

SENT VIA EMAIL

January 10, 2022
Parametrix No. 553-1550-067

Mr. Jerome Cruz, Project Manager
Washington State Department of Ecology
Toxics Cleanup Program
3190 160th Avenue SE
Bellevue, Washington 98008-5452

Re: South Park Landfill December 2021 Progress Report

Dear Jerome:

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

General Activities During December

- 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.
- Recently the Seattle Fire Department has requested the use of the old transfer station site to park some of their large 40-foot response trailers. This possible use is consistent with current SPU operations at the site which includes trailer parking.
- SPU submitted a draft Engineering Design Report (EDR), EDR and associated 30% design for the remedial work on the SPU parcel in early December.
- The current tenants First Student and Amazon vehicle parking are active on SPPD property.
- The 2021 fourth quarter compliance monitoring was conducted the week of November 15, 2021. Lab data for groundwater sampling was received in December. Lab results are included with this status report.
- Gas exceedances above the 5% by volume lower explosive limit (LEL) at GP-29 and GP-33 on the perimeter of SPPD property triggered contingent actions outlined in the Landfill Post-Closure Operations, Maintenance, and Monitoring Plan. SPPD made adjustments to the gas system on their property until the probes returned to protectiveness levels. GP-33 dropped below the LEL on December 1, 2021, and was then monitored weekly in December. GP-29 was monitored daily, excluding some weekends, until control was established the week of December 27, 2021. GP-29 continues to be monitored on a weekly basis, ending the week of January 17, 2022.
- A Corrective Action Plan for the SPPD property landfill gas collection and control system was prepared by Farallon Consulting. It is under review and will be finalized in January. The short-term corrective actions identified in the plan were completed in December.

inspired people. inspired solutions. making a difference.

Deviations from Samples, Required Tasks, CAP, or Schedule

There are no deviations to report.

Data Summary

The groundwater wells were monitored November 16 through 17, 2021. 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, updated time-series plots, and the final lab reports are included as attachments to this progress report.

Data management is complete for the 2021 fourth quarter compliance monitoring event.

Perimeter gas probes GP-29 and GP-33 were monitored following contingent actions outlined in the flowchart in the Landfill Gas Monitoring and Contingency Plan (Appendix A.2 of the Cleanup Action Plan). A table summarizing the monitoring data and a time series plot is attached.

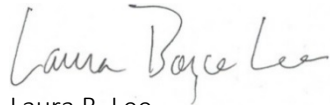
Upcoming Activities

- Ongoing weekly monitoring of probe GP-29 through the week of January 17, 2022.
- The Corrective Action Plan for the SPPD property landfill gas collection and control system will be finalized at the end of the review period.
- Ongoing weekly inspections of the SPPD gas system.
- The report summarizing the 2021 annual cap inspection is under review by SPPD. A final report will be submitted to Ecology after property owner review is complete.
- A report summarizing the October rain inspection of the cap will be submitted to the property owners for review. A final report will be submitted to Ecology after property owner review is complete.
- 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. The City of Seattle Homelessness Outreach and Provider Ecosystem (HOPE) team worked with the homeless individuals residing in the area next to the monitoring location to relocate and then cleared the debris obstructing access to the monitoring wells. The southern portion of the right-of-way remains occupied. Firearms continue to be observed in possession of occupants and visitors to the location. SPU is working on a plan to establish safe access for ongoing quarterly monitoring.
- SPU is waiting for all Ecology comments on the draft EDR and 30% design drawings.

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

Sincerely,

PARAMETRIX



Laura B. Lee
Project Manager

cc: Jeff Neuner, SPU Landfill Closure Business Area Manager
Robert Howie, South Park Property Development LLC
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
Lee Momon, SPU, Solid Waste Transfer Station Manager
Suzanne Hildreth, SPU, Solid Waste Transfer Station Manager

Attachments

- 1 – Groundwater Quality Data Summary, Fourth Quarter 2021
- 2 – Groundwater Quality Time Series Plots through Fourth Quarter 2021
- 3 – Fourth Quarter 2021 Groundwater Laboratory Data
- 4 – Gas Probe Exceedance Contingency Monitoring Data Summary
- 5 – Gas Probe Exceedance Contingency Monitoring Time Series Plot



Groundwater Quality Data Summary, Fourth Quarter 2021, 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-30 ¹	MW-25	MW-26	MW-27 ²	MW-31 ¹	MW-32 ³	MW-33 ³	MW-60 (MW-33 Dup)	MW-08	MW-61 (MW-08 Dup)	MW-10	MW-18 ³	MW-24		
11/16/21	11/17/21	11/16/21	11/16/21	11/17/21	11/17/21	11/16/21	11/16/21	11/16/21	11/17/21	11/17/21	11/17/21	11/17/21	11/17/21	11/17/21	11/17/21	11/17/21	11/16/21	11/17/21		
Field Parameters																				
Temperature	C		13.4	14.3	13.0	14.0	13.7	12.1	12.6	14.1	14.3	15.1	--	12.1	--	13.5	14.2	12.2	--	--
Dissolved Oxygen	mg/L		0.46	0.35	0.20	0.41	0.26	0.28	0.56	0.19	0.24	0.19	--	0.19	--	0.23	0.21	0.18	--	--
Specific Conductivity	µS/cm		384.1	522.5	635.6	392.4	1165	205.8	275.1	374.2	836	1398	--	865	--	1510	870	948	--	--
pH	units		6.18	6.56	6.66	6.24	6.55	5.87	6.10	6.31	6.7	6.67	--	6.57	--	6.81	6.58	6.46	--	--
Redox	mv		110.5	14.9	-61.3	30.6	-65.9	46.2	84.6	-32.5	-79.3	-79.6	--	-69.4	--	-109.8	-41.9	-41.3	--	--
Turbidity	NTU		0.02	1.98	0.02	0.02	0.02	0.02	21.0	2.19	0.02	1.12	--	2.48	--	0.02	0.02	0.02	--	--
Metals																				
Arsenic, Dissolved	µg/L	5.0	0.407	--	--	--	0.278	0.822	1.00	--	1.17	0.863	0.842	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	--	--
Iron, Total	mg/L	27 A-Zone	0.810	3.06 J-	12.2	2.51	32.9 J-	7.81 J-	2.08	11.4	12.7	14.8 J-	14.5 J-						--	--
		31 B-Zone											15.2 J-	14.8 J-	34.8 J-	13.8 J-	19.7 J-			--
Manganese, Total	mg/L	2.2	0.0908	0.623	0.526	0.0666	2.57	0.103	0.0607	0.665	1.61	1.83	1.82	0.991	0.991	2.68	0.918	1.34	--	--
Volatile Organic Compounds																				
Vinyl Chloride	µg/L	0.29	0.0200 U	0.0200 U	0.0200 U	0.106	0.455	0.0582	0.0200 U	0.384 ¹	0.471	0.124	0.109	0.0863	0.0819	0.0745	0.0248	0.0808	0.0200 U	0.0200 U
Cis-1,2-Dichloroethene	µg/L	16	0.20	0.20 U	0.20 U	0.43	0.28	0.20	0.20 U	0.20 U	1.13	0.20 U	0.20 U	0.20 U	0.20 U	1.36	0.20 U	0.20 U	0.20 U	0.20 U
Benzene	µg/L	5.0	--	--	--	--	0.94	--	--	--	--	--	--	--	--	--	--	--	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 sampled

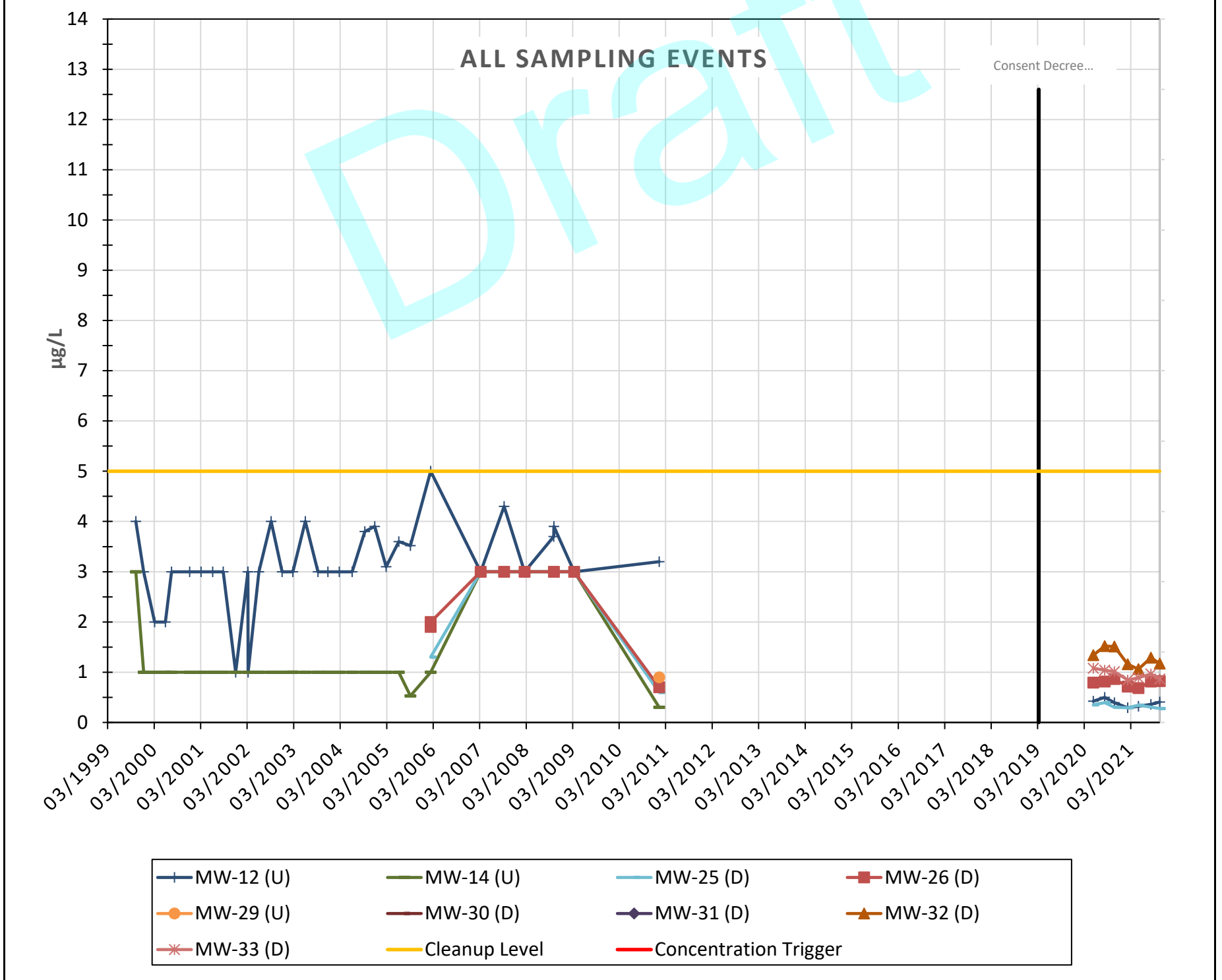
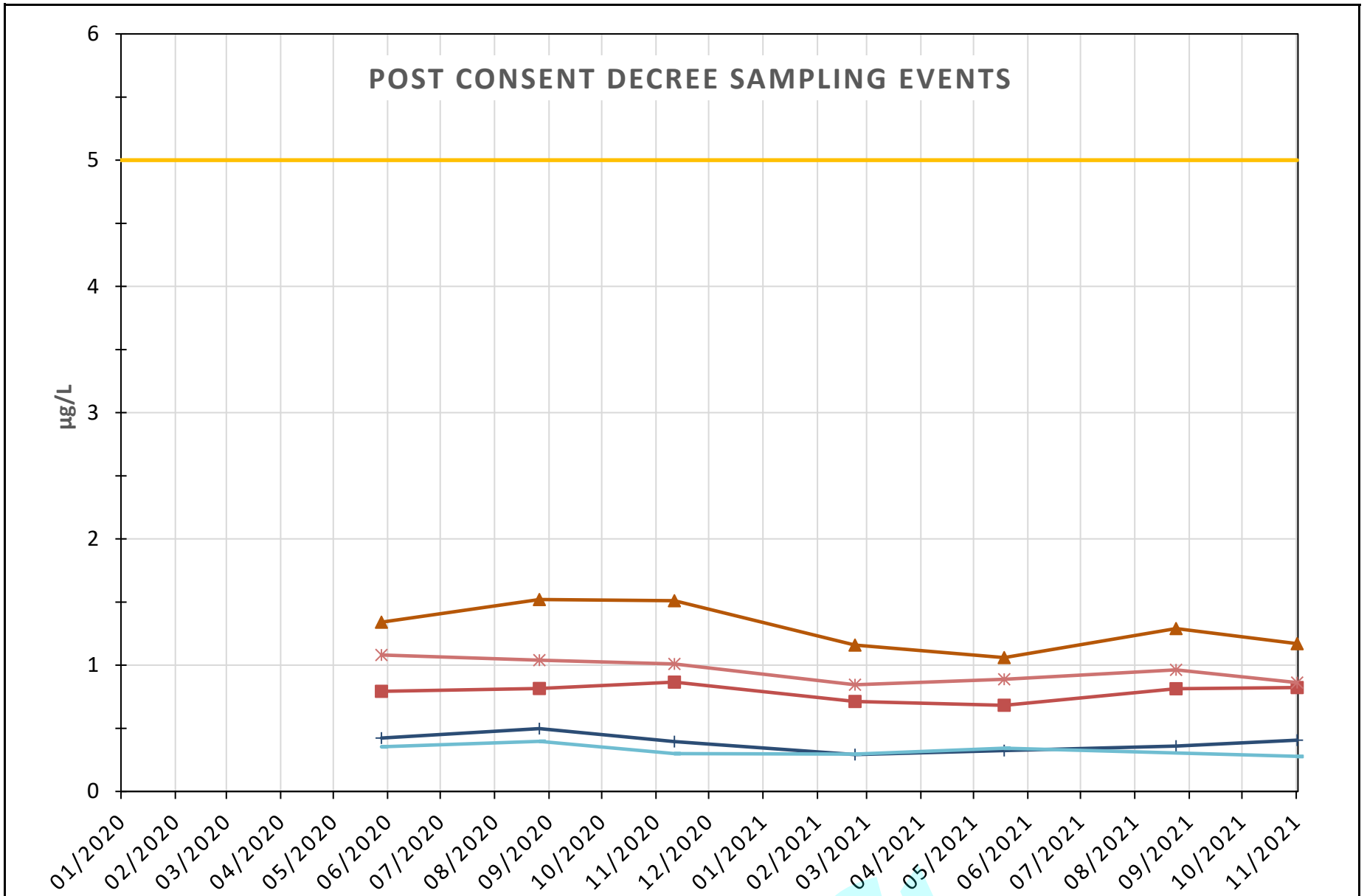
U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.

Units were converted from lab reports for iron (µg/L to mg/L), manganese (µg/L to mg/L), and vinyl chloride (ng/L to µg/L) to maintain consistency with the Final Cleanup Action Plan - Amended 2021

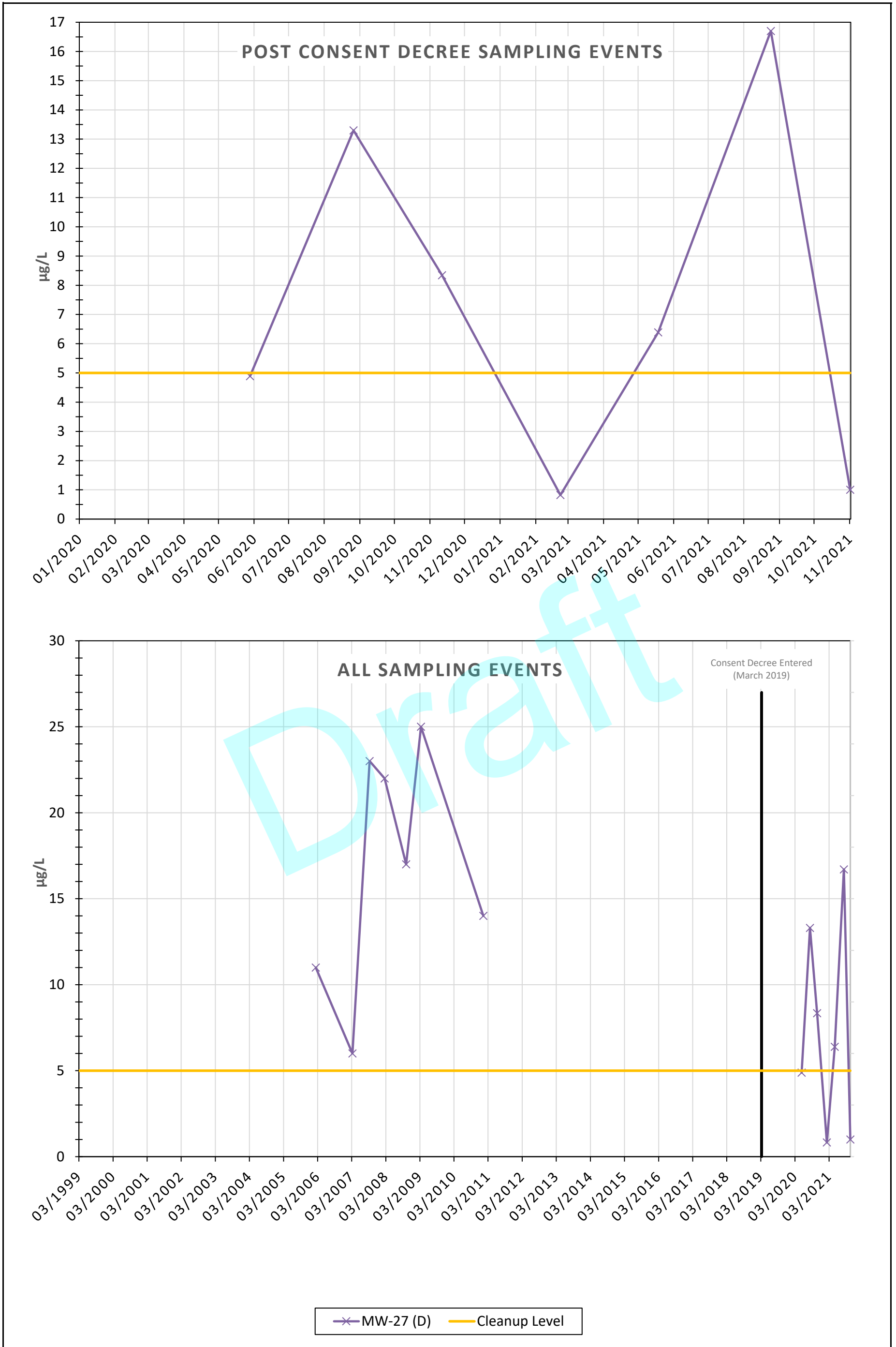
J - The result is an estimated quantity, but the result may be biased low. The associated numerical value is the approximate concentration of the analyte in the sample.

