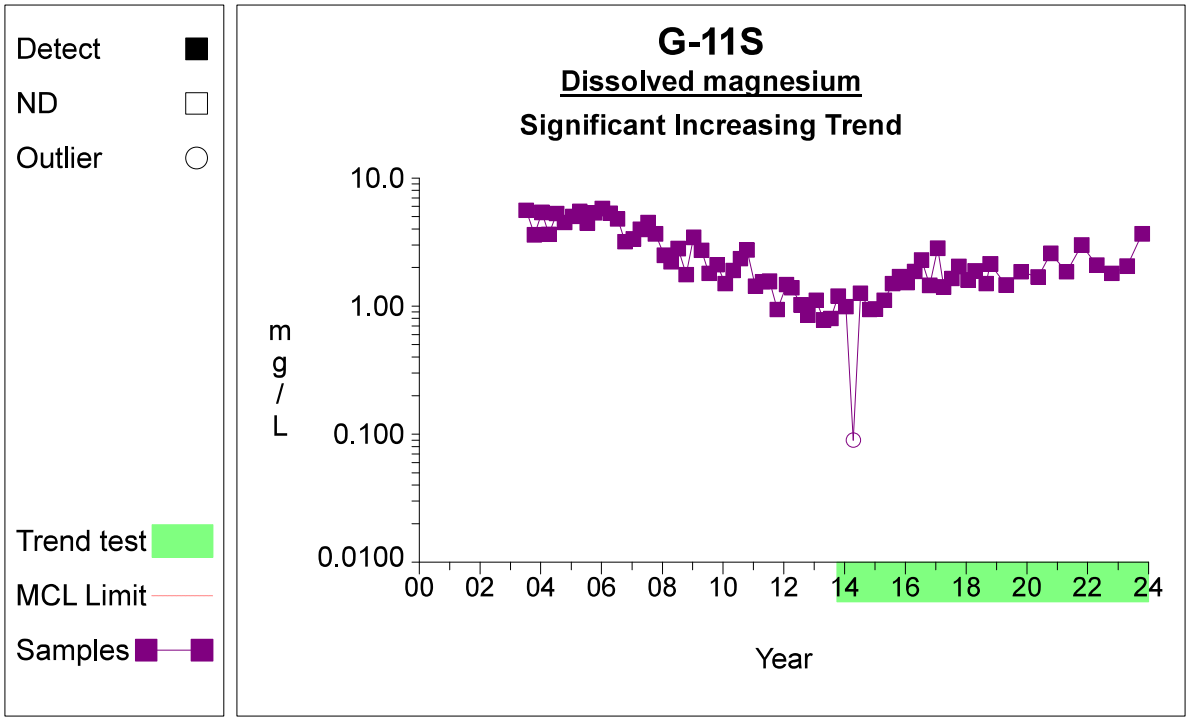
Graph 173

Time Series



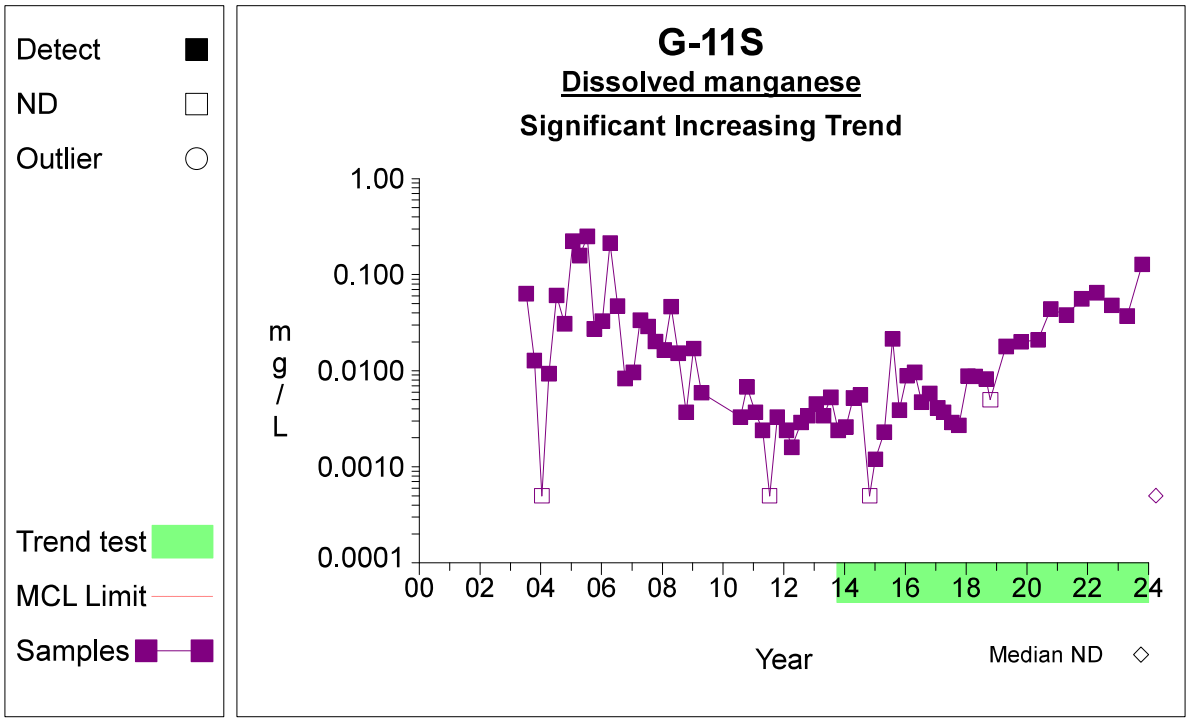
Graph 177

Time Series



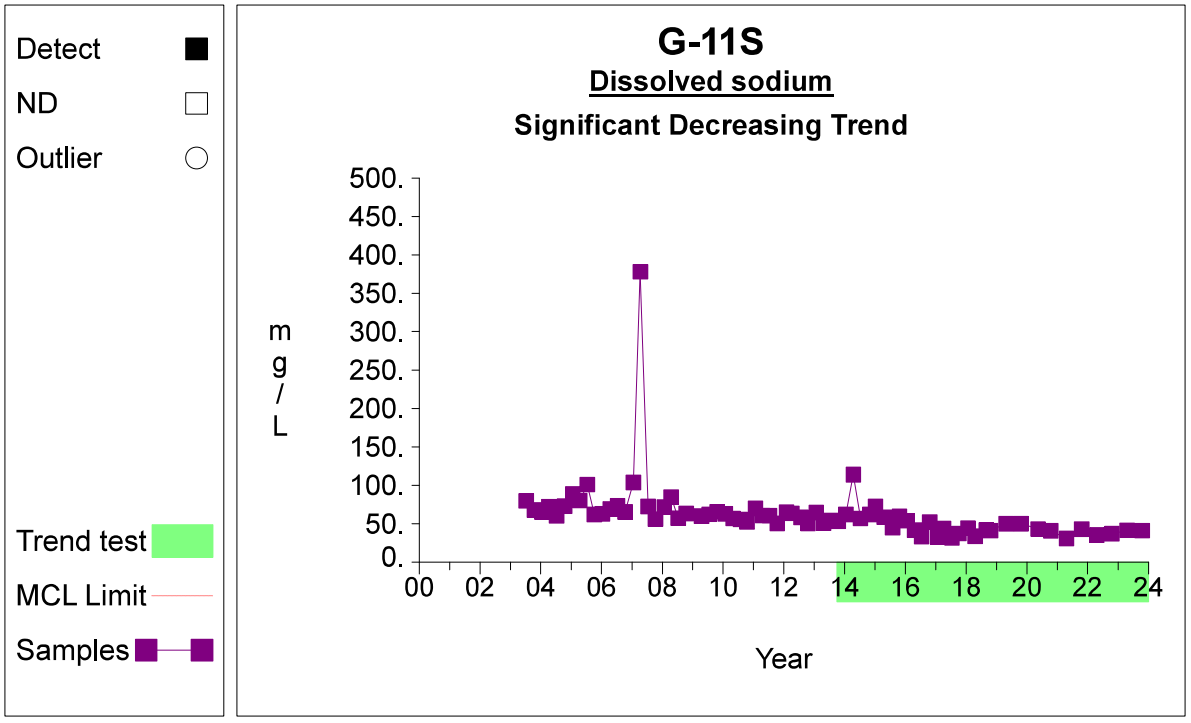
Graph 183

Time Series



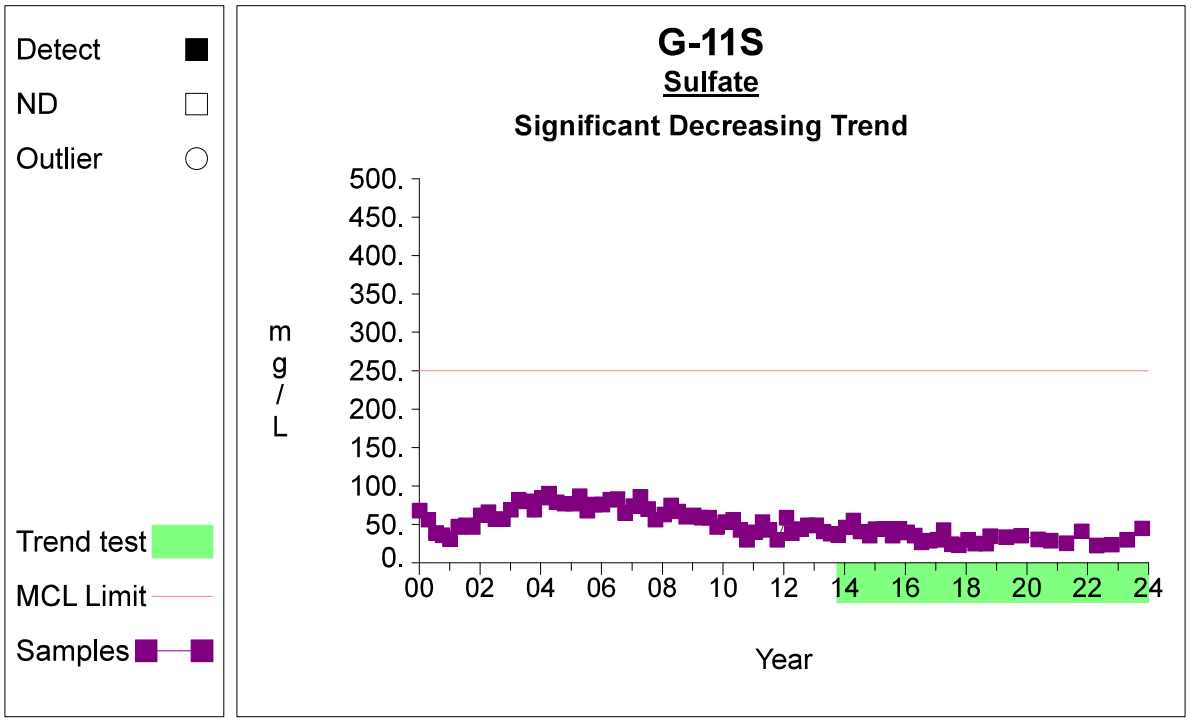
Graph 184

Time Series



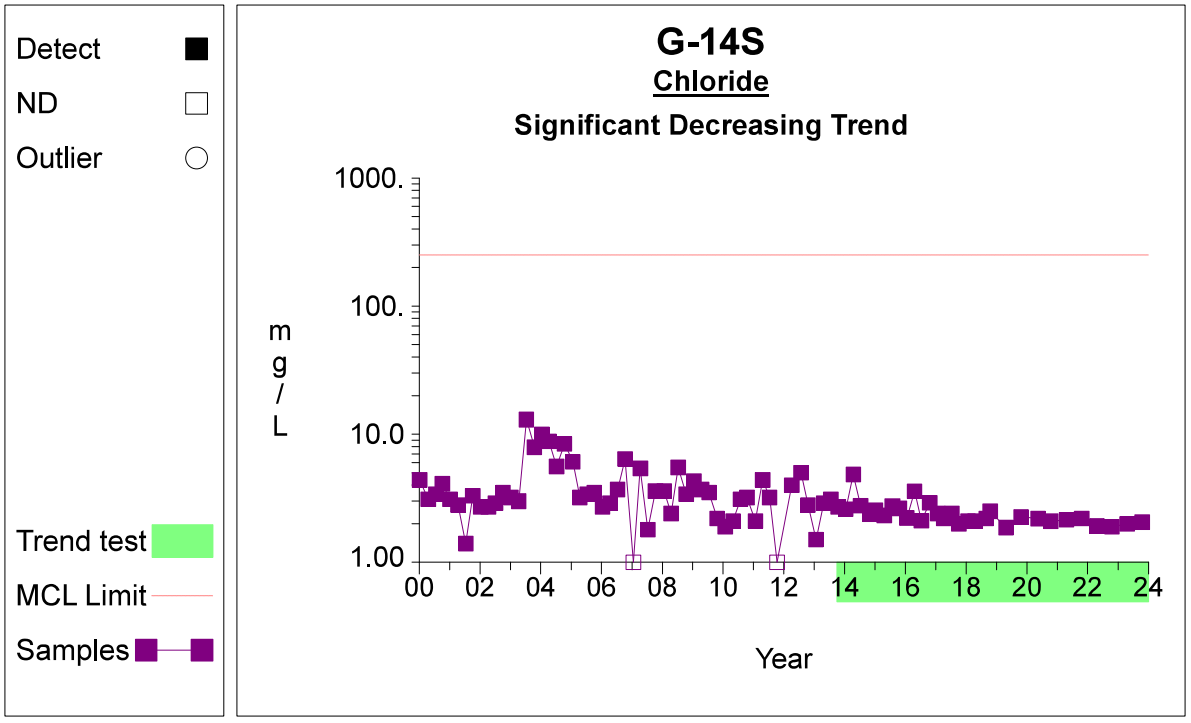
Graph 189

Time Series



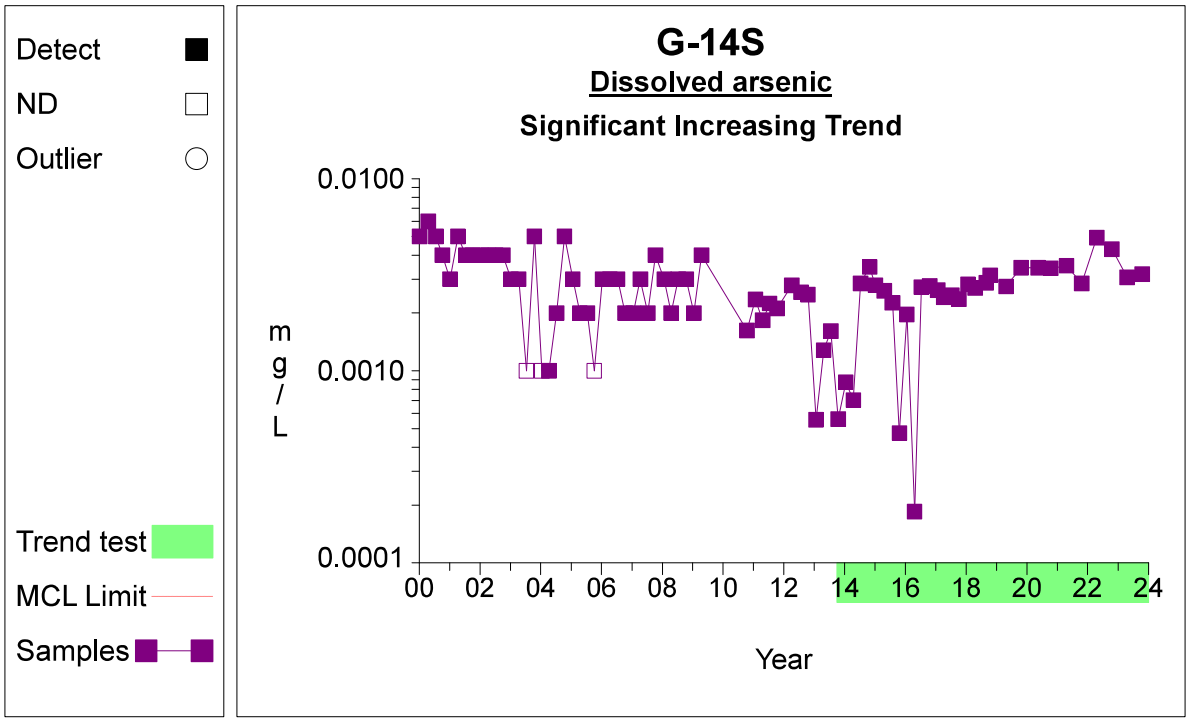
Graph 196

Time Series



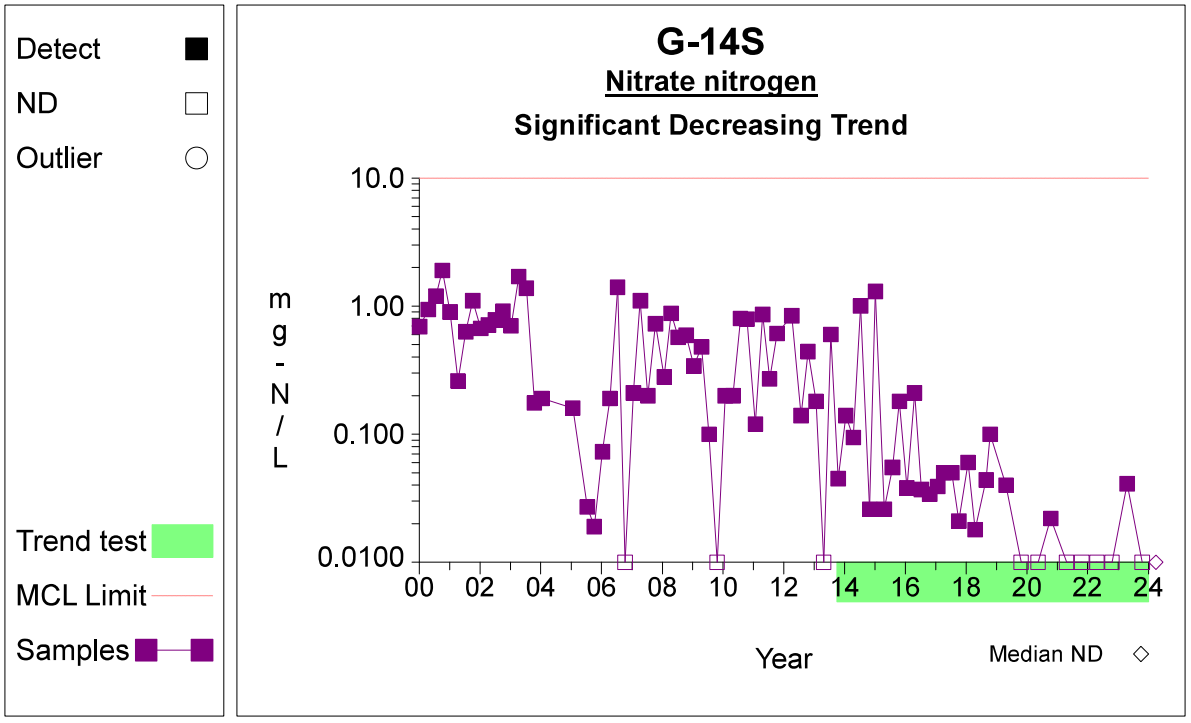
Graph 203

Time Series



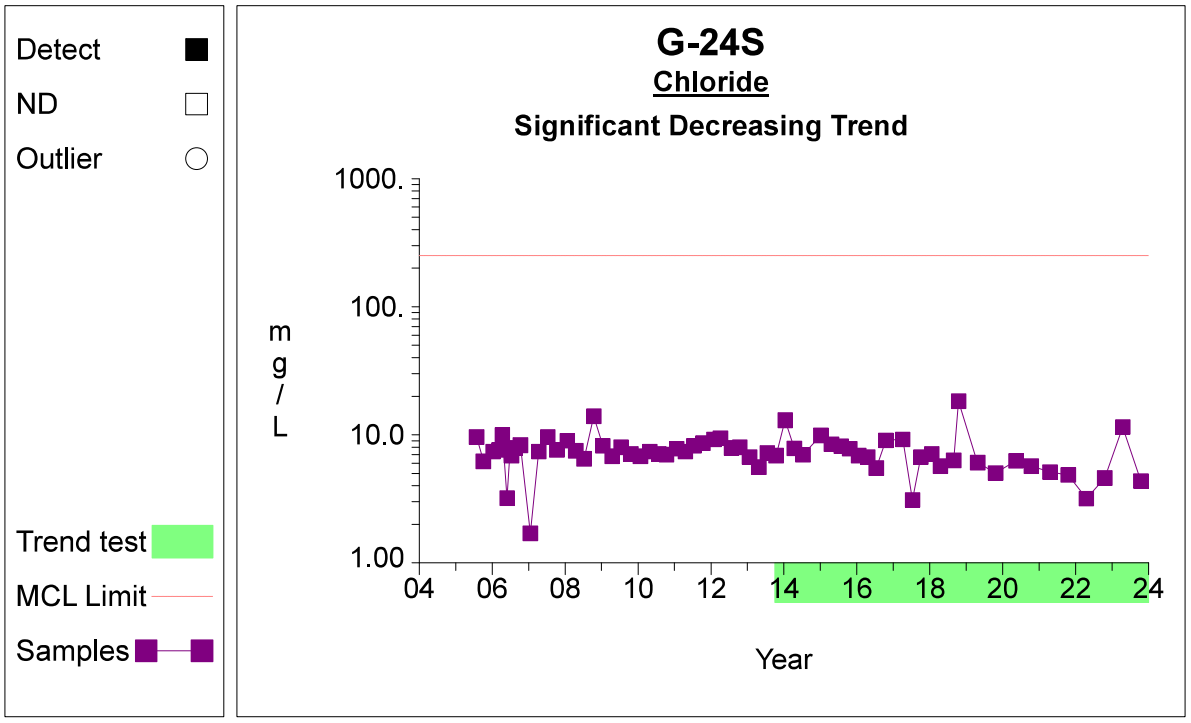
Graph 206

Time Series



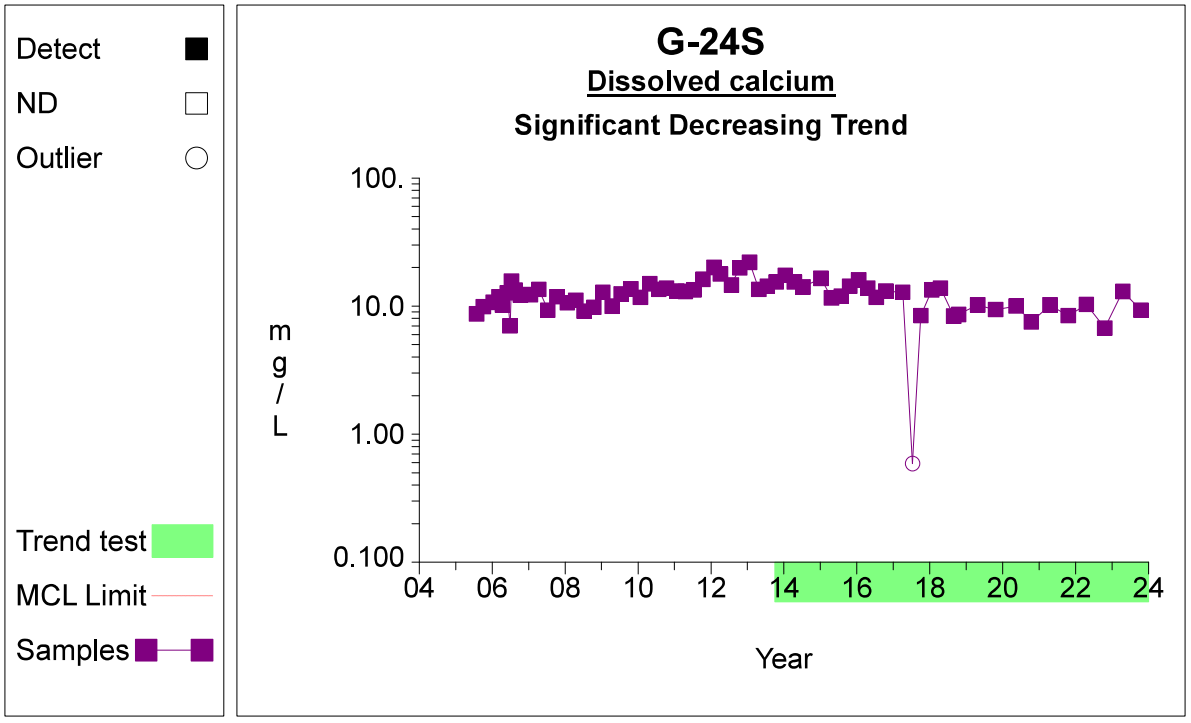
Graph 226

Time Series



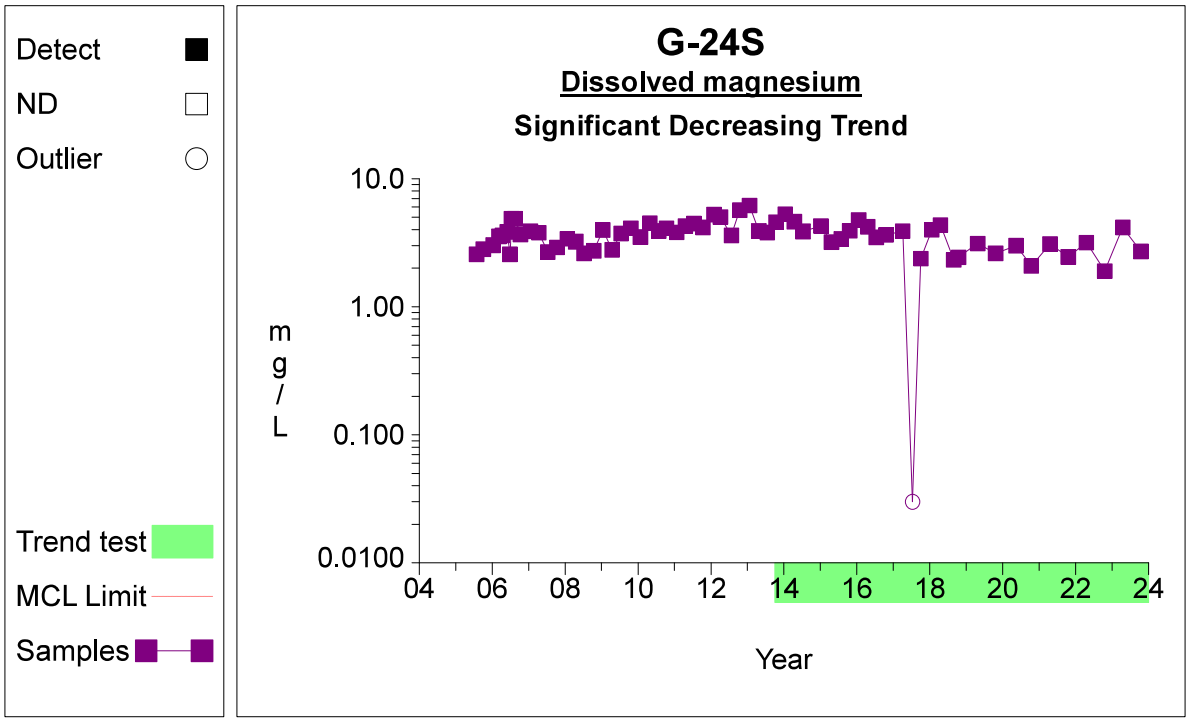
Graph 236

Time Series



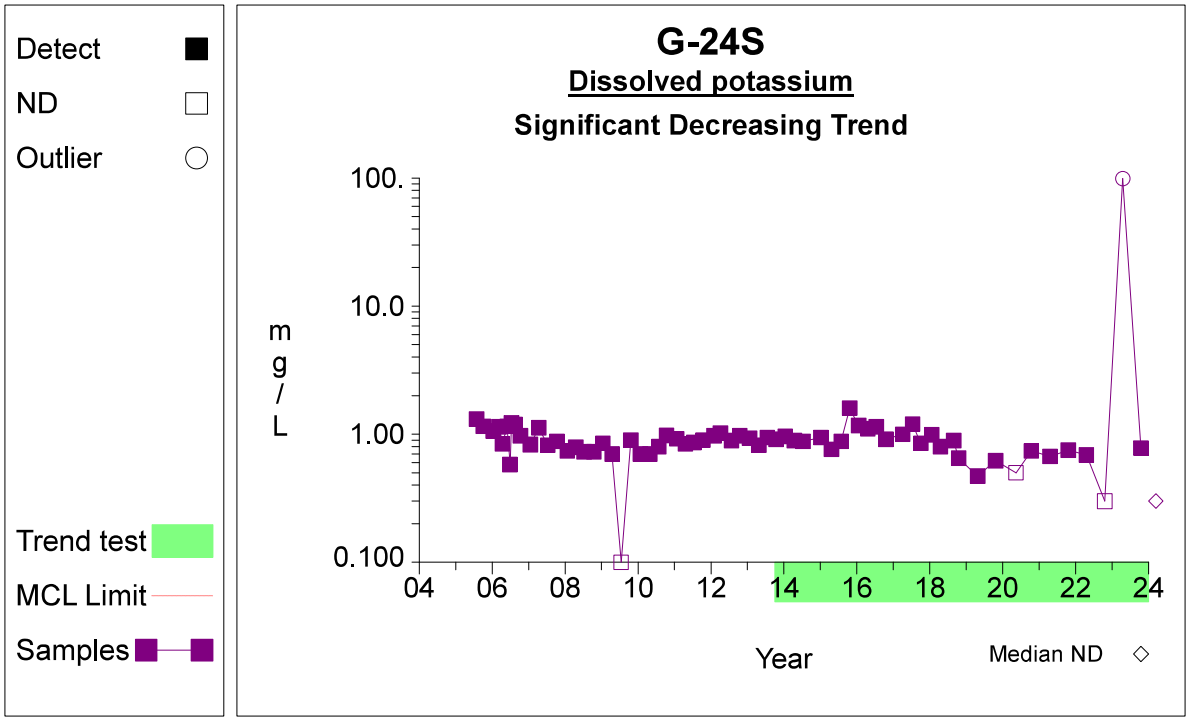
Graph 243

Time Series



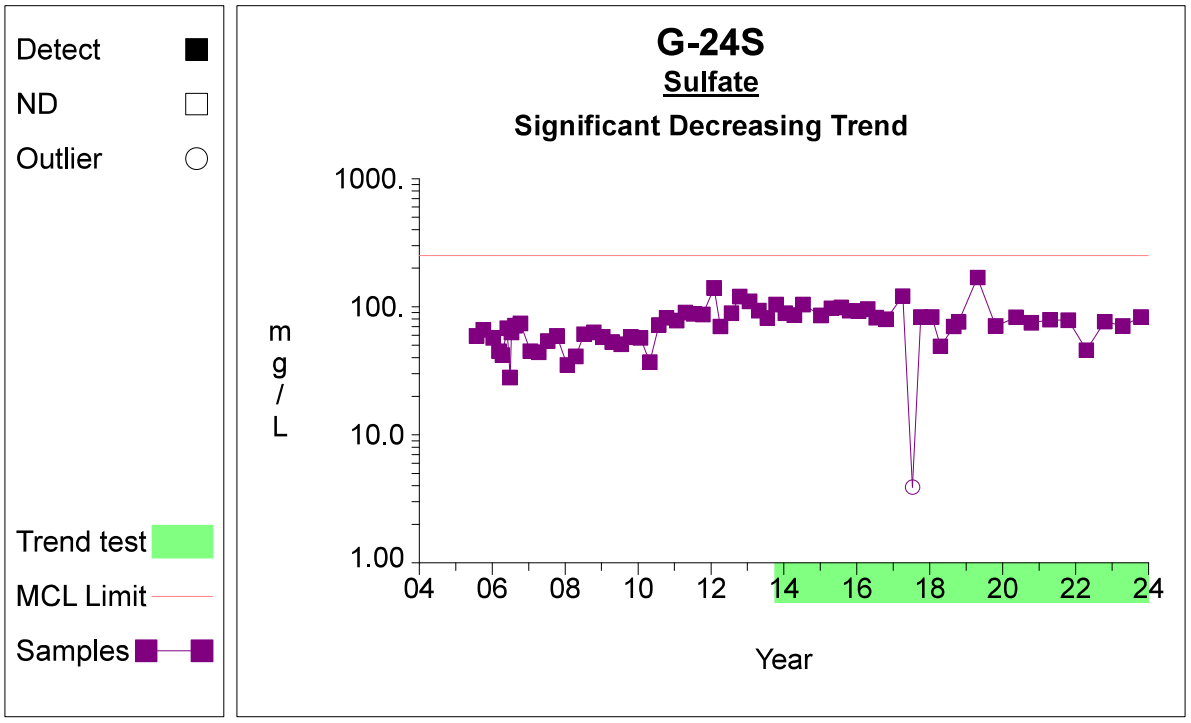
Graph 249

Time Series



Graph 252

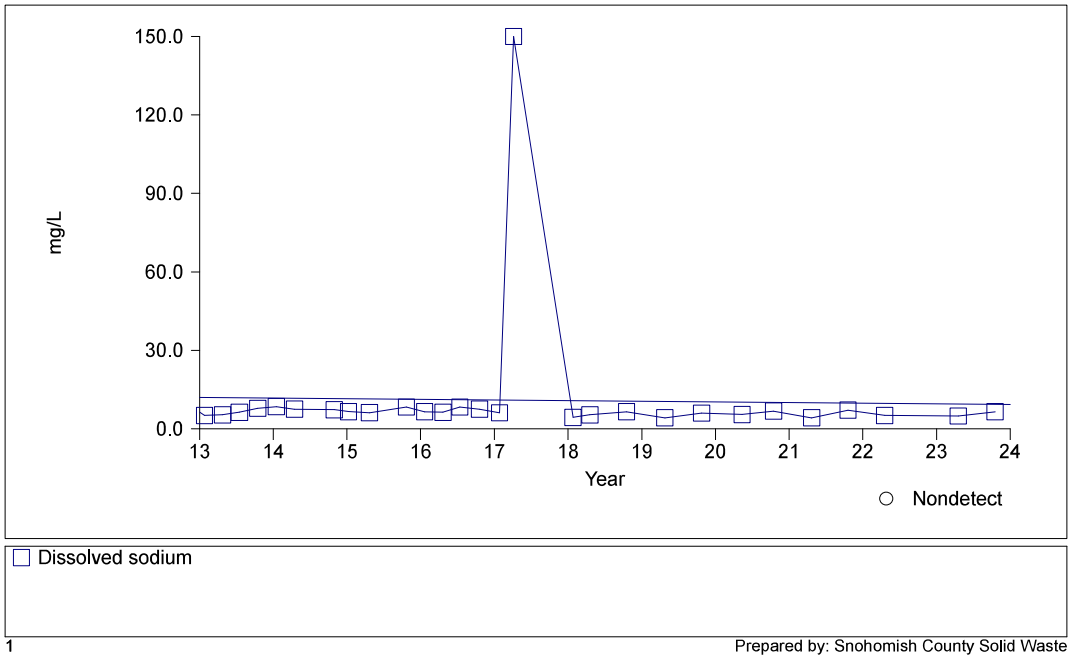
Time Series



Graph 262

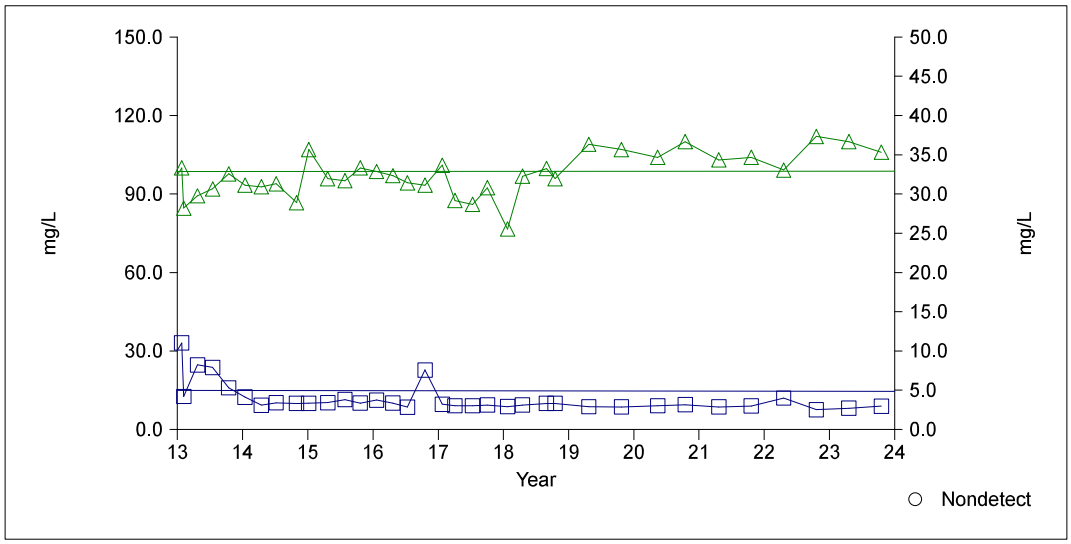
Cathcart Landfill

Time Series Plot for G-01A



Cathcart Landfill

Time Series Plot for G-08D1



1

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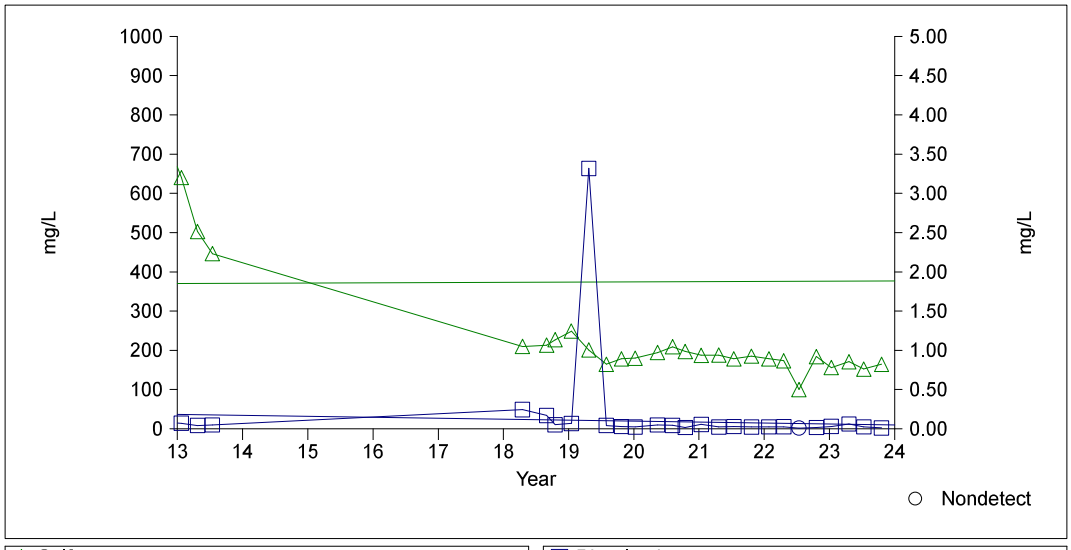
Cathcart Landfill

