

SENT VIA EMAIL

December 22, 2022
Parametrix No. 553-1550-067

Julia Schwarz, Project Manager
Washington State Department of Ecology
Toxics Cleanup Program
3190 160th Avenue SE
Bellevue, Washington 98008-5452

Re: South Park Landfill Fourth Quarter 2022 Progress Report

Dear Julia:

This letter report provides an explanation of actions taken during the referenced period.

General Activities During the 2022 Fourth Quarter

SRDS Property

- The old South Transfer Station seep area (compactor shed) is fenced off and locked and all safeguards are still in place.
- Solid Waste Operations and Household Hazardous Waste Collection continues on the SPU old South Transfer Station property.
- Repaired cracking at catch basin (location SRDS AC-2 in the 2022 Annual Cap Inspection).

CenterPoint Property (former SPPD owned property)

- Ongoing remote monitoring of the landfill gas system blowers. The current tenants First Student and Amazon vehicle parking are active on CenterPoint property.
- Conducted quarterly inspection of the methane alarms in the on-site buildings.
- Conducted quarterly operation and maintenance of the landfill gas system.
- The system's remote monitoring alerted Farallon of a condensate sump high level condition and system shutdown on December 25, 2022. Farallon responded to the alarm and restarted the system on December 29, 2022.

Overall Settlement Parcels

- The 2022 fourth quarter compliance monitoring was completed in November. SPU staff conducted the gas monitoring and the Parametrix team conducted the groundwater monitoring.
- Reviewed field measurements and completed data management for the fourth quarter compliance monitoring events.
- A mid-year cap inspection was conducted on December 16, 2022 to reinspect areas of concern identified during the April 2022 annual cap inspection.

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Deviations from Samples, Required Tasks, CAP, or Schedule

Methane at gas probe GP-15 was recorded at 4.6% by volume during the fourth quarter monitoring event. The Cleanup Action Plan Landfill Gas Monitoring and Contingency Plan (Figure A.2.4) has a contingent action trigger for measurements below 5% and above 1.25%. GP-15 is a shallow probe blocked with water and therefore the recorded measurement is not representative of concentration in the screen zone. We are investigating installation of replacement probes at all of the shallow probes that are consistently blocked with water.

Data Summary

The perimeter gas probes were monitored on November 8, 2022. The results are recorded in the attached gas probe report. All concentrations were less than the 5 percent by volume regulatory action limit. Methane was detected at the following probes:

Probe	CH4 (% by volume)	Blocked	Comments
GP-15	4.6%	Yes	Refer to deviations section above
GP-27	0.2%	No	Below trigger values
GP-29	0.9%	No	Below trigger values

The groundwater wells were monitored November 14 through 16, 2022. The monitoring samples were analyzed by Analytical Resources, Incorporated. Data validation is complete and a concentration trigger assessment for vinyl chloride was performed. A draft data summary table, the updated time-series plots, and the final lab reports for the 2022 fourth quarter are included as attachments to this progress report.

Data management is complete for the 2022 fourth quarter compliance monitoring event.

Upcoming Activities

SRDS Property

- SPU has selected a new design team and will have them under contract by the first week in January 2023. Final design work is anticipated to take one year.

CenterPoint Property

- Ongoing remote monitoring of the CenterPoint property landfill gas system blowers.
- Complete the first quarter 2023 operation and maintenance of the landfill gas system in February.

Overall Settlement Parcels

- Complete the first quarter 2023 compliance monitoring in February.
- Gas probe GP-09 and groundwater wells MW-10 and MW-25 are located in a right-of-way that is frequently occupied by urban campers creating an unsafe situation for compliance monitoring. SPU is working with SDOT

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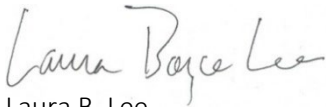
to install fencing around this monitoring location. Interdepartmental agreement between SPU and SDOT on fencing was completed in December 2022.

- Prepare a report summarizing the mid-year cap reinspection.
- Prepare and submit the 2022 annual report.
- Investigate replacement of shallow perimeter compliance gas probes that are consistently blocked with water.

If you have any questions regarding this progress report, please do not hesitate to contact me.

Sincerely,

PARAMETRIX



Laura B. Lee
Project Manager

cc: Min Soon Yim, SPU Landfill Manager
Ashley Piatek, CenterPoint Properties
Jeff Fowler, SPU, Solid Waste Line of Business Deputy Director
Susan Fife-Ferris, SPU, Solid Waste Line of Business/Solid Waste Planning Director
Megan J Joplin, SPU, Law Department, Attorney
Hui Yang, SPU, SRDS Redevelopment Project Manager
Anthony Grant, SPU Solid Waste Transfer Station Manager
Lucie Harpster, SPU Solid Waste Transfer Station Manager

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Attachments

- 1 – Compliance Monitoring Field Sheets, Fourth Quarter 2022
- 2 – Groundwater Quality Data Summary, Fourth Quarter 2022
- 3 – Groundwater Quality Time Series Plots through Fourth Quarter 2022
- 4 – Fourth Quarter 2022 Groundwater Laboratory Data



Attachment 1

Compliance Monitoring Field Sheets
Fourth Quarter 2022



Final Probe Report for South Park Landfill

Probe	Date	Technician	CH4 PPM	O2 %	CO2 %	SP In/Wc	Blocked	BPS	Comment
GP03	11/8/2022	WY, TS	0	8.9	8.3	0.0	N	29.90	
GP07	11/8/2022	WY, TS	0	18.6	2.3	0.0	N	29.90	
GP09	11/8/2022	WY, TS	0	16.6	5.3	0.0	N	29.90	
GP11	11/8/2022	WY, TS	0	20.6	2.0	0.0	Y	29.90	
GP13	11/8/2022	WY, TS	0	13.1	2.7	-8.0	Y	29.90	
GP15	11/8/2022	WY, TS	46000	4.3	11.0	-25.7	Y	29.90	
GP16	11/8/2022	WY, TS	0	21.1	0.7	-0.1	N	29.90	
GP23	11/8/2022	WY, TS	0	15.9	5.7	0.0	N	29.90	
GP26	11/8/2022	WY, TS	0	19.0	2.4	0.0	N	29.90	
GP27	11/8/2022	WY, TS	2000	0.0	13.6	0.0	N	29.90	
GP28	11/8/2022	WY, TS	0	10.2	4.9	0.0	N	29.90	
GP29	11/8/2022	WY, TS	9000	0.0	15.5	0.0	N	29.90	
GP31	11/8/2022	WY, TS	0	4.4	7.4	0.0	N	29.90	
GP32	11/8/2022	WY, TS	0	19.1	1.4	2.3	Y	29.90	
GP33	11/8/2022	WY, TS	0	4.4	9.6	0.0	N	29.90	
GP37	11/8/2022	WY, TS	0	10.1	8.4	0.0	N	29.90	
GP38	11/8/2022	WY, TS	0	4.0	14.4	0.0	N	29.90	

Chain of Custody Record & Laboratory Analysis Request

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

ARI Assigned Number:	Turn-around Requested: 2 weeks	Date: 11/15/2022
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 21 of 21
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 3,3

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments			
Client Project #: 553-1550-067		Samplers: Chris Bourgeois HWA			cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**									**Field-filtered
Sample ID	Date	Time	Matrix	Number of Containers														
SPL-GW-MW25-1122	11/14/22	1050	water	8		X	X	X	X									
SPL-GW-MW30-1122			water	7	X		X	X										
SPL-GW-MW31-1122			water	13	X		X	X										MS/MSD
SPL-GW-MW24-1122	11/16/22	1245	water	8	X		X	X	X									
SPL-GW-MW26-1122	11/15/22	1345	water	8	X		X	X	X									
SPL-GW-MW08-1122	11/15/22	1055	water	8	X		X	X	X									
SPL-GW-MW27-1122	11/15/22	950	water	8	X		X	X	X									
SPL-GW-MW61-1122			water	7	X		X	X										
SPL-GW-MW81-1122			water	2		X	X											
Comments/Special Instructions	Relinquished by: (Signature)	[Signature]			Received by: (Signature)	[Signature]			Relinquished by: (Signature)								Received by: (Signature)	
	Printed Name:	Cierra Wilson			Printed Name:	Phillip Bates			Printed Name:								Printed Name:	
	Company:				Company:	AR			Company:								Company:	
	Date & Time:				Date & Time:	11/15/22 11:00			Date & Time:								Date & Time:	

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

Sample Retention Policy: Unless specified by work order or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

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 206-695-6200 206-695-6201 (fax)

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ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 21
Client Contact: Laura Lee	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 2.5

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments				
Samplers: Chris Bourgeois HWA					cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**										
Sample ID	Date	Time	Matrix	Number of Containers															
SPL-GW-MW12-1122	11/16/22	920	water	8	X		X	X	X										**Field-filtered
SPL-GW-MW14-1122	11/16/22	1125	water	7	X		X	X											
SPL-GW-MW29-1122	11/16/22	1235	water	13	X		X	X											MS/MSD
SPL-GW-MW18-1122	11/16/22	1415	water	8	X		X	X	X										
SPL-GW-MW32-1122			water	8	X		X	X	X										
SPL-GW-MW33-1122			water	8	X		X	X	X										
SPL-GW-MW10-1122			water	8	X		X	X	X										
SPL-GW-MW60-1122	11/16/22	1300	water	7	X		X	X											
SPL-GW-MW80-1122			water	2		X	X												

Comments/Special Instructions	Relinquished by: (Signature) <i>CB</i>	Received by: (Signature) <i>Phillip</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Chris Bourgeois	Printed Name: Phillip Batts	Printed Name:	Printed Name:
	Company: HWA	Company: AR	Company:	Company:
	Date & Time: 11/16/22 1500	Date & Time: 11/16/22 15:00	Date & Time:	Date & Time:

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Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 2, 5

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments		
Client Project #: 553-1550-067		Samplers: Chris Bourgeois HWA			cis-1,2-DCE	cis-1,2-DCE; benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**								
Sample ID	Date	Time	Matrix	Number of Containers													
SPL-GW-MW25-1122			water	8		X	X	X	X							**Field-filtered	
SPL-GW-MW30-1122	11/15/22	1645	water	7	X		X	X									
SPL-GW-MW31-1122	11/15/22	1600	water	13	X		X	X								MS/MSD	
SPL-GW-MW24-1122	11/15/22	1645	water	8	X		X	X	X								
SPL-GW-MW26-1122			water	8	X		X	X	X								
SPL-GW-MW08-1122			water	8	X		X	X	X								
SPL-GW-MW27-1122			water	8	X		X	X	X								
SPL-GW-MW61-1122	11/15/22	1630	water	7	X		X	X									
SPL-GW-MW81-1122	11/16/22	-	water	2		X	X										
Comments/Special Instructions	Relinquished by: (Signature)	Chris Bourgeois			Received by: (Signature)	Phillip Bates			Relinquished by: (Signature)								Received by: (Signature)
	Printed Name:	Chris Bourgeois			Printed Name:	Phillip Bates			Printed Name:								Printed Name:
	Company:	HWA			Company:	AR			Company:								Company:
	Date & Time:	11/16/22 1500			Date & Time:	11/16/22 15:00			Date & Time:								Date & Time:

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GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 11/15/22 Well ID: MW-08

Sampling Organization: Parametrix Samplers: C. Bourgeois & C. Wilson

Purge Data Screened Interval (ft bgs): 5.0-20.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 4.10 9.01 Purge Water Disposal Method: O/WS

Purge Device dedicated bladder pump Pump Intake Depth: 10.5ft

Begin Purge Time: 1015 End Purge Time: 1050

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1020	9.09	2.5	250		12.8	0.65	638	6.75	-38.5	2.27	mild earth odor
1025	9.05	" "	" "		12.6	0.73	640.7	6.75	-58.1	1.45	clear w/
1030	9.05	" "	" "		12.6	0.71	640.5	6.74	-64.1	1.26	minor turbid.
1035	9.06	" "	" "		12.6	0.60	640.3	6.74	-69.1	0.95	↓
1040	9.06	" "	" "		12.5	0.27	640.7	6.74	-73.3	0.95	
1045	9.05	" "	" "		12.6	0.32	640.5	6.74	-76.4	1.02	
1050	9.05	" "	" "		12.5	0.29	640.3	6.74	-77.0	0.8	

Stabilization Criteria 3% 10% , or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 <5 NTU

Sampling Data

Sample ID: SPL-GW_MW08-1122 Time Collected: 1055 Weather: 40s, sunny

Sample Description (Color, Turbidity, Odor, Other): minor turbidity, minor odor (earth)

Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese, dissolved arsenic

Duplicate Sample Collected: Yes No If yes, ID: _____

MS/MSD Collected: Yes No

Additional Information/Comments

could not get bladder pump to draw water so used peristaltic pump controller worked fine @ MW-27

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 11/14/22 Well ID: MW-10
 Sampling Organization: Parametrix Samplers: L. Bourgeois & C. Wilson

Purge Data Screened Interval (ft bgs): 35.0-44.0 Well Casing/Diameter: PVC/2 in
 Initial Depth of Water (Ft below TOC): 13.58 Purge Water Disposal Method: O/WS
 Purge Device peristaltic Pump Intake Depth: 30.0 ft dedicated
 Begin Purge Time: 825 End Purge Time: 925

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate	^{liters} Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
830	13.58	2.5	240 ml/min		13.4	0.94	1422	6.79	-82.1	15.5	
835	13.58	2.5	210 ml/min		13.6	0.70	1425	6.80	-102.2	11.5	Sulfur like smell
840	13.59	2.75	240 ml/min		13.6	0.66	1424	6.80	-115.6	6.13	" "
845	13.59	2.75	240 ml/min		13.7	0.63	1425	6.82	-120.4	3.94	" "
850	13.60	2.75	240 ml/min		13.6	0.47	1435	6.84	-125.5	5.10	" "
855	13.60	2.75	240 ml/min		13.5	0.53	1440	6.85	-129.7	4.70	" "
900	13.60	2.75	240 ml/min		13.5	0.57	1444	6.85	-131.3	4.28	" "
905	13.60	2.75	240 ml/min		13.5	0.47	1447	6.86	-133.0	3.29	" "
910	13.60	2.75	240 ml/min		13.5	0.42	1447	6.86	-134.6	2.78	" "
915	13.60	2.75	" "		13.5	1.99	1446	6.86	-133.6	3.21	Do from bubbles
920	13.60	2.75	" "	12.75	13.5	1.96	1447	6.87	-134.6	2.02	in tube?
925	13.60	2.75	" "	13.1	13.5	1.96	1446	6.87	-134.7	2.02	no bubbles

Stabilization Criteria 3% 10%, or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 < 5 NTU

Sampling Data

Sample ID: SPL-GW-MW10-1122 Time Collected: 930 Weather: high 30's, sunny
 Sample Description (Color, Turbidity, Odor, Other): clear, mild sulfur odor
 Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese, dissolved arsenic
 Duplicate Sample Collected: Yes No If yes, ID: _____
 MS/MSD Collected: Yes No

Additional Information/Comments

spray paint cans on ground by the site/wells.
purge water in bucket has pale green-brown color
but water generally clear

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 11/16/22 Well ID: MW-12

Sampling Organization: Parametrix Samplers: C. Bourgeois, A. Heinze Fry

Purge Data Screened Interval (ft bgs): 10.0-15.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 6.08 Purge Water Disposal Method: O/WS

Purge Device dedicated bladder pump Pump Intake Depth: 12.5 ft

Begin Purge Time: 837 End Purge Time: _____

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
835	6.08	8/4	~500		14.4	0.72	331.5	6.55	99.1	1.64	
840	6.12	8/4	~500	4.5 L	14.4	1.41	324.5	6.48	99.0	0.96	
845	6.12	8/4	325	5.5 L	13.6	1.59	333.8	6.45	90.7	0.7	
850	6.12	8/4	240	5.75 L	13.4	1.53	333.3	6.43	86.8	0.66	
855	6.10	8/4		6.5 L	13.5	1.05	333.4	6.41	82.0	0.59	
860	6.10			6.75 L	13.4	0.82	333.3	6.41	85.7	0.68	
905	6.08			7.0 L	13.5	0.75	332.7	6.41	71.5	0.66	
910	6.08				13.4	0.73	332.9	6.41	66.6	0.65	
915	6.08			8.25	13.5	0.71	333.1	6.41	63.5	0.54	

Stabilization Criteria 3% 10%, or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 < 5 NTU

Sampling Data

Sample ID: SPL-GW_MW12-1122 Time Collected: 920 Weather: cool clear

Sample Description (Color, Turbidity, Odor, Other): clear, no turbidity, no odor

Sample Analyses: cis-1,3-DCE, vinyl chloride, total iron, total manganese, dissolved arsenic

Duplicate Sample Collected: Yes No If yes, ID: _____

MS/MSD Collected: Yes No

Additional Information/Comments

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067

Date: 11/16/22

Well ID: MW-14

Sampling Organization: Parametrix

Samplers: C. Bourgeois, A. Heinze Fry

Purge Data Screened Interval (ft bgs): 11.5-21.5

Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 323

Purge Water Disposal Method: O/WS

Purge Device: dedicated bladder pump

Pump Intake Depth: 16.5 ft

Begin Purge Time: 1000

End Purge Time: 1120

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate	Cum. Vol. Purged (L)	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1000	3.33	8/4	280	~0.5L	14.9	5.91	545.2	6.93	61.3	38.3	
1005	3.35			2.5	15.1	6.43	538.7	6.95	23.7	38.4	
1010	3.37			3.5	15.3	6.20	506.8	6.85	9.9	38.4	
1015	3.36			5	15.4	6.10	498.5	6.81	3.3	32.1	
1020	3.35			6.5	15.5	5.62	495.8	6.79	-3.0	21.9	
1025	3.35			8.5	15.4	5.30	494.2	6.79	-8.6	14.0	
1030	3.34			10.5	15.5	4.92	494.1	6.78	-12.9	8.38	
1035	3.35			12	15.4	4.69	492.9	6.78	-15.6	7.57	
1040	3.35			13	15.4	4.38	492.7	6.78	-18.6	7.73	
1045	3.38			14.5	15.5	0.27	493.2	6.76	-21.1	6.94	
1050	3.35			16	15.5	0.17	494.1	6.76	-23.5	4.86	
1055	3.36			17.5	15.5	0.20	493.6	6.76	-25.7	5.41	
1100	3.34			19	15.5	0.18	493.4	6.76	-27.7	5.85	
1105	3.35			20.	15.6	0.18	493.8	6.76	-29.8	7.32	
1110	3.36			21.5	15.4	0.19	492.5	6.76	-30.7	6.96	
1115	3.36			23	15.5	0.21	493.3	6.76	-32.2	6.50	
1120	3.35			24.5	15.4	0.27	493.1	6.76	-33.6	6.81	

Stabilization Criteria 3% 10% , or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 <5 NTU

Sampling Data

Sample ID: SPL-GW-MW14-1122

Time Collected: 1125

Weather: Clear, cold

Sample Description (Color, Turbidity, Odor, Other): Clear, no observable turbidity, no odor

Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese

Duplicate Sample Collected: Yes No If yes, ID: _____

MS/MSD Collected: Yes No

Additional Information/Comments

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 11/14/22 Well ID: MW-25
 Sampling Organization: Parametrix Samplers: C. Bourgeois + C. Wilson

Purge Data Screened Interval (ft bgs): 20.0-27.0 Well Casing/Diameter: PVC/2 in
 Initial Depth of Water (Ft below TOC): 14.35 Purge Water Disposal Method: O/W/S
 Purge Device dedicated bladder pump Pump Intake Depth: 24.5 ft
 Begin Purge Time: 1010 End Purge Time: 1045

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1010	14.35				13.7	2.25	1220	6.70	65.5	8.74	
1015	14.36				13.7	1.06	1219	6.70	-75.7	6.39	
1020	14.36			5	13.5	0.62	1210	6.70	-86.6	25.9	
1025	14.36				13.7	0.35	1234	6.70	-90.1	10.9	
1030	14.36	9/3	300 mL/min		13.6	0.26	1236	6.70	-96.7	7.50	
1035	14.36	" "	" "	9	13.6	0.23	1237	6.70	-101.2	4.58	clear
1040	14.36	" "	" "		13.6	0.21	1239	6.70	-105.1	2.64	little to no odor
1045	14.36	" "	" "	11	13.6	0.18	1239	6.70	-107.6	2.10	" "

Stabilization Criteria 3% 10% 3% ± 0.1 ± 10 mv 10% or 3 < 5 NTU

Sampling Data

Sample ID: SPL-GW-MW25-1122 Time Collected: 1050 Weather: low 40's, sunny
 Sample Description (Color, Turbidity, Odor, Other): pale yellow color, very minor earth smell
 Sample Analyses: cis-1,2-DCE, benzene, vinyl chloride, total iron, total manganese, dissolved arsenic
 Duplicate Sample Collected: Yes No If yes, ID: _____
 MS/MSD Collected: Yes No

Additional Information/Comments

air coming out of pump controls air compressor hose. No apparent effect on DO, will try to fix next well.

