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SENT VIA EMAIL

October 24, 2023
Parametrix No. 553-1550-067

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

Re: South Park Landfill Third Quarter 2023 Progress Report

Dear Ryan:

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

General Activities During the 2023 Third Quarter

SRDS Property

- The old South Transfer Station seep area (compactor shed) is fenced off and locked and all safeguards are still in place.
- Solid Waste Operations and Household Hazardous Waste Collection continues on the SPU old South Transfer Station property.
- SPU requested access to the CenterPoint property to facilitate brush clearing and a property boundary survey for the STS Phase 2 project.

CenterPoint South Park LLC Property (former SPPD owned property)

- Ongoing remote monitoring of the landfill gas system blowers. The current tenants First Student and Amazon vehicle parking are active on CenterPoint property.
- Conducted quarterly inspection of the methane alarms in the on-site buildings.
- Conducted quarterly operation and maintenance of the landfill gas system.

Overall Settlement Parcels

- The 2023 third quarter compliance monitoring was completed. SPU staff conducted the gas monitoring and the Parametrix team conducted the groundwater monitoring.
- Well maintenance was conducted in advance of the third quarter monitoring event.
- Analysis for benzene at well MW-25 was discontinued from the monitoring program beginning in the third quarter 2023 in accordance with the Cleanup Action Plan because it remained in compliance for two years.
- Parametrix reviewed field measurements and completed data management for the 2023 third quarter compliance monitoring events.

- Parametrix prepared a work plan to replace shallow perimeter compliance gas probes that are consistently blocked with water and submitted it to Ecology for review. Ecology reviewed the work plan and provided comments.

Deviations from Samples, Required Tasks, CAP, or Schedule

There were no deviations this quarter.

Data Summary

The perimeter gas probes were monitored on July 25, 2023. The results are recorded in the attached gas probe report. No methane was detected in any of the gas probes and all concentrations were less than the 5 percent by volume regulatory action limit.

The groundwater wells were monitored between July 31 and August 2, 2023. 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 and updated time-series plots, and the final lab reports for the 2023 third quarter are included as attachments to this progress report.

Data management is complete for the 2023 third quarter compliance monitoring event.

Upcoming Activities

SRDS Property

- SPU has contracted a new design team and design is proceeding from the 60% to 90% design phase. The final design will be completed in early 2024.

CenterPoint Property

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

Overall Settlement Parcels

- Complete the fourth quarter 2023 compliance monitoring.
- Respond to Ecology comments on the work plan to replace shallow perimeter compliance gas probes that are consistently blocked with water and submit final work plan.
- Work with a drilling subcontractor to install replacement gas probes and repair damaged probe GP-28.
- Conduct a cap reinspection on October 11 to follow up on the observations made during the April 2023 cap inspection and prepare a report for submittal to the property owners and Ecology.

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

Sincerely,

PARAMETRIX

Laura B. Lee
Project Manager

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

Attachments

1 – LFG and Groundwater Compliance Monitoring Field Sheets, Third Quarter 2023

2 – Draft Groundwater Quality Data Summary, Third Quarter 2023

3 – Draft Groundwater Quality Time Series Plots through Third Quarter 2023

4 – Third Quarter 2023 Groundwater Laboratory Data

Attachment 1

LFG Compliance Monitoring Field Sheets
Third Quarter 2023

Final Probe Report for South Park Landfill

Probe	Date	Technician	CH4 PPM	O2 %	CO2 %	SP In/Wc	Blocked	BPS	Comment
GP03	7/25/2023	DF/WY/T	0	14.0	5.8	0.0	N	30.16	
GP07	7/25/2023	DF/WY/T	0	17.8	3.2	0.0	N	30.17	
GP09	7/25/2023	DF/WY/T	0	16.7	5.4	0.0	N	30.16	
GP11	7/25/2023	DF/WY/T	0	20.7	0.6	0.3	Y	30.16	
GP13	7/25/2023	DF/WY/T	0	12.0	4.3	-16.1	Y	30.15	
GP15	7/25/2023	DF/WY/T	0	20.7	0.5	-7.6	N	30.17	
GP16	7/25/2023	DF/WY/T	0	20.3	0.7	0.0	N	30.18	
GP23	7/25/2023	DF/WY/T	0	13.7	7.6	0.0	N	30.17	
GP26	7/25/2023	DF/WY/T	0	19.1	2.2	-0.1	N	30.15	
GP27	7/25/2023	DF/WY/T	0	0.0	12.2	0.0	N	30.18	
GP28	7/25/2023	DF/WY/T	0	20.8	0.0	-0.1	N	30.16	
GP29	7/25/2023	DF/WY/T	0	0.0	16.8	0.0	N	30.16	
GP31	7/25/2023	DF/WY/T	0	7.9	10.8	0.0	N	29.99	
GP32	7/25/2023	DF/WY/T	0	14.6	2.7	-1.3	N	30.18	
GP33	7/25/2023	DF/WY/T	0	17.7	2.4	0.0	N	30.17	
GP37	7/25/2023	DF/WY/T	0	10.9	9.9	0.1	N	30.16	
GP38	7/25/2023	DF/WY/T	0	2.1	18.4	0.0	N	30.17	

PARAMETRIX Form 07-EN-215/Rev. 02/07

Water Level Measurement Field Report

DATE 7/31/2023	JOB NO. 553-1550-067	
PROJECT: South Park Landfill	CLIENT: Seattle Public Utilities	
LOCATION: Seattle, WA		
WEATHER: sunny	TEMP: 65 F° at 806 / 70°F° at 1010	AM / PM
PRESENT AT SITE: C. Bourgeois & S. Nguyen		

THE FOLLOWING WAS NOTED:

WELL NUMBER	Time	Measured Depth to Water (ft from TOC or SG level)	Total Measured Well Depth (ft from TOC)	Measuring Point	Total Well Depth (ft bgs)	Screen Interval (ft bgs)	SU (ft)
MW-12	800	6.49		TOC	15.3	10-15	1.52
MW-14	807	3.75		TOC	21.8	11.5-21.5	0.8
MW-29	819	8.33		TOC	30	20-30	-0.29
MW-18	824	15.85		TOC	40.4	30-40	1.25
MW-25	~~835~~ 857	~~11.36~~	14.19	TOC	27	22-27	2.79
MW-32	842	11.20		TOC	24	19-24	-0.44
MW-33	835	~~11.36~~		TOC	25	20-25	-0.47
MW-26	9567	~~9.30~~	10.09	TOC	25	15-25	2.39
MW-27	949	8.83		TOC	20	10-20	2.04
MW-10	852	13.45		TOC	45	35-45	1.65
MW-24	955	9.30		TOC	45.3	35-45	1.56
MW-08	946	~~8.83~~	8.83	TOC	45.6	35.5 – 45.5	1.88
MW-30	1010	10.71		TOC	13	8-13	-0.53
MW-31	1008	11.32		TOC	23	35.5-45.5	-0.46

Comments:

All toc (PVC)

* GW rising significantly after opening well.

TOC – top of PVC casing SG – staff gauge

SIGNED: _____

949 8.83 @ well next to MW-8 (27)

957 10.09 @ well next to MW-24 (26)

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 8/1/23 Well ID: MW-08

Sampling Organization: Parametrix Samplers: C. Bourgeois & S. Nguyen

Purge Data Screened Interval (ft bgs): 35.0-45.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 8.82 Purge Water Disposal Method: O/WS

Purge Device: peristaltic Pump Intake Depth: 40.0 ft

Begin Purge Time: 820 End Purge Time: 915

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (mL/min)	Cum. Vol. Purged (L)	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
820	8.82	55	190	1	14.4	1.70	1221	7.00	-61.4	32.4	
825	8.82	"	"	1.9	14.2	1.44	1161	6.99	-83.5	29.7	
830	8.83			2.8	14.2	1.48	1146	6.98	-92.5	23.0	
835	8.84			3.8	14.1	1.19	1140	6.97	-95.9	17.1	
840	8.81			4.9	14.0	1.08	1138	6.96	-99.1	10.5	
845	8.86			5.9	14.1	1.03	1135	6.98	-100.8	9.51	
850	8.85				14.3	1.69	1136	6.97	-98.7	7.23	
855	8.85			7.2	14.4	1.82	1125	6.96	-98.5	4.68	
900	8.96			8.1	14.4	6.76	1120	6.98	-95.6	~~[illegible]~~	4.28
905	8.84			9.2	14.1	0.34	1121	6.97	-98.9	4.33	
910	8.85			10.3	14.0	0.34	1119	6.98	-101.2	4.25	
915	8.85			11	14.1	0.28	1113	6.97	-102.5	4.23	

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

Sampling Data

Sample ID: SPL-GW_MW08-0823 Time Collected: 920 Weather: Sunny, 65°F

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

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

Duplicate Sample Collected: ☑ Yes ☐ No If yes, ID: SPL-GW_MW61-0823 @ 945

MS/MSD Collected: ☑ Yes ☐ No

Additional Information/Comments

Air bubbles; added tubing in silicon tube to try to minimize air bubbles @ 900

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GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 8/2/23 Well ID: MW-10

Sampling Organization: Parametrix Samplers: C. Bourgeois & S. Nguyen

Purge Data Screened Interval (ft bgs): 35.0-44.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 13.43 Purge Water Disposal Method: O/WS

Purge Device: peristaltic Pump Intake Depth: 40.0 ft

Begin Purge Time: 845 End Purge Time: 920

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (lit/min)	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
850	13.45	2.6	~~[illegible]~~ 300	1.5	14.8	2.00	1381	6.89	-90.0	99.6	v. turbid.
855	13.43	"	"	3.0	14.7	2.16	1378	6.90	-100.3	25.5	
900	"	"	"	4.5	14.8	0.26	1386	6.58	-108.5	12.2	less turbid
905	"	"	"	6.0	14.8	0.27	1405	6.92	-114.3	6.3	"
910	"	"	"	7.5	14.9	0.30	1416	6.95	-118.0	4.58	"
915	"	"	"	9.0	14.9	0.34	1427	6.96	-120.0	4.25	
920	"	"	"	10.5	14.8	0.27	1428	~~[illegible]~~ 6.96	-123.0	3.73	

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

Sampling Data

Sample ID: SPL-GW-MW10-0823 Time Collected: 925 Weather: Sunny, 70's

Sample Description (Color, Turbidity, Odor, Other): clear, odorless 1 liter bottle (HCl - VOA)

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

Duplicate Sample Collected: ☐ Yes ☑ No If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

Parametrix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 8/1/23 Well ID: MW-12

Sampling Organization: Parametrix Samplers: C. Bourgeois & S. Nguyen

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

Initial Depth of Water (Ft below TOC): 6.57 Purge Water Disposal Method: O/WS

Purge Device: dedicated bladder pump Pump Intake Depth: 12.5 ft

Begin Purge Time: 1126 End Purge Time: 1205

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (mL/min)	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1130	6.48	18	180		16.0	1.09	495.4	6.53	50.5	24.8	
1135	6.52	26	280	3.9	15.1	0.44	503.0	6.56	53.8	14.0	
1140	6.65	"	"	4.8	15.1	0.31	501.6	6.53	51.7	11.0	
1145	6.57	"	"	5.8	15.2	0.47	499.5	6.54	49.1	7.53	
1150	6.49	"	"	7.0	15.2	0.35	499.6	6.54	46.3	5.36	
1155	"	"	"	9.0	15.2	0.30	500.4	6.54	44.7	4.86	
1200	"	"	"	10.5	15.1	0.24	500.5	6.54	43.6	4.22	
1205	"	"	"	12.0	15.2	0.22	500.4	6.54	43.6	4.08	
Stabilization Criteria					3%	10%, or 3<0.5	3%	± 0.1	± 10 mv	10% or 3 <5 NTU	

Sampling Data

Sample ID: SPL-GW_MW12-0823 Time Collected: 1210 Weather: Sunny, 70's

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

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

Duplicate Sample Collected: ☐ Yes ☑ No If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

Parametrix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 8/1/23 Well ID: MW-14

Sampling Organization: Parametrix Samplers: C. Bourgeois & S. Nguyen

Purge Data Screened Interval (ft bgs): 11.5-21.5 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 3.45 Purge Water Disposal Method: O/WS