Time Series Plot for G-09S



1

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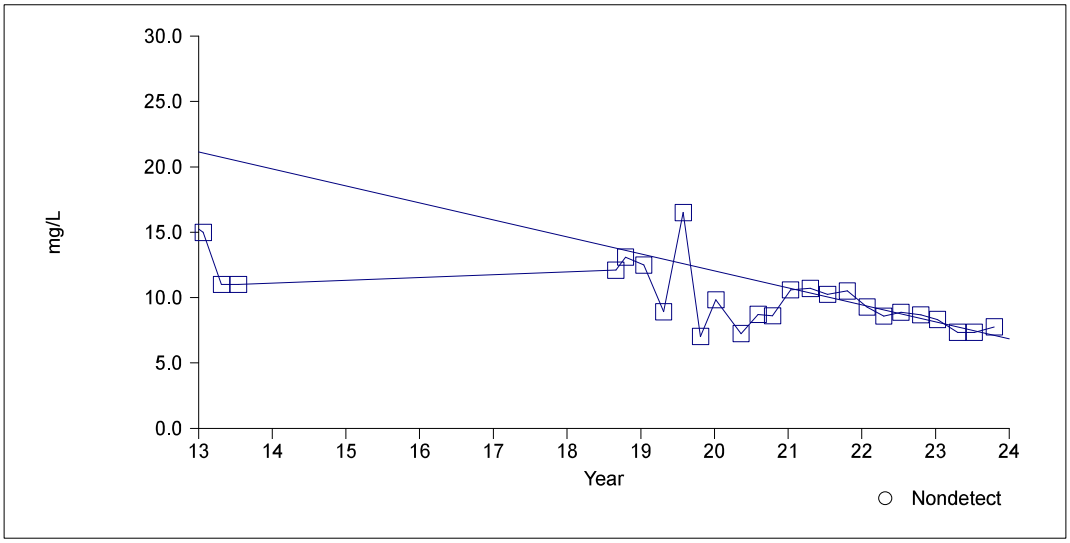
Cathcart Landfill

Time Series Plot for G-10S



1

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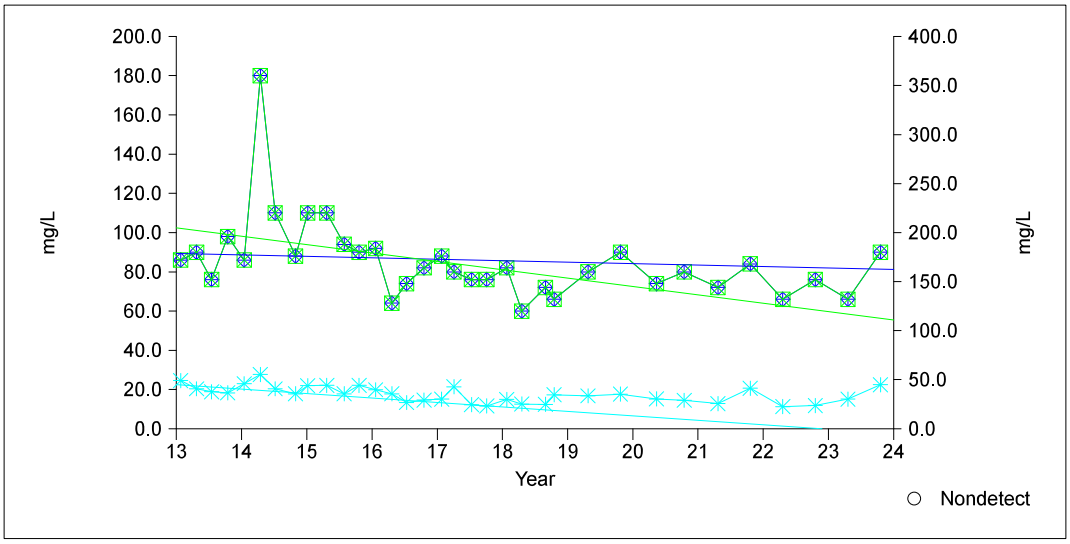
Cathcart Landfill

Time Series Plot for G-11S



1

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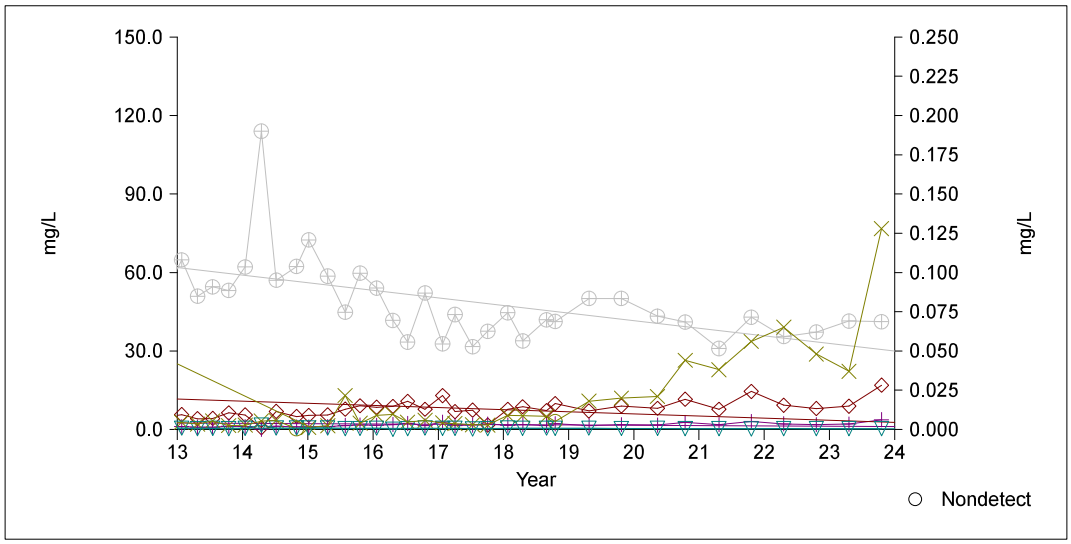
Cathcart Landfill

Time Series Plot for G-11S



1

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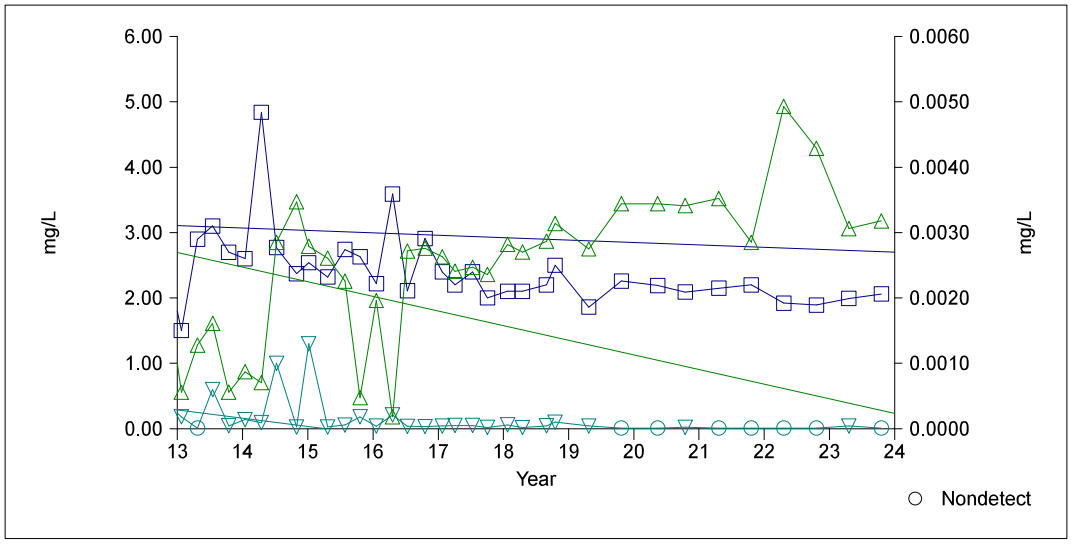
Cathcart Landfill

Time Series Plot for G-14S



1

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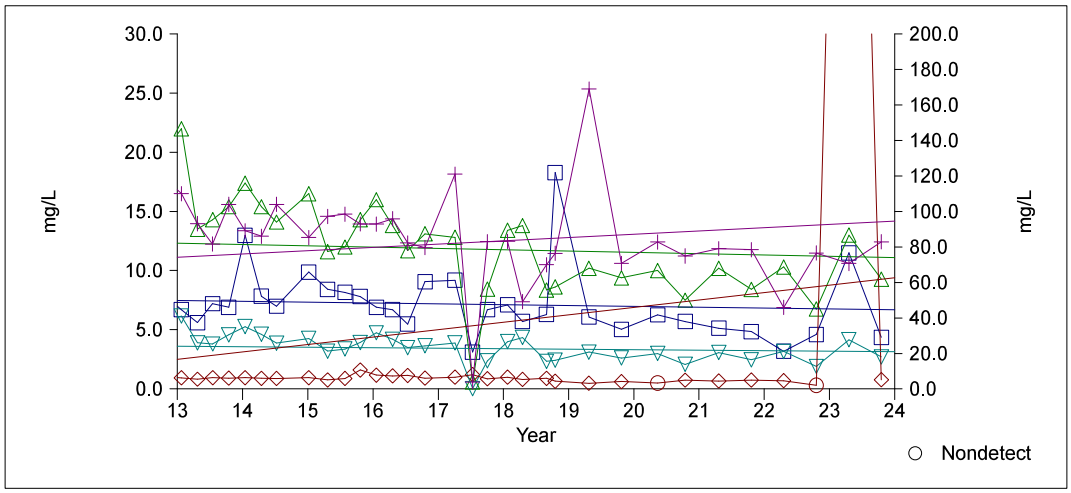
Cathcart Landfill

Time Series Plot for G-24S



Chloride
Dissolved magnesium
Dissolved calcium

Dissolved potassium

Sulfate

Offscale Points

Dissolved potassium on 4/17/2023 was 99.1 mg/L

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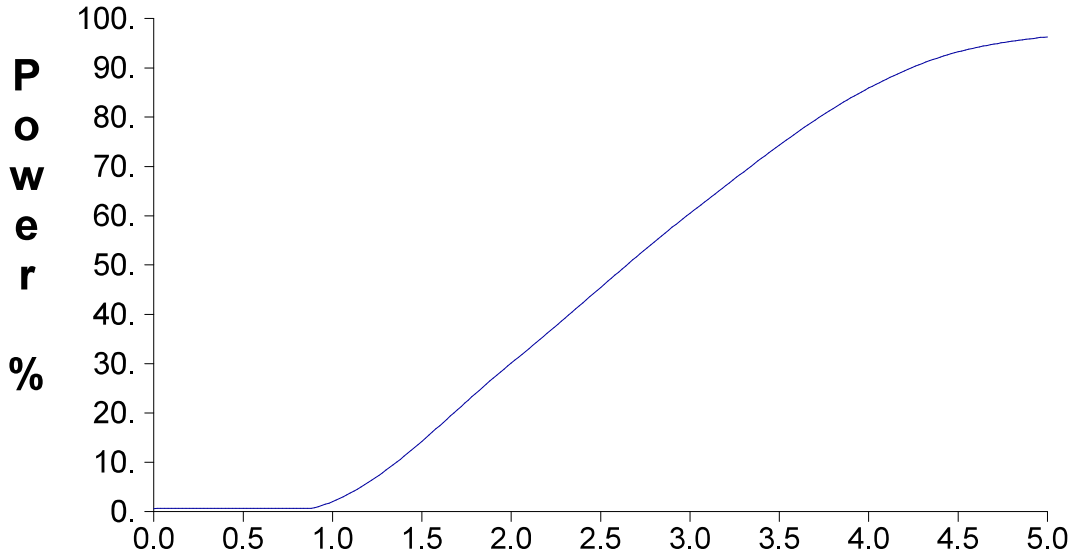
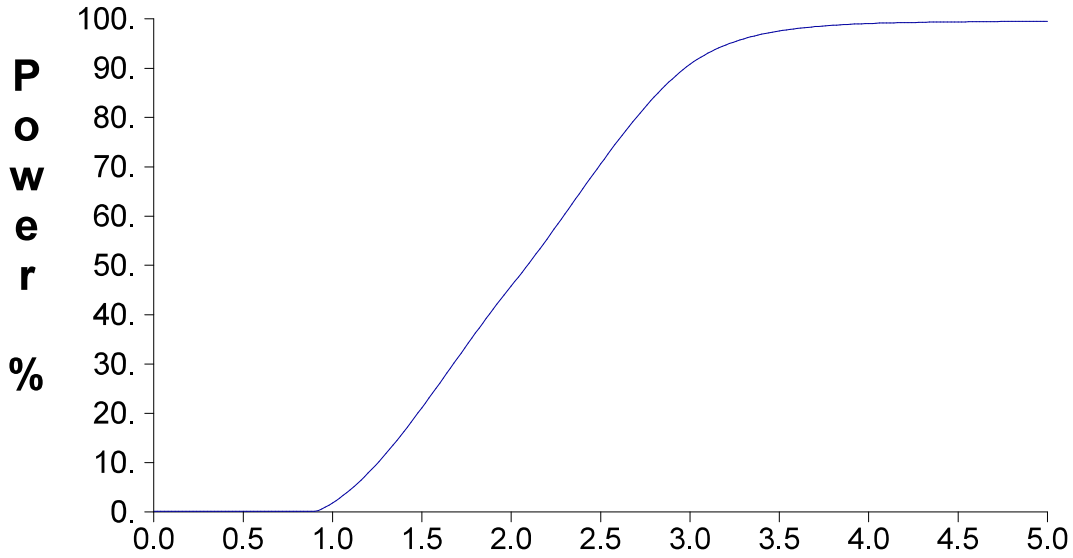
Deep Wells

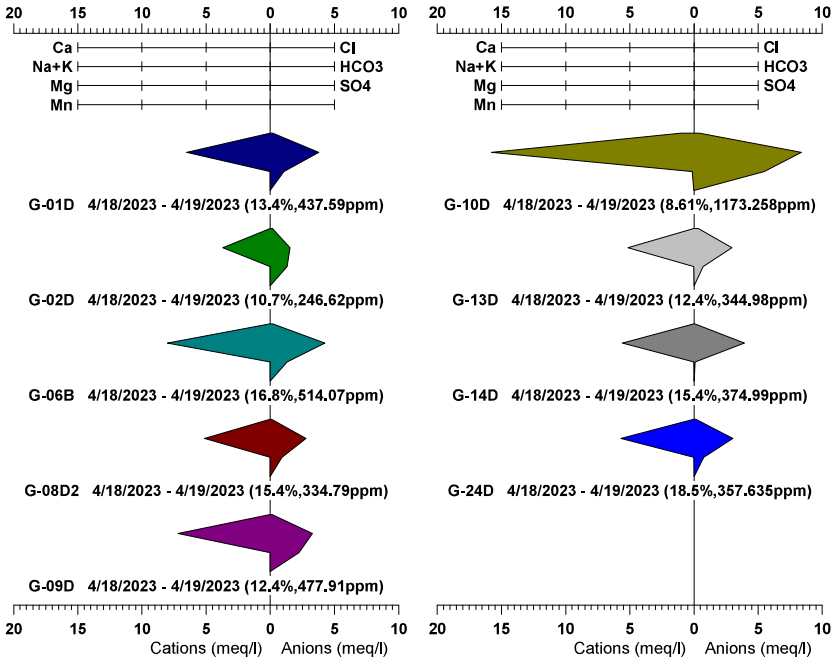
False Positive and False Negative Rates for Current Intra-Well Prediction Limits Monitoring Program



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



Cathcart Landfill



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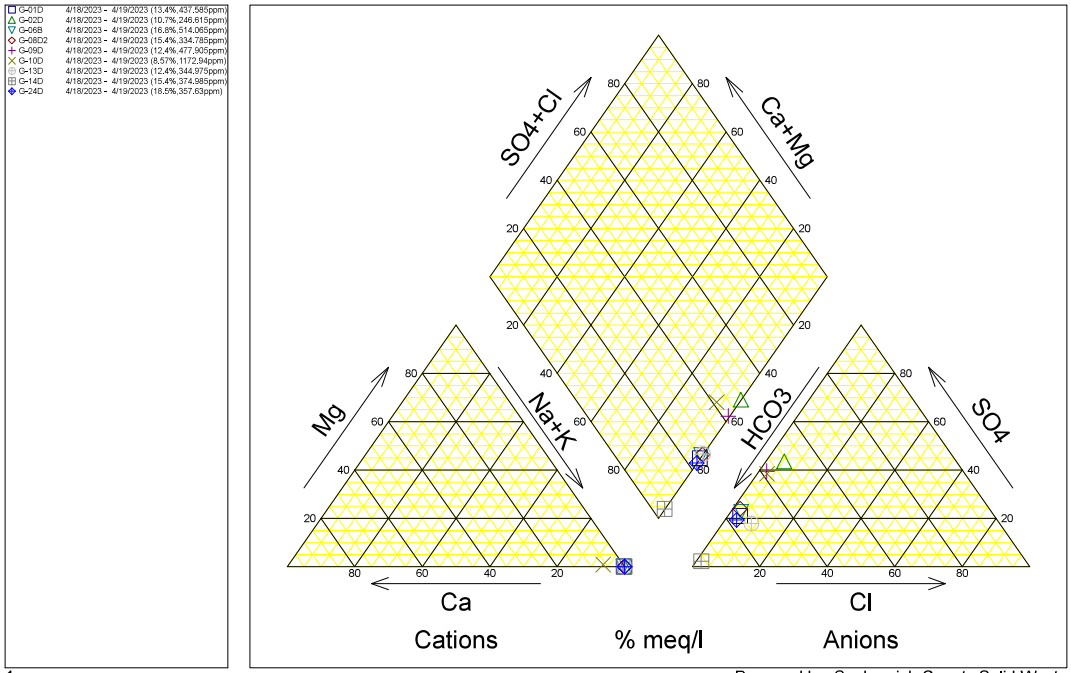
Cathcart Landfill



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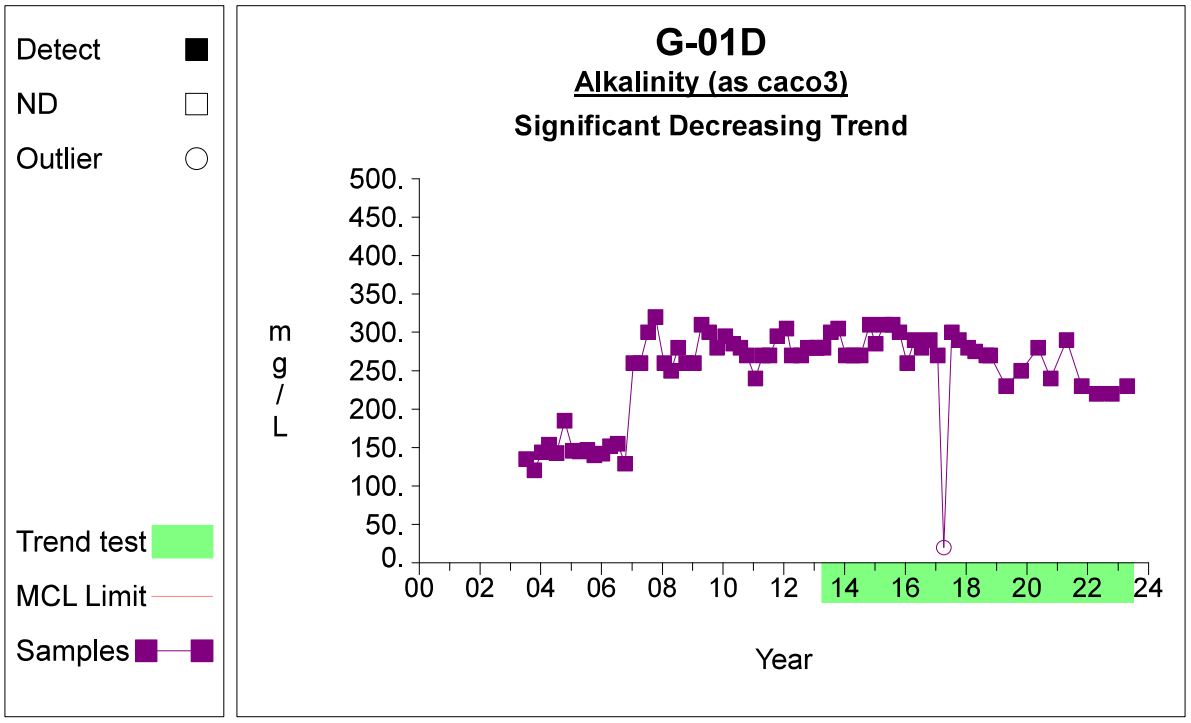
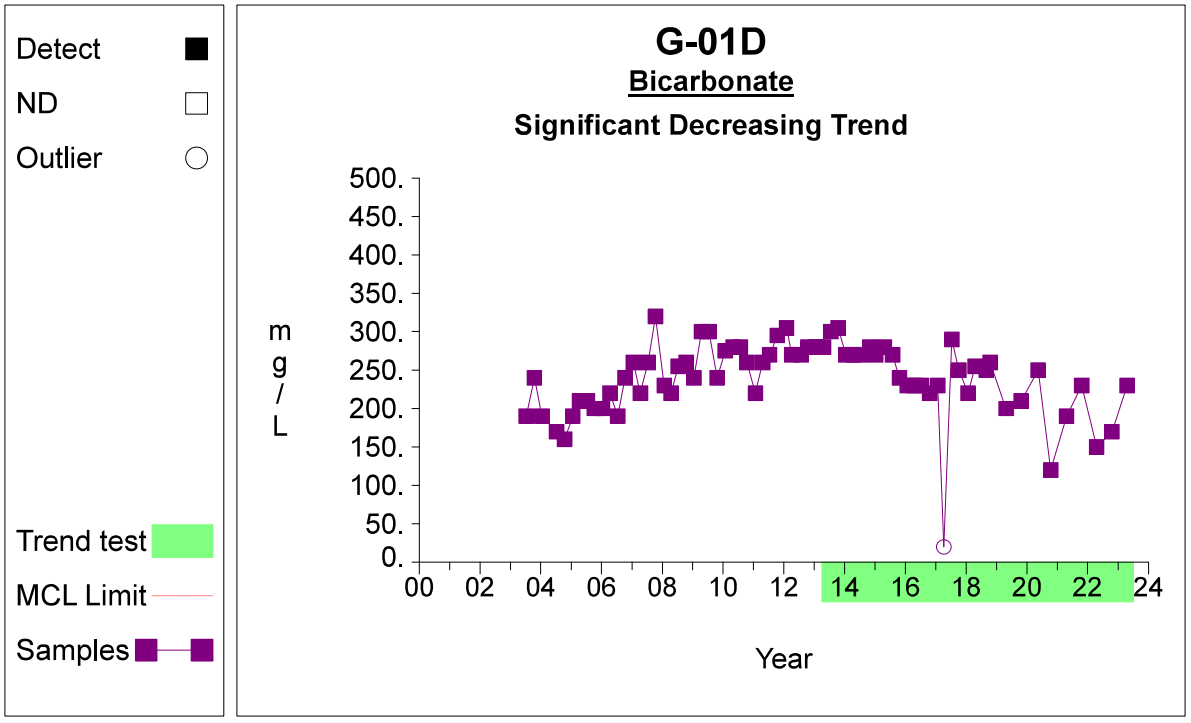
Time Series