→ GE fix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067

Date: 11/15/22

Well ID: MW-26

Sampling Organization: Parametrix

Samplers: C. Bourgeois + C. Wilson

Purge Data Screened Interval (ft bgs): 15.0-25.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 10.25 Purge Water Disposal Method: OWS

Purge Device: dedicated bladder pump Pump Intake Depth: 20.0 ft

Begin Purge Time: 1312 End Purge Time: 1340

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1315	10.25	10/5	325		12.1	1.73	298.6	6.29	-23.6	1.86	clear
1320	10.25	10/5	325		12.1	0.73	304.7	6.12	0.2	1.66	odorless
1325	10.25	8/4	325	4.8	12.1	0.50	310.2	6.08	2.1	1.66	
1330	10.25	8/4	" "		12.1	0.39	310.2	6.06	12.6	1.35	
1335	10.25	" "	" "	8.0	12.1	0.28	316.8	6.07	17.4	0.87	0.87
1340	10.25	" "	" "	9.5	12.1	0.25	318.1	6.03	19.1	1.32	

Stabilization Criteria 3% 10%, or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 < 5 NTU

Sampling Data

Sample ID: SPL-GW_MW26-1122 Time Collected: 1345 Weather: 40s, sunny

Sample Description (Color, Turbidity, Odor, Other): clear, odorless

Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese, dissolved arsenic

Duplicate Sample Collected: Yes No If yes, ID: _____

MS/MSD Collected: Yes No

Additional Information/Comments

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 11/15/22 Well ID: MW-27
 Sampling Organization: Parametrix Samplers: C. Bourgeois + C. Wilson

Purge Data Screened Interval (ft bgs): 10.0-20.0 Well Casing/Diameter: PVC/2 in
 Initial Depth of Water (Ft below TOC): 9.02 Purge Water Disposal Method: O/WS
 Purge Device dedicated bladder pump Pump Intake Depth: 15.0 ft
 Begin Purge Time: 853 End Purge Time: 945

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
855	9.02	7/5			13.0	1.40	553.4	6.74	-90.6	138	light yellow-orange, specks
900	9.04				12.9	0.76	557.6	6.69	-86.9	97.7	
905	9.04	6.5/3.5			12.9	0.39	560.7	6.66	-86.0	37.0	specks
910	9.02	6.5/3.5	250 ml/min	9.9 L	12.5	0.34	554.4	6.65	-85.9	43.8	
915	9.02	6.5/3.5	250 ml/min		12.6	0.31	558.4	6.64	-86.1	32.2	clearer in color
920	9.02				12.6	0.28	556.8	6.64	-86.9	39.6	
925	9.03				12.6	0.23	558.8	6.63	-87.9	20.1	
930	9.03			13.5 L	12.6	0.22	559.6	6.63	-89.0	14.8	
935	9.05				12.6	0.19	557.8	6.63	-90.2	11.8	
940	9.05				12.6	0.19	558.0	6.62	-90.8	11.2	
945					12.6	0.18	558.5	6.62	-91.3	11.8	

Stabilization Criteria 3% 10%, or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 < 5 NTU

Sampling Data

Sample ID: SPL-GW-MW27-1122 Time Collected: 950 Weather: 30s, sunny
 Sample Description (Color, Turbidity, Odor, Other): slight pale yellow hue, minor turbidity
 Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese, dissolved arsenic
 Duplicate Sample Collected: Yes No If yes, ID: _____
 MS/MSD Collected: Yes No

Additional Information/Comments

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 11/15/22 Well ID: MW-31

Sampling Organization: Parametrix Samplers: C. Bourgeois & C. Wilson

Purge Data Screened Interval (ft bgs): 18.0-23.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 11.52 Purge Water Disposal Method: O/WS

Purge Device dedicated bladder pump Pump Intake Depth: 20.5ft

Begin Purge Time: 1505 End Purge Time: 1555

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1510	11.52	8.4/3.8	325		14.1	0.67	457.5	6.45	25.0	30.2	
1515	11.52				14.1	0.35	460.8	6.46	4.1	18.8	small
1520	11.53				14.0	0.28	460.9	6.47	-6.5	12.6	flecks
1525	11.53			8 L	14.1	0.22	461.1	6.47	-15.5	9.00	
1530	11.53				14.1	0.19	461.0	6.47	-22.5	8.13	
1535	11.53				14.0	0.19	461.2	6.47	-28.3	6.66	
540 1538	11.54				13.9	0.17	460.9	6.47	-32.6	5.02	
1545	11.54				14.0	0.16	460.1	6.47	-35.8	4.78	
1550	11.54				13.9	0.15	460.0	6.47	-38.7	4.41	
1555	11.54			12 L	13.9	0.16	460.0	6.46	-40.8	4.31	

Stabilization Criteria 3% 10%, or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 <5 NTU

Sampling Data

Sample ID: SPL-GW_MW31-1122 Time Collected: 1600 Weather: high 40s, sunny

Sample Description (Color, Turbidity, Odor, Other): minor turbidity, no odor

Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese

Duplicate Sample Collected: Yes No If yes, ID: SPL-GW_MW61-1122 @ 1630

MS/MSD Collected: Yes No

Additional Information/Comments

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067

Date: 11/14/22

Well ID: MW-33

Sampling Organization: Parametrix

Samplers: C. Bourgeois + C. Wilson

Purge Data Screened Interval (ft bgs): 20.0-25.0

Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 11.41

Purge Water Disposal Method: O/WS

Purge Device peristaltic pump

Pump Intake Depth: 22.5ft 17.5

Begin Purge Time: 1435

End Purge Time: 1505

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1440	11.42	2.75	250 ml/min		15.0	2.41	1124	6.91	-19.4	3.19	
1445	11.43	2.75	250 ml/min		14.9	0.69	1214	6.89	-51.7	2.31	specks
1450	11.43	2.75	250 ml/min		14.9	0.34	1236	6.89	-88.8	2.35	
1455	11.44	2.75	250 ml/min		14.8	0.24	1387	6.78	-91.3	2.62	
1500	11.44	2.75	250 ml/min		14.8	0.20	1402	6.78	-94.3	2.08	
1505	11.44	2.75	250 ml/min	7L	14.8	0.18	1401	6.78	-97.4	2.33	

Stabilization Criteria 3% 10%, or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 < 5 NTU

Sampling Data

Sample ID: SPL-GW-MW33-1122

Time Collected: 1510

Weather: high 40s, sunny

Sample Description (Color, Turbidity, Odor, Other): ~~could not advance tubing past 17.5 ft~~ light yellow color

Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese, dissolved arsenic

Duplicate Sample Collected: Yes No If yes, ID: _____

MS/MSD Collected: Yes No

Additional Information/Comments

couldnt advance tubing beyond 17.5
 Sample reacted to Nitric and HCl acid.

Attachment 2

Groundwater Quality Data Summary
Fourth Quarter 2022



Groundwater Quality Data Summary, Fourth Quarter 2022, South Park Landfill

Parameter	Units	Cleanup Level	Upgradient Wells				Downgradient Wells											Trip Blanks		
			A-Zone				Perched Zone	A-Zone						B-Zone					MW-80	MW-81
			MW-12	MW-14	MW-29	MW-60 (MW-29 Dup)	MW-30 ¹	MW-25	MW-26	MW-27 ²	MW-31 ¹	MW-61 (MW-31 Dup)	MW-32 ³	MW-33 ³	MW-08	MW-10	MW-18 ³	MW-24	11/15/22	11/16/22
11/16/22	11/16/22	11/16/22	11/16/22	11/15/22	11/14/22	11/15/22	11/15/22	11/15/22	11/15/22	11/15/22	11/14/22	11/14/22	11/15/22	11/14/22	11/16/22	11/15/22	11/15/22	11/16/22		
Field Parameters																				
Temperature	C		13.5	15.4	12.6	--	14.3	13.6	12.1	12.6	13.9	--	13.9	14.8	12.5	13.5	14.6	12.3	--	--
Dissolved Oxygen	mg/L		0.71	0.27	0.19	--	0.31	0.18	0.25	0.18	0.16	--	0.20	0.18	0.29	1.96	0.16	0.18	--	--
Specific Conductivity	µS/cm		333.1	493.1	617.8	--	454.1	1239	318.1	558.5	460.0	--	824	1401	640.3	1446	967	961	--	--
pH	units		6.41	6.76	6.80	--	6.39	6.70	6.03	6.62	6.46	--	6.84	6.78	6.74	6.87	6.61	6.60	--	--
Redox	mv		63.5	-33.6	-70.7	--	-20.4	-107.6	19.1	-91.3	-40.8	--	-93.0	-97.4	-79.0	-134.4	-38.0	-53.2	--	--
Turbidity	NTU		0.54	6.81	1.11	--	2.60	2.10	1.32	11.8	4.31	--	4.61	2.33	0.8	2.02	0.74	1.69	--	--
Metals																				
Arsenic, Dissolved	µg/L	5.0	0.387	--	--	--	--	0.400 U	0.815	10.5 ²	--	--	1.10	0.830	0.200 U	0.200 U	0.400 U	0.400 U	--	--
Iron, Total	mg/L	27 A-Zone	2.22	3.45	17.5 J+	17.2	6.43	36.7	10.7	28.9	19.2	18.1	16.2	19.6	--	--	--	--	--	--
		31 B-Zone	--	--	--	--	--	--	--	--	--	--	--	--	13.1	37.8	17.8	27.4	--	--
Manganese, Total	mg/L	2.2	0.153	0.748	0.510	0.494	0.100	3.07	0.0967	0.603	0.811	0.812	1.40	2.07	0.736	2.54	1.39	1.70	--	--
Volatile Organic Compounds																				
Vinyl Chloride	µg/L	0.29	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.549 ¹	0.461	0.0480	0.0777	0.344 ¹	0.344 ¹	0.410	0.138	0.0558	0.153	0.0524	0.0734	0.0200 U	0.0200 U
Cis-1,2-Dichloroethene	µg/L	16	0.29	0.20 U	0.20 U	0.20 U	0.56	0.35	0.20 U	0.20 U	0.20 U	0.20 U	0.52	0.20 U	0.20 U	1.00	0.20 U	0.20 U	0.20 U	0.20 U
Benzene	µg/L	5.0	--	--	--	--	--	3.73	--	--	--	--	--	--	--	--	--	--	0.20 U	0.20 U

Notes:

- ¹ MW-30 and MW-31 monitor the former Glitsa property and are not CPOC wells.
- ² MW-27, a downgradient A-Zone well across SR 99 consistently has arsenic at concentrations greater than the CUL due to a cement kiln dust deposit that is across the street from the Settlement Area. MW-27 is not a CPOC well for arsenic.
- ³ MW-18 is completed in refuse along the downgradient edge of the Landfill; MW-32 and MW-33 are completed beneath refuse along the downgradient edge.

█ = Exceeds cleanup level for CPOC wells

-- = Not analyzed

U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.

J+ = The result is an estimated quantity, but the result may be biased high. The associated numerical value is the approximate concentration of the analyte in the sample.

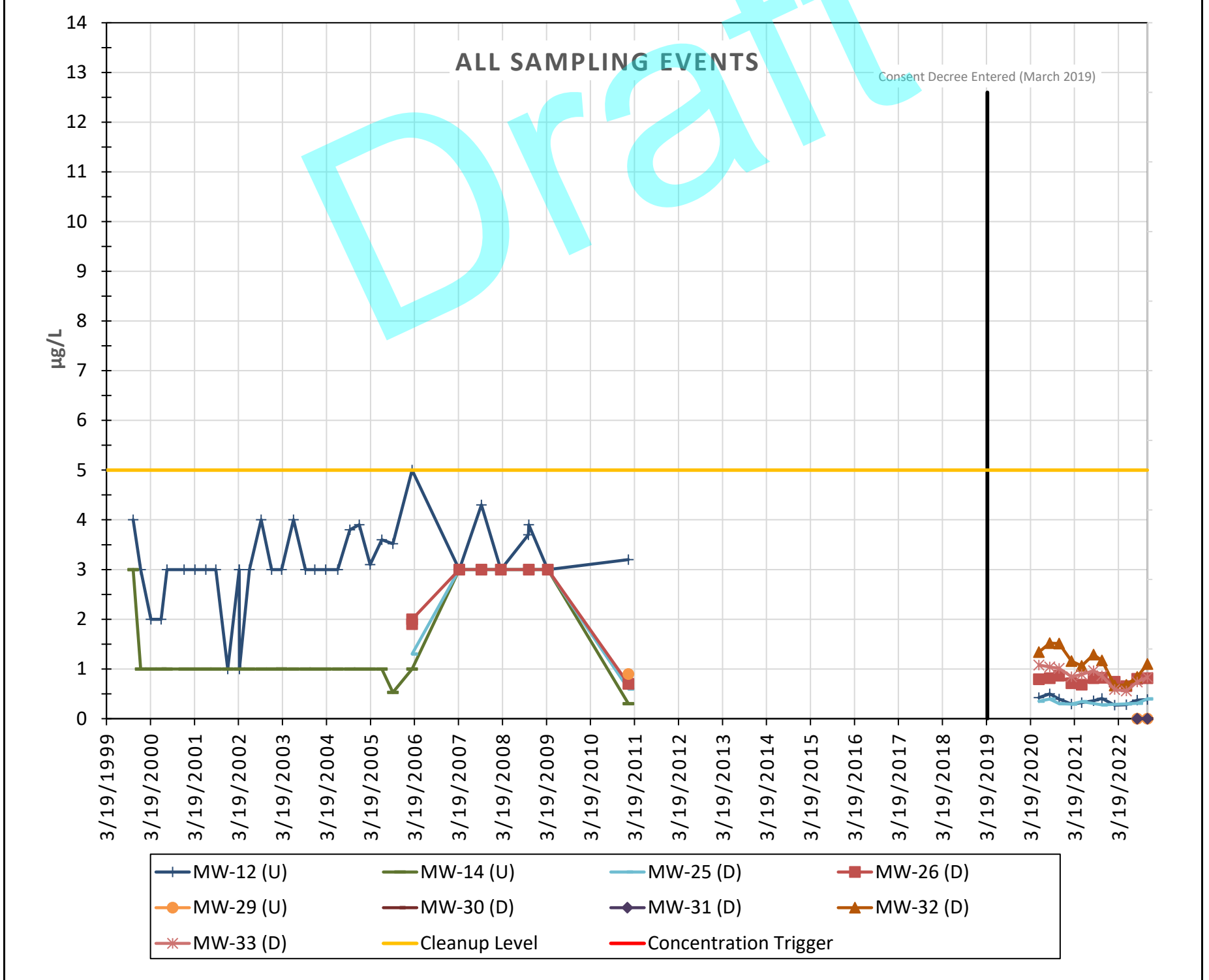
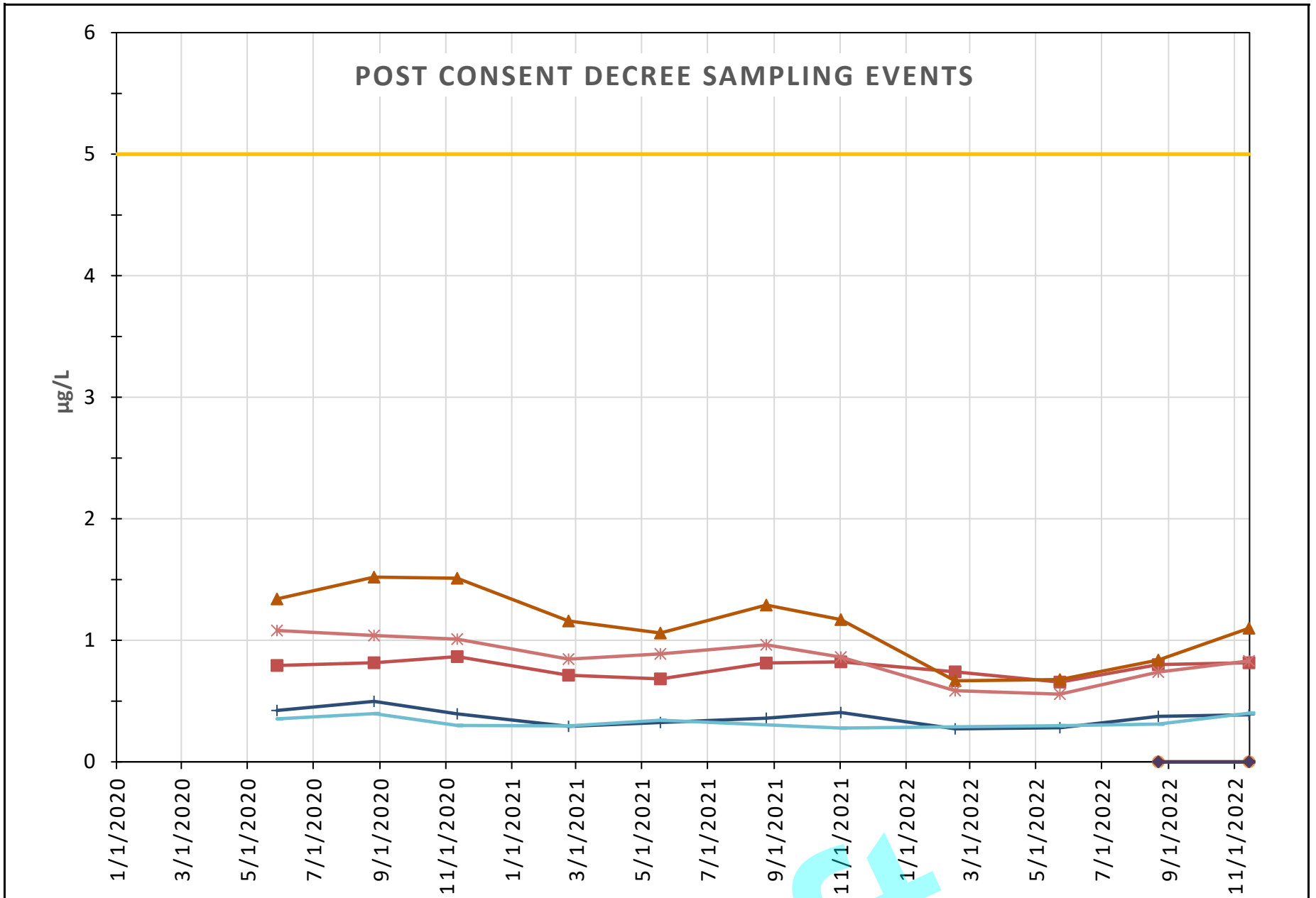
Abbreviations:

- µg/L Micrograms per liter
- mg/L Milligrams per liter
- µS/cm Microsiemens per centimeter
- NTU Nephelometric Turbidity unit
- CPOC Conditional point of compliance

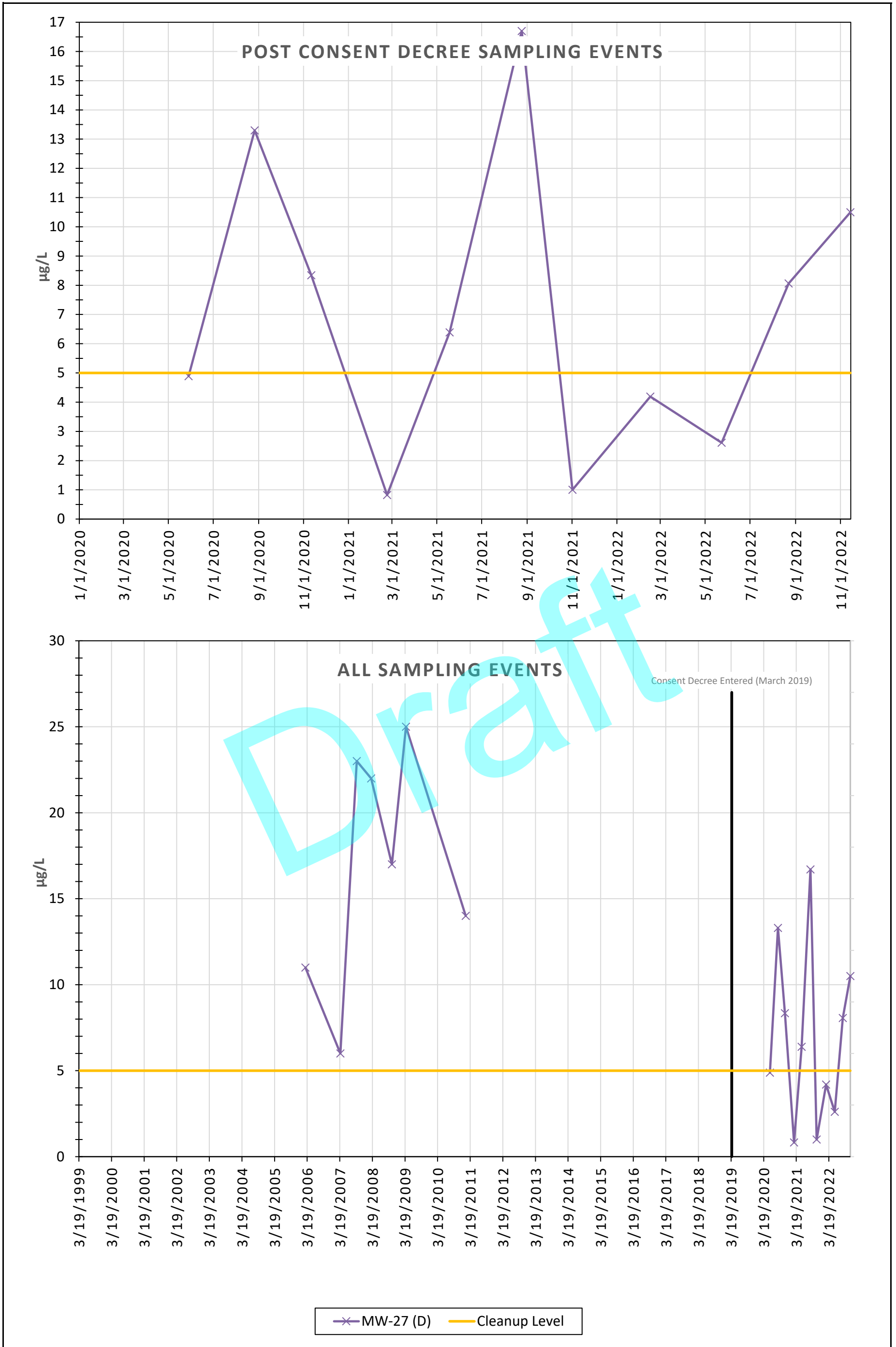
Attachment 3

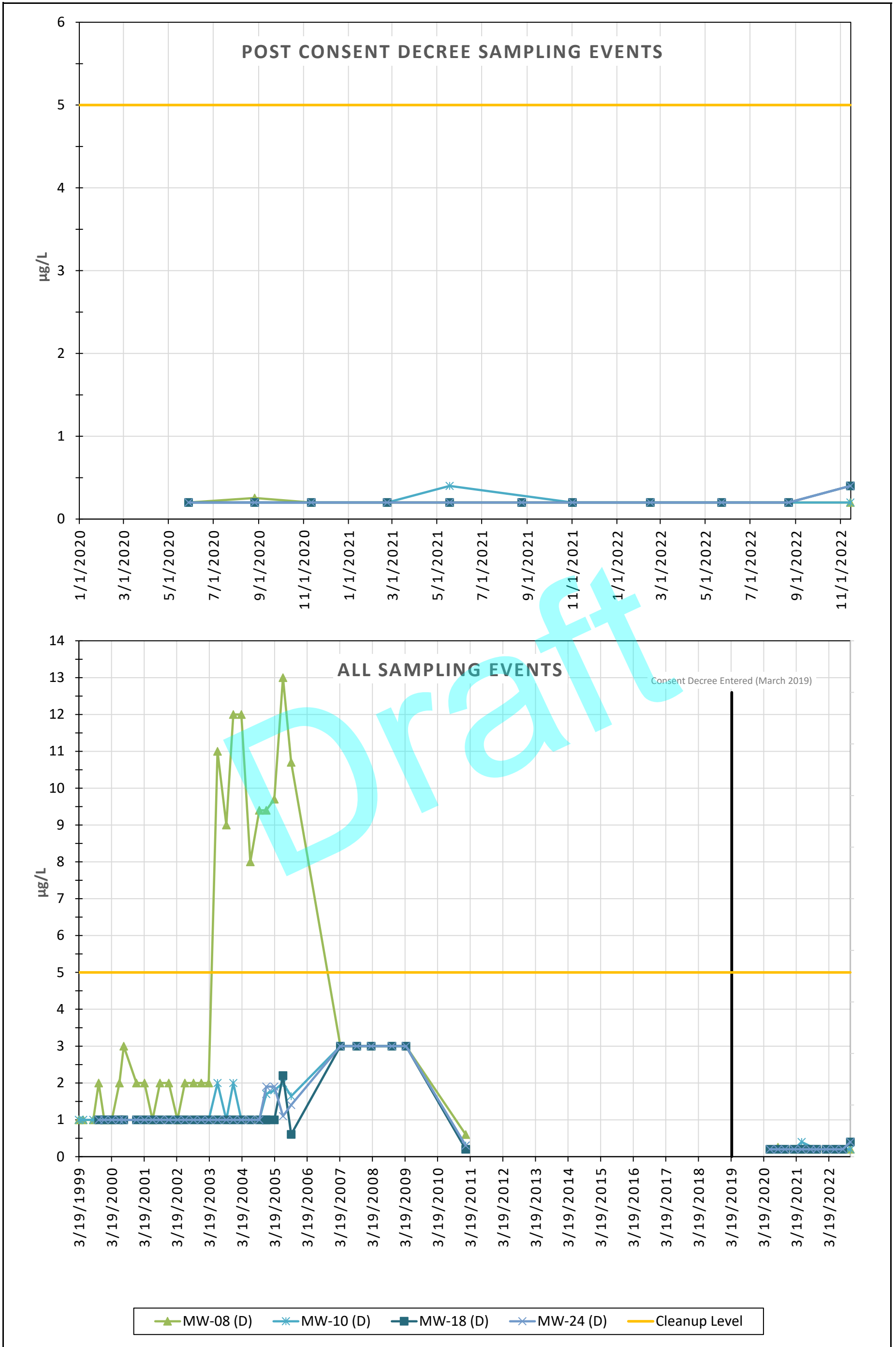
Groundwater Quality Time Series Plots
through Fourth Quarter 2022

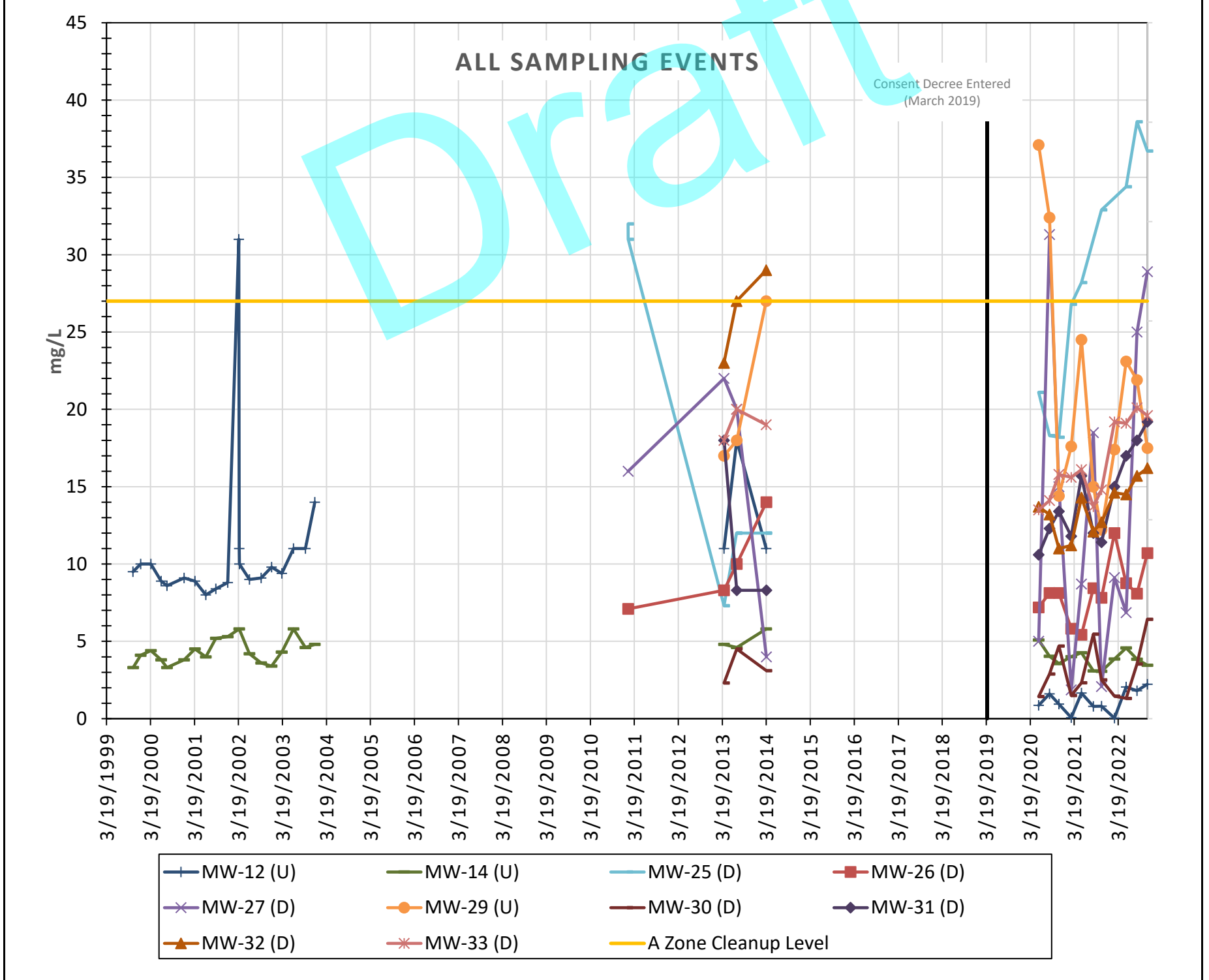
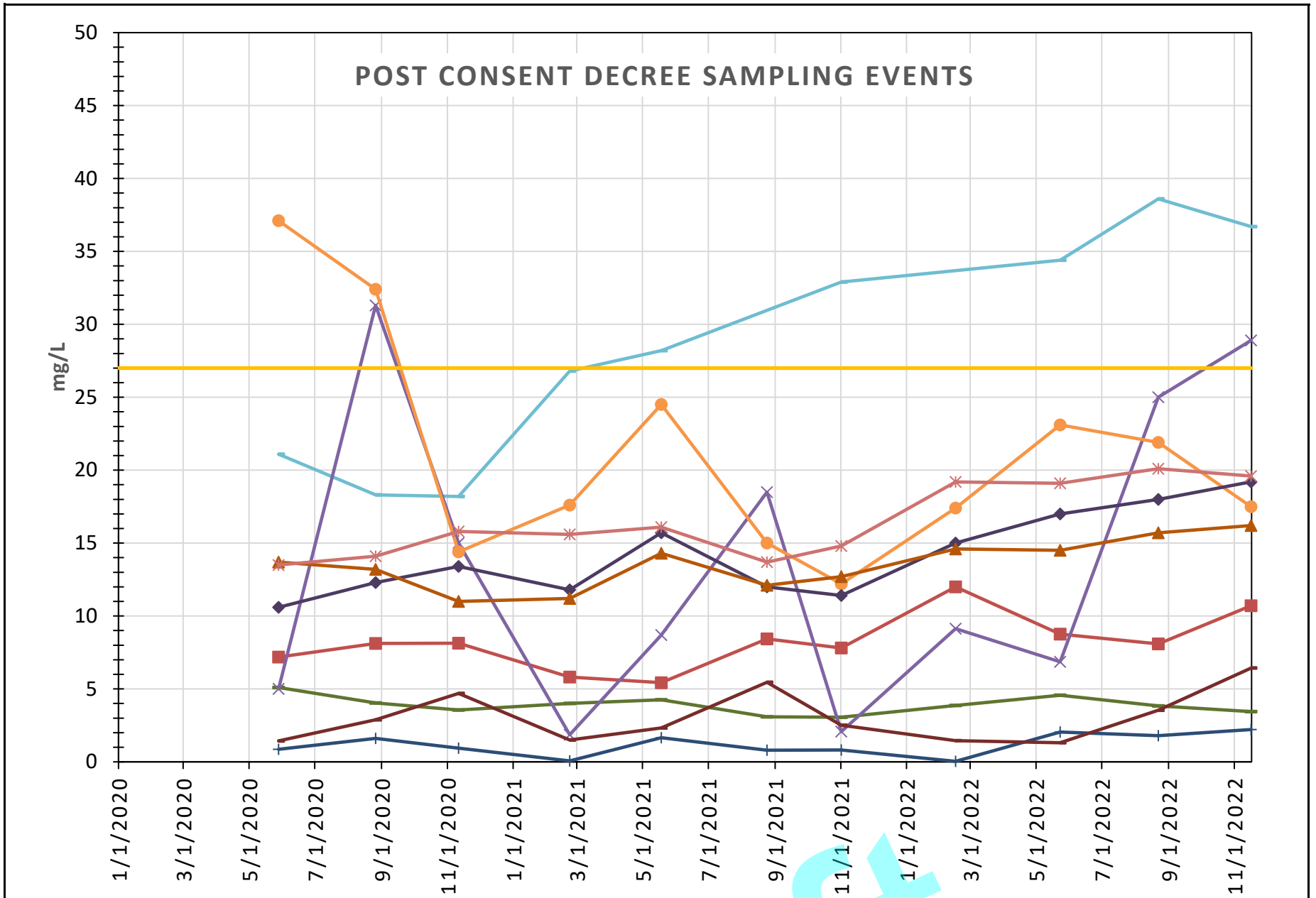




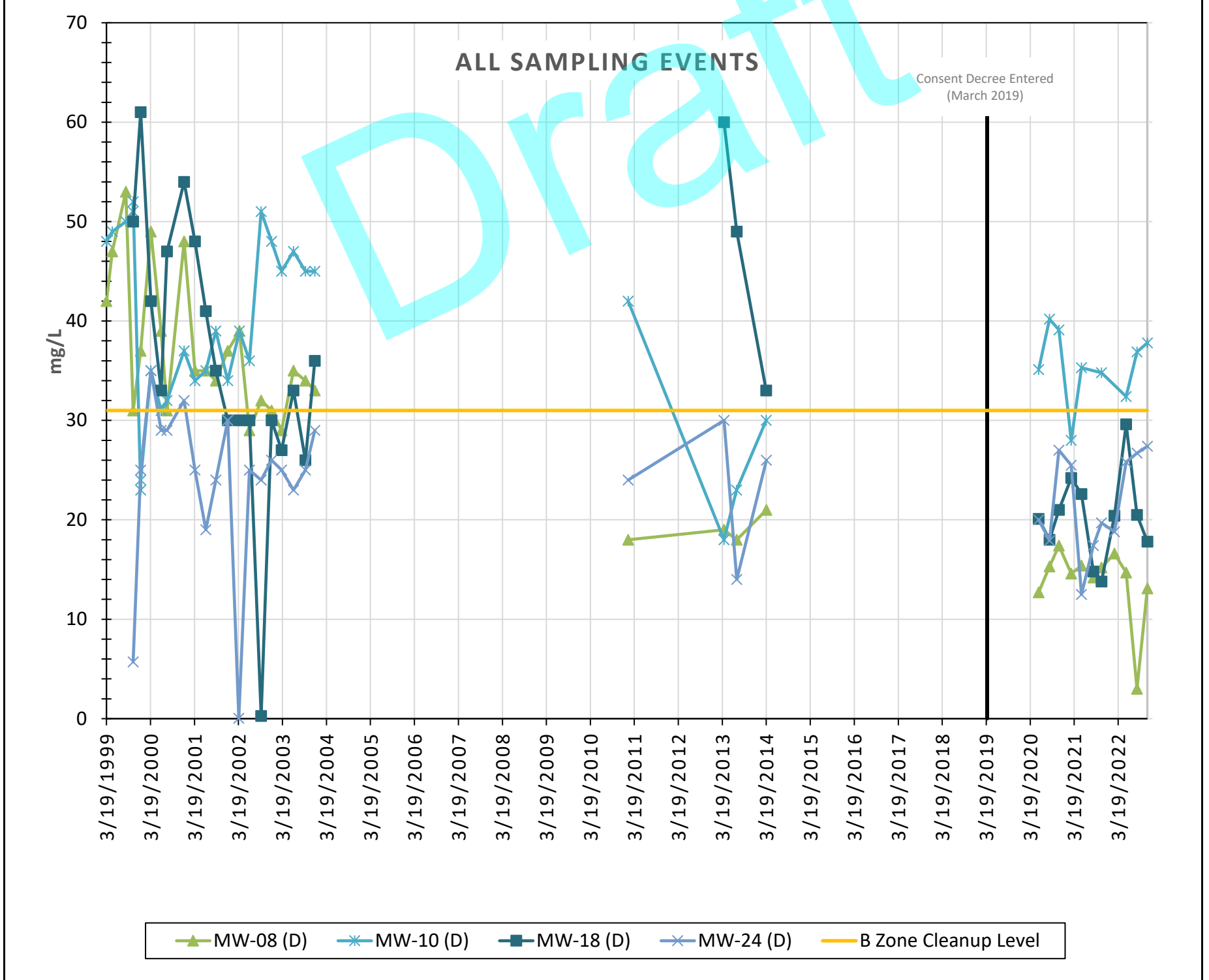
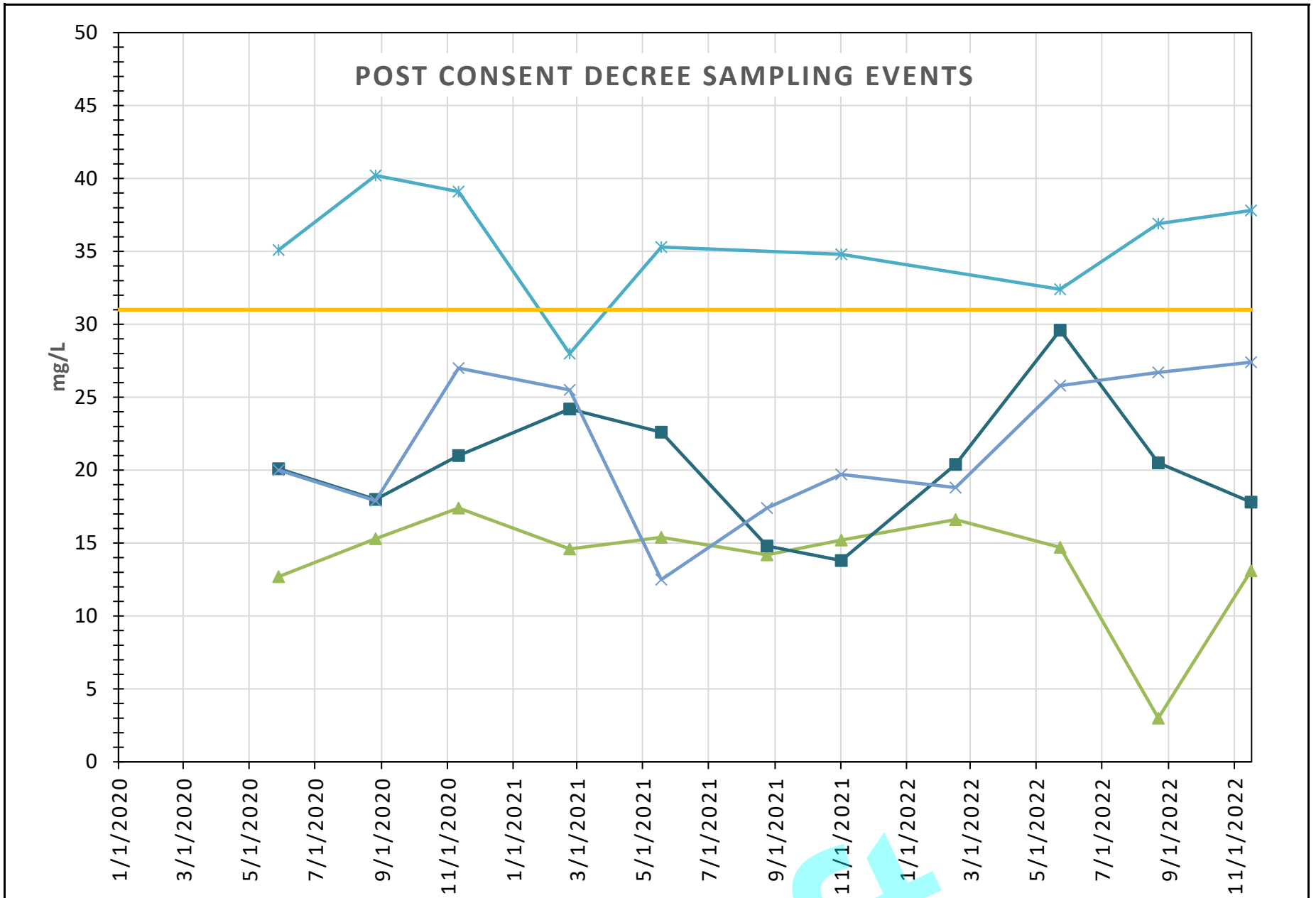
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U = Upgradient