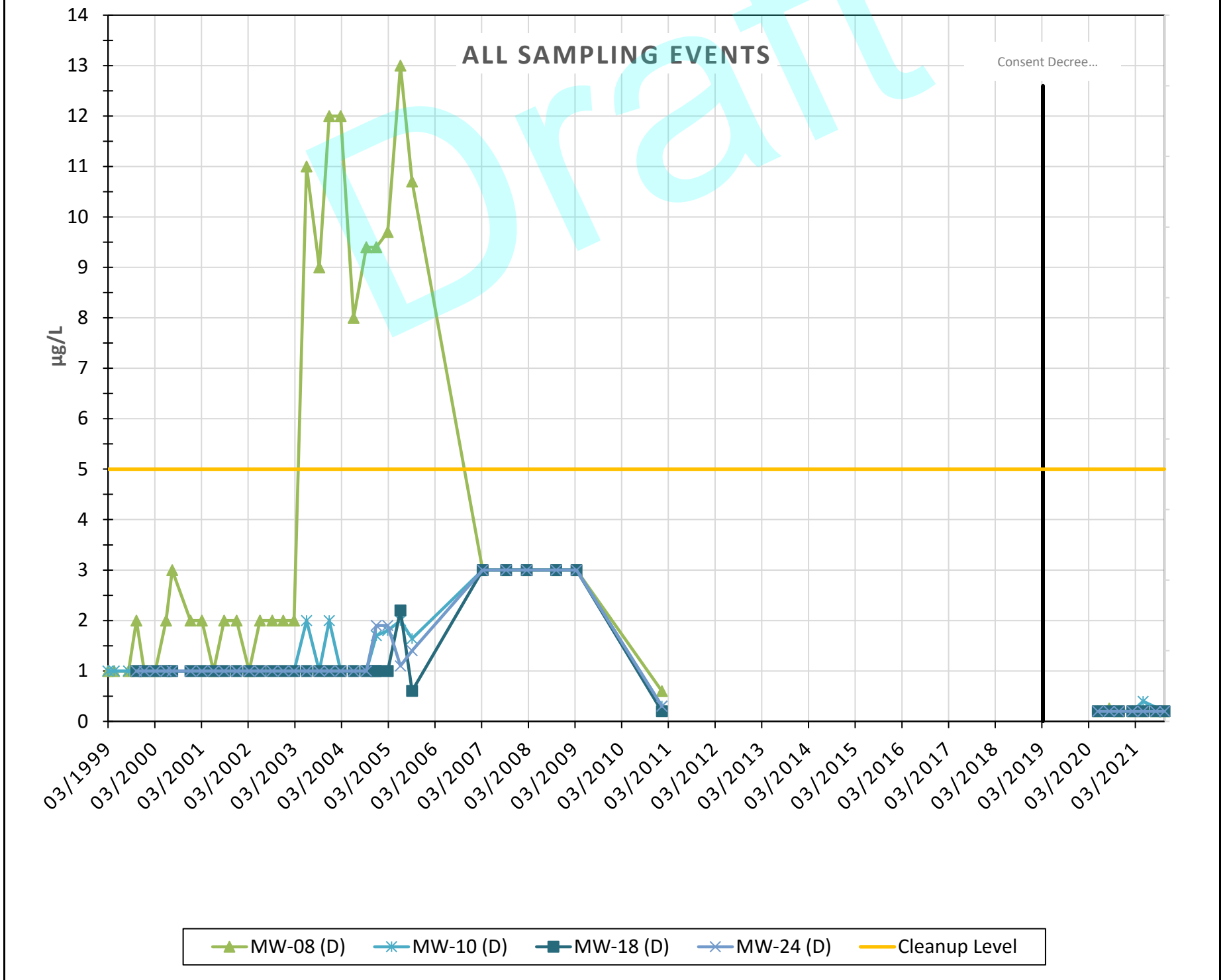
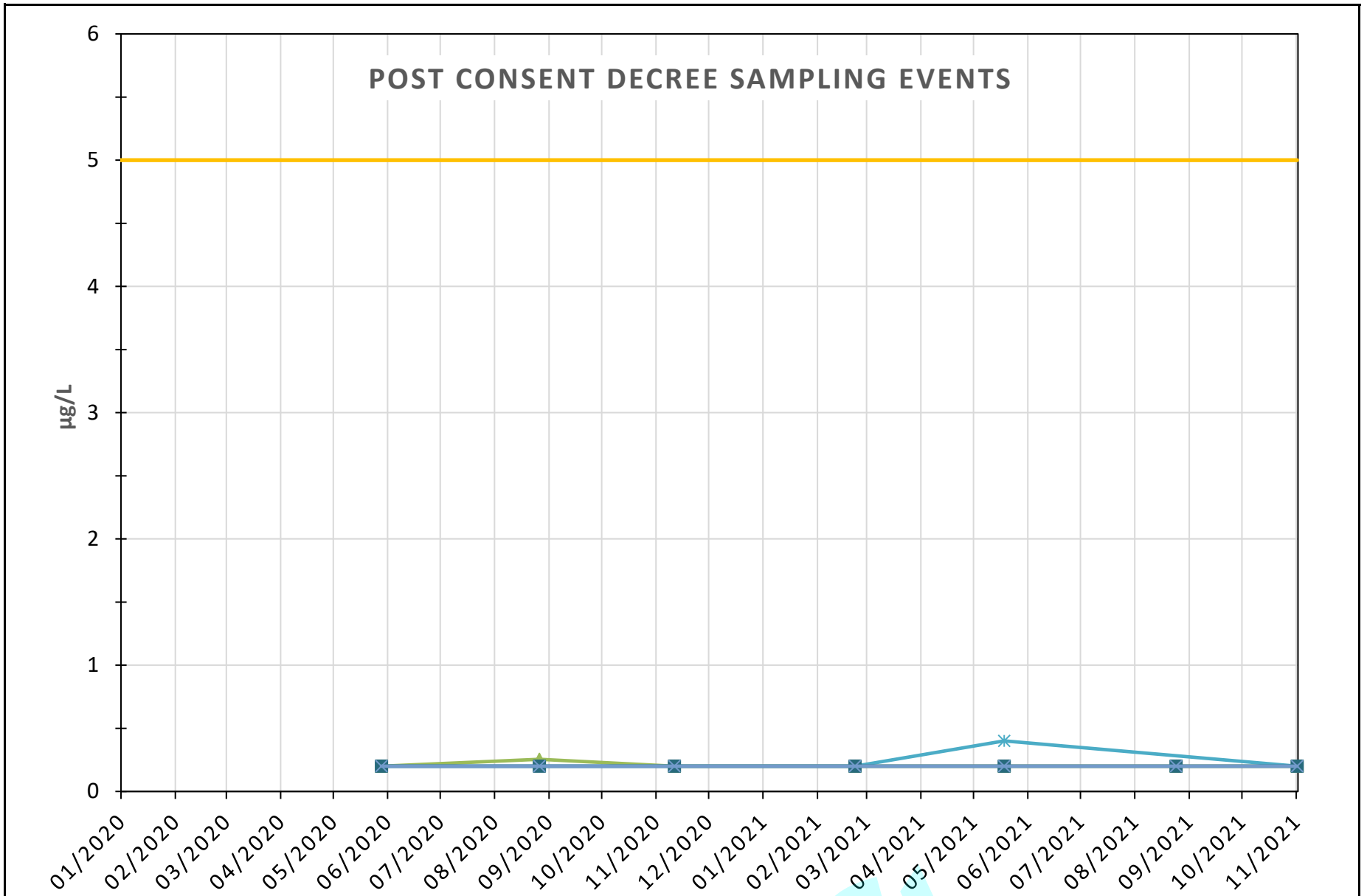
Abbreviations:

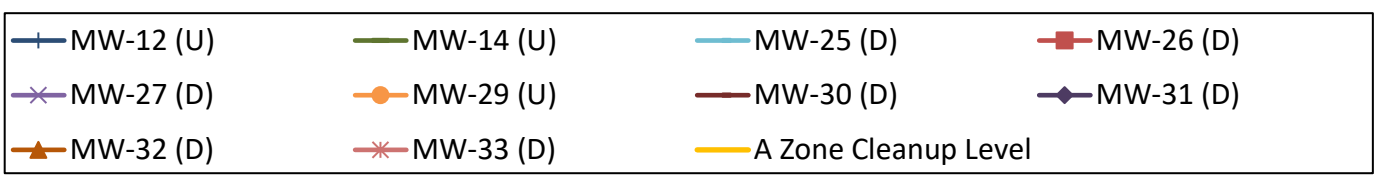
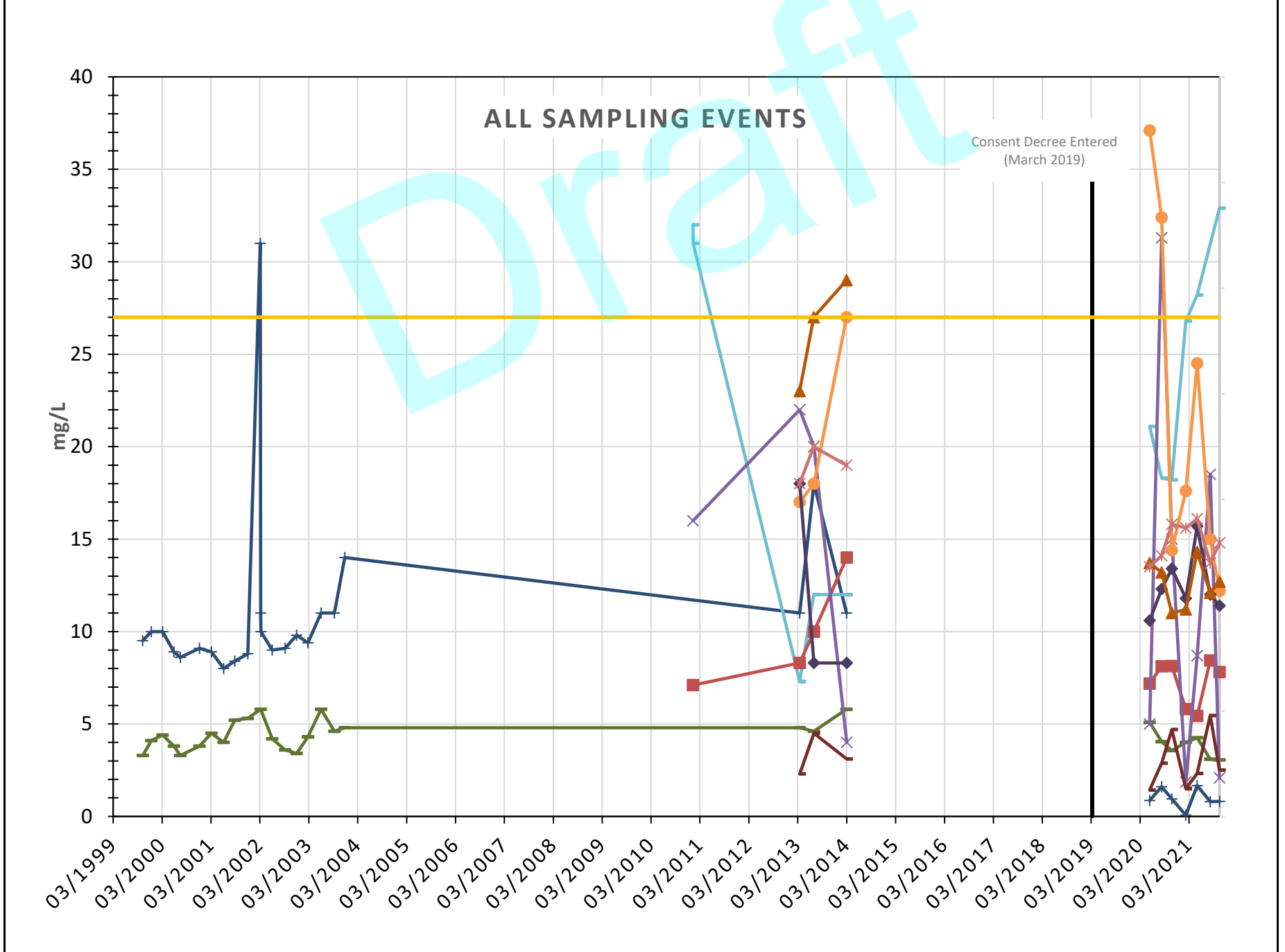
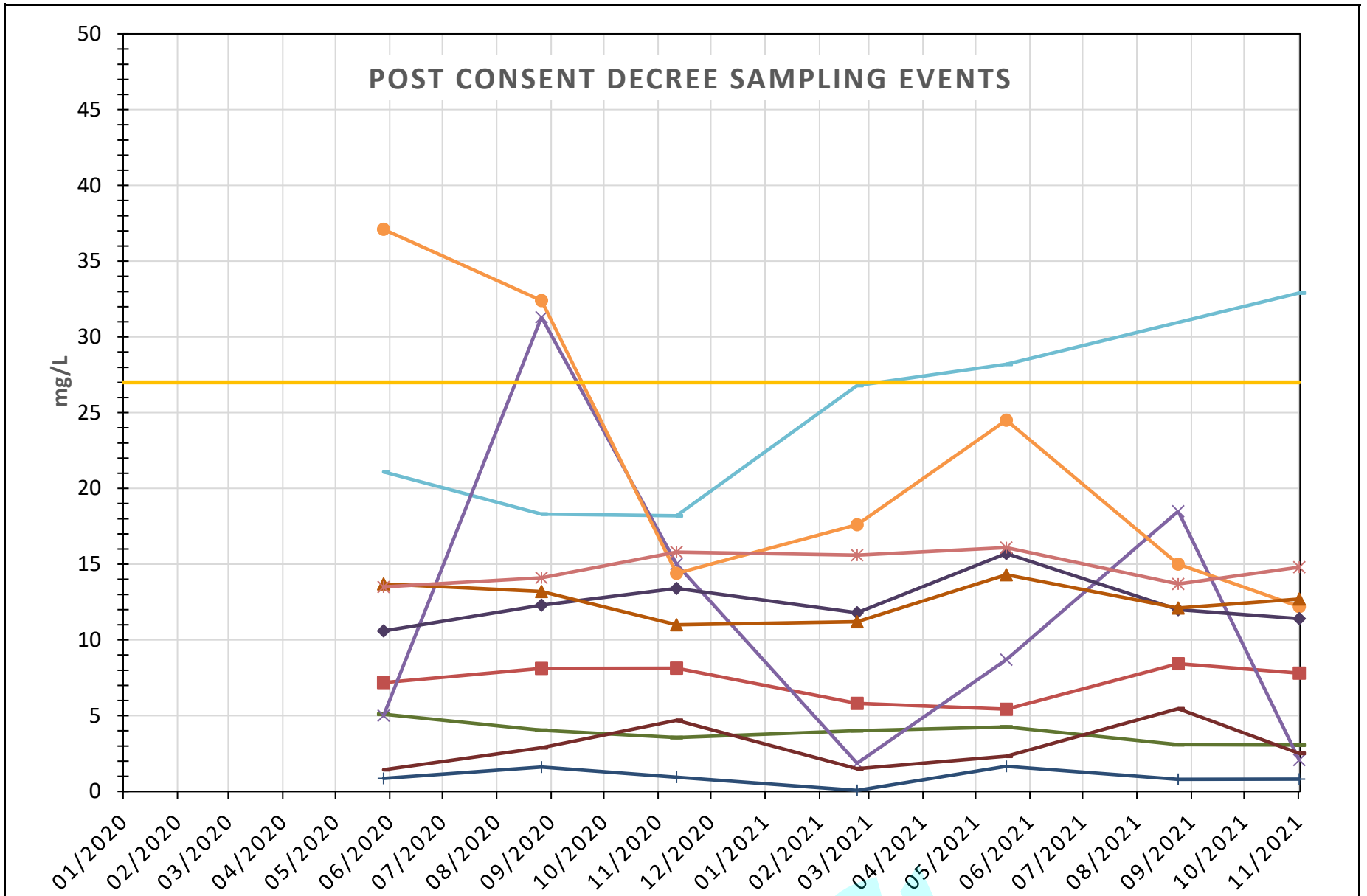
- µg/L Micrograms per liter
- mg/L Milligrams per liter
- ng/L nanograms per liter
- µS/cm microsiemens per centimeter
- NTU Nephelometric Turbidity unit
- CPOC Conditional point of compliance

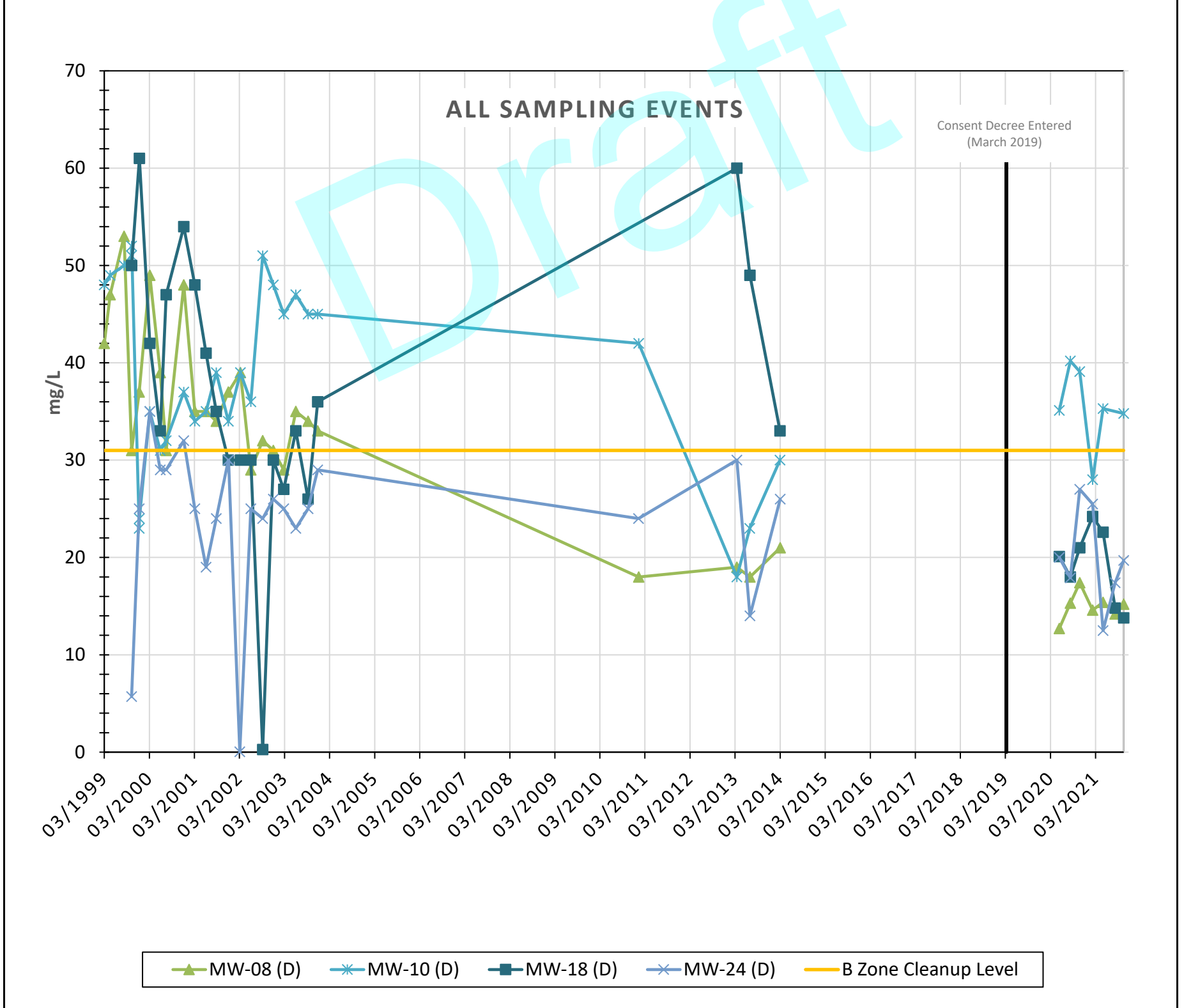
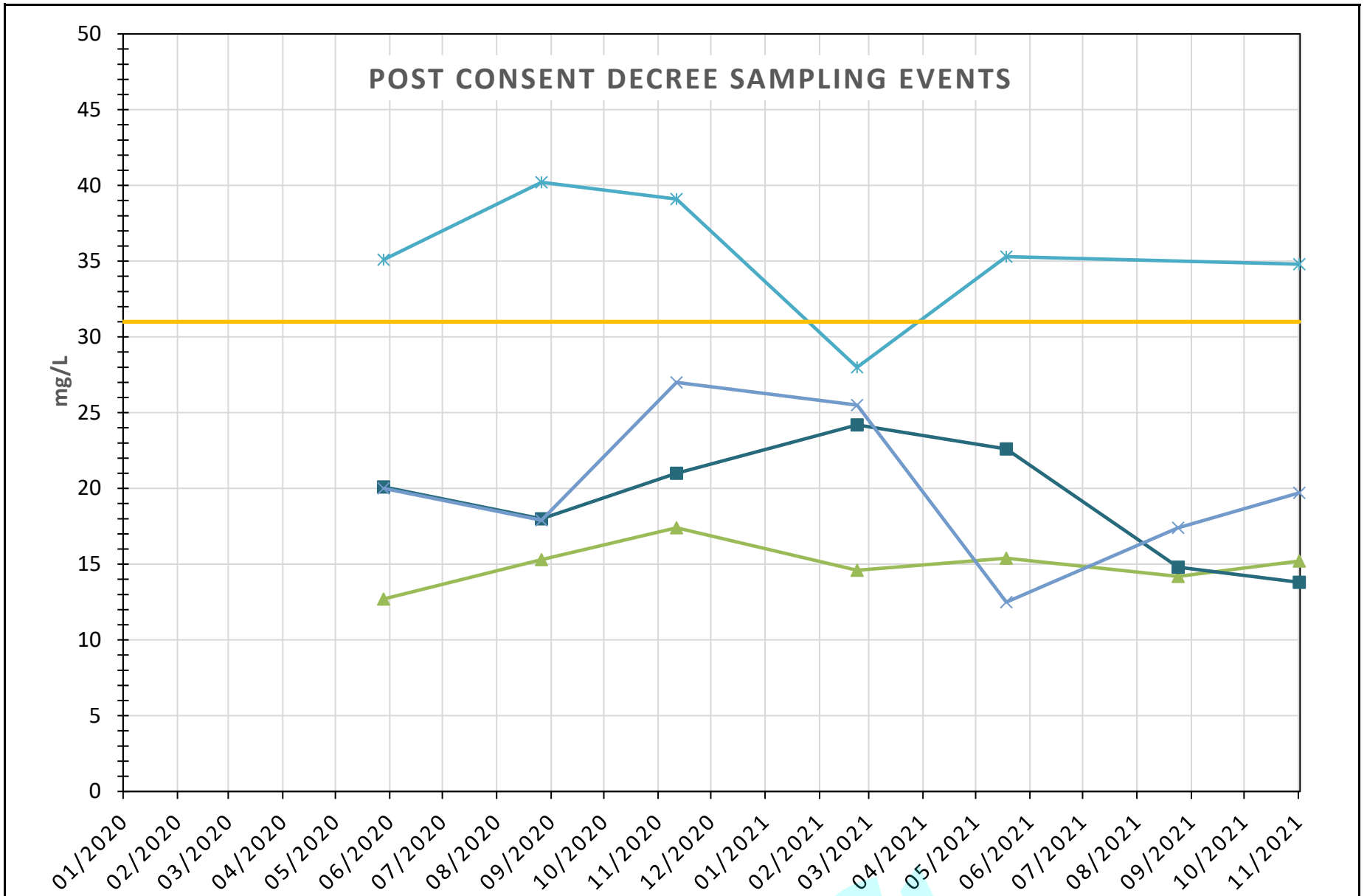