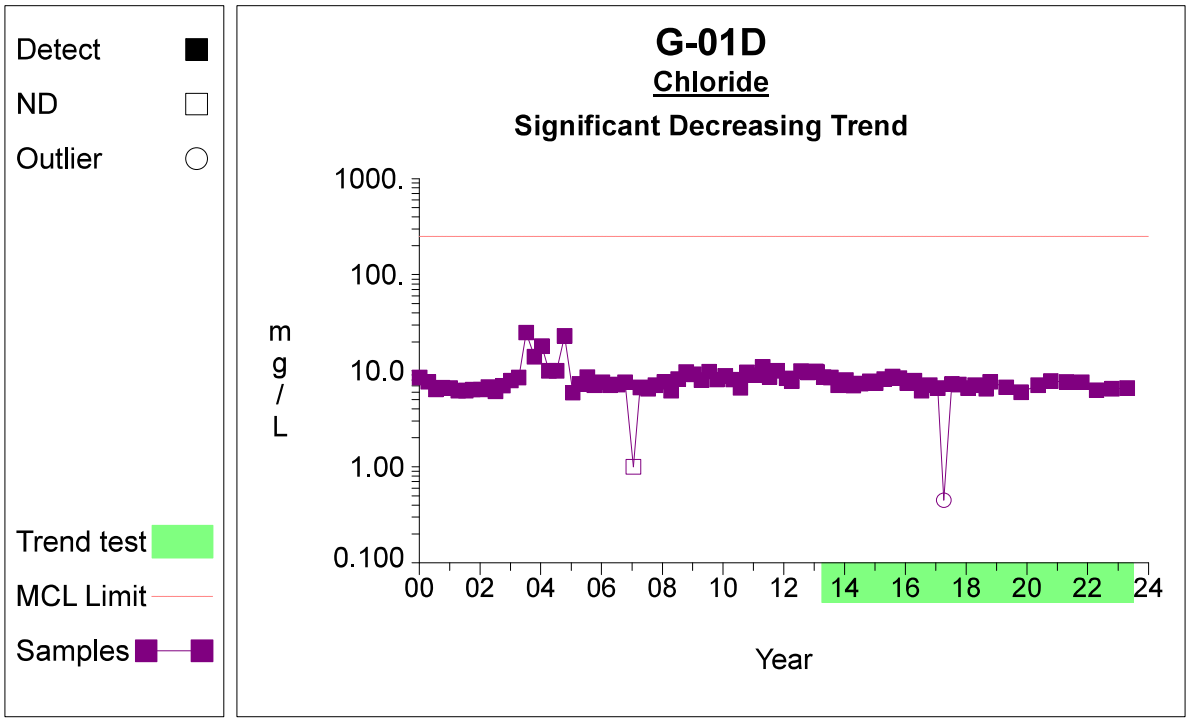
Graph 1

Time Series



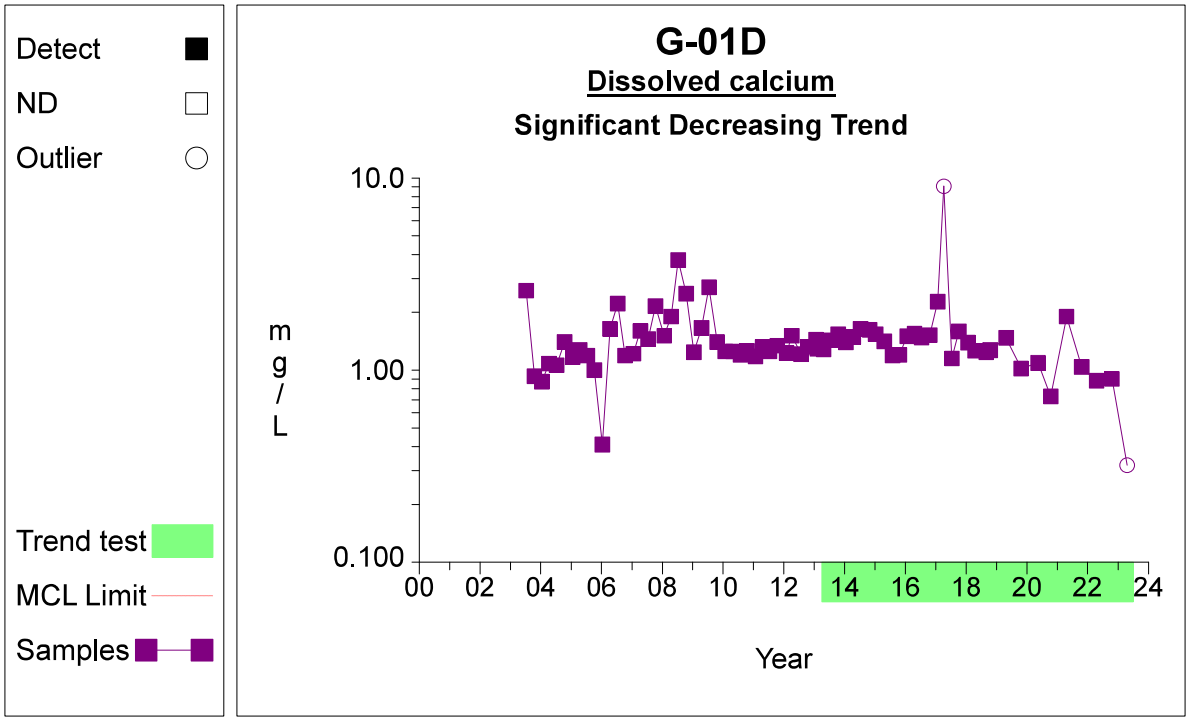
Graph 3

Time Series



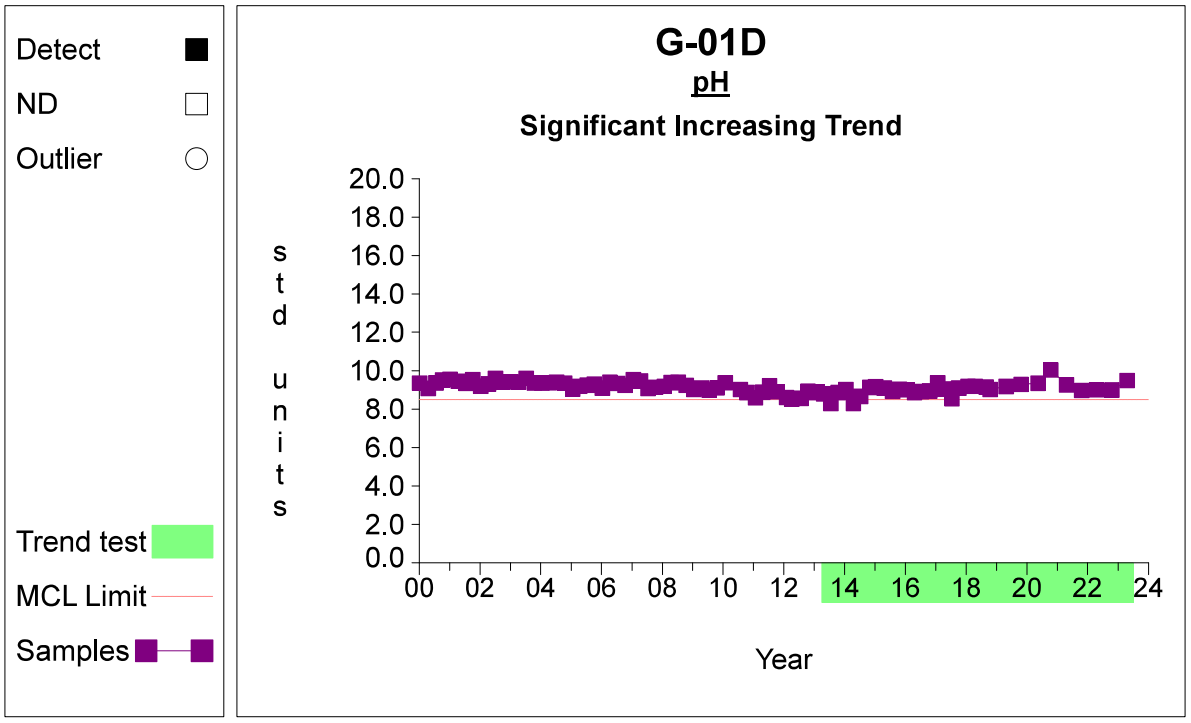
Graph 5

Time Series



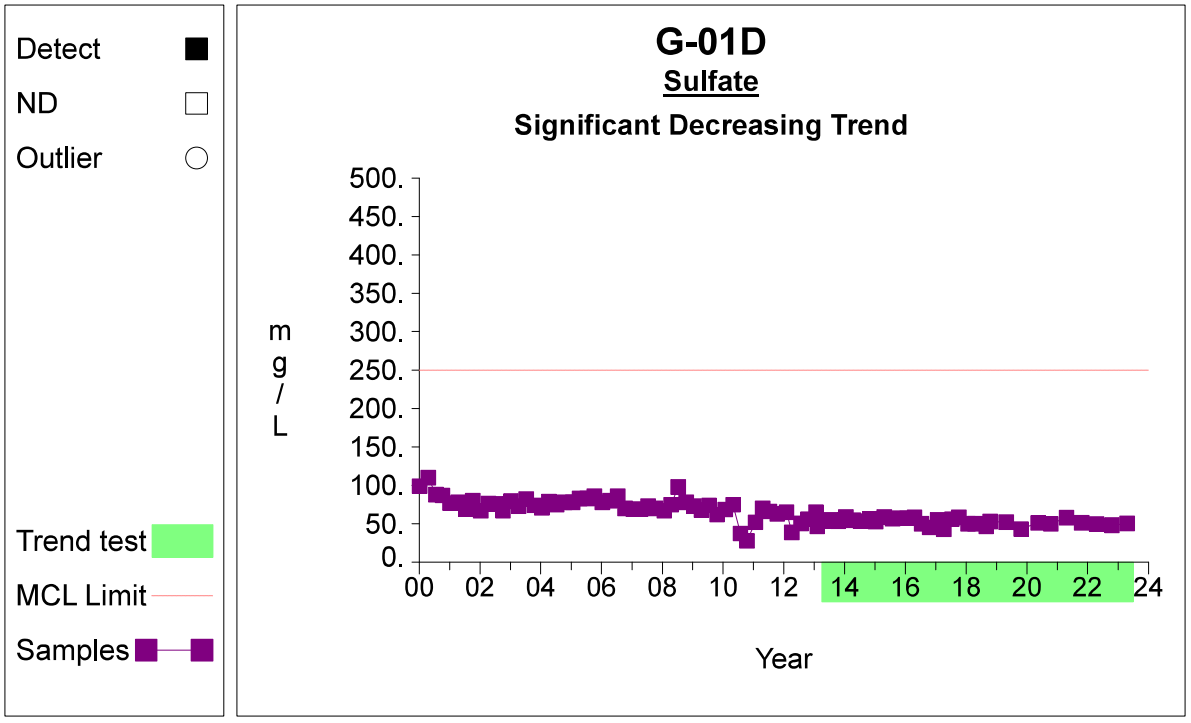
Graph 12

Time Series



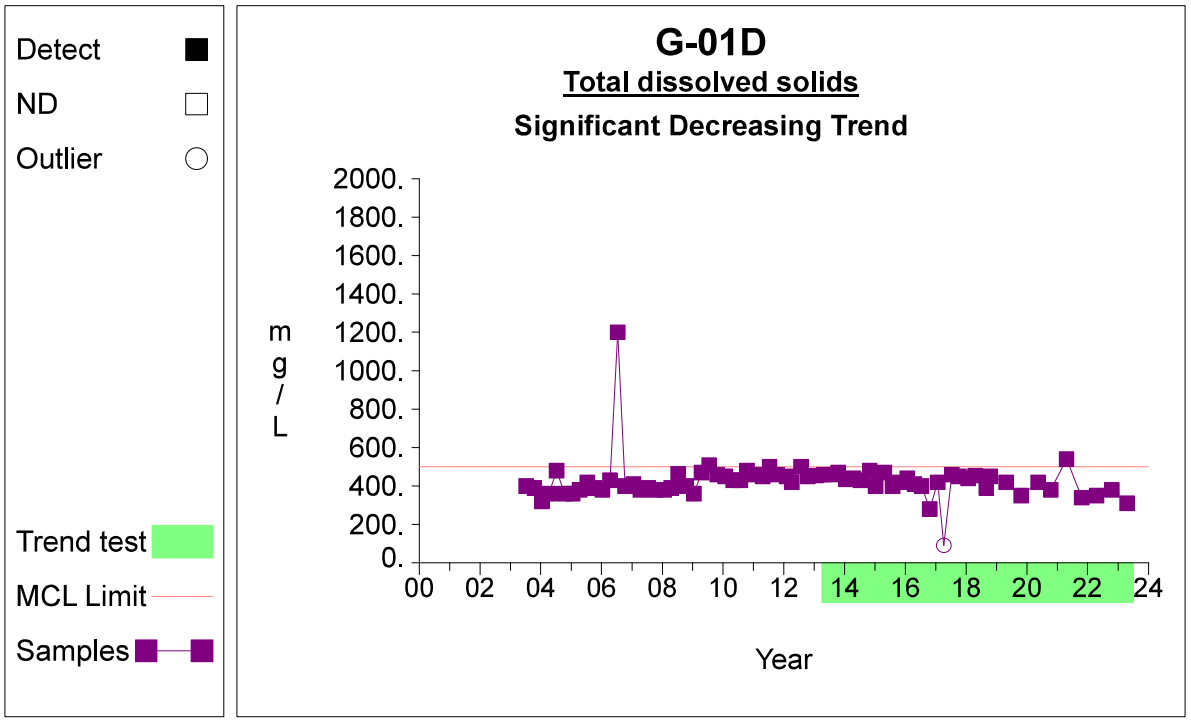
Graph 30

Time Series



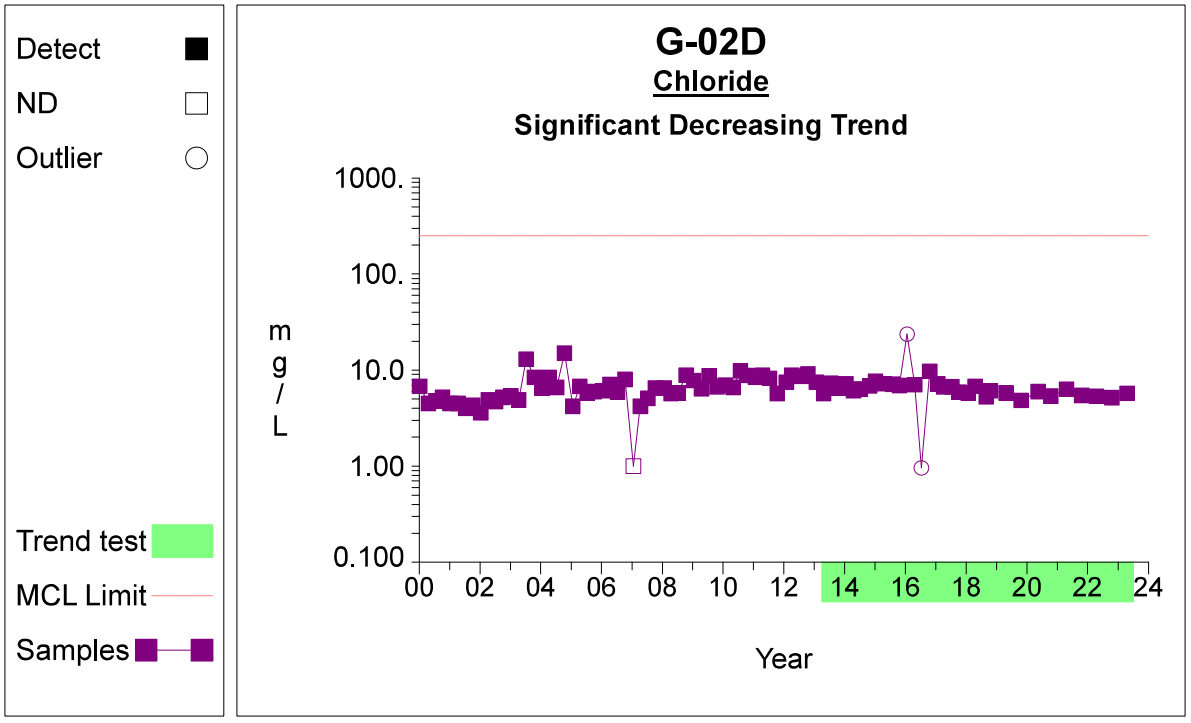
Graph 31

Time Series



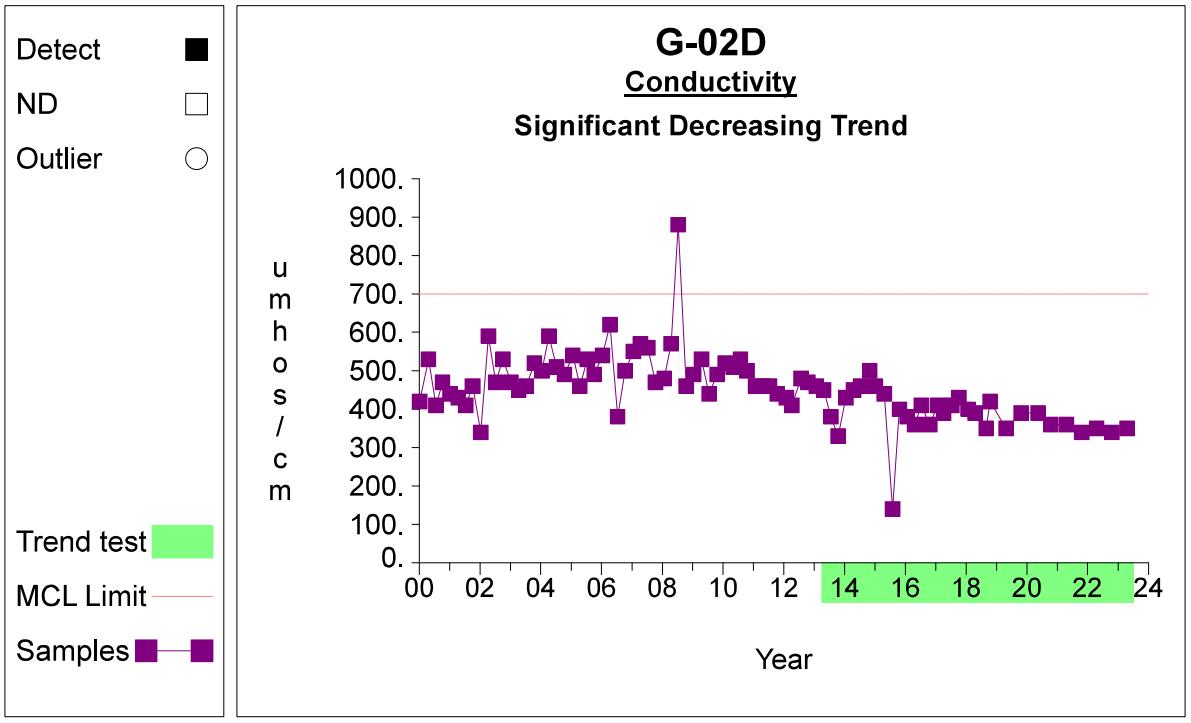
Graph 32

Time Series



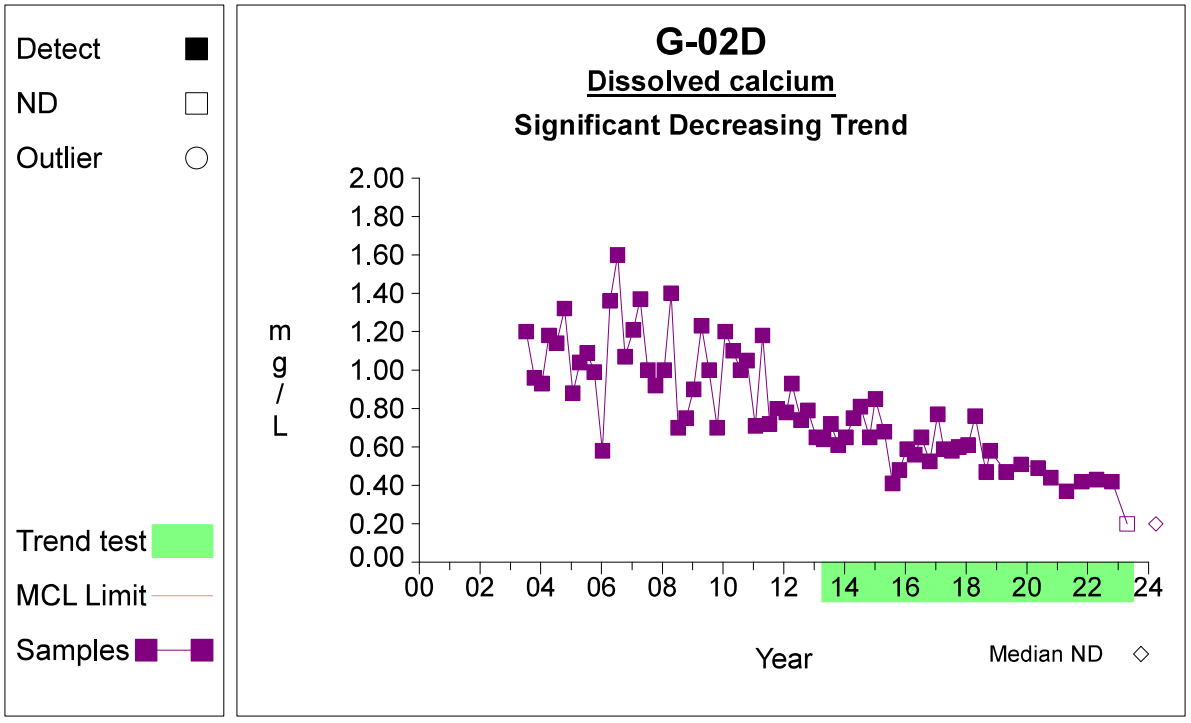
Graph 38

Time Series



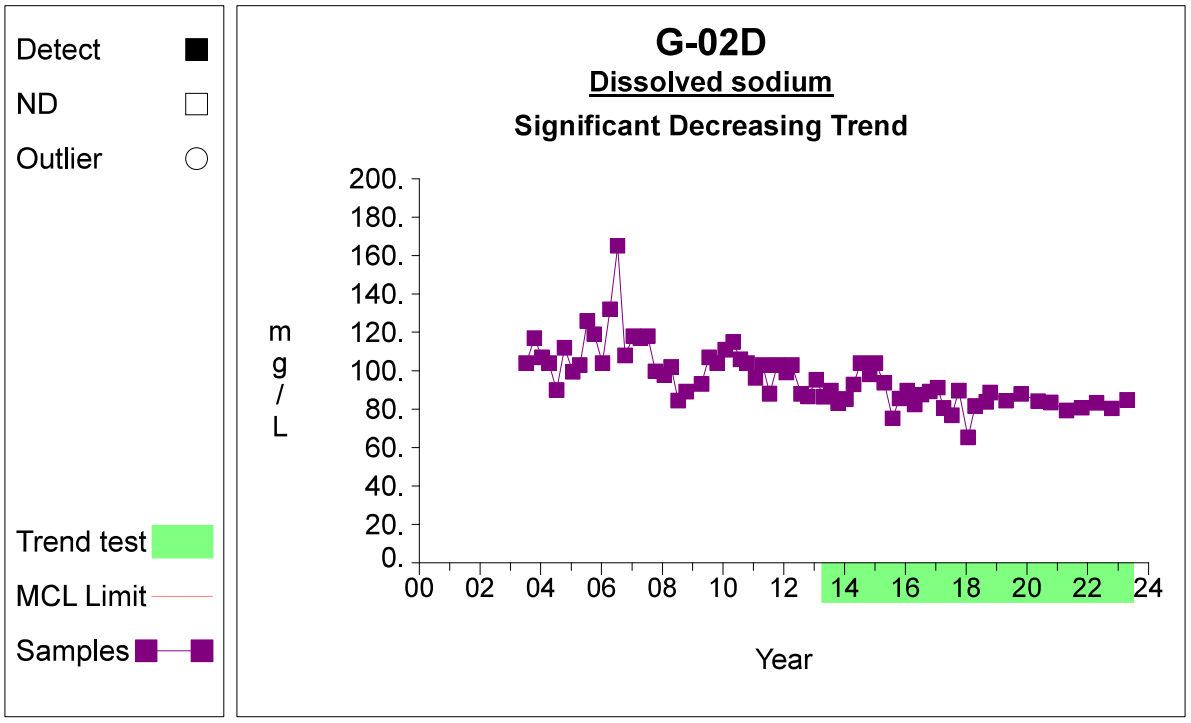
Graph 39

Time Series



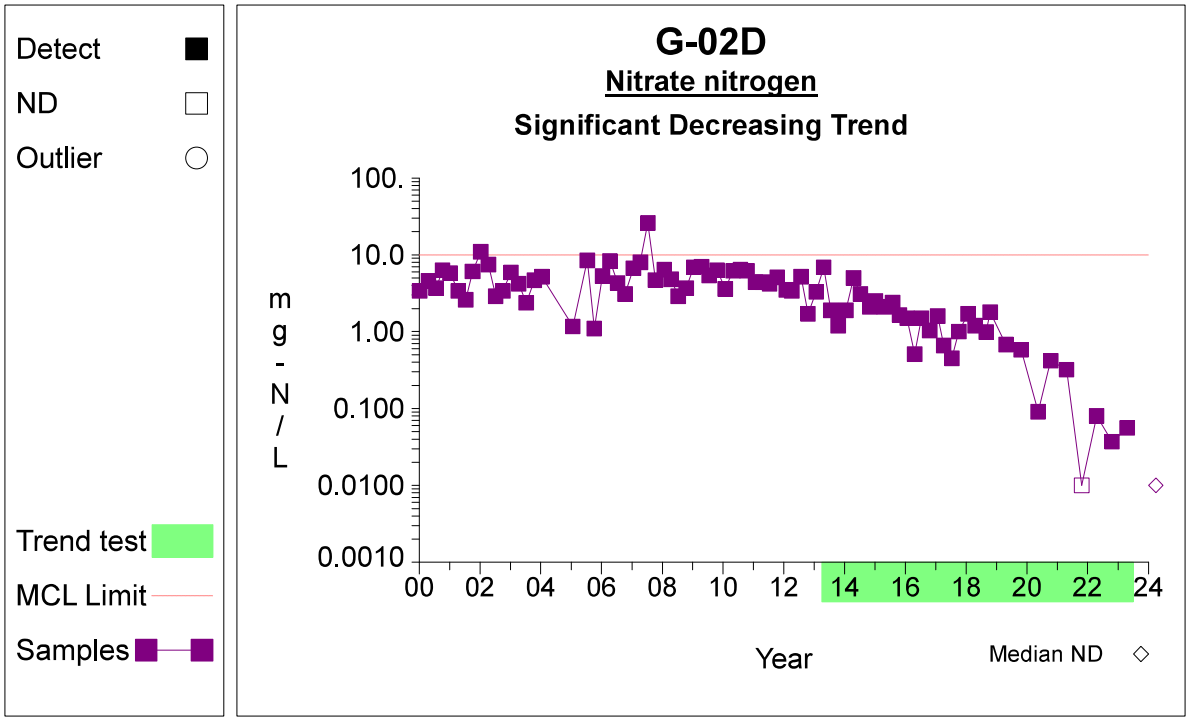
Graph 45

Time Series



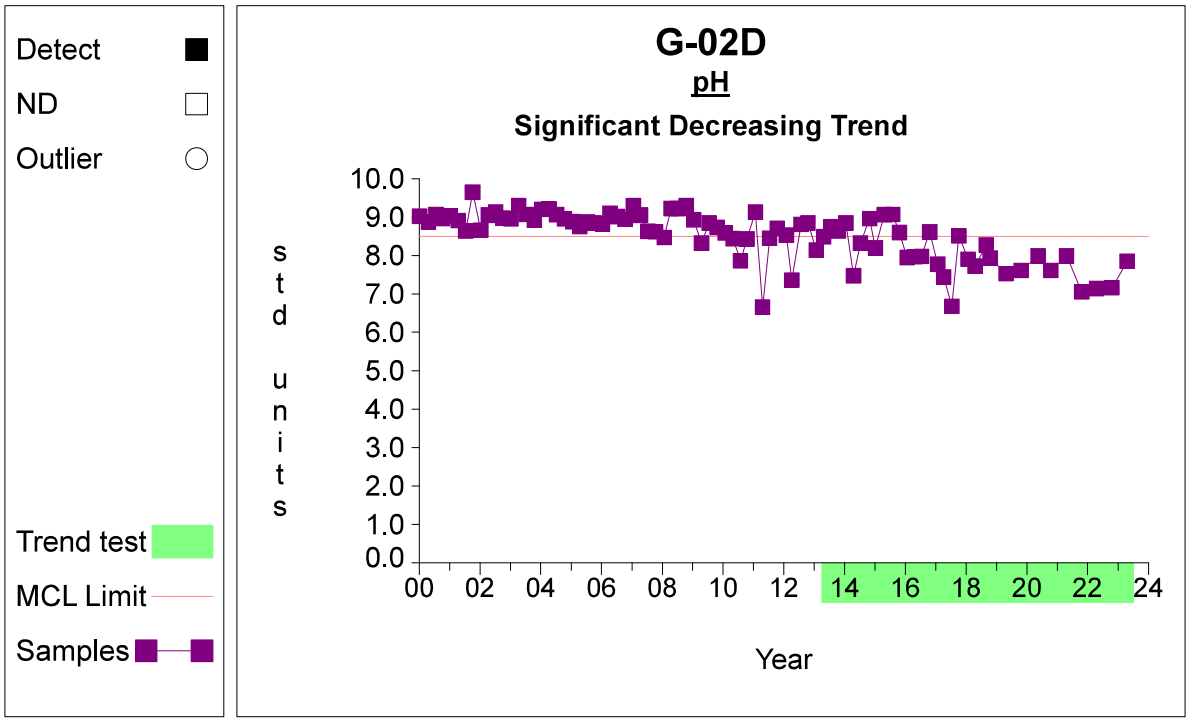
Graph 57

Time Series



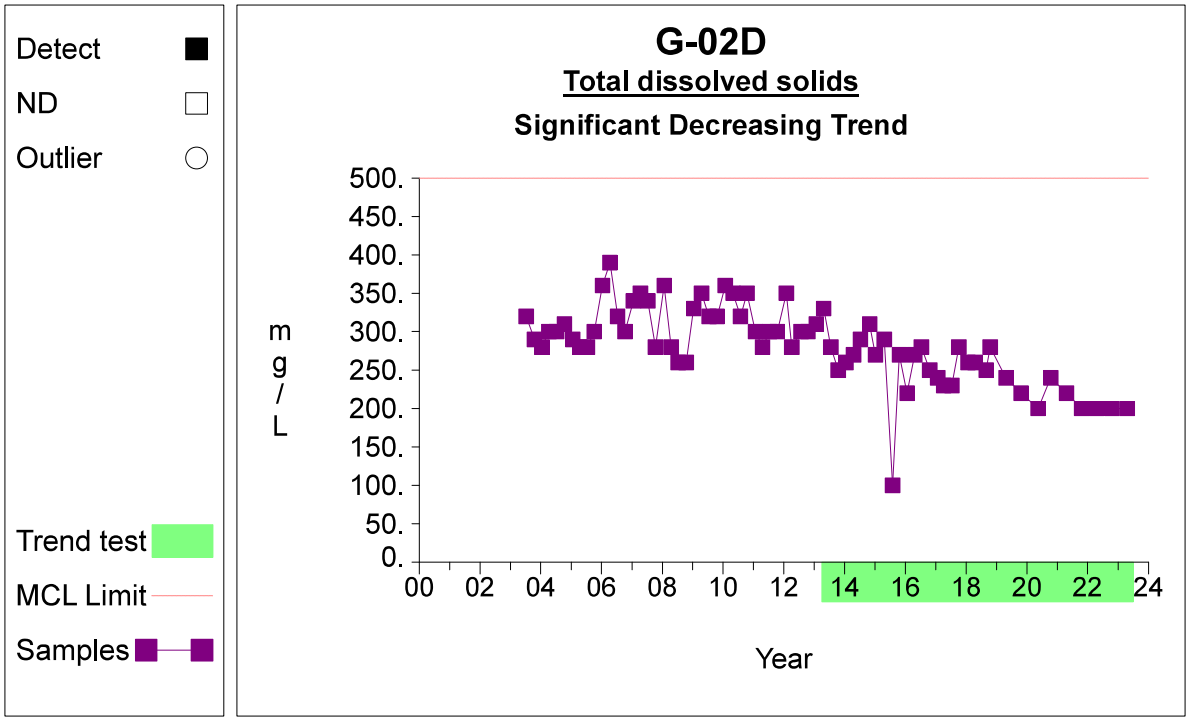
Graph 61

Time Series



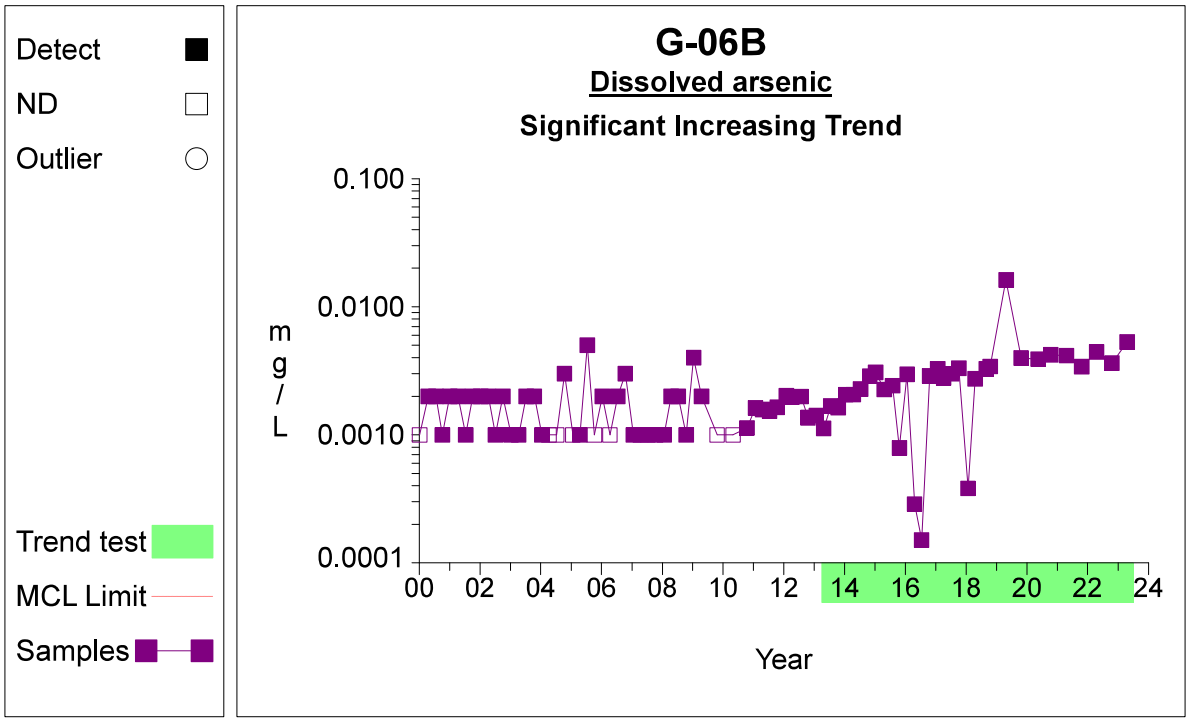
Graph 63

Time Series



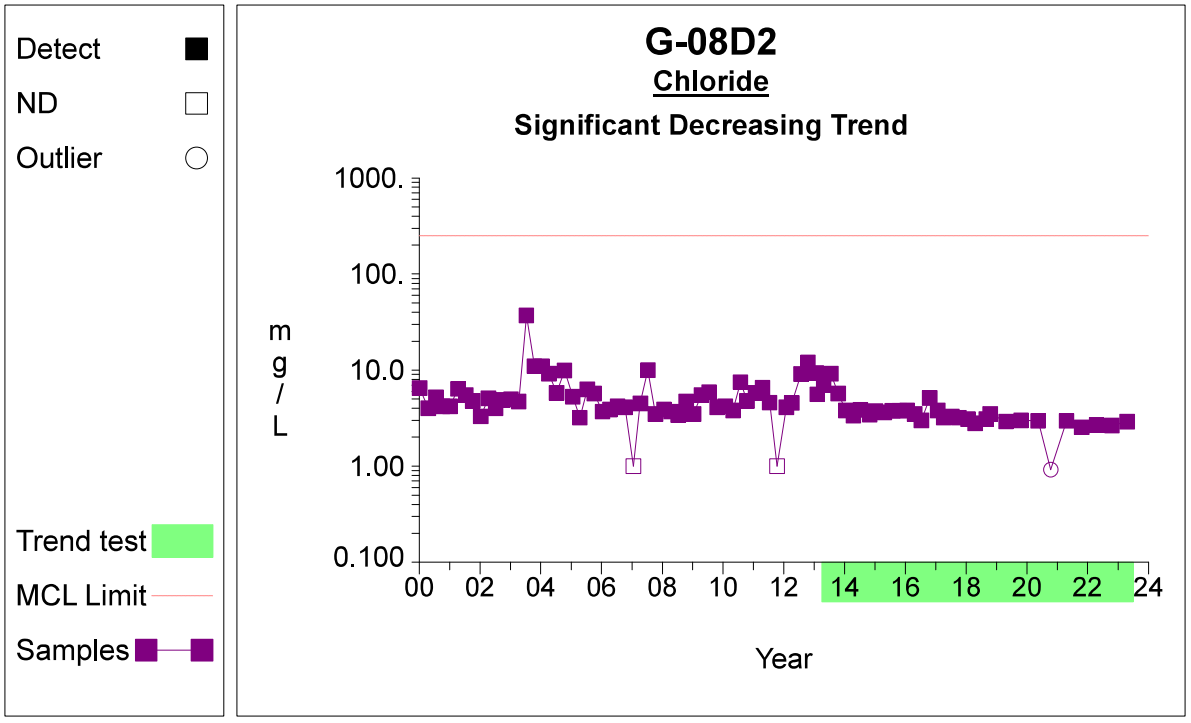
Graph 65

Time Series



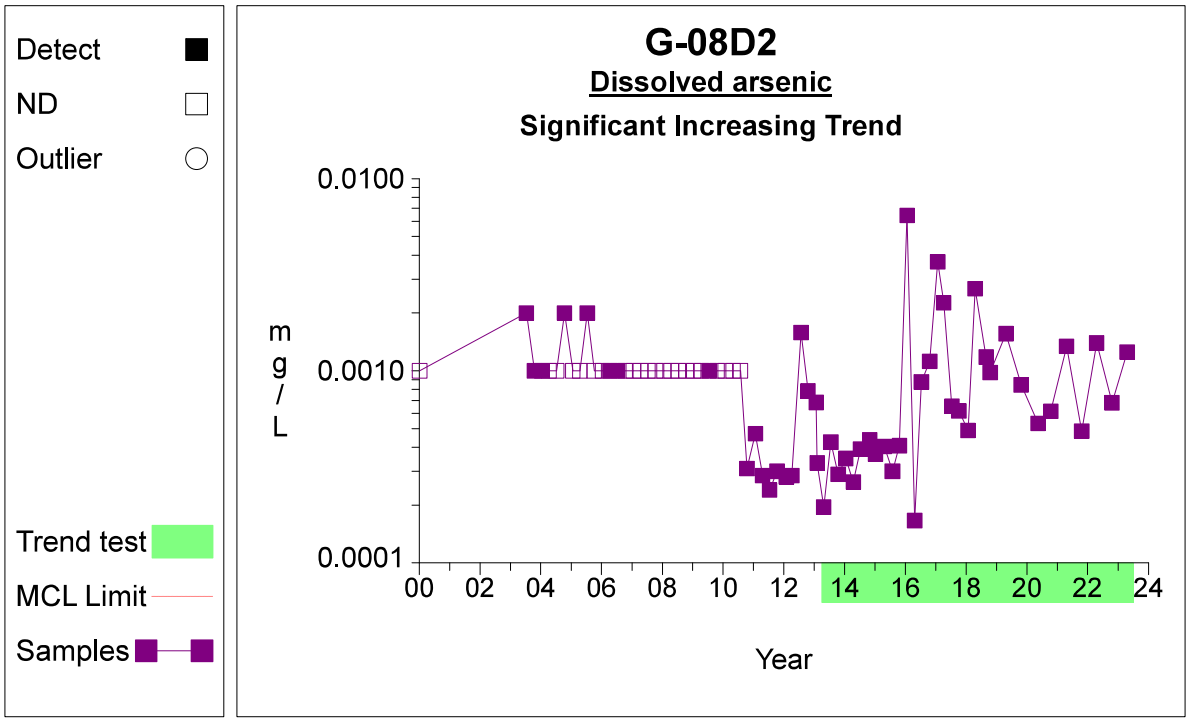
Graph 74

Time Series



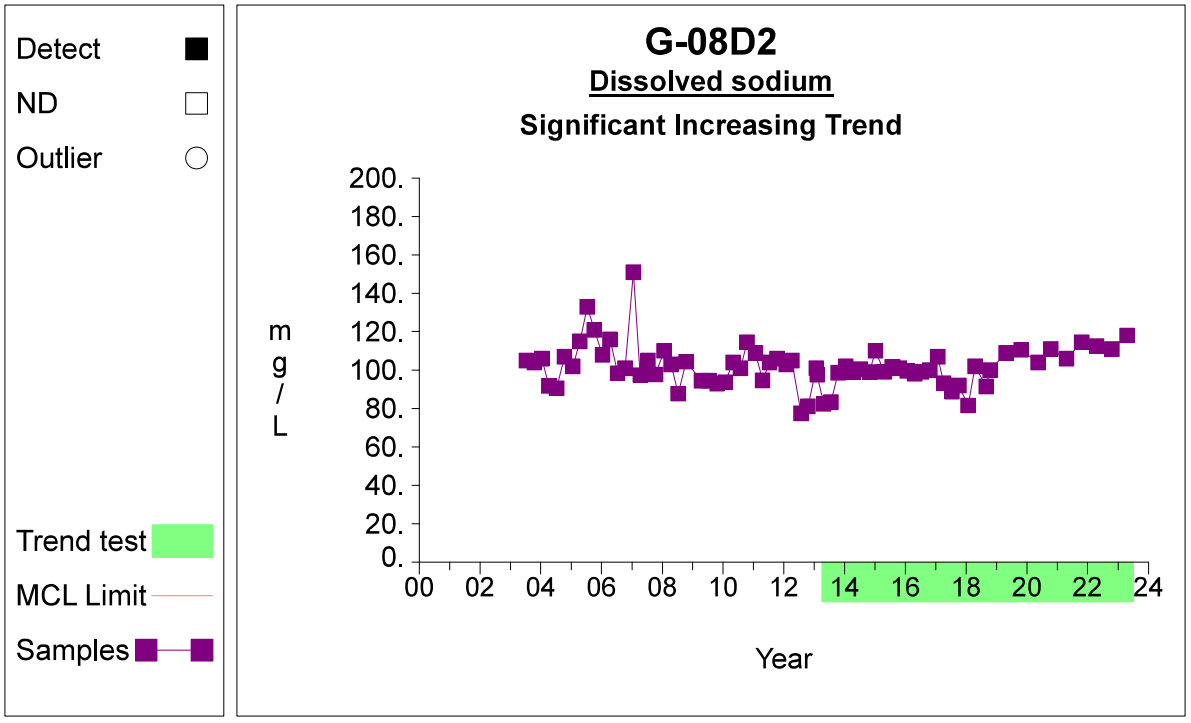
Graph 104

Time Series



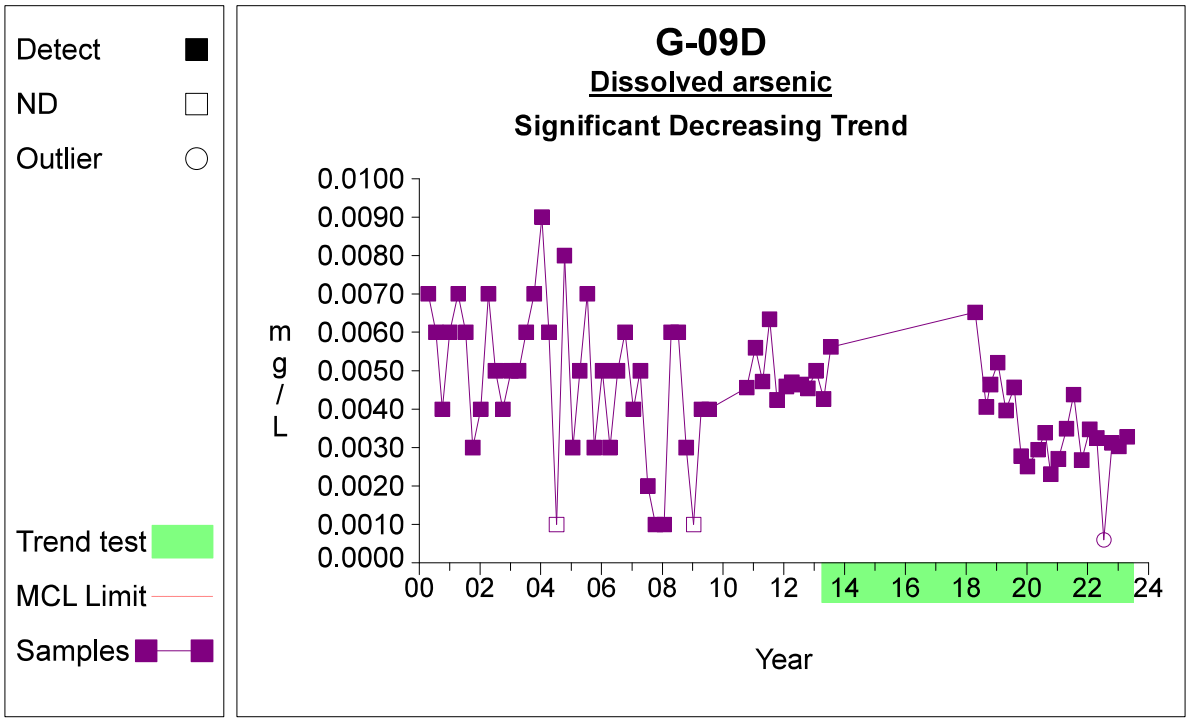
Graph 107

Time Series



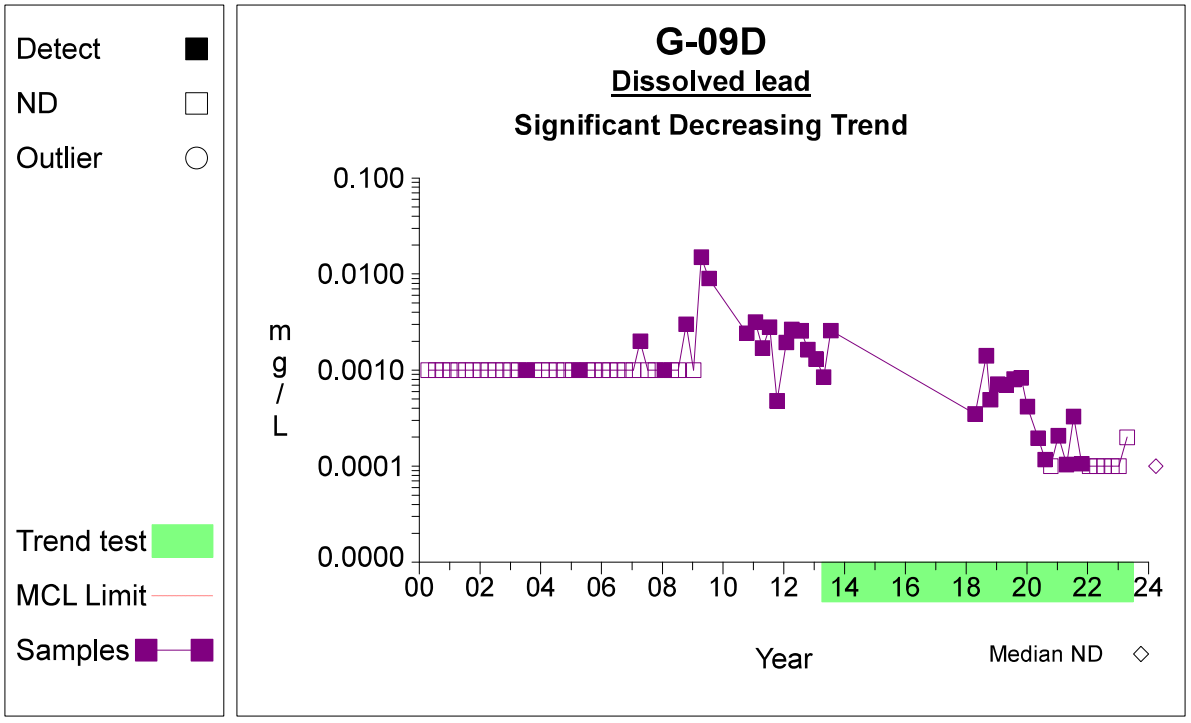