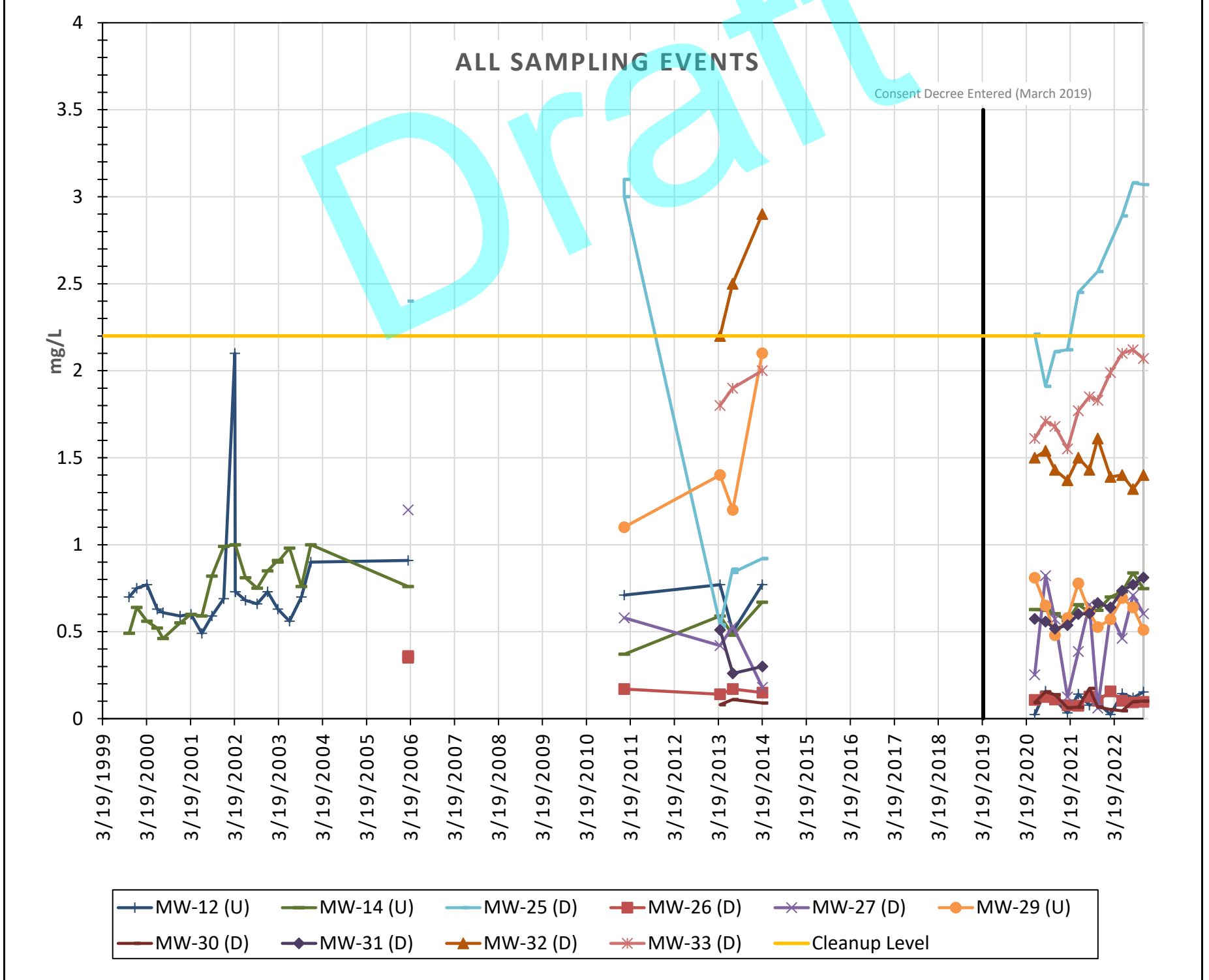
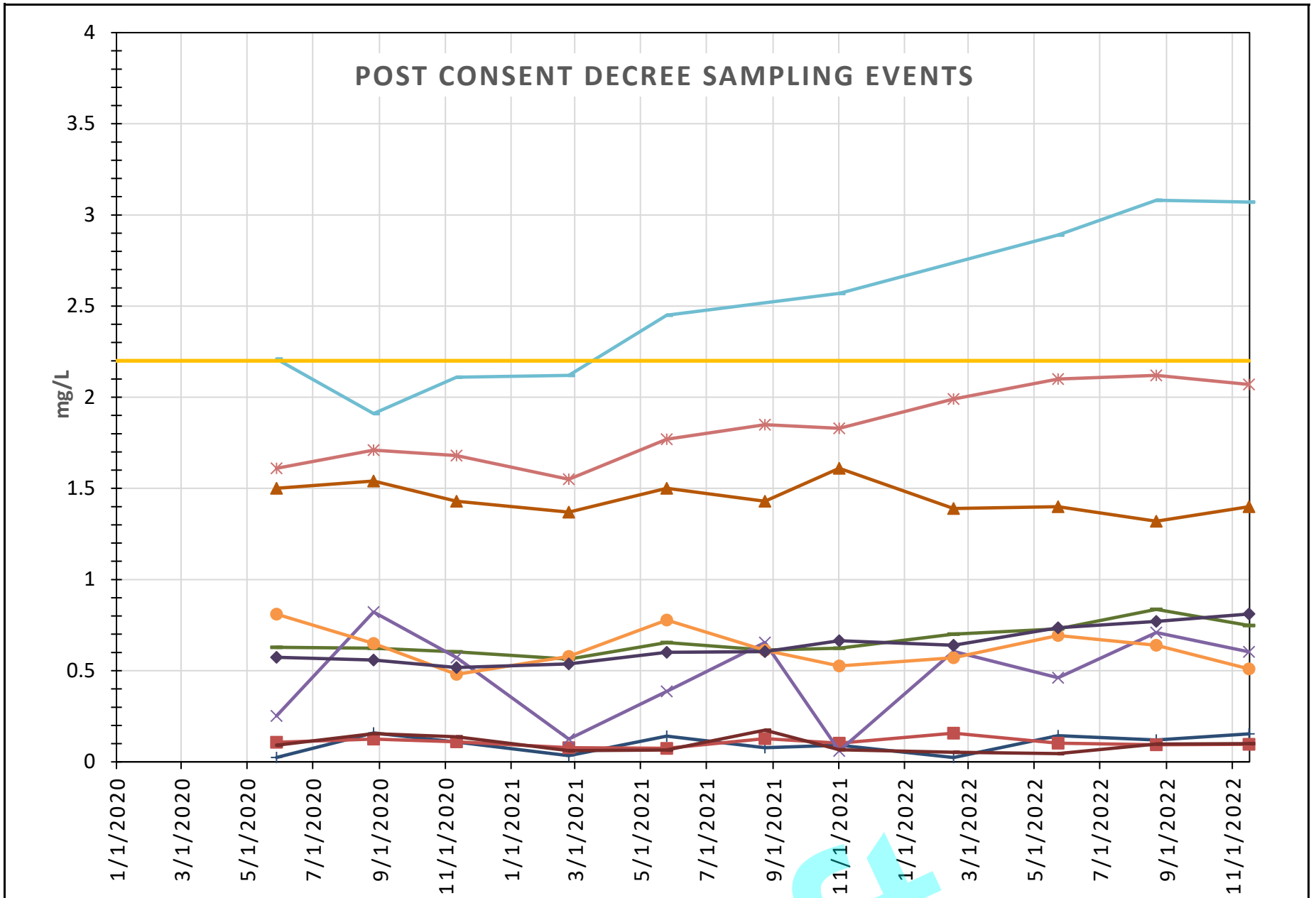


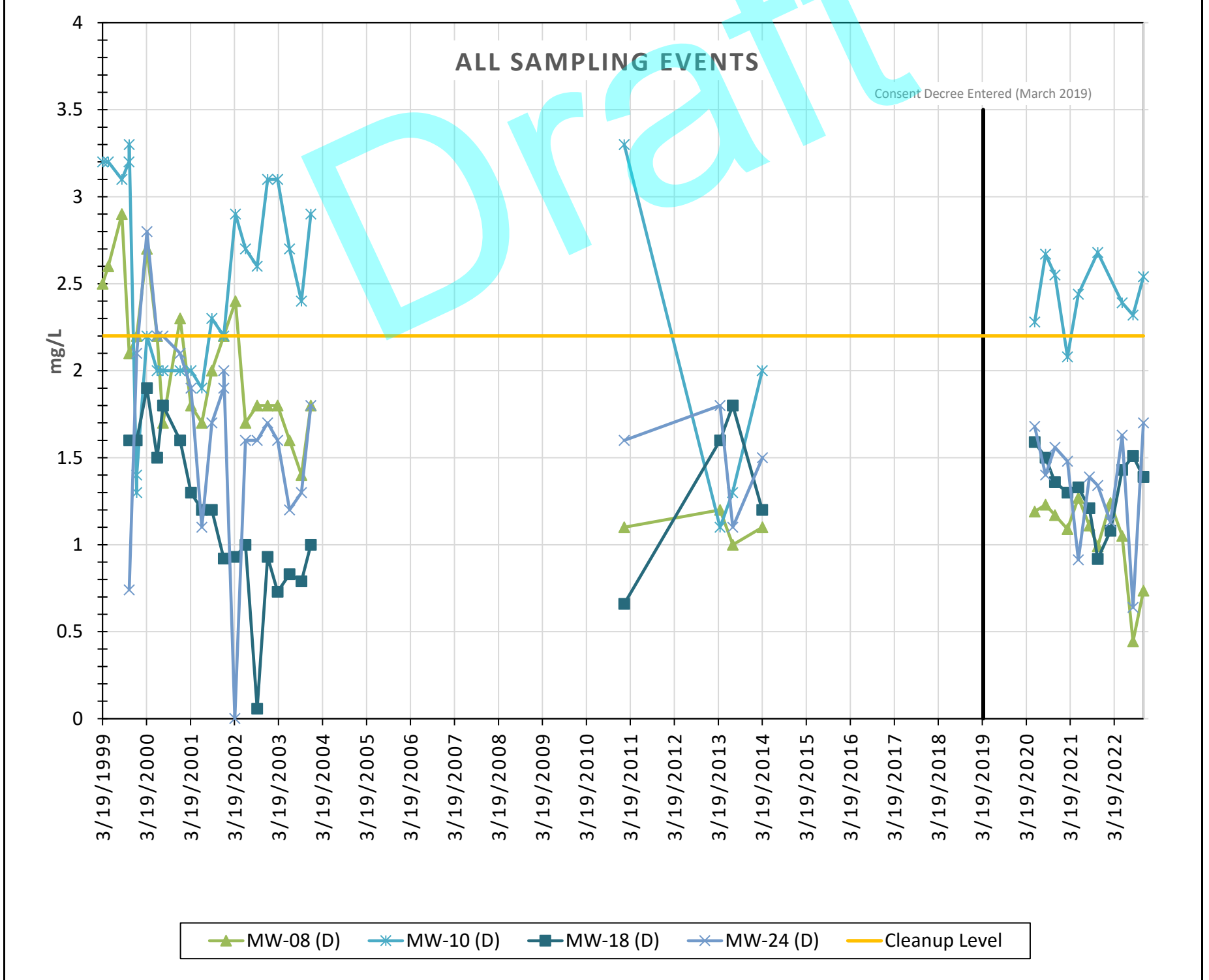
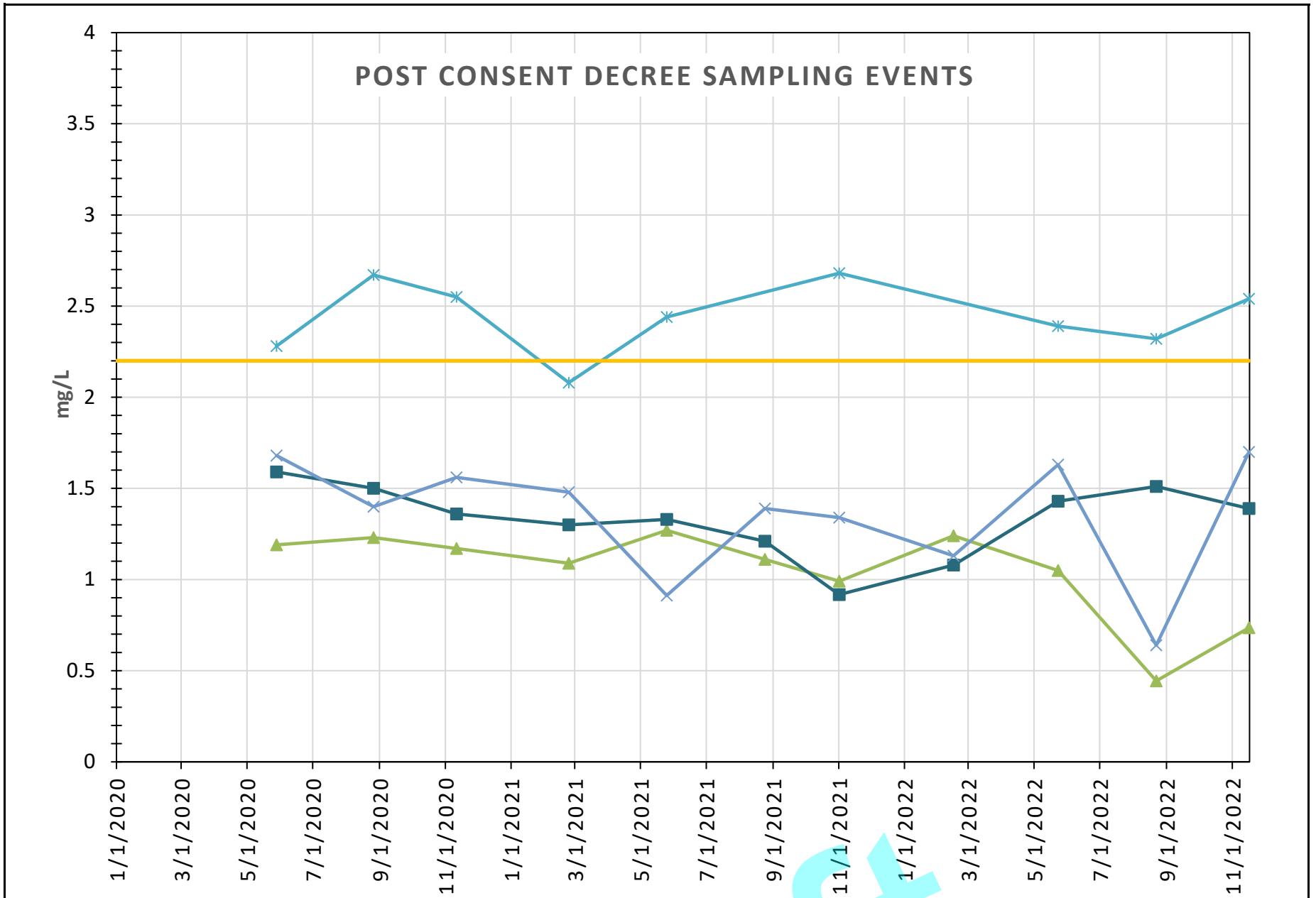