D = Downgradient
U = Upgradient

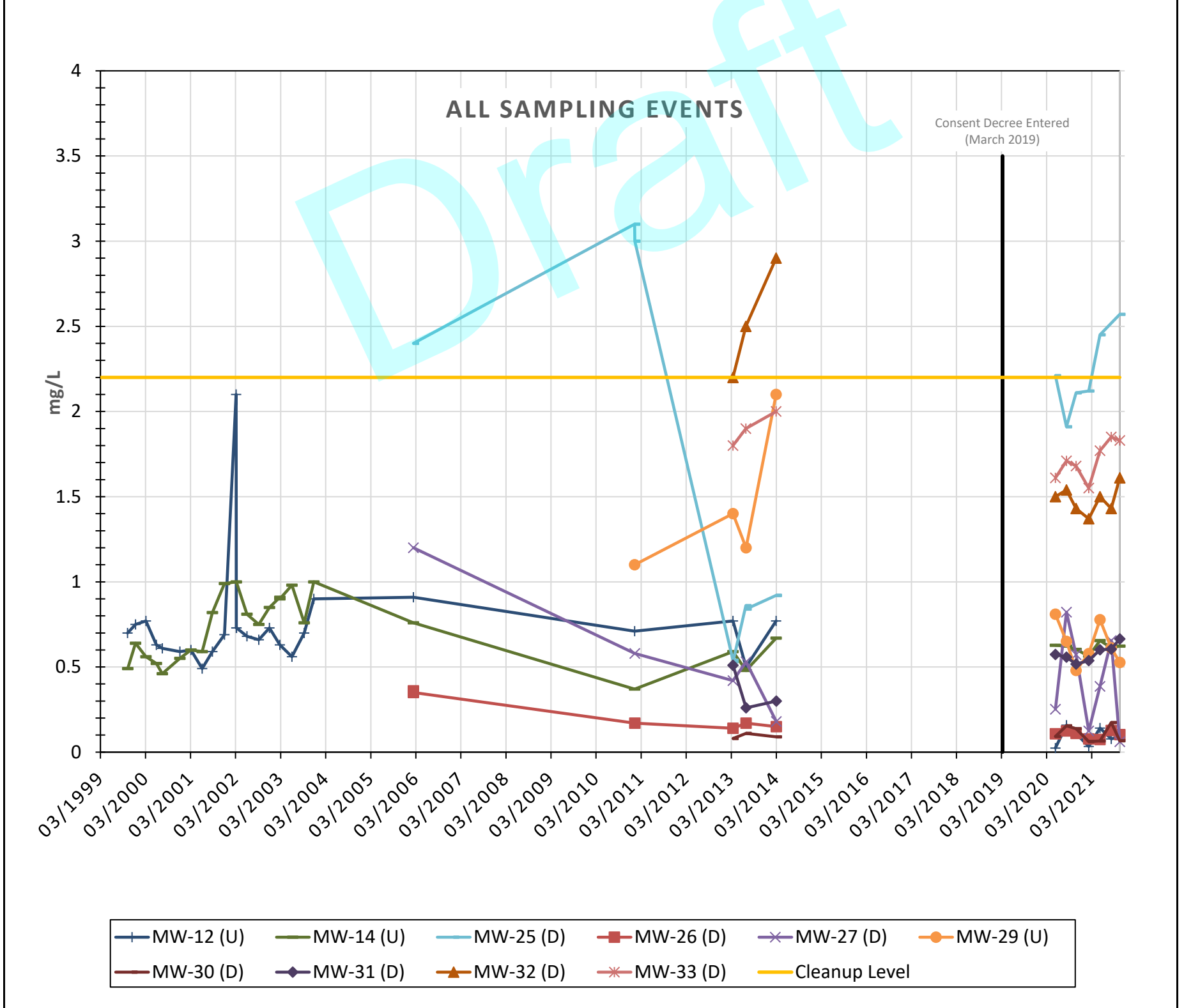
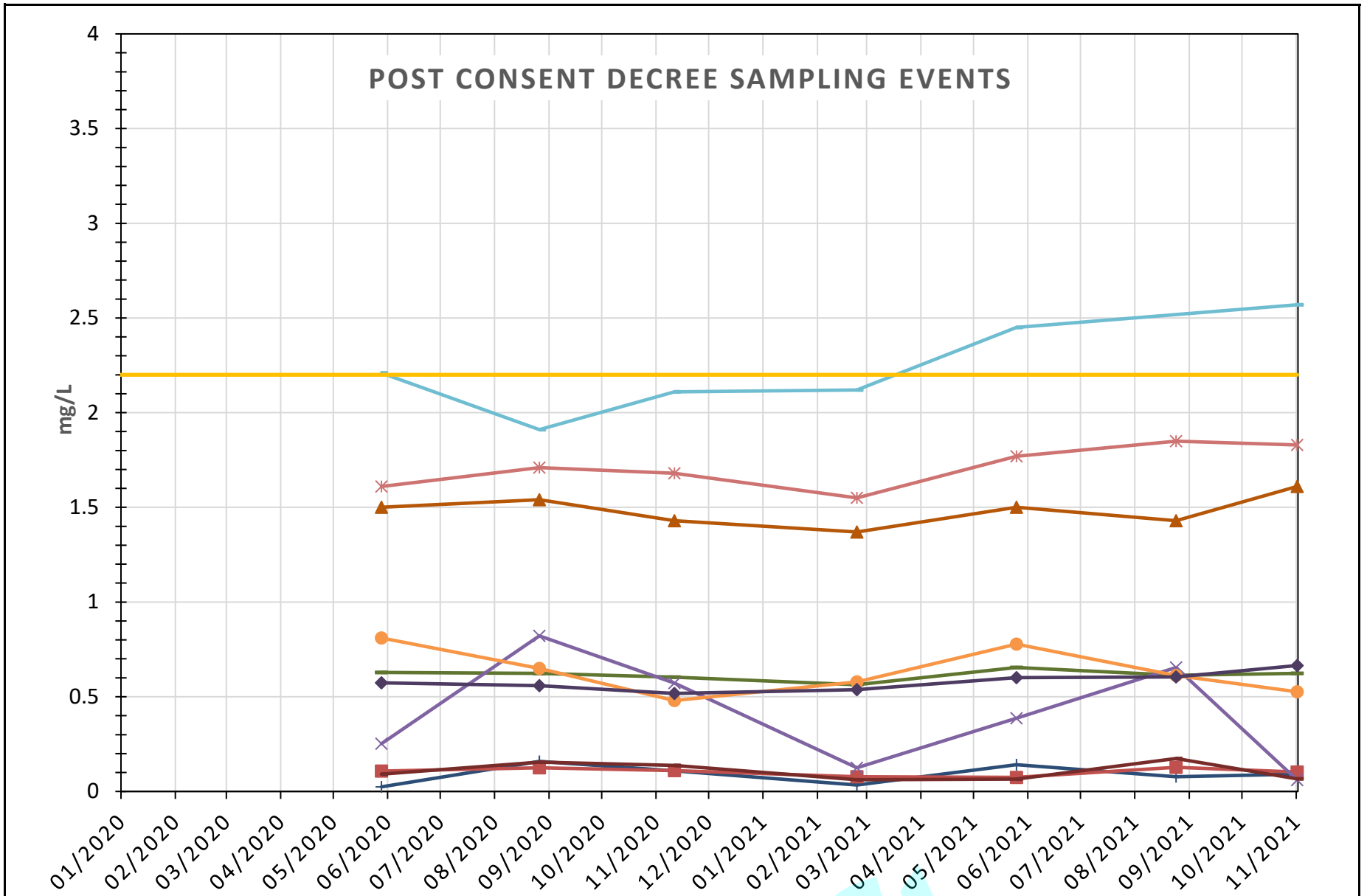


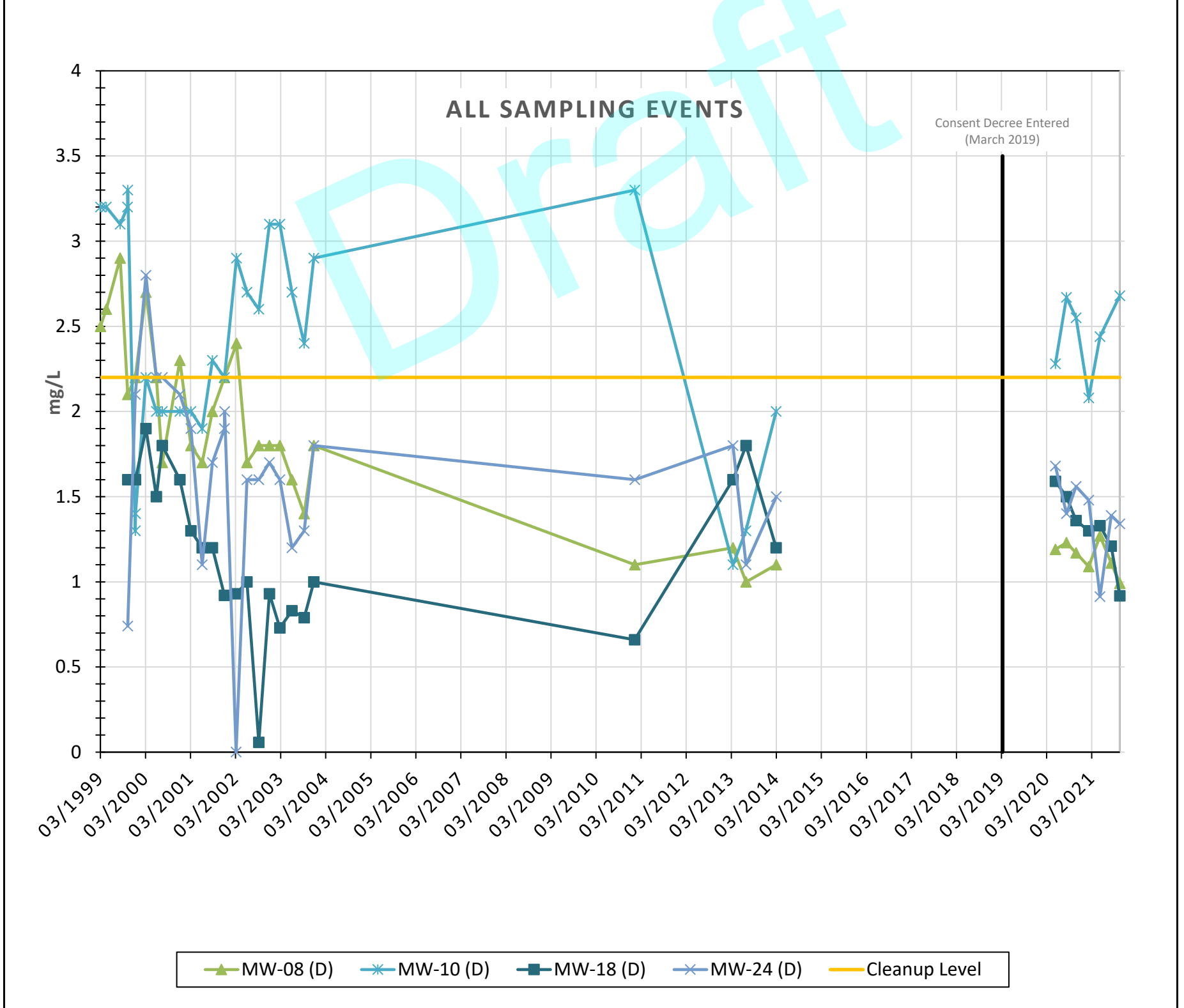
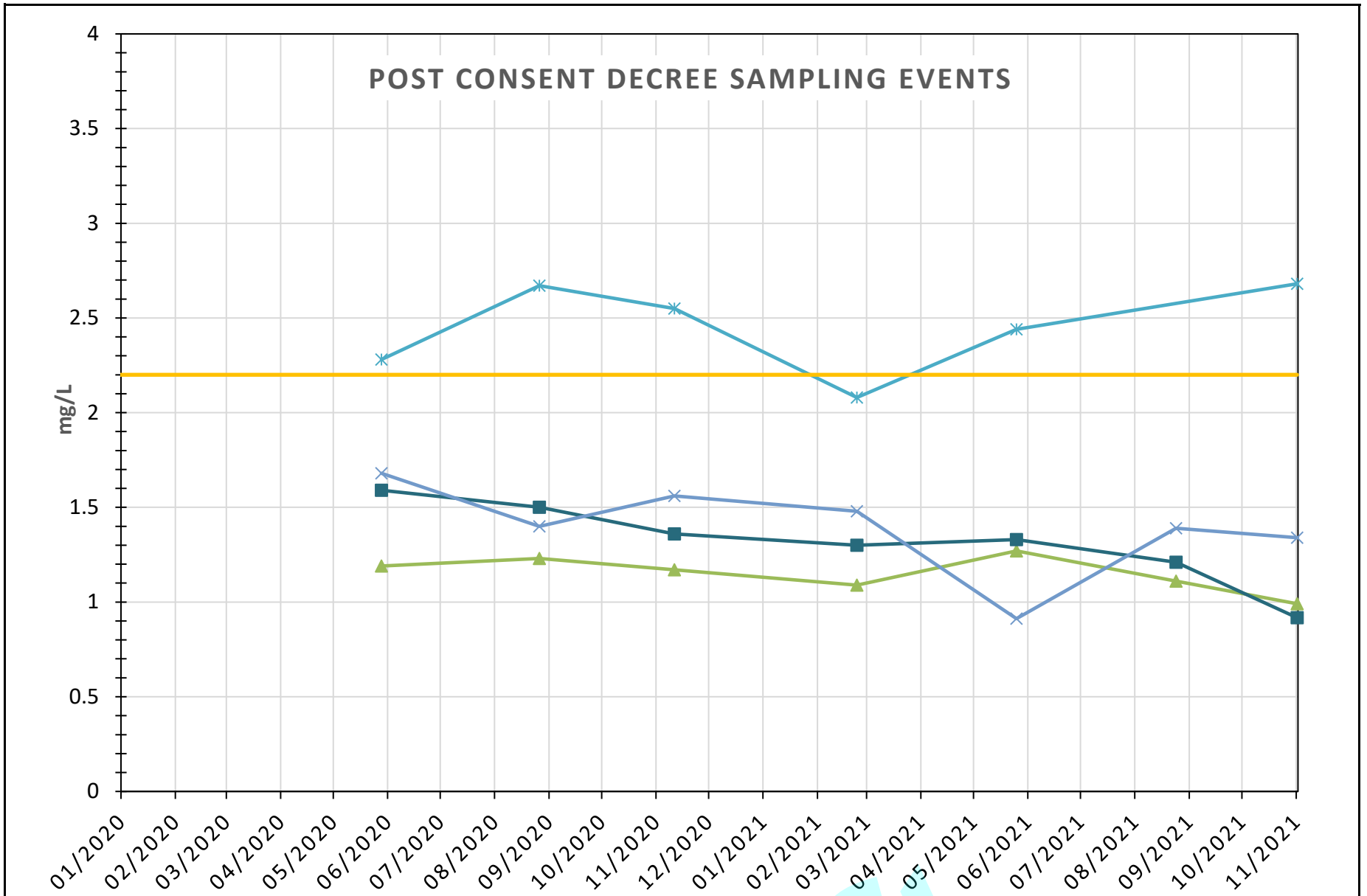