Graph 123

Time Series



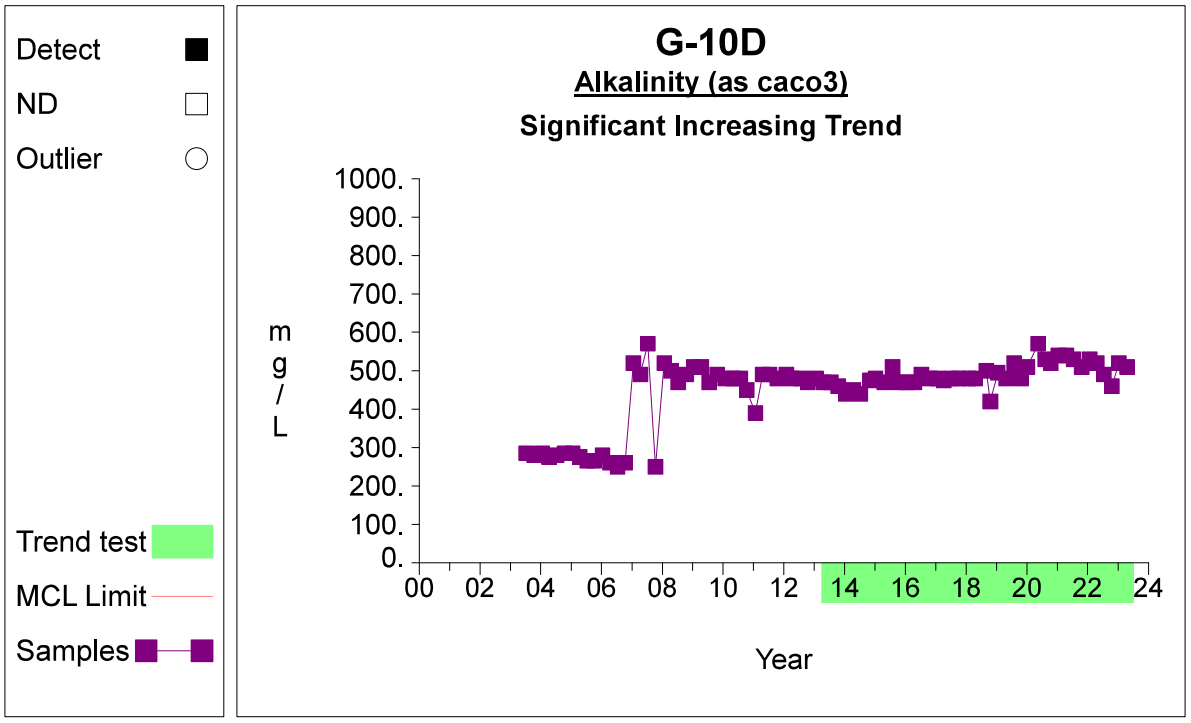
Graph 140

Time Series



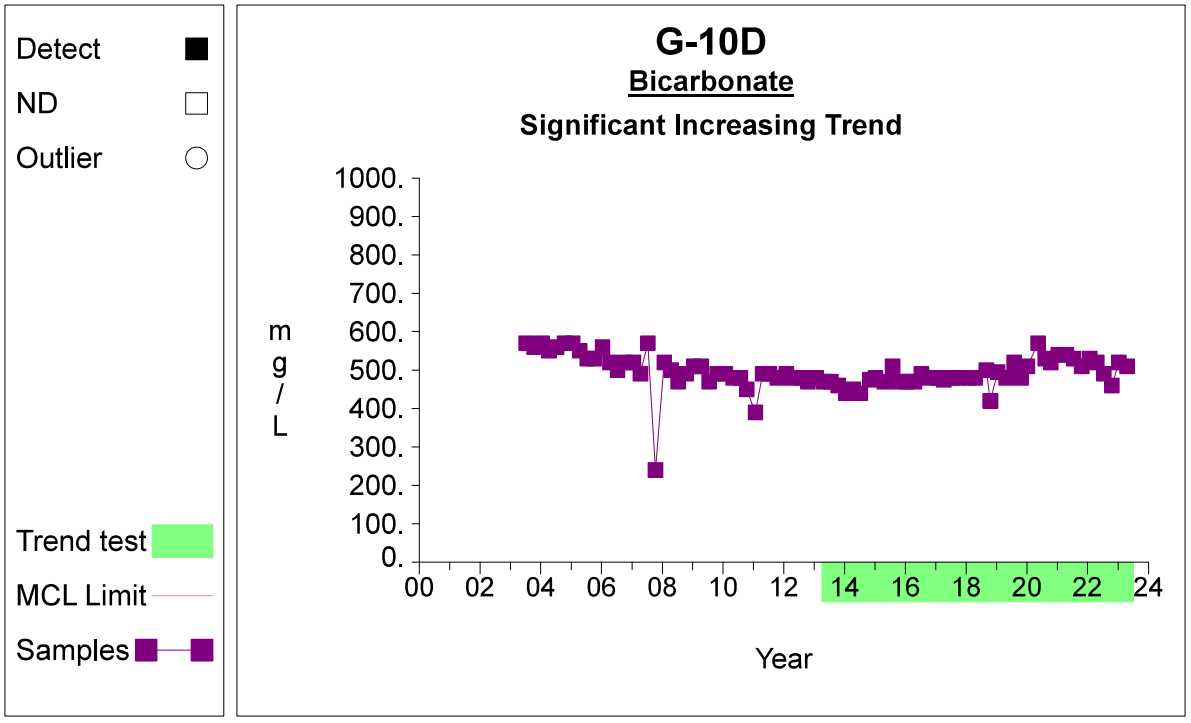
Graph 149

Time Series



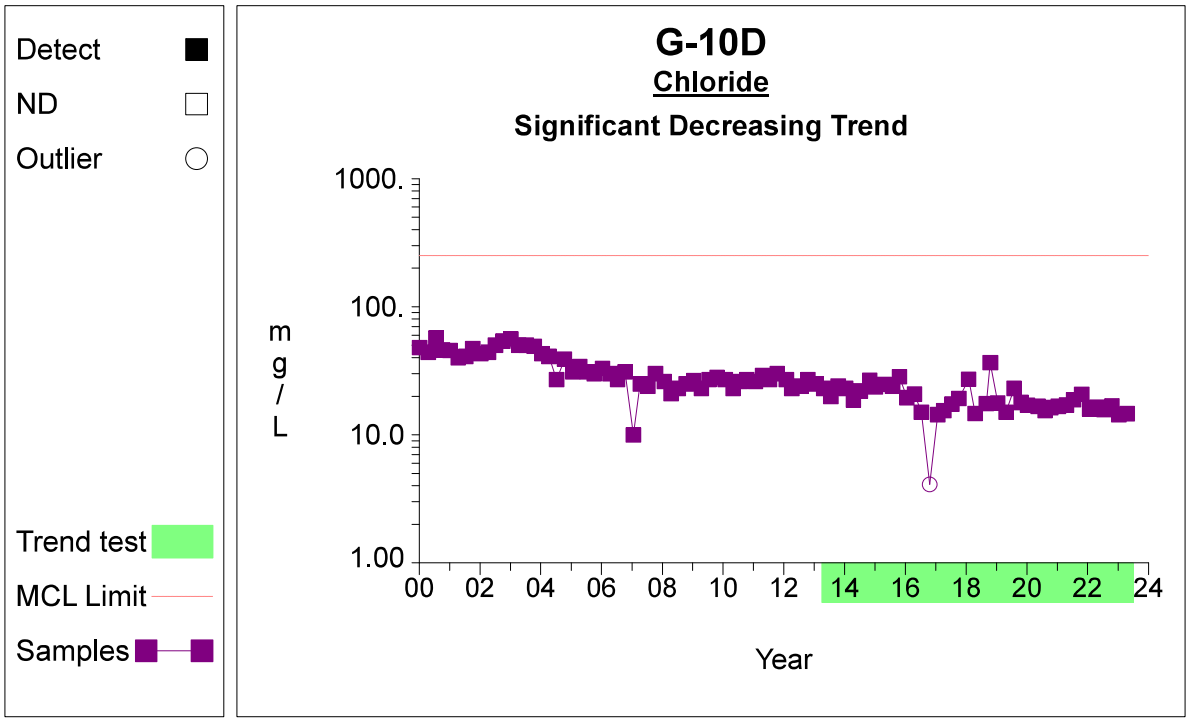
Graph 166

Time Series



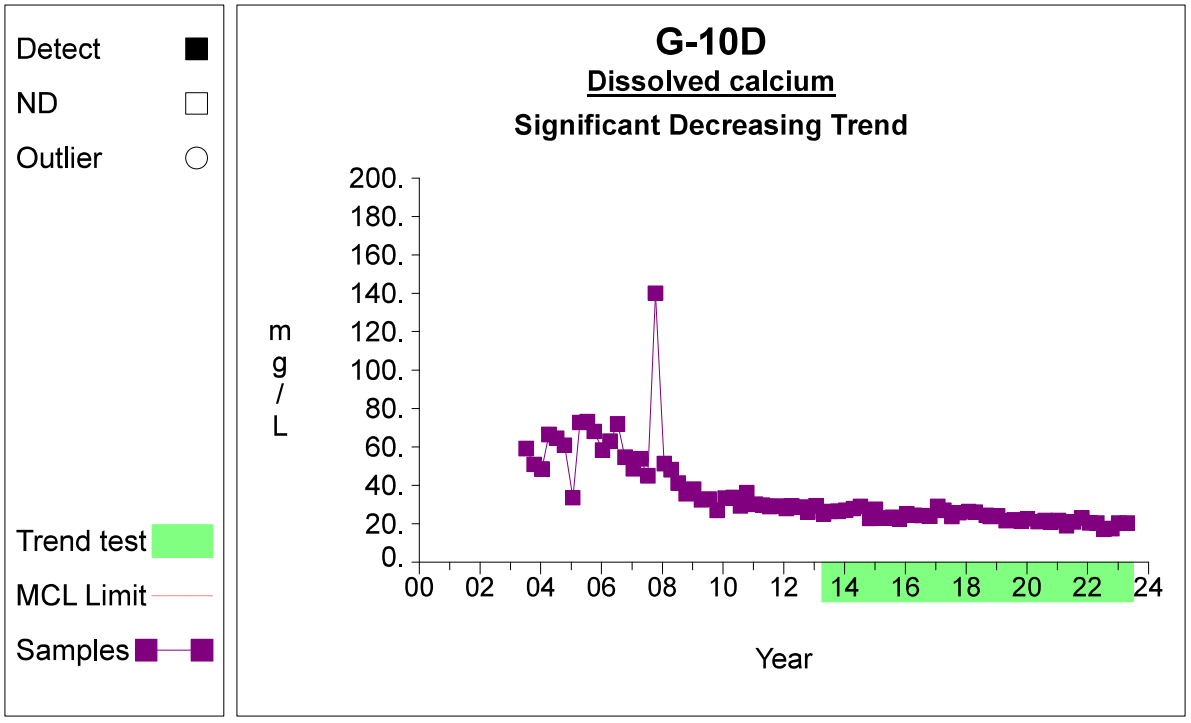
Graph 168

Time Series



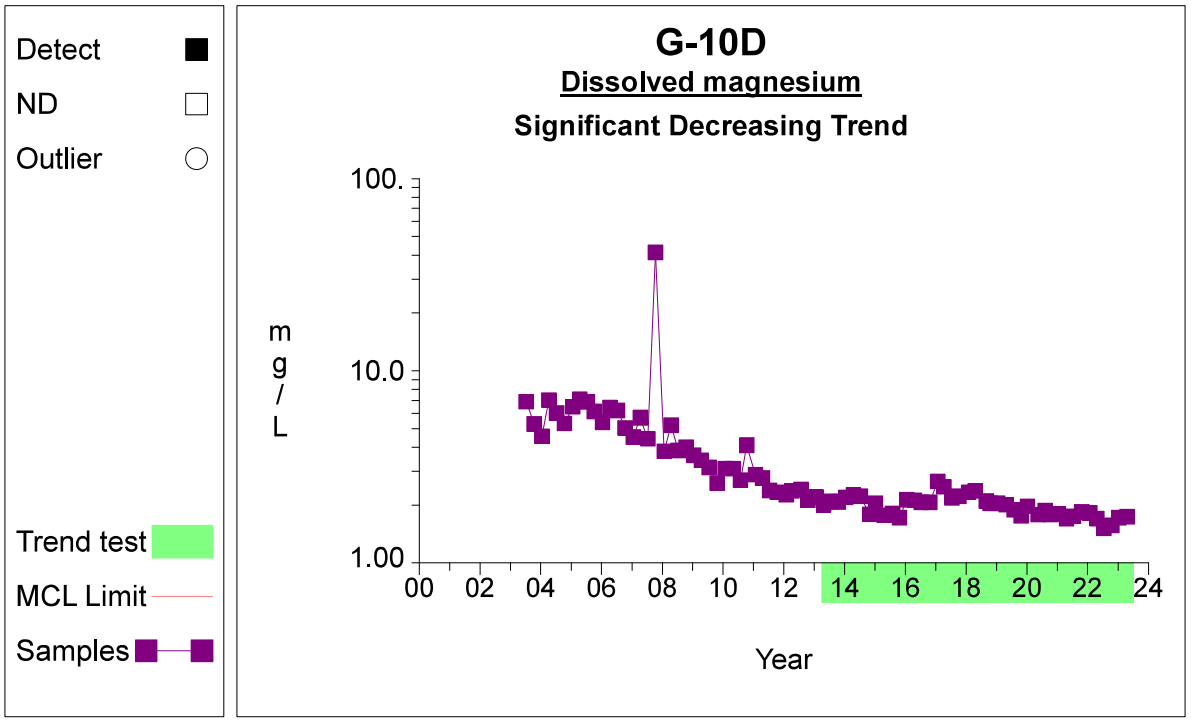
Graph 170

Time Series



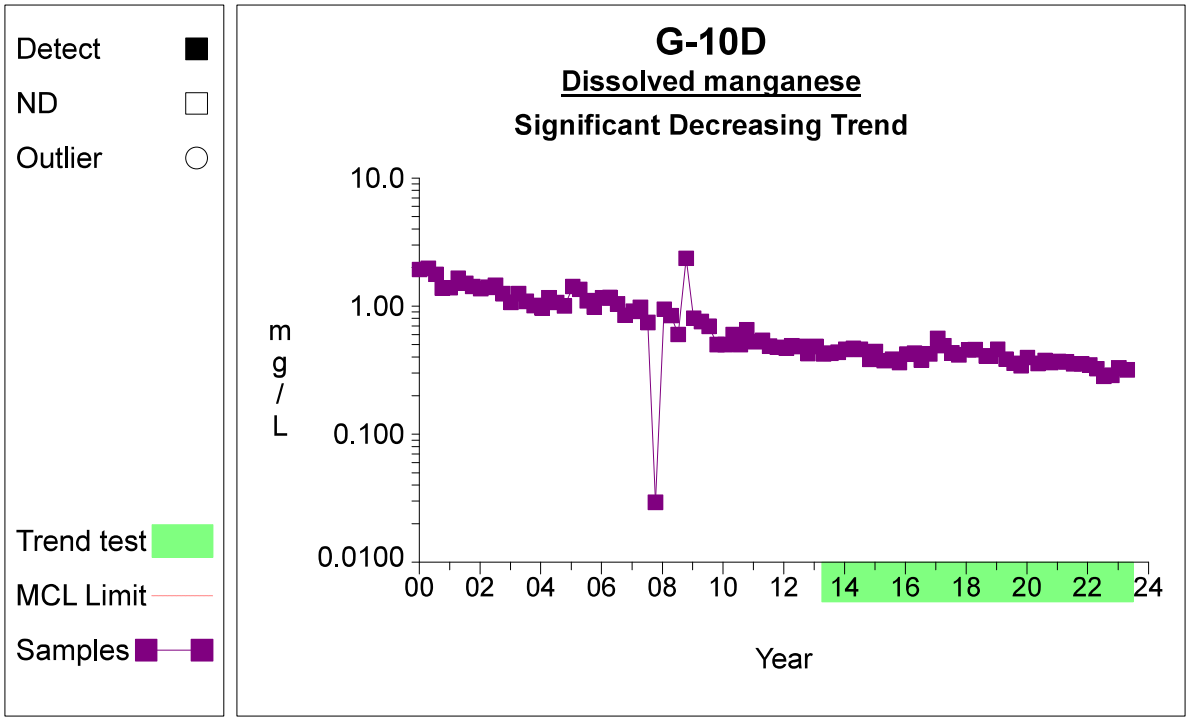
Graph 177

Time Series



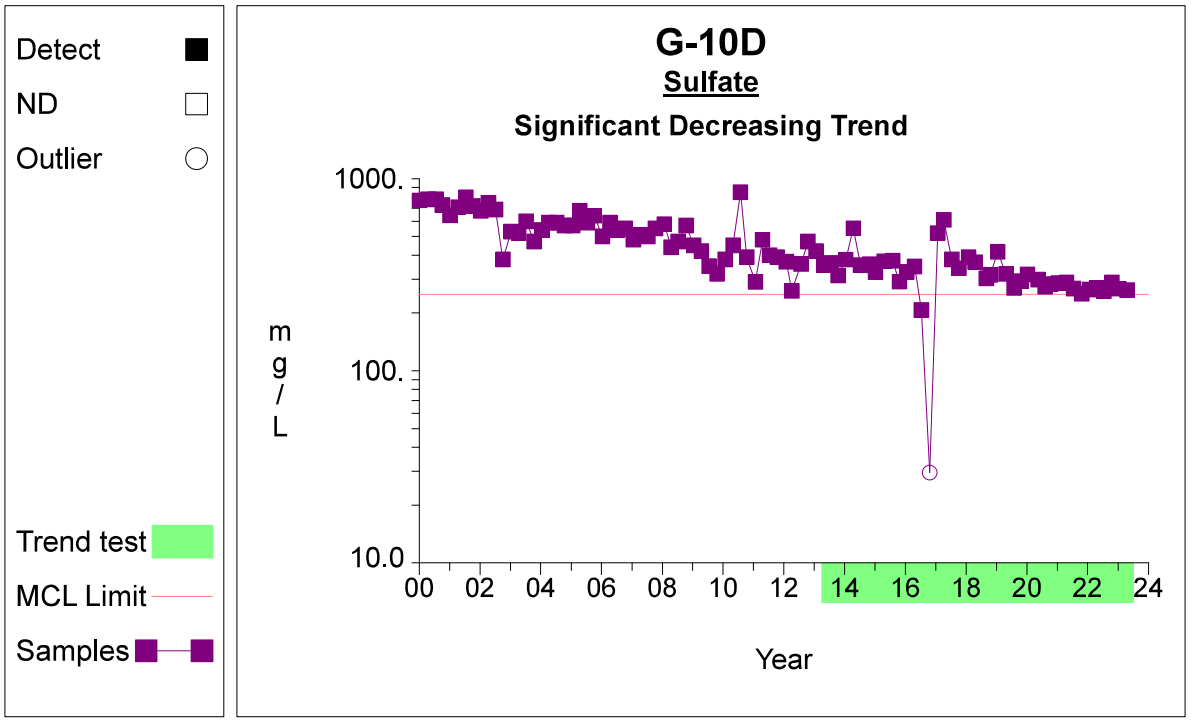
Graph 183

Time Series



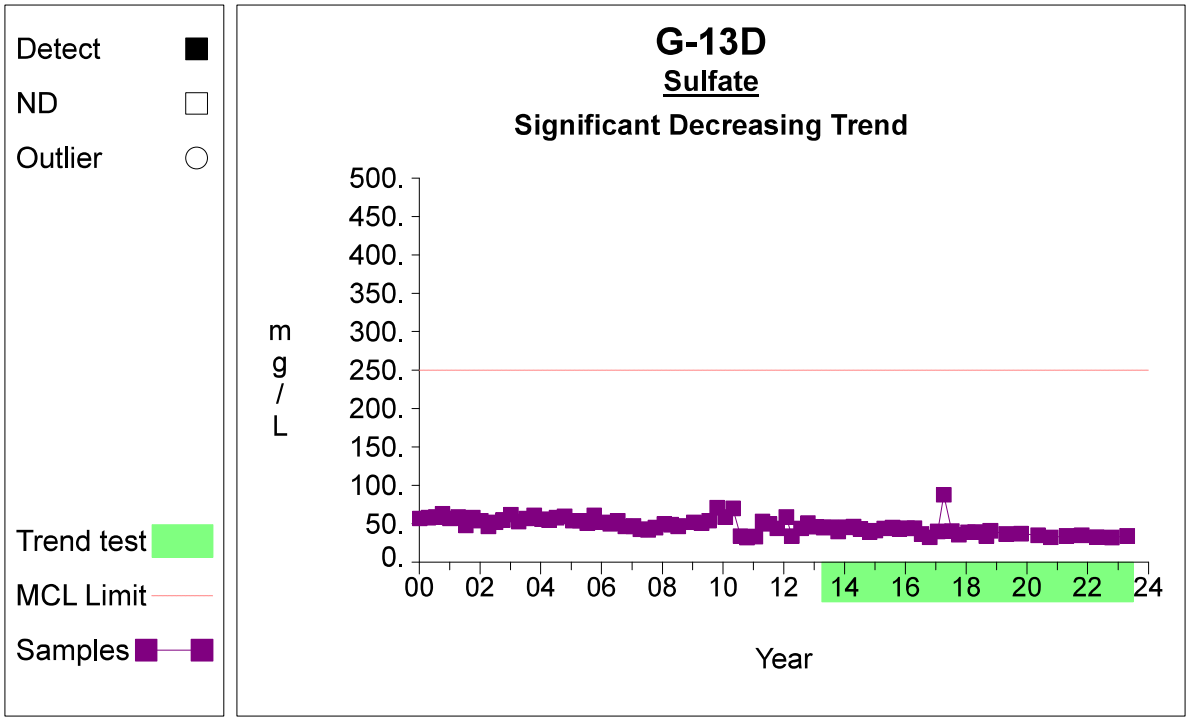
Graph 184

Time Series



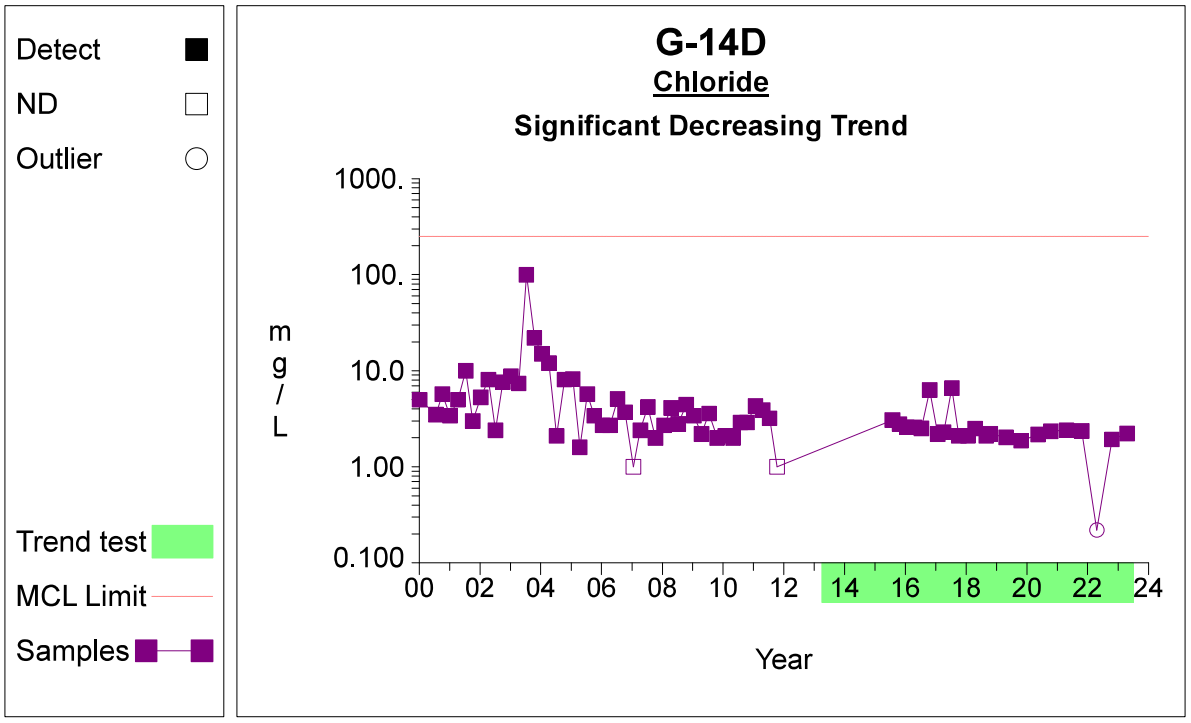
Graph 196

Time Series



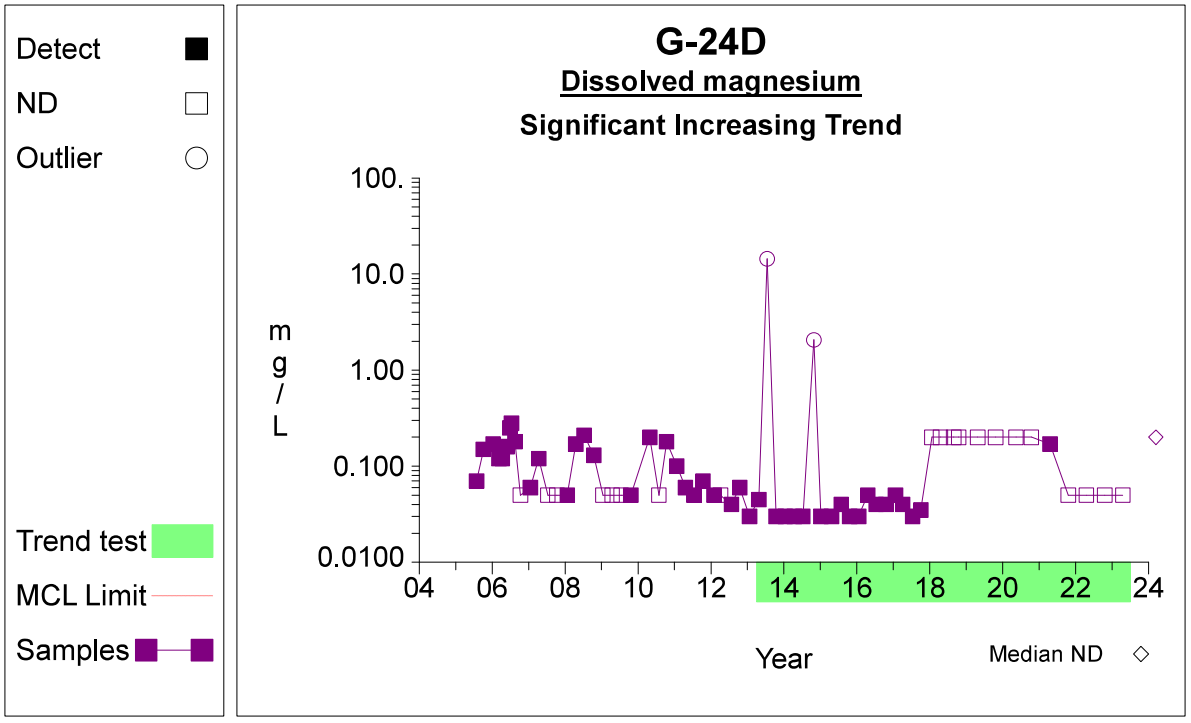
Graph 229

Time Series



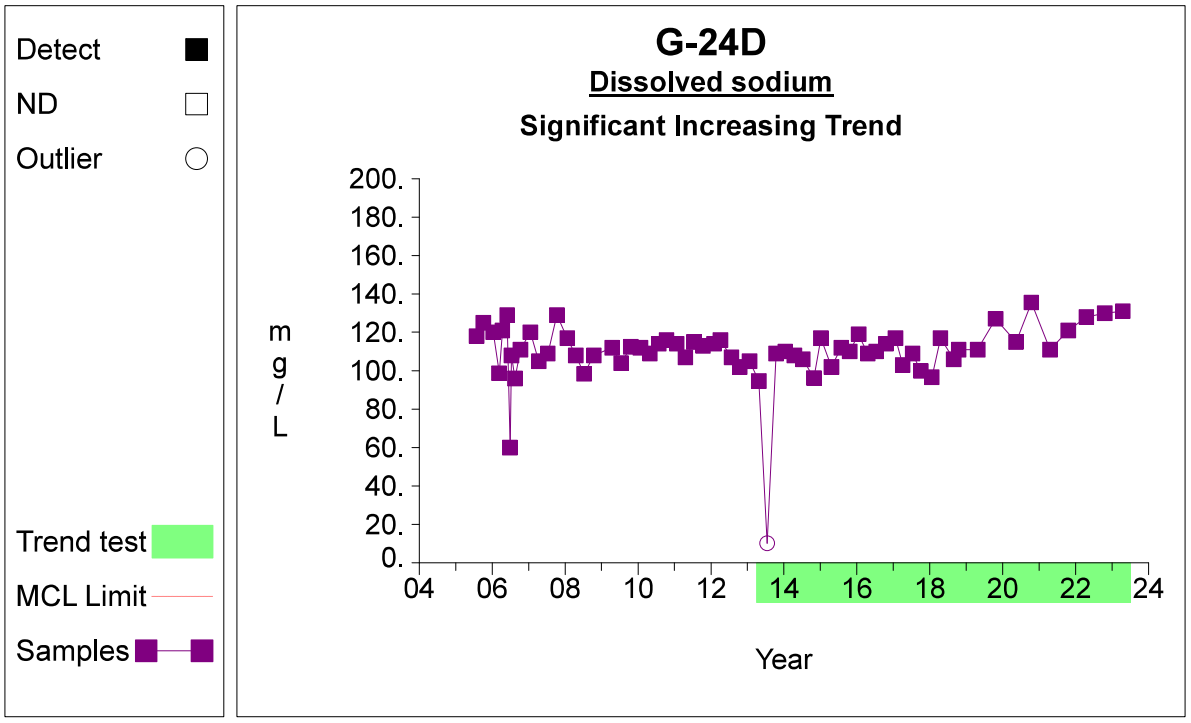
Graph 236

Time Series



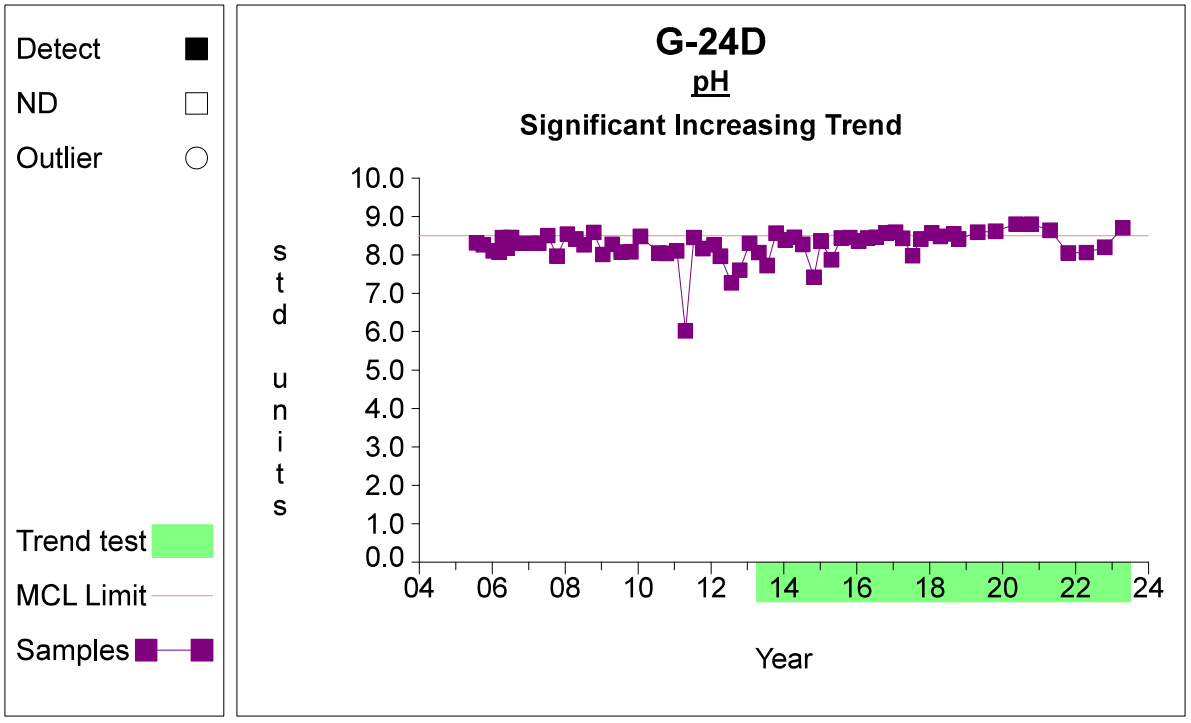
Graph 282

Time Series



Graph 288

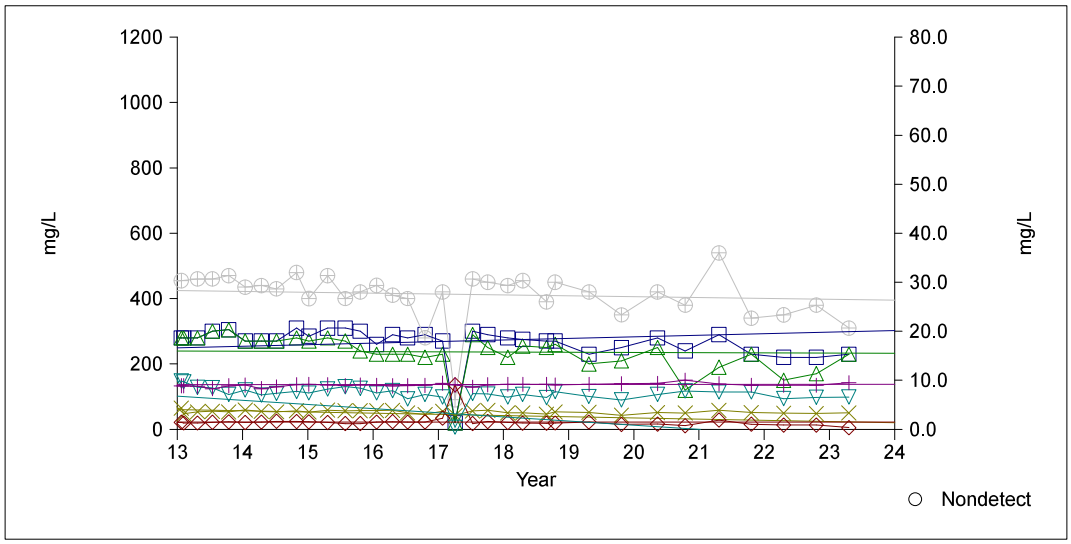
Time Series



Graph 294

Cathcart Landfill

Time Series Plot for G-01D



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

1

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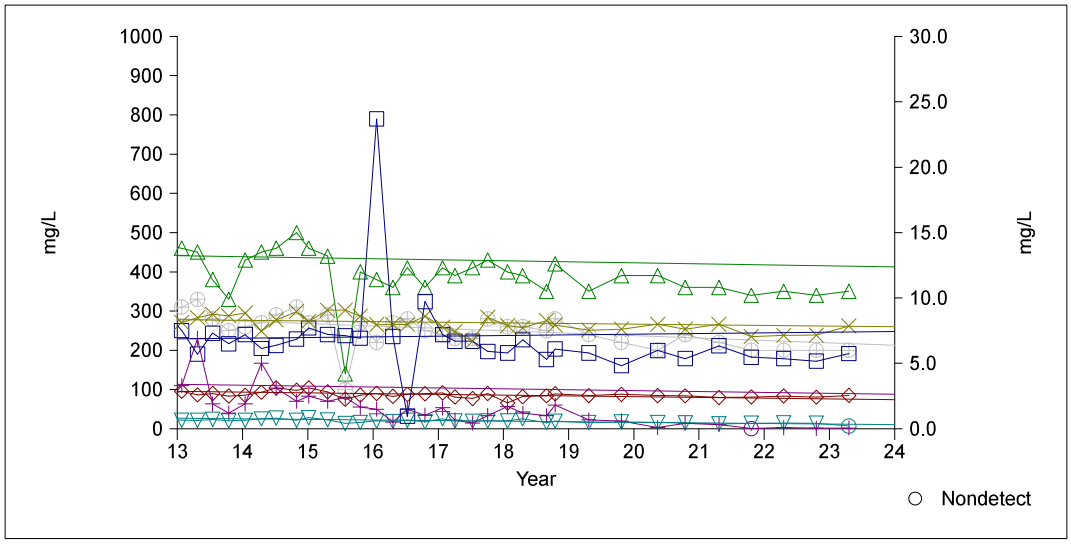
Cathcart Landfill