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U = Upgradient



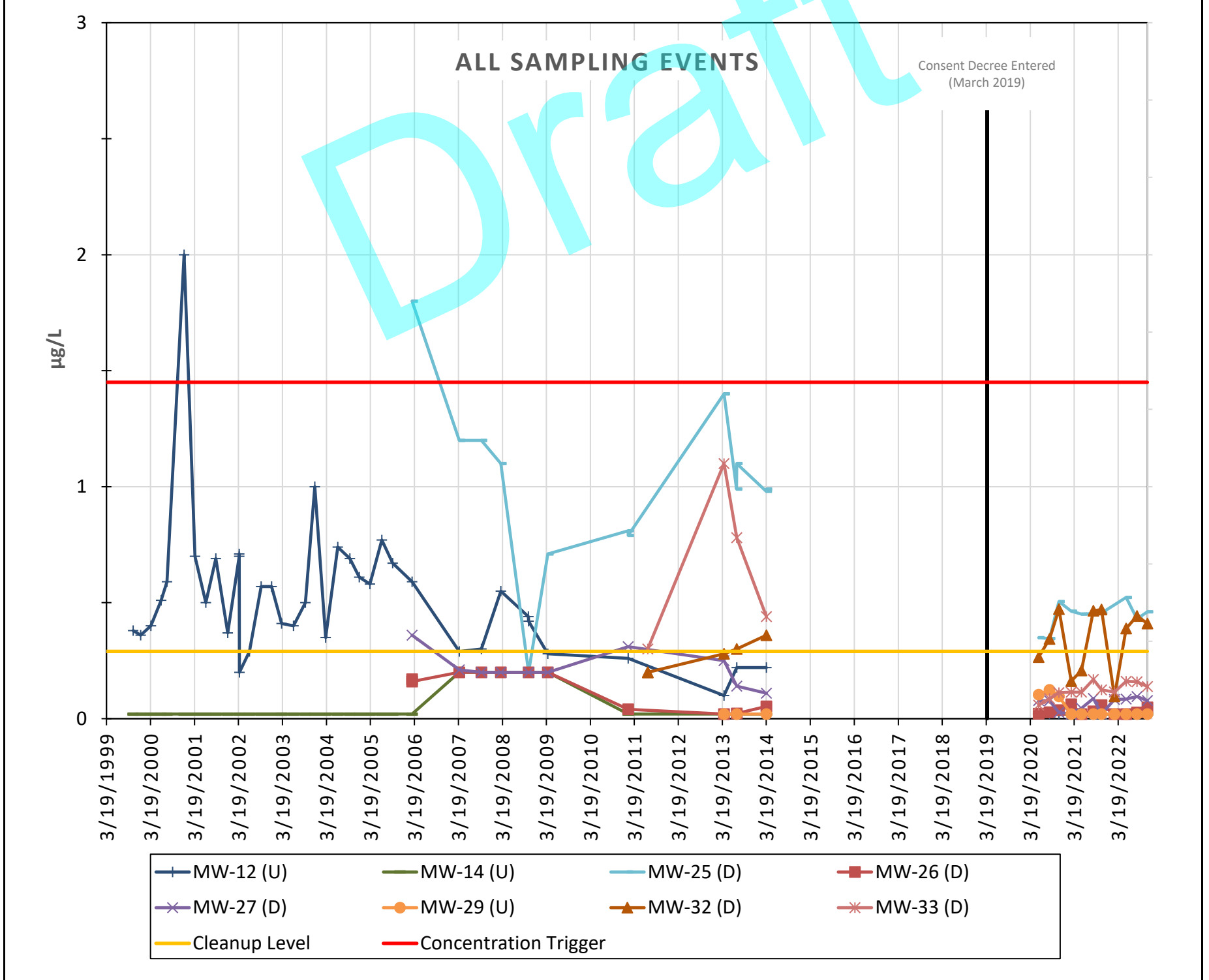
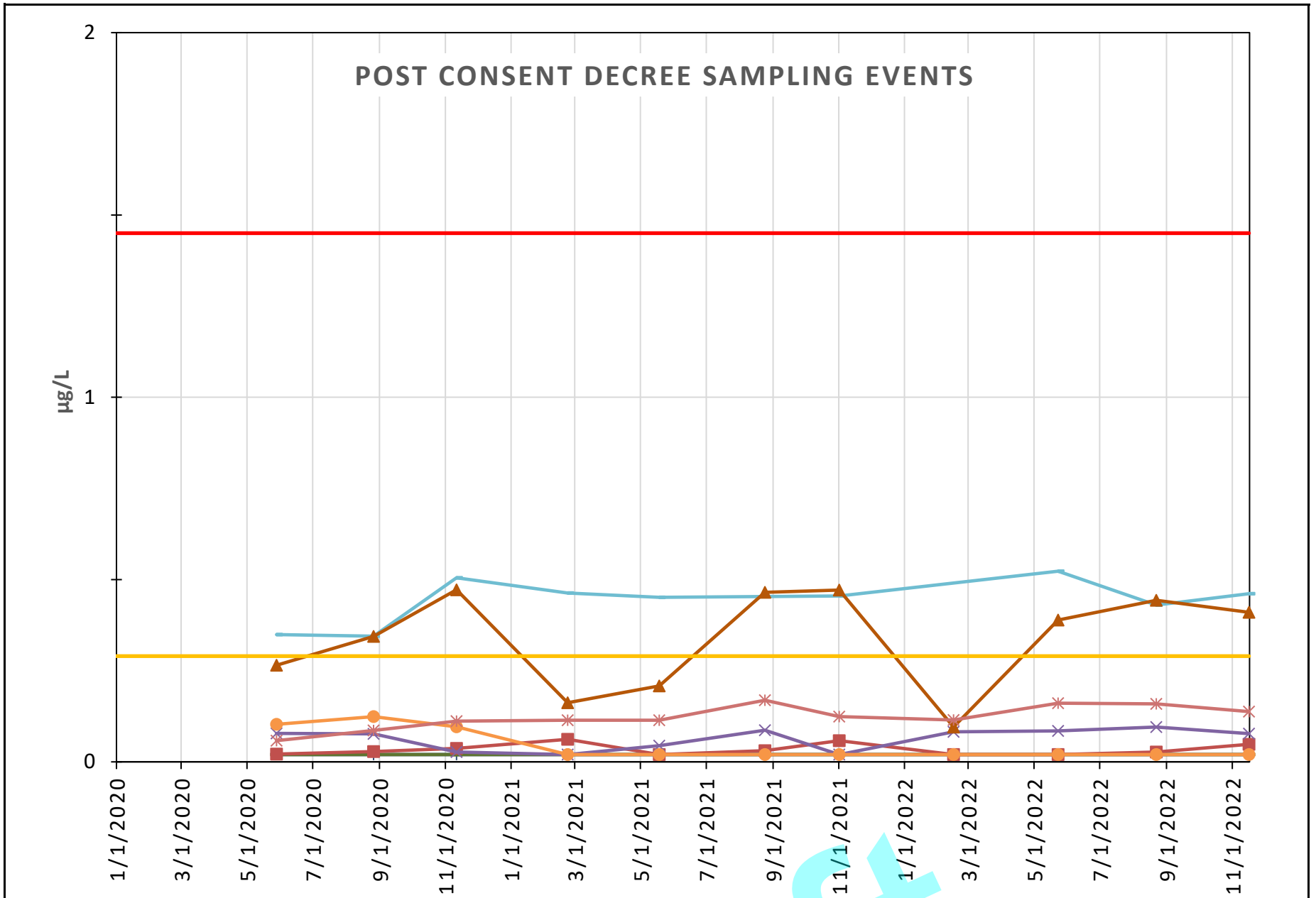
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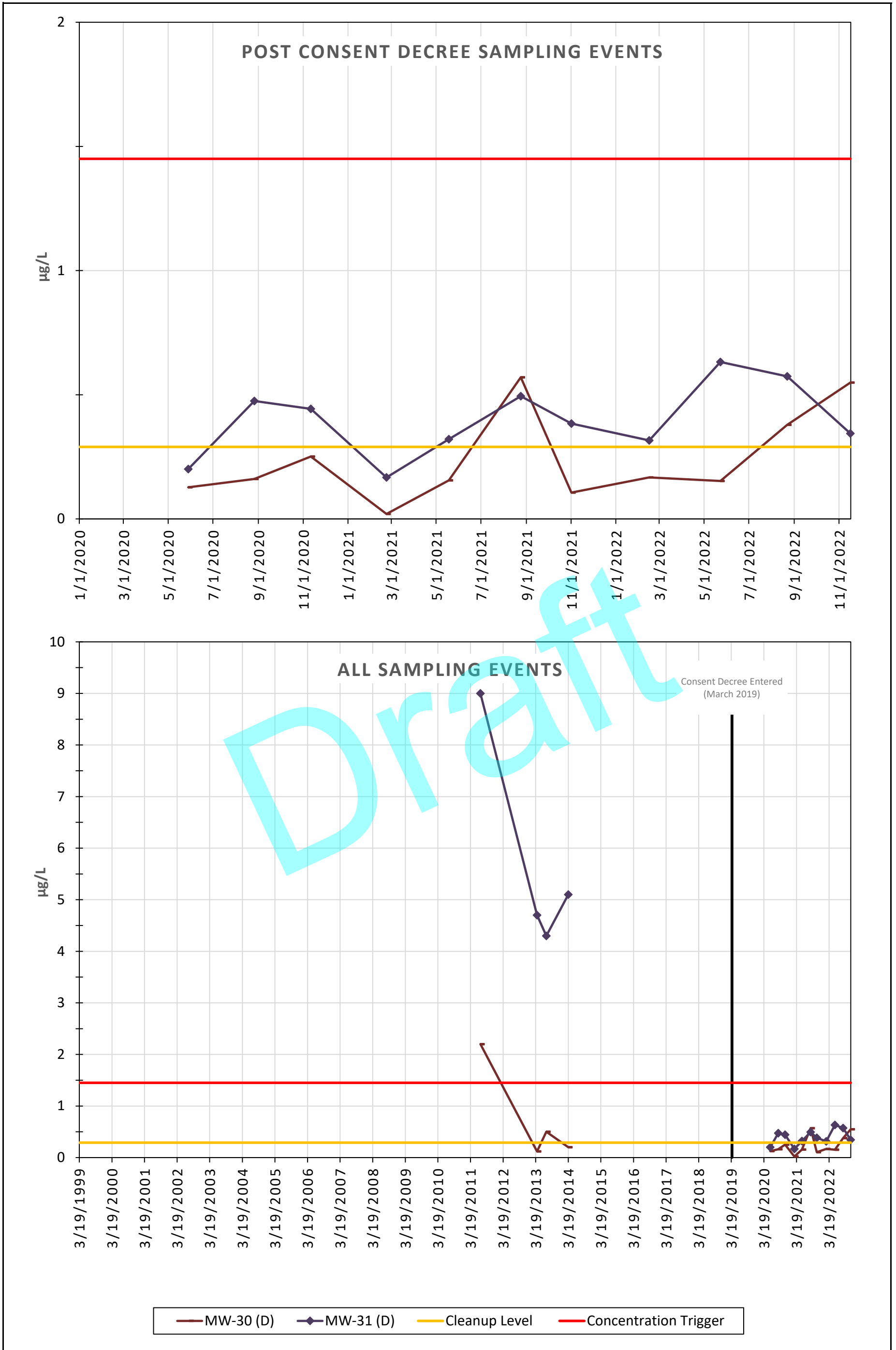


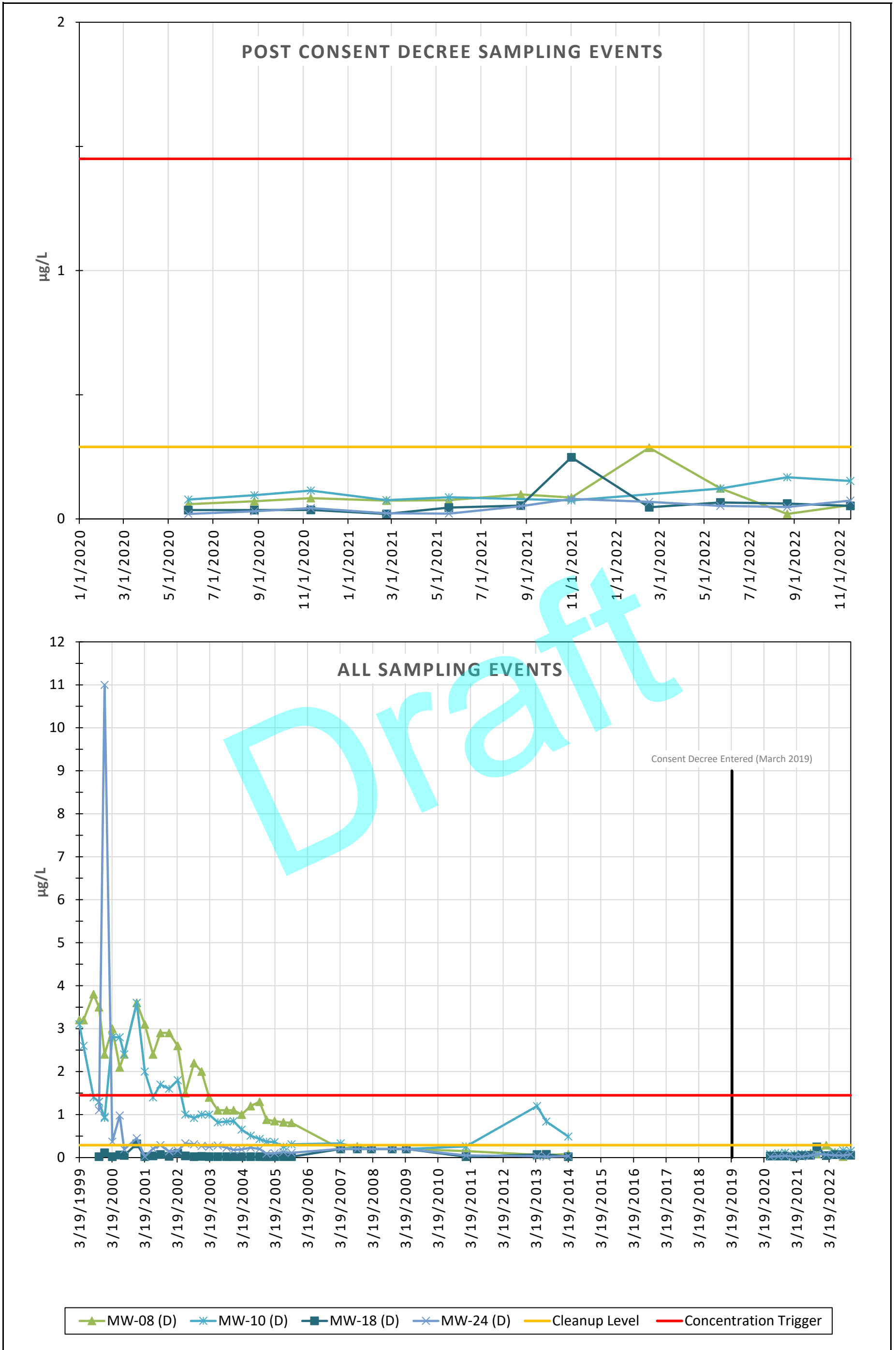


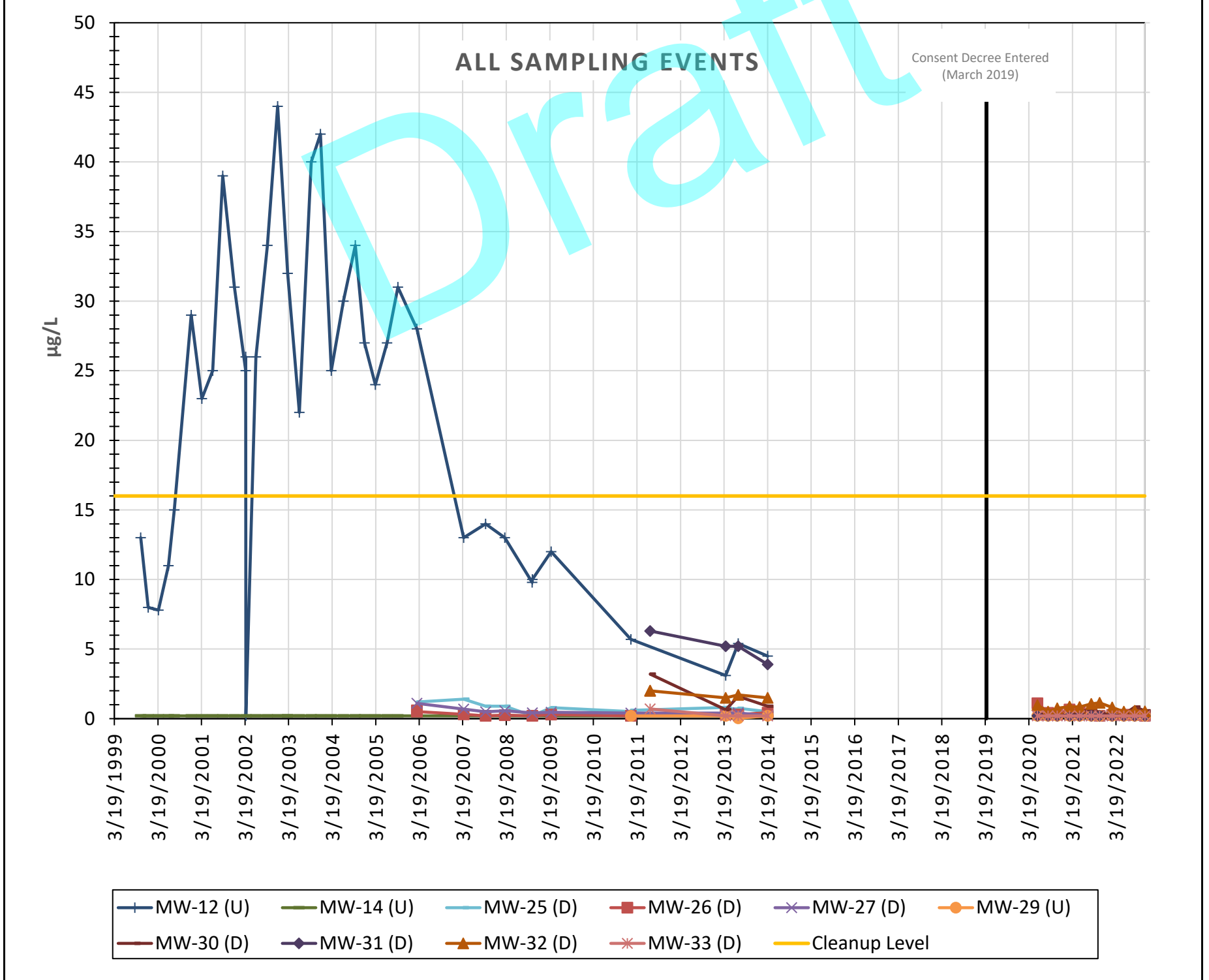
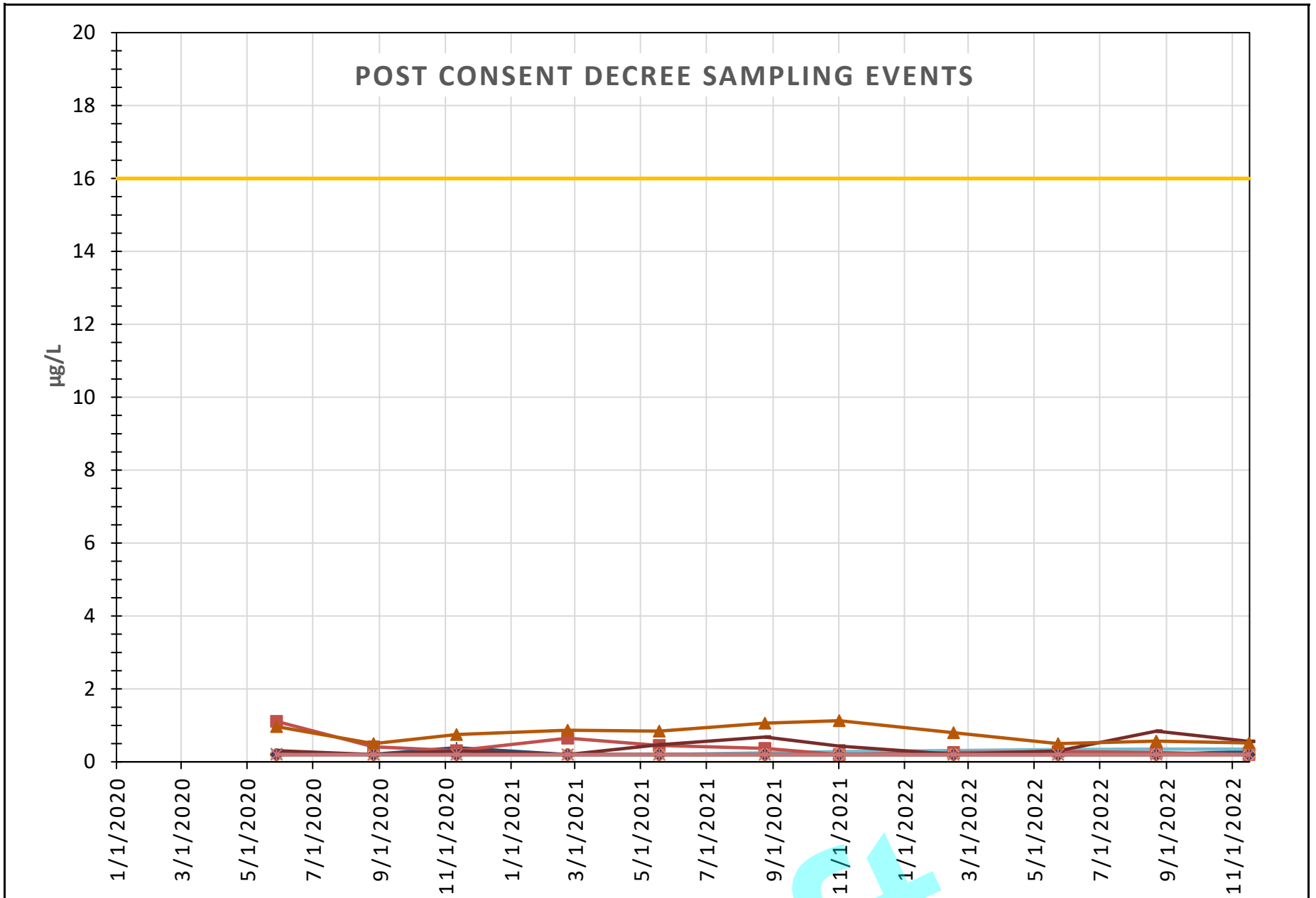
▲ MW-08 (D)
 ✱ MW-10 (D)
 ■ MW-18 (D)
 ✱ MW-24 (D)
 — Cleanup Level