Purge Device: dedicated bladder pump ~~1233~~ Pump Intake Depth: 16.5 ft

Begin Purge Time: 1233 End Purge Time: 1320

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (mL/min.)	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1235	~~3.5~~	20	200	0.25	17.1	1.76	524.7	7.13	25.7	15.5	
1245	3.55	''	''	2.75	16.6	0.49	541.7	7.01	-46.9	10.8	
1250	''	''	''		16.5	0.29	535.6	6.95	-46.8	8.58	
1255	3.56			5.0	16.5	0.25	533.1	6.94	47.2	8.01	
1300	3.52	''	''	5.5	16.4	0.22	533.2	6.94	-47.5	6.17	
1305	''	''	''	6.5	16.4	0.24	531.0	6.94	-48.2	5.16	
1310	~~x~~ 3.53	''	''	7.5	16.4	0.26	532.6	6.94	-49.7	4.55	
1315	3.54	''	''	8.8	16.4	0.26	533.1	6.94	-50.7	4.09	
1320	3.56	''	''	9.5	16.5	0.28	533.0	6.94	-51.8	4.03	
Stabilization Criteria					3%	10%, or 3<0.5	3%	± 0.1	± 10 mv	10% or 3 <5 NTU	

Sampling Data

Sample ID: SPL-GW-MW14-0823 Time Collected: 1325 Weather: Sunny, mid 70's

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

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

Duplicate Sample Collected: ☐ Yes ☑ No If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

Parametrix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 8/1/23 Well ID: MW-18

Sampling Organization: Parametrix Samplers: C. Bourgeois & S. Nguyen

Purge Data Screened Interval (ft bgs): 30.0-40.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 15.82 Purge Water Disposal Method: O/WS

Purge Device: dedicated bladder pump ~~[illegible]~~ Pump Intake Depth: 35.0 ft

Begin Purge Time: 1500 End Purge Time: 1540

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (mL/min)	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1505	15.82	50'	280	~1.0	16.9	3.72	732	6.92	-21.7	14.0	
1510	"	"	"	2.5	16.7	1.66	745	6.90	-52.7	7.69	
1515	"	"	"	4.0	16.6	1.29	745	6.90	-63.7	5.94	
1520	"	"	"	6.5	16.6	1.07	741	6.90	-68.7	4.69	
1525	"	"	"	7.1	16.5	1.00	739	6.90	-72.3	4.35	
1530	"	"	"	9.0	16.6	0.86	738	6.89	-74.4	3.87	
1535	"	"	"	10.0	16.4	0.84	746	6.89	-75.6	3.81	
1540	"	"	"	11.25	16.6	0.87	738	6.89	-77.4	3.75	
		Stabilization Criteria			3%	10%, or 3<0.5	3%	± 0.1	± 10 mv	10% or 3 <5 NTU	

Sampling Data

Sample ID: SPL-GW-MW18-0823 Time Collected: 1545 Weather: Sunny, 70's

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

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

Duplicate Sample Collected: ☐ Yes ☑ No If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

Parametrix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067　　Date: 7/31/23　　Well ID: MW-24

Sampling Organization: Parametrix　　Samplers: C. Bourgeois & S. Nguyen

Purge Data　　Screened Interval (ft bgs): 35.0-45.0　　Well Casing/Diameter: PVC/2 in

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

Purge Device: dedicated bladder pump　　Pump Intake Depth: 40.0 ft

Begin Purge Time: 1239　　End Purge Time: 1310

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1240	9.40	55	250 ml/min	1.9	12.7	0.76	974	6.80	-55.2	7.19	
1245	9.41	"	"	3.1	12.6	0.38	987	6.83	-74.9	6.36	
1250	9.45	"	"	4.8	12.5	0.29	997	6.83	-82.6	1.98	
1255	9.44	"	"	6.0	12.5	0.27	1002	6.83	-87.1	3.20	
1300	9.42	"	"	7.8	12.5	0.29	1001	6.82	-89.5	2.41	
Stabilization Criteria					3%	10%, or 3<0.5	3%	± 0.1	± 10 mv	10% or 3 <5 NTU	

Sampling Data

Sample ID: SPL-GW-MW24-0823　　Time Collected: 1305　　Weather: Sunny, 70's

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

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

Duplicate Sample Collected: ☐ Yes ☑ No　　If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

Parametrix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 8/2/23 Well ID: MW-25

Sampling Organization: Parametrix Samplers: C. Bourgeois & S. Nguyen

Purge Data Screened Interval (ft bgs): 22.0-27.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 14.20 Purge Water Disposal Method: O/WS

Purge Device: dedicated bladder pump Pump Intake Depth: 24.5 ft

Begin Purge Time: 805 End Purge Time: 840

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (ml/min)	Cum. Vol. Purged (L)	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
810	14.21	35	260	1.5	14.6	1.09	1169	6.83	-72.9	23.20	
815	14.24	"	"	3.0	14.6	0.48	1184	6.82	-82.3	14.50	
820	14.20	"	"	4.1	14.7	0.32	1187	6.84	-87.2	9.00	
825	14.20	"	"	5.5	14.7	0.24	1192	6.84	-91.4	9.09	
830	14.20	"	"		14.8	0.20	1195	6.85	-94.2	4.74	
835	14.20	"	"	8.2	14.8	0.16	1198	6.84	-96.5	3.33	
840	14.20	"	"	9.9	14.8	0.16	1200	6.85	-98.1	3.68	
Stabilization Criteria					3%	10%	3%	± 0.1	± 10 mv	10% or 3 <5 NTU	

Sampling Data

Sample ID: SPL-GW-MW25-0823 Time Collected: 845 Weather: Sunny, 70° F

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

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

Duplicate Sample Collected: ☐ Yes ☑ No If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

Parametrix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 7/31/23 Well ID: MW-26

Sampling Organization: Parametrix Samplers: C. Bourgeois & S. Nguyen

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

Initial Depth of Water (Ft below TOC): 10.18 Purge Water Disposal Method: O/WS

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

Begin Purge Time: 1320 End Purge Time: 1402

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (ml/min)	Cum. Vol. Purged (L)	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1322	10.14	25	270	12.8	12.7	2.89	377.3	6.40	10.7	21.9	
1327	10.15	"	"	13	12.9	2.34	234.00	6.31	21.1	20.8	
1332	10.16	"	"	14.1	12.5	1.44	232.95	6.32	21.2	23.5	
1337	10.16	"	"	1	12.5	1.38	338.3	6.33	20.6	15.4	
1342	10.15	"	"	2.5	12.6	1.30	338.2	6.32	19.5	9.93	
1347	10.15	"	"	2.8	12.6	1.20	338.0	6.32	17.7	7.46	
1352	10.15	"	"	4	12.6	1.07	337.2	6.32	16.2	4.69	
1357	10.15	"	"	5	12.8	1.01	338.0	6.32	15.2	3.81	
1402	/	"	"	6	12.6	0.92	338.5	6.32	14.3	3.76	
Stabilization Criteria					3%	10%, or 3<0.5	3%	± 0.1	± 10 mv	10% or 3 <5 NTU	

Sampling Data

Sample ID: SPL-GW_MW26-0823 Time Collected: 1405 Weather: Sunny, 70°F

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

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

Duplicate Sample Collected: ☐ Yes ☑ No If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

Continued vol. from MW-24. new bucket @ 1235

Parametrix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 8/1/23 Well ID: MW-27

Sampling Organization: Parametrix Samplers: C. Bourgeois & S. Nguyen

Purge Data Screened Interval (ft bgs): 10.0-20.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 8.80 Purge Water Disposal Method: O/WS

Purge Device: dedicated bladder pump Pump Intake Depth: 15.0 ft

Begin Purge Time: 948 End Purge Time: 1040

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (ml/min)	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
950	8.85	20'	275	2	15.1	1.67	454.2	6.84	-41.7	60.8	yellow hue
955	"	"	"	2.80	13.9	0.56	482.7	6.87	-65.1	40.7	"
1000	"	"	"	4.0	13.9	0.37	499.9	6.85	-74.9	41.6	"
1005	"	"	"	5.0	13.8	0.37	508.0	6.85	-77.1	35.5	"
1010	"	"	"	6.8	13.8	0.26	517.5	6.81	-82.5	26.6	"
1015	8.82	"	"	8.5	13.7	0.24	521.1	6.78	-81.9	26.2	"
1020	8.85	"	"	9.5	13.7	0.21	521.6	6.81	-86.1	19.1	"
1025	8.80	"	"	11.0	13.8	0.19	520.0	6.83	-88.7	20.0	"
1030	8.82	"	"	12.25	13.7	0.18	520.6	6.83	-89.0	15.4	"
1035	8.82	"	"	14.0	13.7	0.16	518.5	6.83	-90.1	15.4	"
1040	8.81	"	"	15.25	13.8	0.15	521.3	6.85	-90.9	15.9	"
Stabilization Criteria					3%	10%, or 3<0.5	3%	± 0.1	± 10 mv	10% or 3 <5 NTU	

Sampling Data

Sample ID: SPL-GW-MW27-0823 Time Collected: 1045 Weather: Sunny, 70's

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

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

Duplicate Sample Collected: ☐ Yes ☑ No If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 8/1/23 Well ID: MW-29

Sampling Organization: Parametrix Samplers: C. Bourgeois & S. Nguyen

Purge Data Screened Interval (ft bgs): 20.0-30.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 8.86 Purge Water Disposal Method: O/WS

Purge Device peristaltic pump ~~1353~~ Pump Intake Depth: 25.0 ft

Begin Purge Time: 1353 End Purge Time: 1440

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (mL/min)	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1400 ~~1355~~	10.10	2.5	250	1.0	13.7	0.83	821	6.93	-74.1	19.9	
1405	10.23	"	"	2.5 ~~2.0~~	13.5	0.36	812	6.95	-87.3	21.5	orange turb.
1410	10.28	"	"	~~3.0~~ 4	13.6	0.53	781	6.96	-85.1	10.8	less turbid
1420	"	"	"	6	13.6	0.43	776	6.96	-87.5	8.5	
1425	10.30	"	"	7.5	13.6	0.34	770	6.97	-91.9	6.21	less turbid
1430	"	"	"	9.1	13.6	0.27	773	6.98	-96.6	4.60	
1435	~~10.3~~ 10.31	"	"	10.75	13.5	0.21	772	7.00	-100.9	4.10	
1440	10.32	"	"	12.5	13.4	0.16	765	7.03	-105.6	3.59	

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

Sampling Data

Sample ID: SPL-GW_MW29-0823 Time Collected: 1445 Weather: Sunny, 70's

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

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

Duplicate Sample Collected: ☐ Yes ☑ No If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

Parametrix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 7/31/23 Well ID: MW-30

Sampling Organization: Parametrix Samplers: C. Bourgeois & S. Nguyen

Purge Data Screened Interval (ft bgs): 8.0-13.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 10.71 Purge Water Disposal Method: O/WS

Purge Device: peristaltic pump Pump Intake Depth: ~~10.5 ft~~ 12.0

Begin Purge Time: 1025 End Purge Time: 1045

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (mL/min)	Cum. Vol. Purged (litres)	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1025	11.13	2.5	250	0.70	15.0	0.67	1029	6.36	-4.7	~~[illegible]~~ 15.5	
1030	11.25	"	"	2.20	15.0	0.39	1026	6.38	-31.1	4.88	
1035	11.31	"	"	3.90	14.9	0.34	1035	6.40	-39.3	3.27	
1040	11.32	"	"	5.06	14.9	0.33	1054	6.37	-41.3	2.17	
1045	11.36	"	"	6.20	14.9	0.28	1066	6.38	-41.3	0.24	
Stabilization Criteria					3%	10%, or 3<0.5	3%	± 0.1	± 10 mv	10% or 3 <5 NTU	

Sampling Data

Sample ID: SPL-GW_MW30-0823 Time Collected: 1050 Weather: Sunny

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

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

Duplicate Sample Collected: ☐ Yes ☑ No If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

Parametrix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 7/31/23 Well ID: MW-31

Sampling Organization: Parametrix Samplers: C. Bourgeois & S. Nguyen

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

Initial Depth of Water (Ft below TOC): 11.38 (taken after pump) Purge Water Disposal Method: O/WS