Time Series Plot for G-02D



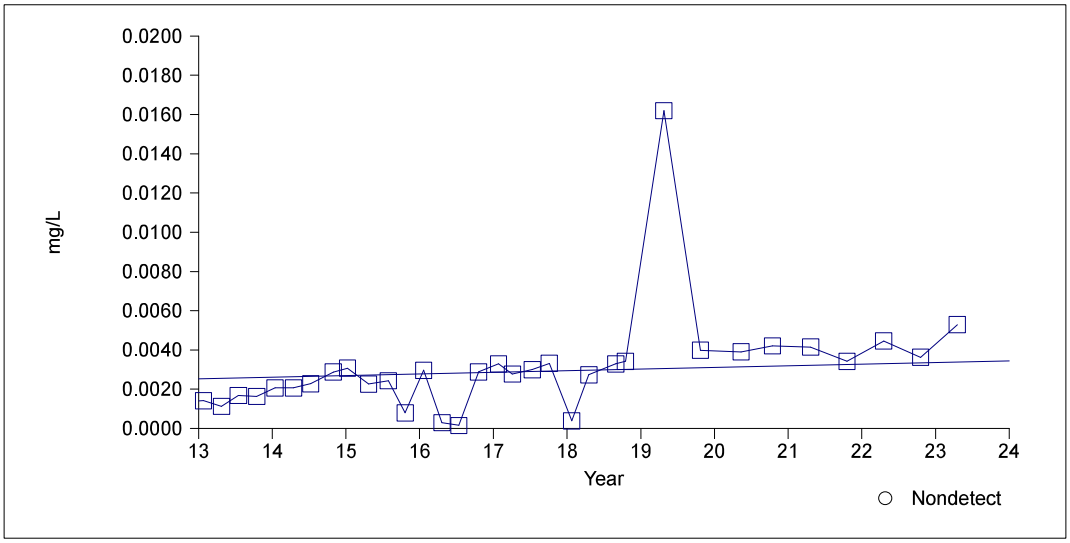
Conductivity
Dissolved sodium
Total dissolved solids
Dissolved calcium
Nitrate nitrogen
Chloride
pH

1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-06B

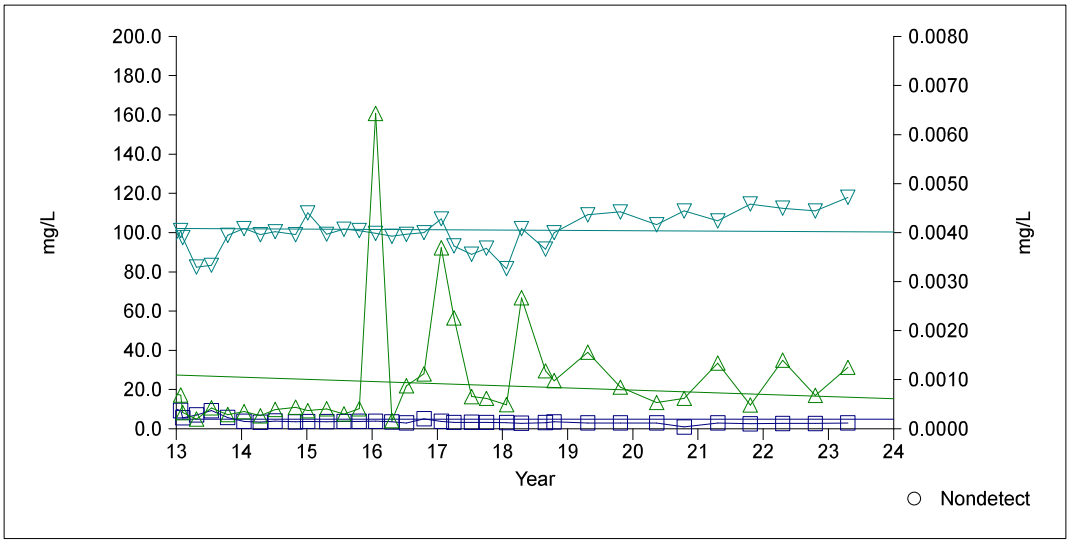


1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-08D2

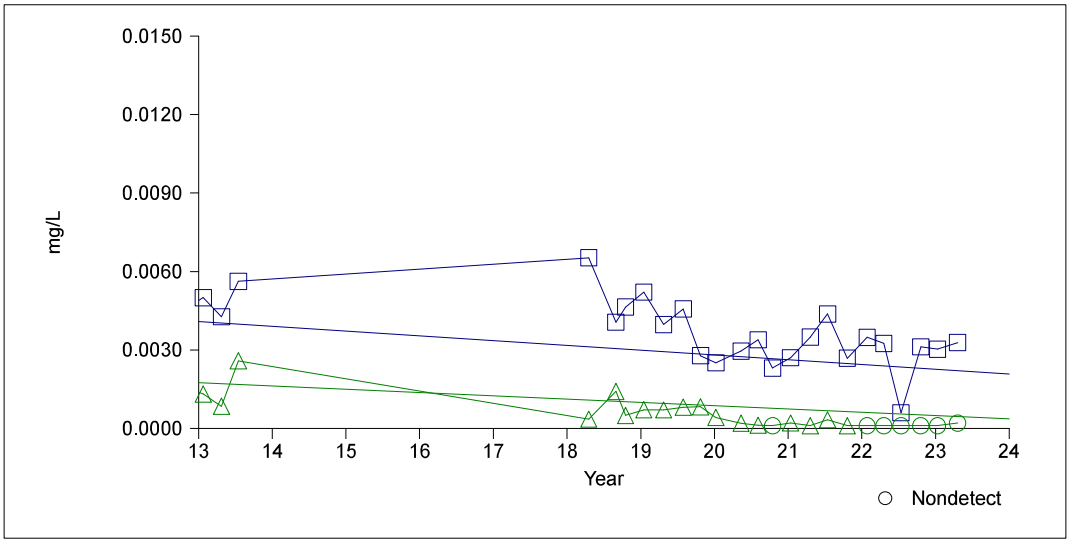


1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-09D

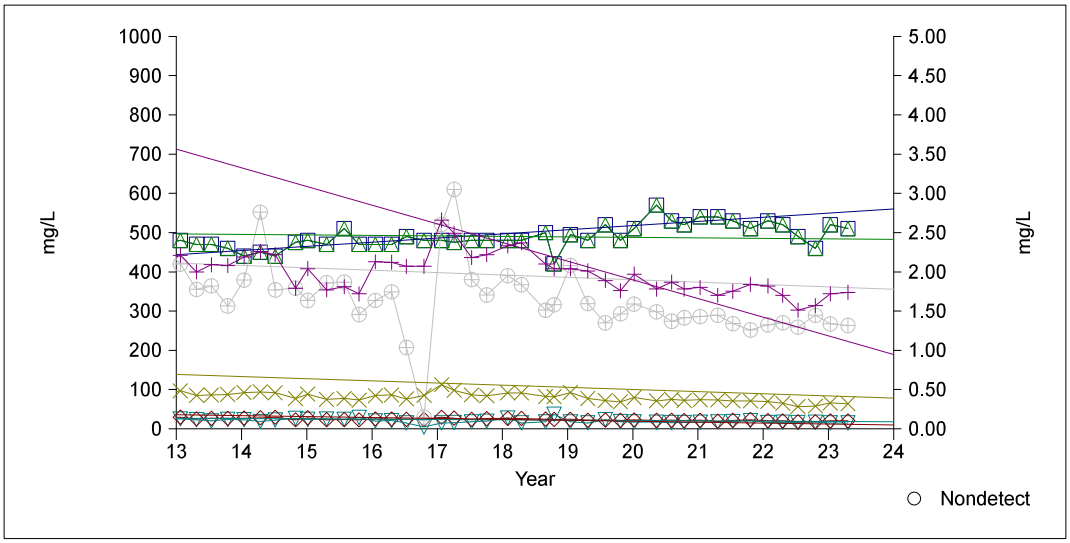


1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-10D

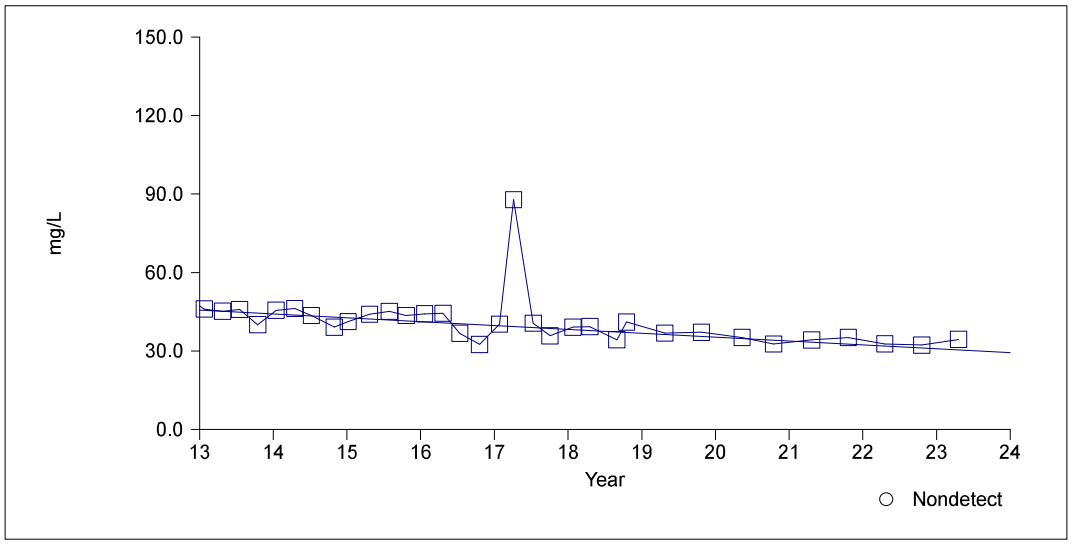


1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-13D

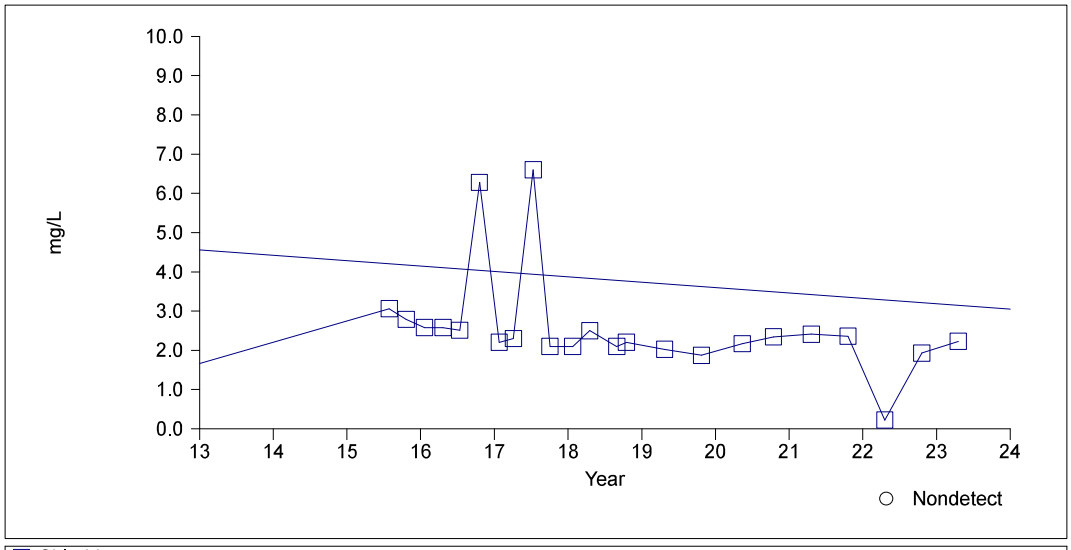


1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-14D

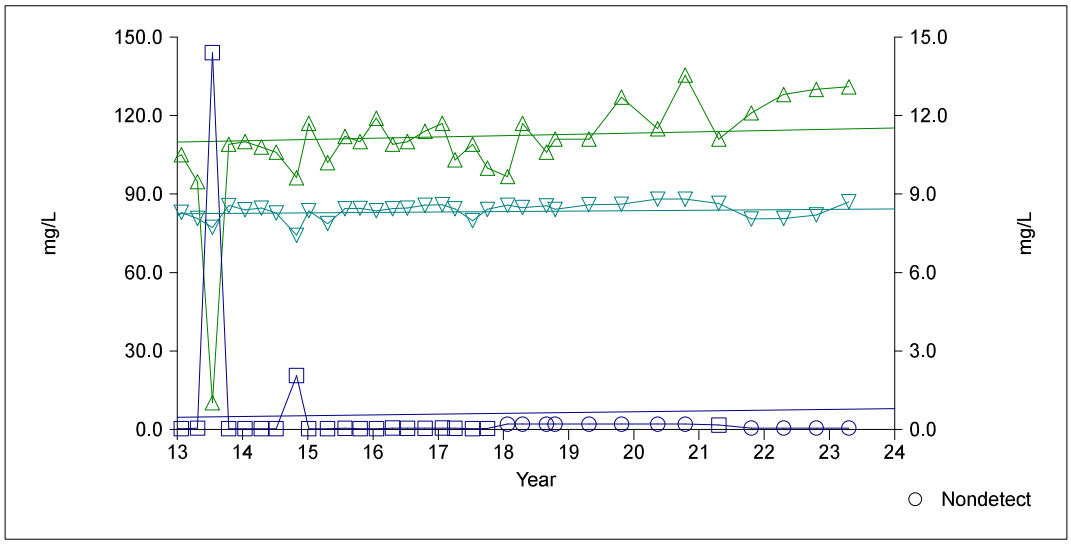


1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-24D



△ Dissolved sodium

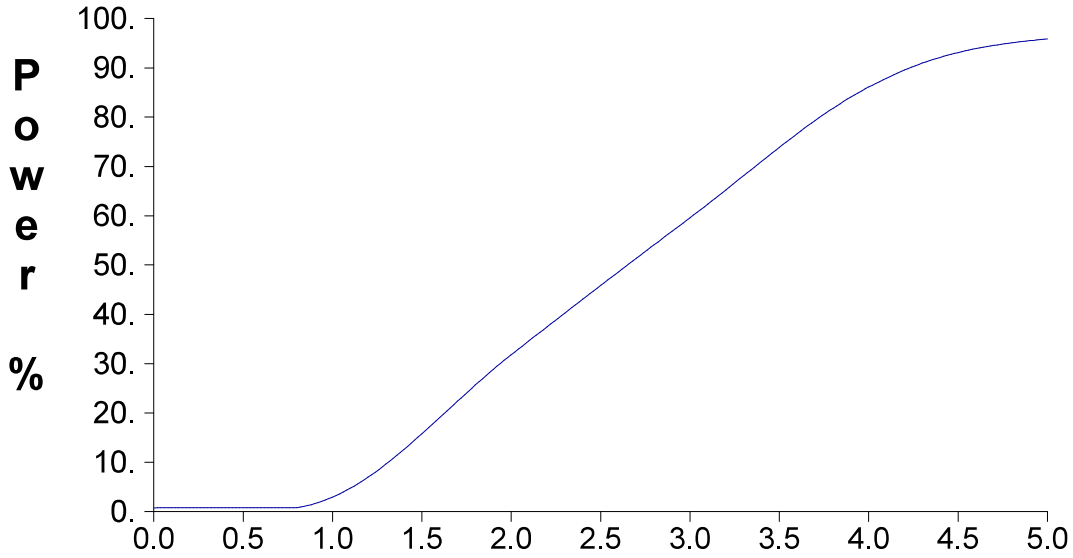
□ Dissolved magnesium

▽ pH

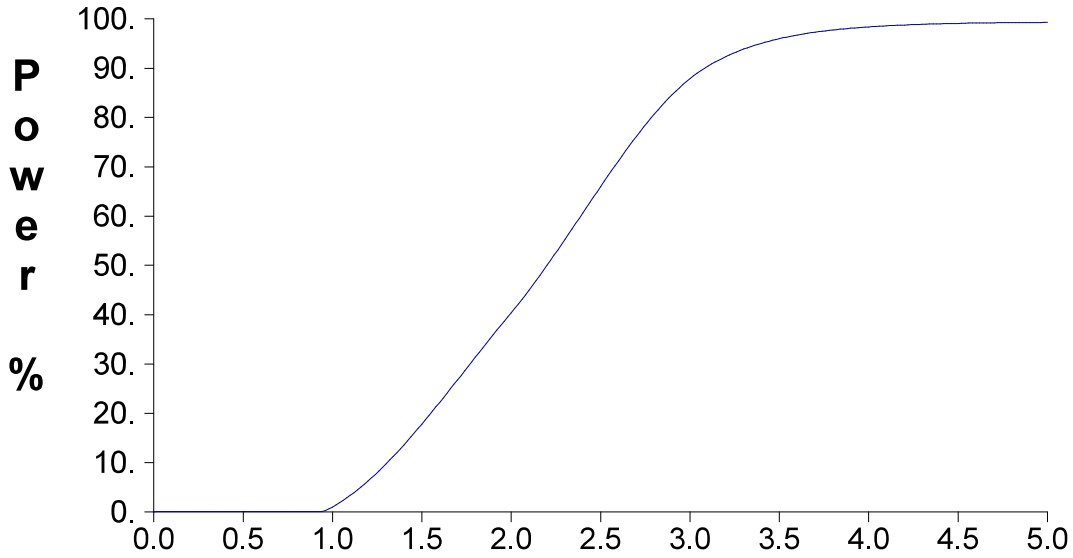
1

Prepared by: Snohomish County Solid Waste

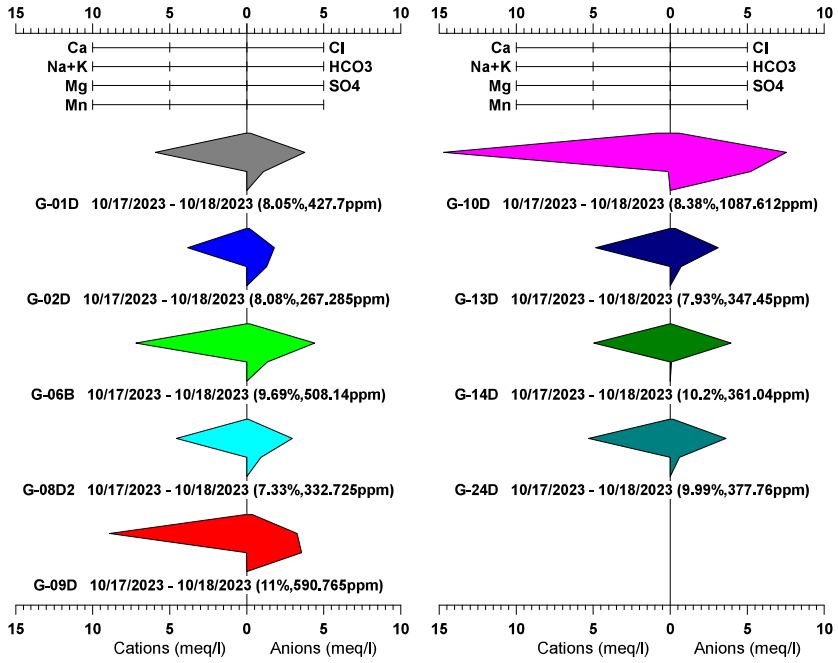
False Positive and False Negative Rates for Current Intra-Well Prediction Limits Monitoring Program



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

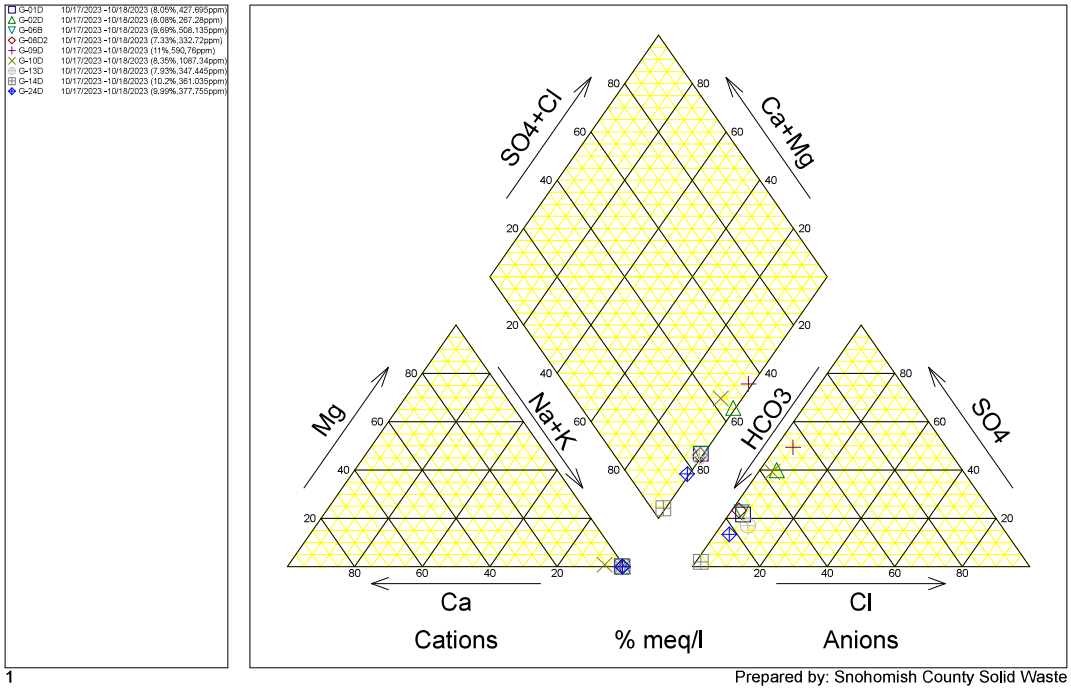


Cathcart Landfill



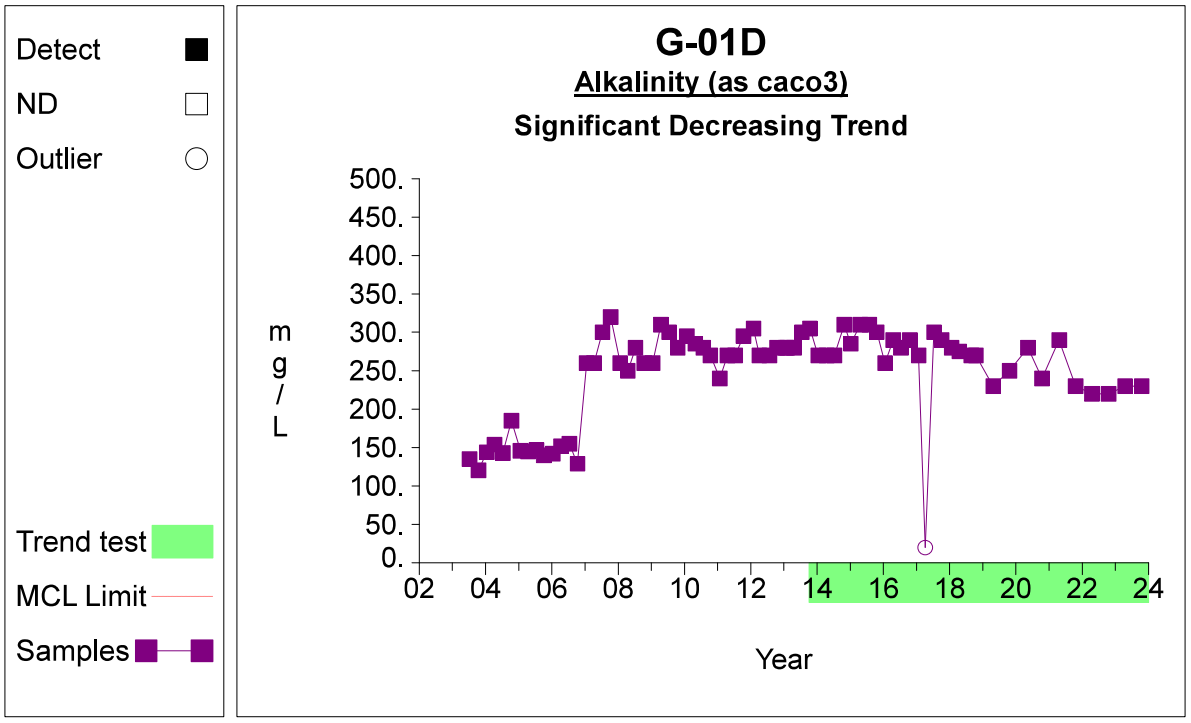
Prepared by: Snohomish County Solid Waste

Cathcart Landfill



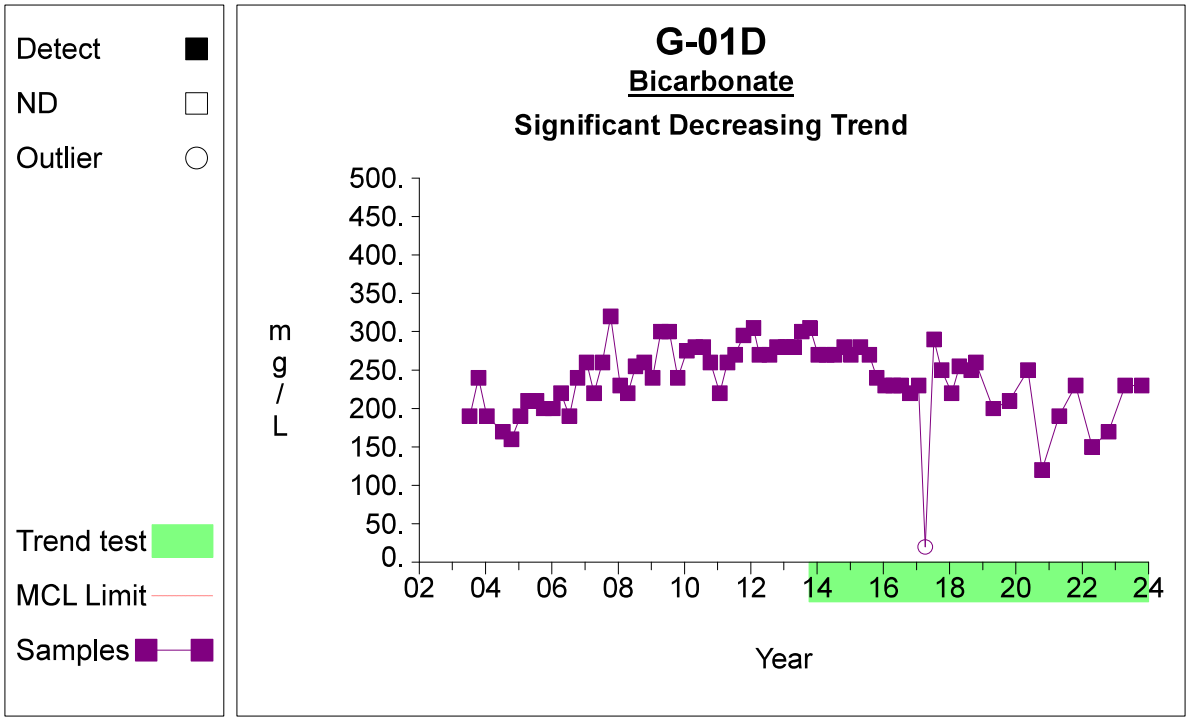
Prepared by: Snohomish County Solid Waste