D = Downgradient
U = Upgradient

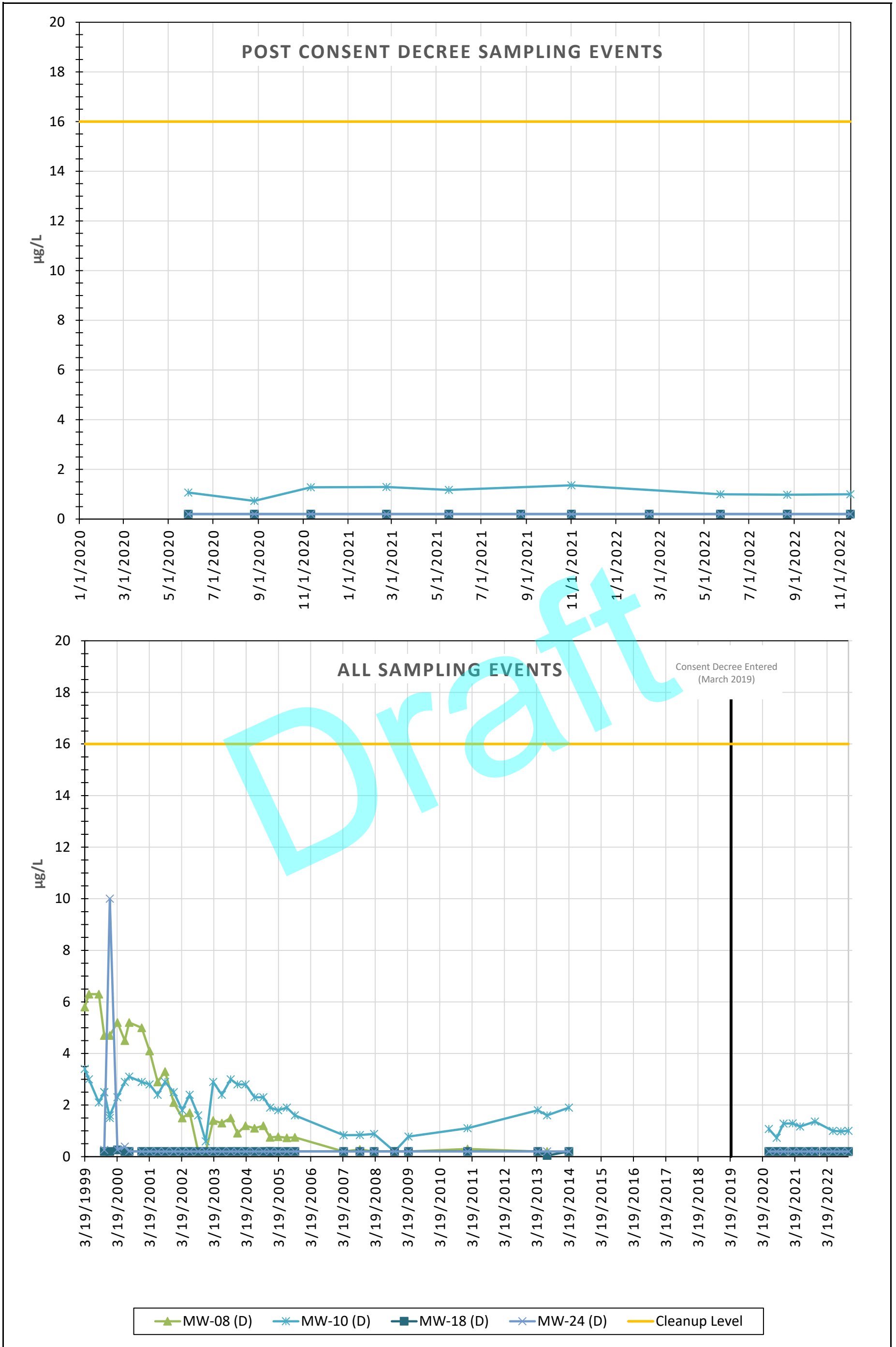


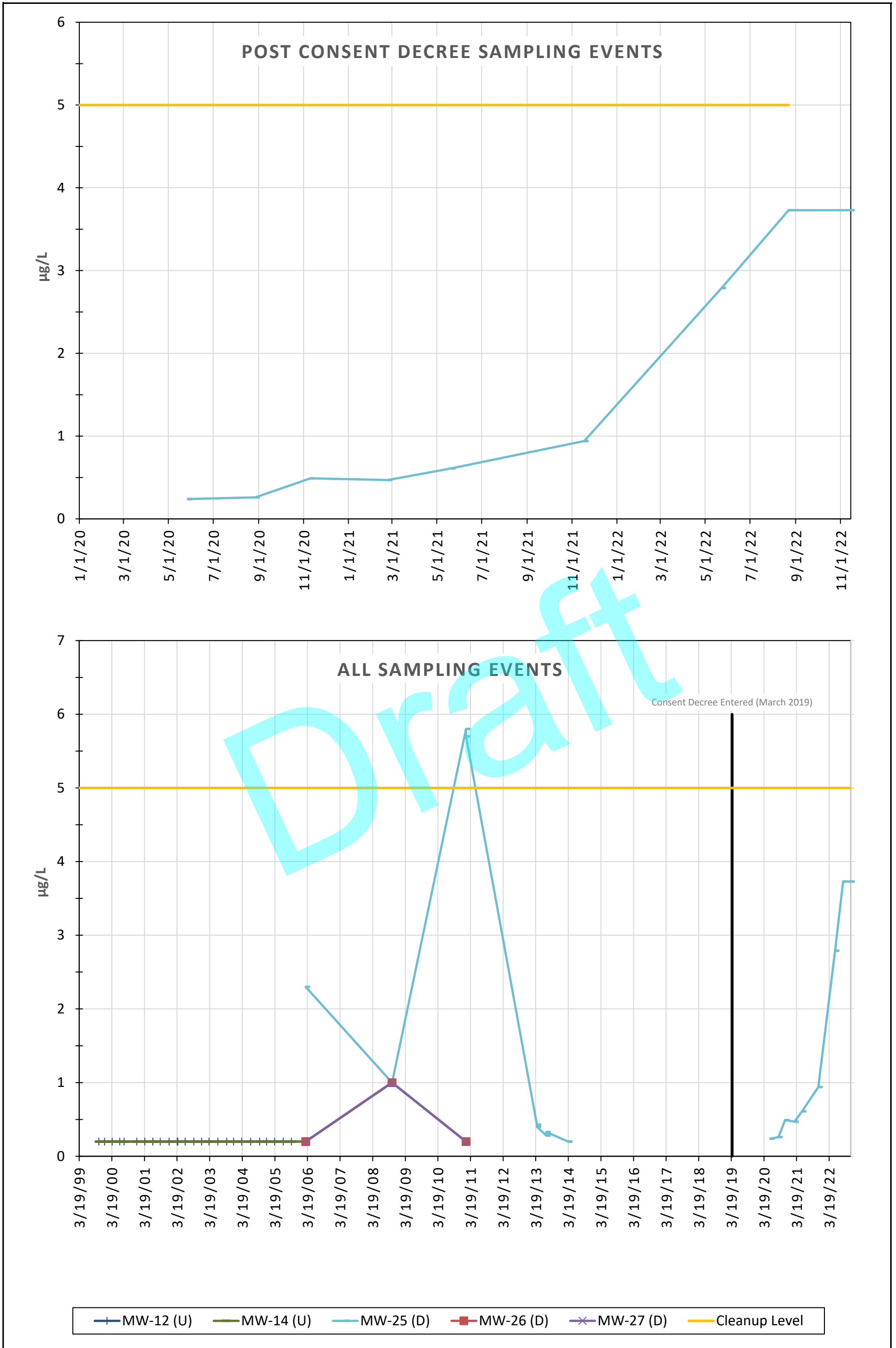






D = Downgradient
U = Upgradient





Attachment 4

Fourth Quarter 2022 Groundwater
Laboratory Data





Analytical Resources, LLC
Analytical Chemists and Consultants

20 December 2022

Jeff Neuner
Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle, WA 98124-4018

RE: South Park Landfill -Parametrix Water (553-1550-067)

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

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

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

Associated Work Order(s)
22K0297

Associated SDG ID(s)
N/A

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

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

Analytical Resources, LLC

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

Shelly Fishel, Project Manager



Chain of Custody Record & Laboratory Analysis Request

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

ARI Assigned Number: 22K0297	Turn-around Requested: 2 weeks	Date: 11/15/2022
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 2
Client Contact: Laura Lee	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 3.3

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments	
Samplers: Chris Bourgeois HWA					cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**							
Sample ID	Date	Time	Matrix	Number of Containers												
SPL-GW-MW12-1122			water	8	X		X	X	X							**Field-filtered
SPL-GW-MW14-1122			water	7	X		X	X								
SPL-GW-MW29-1122			water	13	X		X	X								MS/MSD
SPL-GW-MW18-1122			water	8	X		X	X	X							
SPL-GW-MW32-1122	11/14/22	1400	water	8	X		X	X	X							
SPL-GW-MW33-1122	11/14/22	1510	water	8	X		X	X	X							
SPL-GW-MW10-1122	11/14/22	930	water	8	X		X	X	X							
SPL-GW-MW60-1122			water	7	X		X	X								
SPL-GW-MW80-1122	11/15/22		water	2		X	X									
Comments/Special Instructions	Relinquished by: (Signature) <i>CB</i>		Received by: (Signature) <i>Cierra Wilson</i>		Relinquished by: (Signature) <i>Cierra Wilson</i>					Received by: (Signature) <i>Phillip Bates</i>						
	Printed Name: Chris Bourgeois		Printed Name: Cierra Wilson		Printed Name: Cierra Wilson					Printed Name: Phillip Bates						
	Company: HWA		Company: HWA		Company:					Company: AR						
	Date & Time: 11/15/22 1410		Date & Time: 11/15/22 1410		Date & Time:					Date & Time: 11/15/22 14:30						

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

Sample Retention Policy: Unless specified by work order or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

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

ARI Assigned Number: 22K0297	Turn-around Requested: 2 weeks	Date: 11/15/2022
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 21 of 21
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 3.3

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments		
Client Project #: 553-1550-067		Samplers: Chris Bourgeois HWA			cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**								
Sample ID	Date	Time	Matrix	Number of Containers													
SPL-GW-MW25-1122	11/14/22	1050	water	8		X	X	X	X								**Field-filtered
SPL-GW-MW30-1122			water	7	X		X	X									
SPL-GW-MW31-1122			water	13	X		X	X									MS/MSD
SPL-GW-MW24-1122	11/16/22	1245	water	8	X		X	X	X								
SPL-GW-MW26-1122	11/15/22	1345	water	8	X		X	X	X								
SPL-GW-MW08-1122	11/15/22	1055	water	8	X		X	X	X								
SPL-GW-MW27-1122	11/15/22	950	water	8	X		X	X	X								
SPL-GW-MW61-1122			water	7	X		X	X									
SPL-GW-MW81-1122			water	2		X	X										
Comments/Special Instructions	Relinquished by: (Signature) <i>Sierra Wilson</i>	Received by: (Signature) <i>Philip Bates</i>			Relinquished by: (Signature)						Received by: (Signature)						
	Printed Name: <i>Sierra Wilson</i>	Printed Name: <i>Philip Bates</i>			Printed Name:						Printed Name:						
	Company:	Company: <i>AR</i>			Company:						Company:						
	Date & Time:	Date & Time: <i>11/15/22 11:00</i>			Date & Time:						Date & Time:						

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Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Jeff Neuner

Reported:
20-Dec-2022 11:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW32-1122	22K0297-01	Water	14-Nov-2022 14:00	15-Nov-2022 14:30
SPL-GW-MW32-1122	22K0297-02	Water	14-Nov-2022 14:00	15-Nov-2022 14:30
SPL-GW-MW33-1122	22K0297-03	Water	14-Nov-2022 15:10	15-Nov-2022 14:30
SPL-GW-MW33-1122	22K0297-04	Water	14-Nov-2022 15:10	15-Nov-2022 14:30
SPL-GW-MW10-1122	22K0297-05	Water	14-Nov-2022 09:30	15-Nov-2022 14:30
SPL-GW-MW10-1122	22K0297-06	Water	14-Nov-2022 09:30	15-Nov-2022 14:30
SPL-GW-MW80-1122	22K0297-07	Water	14-Nov-2022 00:00	15-Nov-2022 14:30
SPL-GW-MW25-1122	22K0297-08	Water	14-Nov-2022 10:50	15-Nov-2022 14:30
SPL-GW-MW25-1122	22K0297-09	Water	14-Nov-2022 10:50	15-Nov-2022 14:30
SPL-GW-MW24-1122	22K0297-10	Water	15-Nov-2022 12:45	15-Nov-2022 14:30
SPL-GW-MW24-1122	22K0297-11	Water	15-Nov-2022 12:45	15-Nov-2022 14:30
SPL-GW-MW26-1122	22K0297-12	Water	15-Nov-2022 13:45	15-Nov-2022 14:30
SPL-GW-MW26-1122	22K0297-13	Water	15-Nov-2022 13:45	15-Nov-2022 14:30
SPL-GW-MW08-1122	22K0297-14	Water	15-Nov-2022 10:55	15-Nov-2022 14:30
SPL-GW-MW08-1122	22K0297-15	Water	15-Nov-2022 10:55	15-Nov-2022 14:30
SPL-GW-MW27-1122	22K0297-16	Water	15-Nov-2022 09:50	15-Nov-2022 14:30
SPL-GW-MW27-1122	22K0297-17	Water	15-Nov-2022 09:50	15-Nov-2022 14:30



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Jeff Neuner

Reported:
20-Dec-2022 11:29

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Work Order: 22K0297

Revised Report - December 20, 2022

This report was revised to include missing Benzene data for sample 22K0297-08.

Sample receipt

Sample(s) as listed on the preceding page were received 15-Nov-2022 14:30 under ARI work order 22K0297. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD)



Seattle Public Utilities

700-5th Ave, Ste 4900, Box 34018

Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water

Project Number: 553-1550-067

Project Manager: Jeff Neuner

Reported:

20-Dec-2022 11:29

were within control limits.

Total and Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

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

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



WORK ORDER

22K0297

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

Client: Seattle Public Utilities

Project Manager: Shelly Fishel

Project: South Park Landfill -Parametrix Water

Project Number: 553-1550-067

Preservation Confirmation

Container ID	Container Type	pH
22K0297-01 A	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass (P)
22K0297-01 B	VOA Vial, Clear, 40 mL, HCL	
22K0297-01 C	VOA Vial, Clear, 40 mL, HCL	
22K0297-01 D	VOA Vial, Clear, 40 mL, HCL	
22K0297-01 E	VOA Vial, Clear, 40 mL	
22K0297-01 F	VOA Vial, Clear, 40 mL	
22K0297-01 G	VOA Vial, Clear, 40 mL	
22K0297-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 P
22K0297-03 A	HDPE NM, 500 mL, 1:1 HNO3	L2 P
22K0297-03 B	VOA Vial, Clear, 40 mL, HCL	
22K0297-03 C	VOA Vial, Clear, 40 mL, HCL	
22K0297-03 D	VOA Vial, Clear, 40 mL, HCL	
22K0297-03 E	VOA Vial, Clear, 40 mL	
22K0297-03 F	VOA Vial, Clear, 40 mL	
22K0297-03 G	VOA Vial, Clear, 40 mL	
22K0297-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 P
22K0297-05 A	HDPE NM, 500 mL, 1:1 HNO3	L2 P
22K0297-05 B	VOA Vial, Clear, 40 mL, HCL	
22K0297-05 C	VOA Vial, Clear, 40 mL, HCL	
22K0297-05 D	VOA Vial, Clear, 40 mL, HCL	
22K0297-05 E	VOA Vial, Clear, 40 mL	
22K0297-05 F	VOA Vial, Clear, 40 mL	
22K0297-05 G	VOA Vial, Clear, 40 mL	
22K0297-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 P
22K0297-07 A	VOA Vial, Clear, 40 mL, HCL	
22K0297-07 B	VOA Vial, Clear, 40 mL	
22K0297-08 A	HDPE NM, 500 mL, 1:1 HNO3	L2 P
22K0297-08 B	VOA Vial, Clear, 40 mL, HCL	
22K0297-08 C	VOA Vial, Clear, 40 mL, HCL	
22K0297-08 D	VOA Vial, Clear, 40 mL, HCL	
22K0297-08 E	VOA Vial, Clear, 40 mL	
22K0297-08 F	VOA Vial, Clear, 40 mL	
22K0297-08 G	VOA Vial, Clear, 40 mL	
22K0297-09 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2