Purge Device: peristaltic pump Pump Intake Depth: 20.5ft

Begin Purge Time: 1105 End Purge Time: 1155

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (mL/min)	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1110	11.25	25'	275	10.8*	14.2	6.37	485.6	6.65	-57.0	24.5	
1115	11.40	"	"	12.0	14.2	0.24	491.7	6.64	-67.2	14.7	
1120	11.36	"	"	13.0	14.1	0.21	492.2	6.66	-74.6	12.0	
1125	11.36	"	"	15.0	14.1	0.18	494.5	6.64	-81.7	7.5	
1130	11.39	"	"	1.0	14.2	0.16	493.2	6.64	-84.4	6.67	
1135	11.41	"	"	2.0	14.1	0.15	494.9	6.66	-87.8	5.67	
1140	11.37	"	"	3.5	14.2	0.15	494.8	6.66	-89.6	5.57	
1145	11.38	"	"	5.0	14.2	0.15	494.2	6.65	-92.0	4.79	
1150	11.39	"	"	6.9	14.2	0.14	493.4	6.66	-93.6	4.81	
1155		"	"	9.2	14.2	0.14	493.6	6.67	-96.0	4.32	
			Stabilization Criteria		3%	10%, or 3<0.5	3%	± 0.1	± 10 mv	10% or 3 <5 NTU	

Sampling Data

Sample ID: SPL-GW_MW31-0823 Time Collected: 1204 Weather: Sunny 70°F

Sample Description (Color, Turbidity, Odor, Other): small orange flecks

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

Duplicate Sample Collected: ☐ Yes ☑ No If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

* used bucket from MW-30

→ new bucket at 1130

Parametrix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067　Date: 8/2/23　Well ID: MW-32

Sampling Organization: Parametrix　Samplers: C. Bourgeois & S. Nguyen

Purge Data　Screened Interval (ft bgs): 19.0-24.0　Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 11.15　Purge Water Disposal Method: O/WS

Purge Device: peristaltic pump　Pump Intake Depth: 21.5 ft

Begin Purge Time: 1109　End Purge Time: 1130

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1115	11.18	2.9	300	3.0	15.2	0.43	838	7.08	-90.4	4.15	
1120	11.20	"	"	3.5	15.1	0.37	839	7.04	-104.0	4.26	
1125	11.19	"	"	4.5	15.1	0.38	845	7.07	-107.7	3.11	
1130	11.20	"	"	6.5	15.3	0.36	850	7.06	-109.6	4.30	
Stabilization Criteria					3%	10%, or 3<0.5	3%	± 0.1	± 10 mv	10% or 3 <5 NTU	

Sampling Data

Sample ID: SPL-GW_MW32-0823　Time Collected: 1135　Weather: Sunny, 70's

Sample Description (Color, Turbidity, Odor, Other): visible turbidity

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

Duplicate Sample Collected: ☐ Yes ☑ No　If yes, ID:

MS/MSD Collected: ☐ Yes ☑ No

Additional Information/Comments

Couldn't advance tubing to 21.5'

Parametrix

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067   Date: 8/2/23   Well ID: MW-33

Sampling Organization: Parametrix   Samplers: C. Bourgeois & S. Nguyen

Purge Data   Screened Interval (ft bgs): 20.0-25.0   Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 11.32   Purge Water Disposal Method: O/WS

Purge Device: peristaltic pump   Pump Intake Depth: 22.5ft

Begin Purge Time: 958   End Purge Time: 1025

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate (mL/min)	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1005	11.34	2.6	280	2.0	15.8	1.04	1369	7.00	-90.4	8.31	turbid.
1010	11.34	"	"	3.5	15.7	0.31	1361	7.00	-101.1	6.81	"
1015	11.35	"	"	5.0	15.8	0.22	1347	7.00	-107.7	4.81	"
1020	"	"	"	7.0	15.8	0.19	1332	7.01	-112.3	3.16	pale orange
1025	"	"	"	8.25	15.8	0.20	1321	7.01	-144.7	2.51	
Stabilization Criteria					3%	10%, or 3<0.5	3%	± 0.1	± 10 mv	10% or 3 <5 NTU	

Sampling Data

Sample ID: SPL-GW-MW33-0823   Time Collected: 1030   Weather: Sunny, 70's

Sample Description (Color, Turbidity, Odor, Other): visible turbidity   1 less HCl - VOA

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

Duplicate Sample Collected: ☑ Yes ☐ No   If yes, ID: SPL-GW-MW60-0823 @ 1100

MS/MSD Collected: ☑ Yes ☐ No

Additional Information/Comments

Parametrix

Attachment 2

Draft Groundwater Quality Data Summary
Third Quarter 2023

Groundwater Quality Data Summary, Third Quarter 2023, South Park Landfill

			Upgradient Wells			Downgradient Wells												Trip Blanks	
			A-Zone			Perched Zone	A-Zone						B-Zone						
Parameter	Units	Cleanup Level	MW-12 8/1/23	MW-14 8/1/23	MW-29 8/1/23	MW-30 [1] 7/31/23	MW-25 8/2/23	MW-26 7/31/23	MW-27 8/1/23	MW-31 [1] 7/31/23	MW-32 [2] 8/2/23	MW-33 [2] 8/2/23	MW-60 (MW-33 Dup) 8/2/23	MW-08 8/1/23	MW-61 (MW-08 Dup) 8/1/23	MW-10 8/2/23	MW-18 [2] 8/1/23	MW-24 7/31/23	MW-80 8/2/23	MW-81 7/31/23
Field Parameters																				
Temperature	C		15.2	16.5	13.4	14.9	14.8	12.6	13.8	14.2	15.3	15.8	--	14.1	--	14.8	16.6	12.5	--	--
Dissolved Oxygen	mg/L		0.22	0.28	0.16	0.28	0.16	0.92	0.15	0.14	0.36	0.20	--	0.28	--	0.27	0.87	0.29	--	--
Specific Conductivity	µS/cm		500.4	533.0	765	1066	1200	338.5	521.3	493.6	850	1321	--	1113	--	1428	738	1001	--	--
pH	units		6.54	6.94	7.03	6.38	6.85	6.32	6.85	6.67	7.06	7.01	--	6.97	--	6.96	6.89	6.82	--	--
Redox	mv		43.0	-51.8	-105.6	-41.3	-98.1	14.3	-90.9	-96.0	-109.6	-114.7	--	-102.5	--	-123.0	-77.4	-89.5	--	--
Turbidity	NTU		4.08	4.03	3.59	0.24	3.68	3.76	15.9	4.32	4.30	2.51	--	4.23	--	3.73	3.75	2.41	--	--
Metals																				
Iron, Total	mg/L	27 A-Zone	1.41	4.39	23.4	9.27	**35.9**	12.1	**28.8**	21.4	18.6	20.8	19.5	--	--	--	--	--	--	--
		31 B-Zone	--	--	--	--	--	--	--	--	--	--	--	17.1	16.1	**45.8**	16.1	27.8	--	--
Manganese, Total	mg/L	2.2	0.0993	0.797	0.562	0.291	**2.88**	0.137	0.683	0.830	1.45	1.98	1.92	0.979	0.934	**2.51**	1.17	1.65	--	--
Volatile Organic Compounds																				
Vinyl Chloride	µg/L	0.29	0.0200 U	0.0200 U	0.0200 U	0.427 [1]	**0.311**	0.0200 U	0.0955	0.765 [1]	0.279	0.168	0.164	0.0721	0.0704	0.121	0.0223	0.0489	0.0200 U	0.0200 U
Cis-1,2-Dichloroethene	µg/L	16	0.20 U	0.20 U	0.20 U	0.74	0.21	0.24	0.20 U	0.20 U	0.44	0.20 U	0.20 U	0.20 U	0.20 U	0.69	0.20 U	0.20 U	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-18 is completed in refuse along the downgradient edge of the Landfill; MW-32 and MW-33 are completed beneath refuse along the downgradient edge.

= Exceeds cleanup level for CPOC wells

-- = Not analyzed

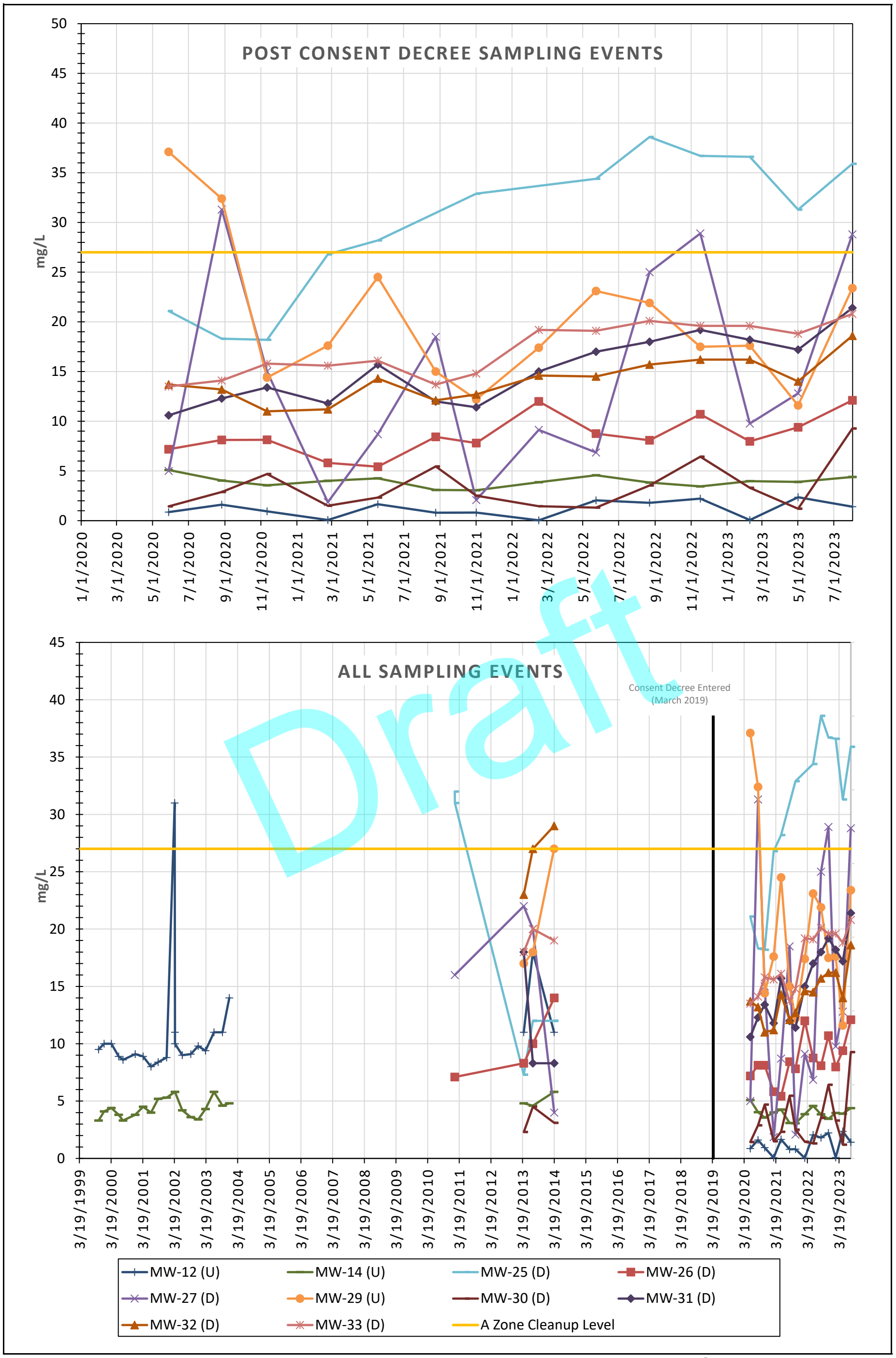
U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.