Time Series



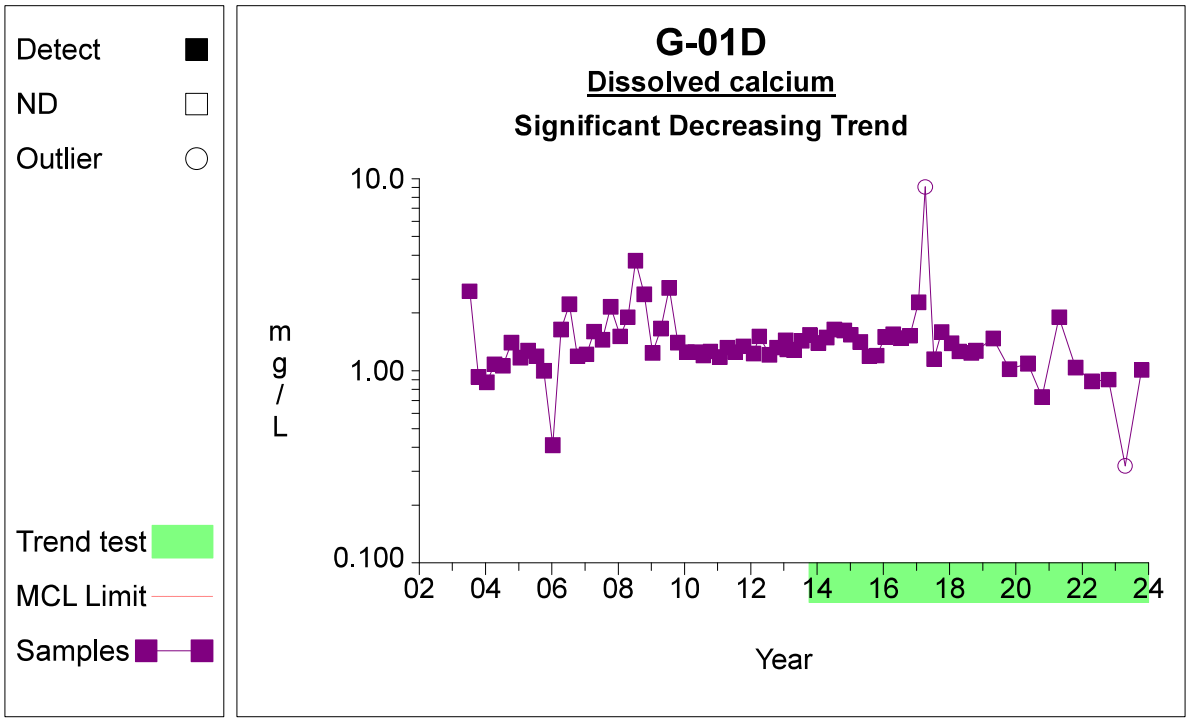
Graph 1

Time Series



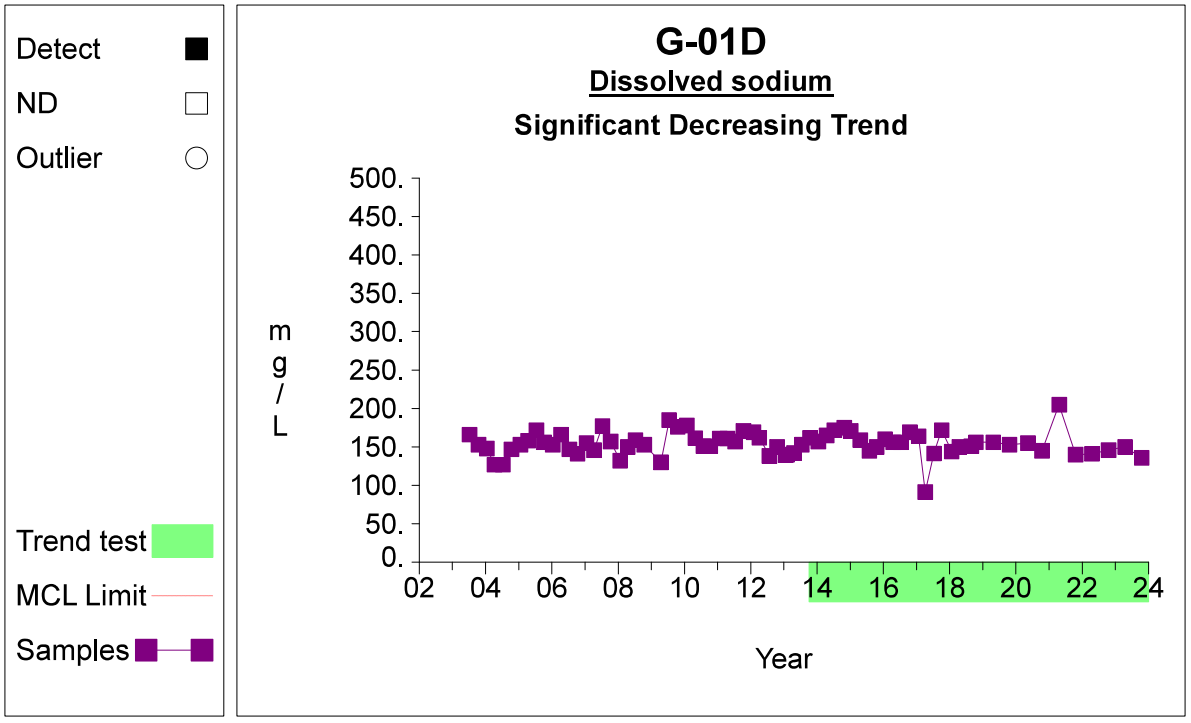
Graph 3

Time Series



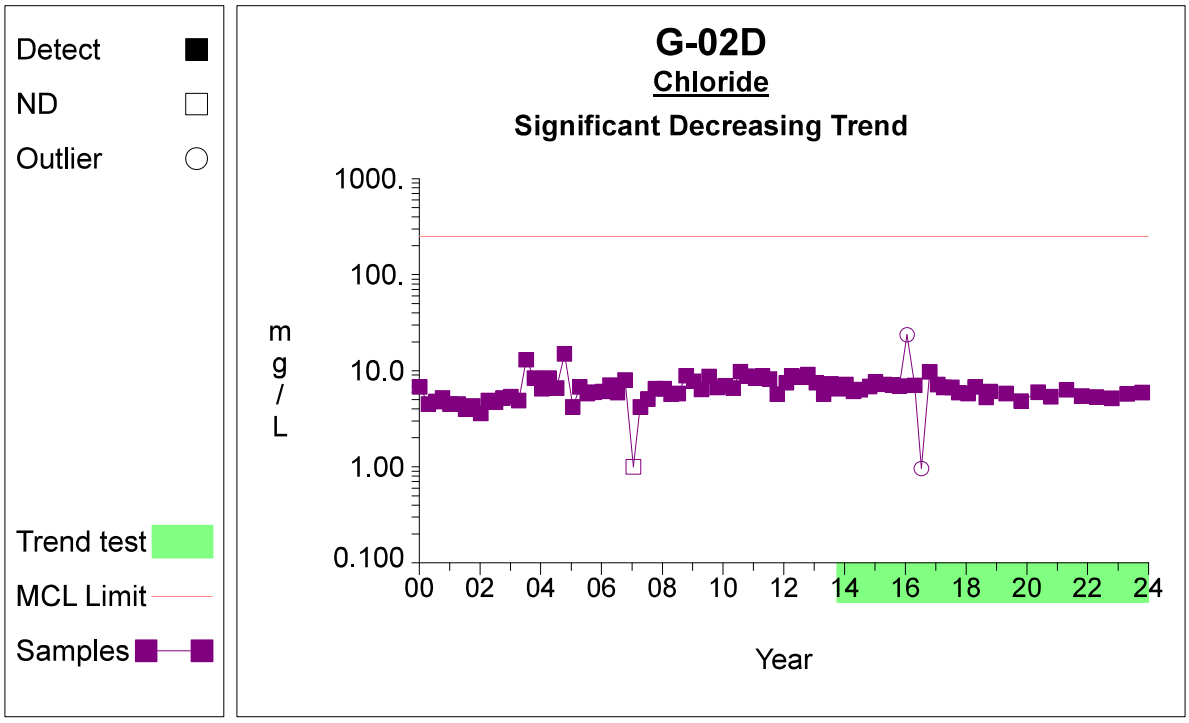
Graph 12

Time Series



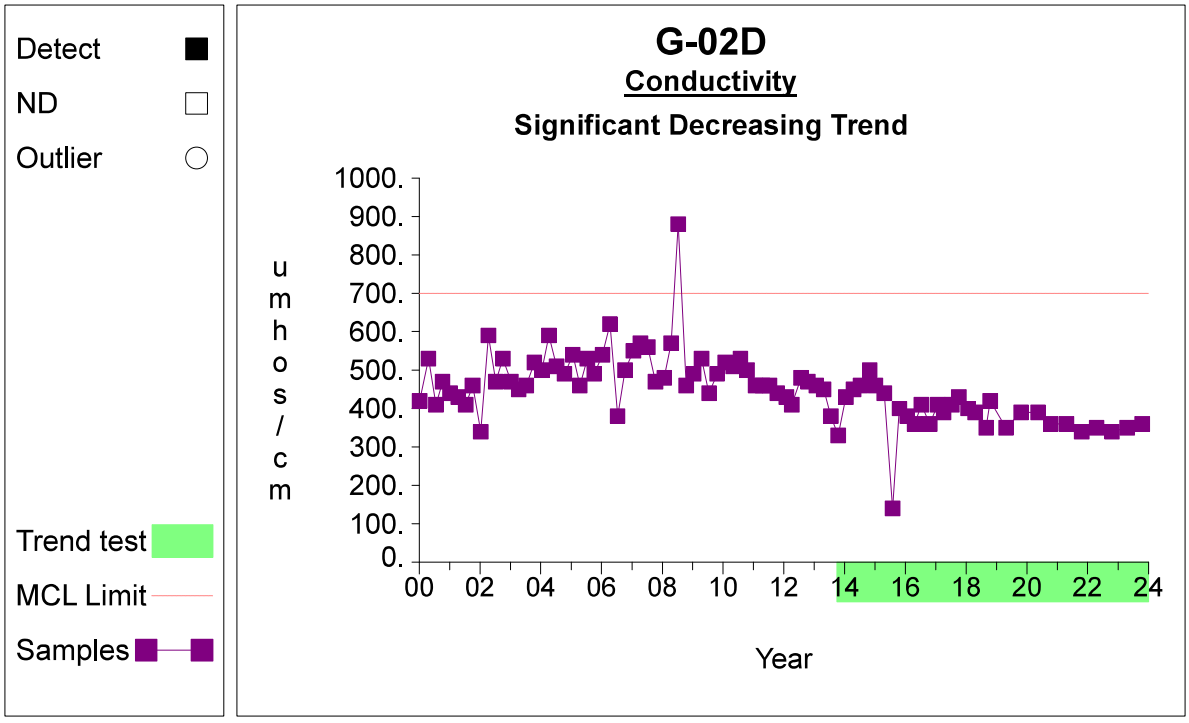
Graph 24

Time Series



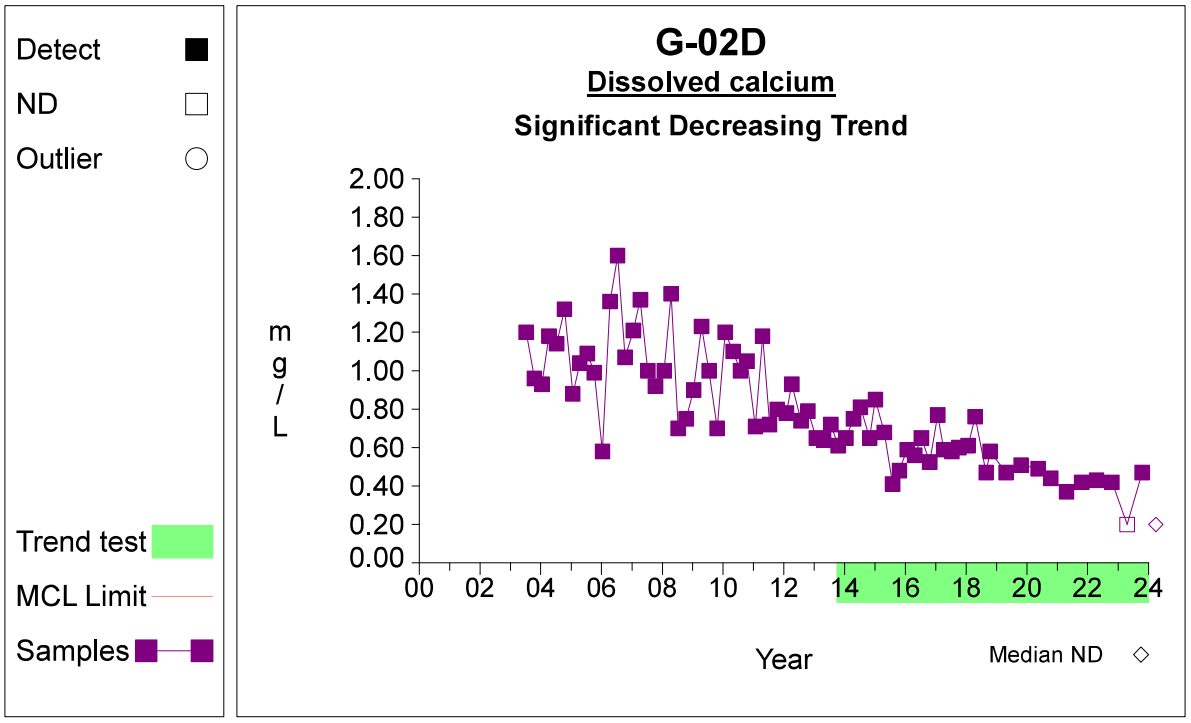
Graph 38

Time Series



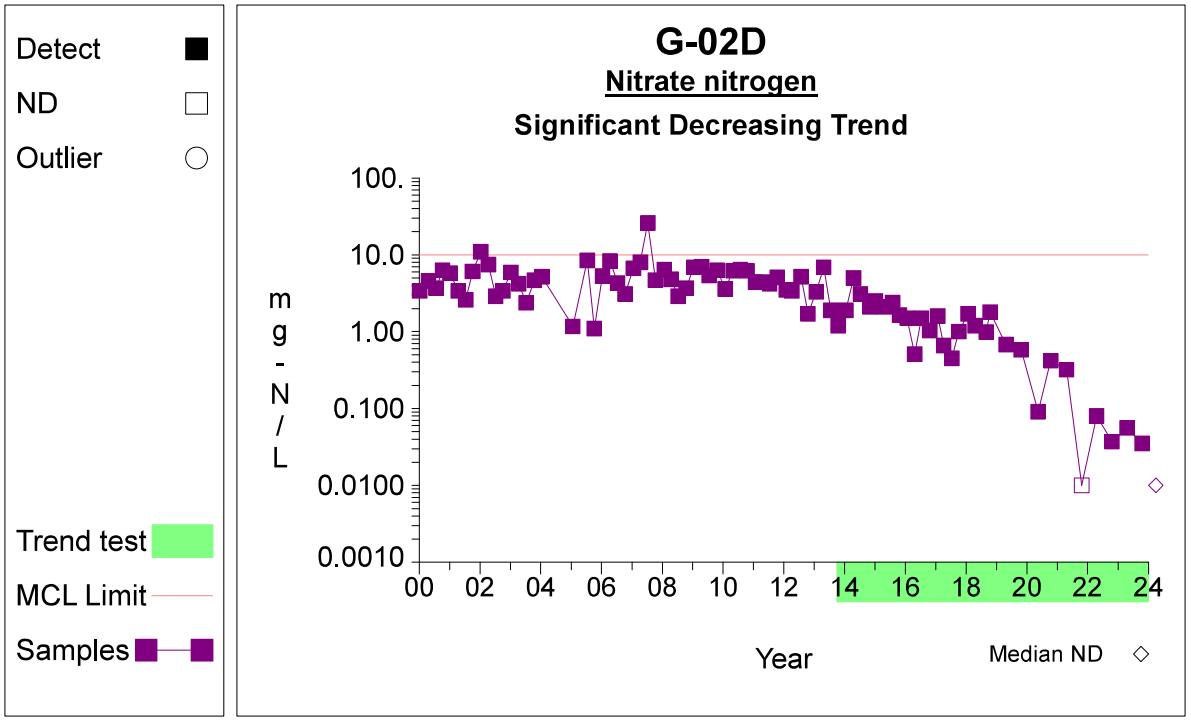
Graph 39

Time Series



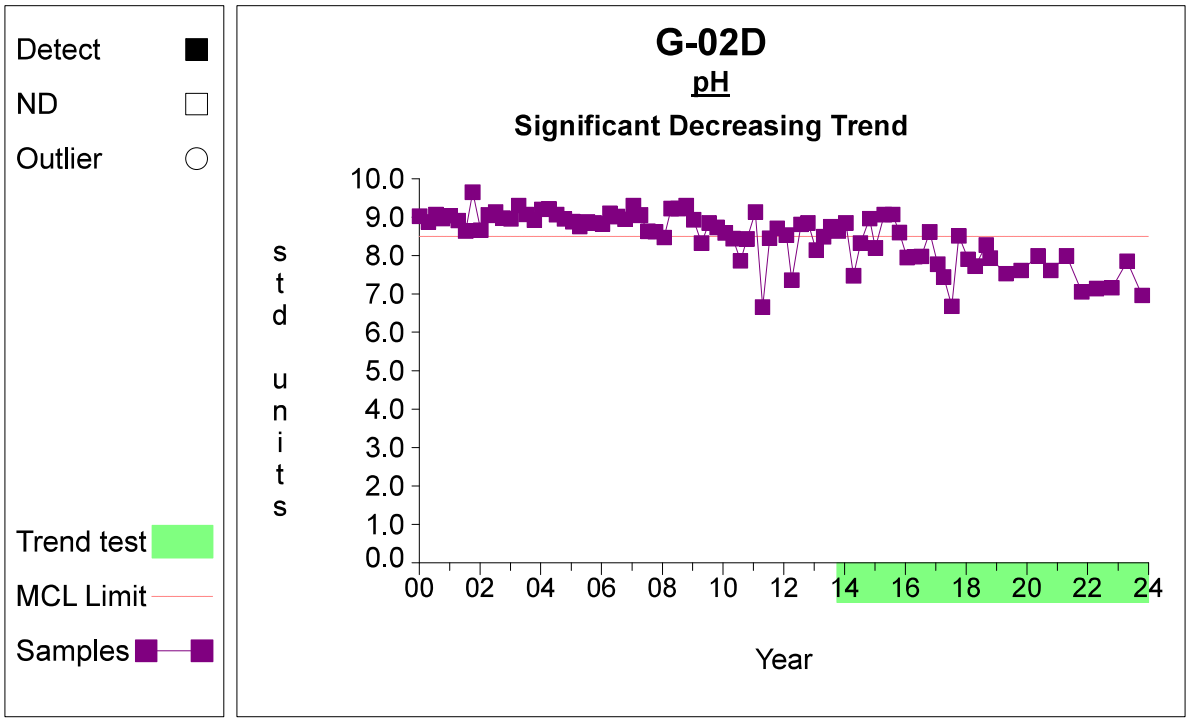
Graph 45

Time Series



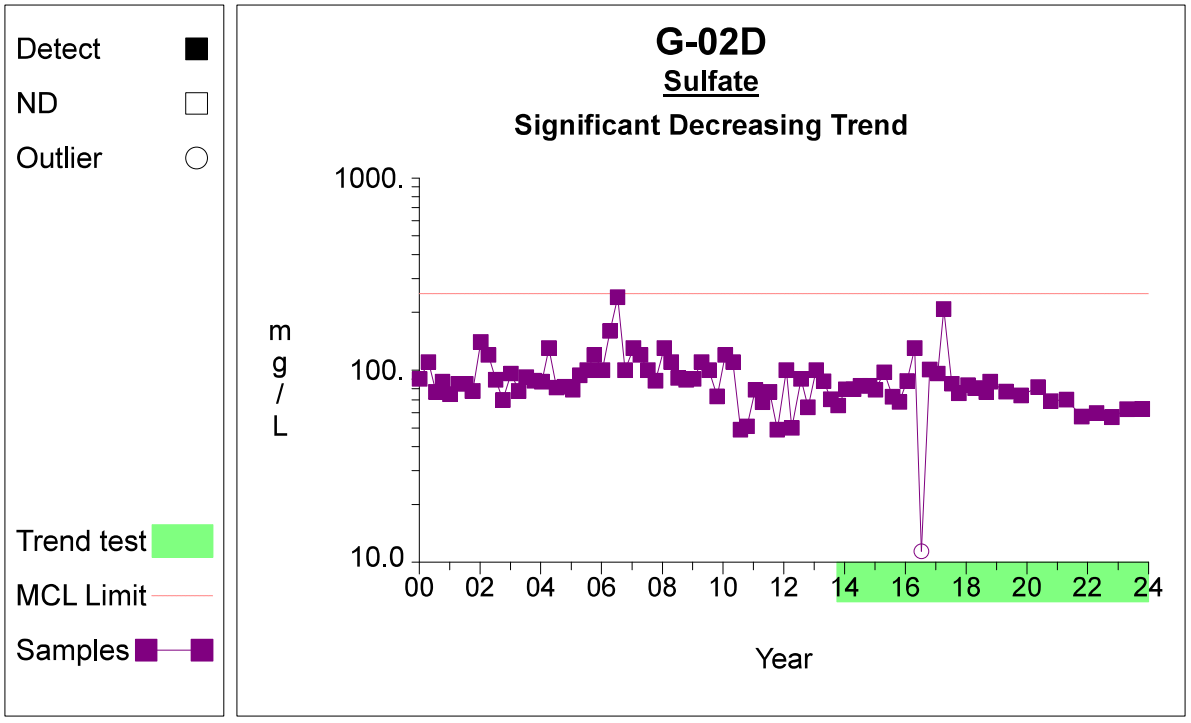
Graph 61

Time Series



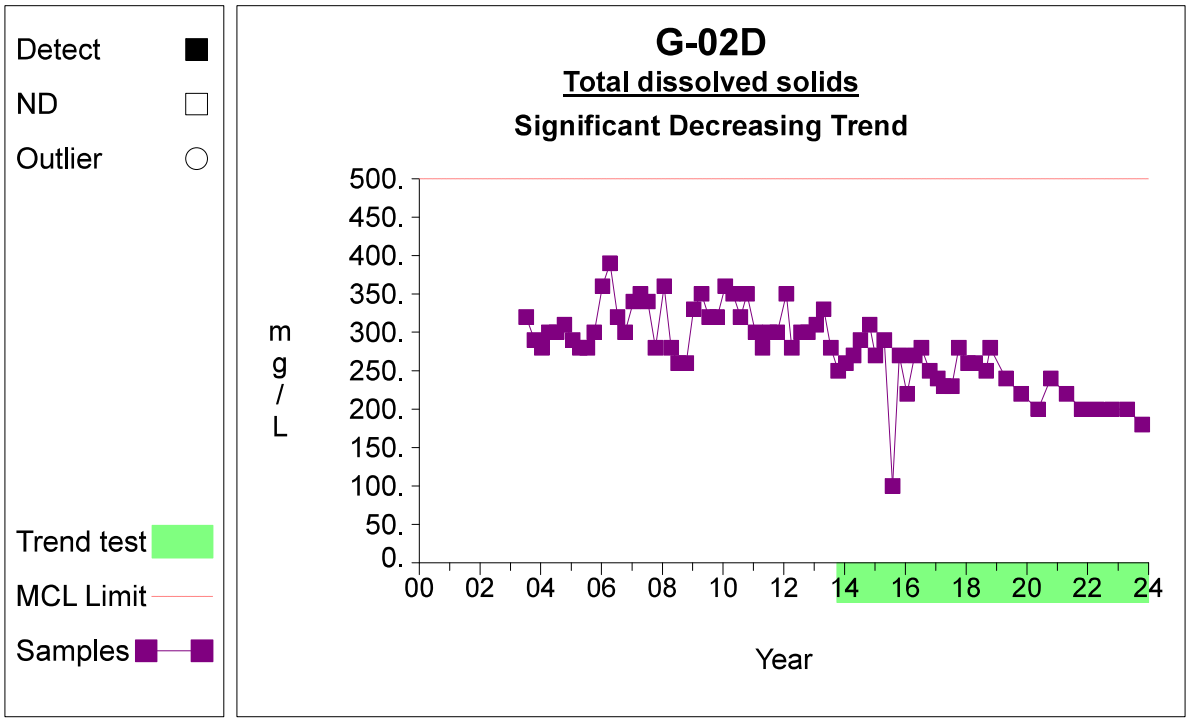
Graph 63

Time Series



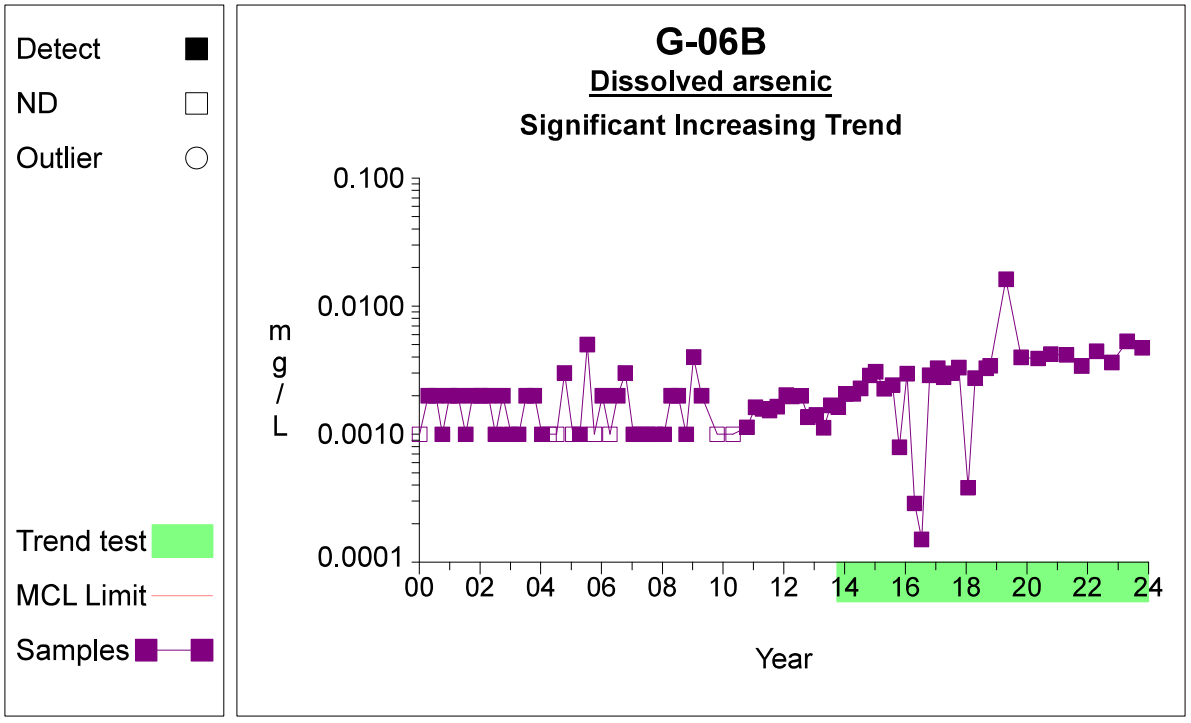
Graph 64

Time Series



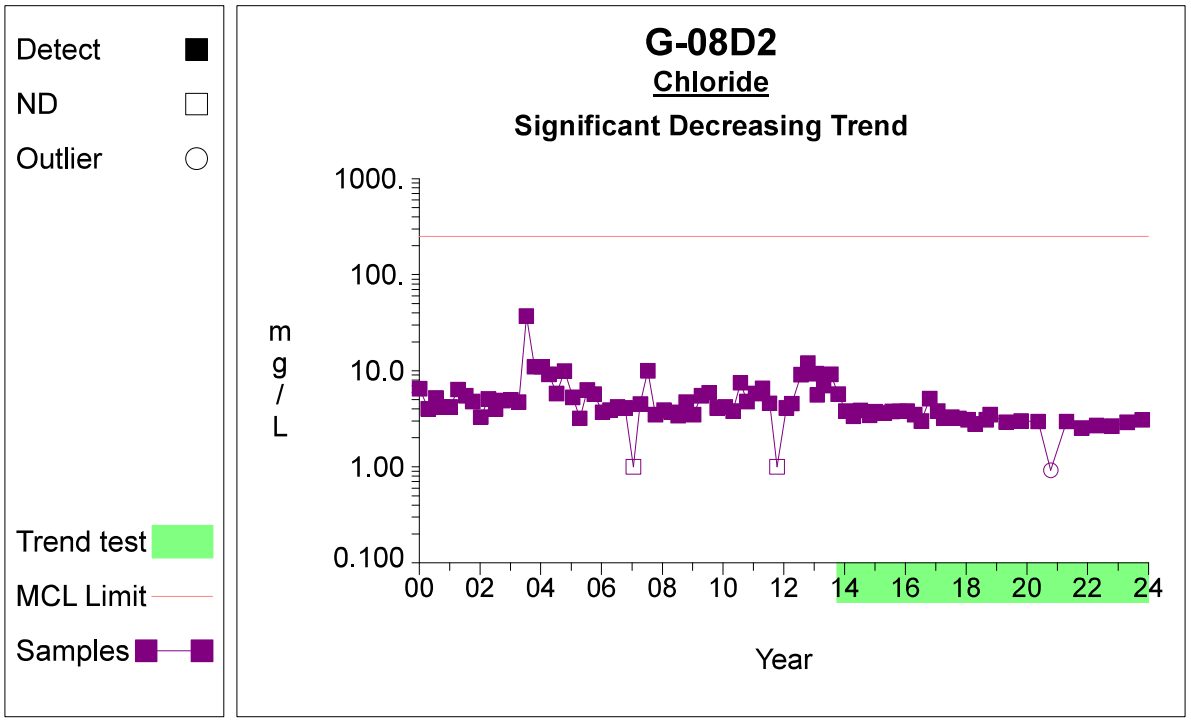
Graph 65

Time Series



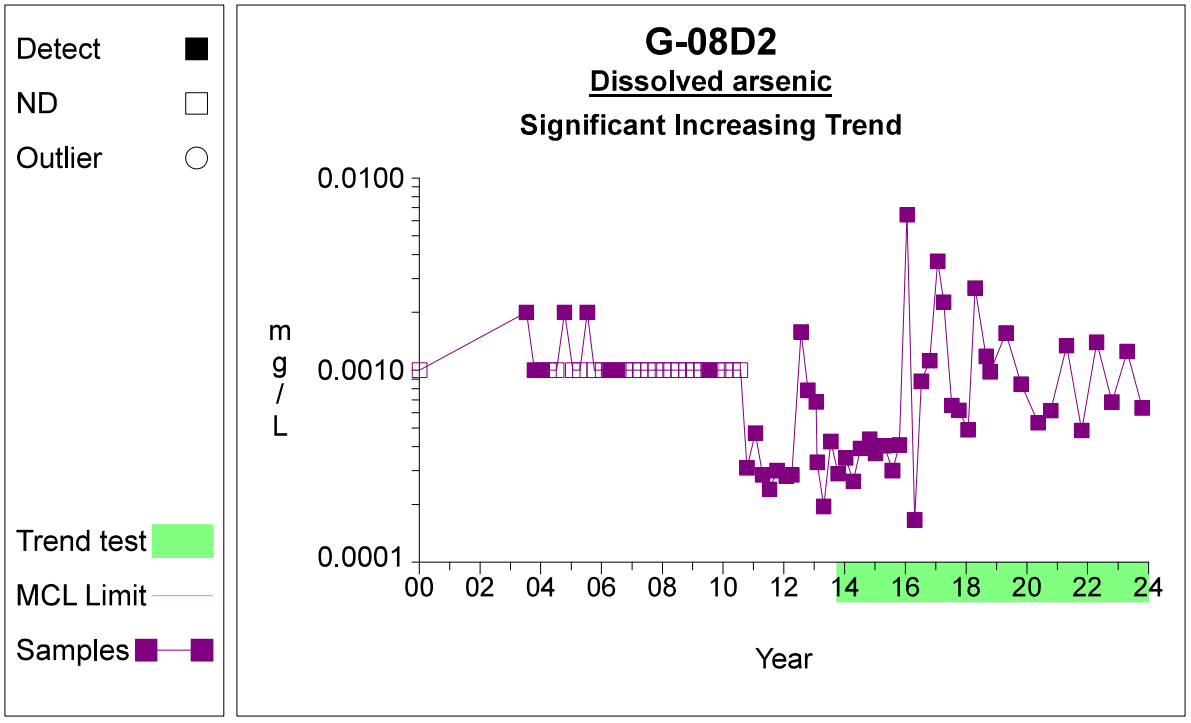
Graph 74

Time Series



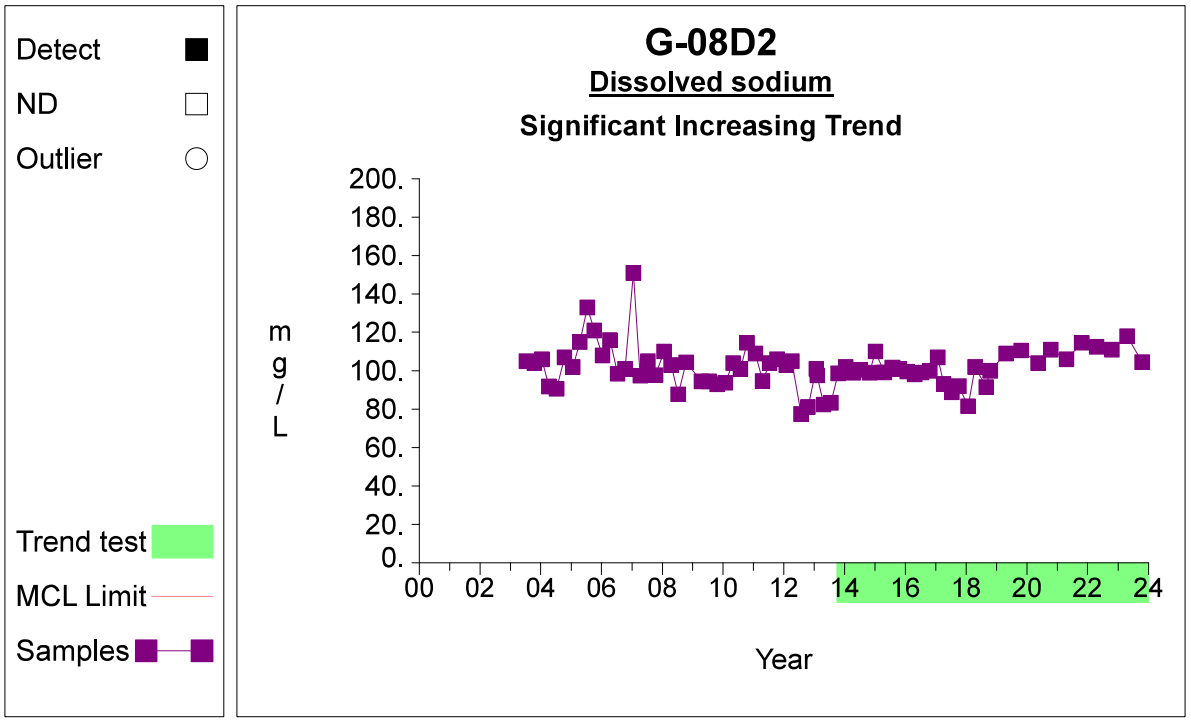
Graph 104

Time Series



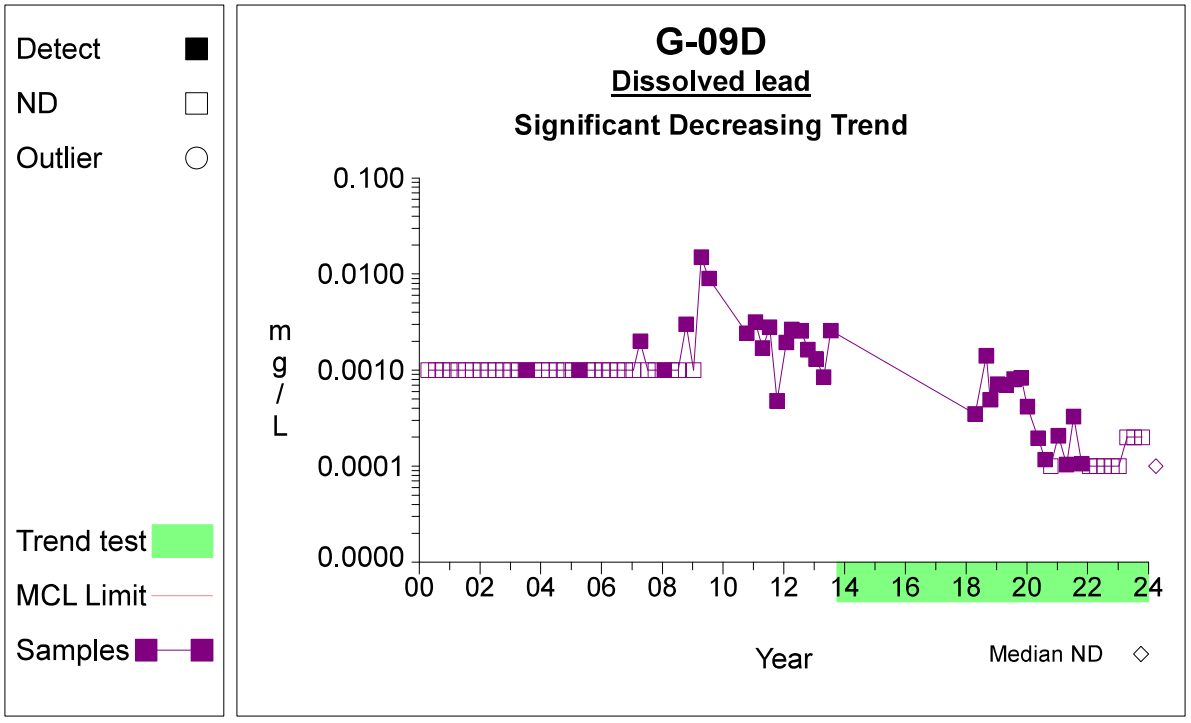
Graph 107

Time Series



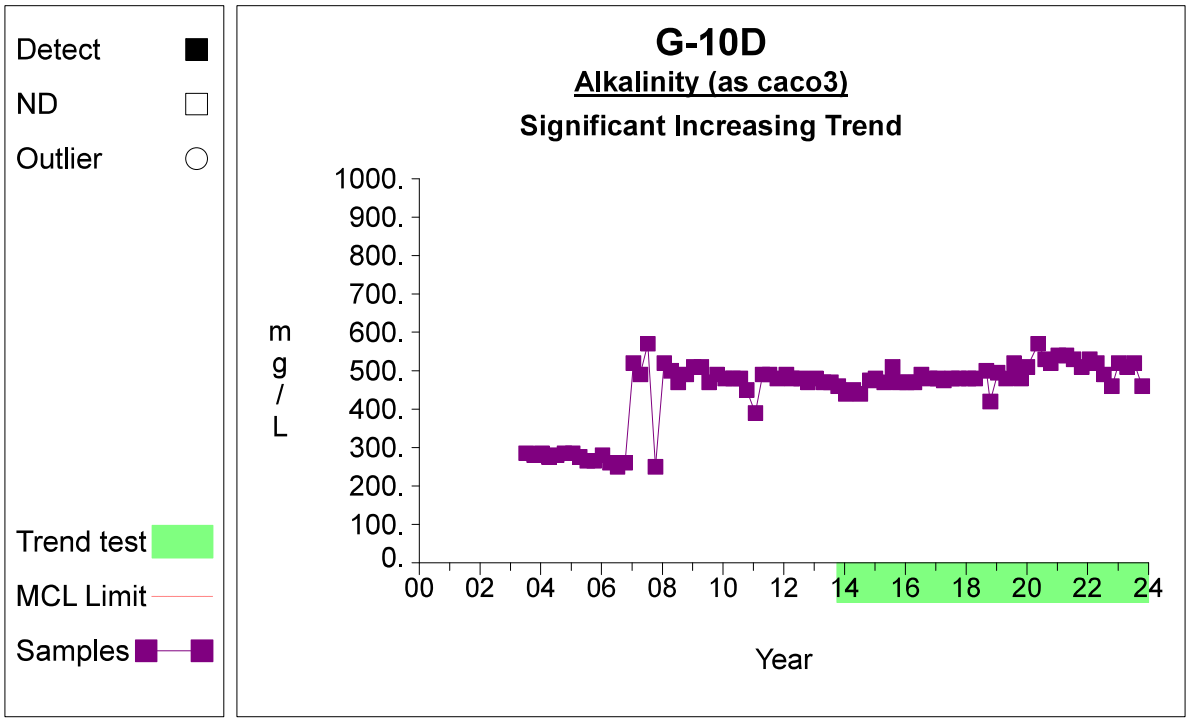
Graph 123

Time Series



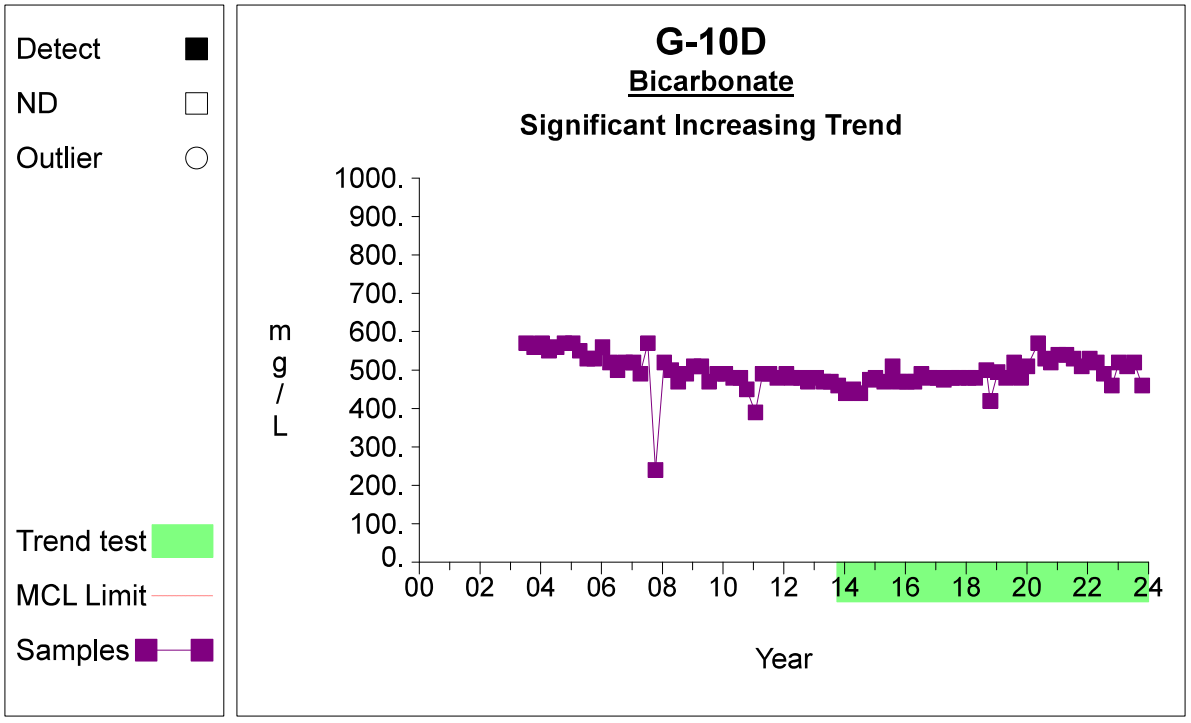
Graph 149

Time Series



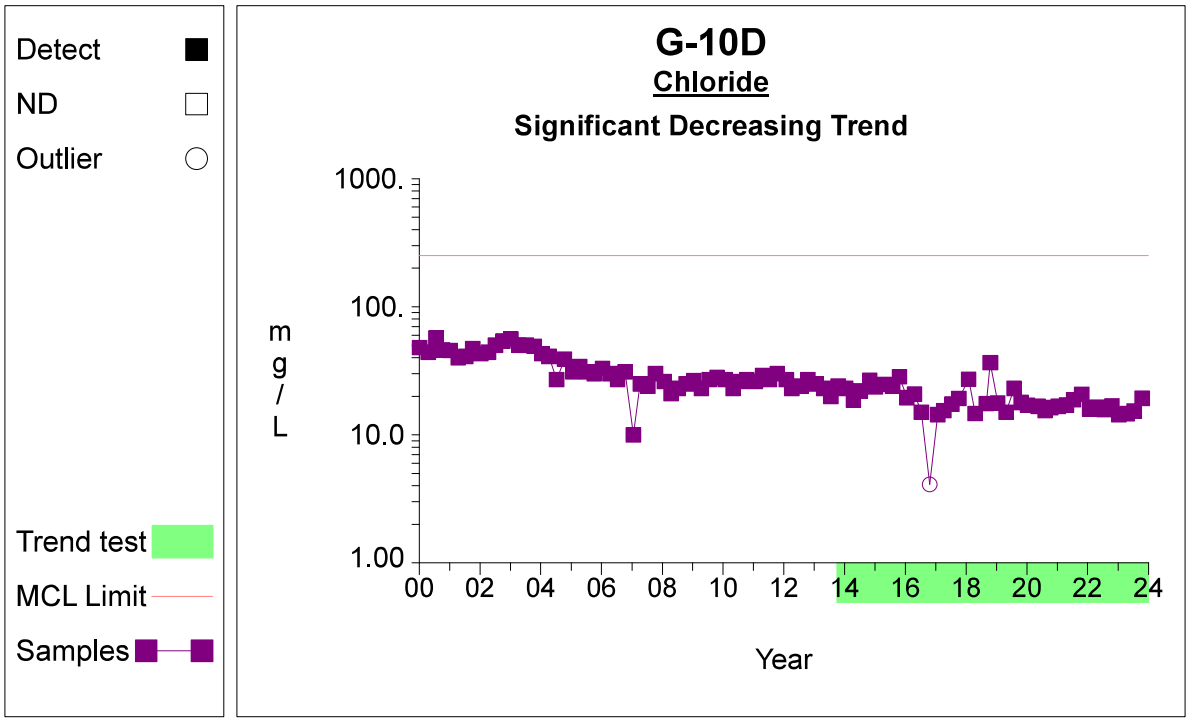
Graph 166

Time Series



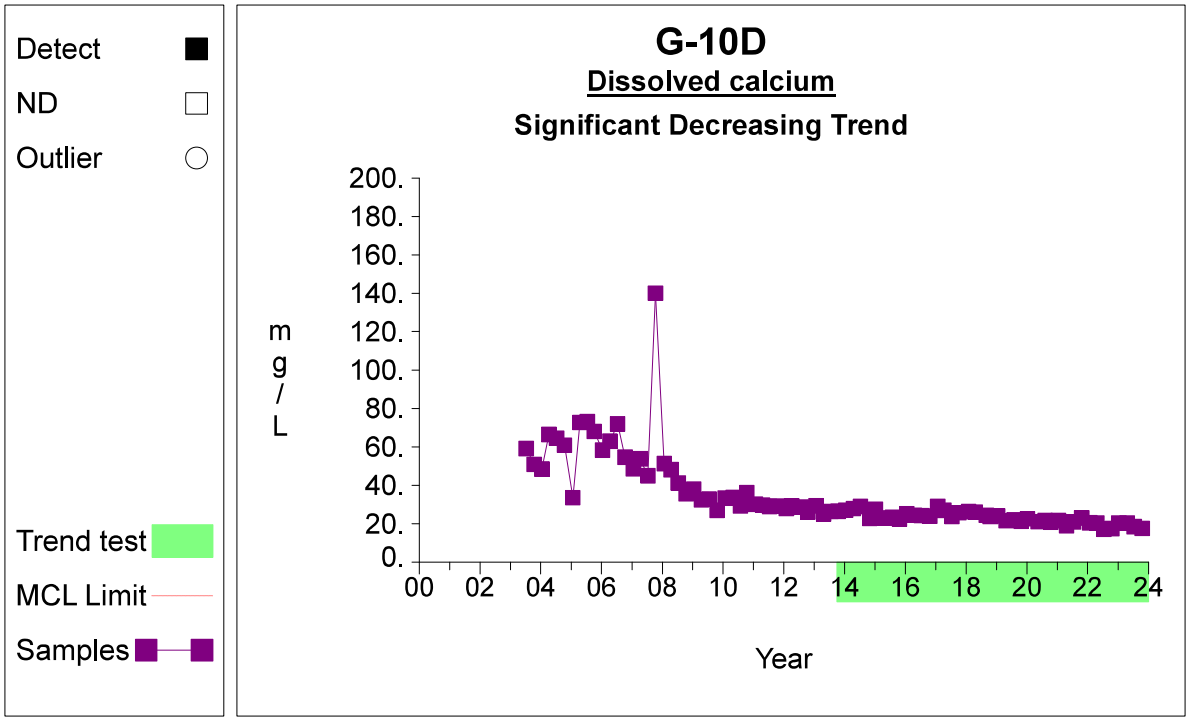
Graph 168

Time Series



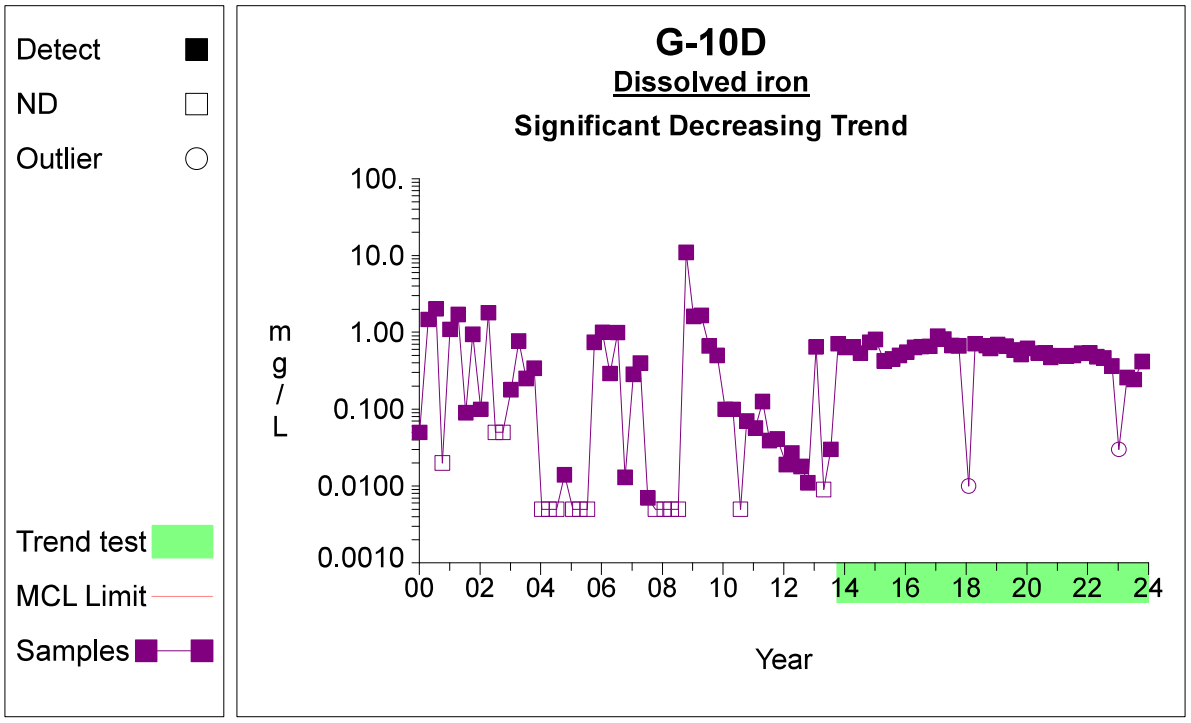
Graph 170

Time Series



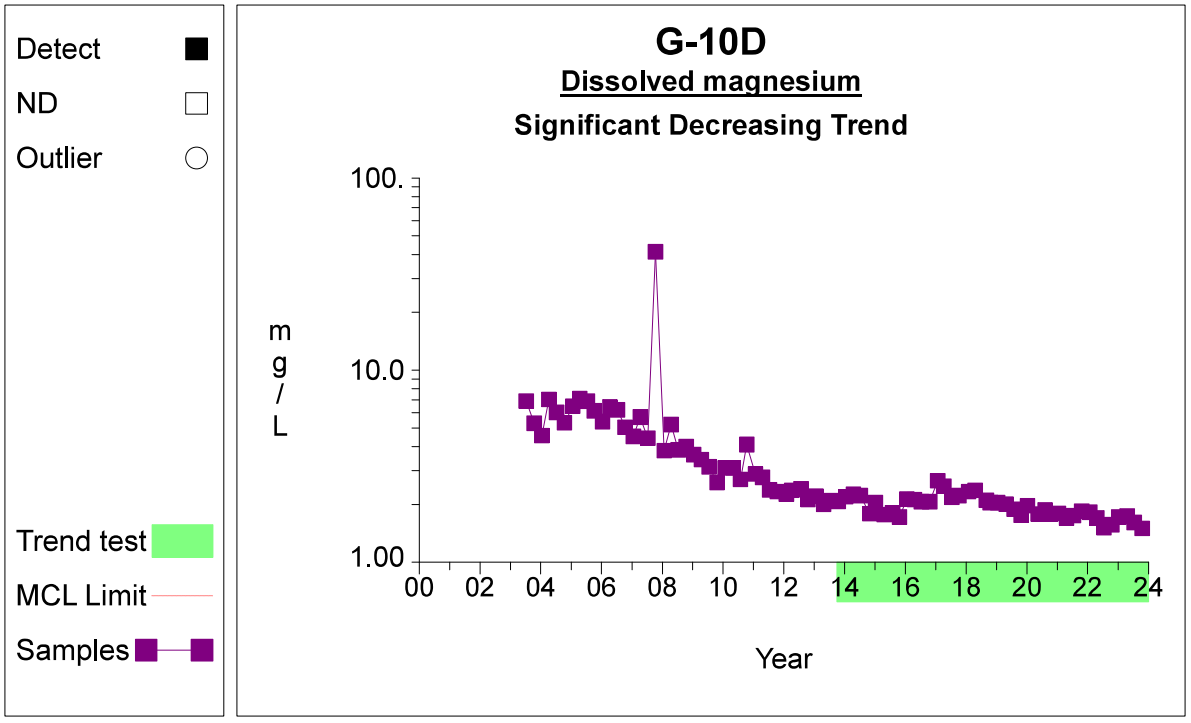
Graph 177