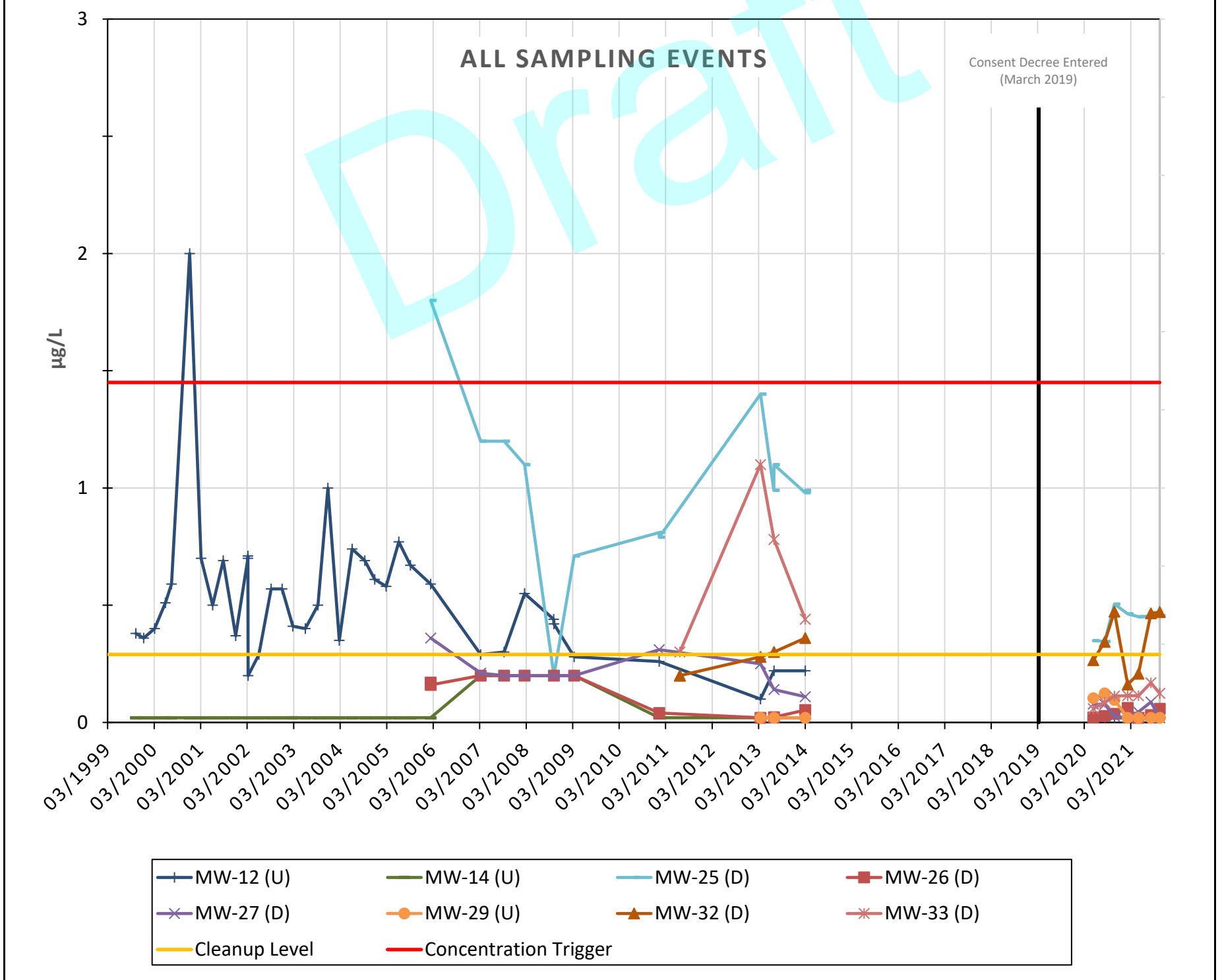
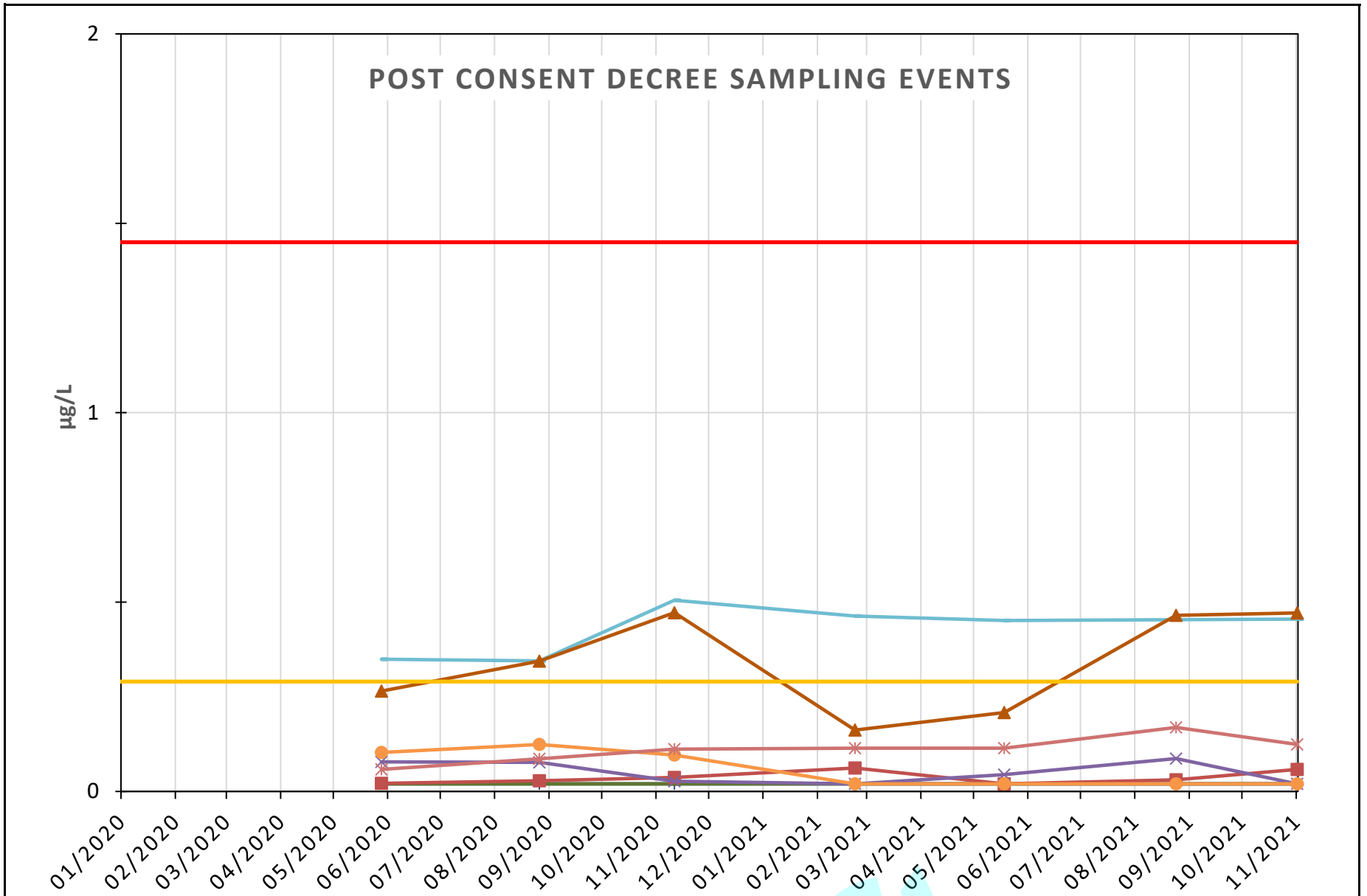


D = Downgradient
U = Upgradient

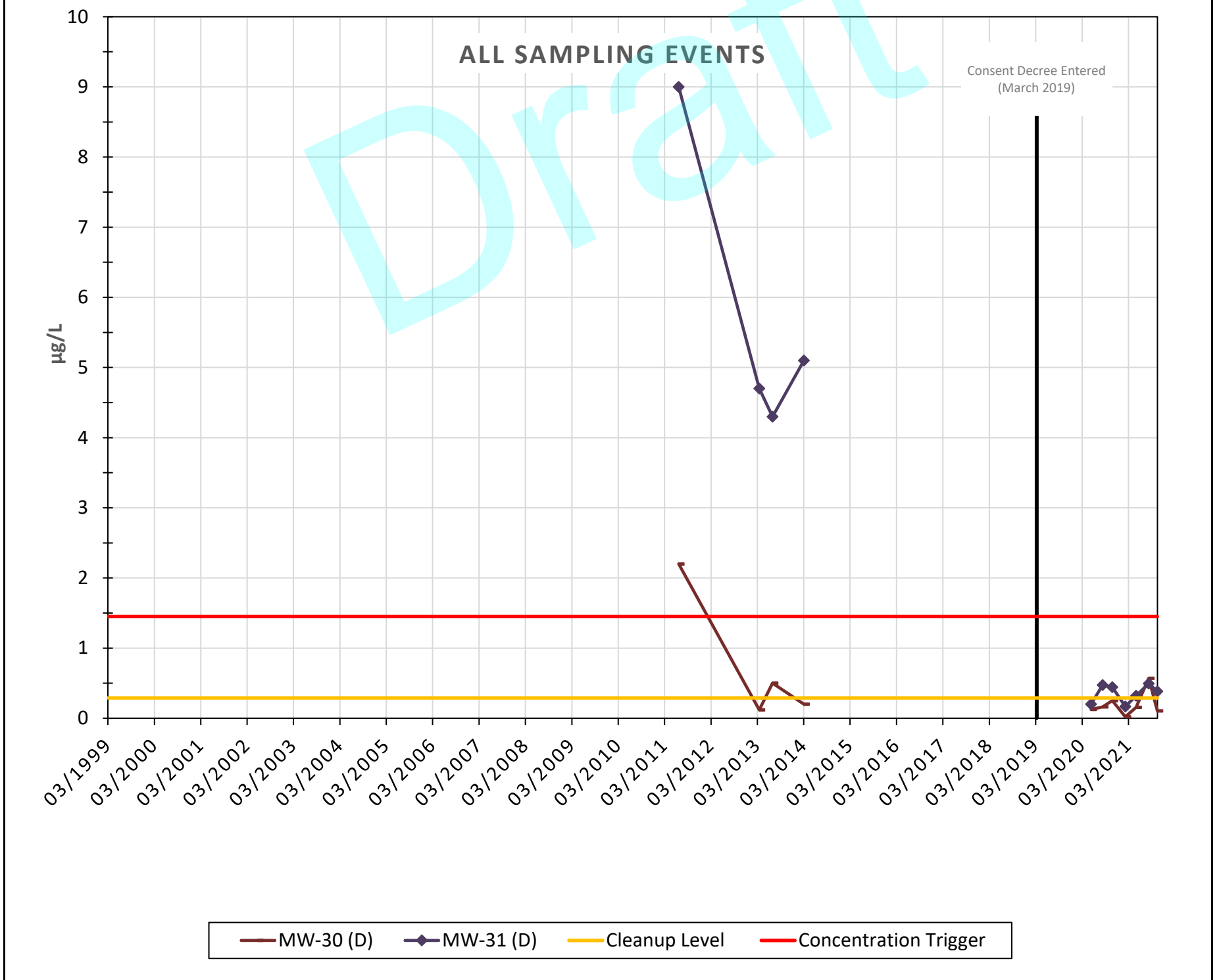
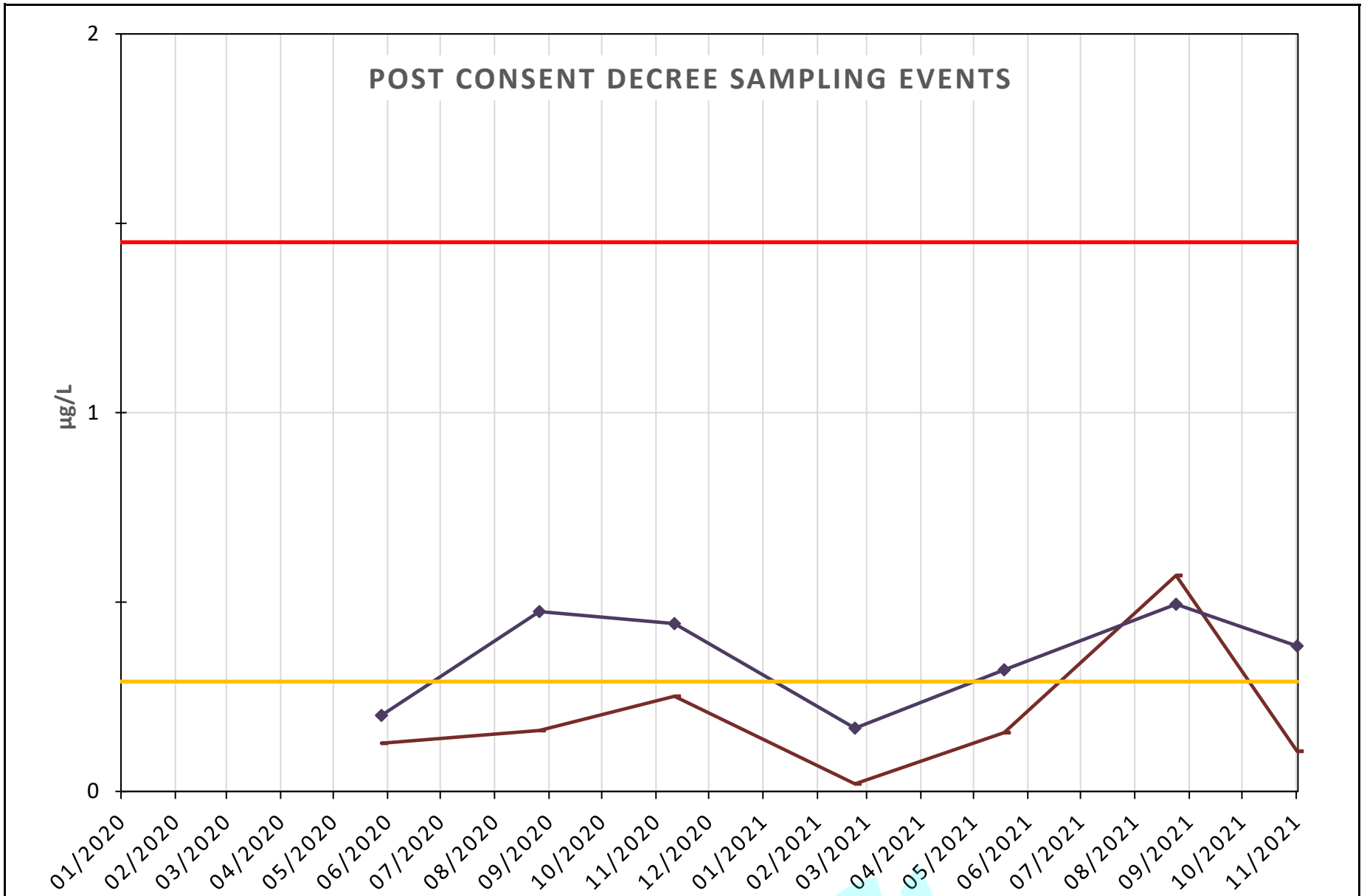




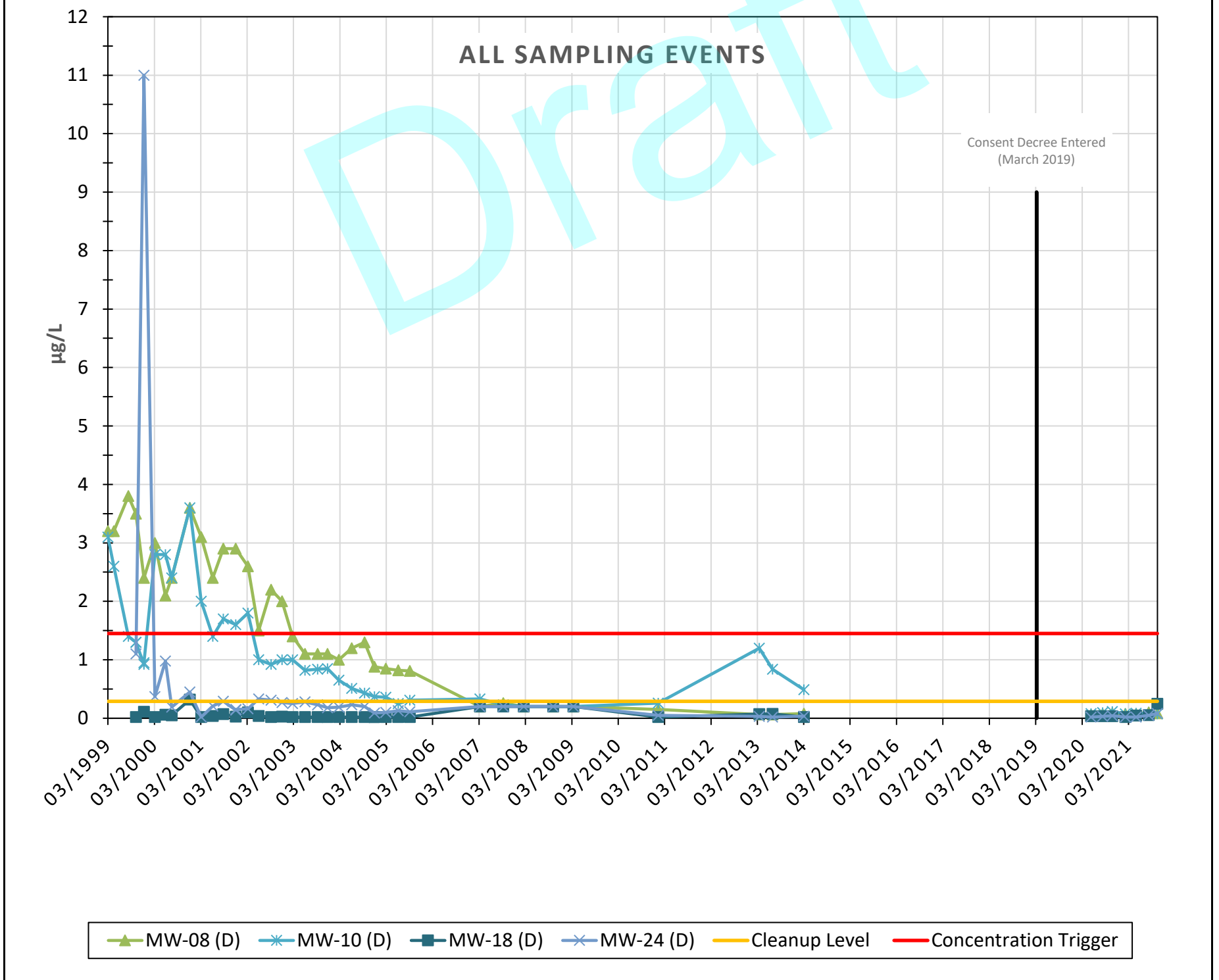
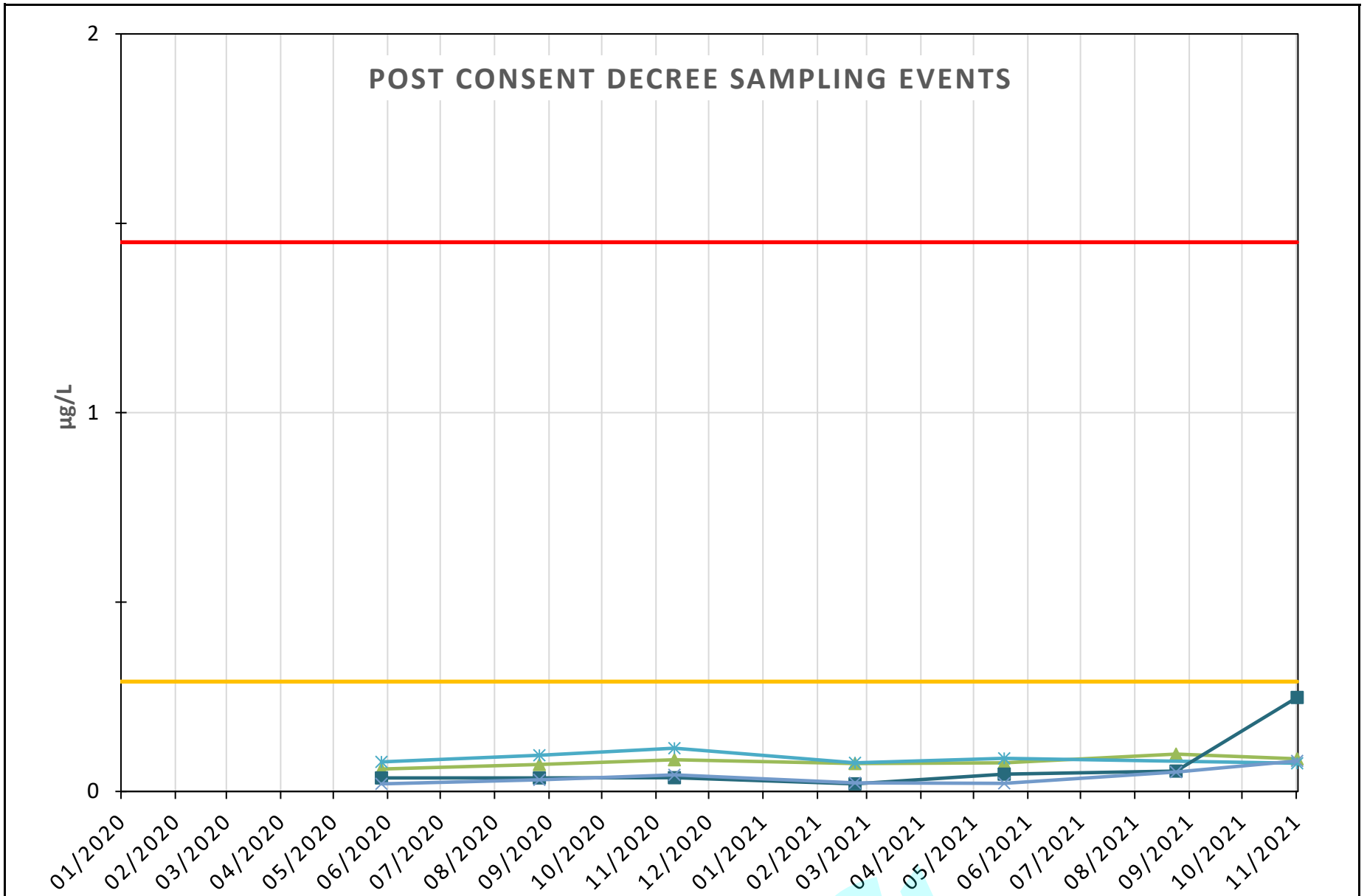
▲ MW-08 (D)
 ✱ MW-10 (D)
 ■ MW-18 (D)
 ✱ MW-24 (D)
 — Cleanup Level