Abbreviations:

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

Attachment 3

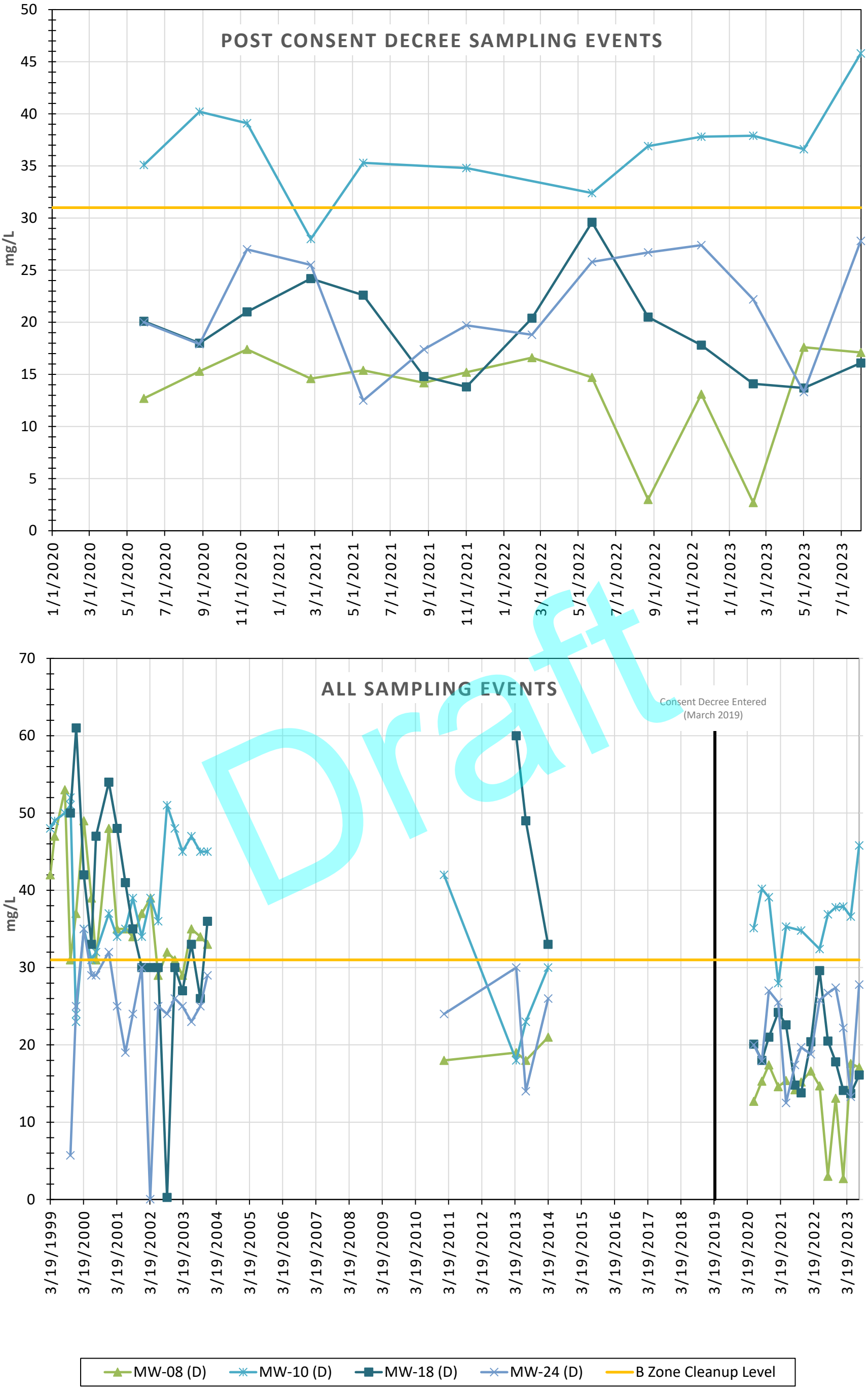
Draft Groundwater Quality Time Series
Plots through Third Quarter 2023



Parametrix
ENGINEERING . PLANNING . ENVIRONMENTAL SCIENCES

D = Downgradient
U = Upgradient

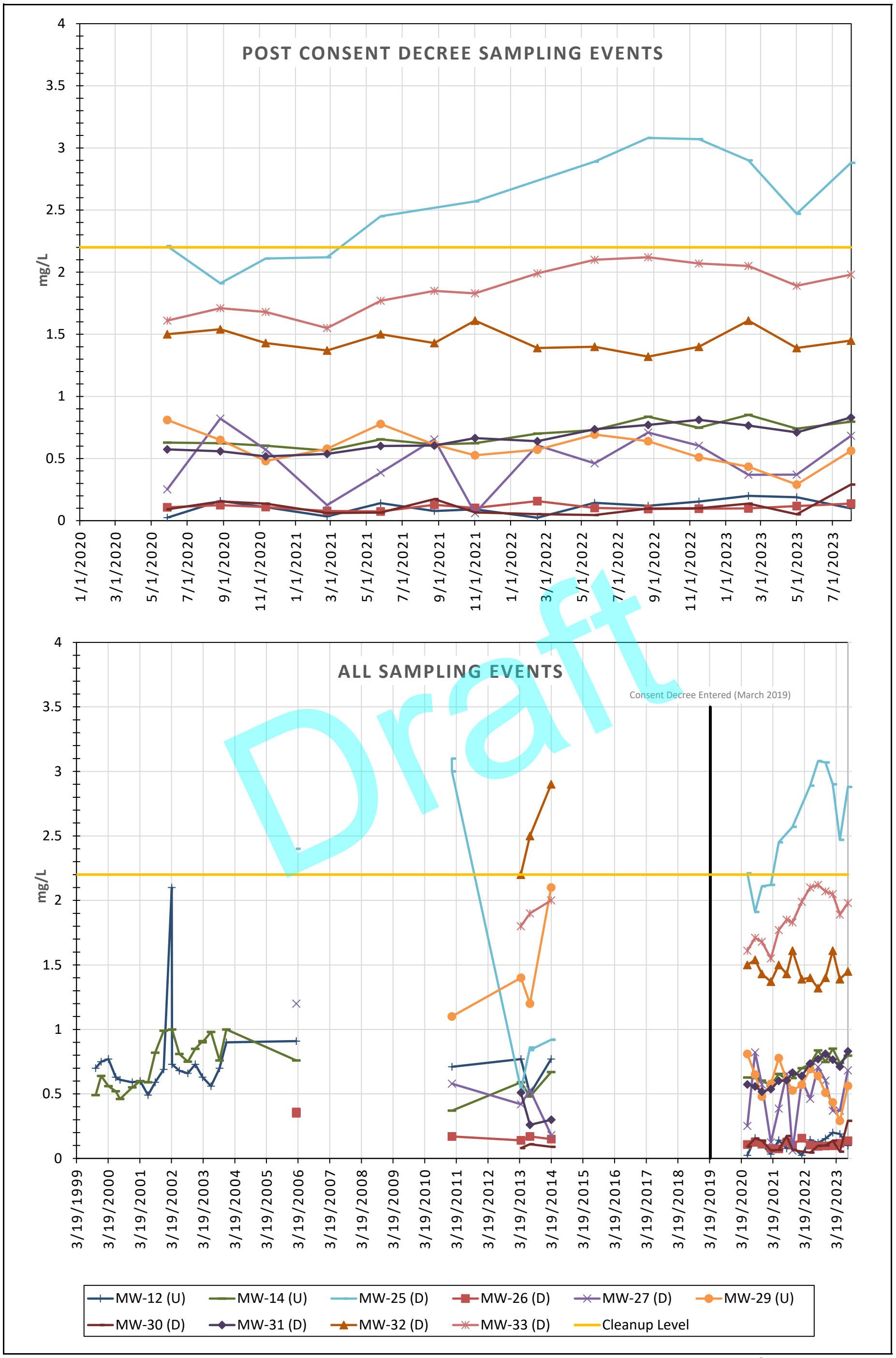
Total Iron Concentrations
A-Zone CPOC Wells
South Park Landfill



Parametrix
ENGINEERING . PLANNING . ENVIRONMENTAL SCIENCES

D = Downgradient
U = Upgradient

Total Iron Concentrations
B-Zone CPOC Wells
South Park Landfill



Parametrix
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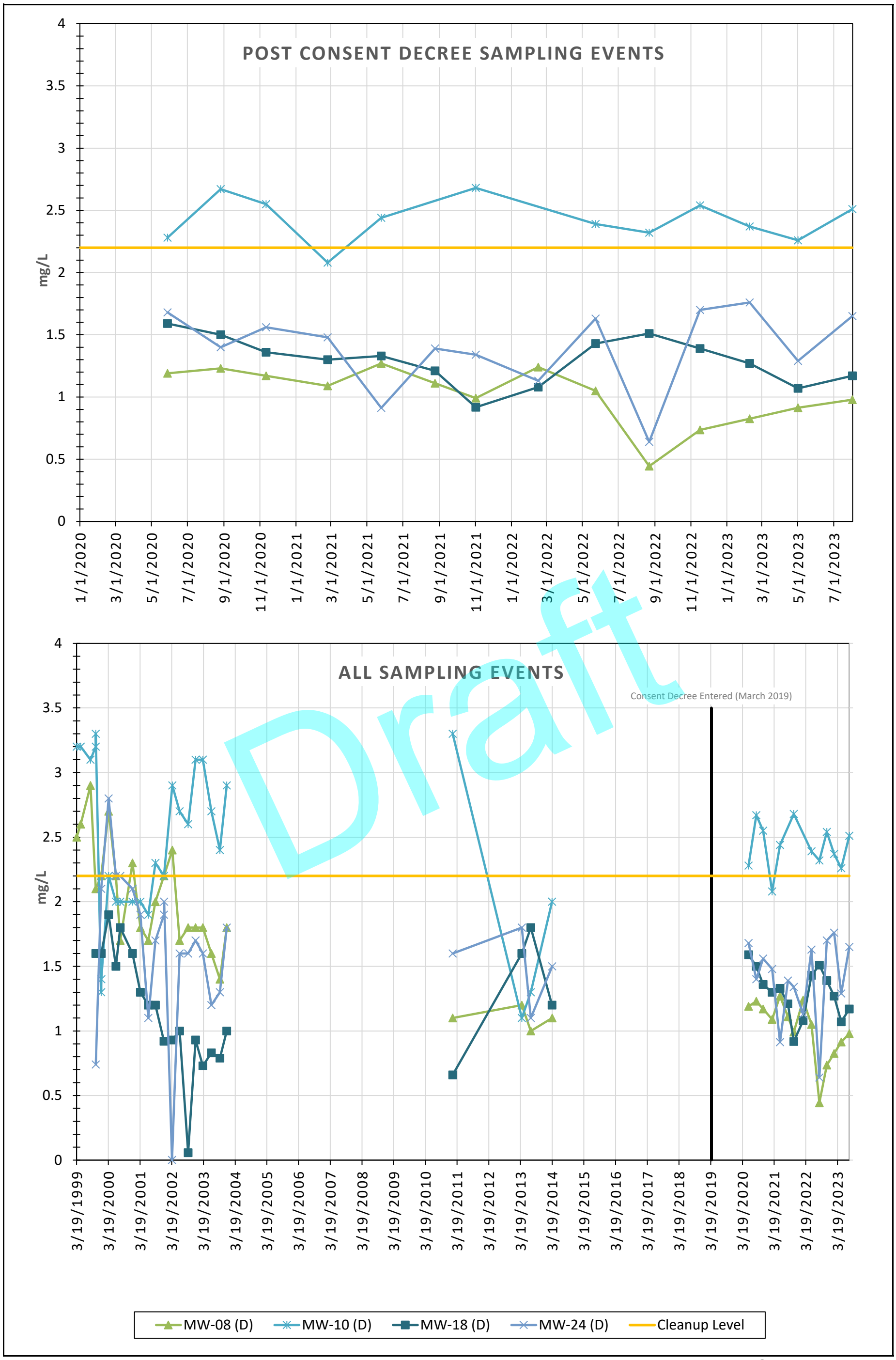
D = Downgradient
U = Upgradient