Time Series



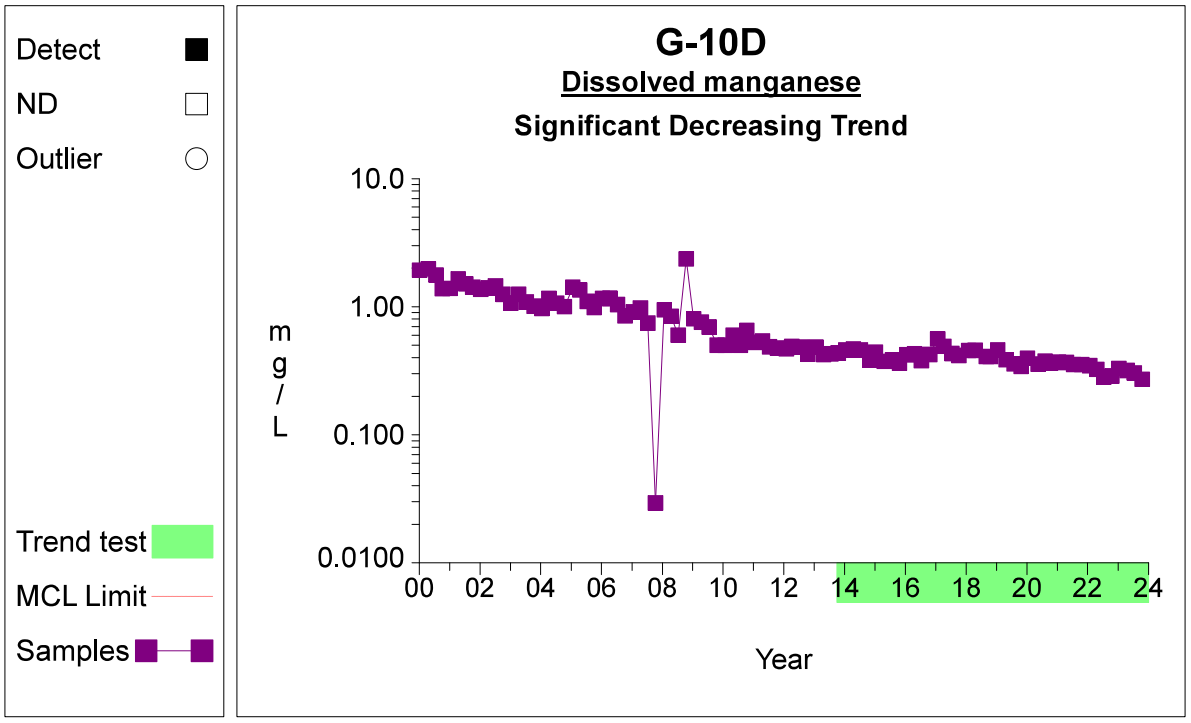
Graph 181

Time Series



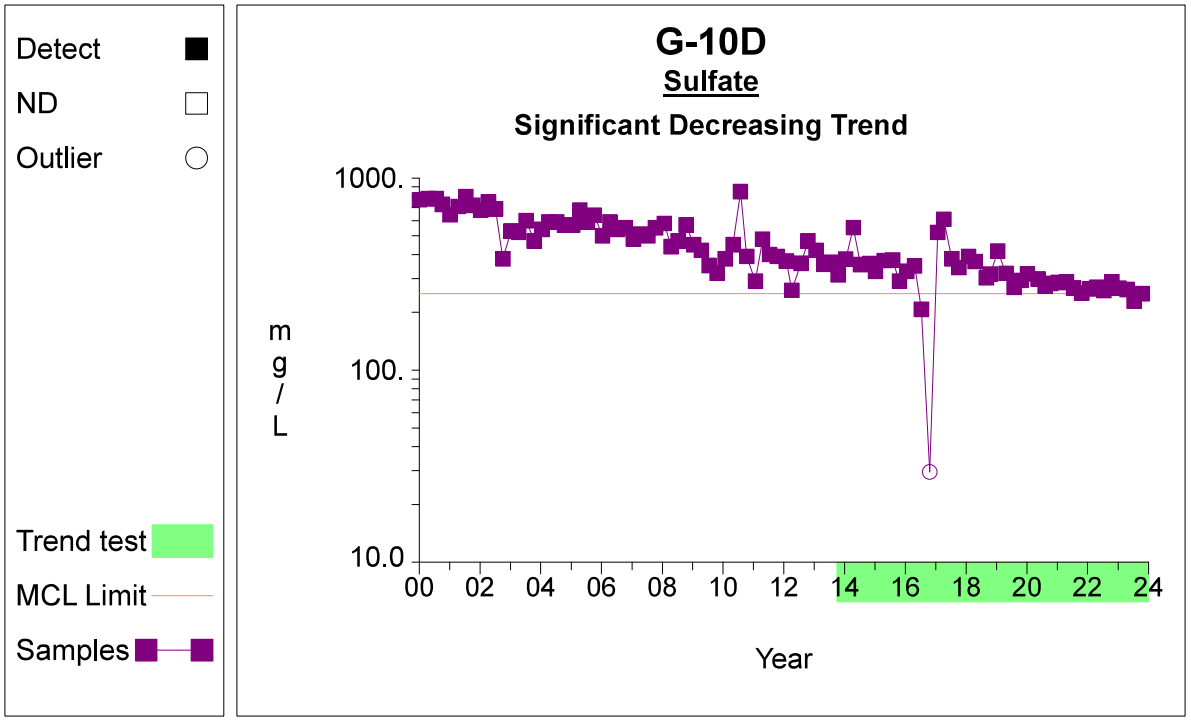
Graph 183

Time Series



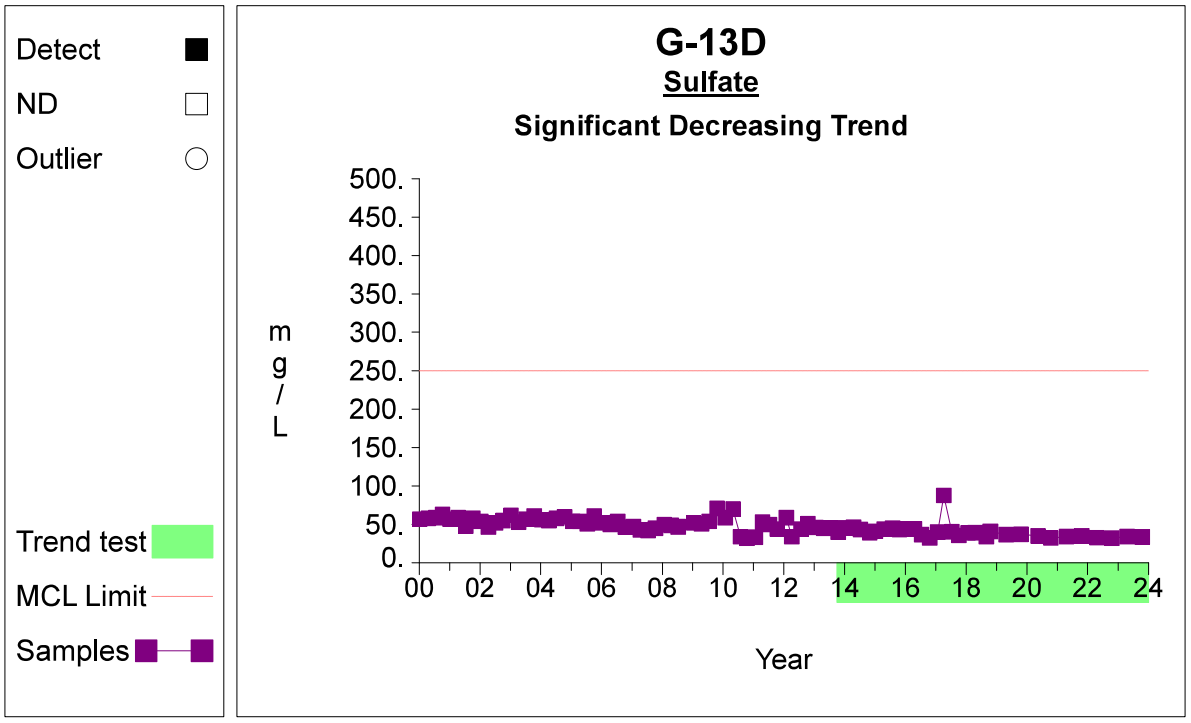
Graph 184

Time Series



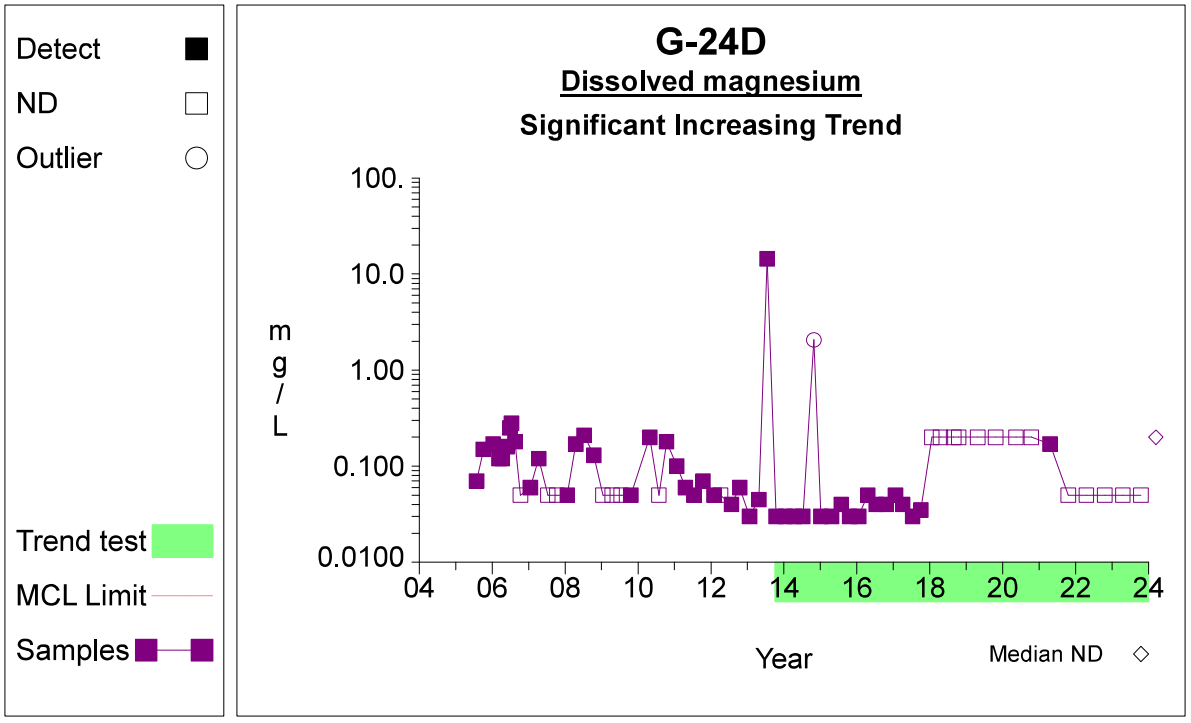
Graph 196

Time Series



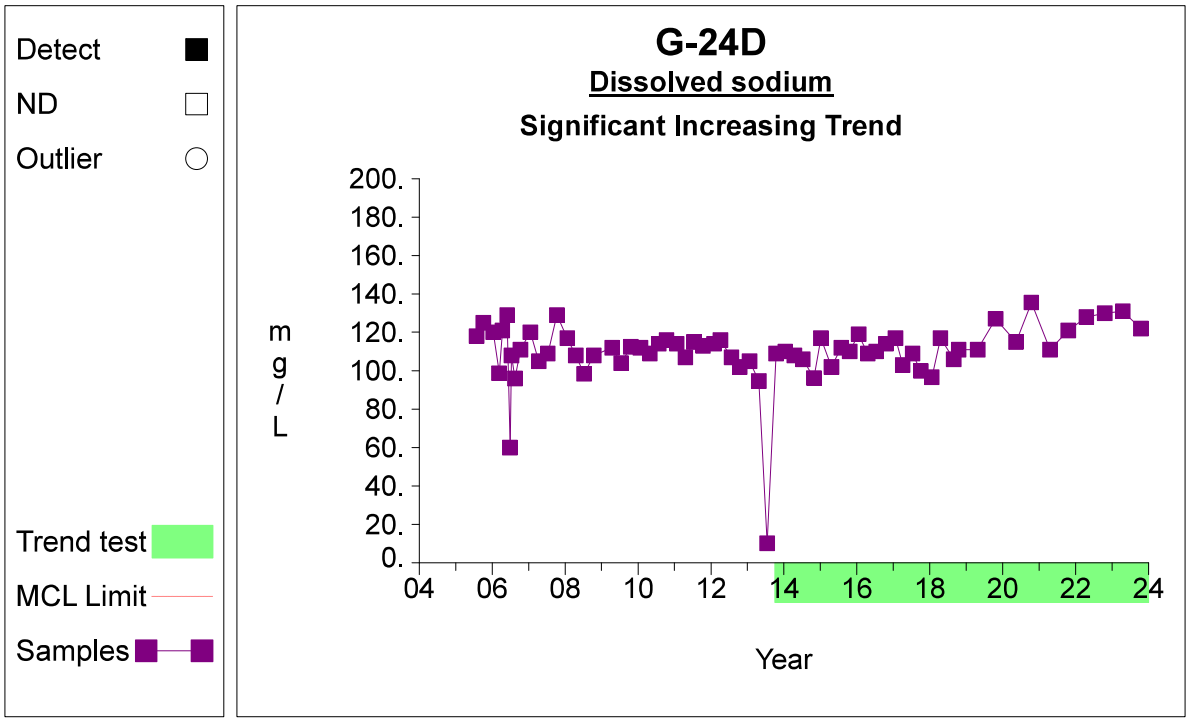
Graph 229

Time Series



Graph 282

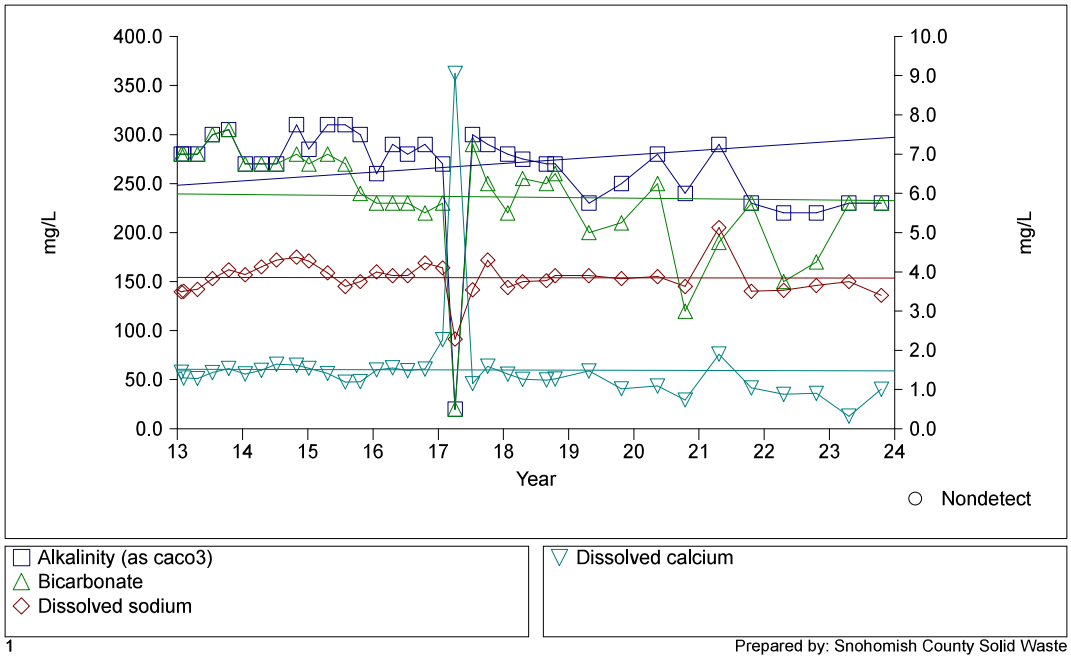
Time Series



Graph 288

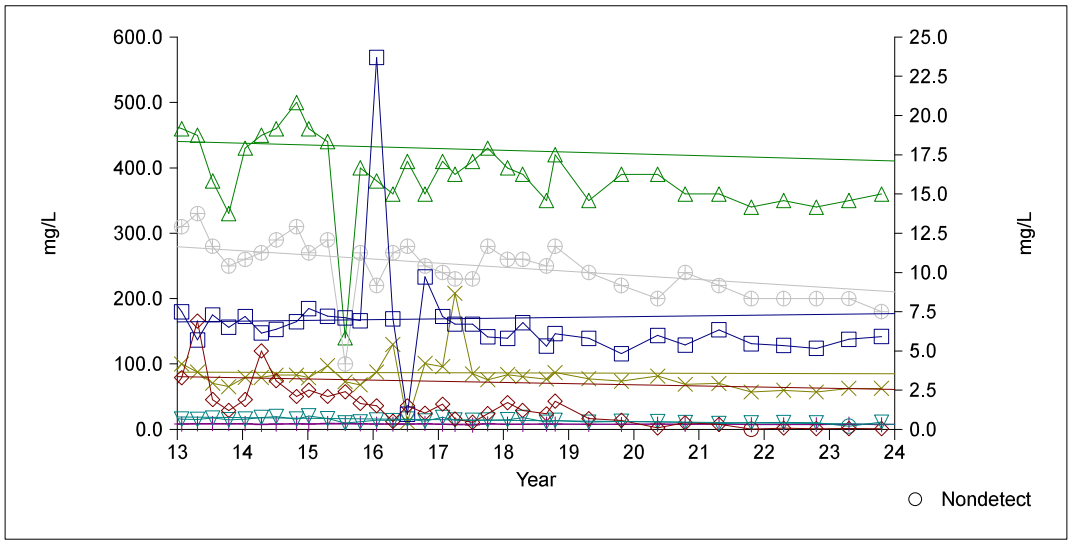
Cathcart Landfill

Time Series Plot for G-01D



Cathcart Landfill

Time Series Plot for G-02D



△ Conductivity
+ pH
× Sulfate
⊕ Total dissolved solids
▽ Dissolved calcium
◇ Nitrate nitrogen
□ Chloride

1

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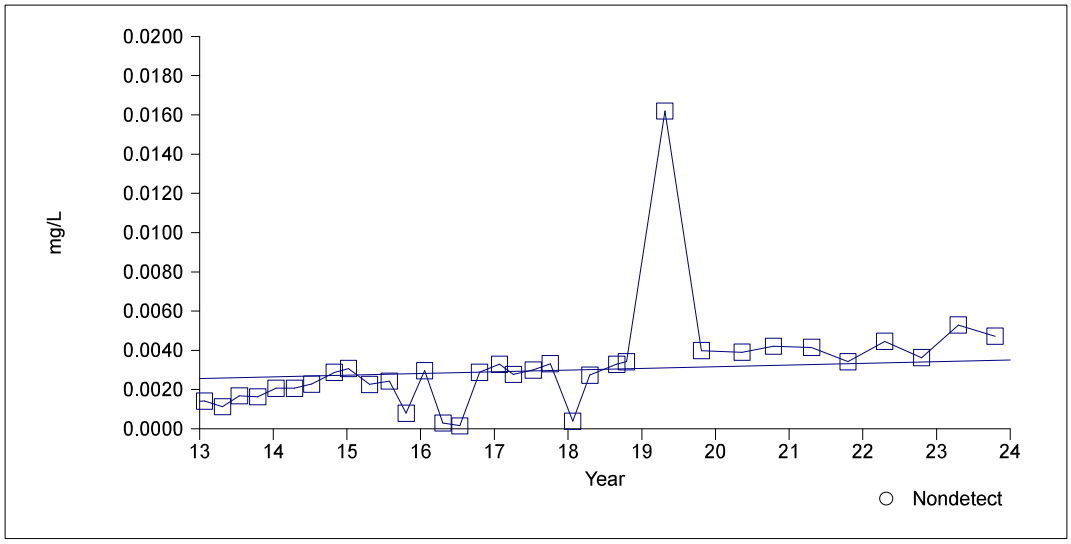
Cathcart Landfill

Time Series Plot for G-06B



□ Dissolved arsenic

1

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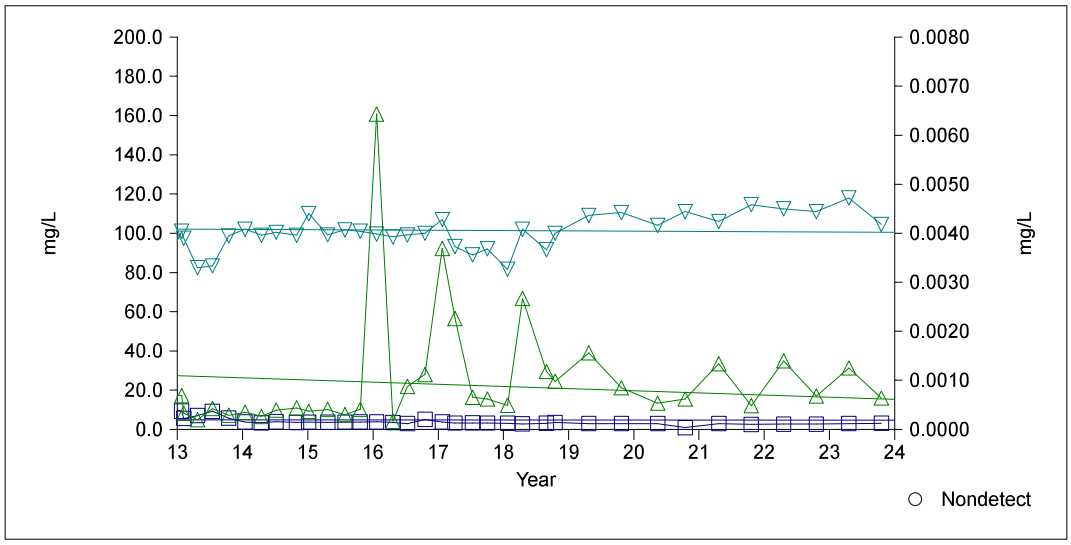
Cathcart Landfill

Time Series Plot for G-08D2



▽ Dissolved sodium
□ Chloride

△ Dissolved arsenic

1

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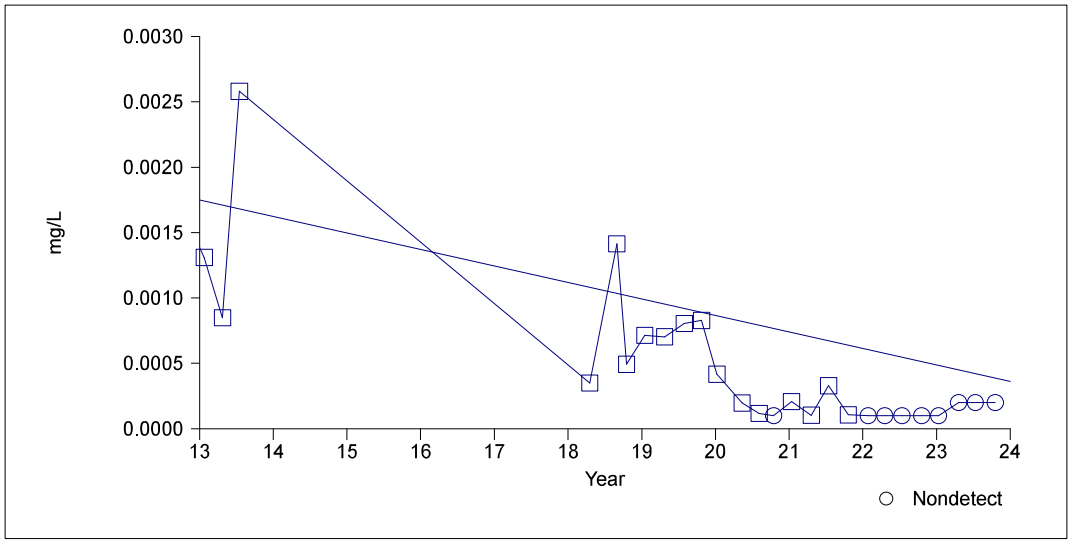
Cathcart Landfill

Time Series Plot for G-09D



□ Dissolved lead

1

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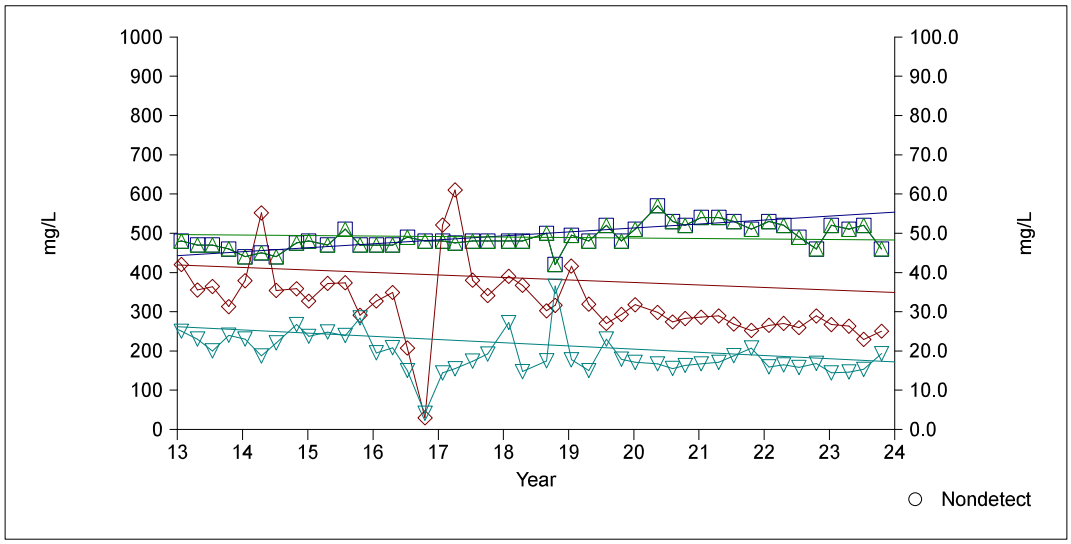
Cathcart Landfill