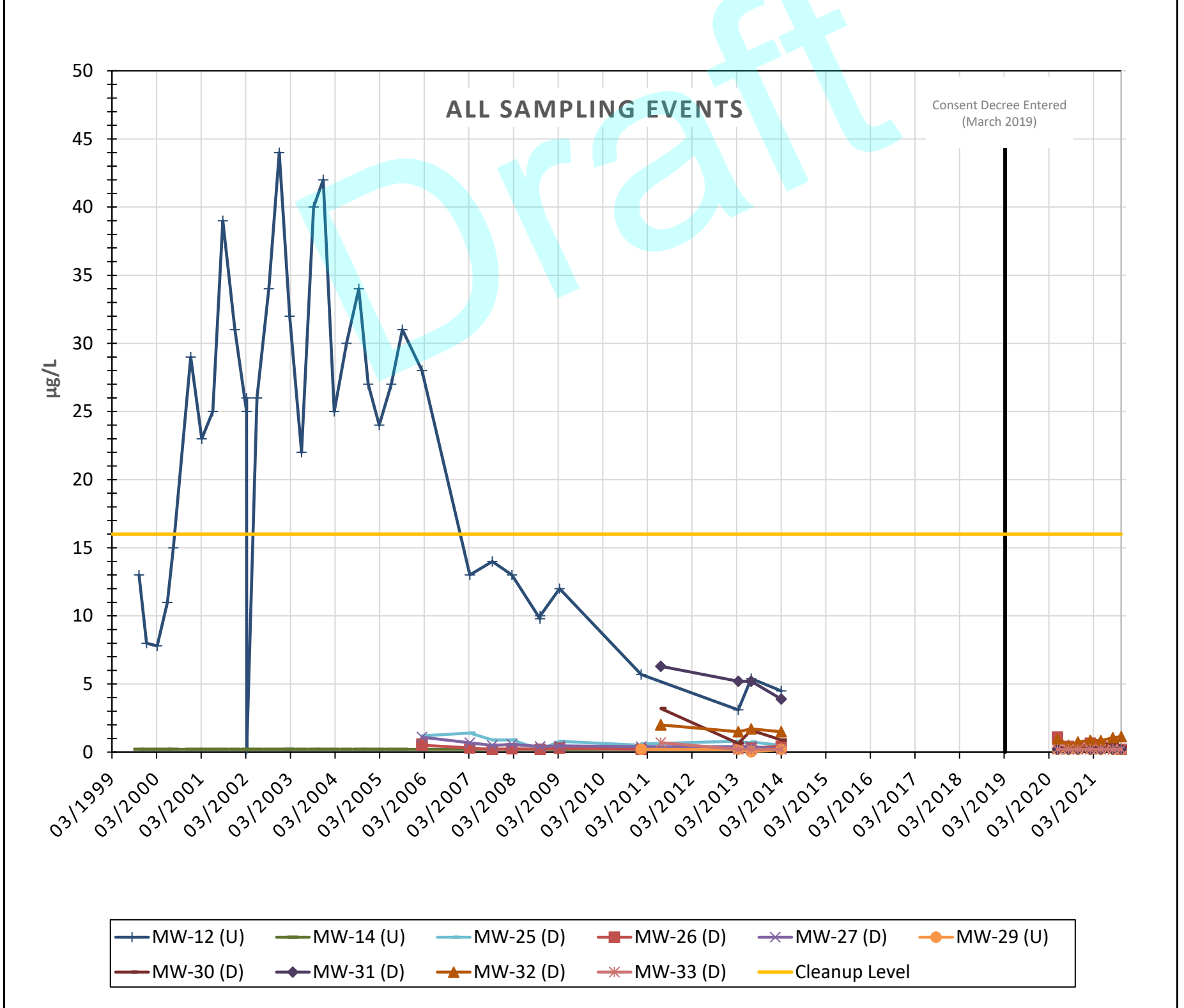
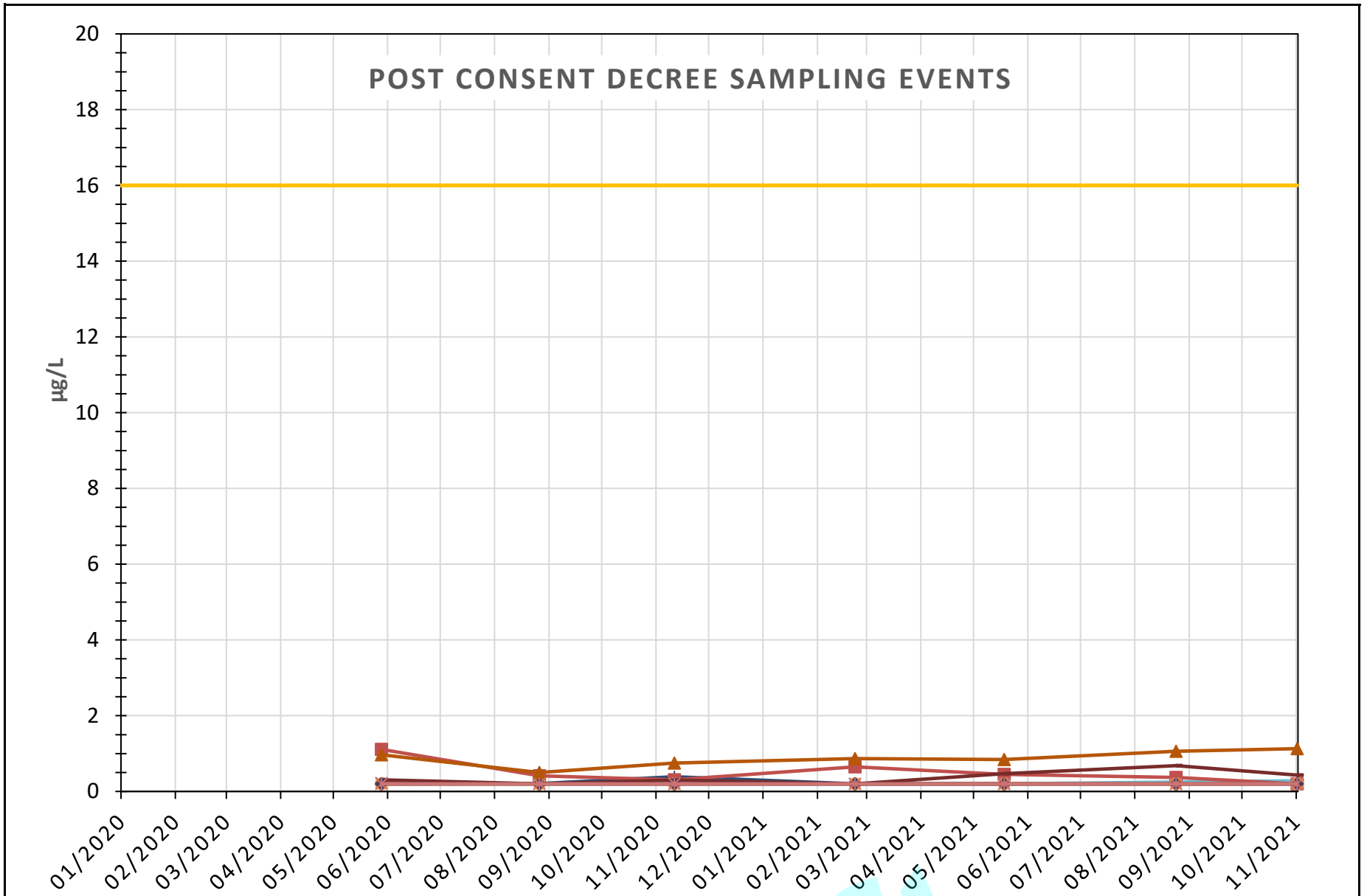


D = Downgradient
U = Upgradient

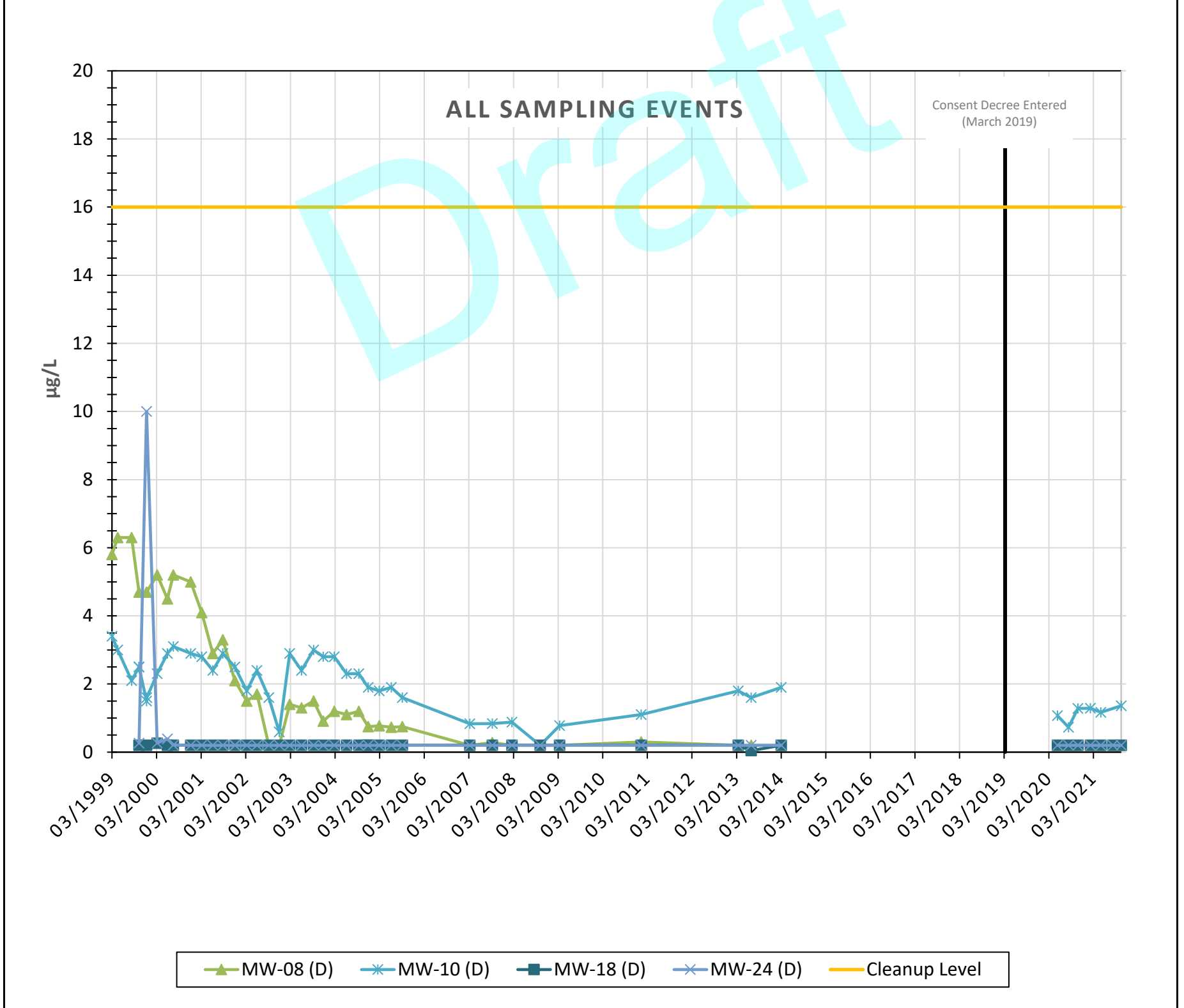
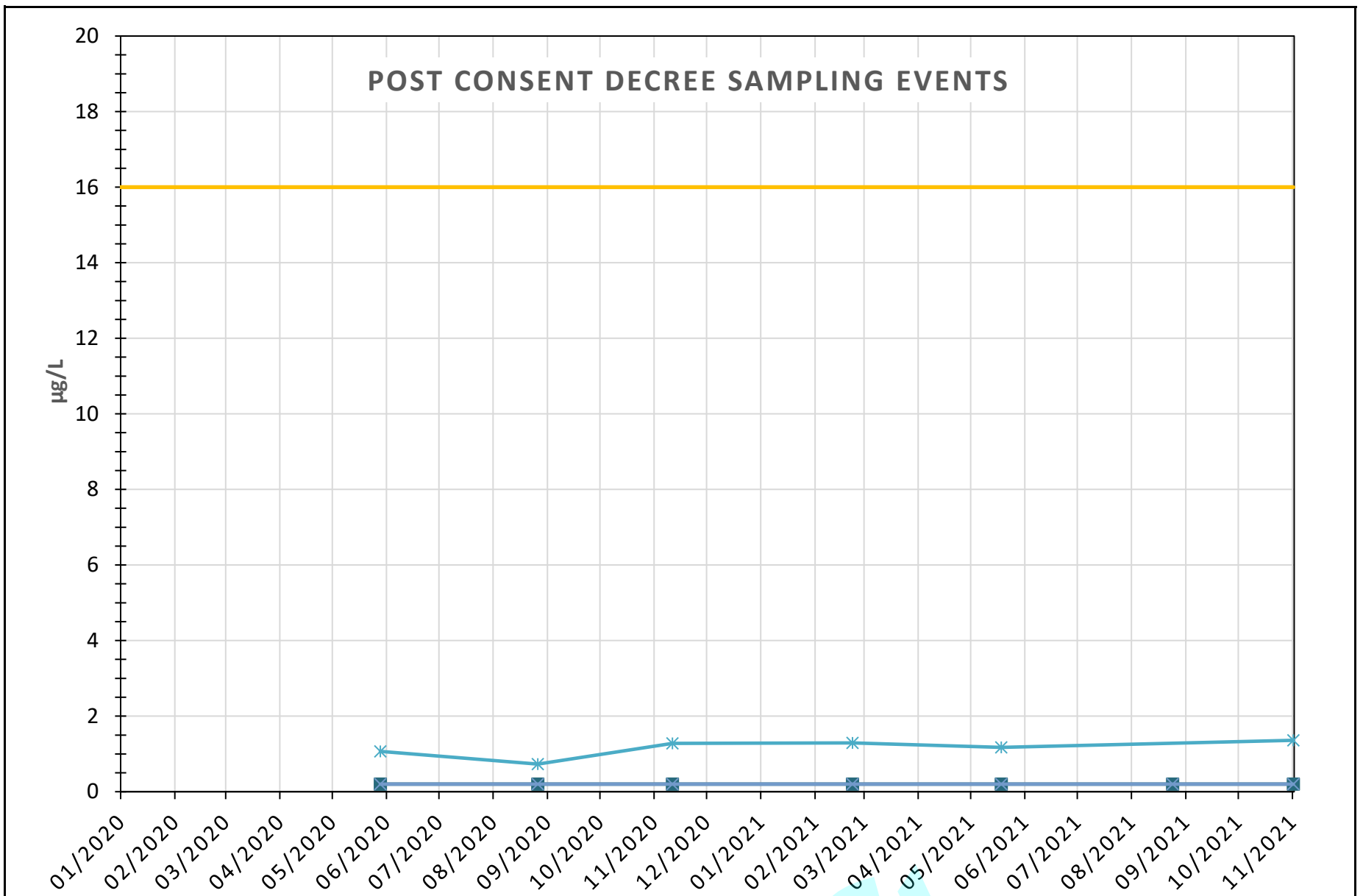


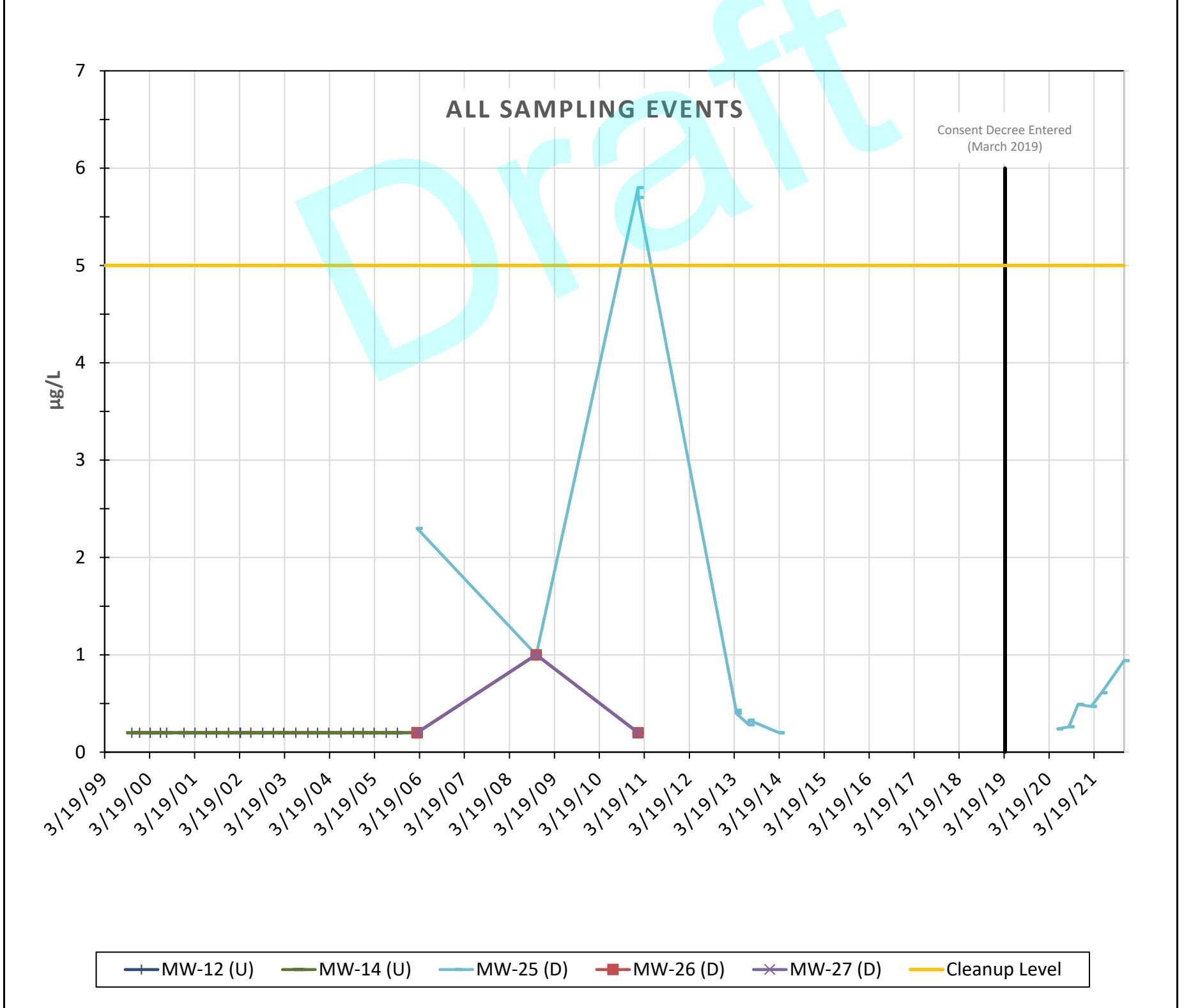
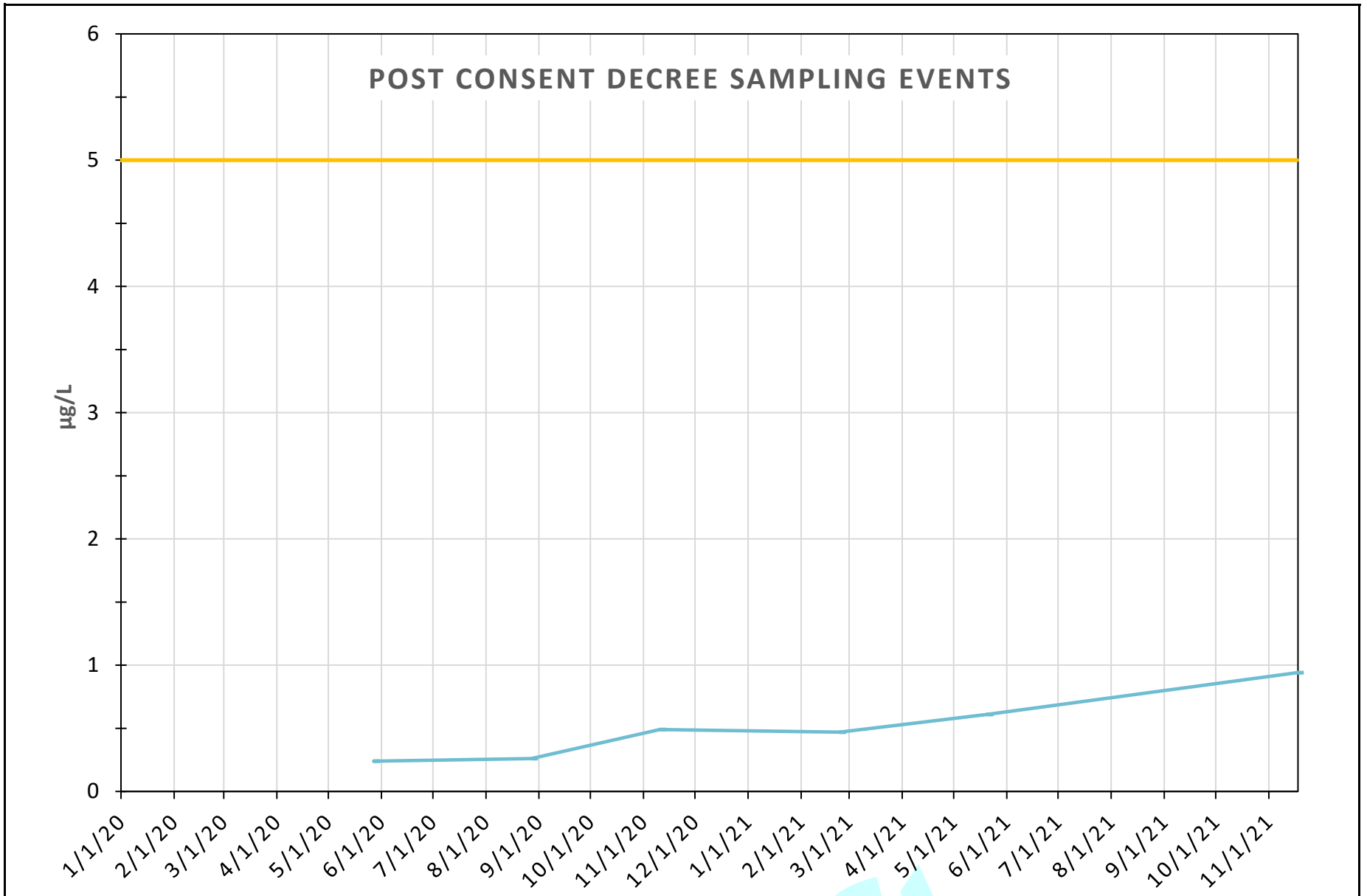
— MW-30 (D)
 —◆— MW-31 (D)
 — Cleanup Level
 — Concentration Trigger





D = Downgradient
U = Upgradient







Analytical Resources, LLC
Analytical Chemists and Consultants

04 December 2021

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

RE: South Park Landfill -Parametrix Water

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)
21K0307

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

Shelly Fishel, Project Manager

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.