WORK ORDER

22K0297

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

Client: Seattle Public Utilities

Project Manager: Shelly Fishel

Project: South Park Landfill -Parametrix Water

Project Number: 553-1550-067

22K0297-10 A	HDPE NM, 500 mL, 1:1 HNO3	LL	P
22K0297-10 B	VOA Vial, Clear, 40 mL, HCL		
22K0297-10 C	VOA Vial, Clear, 40 mL, HCL		
22K0297-10 D	VOA Vial, Clear, 40 mL, HCL		
22K0297-10 E	VOA Vial, Clear, 40 mL		
22K0297-10 F	VOA Vial, Clear, 40 mL		
22K0297-10 G	VOA Vial, Clear, 40 mL		
22K0297-11 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL	P
22K0297-12 A	HDPE NM, 500 mL, 1:1 HNO3	LL	P
22K0297-12 B	VOA Vial, Clear, 40 mL, HCL		
22K0297-12 C	VOA Vial, Clear, 40 mL, HCL		
22K0297-12 D	VOA Vial, Clear, 40 mL, HCL		
22K0297-12 E	VOA Vial, Clear, 40 mL		
22K0297-12 F	VOA Vial, Clear, 40 mL		
22K0297-12 G	VOA Vial, Clear, 40 mL		
22K0297-13 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL	P
22K0297-14 A	HDPE NM, 500 mL, 1:1 HNO3	LL	P
22K0297-14 B	VOA Vial, Clear, 40 mL, HCL		
22K0297-14 C	VOA Vial, Clear, 40 mL, HCL		
22K0297-14 D	VOA Vial, Clear, 40 mL, HCL		
22K0297-14 E	VOA Vial, Clear, 40 mL		
22K0297-14 F	VOA Vial, Clear, 40 mL		
22K0297-14 G	VOA Vial, Clear, 40 mL		
22K0297-15 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL	P
22K0297-16 A	HDPE NM, 500 mL, 1:1 HNO3	LL	P
22K0297-16 B	VOA Vial, Clear, 40 mL, HCL		
22K0297-16 C	VOA Vial, Clear, 40 mL, HCL		
22K0297-16 D	VOA Vial, Clear, 40 mL, HCL		
22K0297-16 E	VOA Vial, Clear, 40 mL		
22K0297-16 F	VOA Vial, Clear, 40 mL		
22K0297-16 G	VOA Vial, Clear, 40 mL		
22K0297-17 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL	P

Preservation Confirmed By _____

Date _____

Reviewed By _____

Date _____



Cooler Receipt Form

ARI Client: Seattle Public Utilities

Project Name: SPU South Public Landfill

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 22K0297

Tracking No: _____ NA

Preliminary Examination Phase:

- Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO
- Were custody papers included with the cooler? YES NO
- Were custody papers properly filled out (ink, signed, etc.) YES NO
- Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time: 14:30 _____ 3.3 _____
If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 5009709

Cooler Accepted by: PIB Date: 11/15/22 Time: 14:30

Complete custody forms and attach all shipping documents

Log-In Phase:

- Was a temperature blank included in the cooler? YES NO
- What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
- Was sufficient ice used (if appropriate)? NA YES NO
- How were bottles sealed in plastic bags? Individually Grouped Not
- Did all bottles arrive in good condition (unbroken)? YES NO
- Were all bottle labels complete and legible? YES NO
- Did the number of containers listed on COC match with the number of containers received? YES NO
- Did all bottle labels and tags agree with custody papers? YES NO
- Were all bottles used correct for the requested analyses? YES NO
- Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO
- Were all VOC vials free of air bubbles? NA YES NO
- Was sufficient amount of sample sent in each bottle? PIB YES NO
- Date VOC Trip Blank was made at ARI..... NA YES NO 11/07
- Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: PIB Date: 11/07 11/15/22 Time: 15:13 Labels checked by: _____

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

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

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW32-1122
22K0297-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/14/2022 14:00
Instrument: NT3 Analyst: PKC Analyzed: 11/17/2022 16:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-01 B
Preparation Batch: BKK0521 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.52	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	106	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW32-1122
22K0297-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/14/2022 14:00
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 14:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-01 G
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.410	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>102</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW32-1122
22K0297-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/14/2022 14:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 01:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-01 A 01
Preparation Batch: BKK0760 Sample Size: 25 mL
Prepared: 11/28/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	16.2	mg/L	D
Manganese	7439-96-5	20	0.0100	1.40	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW32-1122
22K0297-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/14/2022 14:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/26/2022 04:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-02 A 01
Preparation Batch: BKK0662 Sample Size: 25 mL
Prepared: 11/22/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	1.10	ug/L	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW33-1122
22K0297-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/14/2022 15:10
Instrument: NT3 Analyst: PKC Analyzed: 11/17/2022 16:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-03 B
Preparation Batch: BKK0521 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>106</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW33-1122
22K0297-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/14/2022 15:10
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 14:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-03 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.138	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>102</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW33-1122
22K0297-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/14/2022 15:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 01:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-03 A 01
Preparation Batch: BKK0760 Sample Size: 25 mL
Prepared: 11/28/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	19.6	mg/L	D
Manganese	7439-96-5	20	0.0100	2.07	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW33-1122
22K0297-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/14/2022 15:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/26/2022 03:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-04 A 01
Preparation Batch: BKK0662 Sample Size: 25 mL
Prepared: 11/22/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.400	0.830	ug/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW10-1122
22K0297-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/14/2022 09:30
Instrument: NT3 Analyst: PKC Analyzed: 11/17/2022 17:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-05 B
Preparation Batch: BKK0521 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	1.00	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	98.9	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW10-1122
22K0297-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/14/2022 09:30
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 14:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-05 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.153	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>102</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW10-1122
22K0297-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/14/2022 09:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 01:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-05 A 01
Preparation Batch: BKK0760 Sample Size: 25 mL
Prepared: 11/28/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	37.8	mg/L	D
Manganese	7439-96-5	20	0.0100	2.54	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW10-1122
22K0297-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/14/2022 09:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/26/2022 04:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-06 A 01
Preparation Batch: BKK0662 Sample Size: 25 mL
Prepared: 11/22/2022 Final Volume: 25 mL

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW80-1122
22K0297-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/14/2022 00:00
Instrument: NT3 Analyst: PKC Analyzed: 11/17/2022 14:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-07 A
Preparation Batch: BKK0521 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>98.8</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW80-1122
22K0297-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/14/2022 00:00
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 11:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-07 B
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>100</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW25-1122
22K0297-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/14/2022 10:50
Instrument: NT3 Analyst: PKC Analyzed: 11/17/2022 17:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-08 B
Preparation Batch: BKK0521 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.35	ug/L	
Benzene	71-43-2	1	0.20	3.73	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>105</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW25-1122
22K0297-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/14/2022 10:50
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 15:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-08 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.461	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>97.7</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW25-1122
22K0297-08 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/14/2022 10:50
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 01:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-08 A 01
Preparation Batch: BKK0760 Sample Size: 25 mL
Prepared: 11/28/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	36.7	mg/L	D
Manganese	7439-96-5	20	0.0100	3.07	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW25-1122
22K0297-09 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/14/2022 10:50
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/26/2022 03:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-09 A 01
Preparation Batch: BKK0662 Sample Size: 25 mL
Prepared: 11/22/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.400	ND	ug/L	U



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW24-1122
22K0297-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/15/2022 12:45
Instrument: NT3 Analyst: PKC Analyzed: 11/17/2022 17:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-10 B
Preparation Batch: BKK0521 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	104	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW24-1122
22K0297-10 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/15/2022 12:45
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 15:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-10 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0734	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>102</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW24-1122
22K0297-10 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/15/2022 12:45
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 01:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-10 A 01
Preparation Batch: BKK0760 Sample Size: 25 mL
Prepared: 11/28/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	27.4	mg/L	D
Manganese	7439-96-5	20	0.0100	1.70	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW24-1122
22K0297-11 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/15/2022 12:45
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/26/2022 03:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-11 A 01
Preparation Batch: BKK0662 Sample Size: 25 mL
Prepared: 11/22/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.400	ND	ug/L	U



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW26-1122
22K0297-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/15/2022 13:45
Instrument: NT3 Analyst: PKC Analyzed: 11/17/2022 18:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-12 B
Preparation Batch: BKK0521 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	101	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW26-1122
22K0297-12 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/15/2022 13:45
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 15:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-12 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0480	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW26-1122
22K0297-12 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/15/2022 13:45
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 01:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-12 A 01
Preparation Batch: BKK0760 Sample Size: 25 mL
Prepared: 11/28/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	10.7	mg/L	D
Manganese	7439-96-5	1	0.000500	0.0967	mg/L	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW26-1122
22K0297-13 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/15/2022 13:45
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/26/2022 04:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-13 A 01
Preparation Batch: BKK0662 Sample Size: 25 mL
Prepared: 11/22/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	0.815	ug/L	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW08-1122
22K0297-14 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/15/2022 10:55
Instrument: NT3 Analyst: PKC Analyzed: 11/17/2022 18:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-14 B
Preparation Batch: BKK0521 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.9</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW08-1122
22K0297-14 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/15/2022 10:55
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 16:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-14 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0558	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW08-1122
22K0297-14 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/15/2022 10:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 01:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-14 A 01
Preparation Batch: BKK0760 Sample Size: 25 mL
Prepared: 11/28/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	13.1	mg/L	D
Manganese	7439-96-5	10	0.00500	0.736	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW08-1122
22K0297-15 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/15/2022 10:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/26/2022 04:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-15 A 01
Preparation Batch: BKK0662 Sample Size: 25 mL
Prepared: 11/22/2022 Final Volume: 25 mL

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW27-1122
22K0297-16 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/15/2022 09:50
Instrument: NT3 Analyst: PKC Analyzed: 11/17/2022 19:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-16 B
Preparation Batch: BKK0521 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	101	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW27-1122
22K0297-16 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/15/2022 09:50
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 16:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0297-16 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0777	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>102</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW27-1122
22K0297-16 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/15/2022 09:50
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 01:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-16 A 01
Preparation Batch: BKK0760 Sample Size: 25 mL
Prepared: 11/28/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	28.9	mg/L	D
Manganese	7439-96-5	10	0.00500	0.603	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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SPL-GW-MW27-1122
22K0297-17 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/15/2022 09:50
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/29/2022 05:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0297-17 A 01
Preparation Batch: BKK0662 Sample Size: 25 mL
Prepared: 11/22/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.400	10.5	ug/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0521 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0521-BLK2)		Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 14:08								
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.03		ug/L	5.00		101	80-129			
<i>Surrogate: Toluene-d8</i>	4.98		ug/L	5.00		99.6	80-120			
LCS (BKK0521-BS2)		Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 11:31								
cis-1,2-Dichloroethene	10.4	0.20	ug/L	10.0		104	80-121			
Benzene	10.4	0.20	ug/L	10.0		104	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.00		ug/L	5.00		100	80-129			
<i>Surrogate: Toluene-d8</i>	4.97		ug/L	5.00		99.4	80-120			
LCS Dup (BKK0521-BSD2)		Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 13:24								
cis-1,2-Dichloroethene	10.3	0.20	ug/L	10.0		103	80-121	0.42	30	
Benzene	10.7	0.20	ug/L	10.0		107	80-120	3.17	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.04		ug/L	5.00		101	80-129			
<i>Surrogate: Toluene-d8</i>	5.00		ug/L	5.00		100	80-120			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BKK0507 - EPA 8260D-SIM

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0507-BLK1)					Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 11:19					
Vinyl chloride	ND	0.0200	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4830		ug/L	5000		96.5	80-129			
LCS (BKK0507-BS1)					Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 09:43					
Vinyl chloride	2.23	0.0200	ug/L	2.00		112	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4980		ug/L	5000		99.6	80-129			
LCS Dup (BKK0507-BSD1)					Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 10:29					
Vinyl chloride	2.09	0.0200	ug/L	2.00		105	62-141	6.37	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4930		ug/L	5000		98.5	80-129			



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Jeff Neuner

Reported:
20-Dec-2022 11:29

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKK0760 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0760-BLK1)			Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 18:47								
Iron	54	ND	0.0360	mg/L							U
Iron	57	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U
Blank (BKK0760-BLK2)			Prepared: 28-Nov-2022 Analyzed: 06-Dec-2022 20:33								
Iron	54	ND	0.0360	mg/L							U
Iron	57	ND	0.0360	mg/L							U
LCS (BKK0760-BS1)			Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 18:52								
Iron	54	4.90	0.0360	mg/L	5.00		98.0	80-120			
Iron	57	4.76	0.0360	mg/L	5.00		95.1	80-120			
Manganese	55	0.0257	0.000500	mg/L	0.0250		103	80-120			
LCS (BKK0760-BS2)			Prepared: 28-Nov-2022 Analyzed: 06-Dec-2022 20:38								
Iron	54	4.82	0.0360	mg/L	5.00		96.5	80-120			
Iron	57	4.79	0.0360	mg/L	5.00		95.9	80-120			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 20-Dec-2022 11:29
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKK0662 - EPA 6020B UCT-KED

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0662-BLK1)						Prepared: 22-Nov-2022 Analyzed: 28-Nov-2022 20:07					
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BKK0662-BS1)						Prepared: 22-Nov-2022 Analyzed: 28-Nov-2022 20:12					
Arsenic, Dissolved	75a	24.4	0.200	ug/L	25.0		97.6	80-120			



Seattle Public Utilities
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Project: South Park Landfill -Parametrix Water
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Project Manager: Jeff Neuner

Reported:
20-Dec-2022 11:29

Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Iron-54	NELAP,WADOE,DoD-ELAP
Iron-57	NELAP,WADOE,DoD-ELAP
Manganese-55	NELAP,WADOE,DoD-ELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
EPA 8260D in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE



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Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE



Seattle Public Utilities
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Project Manager: Jeff Neuner

Reported:

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Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8260D-SIM in Water

Acrylonitrile	NELAP,WADOE
Vinyl chloride	NELAP,WADOE
1,1-Dichloroethene	NELAP,WADOE
cis-1,2-Dichloroethene	NELAP,WADOE
trans-1,2-Dichloroethene	NELAP,WADOE
Trichloroethene	NELAP,WADOE
Tetrachloroethene	NELAP,WADOE
1,1,2,2-Tetrachloroethane	NELAP,WADOE
1,2-Dichloroethane	NELAP,WADOE
Benzene	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



Seattle Public Utilities
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Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Jeff Neuner

Reported:
20-Dec-2022 11:29

Notes and Definitions

- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- HC The natural concentration of the spiked analyte is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- J Estimated concentration value detected below the reporting limit.
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants

11 December 2022

Jeff Neuner
Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle, WA 98124-4018

RE: South Park Landfill -Parametrix Water (553-155-067)

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

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

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

Associated Work Order(s)
22K0327

Associated SDG ID(s)
N/A

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

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

Analytical Resources, LLC

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

Shelly Fishel, Project Manager



Chain of Custody Record & Laboratory Analysis Request

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

ARI Assigned Number: 22K0327	Turn-around Requested: 2 weeks	Date: 11/16/2022
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 21 of 21
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 2.5

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments		
Client Project #: 553-1550-067		Samplers: Chris Bourgeois HWA			cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**								
Sample ID	Date	Time	Matrix	Number of Containers													
SPL-GW-MW25-1122			water	8		X	X	X	X								**Field-filtered
SPL-GW-MW30-1122	11/15/22	1645	water	7	X		X	X									
SPL-GW-MW31-1122	11/15/22	JP/1600	water	13	X		X	X									MS/MSD
SPL-GW-MW24-1122	11/15/22	1645	water	8	X		X	X	X								
SPL-GW-MW26-1122			water	8	X		X	X	X								
SPL-GW-MW08-1122			water	8	X		X	X	X								
SPL-GW-MW27-1122			water	8	X		X	X	X								
SPL-GW-MW61-1122	11/15/22	1630	water	7	X		X	X									
SPL-GW-MW81-1122	11/16/22	—	water	2		X	X										
Comments/Special Instructions	Relinquished by: (Signature) <i>Chris Bourgeois</i>		Received by: (Signature) <i>Phillip Bates</i>		Relinquished by: (Signature)					Received by: (Signature)							
	Printed Name: Chris Bourgeois		Printed Name: Phillip Bates		Printed Name:					Printed Name:							
	Company: HWA		Company: AR		Company:					Company:							
	Date & Time: 11/16/22 1500		Date & Time: 11/16/22 15:00		Date & Time:					Date & Time:							

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

Sample Retention Policy: Unless specified by work order or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
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Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Jeff Neuner

Reported:
11-Dec-2022 12:11

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW12-1122	22K0327-01	Water	16-Nov-2022 09:20	16-Nov-2022 15:00
SPL-GW-MW12-1122	22K0327-02	Water	16-Nov-2022 09:20	16-Nov-2022 15:00
SPL-GW-MW14-1122	22K0327-03	Water	16-Nov-2022 11:25	16-Nov-2022 15:00
SPL-GW-MW29-1122	22K0327-04	Water	16-Nov-2022 12:35	16-Nov-2022 15:00
SPL-GW-MW18-1122	22K0327-05	Water	16-Nov-2022 14:15	16-Nov-2022 15:00
SPL-GW-MW18-1122	22K0327-06	Water	16-Nov-2022 14:15	16-Nov-2022 15:00
SPL-GW-MW60-1122	22K0327-07	Water	16-Nov-2022 13:00	16-Nov-2022 15:00
SPL-GW-MW30-1122	22K0327-08	Water	15-Nov-2022 16:45	16-Nov-2022 15:00
SPL-GW-MW31-1122	22K0327-09	Water	15-Nov-2022 16:00	16-Nov-2022 15:00
SPL-GW-MW61-1122	22K0327-10	Water	15-Nov-2022 16:30	16-Nov-2022 15:00
SPL-GW-MW81-1122	22K0327-11	Water	15-Nov-2022 00:00	16-Nov-2022 15:00



Seattle Public Utilities
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Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Jeff Neuner

Reported:
11-Dec-2022 12:11

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Work Order: 22K0327

Sample receipt

Sample(s) as listed on the preceding page were received 16-Nov-2022 15:00 under ARI work order 22K0327. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

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

Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.