Total Manganese Concentrations
A-Zone CPOC Wells
South Park Landfill



Parametrix
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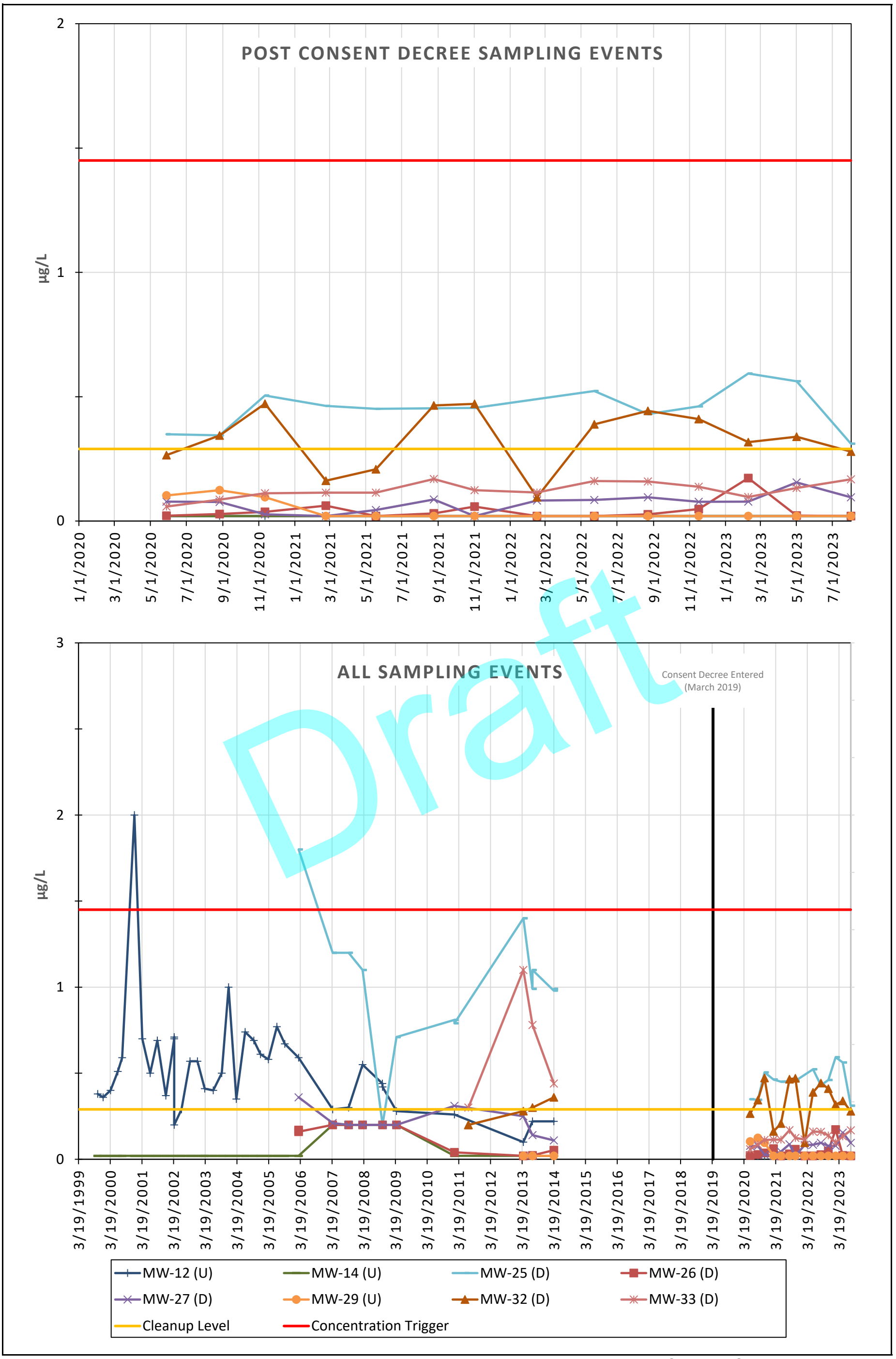
D = Downgradient
U = Upgradient

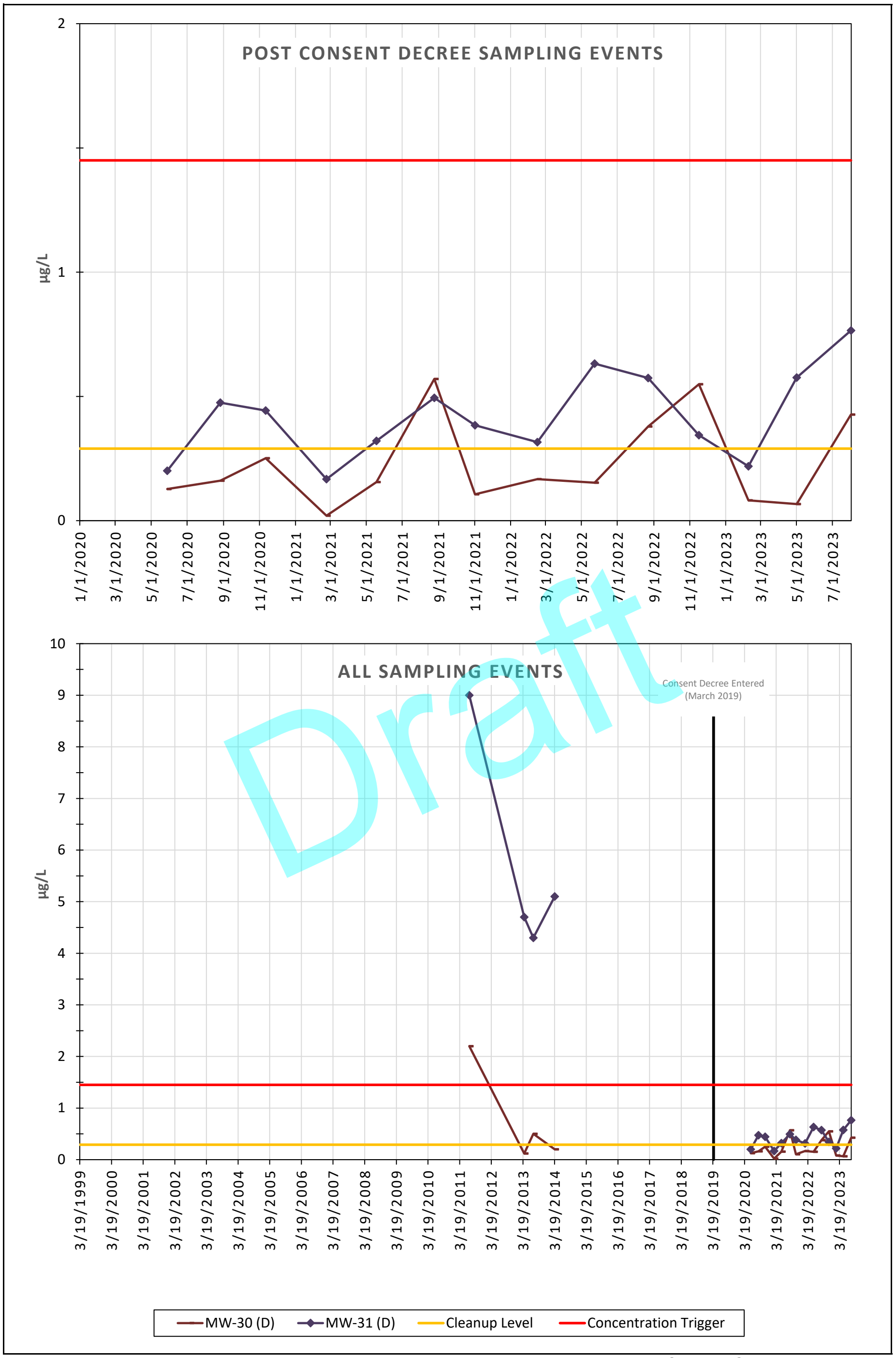
Total Manganese Concentrations
B-Zone CPOC Wells
South Park Landfill



Parametrix
ENGINEERING . PLANNING . ENVIRONMENTAL SCIENCES

D = Downgradient
U = Upgradient

Vinyl Chloride Concentrations
A-Zone CPOC Wells
South Park Landfill



Parametrix
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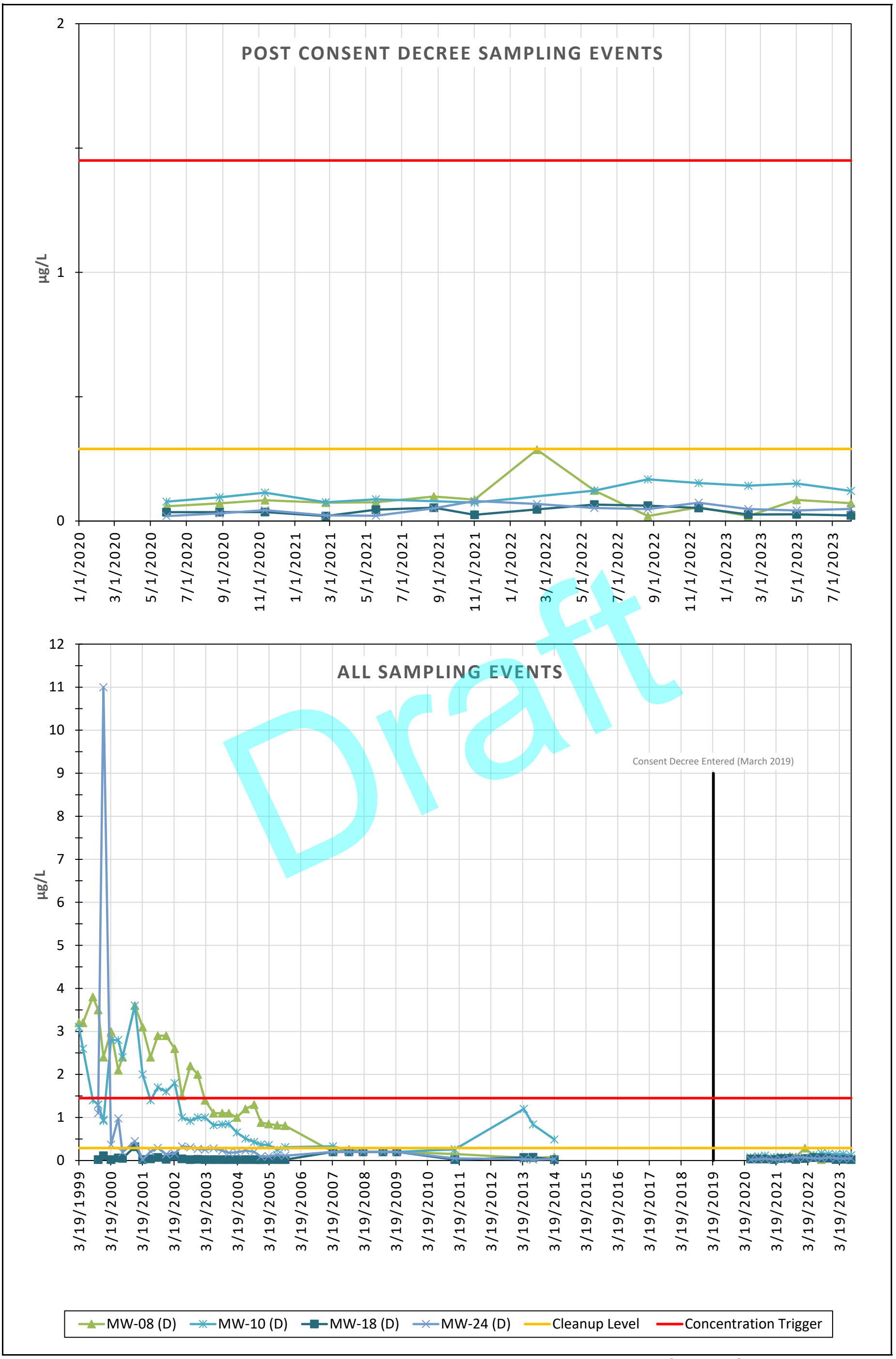
D = Downgradient
U = Upgradient