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: 21K0307	Turn-around Requested: 2 weeks	Date: 11/16/21
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 2
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 5.7

Client Project Name: South Park Landfill					Analysis Requested										Notes/Comments			
Client Project #: 553-1550-067		Samplers: Trey Parry			cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**									
Sample ID	Date	Time	Matrix	Number of Containers														**Field-filtered
SPL-GW-MW25-1121			water	8		X	X	X	X									
SPL-GW-MW30-1121	11/16	12:30	water	7	X		X	X										
SPL-GW-MW31-1121	11/16	13:20	water	7	X		X	X										
SPL-GW-MW24-1121			water	8	X		X	X	X									
SPL-GW-MW26-1121			water	8	X		X	X	X									
SPL-GW-MW08-1121			water	14	X		X	X	X									MS/MSD
SPL-GW-MW27-1121	11/16	15:05	water	8	X		X	X	X									
SPL-GW-MW61-1121			water	8	X		X	X	X									
SPL-GW-MW81-1121			water	2		X	X											
Comments/Special Instructions	Relinquished by: (Signature)			Received by: (Signature)			Relinquished by: (Signature)			Received by: (Signature)								
	Printed Name: Trey Parry			Printed Name: Raven Barbera			Printed Name:			Printed Name:								
	Company: Parametrix			Company: ARI			Company:			Company:								
	Date & Time: 11/16 1600			Date & Time: 11/16/21 1600			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.

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)

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Client Project #: 553-1550-067		Samplers: Trey Parry			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-MW12-1121	11/16	8:10	water	8	X		X	X	X						
SPL-GW-MW14-1121			water	7	X		X	X							
SPL-GW-MW29-1121	11/16	10:20	water	7	X		X	X							
SPL-GW-MW18-1121			water	8	X		X	X	X						
SPL-GW-MW32-1121	11/16	11:40	water	8	X		X	X	X						
SPL-GW-MW33-1121			water	14	X		X	X	X						MS/MSD
SPL-GW-MW10-1121			water	8	X		X	X	X						
SPL-GW-MW60-1121			water	8	X		X	X	X						
SPL-GW-MW80-1121	11/16	8:30	water	2		X	X								
Comments/Special Instructions	Relinquished by: (Signature)		Received by: (Signature)		Relinquished by: (Signature)					Received by: (Signature)					
	Printed Name: Trey Parry		Printed Name: Raven Barbera		Printed Name:					Printed Name:					
	Company: Parametrix		Company: ARI		Company:					Company:					
	Date & Time: 11/16		Date & Time: 11/16/21 1600		Date & Time:					Date & Time:					

Two vinyl chlorides are observed. The VOC time, not initial, is correct.

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.

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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:
04-Dec-2021 10:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW30-1121	21K0307-01	Water	16-Nov-2021 12:30	16-Nov-2021 16:00
SPL-GW-MW31-1121	21K0307-02	Water	16-Nov-2021 13:20	16-Nov-2021 16:00
SPL-GW-MW27-1121	21K0307-03	Water	16-Nov-2021 15:05	16-Nov-2021 16:00
SPL-GW-MW27-1121	21K0307-04	Water	16-Nov-2021 15:05	16-Nov-2021 16:00
SPL-GW-MW12-1121	21K0307-05	Water	16-Nov-2021 09:10	16-Nov-2021 16:00
SPL-GW-MW12-1121	21K0307-06	Water	16-Nov-2021 09:10	16-Nov-2021 16:00
SPL-GW-MW29-1121	21K0307-07	Water	16-Nov-2021 10:20	16-Nov-2021 16:00
SPL-GW-MW32-1121	21K0307-08	Water	16-Nov-2021 11:10	16-Nov-2021 16:00
SPL-GW-MW32-1121	21K0307-09	Water	16-Nov-2021 11:10	16-Nov-2021 16:00
SPL-GW-MW80-1121	21K0307-10	Water	16-Nov-2021 08:30	16-Nov-2021 16:00



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:
04-Dec-2021 10:38

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill -Parametrix Water
Work Order: 21K0307

Sample receipt

Samples as listed on the preceding page were received 16-Nov-2021 16:00 under ARI work order 21K0307. 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) were within control limits.

Total and Dissolved Metals - EPA Method 6020B

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



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:

04-Dec-2021 10:38

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

21K0307

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
21K0307-01 A	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
21K0307-01 B	VOA Vial, Clear, 40 mL, HCL	
21K0307-01 C	VOA Vial, Clear, 40 mL, HCL	
21K0307-01 D	VOA Vial, Clear, 40 mL, HCL	
21K0307-01 E	VOA Vial, Clear, 40 mL	
21K0307-01 F	VOA Vial, Clear, 40 mL	
21K0307-01 G	VOA Vial, Clear, 40 mL	
21K0307-02 A	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
21K0307-02 B	VOA Vial, Clear, 40 mL, HCL	
21K0307-02 C	VOA Vial, Clear, 40 mL, HCL	
21K0307-02 D	VOA Vial, Clear, 40 mL, HCL	
21K0307-02 E	VOA Vial, Clear, 40 mL	
21K0307-02 F	VOA Vial, Clear, 40 mL	
21K0307-02 G	VOA Vial, Clear, 40 mL	
21K0307-03 A	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
21K0307-03 B	VOA Vial, Clear, 40 mL, HCL	
21K0307-03 C	VOA Vial, Clear, 40 mL, HCL	
21K0307-03 D	VOA Vial, Clear, 40 mL, HCL	
21K0307-03 E	VOA Vial, Clear, 40 mL	
21K0307-03 F	VOA Vial, Clear, 40 mL	
21K0307-03 G	VOA Vial, Clear, 40 mL	
21K0307-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 pass
21K0307-05 A	HDPE NM, 500 mL, 1:1 HNO3	
21K0307-05 B	VOA Vial, Clear, 40 mL, HCL	
21K0307-05 C	VOA Vial, Clear, 40 mL, HCL	
21K0307-05 D	VOA Vial, Clear, 40 mL, HCL	
21K0307-05 E	VOA Vial, Clear, 40 mL, HCL	
21K0307-05 F	VOA Vial, Clear, 40 mL, HCL	
21K0307-05 G	VOA Vial, Clear, 40 mL	
21K0307-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 pass
21K0307-07 A	HDPE NM, 500 mL, 1:1 HNO3	
21K0307-07 B	VOA Vial, Amber, 40 mL, HCL	
21K0307-07 C	VOA Vial, Amber, 40 mL, HCL	
21K0307-07 D	VOA Vial, Amber, 40 mL, HCL	



WORK ORDER

21K0307

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

21K0307-07 E	VOA Vial, Clear, 40 mL	
21K0307-07 F	VOA Vial, Clear, 40 mL	
21K0307-07 G	VOA Vial, Clear, 40 mL	
21K0307-08 A	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
21K0307-08 B	VOA Vial, Clear, 40 mL, HCL	
21K0307-08 C	VOA Vial, Clear, 40 mL, HCL	
21K0307-08 D	VOA Vial, Clear, 40 mL, HCL	
21K0307-08 E	VOA Vial, Clear, 40 mL	
21K0307-08 F	VOA Vial, Clear, 40 mL	
21K0307-08 G	VOA Vial, Clear, 40 mL	
21K0307-09 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 pass
21K0307-10 A	VOA Vial, Clear, 40 mL, HCL	
21K0307-10 B	VOA Vial, Clear, 40 mL	

Preservation Confirmed By 

Date 11/18/21



Cooler Receipt Form

ARI Client: Parametrix / SPU

Project Name: South Park Landfill

COC No(s): _____

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

Assigned ARI Job No: 21K0307 ^{NA}

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 1600 5.7

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID# DGC-3009708

Cooler Accepted by: RB Date: 11/16/21 Time: 1600

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

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

Samples Logged by: RB Date: 11/18/21 Time: 9:37 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: 04-Dec-2021 10:38
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SPL-GW-MW30-1121
21K0307-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/16/2021 12:30
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 15:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-01 C
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.43	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	117	%	



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: 04-Dec-2021 10:38
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SPL-GW-MW30-1121
21K0307-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/16/2021 12:30
Instrument: NT16 Analyst: KOTT Analyzed: 11/19/2021 14:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-01 B
Preparation Batch: BJK0498 Sample Size: 10 mL
Prepared: 11/19/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.106	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>107</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: 04-Dec-2021 10:38
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SPL-GW-MW30-1121
21K0307-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/16/2021 12:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/30/2021 23:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0307-01 A 01
Preparation Batch: BJK0731 Sample Size: 25 mL
Prepared: 11/30/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	2.51	mg/L	
Manganese	7439-96-5	1	0.000500	0.0666	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: 04-Dec-2021 10:38
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SPL-GW-MW31-1121
21K0307-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/16/2021 13:20
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 16:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-02 B
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 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>120</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:
04-Dec-2021 10:38

SPL-GW-MW31-1121
21K0307-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM

Sampled: 11/16/2021 13:20

Instrument: NT16 Analyst: KOTT

Analyzed: 11/19/2021 14:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJK0498
Prepared: 11/19/2021

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 21K0307-02 G

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.384	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: 04-Dec-2021 10:38
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SPL-GW-MW31-1121
21K0307-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/16/2021 13:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/30/2021 23:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0307-02 A 01
Preparation Batch: BJK0731 Sample Size: 25 mL
Prepared: 11/30/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	11.4	mg/L	
Manganese	7439-96-5	10	0.00500	0.665	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: 04-Dec-2021 10:38
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SPL-GW-MW27-1121
21K0307-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/16/2021 15:05
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 16:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-03 B
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 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 %	117	%	



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: 04-Dec-2021 10:38
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SPL-GW-MW27-1121
21K0307-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/16/2021 15:05
Instrument: NT16 Analyst: KOTT Analyzed: 11/19/2021 15:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-03 C
Preparation Batch: BJK0498 Sample Size: 10 mL
Prepared: 11/19/2021 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>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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 04-Dec-2021 10:38
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SPL-GW-MW27-1121
21K0307-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/16/2021 15:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/30/2021 23:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0307-03 A 01
Preparation Batch: BJK0731 Sample Size: 25 mL
Prepared: 11/30/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	2.08	mg/L	
Manganese	7439-96-5	1	0.000500	0.0607	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: 04-Dec-2021 10:38
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SPL-GW-MW27-1121
21K0307-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/16/2021 15:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/30/2021 23:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0307-04 A 01
Preparation Batch: BJK0728 Sample Size: 25 mL
Prepared: 11/30/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	1.00	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: 04-Dec-2021 10:38
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SPL-GW-MW12-1121
21K0307-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/16/2021 09:10
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 16:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-05 B
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.20	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	119	%	



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: 04-Dec-2021 10:38
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SPL-GW-MW12-1121
21K0307-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/16/2021 09:10
Instrument: NT16 Analyst: KOTT Analyzed: 11/19/2021 15:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-05 C
Preparation Batch: BJK0498 Sample Size: 10 mL
Prepared: 11/19/2021 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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 04-Dec-2021 10:38
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SPL-GW-MW12-1121
21K0307-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/16/2021 09:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/30/2021 23:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0307-05 A 01
Preparation Batch: BJK0731 Sample Size: 25 mL
Prepared: 11/30/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	0.810	mg/L	
Manganese	7439-96-5	1	0.000500	0.0908	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: 04-Dec-2021 10:38
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SPL-GW-MW12-1121
21K0307-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/16/2021 09:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/30/2021 23:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0307-06 A 01
Preparation Batch: BJK0728 Sample Size: 25 mL
Prepared: 11/30/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	0.407	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: 04-Dec-2021 10:38
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SPL-GW-MW29-1121
21K0307-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/16/2021 10:20
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 17:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-07 C
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 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>117</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: 04-Dec-2021 10:38
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SPL-GW-MW29-1121
21K0307-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/16/2021 10:20
Instrument: NT16 Analyst: KOTT Analyzed: 11/19/2021 15:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-07 B
Preparation Batch: BJK0498 Sample Size: 10 mL
Prepared: 11/19/2021 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>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: 04-Dec-2021 10:38
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SPL-GW-MW29-1121
21K0307-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/16/2021 10:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/01/2021 00:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0307-07 A 01
Preparation Batch: BJK0731 Sample Size: 25 mL
Prepared: 11/30/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	12.2	mg/L	
Manganese	7439-96-5	10	0.00500	0.526	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: 04-Dec-2021 10:38
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SPL-GW-MW32-1121
21K0307-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/16/2021 11:10
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 17:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-08 C
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	1.13	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>124</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: 04-Dec-2021 10:38
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SPL-GW-MW32-1121
21K0307-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/16/2021 11:10
Instrument: NT16 Analyst: KOTT Analyzed: 11/19/2021 16:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-08 B
Preparation Batch: BJK0498 Sample Size: 10 mL
Prepared: 11/19/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.471	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: 04-Dec-2021 10:38
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SPL-GW-MW32-1121
21K0307-08 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/16/2021 11:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/01/2021 00:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0307-08 A 01
Preparation Batch: BJK0731 Sample Size: 25 mL
Prepared: 11/30/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	12.7	mg/L	
Manganese	7439-96-5	20	0.0100	1.61	mg/L	D



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SPL-GW-MW32-1121
21K0307-09 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/16/2021 11:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 11/30/2021 23:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0307-09 A 01
Preparation Batch: BJK0728 Sample Size: 25 mL
Prepared: 11/30/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	1.17	ug/L	



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

Reported:
04-Dec-2021 10:38

SPL-GW-MW80-1121
21K0307-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/16/2021 08:30

Instrument: NT2 Analyst: PKC

Analyzed: 11/23/2021 14:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJK0622
Prepared: 11/23/2021

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 21K0307-10 B

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>111</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>96.8</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: 04-Dec-2021 10:38
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SPL-GW-MW80-1121
21K0307-10 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/16/2021 08:30
Instrument: NT16 Analyst: KOTT Analyzed: 11/19/2021 16:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0307-10 A
Preparation Batch: BJK0498 Sample Size: 10 mL
Prepared: 11/19/2021 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>105</i>	<i>%</i>	



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

Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BJK0622 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0622-BLK1)		Prepared: 23-Nov-2021 Analyzed: 23-Nov-2021 14:37								
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.75		ug/L	5.00		115	80-129			
<i>Surrogate: Toluene-d8</i>	4.79		ug/L	5.00		95.7	80-120			
LCS (BJK0622-BS1)		Prepared: 23-Nov-2021 Analyzed: 23-Nov-2021 12:06								
cis-1,2-Dichloroethene	10.1	0.20	ug/L	10.0		101	80-121			
Benzene	9.43	0.20	ug/L	10.0		94.3	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.58		ug/L	5.00		112	80-129			
<i>Surrogate: Toluene-d8</i>	4.91		ug/L	5.00		98.1	80-120			
LCS Dup (BJK0622-BS1)		Prepared: 23-Nov-2021 Analyzed: 23-Nov-2021 12:28								
cis-1,2-Dichloroethene	10.4	0.20	ug/L	10.0		104	80-121	3.07	30	
Benzene	9.54	0.20	ug/L	10.0		95.4	80-120	1.11	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.39		ug/L	5.00		108	80-129			
<i>Surrogate: Toluene-d8</i>	5.03		ug/L	5.00		101	80-120			



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

Reported:
04-Dec-2021 10:38

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BJK0498 - EPA 5030C (Purge and Trap)

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0498-BLK1)		Prepared: 19-Nov-2021 Analyzed: 19-Nov-2021 10:30								
Vinyl chloride	ND	0.0200	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5230		ug/L	5000	105		80-129			
LCS (BJK0498-BS1)		Prepared: 19-Nov-2021 Analyzed: 19-Nov-2021 09:08								
Vinyl chloride	2.31	0.0200	ug/L	2.00		116	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5210		ug/L	5000	104		80-129			
LCS Dup (BJK0498-BSD1)		Prepared: 19-Nov-2021 Analyzed: 19-Nov-2021 09:29								
Vinyl chloride	2.03	0.0200	ug/L	2.00		101	62-141	13.30	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5160		ug/L	5000	103		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: 04-Dec-2021 10:38
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BJK0731 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0731-BLK1)			Prepared: 30-Nov-2021 Analyzed: 30-Nov-2021 18:56								
Iron	54	ND	0.0360	mg/L							U
Iron	57	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U
LCS (BJK0731-BS1)			Prepared: 30-Nov-2021 Analyzed: 30-Nov-2021 19:01								
Iron	54	4.97	0.0360	mg/L	5.00		99.5	80-120			
Iron	57	5.04	0.0360	mg/L	5.00		101	80-120			
Manganese	55	0.0244	0.000500	mg/L	0.0250		97.6	80-120			



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BJK0728 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0728-BLK1)						Prepared: 30-Nov-2021 Analyzed: 30-Nov-2021 16:38					
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BJK0728-BS1)						Prepared: 30-Nov-2021 Analyzed: 30-Nov-2021 16:43					
Arsenic, Dissolved	75a	24.8	0.200	ug/L	25.0		99.2	80-120			



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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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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

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	02/28/2022
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2022
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022



Seattle Public Utilities
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Seattle WA, 98124-4018

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

Reported:
04-Dec-2021 10:38

Notes and Definitions

- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- 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

04 December 2021

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

RE: South Park Landfill -Parametrix Water

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)
21K0331

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

Shelly Fishel, Project Manager

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.



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: 21K0331	Turn-around Requested: 2 weeks	Date: 11/17/21
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 2
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 3.9

Client Project Name: South Park Landfill					Analysis Requested										Notes/Comments	
Client Project #: 553-1550-067		Samplers: Trey Parry			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-MW25-1121	11/17	10:00	water	8		X	X	X	X							
SPL-GW-MW30-1121			water	7	X		X	X								
SPL-GW-MW31-1121			water	7	X		X	X								
SPL-GW-MW24-1121	11/17	15:00	water	8	X		X	X	X							
SPL-GW-MW26-1121	11/17	14:00	water	8	X		X	X	X							
SPL-GW-MW08-1121	11/17	12:50	water	14	X		X	X	X							MS/MSD
SPL-GW-MW27-1121			water	8	X		X	X	X							
SPL-GW-MW61-1121	11/17	12:50	water	8	X		X	X	X							
SPL-GW-MW81-1121	11/17	10:00	water	2		X	X									
Comments/Special Instructions	Relinquished by: (Signature)		Received by: (Signature)		Relinquished by: (Signature)					Received by: (Signature)						
	Printed Name: Trey Parry		Printed Name: Arden Paist		Printed Name:					Printed Name:						
	Company: Parametrix		Company: ARI		Company:					Company:						
	Date & Time: 11/17/21 1645		Date & Time: 11/17/21 1645		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.