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Reported:
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The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total and Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

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

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

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



WORK ORDER

22K0327

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

Client: Seattle Public Utilities

Project Manager: Shelly Fishel

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Preservation Confirmation

Container ID	Container Type	pH
22K0327-01 A	HDPE NM, 500 mL, 1:1 HNO3	CC Pass (P)
22K0327-01 B	VOA Vial, Clear, 40 mL, HCL	
22K0327-01 C	VOA Vial, Clear, 40 mL, HCL	
22K0327-01 D	VOA Vial, Clear, 40 mL, HCL	
22K0327-01 E	VOA Vial, Clear, 40 mL	
22K0327-01 F	VOA Vial, Clear, 40 mL	
22K0327-01 G	VOA Vial, Clear, 40 mL	
22K0327-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	CC P
22K0327-03 A	HDPE NM, 500 mL, 1:1 HNO3	CC P
22K0327-03 B	VOA Vial, Clear, 40 mL, HCL	
22K0327-03 C	VOA Vial, Clear, 40 mL, HCL	
22K0327-03 D	VOA Vial, Clear, 40 mL, HCL	
22K0327-03 E	VOA Vial, Clear, 40 mL	
22K0327-03 F	VOA Vial, Clear, 40 mL	
22K0327-03 G	VOA Vial, Clear, 40 mL	
22K0327-04 A	HDPE NM, 500 mL, 1:1 HNO3	CC P
22K0327-04 B	VOA Vial, Clear, 40 mL, HCL	
22K0327-04 C	VOA Vial, Clear, 40 mL, HCL	
22K0327-04 D	VOA Vial, Clear, 40 mL, HCL	
22K0327-04 E	VOA Vial, Clear, 40 mL, HCL	
22K0327-04 F	VOA Vial, Clear, 40 mL, HCL	
22K0327-04 G	VOA Vial, Clear, 40 mL, HCL	
22K0327-04 H	VOA Vial, Clear, 40 mL	
22K0327-04 I	VOA Vial, Clear, 40 mL	
22K0327-04 J	VOA Vial, Clear, 40 mL	
22K0327-04 K	VOA Vial, Clear, 40 mL	
22K0327-04 L	VOA Vial, Clear, 40 mL	
22K0327-04 M	VOA Vial, Clear, 40 mL	
22K0327-05 A	HDPE NM, 500 mL, 1:1 HNO3	CC P
22K0327-05 B	VOA Vial, Clear, 40 mL, HCL	
22K0327-05 C	VOA Vial, Clear, 40 mL, HCL	
22K0327-05 D	VOA Vial, Clear, 40 mL, HCL	
22K0327-05 E	VOA Vial, Clear, 40 mL	
22K0327-05 F	VOA Vial, Clear, 40 mL	



WORK ORDER

22K0327

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

Client: Seattle Public Utilities	Project Manager: Shelly Fishel
Project: South Park Landfill -Parametrix Water	Project Number: 553-155-067

22K0327-05 G	VOA Vial, Clear, 40 mL		
22K0327-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	C2	P
22K0327-07 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P
22K0327-07 B	VOA Vial, Clear, 40 mL, HCL		
22K0327-07 C	VOA Vial, Clear, 40 mL, HCL		
22K0327-07 D	VOA Vial, Clear, 40 mL, HCL		
22K0327-07 E	VOA Vial, Clear, 40 mL		
22K0327-07 F	VOA Vial, Clear, 40 mL		
22K0327-07 G	VOA Vial, Clear, 40 mL		
22K0327-08 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P
22K0327-08 B	VOA Vial, Clear, 40 mL, HCL		
22K0327-08 C	VOA Vial, Clear, 40 mL, HCL		
22K0327-08 D	VOA Vial, Clear, 40 mL, HCL		
22K0327-08 E	VOA Vial, Clear, 40 mL		
22K0327-08 F	VOA Vial, Clear, 40 mL		
22K0327-08 G	VOA Vial, Clear, 40 mL		
22K0327-09 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P
22K0327-09 B	VOA Vial, Clear, 40 mL, HCL		
22K0327-09 C	VOA Vial, Clear, 40 mL, HCL		
22K0327-09 D	VOA Vial, Clear, 40 mL, HCL		
22K0327-09 E	VOA Vial, Clear, 40 mL, HCL		
22K0327-09 F	VOA Vial, Clear, 40 mL, HCL		
22K0327-09 G	VOA Vial, Clear, 40 mL, HCL		
22K0327-09 H	VOA Vial, Clear, 40 mL		
22K0327-09 I	VOA Vial, Clear, 40 mL		
22K0327-09 J	VOA Vial, Clear, 40 mL		
22K0327-09 K	VOA Vial, Clear, 40 mL		
22K0327-09 L	VOA Vial, Clear, 40 mL		
22K0327-09 M	VOA Vial, Clear, 40 mL		
22K0327-10 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P
22K0327-10 B	VOA Vial, Clear, 40 mL, HCL		
22K0327-10 C	VOA Vial, Clear, 40 mL, HCL		
22K0327-10 D	VOA Vial, Clear, 40 mL, HCL		
22K0327-10 E	VOA Vial, Clear, 40 mL		
22K0327-10 F	VOA Vial, Clear, 40 mL		
22K0327-10 G	VOA Vial, Clear, 40 mL		



WORK ORDER

22K0327

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

Client: Seattle Public Utilities

Project Manager: Shelly Fishel

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

22K0327-11 A VOA Vial, Clear, 40 mL, HCL

22K0327-11 B VOA Vial, Clear, 40 mL

PEB

Preservation Confirmed By

11/16/22

Date



Cooler Receipt Form

ARI Client: Seattle Public Utilities

Project Name: SPU South Park Landfill

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 22K0327

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES (NO)

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

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

Time 15:06 2.5

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: J009708

Cooler Accepted by: PJB Date: 11/16/22 Time: 15:00

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? ... NA YES NO

How were bottles sealed in plastic bags? ... Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? ... YES NO

Were all bottle labels complete and legible? ... YES NO

Did the number of containers listed on COC match with the number of containers received? ... YES NO

Did all bottle labels and tags agree with custody papers? ... YES NO

Were all bottles used correct for the requested analyses? ... YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? ... NA YES NO

Was sufficient amount of sample sent in each bottle? ... YES NO

Date VOC Trip Blank was made at ARI: ... NA 11/07

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: PJB Date: 11/16/22 Time: 16:57 Labels checked by: _____

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

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

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW12-1122
22K0327-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/16/2022 09:20
Instrument: NT3 Analyst: PKC Analyzed: 11/19/2022 13:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-01 C
Preparation Batch: BKK0590 Sample Size: 10 mL
Prepared: 11/19/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.29	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	100	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW12-1122
22K0327-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/16/2022 09:20
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 16:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-01 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW12-1122
22K0327-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/16/2022 09:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 03:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0327-01 A 01
Preparation Batch: BKK0836 Sample Size: 25 mL
Prepared: 11/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	2.22	mg/L	D
Manganese	7439-96-5	5	0.00250	0.153	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW12-1122
22K0327-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/16/2022 09:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/26/2022 04:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0327-02 A 01
Preparation Batch: BKK0662 Sample Size: 25 mL
Prepared: 11/22/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	0.387	ug/L	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW14-1122
22K0327-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/16/2022 11:25
Instrument: NT3 Analyst: PKC Analyzed: 11/19/2022 13:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-03 C
Preparation Batch: BKK0590 Sample Size: 10 mL
Prepared: 11/19/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	101	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW14-1122
22K0327-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/16/2022 11:25
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 17:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-03 F
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>100</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW14-1122
22K0327-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/16/2022 11:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 02:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0327-03 A 01
Preparation Batch: BKK0836 Sample Size: 25 mL
Prepared: 11/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	3.45	mg/L	D
Manganese	7439-96-5	10	0.00500	0.748	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW29-1122
22K0327-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/16/2022 12:35
Instrument: NT3 Analyst: PKC Analyzed: 11/19/2022 14:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-04 C
Preparation Batch: BKK0590 Sample Size: 10 mL
Prepared: 11/19/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>104</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW29-1122
22K0327-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/16/2022 12:35
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 12:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-04 H
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW29-1122
22K0327-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/16/2022 12:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 02:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0327-04 A 01
Preparation Batch: BKK0836 Sample Size: 25 mL
Prepared: 11/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	17.5	mg/L	D
Manganese	7439-96-5	10	0.00500	0.510	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW18-1122
22K0327-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/16/2022 14:15
Instrument: NT3 Analyst: PKC Analyzed: 11/19/2022 14:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-05 B
Preparation Batch: BKK0590 Sample Size: 10 mL
Prepared: 11/19/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	98.1	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW18-1122
22K0327-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/16/2022 14:15
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 17:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-05 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0524	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW18-1122
22K0327-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/16/2022 14:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 01:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0327-05 A 01
Preparation Batch: BKK0836 Sample Size: 25 mL
Prepared: 11/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	17.8	mg/L	D
Manganese	7439-96-5	20	0.0100	1.39	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW18-1122
22K0327-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/16/2022 14:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/26/2022 04:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0327-06 A 01
Preparation Batch: BKK0662 Sample Size: 25 mL
Prepared: 11/22/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.400	ND	ug/L	U



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW60-1122
22K0327-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/16/2022 13:00
Instrument: NT3 Analyst: PKC Analyzed: 11/19/2022 14:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-07 B
Preparation Batch: BKK0590 Sample Size: 10 mL
Prepared: 11/19/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW60-1122
22K0327-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/16/2022 13:00
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 17:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-07 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW60-1122
22K0327-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/16/2022 13:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 02:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0327-07 A 01
Preparation Batch: BKK0836 Sample Size: 25 mL
Prepared: 11/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	17.2	mg/L	D
Manganese	7439-96-5	10	0.00500	0.494	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW30-1122
22K0327-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/15/2022 16:45
Instrument: NT3 Analyst: PKC Analyzed: 11/19/2022 15:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-08 B
Preparation Batch: BKK0590 Sample Size: 10 mL
Prepared: 11/19/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.56	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	100	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW30-1122
22K0327-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/15/2022 16:45
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 18:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-08 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.549	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW30-1122
22K0327-08 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/15/2022 16:45
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 03:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0327-08 A 01
Preparation Batch: BKK0836 Sample Size: 25 mL
Prepared: 11/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	6.43	mg/L	D
Manganese	7439-96-5	1	0.000500	0.100	mg/L	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW31-1122
22K0327-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/15/2022 16:00
Instrument: NT3 Analyst: PKC Analyzed: 11/19/2022 15:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-09 B
Preparation Batch: BKK0590 Sample Size: 10 mL
Prepared: 11/19/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW31-1122
22K0327-09 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/15/2022 16:00
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 13:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-09 H
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.344	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW31-1122
22K0327-09 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/15/2022 16:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 02:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0327-09 A 01
Preparation Batch: BKK0836 Sample Size: 25 mL
Prepared: 11/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	19.2	mg/L	D
Manganese	7439-96-5	20	0.0100	0.811	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW61-1122
22K0327-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/15/2022 16:30
Instrument: NT3 Analyst: PKC Analyzed: 11/19/2022 15:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-10 B
Preparation Batch: BKK0590 Sample Size: 10 mL
Prepared: 11/19/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.8</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Jeff Neuner	Reported: 11-Dec-2022 12:11
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SPL-GW-MW61-1122
22K0327-10 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/15/2022 16:30
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 18:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-10 E
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.344	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



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SPL-GW-MW61-1122
22K0327-10 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/15/2022 16:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/09/2022 02:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0327-10 A 01
Preparation Batch: BKK0836 Sample Size: 25 mL
Prepared: 11/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	18.1	mg/L	D
Manganese	7439-96-5	10	0.00500	0.812	mg/L	D



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SPL-GW-MW81-1122
22K0327-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/15/2022 00:00
Instrument: NT3 Analyst: PKC Analyzed: 11/19/2022 11:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-11 A
Preparation Batch: BKK0590 Sample Size: 10 mL
Prepared: 11/19/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>96.1</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>99.2</i>	<i>%</i>	



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SPL-GW-MW81-1122
22K0327-11 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/15/2022 00:00
Instrument: NT16 Analyst: KOTT Analyzed: 11/17/2022 19:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0327-11 B
Preparation Batch: BKK0507 Sample Size: 10 mL
Prepared: 11/17/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.9</i>	<i>%</i>	



Seattle Public Utilities
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Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Jeff Neuner

Reported:
11-Dec-2022 12:11

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0590 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0590-BLK1)		Prepared: 19-Nov-2022 Analyzed: 19-Nov-2022 11:30								
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.97		ug/L	5.00		99.4	80-129			
<i>Surrogate: Toluene-d8</i>	4.92		ug/L	5.00		98.5	80-120			
LCS (BKK0590-BS1)		Prepared: 19-Nov-2022 Analyzed: 19-Nov-2022 10:22								
cis-1,2-Dichloroethene	9.46	0.20	ug/L	10.0		94.6	80-121			
Benzene	9.77	0.20	ug/L	10.0		97.7	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.76		ug/L	5.00		95.2	80-129			
<i>Surrogate: Toluene-d8</i>	5.04		ug/L	5.00		101	80-120			
LCS Dup (BKK0590-BSD1)		Prepared: 19-Nov-2022 Analyzed: 19-Nov-2022 10:44								
cis-1,2-Dichloroethene	9.19	0.20	ug/L	10.0		91.9	80-121	2.90	30	
Benzene	9.38	0.20	ug/L	10.0		93.8	80-120	4.03	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.89		ug/L	5.00		97.8	80-129			
<i>Surrogate: Toluene-d8</i>	5.02		ug/L	5.00		100	80-120			
Matrix Spike (BKK0590-MS1)		Source: 22K0327-04		Prepared: 19-Nov-2022 Analyzed: 19-Nov-2022 18:33						
cis-1,2-Dichloroethene	9.61	0.20	ug/L	10.0	ND	96.1	80-121			
Benzene	9.87	0.20	ug/L	10.0	ND	98.7	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.10		ug/L	5.00	5.18	102	80-129			
<i>Surrogate: Toluene-d8</i>	4.98		ug/L	5.00		99.7	80-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike (BKK0590-MS2)		Source: 22K0327-09		Prepared: 19-Nov-2022 Analyzed: 19-Nov-2022 19:18						
cis-1,2-Dichloroethene	9.42	0.20	ug/L	10.0	ND	94.2	80-121			
Benzene	9.53	0.20	ug/L	10.0	0.06	94.8	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.15		ug/L	5.00	5.04	103	80-129			
<i>Surrogate: Toluene-d8</i>	5.01		ug/L	5.00		100	80-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKK0590-MSD1)		Source: 22K0327-04		Prepared: 19-Nov-2022 Analyzed: 19-Nov-2022 18:55						
cis-1,2-Dichloroethene	9.96	0.20	ug/L	10.0	ND	99.6	80-121	3.55	30	
Benzene	10.6	0.20	ug/L	10.0	ND	106	80-120	7.19	30	



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Jeff Neuner

Reported:
11-Dec-2022 12:11

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0590 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKK0590-MSD1)		Source: 22K0327-04		Prepared: 19-Nov-2022		Analyzed: 19-Nov-2022 18:55				
Surrogate: 1,2-Dichloroethane-d4	4.74		ug/L	5.00	5.18	94.8	80-129			
Surrogate: Toluene-d8	5.06		ug/L	5.00		101	80-120			

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

Matrix Spike Dup (BKK0590-MSD2)		Source: 22K0327-09		Prepared: 19-Nov-2022		Analyzed: 19-Nov-2022 19:40				
cis-1,2-Dichloroethene	9.81	0.20	ug/L	10.0	ND	98.1	80-121	4.06	30	
Benzene	10.2	0.20	ug/L	10.0	0.06	101	80-120	6.61	30	
Surrogate: 1,2-Dichloroethane-d4	5.01		ug/L	5.00	5.04	100	80-129			
Surrogate: Toluene-d8	4.96		ug/L	5.00		99.3	80-120			

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



Seattle Public Utilities
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Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Jeff Neuner

Reported:
11-Dec-2022 12:11

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BKK0507 - EPA 8260D-SIM

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0507-BLK1)				Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 11:19						
Vinyl chloride	ND	0.0200	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4830		ug/L	5000		96.5	80-129			
LCS (BKK0507-BS1)				Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 09:43						
Vinyl chloride	2.23	0.0200	ug/L	2.00		112	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4980		ug/L	5000		99.6	80-129			
LCS Dup (BKK0507-BSD1)				Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 10:29						
Vinyl chloride	2.09	0.0200	ug/L	2.00		105	62-141	6.37	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4930		ug/L	5000		98.5	80-129			
Matrix Spike (BKK0507-MS1)				Source: 22K0327-04		Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 12:22				
Vinyl chloride	2.03	0.0200	ug/L	2.00	ND	102	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5050		ug/L	5000	5030	101	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike (BKK0507-MS2)				Source: 22K0327-09		Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 13:25				
Vinyl chloride	2.56	0.0200	ug/L	2.00	0.344	111	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4970		ug/L	5000	5060	99.3	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKK0507-MSD1)				Source: 22K0327-04		Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 12:43				
Vinyl chloride	1.83	0.0200	ug/L	2.00	ND	91.7	62-141	10.20	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4970		ug/L	5000	5030	99.4	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKK0507-MSD2)				Source: 22K0327-09		Prepared: 17-Nov-2022 Analyzed: 17-Nov-2022 13:46				
Vinyl chloride	2.37	0.0200	ug/L	2.00	0.344	101	62-141	7.56	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4960		ug/L	5000	5060	99.2	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKK0836 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0836-BLK1)						Prepared: 30-Nov-2022 Analyzed: 02-Dec-2022 19:33					
Manganese	55	ND	0.000500	mg/L							U
Blank (BKK0836-BLK2)						Prepared: 30-Nov-2022 Analyzed: 06-Dec-2022 20:43					
Iron	54	ND	0.0360	mg/L							U
Iron	57	ND	0.0360	mg/L							U
LCS (BKK0836-BS1)						Prepared: 30-Nov-2022 Analyzed: 02-Dec-2022 19:38					
Manganese	55	0.0258	0.000500	mg/L	0.0250		103	80-120			
LCS (BKK0836-BS2)						Prepared: 30-Nov-2022 Analyzed: 06-Dec-2022 20:47					
Iron	54	4.64	0.0360	mg/L	5.00		92.8	80-120			
Iron	57	4.67	0.0360	mg/L	5.00		93.3	80-120			
Duplicate (BKK0836-DUP3)						Source: 22K0327-04 Prepared: 30-Nov-2022 Analyzed: 07-Dec-2022 01:27					
Manganese	55	0.510	0.00500	mg/L		0.510			0.04	20	D
Duplicate (BKK0836-DUP4)						Source: 22K0327-09 Prepared: 30-Nov-2022 Analyzed: 07-Dec-2022 03:30					
Manganese	55	0.807	0.0100	mg/L		0.811			0.49	20	D
Duplicate (BKK0836-DUP5)						Source: 22K0327-04 Prepared: 30-Nov-2022 Analyzed: 09-Dec-2022 02:28					
Iron	54	17.8	0.720	mg/L		17.5			1.82	20	D
Duplicate (BKK0836-DUP6)						Source: 22K0327-09 Prepared: 30-Nov-2022 Analyzed: 09-Dec-2022 02:40					
Iron	54	18.9	1.80	mg/L		19.2			1.57	20	D
Matrix Spike (BKK0836-MS3)						Source: 22K0327-04 Prepared: 30-Nov-2022 Analyzed: 07-Dec-2022 01:32					
Manganese	55	0.539	0.00500	mg/L	0.0250	0.510	117	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BKK0836-MS4)						Source: 22K0327-09 Prepared: 30-Nov-2022 Analyzed: 07-Dec-2022 03:34					
Manganese	55	0.834	0.0100	mg/L	0.0250	0.811	92.4	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BKK0836-MS5)						Source: 22K0327-04 Prepared: 30-Nov-2022 Analyzed: 09-Dec-2022 02:32					
Iron	54	24.6	0.720	mg/L	5.00	17.5	143	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKK0836 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKK0836-MS6)			Source: 22K0327-09			Prepared: 30-Nov-2022 Analyzed: 09-Dec-2022 02:44					
Iron	54	24.0	1.80	mg/L	5.00	19.2	96.8	75-125			D

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



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKK0662 - EPA 6020B UCT-KED

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0662-BLK1)						Prepared: 22-Nov-2022 Analyzed: 28-Nov-2022 20:07					
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BKK0662-BS1)						Prepared: 22-Nov-2022 Analyzed: 28-Nov-2022 20:12					
Arsenic, Dissolved	75a	24.4	0.200	ug/L	25.0		97.6	80-120			



Seattle Public Utilities
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Project: South Park Landfill -Parametrix Water
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Reported:
11-Dec-2022 12:11

Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Iron-54	NELAP,WADOE,DoD-ELAP
Iron-57	NELAP,WADOE,DoD-ELAP
Manganese-55	NELAP,WADOE,DoD-ELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
EPA 8260D in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE



Seattle Public Utilities
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Project: South Park Landfill -Parametrix Water
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Reported:
11-Dec-2022 12:11

Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE



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Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

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Acrylonitrile	NELAP,WADOE
Vinyl chloride	NELAP,WADOE
1,1-Dichloroethene	NELAP,WADOE
cis-1,2-Dichloroethene	NELAP,WADOE
trans-1,2-Dichloroethene	NELAP,WADOE
Trichloroethene	NELAP,WADOE
Tetrachloroethene	NELAP,WADOE
1,1,2,2-Tetrachloroethane	NELAP,WADOE
1,2-Dichloroethane	NELAP,WADOE
Benzene	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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Notes and Definitions

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