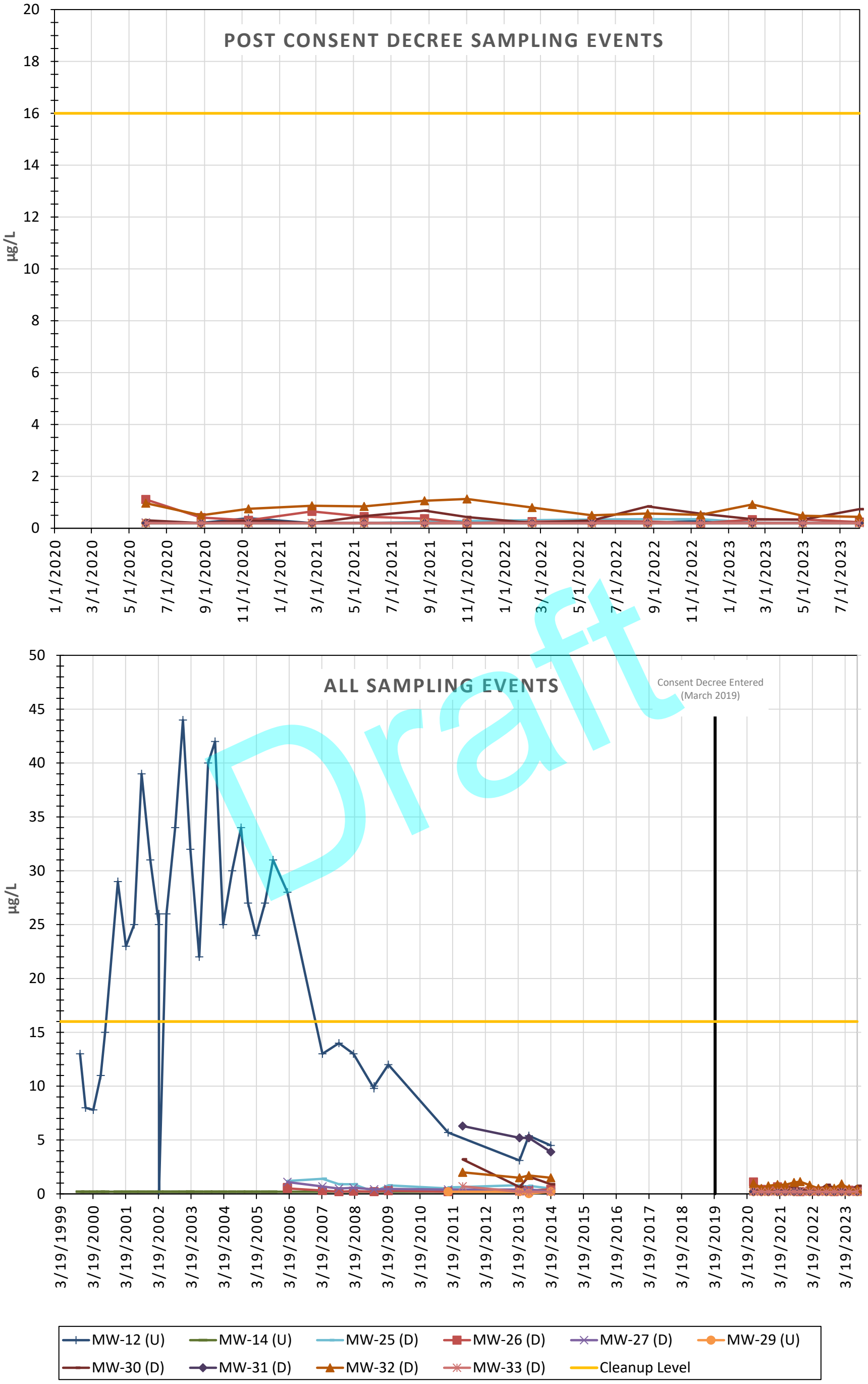
Vinyl Chloride Concentrations
A-Zone Non-CPOC Wells
South Park Landfill



Parametrix
ENGINEERING . PLANNING . ENVIRONMENTAL SCIENCES

D = Downgradient
U = Upgradient

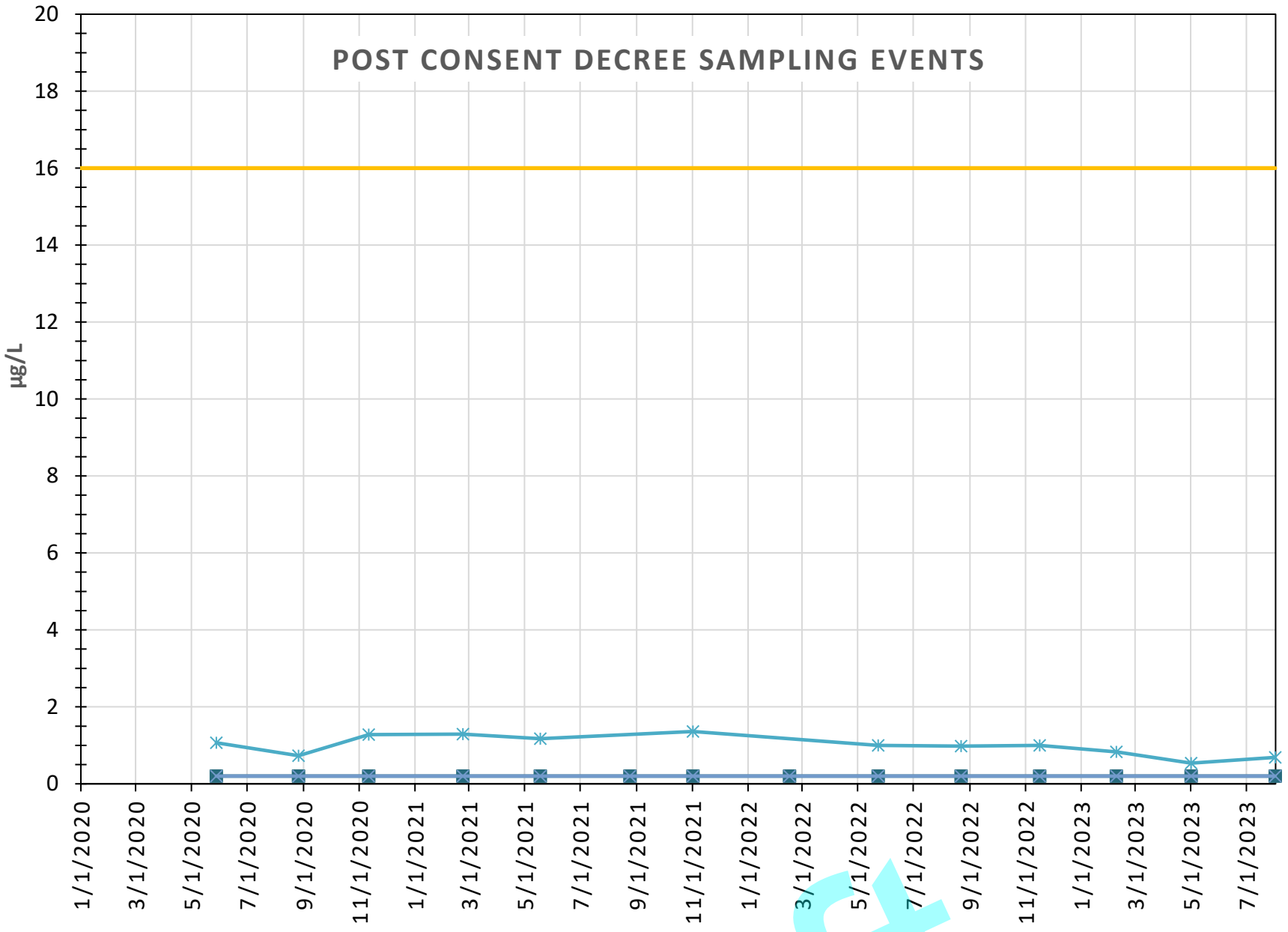
Vinyl Chloride Concentrations
B-Zone CPOC Wells
South Park Landfill

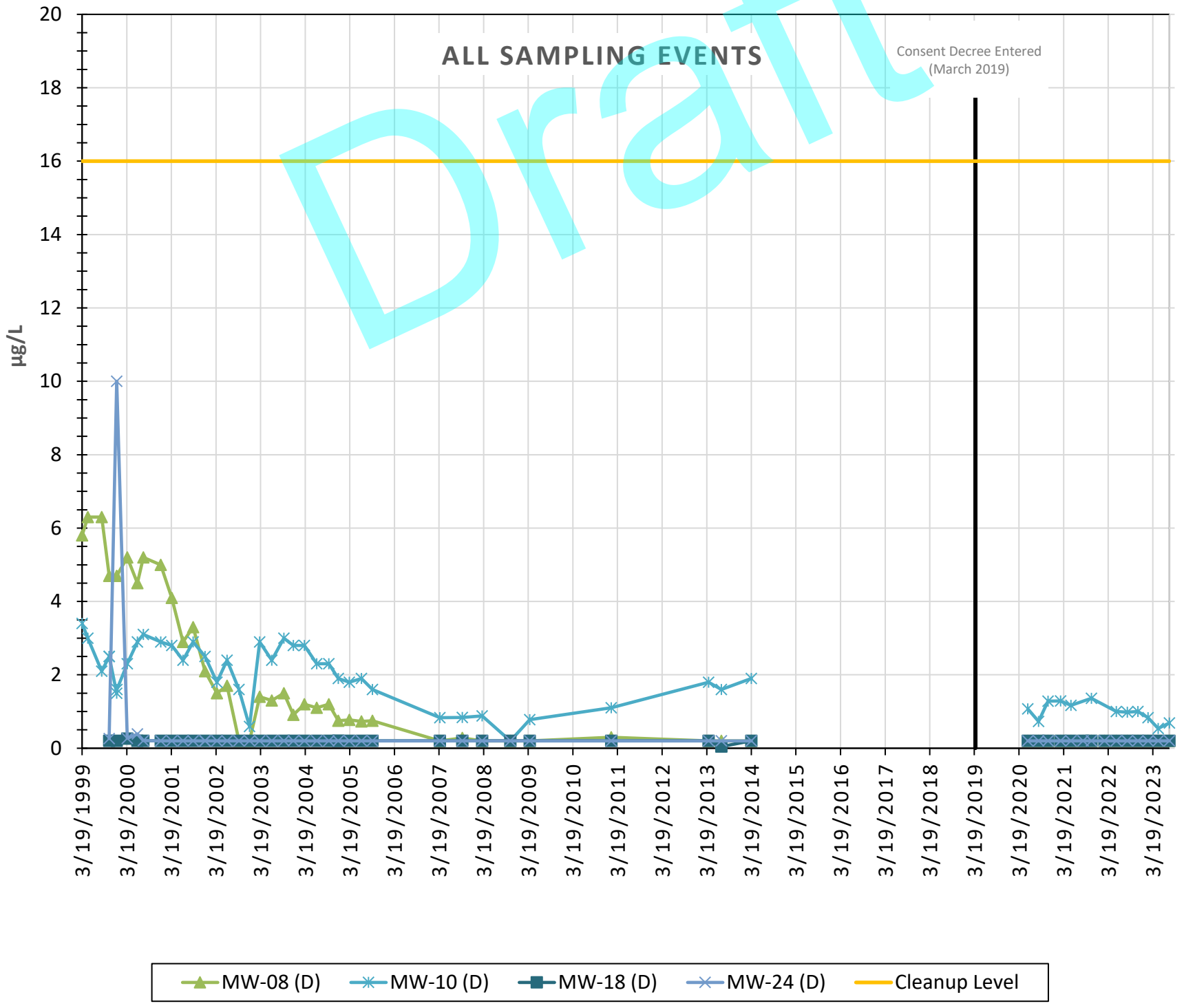


Parametrix
ENGINEERING . PLANNING . ENVIRONMENTAL SCIENCES

D = Downgradient
U = Upgradient

Cis-1,2-Dichloroethene Concentrations
A-Zone CPOC Wells
South Park Landfill





Parametrix
ENGINEERING . PLANNING . ENVIRONMENTAL SCIENCES

D = Downgradient
U = Upgradient

Cis-1,2-Dichloroethene Concentrations
B-Zone CPOC Wells
South Park Landfill

Attachment 4

Third Quarter 2023 Groundwater Laboratory Data

Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

14 August 2023

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

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

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

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

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

Associated Work Order(s)	Associated SDG ID(s)
23H0010	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

Kelly Bottem, Client Services 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.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 23H0010	Turn-around Requested: 2 weeks	Date: 7/31/2023	
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 1	
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1	Cooler Temps: 4.1°
Client Project Name: SPU South Park Landfill			
Client Project #: 553-1550-067	Samplers: Chris Bourgeois HWA		