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: 21K0331	Turn-around Requested: 2 weeks	Date: 11/17/21
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 2 of 2
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 3.9

Client Project Name: South Park Landfill					Analysis Requested										Notes/Comments			
Client Project #: 553-1550-067		Samplers: Trey Parry			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-MW12-1121			water	8	X		X	X	X									
SPL-GW-MW14-1121	11/17	8:20	water	7	X		X	X										
SPL-GW-MW29-1121			water	7	X		X	X										
SPL-GW-MW18-1121	11/17	9:10	water	8	X		X	X	X									
SPL-GW-MW32-1121			water	8	X		X	X	X									
SPL-GW-MW33-1121	11/17	15:55	water	14	X		X	X	X									MS/MSD
SPL-GW-MW10-1121	11/17	11:00	water	8	X		X	X	X									
SPL-GW-MW60-1121	11/17	15:55	water	8	X		X	X	X									
SPL-GW-MW80-1121			water	2		X	X											
Comments/Special Instructions	Relinquished by: (Signature)			Received by: (Signature)			Relinquished by: (Signature)			Received by: (Signature)								
	Printed Name: Trey Parry			Printed Name: Arden Paist			Printed Name:			Printed Name:								
	Company: Parametrix			Company: ARI			Company:			Company:								
	Date & Time: 11/17/21 16:45			Date & Time: 11/17/21 16:45			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
Seattle WA, 98124-4018

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

Reported:
04-Dec-2021 12:02

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW25-1121	21K0331-01	Water	17-Nov-2021 10:00	17-Nov-2021 16:45
SPL-GW-MW25-1121	21K0331-02	Water	17-Nov-2021 10:00	17-Nov-2021 16:45
SPL-GW-MW24-1121	21K0331-03	Water	17-Nov-2021 15:00	17-Nov-2021 16:45
SPL-GW-MW24-1121	21K0331-04	Water	17-Nov-2021 15:00	17-Nov-2021 16:45
SPL-GW-MW26-1121	21K0331-05	Water	17-Nov-2021 14:00	17-Nov-2021 16:45
SPL-GW-MW26-1121	21K0331-06	Water	17-Nov-2021 14:00	17-Nov-2021 16:45
SPL-GW-MW08-1121	21K0331-07	Water	17-Nov-2021 12:50	17-Nov-2021 16:45
SPL-GW-MW08-1121	21K0331-08	Water	17-Nov-2021 12:50	17-Nov-2021 16:45
SPL-GW-MW61-1121	21K0331-09	Water	17-Nov-2021 12:50	17-Nov-2021 16:45
SPL-GW-MW61-1121	21K0331-10	Water	17-Nov-2021 12:50	17-Nov-2021 16:45
SPL-GW-MW81-1121	21K0331-11	Water	17-Nov-2021 10:00	17-Nov-2021 16:45
SPL-GW-MW14-1121	21K0331-12	Water	17-Nov-2021 08:20	17-Nov-2021 16:45
SPL-GW-MW18-1121	21K0331-13	Water	17-Nov-2021 09:10	17-Nov-2021 16:45
SPL-GW-MW18-1121	21K0331-14	Water	17-Nov-2021 09:10	17-Nov-2021 16:45
SPL-GW-MW33-1121	21K0331-15	Water	17-Nov-2021 15:55	17-Nov-2021 16:45
SPL-GW-MW33-1121	21K0331-16	Water	17-Nov-2021 15:55	17-Nov-2021 16:45
SPL-GW-MW10-1121	21K0331-17	Water	17-Nov-2021 11:00	17-Nov-2021 16:45
SPL-GW-MW10-1121	21K0331-18	Water	17-Nov-2021 11:00	17-Nov-2021 16:45
SPL-GW-MW60-1121	21K0331-19	Water	17-Nov-2021 15:55	17-Nov-2021 16:45
SPL-GW-MW60-1121	21K0331-20	Water	17-Nov-2021 15:55	17-Nov-2021 16:45



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:
04-Dec-2021 12:02

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill -Parametrix Water
Work Order: 21K0331

Sample receipt

Samples as listed on the preceding page were received 17-Nov-2021 16:45 under ARI work order 21K0331. 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.

Sample specific QC was performed in association with samples 21K0331-08 and 21K0331-15 in batch BJK0622. 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.

The instrument malfunctioned in original run. Samples 21K0331-13, 21K0331-17 and 21K0331-19 were reanalyzed. All unpreserved vials for 21K0331-19 were compromised after injects and was analyzed out of an preserved vial.

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.



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

Reported:
04-Dec-2021 12:02

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

Sample specific QC was performed in association with samples 21K0331-08 and 21K0331-15 in batch BJK0588. 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.

Sample specific QC was performed in association with samples 21K0331-08 and 21K0331-15 in Total Metals batch B JL0028 and in association with samples 21K0331-09 and 21K0331-16 in Dissolved Arsenic batch B JL0029. The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits except Total Iron which was out of control low in the MS/MSD (BKL0028-MS1, BKL0028-MS2, BKL0028-MSD1 and BKL0028-MSD2). Deviations have been flagged.



WORK ORDER

21K0331

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	
21K0331-01 A	HDPE NM, 500 mL, 1:1 HNO3	L2	Pass (P)
21K0331-01 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-01 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-01 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-01 E	VOA Vial, Clear, 40 mL		
21K0331-01 F	VOA Vial, Clear, 40 mL		
21K0331-01 G	VOA Vial, Clear, 40 mL		
21K0331-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-03 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-03 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-03 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-03 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-03 E	VOA Vial, Clear, 40 mL		
21K0331-03 F	VOA Vial, Clear, 40 mL		
21K0331-03 G	VOA Vial, Clear, 40 mL	bubble	
21K0331-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-05 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-05 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-05 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-05 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-05 E	VOA Vial, Clear, 40 mL		
21K0331-05 F	VOA Vial, Clear, 40 mL		
21K0331-05 G	VOA Vial, Clear, 40 mL		
21K0331-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-07 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-07 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 E	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 F	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 G	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 H	VOA Vial, Clear, 40 mL		
21K0331-07 I	VOA Vial, Clear, 40 mL		
21K0331-07 J	VOA Vial, Clear, 40 mL		



WORK ORDER

21K0331

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	
21K0331-07 K	VOA Vial, Clear, 40 mL		
21K0331-07 L	VOA Vial, Clear, 40 mL		
21K0331-07 M	VOA Vial, Clear, 40 mL		
21K0331-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-09 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-09 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-09 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-09 D	VOA Vial, Clear, 40 mL, HCL	bubble	
21K0331-09 E	VOA Vial, Clear, 40 mL		
21K0331-09 F	VOA Vial, Clear, 40 mL		
21K0331-09 G	VOA Vial, Clear, 40 mL		
21K0331-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-11 A	VOA Vial, Clear, 40 mL, HCL	L2	P
21K0331-11 B	VOA Vial, Clear, 40 mL	bubble	
21K0331-12 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-12 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-12 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-12 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-12 E	VOA Vial, Clear, 40 mL		
21K0331-12 F	VOA Vial, Clear, 40 mL		
21K0331-12 G	VOA Vial, Clear, 40 mL		
21K0331-13 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-13 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-13 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-13 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-13 E	VOA Vial, Clear, 40 mL		
21K0331-13 F	VOA Vial, Clear, 40 mL	bubble	
21K0331-13 G	VOA Vial, Clear, 40 mL	bubble	
21K0331-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-15 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-15 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-15 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-15 D	VOA Vial, Clear, 40 mL, HCL	bubble	
21K0331-15 E	VOA Vial, Clear, 40 mL, HCL		
21K0331-15 F	VOA Vial, Clear, 40 mL, HCL		
21K0331-15 G	VOA Vial, Clear, 40 mL, HCL		



WORK ORDER

21K0331

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

21K0331-15 H	VOA Vial, Clear, 40 mL		
21K0331-15 I	VOA Vial, Clear, 40 mL		
21K0331-15 J	VOA Vial, Clear, 40 mL		
21K0331-15 K	VOA Vial, Clear, 40 mL		
21K0331-15 L	VOA Vial, Clear, 40 mL		
21K0331-15 M	VOA Vial, Clear, 40 mL	bubble	
21K0331-16 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	>2	Fail
21K0331-17 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
21K0331-17 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-17 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-17 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-17 E	VOA Vial, Clear, 40 mL		
21K0331-17 F	VOA Vial, Clear, 40 mL		
21K0331-17 G	VOA Vial, Clear, 40 mL		
21K0331-18 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
21K0331-19 A	HDPE NM, 500 mL, 1:1 HNO3	>2	Fail
21K0331-19 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-19 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-19 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-19 E	VOA Vial, Clear, 40 mL		
21K0331-19 F	VOA Vial, Clear, 40 mL		
21K0331-19 G	VOA Vial, Clear, 40 mL		
21K0331-20 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	bubble <2	P

RF

Preservation Confirmed By _____

11/19/21

Date _____



Cooler Receipt Form

ARI Client: SPU

Project Name: South Park Landfill

COC No(s): _____ NA

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

Assigned ARI Job No: 21K0331

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 1645 3.9

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DOO 2865

Cooler Accepted by: AP Date: 11/17/21 Time: 1645

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

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

Samples Logged by: RP Date: 11/19/21 Time: 1013 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:

lab to determine size of bubbles in vials

By: RP Date: 11/19/21



WORK ORDER

21K0331

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	
21K0331-01 A	HDPE NM, 500 mL, 1:1 HNO3	L2	Pass (P)
21K0331-01 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-01 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-01 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-01 E	VOA Vial, Clear, 40 mL		
21K0331-01 F	VOA Vial, Clear, 40 mL		
21K0331-01 G	VOA Vial, Clear, 40 mL		
21K0331-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-03 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-03 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-03 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-03 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-03 E	VOA Vial, Clear, 40 mL		
21K0331-03 F	VOA Vial, Clear, 40 mL		
21K0331-03 G	VOA Vial, Clear, 40 mL	bubble	
21K0331-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-05 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-05 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-05 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-05 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-05 E	VOA Vial, Clear, 40 mL		
21K0331-05 F	VOA Vial, Clear, 40 mL		
21K0331-05 G	VOA Vial, Clear, 40 mL		
21K0331-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-07 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-07 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 E	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 F	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 G	VOA Vial, Clear, 40 mL, HCL		
21K0331-07 H	VOA Vial, Clear, 40 mL		
21K0331-07 I	VOA Vial, Clear, 40 mL		
21K0331-07 J	VOA Vial, Clear, 40 mL		



WORK ORDER

21K0331

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

21K0331-07 K	VOA Vial, Clear, 40 mL		
21K0331-07 L	VOA Vial, Clear, 40 mL		
21K0331-07 M	VOA Vial, Clear, 40 mL		
21K0331-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-09 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-09 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-09 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-09 D	VOA Vial, Clear, 40 mL, HCL	bubble	
21K0331-09 E	VOA Vial, Clear, 40 mL		
21K0331-09 F	VOA Vial, Clear, 40 mL		
21K0331-09 G	VOA Vial, Clear, 40 mL		
21K0331-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-11 A	VOA Vial, Clear, 40 mL, HCL	L2	P
21K0331-11 B	VOA Vial, Clear, 40 mL	bubble	
21K0331-12 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-12 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-12 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-12 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-12 E	VOA Vial, Clear, 40 mL		
21K0331-12 F	VOA Vial, Clear, 40 mL		
21K0331-12 G	VOA Vial, Clear, 40 mL		
21K0331-13 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-13 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-13 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-13 D	VOA Vial, Clear, 40 mL, HCL		
21K0331-13 E	VOA Vial, Clear, 40 mL		
21K0331-13 F	VOA Vial, Clear, 40 mL	bubble	
21K0331-13 G	VOA Vial, Clear, 40 mL	bubble	
21K0331-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
21K0331-15 A	HDPE NM, 500 mL, 1:1 HNO3	L2	P
21K0331-15 B	VOA Vial, Clear, 40 mL, HCL		
21K0331-15 C	VOA Vial, Clear, 40 mL, HCL		
21K0331-15 D	VOA Vial, Clear, 40 mL, HCL	bubble	
21K0331-15 E	VOA Vial, Clear, 40 mL, HCL		
21K0331-15 F	VOA Vial, Clear, 40 mL, HCL		
21K0331-15 G	VOA Vial, Clear, 40 mL, HCL		



WORK ORDER

21K0331

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

21K0331-15 H	VOA Vial, Clear, 40 mL			
21K0331-15 I	VOA Vial, Clear, 40 mL			
21K0331-15 J	VOA Vial, Clear, 40 mL			
21K0331-15 K	VOA Vial, Clear, 40 mL			
21K0331-15 L	VOA Vial, Clear, 40 mL			
21K0331-15 M	VOA Vial, Clear, 40 mL	bubble		
21K0331-16 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	>2	Fail	①
21K0331-17 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P	
21K0331-17 B	VOA Vial, Clear, 40 mL, HCL			
21K0331-17 C	VOA Vial, Clear, 40 mL, HCL			
21K0331-17 D	VOA Vial, Clear, 40 mL, HCL			
21K0331-17 E	VOA Vial, Clear, 40 mL			
21K0331-17 F	VOA Vial, Clear, 40 mL			
21K0331-17 G	VOA Vial, Clear, 40 mL			
21K0331-18 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P	
21K0331-19 A	HDPE NM, 500 mL, 1:1 HNO3	>2	Fail	①
21K0331-19 B	VOA Vial, Clear, 40 mL, HCL			
21K0331-19 C	VOA Vial, Clear, 40 mL, HCL			
21K0331-19 D	VOA Vial, Clear, 40 mL, HCL			
21K0331-19 E	VOA Vial, Clear, 40 mL			
21K0331-19 F	VOA Vial, Clear, 40 mL			
21K0331-19 G	VOA Vial, Clear, 40 mL	bubble		
21K0331-20 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P	

Preservation Confirmed By _____

11/19/21

Date _____

① Preserved to pH < 2.0
with 0.5 mL conc.
HNO₃ (J11523). SD 12/1/21



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: 04-Dec-2021 12:02
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SPL-GW-MW25-1121
21K0331-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/17/2021 10:00
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 17:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-01 D
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.28	ug/L	
Benzene	71-43-2	1	0.20	0.94	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>119</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>96.0</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: 04-Dec-2021 12:02
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SPL-GW-MW25-1121
21K0331-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/17/2021 10:00
Instrument: NT16 Analyst: KOTT Analyzed: 11/22/2021 15:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-01 F
Preparation Batch: BJK0588 Sample Size: 10 mL
Prepared: 11/22/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.455	ug/L	
<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: 04-Dec-2021 12:02
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SPL-GW-MW25-1121
21K0331-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/17/2021 10:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 19:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-01 A 01
Preparation Batch: BJL0028 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	32.9	mg/L	D
Manganese	7439-96-5	20	0.0100	2.57	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: 04-Dec-2021 12:02
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SPL-GW-MW25-1121
21K0331-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/17/2021 10:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 01:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-02 A 01
Preparation Batch: BJL0029 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	0.278	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: 04-Dec-2021 12:02
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SPL-GW-MW24-1121
21K0331-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/17/2021 15:00
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 18:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-03 B
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 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>123</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: 04-Dec-2021 12:02
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SPL-GW-MW24-1121
21K0331-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/17/2021 15:00
Instrument: NT16 Analyst: KOTT Analyzed: 11/22/2021 16:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-03 E
Preparation Batch: BJK0588 Sample Size: 10 mL
Prepared: 11/22/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0808	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>108</i>	<i>%</i>	



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SPL-GW-MW24-1121
21K0331-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/17/2021 15:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 04:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-03 A 01
Preparation Batch: BJL0028 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	19.7	mg/L	
Manganese	7439-96-5	10	0.00500	1.34	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: 04-Dec-2021 12:02
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SPL-GW-MW24-1121
21K0331-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/17/2021 15:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 02:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-04 A 01
Preparation Batch: BJL0029 Sample Size: 25 mL
Prepared: 12/01/2021 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: 553-155-067 Project Manager: Jeff Neuner	Reported: 04-Dec-2021 12:02
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SPL-GW-MW26-1121
21K0331-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/17/2021 14:00
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 18:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-05 B
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.20	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	124	%	



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SPL-GW-MW26-1121
21K0331-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/17/2021 14:00
Instrument: NT16 Analyst: KOTT Analyzed: 11/22/2021 16:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-05 E
Preparation Batch: BJK0588 Sample Size: 10 mL
Prepared: 11/22/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0582	ug/L	
<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: 553-155-067 Project Manager: Jeff Neuner	Reported: 04-Dec-2021 12:02
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SPL-GW-MW26-1121
21K0331-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/17/2021 14:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 04:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-05 A 01
Preparation Batch: BJL0028 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	7.81	mg/L	
Manganese	7439-96-5	1	0.000500	0.103	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: 04-Dec-2021 12:02
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SPL-GW-MW26-1121
21K0331-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/17/2021 14:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 02:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-06 A 01
Preparation Batch: BJL0029 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	0.822	ug/L	



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SPL-GW-MW08-1121
21K0331-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/17/2021 12:50
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 18:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-07 B
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 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>120</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: 04-Dec-2021 12:02
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SPL-GW-MW08-1121
21K0331-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/17/2021 12:50
Instrument: NT16 Analyst: KOTT Analyzed: 11/22/2021 13:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-07 I
Preparation Batch: BJK0588 Sample Size: 10 mL
Prepared: 11/22/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0863	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>109</i>	<i>%</i>	



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SPL-GW-MW08-1121
21K0331-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/17/2021 12:50
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 04:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-07 A 01
Preparation Batch: BJL0028 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	15.2	mg/L	
Manganese	7439-96-5	10	0.00500	0.991	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: 04-Dec-2021 12:02
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SPL-GW-MW08-1121
21K0331-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/17/2021 12:50
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 01:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-08 A 01
Preparation Batch: BJL0029 Sample Size: 25 mL
Prepared: 12/01/2021 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: 553-155-067 Project Manager: Jeff Neuner	Reported: 04-Dec-2021 12:02
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SPL-GW-MW61-1121
21K0331-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/17/2021 12:50
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 19:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-09 C
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 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 %	124	%	



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: 04-Dec-2021 12:02
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SPL-GW-MW61-1121
21K0331-09 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/17/2021 12:50
Instrument: NT16 Analyst: KOTT Analyzed: 11/22/2021 16:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-09 E
Preparation Batch: BJK0588 Sample Size: 10 mL
Prepared: 11/22/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0819	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>98.7</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: 553-155-067 Project Manager: Jeff Neuner	Reported: 04-Dec-2021 12:02
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SPL-GW-MW61-1121
21K0331-09 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/17/2021 12:50
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 04:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-09 A 01
Preparation Batch: BJL0028 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	14.8	mg/L	
Manganese	7439-96-5	10	0.00500	0.991	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: 04-Dec-2021 12:02
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SPL-GW-MW61-1121
21K0331-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/17/2021 12:50
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 03:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-10 A 01
Preparation Batch: BJL0029 Sample Size: 25 mL
Prepared: 12/01/2021 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: 553-155-067 Project Manager: Jeff Neuner	Reported: 04-Dec-2021 12:02
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SPL-GW-MW81-1121
21K0331-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/17/2021 10:00
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 15:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-11 A
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 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>116</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>97.6</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: 04-Dec-2021 12:02
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SPL-GW-MW81-1121
21K0331-11 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/17/2021 10:00
Instrument: NT16 Analyst: KOTT Analyzed: 11/22/2021 17:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-11 B
Preparation Batch: BJK0588 Sample Size: 10 mL
Prepared: 11/22/2021 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>97.9</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: 553-155-067 Project Manager: Jeff Neuner	Reported: 04-Dec-2021 12:02
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SPL-GW-MW14-1121
21K0331-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/17/2021 08:20
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 19:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-12 C
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 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>123</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: 04-Dec-2021 12:02
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SPL-GW-MW14-1121
21K0331-12 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/17/2021 08:20
Instrument: NT16 Analyst: KOTT Analyzed: 11/22/2021 17:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-12 E
Preparation Batch: BJK0588 Sample Size: 10 mL
Prepared: 11/22/2021 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>98.3</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: 04-Dec-2021 12:02
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SPL-GW-MW14-1121
21K0331-12 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/17/2021 08:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 05:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-12 A 01
Preparation Batch: BJL0028 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	3.06	mg/L	
Manganese	7439-96-5	10	0.00500	0.623	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: 04-Dec-2021 12:02
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SPL-GW-MW18-1121
21K0331-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/17/2021 09:10
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 19:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-13 C
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 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>123</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: 04-Dec-2021 12:02
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SPL-GW-MW18-1121
21K0331-13 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/17/2021 09:10
Instrument: NT7 Analyst: PB Analyzed: 11/29/2021 12:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-13 E
Preparation Batch: BJK0712 Sample Size: 10 mL
Prepared: 11/29/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0248	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>91.1</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: 04-Dec-2021 12:02
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SPL-GW-MW18-1121
21K0331-13 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/17/2021 09:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 05:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-13 A 01
Preparation Batch: BJL0028 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	13.8	mg/L	
Manganese	7439-96-5	10	0.00500	0.918	mg/L	D