Time Series Plot for G-10D



1

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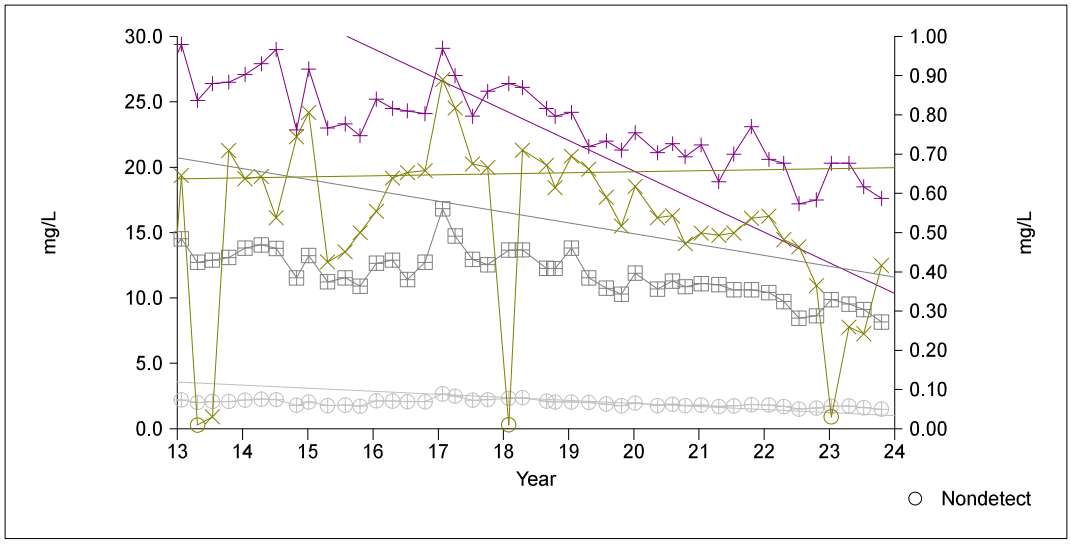
Cathcart Landfill

Time Series Plot for G-10D

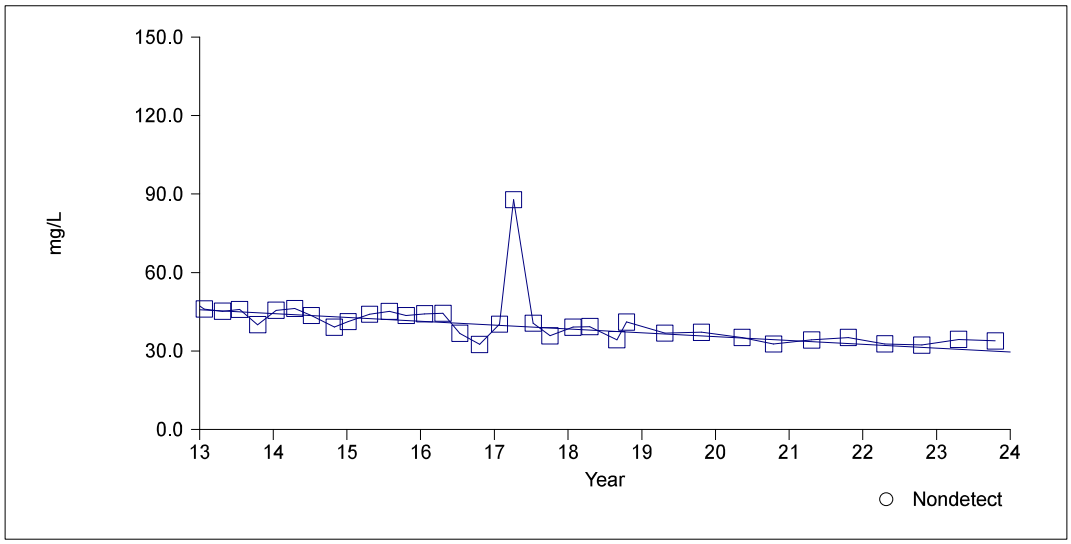


1

Prepared by: Snohomish County Solid Waste

Cathcart Landfill

Time Series Plot for G-13D



1

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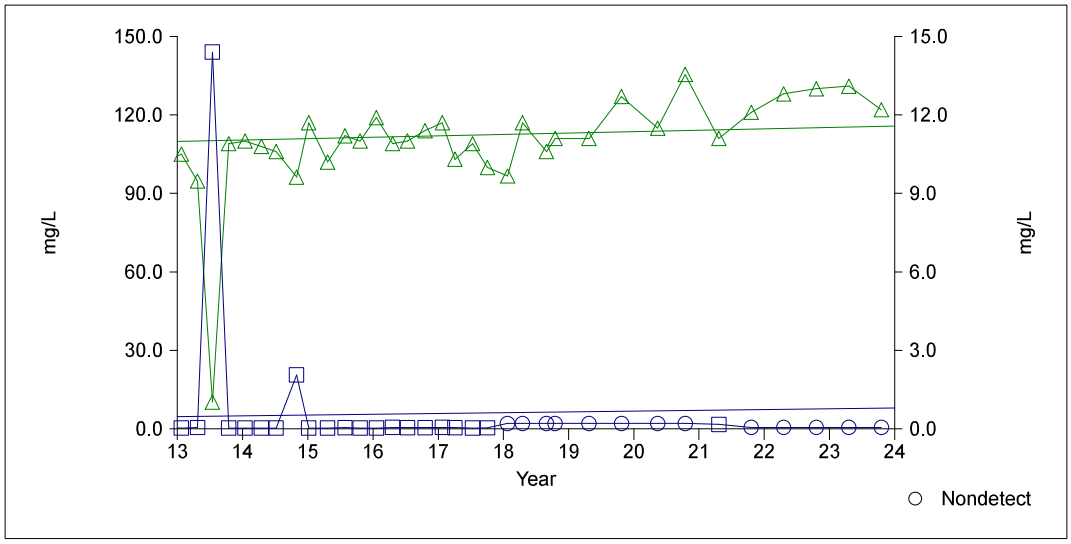
Cathcart Landfill

Time Series Plot for G-24D



1

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Appendix D

Field Monitoring Forms

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

Field Sampling Data

Sample Number:	22070	**Conditions:**	Sunny
Date:	1/10/2023	**Site:**	Cathcart
Time:	11:22 AM	**Location:**	G-10S

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: 23.51 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: Split sample. See field specs on 22069.

Number of Bottles: 8

Operator/Witness: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22069 **Conditions:** Sunny
Date: 1/10/2023 **Site:** Cathcart
Time: 11:22 AM **Location:** G-10S

Well Information:

Well Depth: 44 ft **Water Depth:** 22.08 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.51 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.28	1397	11.5	Clear	Very Fine				
Test 2	Grab	6.33	1390	12	Clear	Very Fine				
Test 3	Grab	6.45	1379	12.2	Clear	Very Fine				

Sampling:

Sample Depth: 23.51 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: Split sample with 22070.

Number of Bottles: 8

Operator/Witness: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22068 **Conditions:** Sunny
Date: 1/10/2023 **Site:** Cathcart
Time: 11:22 AM **Location:** G-10D

Well Information:

Well Depth: 82 ft **Water Depth:** 29.95 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	6.76	1551	11.5	Clear	Very Fine				

Sampling:

Sample Depth: 35.05 ft **Sample Type:** Standard Ground - Water
Sample Time: 12:00

	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: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22067 **Conditions:** Sunny
Date: 1/10/2023 **Site:** Cathcart
Time: 10:57 AM **Location:** G-09D

Well Information:

Well Depth: 81 ft **Water Depth:** 52.4 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.58 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.76	706	12.1	Clear	Very Fine				
Test 2	Grab	8.93	687	13.2	Clear	Very Fine				

Sampling:

Sample Depth: 81 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:10

	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: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22066 **Conditions:** Sunny
Date: 1/10/2023 **Site:** Cathcart
Time: 10:53 AM **Location:** G-09S

Well Information:

Well Depth: 51.5 ft **Water Depth:** 30.92 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.29 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6	956	12.2	Clear	Very Fine				

Sampling:

Sample Depth: 51.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:15

	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 first purge.

Number of Bottles: 8

Operator/Witness: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22167 **Conditions:** Precip - rain
Date: 4/19/2023 **Site:** Cathcart
Time: 10:14 AM **Location:** G-11S

Well Information:

Well Depth: 41.2 ft **Water Depth:** 18.02 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.71 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.59	210	10.7	Clear	Very Fine				
Test 2	Grab	6.78	238	10.7	Clear	Very Fine				

Sampling:

Sample Depth: 41.2 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:20

	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 2.5 gallons of second purge.

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Joshua Cooper**

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

Field Sampling Data

Sample Number: 22166 **Conditions:** Precip - rain
Date: 4/19/2023 **Site:** Cathcart
Time: 9:49 AM **Location:** G-13D

Well Information:

Well Depth: 44.9 ft **Water Depth:** 10.48 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 5.51 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	9.43	462	9.8	Clear	Very Fine				
Test 2	Grab	9.42	459	10.4	Clear	Very Fine				
Test 3	Grab	9.41	456	10.3	Clear	Very Fine				

Sampling:

Sample Depth: 15.84 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:

Number of Bottles: 8

Operator/Witness: Trina Arnold **Sampler: Joshua Cooper**

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

Field Sampling Data

Sample Number: 22165 **Conditions:** Precip - rain
Date: 4/19/2023 **Site:** Cathcart
Time: 9:02 AM **Location:** G-10D

Well Information:

Well Depth: 82 ft **Water Depth:** 29.36 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.42 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.14	1548	11.2	Clear	Fine				

Sampling:

Sample Depth: 35.7 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:

Number of Bottles: 8

Operator/Witness: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22164 **Conditions:** Precip - rain
Date: 4/19/2023 **Site:** Cathcart
Time: 8:47 AM **Location:** G-10S

Well Information:

Well Depth: 44 ft **Water Depth:** 22.25 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.48 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.69	1375	11	Clear	Fine				
Test 2	Grab	6.69	1366	11.3	Clear	Fine				
Test 3	Grab	6.68	1366	10	Clear	Fine				

Sampling:

Sample Depth: 25.16 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:10

	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: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22163 **Conditions:** Precip - rain
Date: 4/19/2023 **Site:** Cathcart
Time: 8:36 AM **Location:** G-09D

Well Information:

Well Depth: 81 ft **Water Depth:** 51.25 ft

Surface Measurements:

Flow Rate: 0 **Measure Method:**

Field Chemistry Tests:

Purge Volume:

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	9.18	731	12.8	Clear	Fine				
Test 2	Grab	9.33	675	12.9	Clear	Fine				

Sampling:

Sample Depth: **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: Dry 2nd purge, 3 gal

Number of Bottles: 8

Operator/Witness: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22162 **Conditions:** Precip - rain
Date: 4/19/2023 **Site:** Cathcart
Time: 8:27 AM **Location:** G-09S

Well Information:

Well Depth: 51.5 ft **Water Depth:** 29.51 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.52 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.38	976	12.4	Clear	Fine				
Test 2	Grab	6.41	966	13.1	Clear	Fine				

Sampling:

Sample Depth: **Sample Type:** Standard Ground - Water
Sample Time: 08:40

	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 1 gal, 2nd purge

Number of Bottles: 8

Operator/Witness: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22161 **Conditions:** Overcast
Date: 4/18/2023 **Site:** Cathcart
Time: 11:11 AM **Location:** G-06B

Well Information:

Well Depth: 88 ft **Water Depth:** 33.3 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.75 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.11	617	12.2	Clear	Fine				
Test 2	Grab	7.99	698	12	Clear	Fine				

Sampling:

Sample Depth: 88 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: Dry after 2nd purge

Number of Bottles: 8

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

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Snohomish, WA 98296

Field Sampling Data

Sample Number: 22160 **Conditions:** Overcast
Date: 4/18/2023 **Site:** Cathcart
Time: 10:36 AM **Location:** G-01D

Well Information:

Well Depth: 67.2 ft **Water Depth:** 23.12 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 7.05 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	9.44	577	10.7	Clear	Fine				
Test 2	Grab	9.45	574	10.9	Clear	Fine				
Test 3	Grab	9.49	576	10.9	Clear	Fine				

Sampling:

Sample Depth: 45.62 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:00

	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: Matt Lawless **Sampler: Trina Arnold**

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Snohomish, WA 98296

Field Sampling Data

Sample Number: 22159 **Conditions:** Overcast
Date: 4/18/2023 **Site:** Cathcart
Time: 10:34 AM **Location:** G-01A

Well Information:

Well Depth: 15.65 ft **Water Depth:** 8.15 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 1.2 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.2	107	9.5	Clear	Fine				
Test 2	Grab	6.35	108	8.9	Clear	Fine				
Test 3	Grab	6.28	108	8.2	Clear	Fine				

Sampling:

Sample Depth: 11.73 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:

Number of Bottles: 8

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

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Field Sampling Data

Sample Number: 22158 **Conditions:** Overcast
Date: 4/18/2023 **Site:** Cathcart
Time: 10:25 AM **Location:** G-02D

Well Information:

Well Depth: 56.5 ft **Water Depth:** 29.02 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.4 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.85	343	10.5	Clear	Fine				

Sampling:

Sample Depth: 56.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:45

	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: Matt Lawless **Sampler: Trina Arnold**

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Field Sampling Data

Sample Number: 22157 **Conditions:** Overcast
Date: 4/18/2023 **Site:** Cathcart
Time: 9:45 AM **Location:** G-08D2

Well Information:

Well Depth: 112.5 ft **Water Depth:** 2.51 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 17.6 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	9.86	472 µS	10.9	Clear	Fine				
Test 2	Grab	9.91	473 µS	10.5	Clear	Fine				
Test 3	Grab	9.91	468	10.4	Clear	Fine				

Sampling:

Sample Depth: 40.17 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:

Number of Bottles: 8

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

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Field Sampling Data

Sample Number: 22156 **Conditions:** Overcast
Date: 4/18/2023 **Site:** Cathcart
Time: 9:44 AM **Location:** G-08D1

Well Information:

Well Depth: 56.4 ft **Water Depth:** 23.21 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 5.31 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	9.36	450	10.9	Clear	Fine				
Test 2	Grab	9.56	446	10.6	Clear	Fine				
Test 3	Grab	9.65	443	10.5	Clear	Fine				

Sampling:

Sample Depth: 56.4 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:10

	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 4 gallons into third purge

Number of Bottles: 8

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

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Field Sampling Data

Sample Number: 22155 **Conditions:** Overcast
Date: 4/18/2023 **Site:** Cathcart
Time: 9:12 AM **Location:** G-14D

Well Information:

Well Depth: 110 ft **Water Depth:** 30.5 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 12.72 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	9.44	493 µS	10.9	Clear	Fine				
Test 2	Grab	9.72	492 µS	10.8	Clear	Fine				

Sampling:

Sample Depth: 110 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: Dry after 10 gallons intp second purge

Number of Bottles: 8

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

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Field Sampling Data

Sample Number: 22154 **Conditions:** Overcast
Date: 4/18/2023 **Site:** Cathcart
Time: 9:11 AM **Location:** G-14S

Well Information:

Well Depth: 68.5 ft **Water Depth:** 9.1 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 9.5 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	9.01	381	10.5	Clear	Fine				
Test 2	Grab	9.17	377	10.7	Clear	Fine				

Sampling:

Sample Depth: 68.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:30

	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: Dry after after 1 gallon into second purge

Number of Bottles: 8

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

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Field Sampling Data

Sample Number:	22153	**Conditions:**	Overcast
Date:	4/18/2023	**Site:**	Cathcart
Time:	8:38 AM	**Location:**	G-24D

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: 33.6 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: Split sample with 22152. See sheet 22152 for field chemistry

Number of Bottles: 8

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

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Field Sampling Data

Sample Number: 22152 **Conditions:** Overcast
Date: 4/18/2023 **Site:** Cathcart
Time: 8:37 AM **Location:** G-24D

Well Information:

Well Depth: 85 ft **Water Depth:** 18.88 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 10.58 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.98	520 µS	10.9	Clear	Fine				
Test 2	Grab	8.75	518 µS	10.7	Clear	Fine				
Test 3	Grab	8.7	516	10.7	Clear	Fine				

Sampling:

Sample Depth: 33.6 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: Split sample with 22153

Number of Bottles: 8

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

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Field Sampling Data

Sample Number: 22151 **Conditions:** Overcast
Date: 4/18/2023 **Site:** Cathcart
Time: 8:30 AM **Location:** G-24S

Well Information:

Well Depth: 26.5 ft **Water Depth:** 13.24 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 2.12 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.62	446 µS	9.8	Clear	Fine				
Test 2	Grab	7.83	450 µS	10	Clear	Fine				

Sampling:

Sample Depth: 22.28 ft **Sample Type:** Standard Ground - Water
Sample Time: 01:45

	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: Well is dry after two purges

Number of Bottles: 8

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

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Field Sampling Data

Sample Number: 22150 **Conditions:** Overcast
Date: 4/18/2023 **Site:** Cathcart
Time: 8:10 AM **Location:** G-04A

Well Information:

Well Depth: 20 ft **Water Depth:** 14 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 0.96 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.18	642	9.7	Clear	Fine				

Sampling:

Sample Depth: 14.36 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 one purge

Number of Bottles: 8

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

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Field Sampling Data

Sample Number: 22242 **Conditions:** Sunny
Date: 7/11/2023 **Site:** Cathcart
Time: 10:42 AM **Location:** G-10S

Well Information:

Well Depth: 44 ft **Water Depth:** 24.02 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.2 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.48	1307	13.5	Clear	Very Fine				
Test 2	Grab	6.62	1328	12.1	Clear	Very Fine				
Test 3	Grab	6.67	1335	12.1	Clear	Very Fine				

Sampling:

Sample Depth: 25.12 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: 22241 **Conditions:** Sunny
Date: 7/11/2023 **Site:** Cathcart
Time: 10:42 AM **Location:** G-10D

Well Information:

Well Depth: 82 ft **Water Depth:** 30.97 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.16 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.01	1479	14.7	Clear	Very Fine				

Sampling:

Sample Depth: 36.38 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:

Number of Bottles: 8

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

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Field Sampling Data

Sample Number:	22240	**Conditions:**	Sunny
Date:	7/11/2023	**Site:**	Cathcart
Time:	10:20 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: 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: Split sample. See field data on 22239. Dry after 1st purge.

Number of Bottles: 8

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

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Field Sampling Data

Sample Number: 22239 **Conditions:** Sunny
Date: 7/11/2023 **Site:** Cathcart
Time: 10:20 AM **Location:** G-09D

Well Information:

Well Depth: 81 ft **Water Depth:** 53.97 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.32 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.63	687	13.7	Clear	Very Fine				

Sampling:

Sample Depth: 81 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: Split sample with 22240. Dry after first purge.

Number of Bottles: 8

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

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Field Sampling Data

Sample Number: 22238 **Conditions:** Sunny
Date: 7/11/2023 **Site:** Cathcart
Time: 10:09 AM **Location:** G-09S

Well Information:

Well Depth: 51.5 ft **Water Depth:** 31.24 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.24 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.2	964	14.8	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**

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Field Sampling Data

Sample Number: 22331 **Conditions:** Overcast
Date: 10/18/2023 **Site:** Cathcart
Time: 9:37 AM **Location:** G-10D

Well Information:

Well Depth: 82 ft **Water Depth:** 30.81 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	6.78	1493	13.2	Clear	Very Fine				

Sampling:

Sample Depth: 36.22 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:20

	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:

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22330 **Conditions:** Overcast
Date: 10/18/2023 **Site:** Cathcart
Time: 9:36 AM **Location:** G-10S

Well Information:

Well Depth: 44 ft **Water Depth:** 24.41 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	6.3	1132	12.5	Clear	Very Fine				

Sampling:

Sample Depth: 44 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: dry after first purge

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Trina Arnold**

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Field Sampling Data

Sample Number: 22329 **Conditions:** Overcast
Date: 10/18/2023 **Site:** Cathcart
Time: 9:11 AM **Location:** G-09D

Well Information:

Well Depth: 81 ft **Water Depth:** 53.88 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.34 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.55	773	13.7	Clear	Fine				
Test 2	Grab	8.64	791	13.7	Clear	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 2 gallons during 2nd purge

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Trina Arnold**

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Field Sampling Data

Sample Number: 22328 **Conditions:** Overcast
Date: 10/18/2023 **Site:** Cathcart
Time: 9:07 AM **Location:** G-09S

Well Information:

Well Depth: 51.5 ft **Water Depth:** 32.37 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.06 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6	986	13.6	Clear	Very Fine				

Sampling:

Sample Depth: 51.5 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:30

	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: dry after first purge

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Trina Arnold**

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Field Sampling Data

Sample Number: 22327 **Conditions:** Overcast
Date: 10/18/2023 **Site:** Cathcart
Time: 8:54 AM **Location:** G-02D

Well Information:

Well Depth: 56.5 ft **Water Depth:** 31.65 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.98 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.96	356	11.2	Clear	Very Fine				

Sampling:

Sample Depth: 56.5 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 first purge

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22326 **Conditions:** Overcast
Date: 10/18/2023 **Site:** Cathcart
Time: 8:41 AM **Location:** G-11S

Well Information:

Well Depth: 41.2 ft **Water Depth:** 17.88 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 3.73 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	5.73	274	11.4	Clear	Very Fine				
Test 2	Grab	5.89	289	11.1	Clear	Very Fine				

Sampling:

Sample Depth: 41.2 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 second purge

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22325 **Conditions:** Overcast
Date: 10/18/2023 **Site:** Cathcart
Time: 8:19 AM **Location:** G-13D

Well Information:

Well Depth: 44.9 ft **Water Depth:** 10.29 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 5.54 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.4	425	11.5	Clear	Very Fine				
Test 2	Grab	8.5	457	10.7	Clear	Very Fine				
Test 3	Grab	8.5	455	10.8	Clear	Very Fine				

Sampling:

Sample Depth: 15.51 ft **Sample Type:** Standard Ground - Water
Sample Time: 08:35

	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: Daniel Block **Sampler: Trina Arnold**

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Field Sampling Data

Sample Number: 22324 **Conditions:** Overcast
Date: 10/17/2023 **Site:** Cathcart
Time: 11:03 AM **Location:** G-08D1

Well Information:

Well Depth: 56.4 ft **Water Depth:** 27.61 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 4.61 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.29	459	11.2	Clear	Very Fine				
Test 2	Grab	8.77	453	11	Clear	Medium				

Sampling:

Sample Depth: 56.4 ft **Sample Type:** Standard Ground - Water
Sample Time: 11:30

	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: dry after 2 purges

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number:	22323	**Conditions:**	Overcast
Date:	10/17/2023	**Site:**	Cathcart
Time:	11:01 AM	**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: 57.8 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: see sheet 22322 for field chemistry data

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22322 **Conditions:** Overcast
Date: 10/17/2023 **Site:** Cathcart
Time: 10:57 AM **Location:** G-08D2

Well Information:

Well Depth: 112.5 ft **Water Depth:** 9.69 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 16.45 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.94	477	11.7	Clear	Medium				
Test 2	Grab	9.04	475	11.3	Clear	Medium				
Test 3	Grab	9.01	465	11.7	Clear	Medium				

Sampling:

Sample Depth: 57.8 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:

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Daniel Block**

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Field Sampling Data

Sample Number: 22321 **Conditions:** Overcast
Date: 10/17/2023 **Site:** Cathcart
Time: 10:37 AM **Location:** G-06B

Well Information:

Well Depth: 88 ft **Water Depth:** 35.89 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.34 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.25	652	13.1	Clear	Very Fine				
Test 2	Grab	7.32	701	12.7	Clear	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: well dry after second purge

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22320 **Conditions:** Overcast
Date: 10/17/2023 **Site:** Cathcart
Time: 10:07 AM **Location:** G-01D

Well Information:

Well Depth: 67.2 ft **Water Depth:** 23.98 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 6.92 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.77	575	11.9	Clear	Very Fine				
Test 2	Grab	8.79	578	11.5	Clear	Medium				
Test 3	Grab	8.65	582	12.2	Clear	Fine				

Sampling:

Sample Depth: 44.66 ft **Sample Type:** Standard Ground - Water
Sample Time: 10:20

	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:

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Daniel Block**

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Field Sampling Data

Sample Number: 22319 **Conditions:** Overcast
Date: 10/17/2023 **Site:** Cathcart
Time: 10:03 AM **Location:** G-01A

Well Information:

Well Depth: 15.65 ft **Water Depth:** 8.62 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 1.12 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	5.1	140	13.5	Clear	Very Fine				
Test 2	Grab	5.48	134.6	13.5	Clear	Very Fine				
Test 3	Grab	4.77	138.2	13.9	Clear	Very Fine				

Sampling:

Sample Depth: 11.63 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: Daniel Block **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number:	22318	**Conditions:**	Overcast
Date:	10/17/2023	**Site:**	Cathcart
Time:	9:58 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: not enough water to sample

Number of Bottles:

Operator/Witness: Daniel Block **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22317 **Conditions:** Overcast
Date: 10/17/2023 **Site:** Cathcart
Time: 9:28 AM **Location:** G-14D

Well Information:

Well Depth: 110 ft **Water Depth:** 31.65 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 12.54 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.62	492	12.1	Clear	Medium				
Test 2	Grab	8.8	494	12.1	Clear	Medium				

Sampling:

Sample Depth: 110 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 10.5 gallons of 2nd purge

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22316 **Conditions:** Overcast
Date: 10/17/2023 **Site:** Cathcart
Time: 9:23 AM **Location:** G-14S

Well Information:

Well Depth: 68.5 ft **Water Depth:** 17.01 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 8.24 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	8.11	374	12	Clear	Very Fine				
Test 2	Grab	8.21	381	11.5	Clear	Very Fine				

Sampling:

Sample Depth: 68.5 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: dry after 2 gallons during second purge

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Matt Lawless**

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Field Sampling Data

Sample Number: 22315 **Conditions:** Overcast
Date: 10/17/2023 **Site:** Cathcart
Time: 8:51 AM **Location:** G-24D

Well Information:

Well Depth: 85 ft **Water Depth:** 19.1 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 10.54 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	7.79	511	12.3	Clear	Very Fine				
Test 2	Grab	7.88	509	12	Clear	Very Fine				
Test 3	Grab	7.85	506	11.9	Clear	Very Fine				

Sampling:

Sample Depth: 35.48 ft **Sample Type:** Standard Ground - Water
Sample Time: 09:16

	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: Daniel Block **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22314 **Conditions:** Overcast
Date: 10/17/2023 **Site:** Cathcart
Time: 8:42 AM **Location:** G-24S

Well Information:

Well Depth: 26.5 ft **Water Depth:** 14.62 ft

Surface Measurements:

Flow Rate: **Measure Method:**

Field Chemistry Tests:

Purge Volume: 1.9 gallons

	Type	pH	Cond	Temp	Color	Turbidity	Purge Vol	Water Depth	ORP	Time
Test 1	Grab	6.32	427	12	Clear	Very Fine				
Test 2	Grab	6.89	448		Clear	Very Fine				

Sampling:

Sample Depth: 23 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 2 purges

Number of Bottles: 8

Operator/Witness: Daniel Block **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22084 **Conditions:** Overcast
Date: 1/31/2023 **Site:** Cathcart
Time: 10:14 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	6.34	172.4	5.6	Clear	Fine				

Sampling:

Sample Depth: **Sample Type:** Standard Surface - Water
Sample Time: 10:22

	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: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number:	22083	**Conditions:**	Overcast
Date:	1/31/2023	**Site:**	Cathcart
Time:	10:13 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: Location is dry, no sample taken

Number of Bottles:

Operator/Witness: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22082 **Conditions:** Overcast
Date: 1/31/2023 **Site:** Cathcart
Time: 9:56 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	6.87	128.8	5.2	Clear	Very 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: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22081 **Conditions:** Overcast
Date: 1/31/2023 **Site:** Cathcart
Time: 9:46 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	6.84	138.6	4.7	Clear	Very Fine				

Sampling:

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

Sample Time: 09:50

	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: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number: 22080 **Conditions:** Overcast
Date: 1/31/2023 **Site:** Cathcart
Time: 9:41 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	6.7	112	6.5	Clear	Very Fine				

Sampling:

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

Sample Time: 09:43

	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: Joshua Cooper **Sampler: Matt Lawless**

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

Field Sampling Data

Sample Number:	22237	**Conditions:**	Sunny
Date:	7/11/2023	**Site:**	Cathcart
Time:	9:53 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

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**

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

Field Sampling Data

Sample Number:	22236	**Conditions:**	Sunny
Date:	7/11/2023	**Site:**	Cathcart
Time:	9:53 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**

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

Field Sampling Data

Sample Number:	22235	**Conditions:**	Sunny
Date:	7/11/2023	**Site:**	Cathcart
Time:	9:52 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**

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

Field Sampling Data

Sample Number:	22234	**Conditions:**	Sunny
Date:	7/11/2023	**Site:**	Cathcart
Time:	9:51 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**

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

Field Sampling Data

Sample Number: 22233 **Conditions:** Sunny
Date: 7/11/2023 **Site:** Cathcart
Time: 9:40 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	6.79	462	18.2	Clear	Very 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 Department of Public Works

Solid Waste Division

Gas Probe Monitoring Data

QUARTERLY GAS ROUND
DATE: 03/03/23

Site	Location: Probe	Time (Military)	Methane (% VOL)	Oxygen (% VOL, % LEL, PPM)	Carbon Diox. (% VOL)	Velocity	Pressure	Comments
CATHCART	GP-4	1305	0%	21%	0%		29.51	
	GP-5(1)	1313	0%	18%	3%		"	
	GP-5(2)	1314	0%	21%	0%		"	
	GP-1(1)	1325	0%	19%	1%		"	
	GP-1(2)	1325	0%	21%	0%		"	
	GP-2(1)	1329	0%	13%	7%		"	
	GP-2(2)	1329	0%	13%	6%		"	
	GP-3	1346	0%	21%	0%		"	
	GP-6	1342	0%	21%	0%		"	
	Main Man	1350	53%	0%	27%	566	"	
Site	**Location: Barhole**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	BH-3	1310	0%	21%	0%		29.51	
	BH-4	1312	0%	21%	1%		"	
	BH-5	1317	0%	21%	0%		"	
	BH-6	1322	0%	20%	1%		"	
	BH-7	1324	0%	21%	0%		"	
	BH-8	1319	0%	21%	0%		"	
Site	**Location: Structure**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	SP-4	1332	0%	21%	0%		29.51	
	C-FV-1`	1333	0%	22%	0%		"	
	C-COV-2	1334	0%	22%	0%		"	
	C-VV-2	1335	0%	22%	0%		"	
	SP-1	1336	0%	21%	1%		"	
	C-VV-3	1337	0%	21%	0%		"	
	Grit Chamber	1338	0%	22%	0%		"	
	C-FV-2	1339	0%	21%	0%		"	
	C-VV-5	1340	0%	22%	0%		"	

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

Snohomish County Department of Public Works

Solid Waste Division

Gas Probe Monitoring Data

QUARTERLY GAS ROUND
DATE: 05/12/23

Site	Location: Probe	Time (Military)	Methane (% VOL)	Oxygen (% VOL, % LEL, PPM)	Carbon Diox. (% VOL)	Velocity	Pressure	Comments
CATHCART	GP-4	1310	0%	21%	0%		29.82	
	GP-5(1)	1313	0%	21%	0%		"	
	GP-5(2)	1314	0%	20%	0%		"	
	GP-1(1)	1330	0%	19%	1%		"	
	GP-1(2)	1331	0%	20%	0%		"	
	GP-2(1)	1334	0%	19%	3%		"	
	GP-2(2)	1335	0%	19%	2%		"	
	GP-3	1410	0%	20%	0%		"	
	GP-6	1405	0%	20%	0%		"	
	Main Man	1415	22%	11%	11%	476	"	
Site	**Location: Barhole**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	BH-3	1357	0%	20%	0%		29.82	
	BH-4	1316	0%	19%	2%		"	
	BH-5	1319	0%	20%	0%		"	
	BH-6	1325	0%	18%	2%		"	
	BH-7	1328	0%	19%	1%		"	
	BH-8	1321	0%	20%	0%		"	
Site	**Location: Structure**	**Time (Military)**	**Methane (% VOL)**	**Oxygen (% VOL, % LEL, PPM)**	**Carbon Diox. (% VOL)**	**Velocity**	**Pressure**	**Comments**
CATHCART	SP-4	1337	0%	20%	0%		29.82	
	C-FV-1`	1338	0%	20%	0%		"	
	C-COV-2	1339	0%	20%	0%		"	
	C-VV-2	1340	0%	20%	0%		"	
	SP-1	1341	0%	20%	0%		"	
	C-VV-3	1342	0%	20%	0%		"	
	Grit Chamber	1343	0%	20%	0%		"	
	C-FV-2	1344	0%	20%	0%		"	
	C-VV-5	1345	0%	20%	0%		"	

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

Snohomish County Department of Public Works

Solid Waste Division

Gas Probe Monitoring Data

QUARTERLY GAS ROUND
DATE: 08/18/23

Site	Location: Probe	Time (Military)	Methane (% VOL)	Oxygen (% VOL, % LEL, PPM)	Carbon Diox. (% VOL)	Velocity	Pressure	Comments
CATHCART GAS PROBES/FLARE	GP-4	1345	0%	20%	0%		29.59	
	GP-5(1)	1350	0%	20%	0%		"	
	GP-5(2)	1352	0%	19%	2%		"	
	GP-1(1)	1405	0%	20%	0%		"	
	GP-1(2)	1406	0%	20%	0%		"	
	GP-2(1)	1408	0%	8%	7%		"	
	GP-2(2)	1408	0%	12%	7%		"	
	GP-3	1424	0%	20%	0%		"	
	GP-6	1420	0%	18%	2%		"	
	Main Man	0800	28%	11%	14%	203	"	
CATHCART BARHOLES	BH-3	1348	0%	20%	0%		29.59	
	BH-4	1355	0%	19%	4%		"	
	BH-5	1400	0%	20%	0%		"	
	BH-6	1403	0%	19%	1%		"	
	BH-7	1407	0%	20%	0%		"	
	BH-8	1358	0%	20%	0%		"	
CATHCART VAULTS	SP-4	1409	0%	20%	0%		29.59	
	C-FV-1`	1410	0%	20%	0%		"	
	C-COV-2	1411	0%	20%	0%		"	
	C-VV-2	1412	0%	20%	0%		"	
	SP-1	1413	0%	20%	0%		"	
	C-VV-3	1414	0%	20%	0%		"	
	Grit Chamber	1415	0%	20%	0%		"	
	C-FV-2	1416	0%	20%	0%		"	
	C-VV-5	1417	0%	20%	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: 11/28/23

Site	Location: Probe	Time (Military)	Methane (% VOL)	Oxygen (% VOL, % LEL, PPM)	Carbon Diox. (% VOL)	Velocity	Pressure	Comments
CATHCART GAS PROBES/FLARE	GP-4	1240	0%	20%	1%		29.79	
	GP-5(1)	1245	0%	18%	3%		"	
	GP-5(2)	1246	0%	16%	0%		"	
	GP-1(1)	1300	0%	21%	0%		"	
	GP-1(2)	1302	0%	21%	0%		"	
	GP-2(1)	1304	0%	8%	8%		"	
	GP-2(2)	1305	0%	11%	7%		"	
	GP-3	1318	0%	21%	2%		"	
	GP-6	1316	0%	21%	0%		"	
	Main Man	1332	59%	3%	25%	210	"	
CATHCART BARHOLES	BH-3	1242	0%	20%	1%		29.79	
	BH-4	1248	0%	19%	3%		"	
	BH-5	1250	0%	20%	0%		"	
	BH-6	1255	0%	20%	1%		"	
	BH-7	1258	0%	21%	1%		"	
	BH-8	1252	0%	21%	0%		"	
CATHCART VAULTS	SP-4	1306	0%	20%	0%		29.79	
	C-FV-1`	1307	0%	21%	0%		"	
	C-COV-2	1308	0%	21%	0%		"	
	C-VV-2	1309	0%	21%	0%		"	
	SP-1	1310	0%	20%	3%		"	
	C-VV-3	1311	0%	21%	0%		"	
	Grit Chamber	1312	0%	21%	1%		"	
	C-FV-2	1313	0%	20%	1%		"	
	C-VV-5	1314	0%	21%	0%		"	

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