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

Sample ID	Date	Time	Matrix	Number of Containers	Analysis Requested: cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn	Notes/Comments
~~SPL-GW-MW25-0823~~			~~water~~	~~7~~	~~X~~	~~X~~	~~X~~	
SPL-GW-MW30-0823	7/31/23	1050	water	7	X	X	X	
SPL-GW-MW31-0823	7/31/23	1204	water	7	X	X	X	
SPL-GW-MW24-0823	7/31/23	1305	water	7	X	X	X	
~~SPL-GW-MW26-0823~~	~~7/31/23~~	~~1405~~	water	~~7~~	~~X~~	~~X~~	~~X~~	
~~SPL-GW-MW08-0823~~			water	~~13~~	~~X~~	~~X~~	~~X~~	~~MS/MSD~~
~~SPL-GW-MW27-0823~~			water	~~7~~	~~X~~	~~X~~	~~X~~	
~~SPL-GW-MW61-0823~~			water	~~7~~	~~X~~	~~X~~	~~X~~	
SPL-GW-MW81-0823	7/31/23	—	water	2	X	X		

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Chris Bourgeois	Printed Name: Roman n.	Printed Name:	Printed Name:
	Company: HWA	Company: ARI	Company:	Company:
	Date & Time: 7/31/23 1479	Date & Time: 7/31/23 1479	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, not withstanding 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	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW30-0823	23H0010-01	Water	31-Jul-2023 10:50	31-Jul-2023 14:39
SPL-GW-MW31-0823	23H0010-02	Water	31-Jul-2023 12:04	31-Jul-2023 14:39
SPL-GW-MW24-0823	23H0010-03	Water	31-Jul-2023 13:05	31-Jul-2023 14:39
SPL-GW-MW26-0823	23H0010-04	Water	31-Jul-2023 14:05	31-Jul-2023 14:39
SPL-GW-MW81-0823	23H0010-05	Water	31-Jul-2023 10:50	31-Jul-2023 14:39

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill
Work Order: 23H0010

Sample receipt

Samples as listed on the preceding page were received July 31, 2023 under ARI work order 23H0010. 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.

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

Total Metals - EPA Method 6020B

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

Initial and continuing calibrations were within method requirements.

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

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

WORK ORDER

23H0010

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

Client: Seattle Public Utilities **Project Manager:** Kelly Bottem

Project: South Park Landfill -Parametrix Water **Project Number:** 553-155-067

Preservation Confirmation

Container ID	Container Type	pH	
23H0010-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass (PJ
23H0010-01 B	VOA Vial, Clear, 40 mL, HCL		
23H0010-01 C	VOA Vial, Clear, 40 mL, HCL		
23H0010-01 D	VOA Vial, Clear, 40 mL, HCL		
23H0010-01 E	VOA Vial, Clear, 40 mL		
23H0010-01 F	VOA Vial, Clear, 40 mL		
23H0010-01 G	VOA Vial, Clear, 40 mL		
23H0010-02 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23H0010-02 B	VOA Vial, Clear, 40 mL, HCL		
23H0010-02 C	VOA Vial, Clear, 40 mL, HCL		
23H0010-02 D	VOA Vial, Clear, 40 mL, HCL		
23H0010-02 E	VOA Vial, Clear, 40 mL		
23H0010-02 F	VOA Vial, Clear, 40 mL		
23H0010-02 G	VOA Vial, Clear, 40 mL		
23H0010-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23H0010-03 B	VOA Vial, Clear, 40 mL, HCL		
23H0010-03 C	VOA Vial, Clear, 40 mL, HCL		
23H0010-03 D	VOA Vial, Clear, 40 mL, HCL		
23H0010-03 E	VOA Vial, Clear, 40 mL		
23H0010-03 F	VOA Vial, Amber, 40 mL		
23H0010-03 G	VOA Vial, Amber, 40 mL		
23H0010-04 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23H0010-04 B	VOA Vial, Clear, 40 mL, HCL		
23H0010-04 C	VOA Vial, Clear, 40 mL, HCL		
23H0010-04 D	VOA Vial, Clear, 40 mL, HCL		
23H0010-04 E	VOA Vial, Clear, 40 mL		
23H0010-04 F	VOA Vial, Clear, 40 mL		
23H0010-04 G	VOA Vial, Clear, 40 mL		
23H0010-05 A	VOA Vial, Clear, 40 mL, HCL		
23H0010-05 B	VOA Vial, Clear, 40 mL		

PIB
Preservation Confirmed By

08/01/23
Date

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: SPU

Project Name: SPU South Park Landfill

COC No(s): ______ NA (circled)

Delivered by: Fed-Ex UPS Courier Hand Delivered (circled) Other: ______

Assigned ARI Job No: 23H0010

Tracking No: ______ NA (circled)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	NO (circled)
Were custody papers included with the cooler?	YES (circled)	NO
Were custody papers properly filled out (ink, signed, etc.)	YES (circled)	NO

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

Time 1439 — 9.1°

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

Temp Gun ID#: D708

Cooler Accepted by: [signature] Date: 7/31/23 Time: 1439

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO (circled)
What kind of packing material was used? Bubble Wrap Wet Ice (circled) Gel Packs Baggies (circled) Foam Block Paper Other: ______			
Was sufficient ice used (if appropriate)?	NA	YES	NO (circled)
How were bottles sealed in plastic bags?	Individually	Grouped (circled)	Not
Did all bottles arrive in good condition (unbroken)?		YES (circled)	NO
Were all bottle labels complete and legible?		YES (circled)	NO
Did the number of containers listed on COC match with the number of containers received?		YES (circled)	NO
Did all bottle labels and tags agree with custody papers?		YES (circled)	NO
Were all bottles used correct for the requested analyses?		YES (circled)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	YES (circled)	NO
Were all VOC vials free of air bubbles?	NA	YES (circled)	NO
Was sufficient amount of sample sent in each bottle?		YES (circled)	NO
Date VOC Trip Blank was made at ARI	NA	07/27/23	

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

Samples Logged by: PIB Date: ~~08/2~~ 08/1/23 (PIB 08/1/23) Time: 11:21 Labels checked by: PIB

***** 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:

Client crossed out SPL-GW-MW26-0823 However, sample volume was received.

By: PIB Date: 08/01/23

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

ARI Work Order: 23H0010

Cooler#: _____ **Temperature(°C):** 4.1°

Sample ID	Bottle Count	Bottle Type
Sample 460nm 6°C		

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Completed by: _____ Date: 7/31/23 Time: 1459

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW30-0823
23H0010-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 07/31/2023 10:50
Instrument: NT20 Analyst: PKC — Analyzed: 08/02/2023 17:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0010-01 C
Preparation Batch: BLH0032 — Sample Size: 10 mL
Prepared: 08/02/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.74	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*112*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW30-0823

23H0010-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 07/31/2023 10:50

Instrument: NT16 Analyst: TWC — Analyzed: 08/01/2023 17:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0010-01 E

Preparation Batch: BLH0020 — Sample Size: 10 mL

Prepared: 08/01/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.427	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*99.7*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW30-0823

23H0010-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 07/31/2023 10:50

Instrument: ICPMS2 Analyst: MCB — Analyzed: 08/11/2023 00:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0010-01 A 01

Preparation Batch: BLH0298 — Sample Size: 25 mL

Prepared: 08/10/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	9.27	mg/L	D
Manganese	7439-96-5	10	0.00500	0.291	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW31-0823

23H0010-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 07/31/2023 12:04

Instrument: NT20 Analyst: PKC — Analyzed: 08/02/2023 17:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0010-02 B

Preparation Batch: BLH0032 — Sample Size: 10 mL

Prepared: 08/02/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*113*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW31-0823

23H0010-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 07/31/2023 12:04
Instrument: NT16 Analyst: TWC — Analyzed: 08/01/2023 17:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0010-02 E
Preparation Batch: BLH0020 — Sample Size: 10 mL
Prepared: 08/01/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.765	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.1*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW31-0823

23H0010-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 07/31/2023 12:04

Instrument: ICPMS2 Analyst: MCB — Analyzed: 08/11/2023 00:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0010-02 A 01

Preparation Batch: BLH0298 — Sample Size: 25 mL

Prepared: 08/10/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	21.4	mg/L	D
Manganese	7439-96-5	20	0.0100	0.830	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW24-0823

23H0010-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 07/31/2023 13:05

Instrument: NT20 Analyst: PKC — Analyzed: 08/02/2023 18:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0010-03 B

Preparation Batch: BLH0032 — Sample Size: 10 mL

Prepared: 08/02/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*112*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW24-0823

23H0010-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 07/31/2023 13:05

Instrument: NT16 Analyst: TWC — Analyzed: 08/01/2023 17:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0010-03 E

Preparation Batch: BLH0020 — Sample Size: 10 mL

Prepared: 08/01/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0489	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*99.8*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW24-0823

23H0010-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 07/31/2023 13:05
Instrument: ICPMS2 Analyst: MCB — Analyzed: 08/11/2023 00:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0010-03 A 01
Preparation Batch: BLH0298 — Sample Size: 25 mL
Prepared: 08/10/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	27.8	mg/L	D
Manganese	7439-96-5	50	0.0250	1.65	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW26-0823

23H0010-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 07/31/2023 14:05

Instrument: NT20 Analyst: PKC — Analyzed: 08/02/2023 18:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0010-04 B

Preparation Batch: BLH0032 — Sample Size: 10 mL

Prepared: 08/02/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.24	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*113*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW26-0823

23H0010-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 07/31/2023 14:05
Instrument: NT16 Analyst: TWC — Analyzed: 08/01/2023 18:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0010-04 E
Preparation Batch: BLH0020 — Sample Size: 10 mL
Prepared: 08/01/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.7*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW26-0823

23H0010-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 07/31/2023 14:05
Instrument: ICPMS2 Analyst: MCB — Analyzed: 08/10/2023 23:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0010-04 A 01
Preparation Batch: BLH0298 — Sample Size: 25 mL
Prepared: 08/10/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	12.1	mg/L	D
Manganese	7439-96-5	10	0.00500	0.137	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW81-0823

23H0010-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 07/31/2023 10:50

Instrument: NT20 Analyst: PKC — Analyzed: 08/02/2023 18:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0010-05 A

Preparation Batch: BLH0032 — Sample Size: 10 mL

Prepared: 08/02/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*112*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

SPL-GW-MW81-0823

23H0010-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 07/31/2023 10:50

Instrument: NT16 Analyst: TWC — Analyzed: 08/01/2023 18:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0010-05 B

Preparation Batch: BLH0020 — Sample Size: 10 mL

Prepared: 08/01/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.2*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLH0032 - EPA 8260D

Instrument: NT20 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0032-BLK1)				Prepared: 02-Aug-2023 Analyzed: 02-Aug-2023 12:34						
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.20		ug/L	*5.0000*		*104*	*80-129*			
LCS (BLH0032-BS1)				Prepared: 02-Aug-2023 Analyzed: 02-Aug-2023 11:00						
cis-1,2-Dichloroethene	8.50	0.20	ug/L	10.000		85.0	80-121			
Surrogate: 1,2-Dichloroethane-d4	4.75		ug/L	*5.0000*		*95.1*	*80-129*			
LCS Dup (BLH0032-BSD1)				Prepared: 02-Aug-2023 Analyzed: 02-Aug-2023 11:47						
cis-1,2-Dichloroethene	8.58	0.20	ug/L	10.000		85.8	80-121	0.95	30	
Surrogate: 1,2-Dichloroethane-d4	4.78		ug/L	*5.0000*		*95.5*	*80-129*			

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLH0020 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0020-BLK1)				Prepared: 01-Aug-2023 Analyzed: 01-Aug-2023 11:12						
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4890		ug/L	*5000.0*		*97.9*	*80-129*			
LCS (BLH0020-BS1)				Prepared: 01-Aug-2023 Analyzed: 01-Aug-2023 09:30						
Vinyl chloride	2.22	0.0200	ug/L	2.0000		111	62-141			
Surrogate: 1,2-Dichloroethane-d4	4760		ug/L	*5000.0*		*95.2*	*80-129*			
LCS Dup (BLH0020-BSD1)				Prepared: 01-Aug-2023 Analyzed: 01-Aug-2023 09:51						
Vinyl chloride	2.11	0.0200	ug/L	2.0000		106	62-141	4.96	30	
Surrogate: 1,2-Dichloroethane-d4	4860		ug/L	*5000.0*		*97.1*	*80-129*			

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLH0298 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0298-BLK1)				Prepared: 10-Aug-2023 Analyzed: 10-Aug-2023 18:22							
Iron	54	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U
LCS (BLH0298-BS1)				Prepared: 10-Aug-2023 Analyzed: 10-Aug-2023 18:27							
Iron	54	4.97	0.0360	mg/L	5.0001		99.5	80-120			
Manganese	55	0.0267	0.000500	mg/L	0.025000		107	80-120			

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Iron-54	NELAP,WADOE,DoD-ELAP
Manganese-55	NELAP,WADOE,DoD-ELAP
EPA 8260D in Water	
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
EPA 8260D-SIM in Water	
Vinyl chloride	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-155-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	14-Aug-2023 15:58

Notes and Definitions

*	Flagged value is not within established control limits.
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.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
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
Tukwila, WA

21 August 2023

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

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

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

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

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

Associated Work Order(s)	Associated SDG ID(s)
23H0102	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

Kelly Bottem, Client Services 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.