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SPL-GW-MW18-1121
21K0331-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/17/2021 09:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 03:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-14 A 01
Preparation Batch: BJL0029 Sample Size: 25 mL
Prepared: 12/01/2021 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



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SPL-GW-MW33-1121
21K0331-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/17/2021 15:55
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 20:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-15 B
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 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>122</i>	<i>%</i>	



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SPL-GW-MW33-1121
21K0331-15 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/17/2021 15:55
Instrument: NT16 Analyst: KOTT Analyzed: 11/22/2021 14:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-15 H
Preparation Batch: BJK0588 Sample Size: 10 mL
Prepared: 11/22/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.124	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>102</i>	<i>%</i>	



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SPL-GW-MW33-1121
21K0331-15 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/17/2021 15:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 05:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-15 A 01
Preparation Batch: BJL0028 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	14.8	mg/L	
Manganese	7439-96-5	20	0.0100	1.83	mg/L	D



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SPL-GW-MW33-1121
21K0331-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/17/2021 15:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 02:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-16 A 01
Preparation Batch: BJL0029 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	0.863	ug/L	



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SPL-GW-MW10-1121
21K0331-17 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/17/2021 11:00
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 20:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-17 C
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	1.36	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	121	%	



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SPL-GW-MW10-1121
21K0331-17 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/17/2021 11:00
Instrument: NT7 Analyst: PB Analyzed: 11/29/2021 13:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-17 D
Preparation Batch: BJK0712 Sample Size: 10 mL
Prepared: 11/29/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0745	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>116</i>	<i>%</i>	



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SPL-GW-MW10-1121
21K0331-17 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/17/2021 11:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 18:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-17 A 01
Preparation Batch: BJL0028 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	34.8	mg/L	D
Manganese	7439-96-5	20	0.0100	2.68	mg/L	D



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SPL-GW-MW10-1121
21K0331-18 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/17/2021 11:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 03:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-18 A 01
Preparation Batch: BJL0029 Sample Size: 25 mL
Prepared: 12/01/2021 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



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SPL-GW-MW60-1121
21K0331-19 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/17/2021 15:55
Instrument: NT2 Analyst: PKC Analyzed: 11/23/2021 20:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-19 C
Preparation Batch: BJK0622 Sample Size: 10 mL
Prepared: 11/23/2021 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 %	127	%	



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SPL-GW-MW60-1121
21K0331-19 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 11/17/2021 15:55
Instrument: NT7 Analyst: KOTT Analyzed: 11/26/2021 18:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21K0331-19 D
Preparation Batch: BJK0666 Sample Size: 10 mL
Prepared: 11/24/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.109	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



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SPL-GW-MW60-1121
21K0331-19 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/17/2021 15:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 05:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-19 A 01
Preparation Batch: BJL0028 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	1	0.0360	14.5	mg/L	
Manganese	7439-96-5	20	0.0100	1.82	mg/L	D



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SPL-GW-MW60-1121
21K0331-20 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/17/2021 15:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/02/2021 03:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 21K0331-20 A 01
Preparation Batch: BJL0029 Sample Size: 25 mL
Prepared: 12/01/2021 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	0.842	ug/L	



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Project Number: 553-155-067
Project Manager: Jeff Neuner

Reported:
04-Dec-2021 12:02

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BJK0622 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0622-BLK1)		Prepared: 23-Nov-2021 Analyzed: 23-Nov-2021 14:37								
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.75		ug/L	5.00		115	80-129			
<i>Surrogate: Toluene-d8</i>	4.79		ug/L	5.00		95.7	80-120			
LCS (BJK0622-BS1)		Prepared: 23-Nov-2021 Analyzed: 23-Nov-2021 12:06								
cis-1,2-Dichloroethene	10.1	0.20	ug/L	10.0		101	80-121			
Benzene	9.43	0.20	ug/L	10.0		94.3	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.58		ug/L	5.00		112	80-129			
<i>Surrogate: Toluene-d8</i>	4.91		ug/L	5.00		98.1	80-120			
LCS Dup (BJK0622-BSD1)		Prepared: 23-Nov-2021 Analyzed: 23-Nov-2021 12:28								
cis-1,2-Dichloroethene	10.4	0.20	ug/L	10.0		104	80-121	3.07	30	
Benzene	9.54	0.20	ug/L	10.0		95.4	80-120	1.11	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.39		ug/L	5.00		108	80-129			
<i>Surrogate: Toluene-d8</i>	5.03		ug/L	5.00		101	80-120			
Matrix Spike (BJK0622-MS1)		Source: 21K0331-07		Prepared: 23-Nov-2021 Analyzed: 23-Nov-2021 22:02						
cis-1,2-Dichloroethene	12.0	0.20	ug/L	10.0	ND	120	80-121			
Benzene	10.8	0.20	ug/L	10.0	ND	108	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.93		ug/L	5.00	6.02	119	80-129			
<i>Surrogate: Toluene-d8</i>	5.00		ug/L	5.00		100	80-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike (BJK0622-MS2)		Source: 21K0331-15		Prepared: 23-Nov-2021 Analyzed: 23-Nov-2021 22:45						
cis-1,2-Dichloroethene	11.5	0.20	ug/L	10.0	ND	115	80-121			
Benzene	10.5	0.20	ug/L	10.0	ND	105	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.92		ug/L	5.00	6.09	118	80-129			
<i>Surrogate: Toluene-d8</i>	5.02		ug/L	5.00		100	80-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BJK0622-MSD1)		Source: 21K0331-07		Prepared: 23-Nov-2021 Analyzed: 23-Nov-2021 22:23						
cis-1,2-Dichloroethene	12.0	0.20	ug/L	10.0	ND	120	80-121	0.45	30	
Benzene	10.8	0.20	ug/L	10.0	ND	108	80-120	0.12	30	



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BJK0622 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BJK0622-MSD1)		Source: 21K0331-07		Prepared: 23-Nov-2021		Analyzed: 23-Nov-2021 22:23				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.51		ug/L	5.00	6.02	110	80-129			
<i>Surrogate: Toluene-d8</i>	4.95		ug/L	5.00		99.0	80-120			

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

Matrix Spike Dup (BJK0622-MSD2)		Source: 21K0331-15		Prepared: 23-Nov-2021		Analyzed: 23-Nov-2021 23:07				
cis-1,2-Dichloroethene	11.7	0.20	ug/L	10.0	ND	117	80-121	1.50	30	
Benzene	10.7	0.20	ug/L	10.0	ND	107	80-120	1.98	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.57		ug/L	5.00	6.09	111	80-129			
<i>Surrogate: Toluene-d8</i>	4.92		ug/L	5.00		98.4	80-120			

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



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

Reported:
04-Dec-2021 12:02

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BJK0588 - EPA 5030C (Purge and Trap)

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0588-BLK1)				Prepared: 22-Nov-2021 Analyzed: 22-Nov-2021 13:28						
Vinyl chloride	ND	0.0200	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5190		ug/L	5000		104	80-129			
LCS (BJK0588-BS1)				Prepared: 22-Nov-2021 Analyzed: 22-Nov-2021 11:53						
Vinyl chloride	2.29	0.0200	ug/L	2.00		115	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5350		ug/L	5000		107	80-129			
LCS Dup (BJK0588-BSD1)				Prepared: 22-Nov-2021 Analyzed: 22-Nov-2021 12:39						
Vinyl chloride	2.44	0.0200	ug/L	2.00		122	62-141	6.31	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5270		ug/L	5000		105	80-129			
Matrix Spike (BJK0588-MS1)				Source: 21K0331-07		Prepared: 22-Nov-2021 Analyzed: 22-Nov-2021 14:10				
Vinyl chloride	2.19	0.0200	ug/L	2.00	0.0863	105	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5260		ug/L	5000	5460	105	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike (BJK0588-MS2)				Source: 21K0331-15		Prepared: 22-Nov-2021 Analyzed: 22-Nov-2021 15:13				
Vinyl chloride	2.15	0.0200	ug/L	2.00	0.124	101	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4940		ug/L	5000	5080	98.8	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BJK0588-MSD1)				Source: 21K0331-07		Prepared: 22-Nov-2021 Analyzed: 22-Nov-2021 14:31				
Vinyl chloride	2.19	0.0200	ug/L	2.00	0.0863	105	62-141	0.01	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5200		ug/L	5000	5460	104	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BJK0588-MSD2)				Source: 21K0331-15		Prepared: 22-Nov-2021 Analyzed: 22-Nov-2021 15:35				
Vinyl chloride	2.13	0.0200	ug/L	2.00	0.124	100	62-141	0.94	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4960		ug/L	5000	5080	99.1	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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

Reported:
04-Dec-2021 12:02

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BJK0666 - EPA 5030C (Purge and Trap)

Instrument: NT7 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0666-BLK1)		Prepared: 24-Nov-2021 Analyzed: 26-Nov-2021 16:08								
Vinyl chloride	ND	0.0200	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5780		ug/L	5000		116	80-129			
LCS (BJK0666-BS1)		Prepared: 24-Nov-2021 Analyzed: 26-Nov-2021 14:42								
Vinyl chloride	0.458	0.0200	ug/L	0.500		91.6	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5830		ug/L	5000		117	80-129			
LCS Dup (BJK0666-BSD1)		Prepared: 24-Nov-2021 Analyzed: 26-Nov-2021 15:39								
Vinyl chloride	0.392	0.0200	ug/L	0.500		78.5	62-141	15.40	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	3960		ug/L	5000		79.2	80-129			*



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

Reported:
04-Dec-2021 12:02

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BJK0712 - EPA 5030C (Purge and Trap)

Instrument: NT7 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0712-BLK1)				Prepared: 29-Nov-2021 Analyzed: 29-Nov-2021 11:54						
Vinyl chloride	ND	0.0200	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	6130		ug/L	5000	123		80-129			
LCS (BJK0712-BS1)				Prepared: 29-Nov-2021 Analyzed: 29-Nov-2021 09:33						
Vinyl chloride	0.410	0.0200	ug/L	0.500		82.0	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4850		ug/L	5000	97.0		80-129			
LCS Dup (BJK0712-BSD1)				Prepared: 29-Nov-2021 Analyzed: 29-Nov-2021 10:28						
Vinyl chloride	0.415	0.0200	ug/L	0.500		83.1	62-141	1.33	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4630		ug/L	5000	92.7		80-129			



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

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

Reported:
04-Dec-2021 12:02

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BJL0028 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJL0028-BLK1)			Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 02:40								
Iron	54	ND	0.0360	mg/L							U
Iron	57	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U
LCS (BJL0028-BS1)			Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 02:45								
Iron	54	4.85	0.0360	mg/L	5.00		96.9	80-120			
Iron	57	4.78	0.0360	mg/L	5.00		95.6	80-120			
Manganese	55	0.0250	0.000500	mg/L	0.0250		100	80-120			
Duplicate (BJL0028-DUP1)			Source: 21K0331-07 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 04:10								
Iron	54	15.2	0.0360	mg/L		15.2			0.53	20	
Duplicate (BJL0028-DUP2)			Source: 21K0331-15 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 05:04								
Iron	54	14.5	0.0360	mg/L		14.8			1.74	20	
Duplicate (BJL0028-DUP3)			Source: 21K0331-07 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 20:41								
Manganese	55	1.05	0.00500	mg/L		0.991			5.73	20	D
Duplicate (BJL0028-DUP4)			Source: 21K0331-15 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 21:42								
Manganese	55	1.79	0.0100	mg/L		1.83			1.84	20	D
Matrix Spike (BJL0028-MS1)			Source: 21K0331-07 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 04:14								
Iron	54	18.6	0.0360	mg/L	5.00	15.2	67.9	75-125			*
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BJL0028-MS2)			Source: 21K0331-15 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 05:08								
Iron	54	18.0	0.0360	mg/L	5.00	14.8	64.9	75-125			*
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BJL0028-MS3)			Source: 21K0331-07 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 20:45								
Manganese	55	1.01	0.00500	mg/L	0.0250	0.991	87.3	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BJL0028-MS4)			Source: 21K0331-15 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 21:46								
Manganese	55	1.83	0.0100	mg/L	0.0250	1.83	22.1	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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: 04-Dec-2021 12:02
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BJL0028 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

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 Dup (BJL0028-MSD1)			Source: 21K0331-07		Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 04:19						
Iron	54	18.0	0.0360	mg/L	5.00	15.2	54.7	75-125	3.62	20	*

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

Matrix Spike Dup (BJL0028-MSD2)			Source: 21K0331-15		Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 05:13						
Iron	54	18.2	0.0360	mg/L	5.00	14.8	68.9	75-125	1.12	20	*

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

Matrix Spike Dup (BJL0028-MSD3)			Source: 21K0331-07		Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 20:49						
Manganese	55	1.01	0.00500	mg/L	0.0250	0.991	77.2	75-125	0.25	20	D

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

Matrix Spike Dup (BJL0028-MSD4)			Source: 21K0331-15		Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 21:50						
Manganese	55	1.82	0.0100	mg/L	0.0250	1.83	-22.5	75-125	0.61	20	HC, D

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



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Project Number: 553-155-067
Project Manager: Jeff Neuner

Reported:
04-Dec-2021 12:02

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BJL0029 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Blank (BJL0029-BLK1)					Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 01:23					
Arsenic, Dissolved	75a	ND	0.200	ug/L						U
LCS (BJL0029-BS1)					Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 01:27					
Arsenic, Dissolved	75a	23.9	0.200	ug/L	25.0		95.6 80-120			
Duplicate (BJL0029-DUP1)					Source: 21K0331-08 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 01:50					
Arsenic, Dissolved	75a	ND	0.200	ug/L		ND				U
Duplicate (BJL0029-DUP2)					Source: 21K0331-16 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 03:03					
Arsenic, Dissolved	75a	0.894	0.200	ug/L		0.863		3.53	20	
Matrix Spike (BJL0029-MS1)					Source: 21K0331-08 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 01:54					
Arsenic, Dissolved	75a	24.3	0.200	ug/L	25.0	ND	96.5 75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike (BJL0029-MS2)					Source: 21K0331-16 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 03:08					
Arsenic, Dissolved	75a	25.3	0.200	ug/L	25.0	0.863	97.7 75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BJL0029-MSD1)					Source: 21K0331-08 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 02:00					
Arsenic, Dissolved	75a	24.4	0.200	ug/L	25.0	ND	96.9 75-125	0.38	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BJL0029-MSD2)					Source: 21K0331-16 Prepared: 01-Dec-2021 Analyzed: 02-Dec-2021 03:14					
Arsenic, Dissolved	75a	24.9	0.200	ug/L	25.0	0.863	96.0 75-125	1.67	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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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



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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
1,1,1,2-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	02/28/2022
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2022
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022



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04-Dec-2021 12:02

Notes and Definitions

- * Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- 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.

**Methane in Perimeter Gas Probes GP-29 and GP-33, 2021 Gas Probe Exceedance Contingency Monitoring,
South Park Landfill**

Gas Probe	Date Monitored	Time of Measurement	Pressure (in W.C.)	CH ₄ (% Volume)	CO ₂ (% Volume)	O ₂ (% Volume)	Barometer
GP-29	5/14/2020	NA	0.00	1.4	11.8	3.0	29.97 ↑
	8/24/2020	11:19	0.00	1.8	14.8	2.0	30.03 ↓
	11/9/2020	9:48	0.00	2.9	14.3	1.6	30.05 ↔
	2/22/2021	9:34	0.00	2.0	7.3	6.1	30.15 ↓
	5/17/2021	11:30	-0.02	1.6	14.1		29.89 ↓
	8/23/2021	11:00	-0.02	1.5	21.4		29.66 ↑
	11/15/2021	11:19	0.00	6.9	16.6	0.0	29.55 ↓
	11/29/2021	13:01	0.10	5.1	13.5	0.1	30.24 ↑
	11/30/2021	10:27	0.03	5.2	13.4	0.2	30.23 ↔
	12/1/2021	9:00	0.01	5.2	13.5	0.0	30.16 ↔
	12/2/2021	9:00	-0.06	4.9	13.2	0.2	30.27 ↑
	12/3/2021	13:15		5.0	13.2	0.1	30.32 ↔
	12/4/2021	9:49	-0.01	4.7	12.7	0.8	30.14 ↓
	12/6/2021	12:28	-0.02	5.3	14.0	0.1	29.99 ↑
	12/7/2021	12:55	0.01	5.3	14.0	0.1	29.58 ↓
	12/8/2021	11:07	-0.02	5.2	13.9	0.1	29.61 ↓ to ↔
	12/9/2021	10:42	-0.03	5.4	14.1	0.1	29.89 ↔
	12/10/2021	13:20	0.01	5.4	13.8	0.3	30.07 ↓
	12/13/2021	11:25	0.03	5.2	13.9	0.1	29.4 ↓
	12/14/2021	8:15	-0.01	5.3	13.9	0.3	29.32 ↑
	12/15/2021	9:39	0.03	5.3	13.3	0.1	29.73 ↔
	12/16/2021	11:00	-0.01	5.3	13.5	0.2	29.59 ↑
	12/17/2021	10:49	0.00	5.4	12.9	0.2	30.35 ↑
	12/18/2021	10:27	0.01	5.8	13.8	0.1	29.75 ↓
	12/19/2021	9:50	0.00	5.8	13.7	0.2	29.97 ↔
	12/20/2021	11:16	0.01	5.8	13.6	0.3	30.06 ↔
	12/21/2021	8:48	-0.02	5.4	12.8	0.2	29.65 ↔
	12/22/2021	8:16	-0.01	6.0	13.6	0.2	29.71 ↓
	12/23/2021	9:18	-0.05	6.1	12.9	0.1	29.47 ↓
	12/24/2021	9:27	0.01	6.2	12.8	0.1	29.27 ↓
	12/27/2021	21:41	0.01	1.8	12.0	0.2	29.85 ↑
	12/29/2021	8:16	-0.02	1.2	12.6	1.4	29.91 ↑
	1/6/2022	9:05	0.01	1.4	11.7	0.1	29.7 ↓

**Methane in Perimeter Gas Probes GP-29 and GP-33, 2021 Gas Probe Exceedance Contingency Monitoring,
South Park Landfill**

Gas Probe	Date Monitored	Time of Measurement	Pressure (in W.C.)	CH₄ (% Volume)	CO₂ (% Volume)	O₂ (% Volume)	Barometer
GP-33	5/14/2020	NA	0.00	0.0	5.5	8.0	29.97 ↑
	8/24/2020	12:55	0.00	0.0	6.7	9.5	30.03 ↓
	11/9/2020	12:44	0.00	0.0	4.9	13.5	30.05 ↔
	2/22/2021	12:38	0.00	0.0	4.2	6.2	30.15 ↓
	5/17/2021	16:45	-0.05	0.0	4.7	8.2	29.89 ↓
	8/23/2021	9:56	10.74	0.0	8.3	6.0	29.66 ↑
	11/15/2021	11:43	0.00	4.5	9.3	0.0	29.55 ↓
	11/29/2021	13:19	0.07	5.0	8.0	0.0	30.24 ↑
	11/30/2021	10:44	-0.30	5.2	7.9	0.0	30.23 ↔
	12/1/2021	9:08	0.03	4.9	8.0	0.0	30.16 ↔
	12/2/2021	9:05	-0.09	2.4	8.0	0.0	30.27 ↑
	12/3/2021	13:25		1.7	8.2	0.1	30.32 ↔
	12/4/2021	10:00	-0.02	0.9	8.5	0.0	30.14 ↓
	12/6/2021	12:40	-0.01	0.6	9.5	0.0	29.99 ↑
	12/7/2021	13:07	0.00	0.5	9.6	0.0	29.58 ↓
	12/10/2021	13:37	0.00	0.4	10	0	30.07 ↓
	12/16/2021	11:17	-0.02	0.0	9.4	2.1	29.59 ↑
	12/22/2021	8:27	-0.01	0.0	9.2	5.2	29.71 ↓
	12/29/2021	8:27	0.01	0.1	9.5	3.5	29.91 ↑

Values in **red** exceed the LEL % by volume

↓ ↑ ↔ Arrows indicate falling, rising, or steady barometer

Methane Exceedance Trigger Monitoring South Park Landfill