Accredited in accordance with nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 23G0102	Turn-around Requested: 2 weeks	Date: 8/2/23
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 2
Client Contact: Laura Lee	Phone: 206 394-3665	No. of Coolers: Cooler Temps:
Client Project Name: SPU South Park Landfill		
	Samplers: Chris Bourgeois HWA	

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

Sample ID	Date	Time	Matrix	Number of Containers	Analysis Requested: cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn								Notes/Comments
SPL-GW-MW12-0823	8/1/23	1210	water	7	X	X	X								
SPL-GW-MW14-0823	8/1/23	1325	water	7	X	X	X								
SPL-GW-MW29-0823	8/1/23	1745	water	7	X	X	X								
SPL-GW-MW18-0823	8/1/23	1545	water	7	X	X	X								
SPL-GW-MW32-0823	8/2/23	1135	water	7	X	X	X								
SPL-GW-MW33-0823	8/2/23	1030	water	~~13~~ 12	X	X	X								MS/MSD
SPL-GW-MW10-0823	8/2/23	925	water	~~7~~ 6	X	X	X								
SPL-GW-MW60-0823	8/2/23	1100	water	7	X	X	X								
SPL-GW-MW80-0823	8/2/23	—	water	2	X	X									

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Chris Bourgeois	Printed Name: SEAN RAHMAN	Printed Name:	Printed Name:
	Company: HWA	Company: ARI LLC	Company:	Company:
	Date & Time: 8/2/23 / 1208	Date & Time: 8-2-23, 12:08	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, not withstanding 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

ARI Assigned Number: 23G0102	Turn-around Requested: 2 weeks	Date: 8/2/23
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: 2 of 2
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: Cooler Temps:
Client Project Name: SPU South Park Landfill		
Client Project #: 553-1550-067	Samplers: Chris Bourgeois HWA	

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

Sample ID	Date	Time	Matrix	Number of Containers	Analysis Requested: cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn							Notes/Comments
SPL-GW-MW25-0823	8/2/23	0845	water	7	X	X	X							
~~SPL-GW-MW30-0823~~			~~water~~	~~7~~	~~X~~	~~X~~	~~X~~							
~~SPL-GW-MW31-0823~~			~~water~~	~~7~~	~~X~~	~~X~~	~~X~~							
~~SPL-GW-MW24-0823~~			~~water~~	~~7~~	~~X~~	~~X~~	~~X~~							
~~SPL-GW-MW26-0823~~			~~water~~	~~7~~	~~X~~	~~X~~	~~X~~							
SPL-GW-MW08-0823	8/1/23	920	water	13	X	X	X							MS/MSD
SPL-GW-MW27-0823	8/1/23	1045	water	7	X	X	X							
SPL-GW-MW61-0823	8/1/23	945	water	7	X	X	X							
~~SPL-GW-MW81-0823~~			~~water~~	~~2~~	~~X~~	~~X~~								

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Chris Bourgeois	Printed Name: SEAN RAHMAN	Printed Name:	Printed Name:
	Company: HWA	Company: ARI LLC	Company:	Company:
	Date & Time: 8/2/23 1206	Date & Time: 8-2-23 12:08	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, not withstanding 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	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW12-0823	23H0102-01	Water	01-Aug-2023 12:10	02-Aug-2023 12:08
SPL-GW-MW14-0823	23H0102-02	Water	01-Aug-2023 13:25	02-Aug-2023 12:08
SPL-GW-MW29-0823	23H0102-03	Water	01-Aug-2023 14:45	02-Aug-2023 12:08
SPL-GW-MW18-0823	23H0102-04	Water	01-Aug-2023 15:45	02-Aug-2023 12:08
SPL-GW-MW32-0823	23H0102-05	Water	02-Aug-2023 11:35	02-Aug-2023 12:08
SPL-GW-MW33-0823	23H0102-06	Water	02-Aug-2023 10:30	02-Aug-2023 12:08
SPL-GW-MW10-0823	23H0102-07	Water	02-Aug-2023 09:25	02-Aug-2023 12:08
SPL-GW-MW60-0823	23H0102-08	Water	02-Aug-2023 11:00	02-Aug-2023 12:08
SPL-GW-MW80-0823	23H0102-09	Water	01-Aug-2023 09:20	02-Aug-2023 12:08
SPL-GW-MW25-0823	23H0102-10	Water	02-Aug-2023 08:45	02-Aug-2023 12:08
SPL-GW-MW08-0823	23H0102-11	Water	01-Aug-2023 09:20	02-Aug-2023 12:08
SPL-GW-MW27-0823	23H0102-12	Water	01-Aug-2023 10:45	02-Aug-2023 12:08
SPL-GW-MW61-0823	23H0102-13	Water	01-Aug-2023 09:45	02-Aug-2023 12:08

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill
Work Order: 23H0102

Sample receipt

Samples as listed on the preceding page were received August 2, 2023 under ARI work order 23H0102. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Volatiles - EPA Method SW8260D

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

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

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

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

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

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

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

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

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

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

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

Total Metals - EPA Method 6020B

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

Initial and continuing calibrations were within method requirements.

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

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

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

WORK ORDER

23H0102

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

Client: Seattle Public Utilities **Project Manager:** Kelly Bottem

Project: South Park Landfill -Parametrix Water **Project Number:** 553-1550-067

Preservation Confirmation

Container ID	Container Type	pH		
23H0102-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass (P)	
23H0102-01 B	VOA Vial, Clear, 40 mL, HCL			
23H0102-01 C	VOA Vial, Clear, 40 mL, HCL			
23H0102-01 D	VOA Vial, Clear, 40 mL, HCL			
23H0102-01 E	VOA Vial, Clear, 40 mL			
23H0102-01 F	VOA Vial, Clear, 40 mL			
23H0102-01 G	VOA Vial, Clear, 40 mL			
23H0102-02 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P	
23H0102-02 B	VOA Vial, Clear, 40 mL, HCL			
23H0102-02 C	VOA Vial, Clear, 40 mL, HCL			
23H0102-02 D	VOA Vial, Clear, 40 mL, HCL			
23H0102-02 E	VOA Vial, Clear, 40 mL			
23H0102-02 F	VOA Vial, Clear, 40 mL			
23H0102-02 G	VOA Vial, Clear, 40 mL			
23H0102-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P	
23H0102-03 B	VOA Vial, Clear, 40 mL, HCL			
23H0102-03 C	VOA Vial, Clear, 40 mL, HCL			
23H0102-03 D	VOA Vial, Clear, 40 mL, HCL			
23H0102-03 E	VOA Vial, Clear, 40 mL			
23H0102-03 F	VOA Vial, Clear, 40 mL			
23H0102-03 G	VOA Vial, Clear, 40 mL			
23H0102-04 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P	
23H0102-04 B	VOA Vial, Clear, 40 mL, HCL			
23H0102-04 C	VOA Vial, Clear, 40 mL, HCL			
23H0102-04 D	VOA Vial, Clear, 40 mL, HCL			
23H0102-04 E	VOA Vial, Clear, 40 mL			
23H0102-04 F	VOA Vial, Clear, 40 mL			
23H0102-04 G	VOA Vial, Clear, 40 mL			
23H0102-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P	
23H0102-05 B	VOA Vial, Clear, 40 mL, HCL			
23H0102-05 C	VOA Vial, Clear, 40 mL, HCL			
23H0102-05 D	VOA Vial, Clear, 40 mL, HCL			
23H0102-05 E	VOA Vial, Clear, 40 mL			
23H0102-05 F	VOA Vial, Clear, 40 mL			

Reviewed By Date

WORK ORDER

23H0102

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

Client: Seattle Public Utilities | **Project Manager:** Kelly Bottem

Project: South Park Landfill -Parametrix Water | **Project Number:** 553-1550-067

23H0102-05 G	VOA Vial, Clear, 40 mL		
23H0102-06 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P
23H0102-06 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-06 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-06 D	VOA Vial, Clear, 40 mL, HCL		
23H0102-06 E	VOA Vial, Clear, 40 mL, HCL		
23H0102-06 F	VOA Vial, Clear, 40 mL, HCL		
23H0102-06 G	VOA Vial, Clear, 40 mL		
23H0102-06 H	VOA Vial, Clear, 40 mL		
23H0102-06 I	VOA Vial, Clear, 40 mL		
23H0102-06 J	VOA Vial, Clear, 40 mL		
23H0102-06 K	VOA Vial, Clear, 40 mL		
23H0102-06 L	VOA Vial, Clear, 40 mL		
23H0102-07 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P
23H0102-07 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-07 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-07 D	VOA Vial, Clear, 40 mL		
23H0102-07 E	VOA Vial, Clear, 40 mL		
23H0102-07 F	VOA Vial, Clear, 40 mL		
23H0102-08 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P
23H0102-08 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-08 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-08 D	VOA Vial, Clear, 40 mL, HCL		
23H0102-08 E	VOA Vial, Clear, 40 mL		
23H0102-08 F	VOA Vial, Clear, 40 mL		
23H0102-08 G	VOA Vial, Clear, 40 mL		
23H0102-09 A	VOA Vial, Clear, 40 mL, HCL		
23H0102-09 B	VOA Vial, Clear, 40 mL		
23H0102-10 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P
23H0102-10 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-10 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-10 D	VOA Vial, Clear, 40 mL, HCL		
23H0102-10 E	VOA Vial, Clear, 40 mL		
23H0102-10 F	VOA Vial, Clear, 40 mL		
23H0102-10 G	VOA Vial, Clear, 40 mL		
23H0102-11 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P

Reviewed By _____ Date _____

WORK ORDER

23H0102

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

Client: Seattle Public Utilities **Project Manager: Kelly Bottem**

Project: South Park Landfill -Parametrix Water **Project Number: 553-1550-067**

23H0102-11 B	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 C	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 D	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 E	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 F	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 G	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 H	VOA Vial, Clear, 40 mL	
23H0102-11 I	VOA Vial, Clear, 40 mL	
23H0102-11 J	VOA Vial, Clear, 40 mL	
23H0102-11 K	VOA Vial, Clear, 40 mL	
23H0102-11 L	VOA Vial, Clear, 40 mL	
23H0102-11 M	VOA Vial, Clear, 40 mL	
23H0102-12 A	HDPE NM, 500 mL, 1:1 HNO3	C2 P
23H0102-12 B	VOA Vial, Clear, 40 mL, HCL	
23H0102-12 C	VOA Vial, Clear, 40 mL, HCL	
23H0102-12 D	VOA Vial, Clear, 40 mL, HCL	
23H0102-12 E	VOA Vial, Clear, 40 mL	
23H0102-12 F	VOA Vial, Clear, 40 mL	
23H0102-12 G	VOA Vial, Clear, 40 mL	
23H0102-13 A	HDPE NM, 500 mL, 1:1 HNO3	C2 P
23H0102-13 B	VOA Vial, Clear, 40 mL, HCL	
23H0102-13 C	VOA Vial, Clear, 40 mL, HCL	
23H0102-13 D	VOA Vial, Clear, 40 mL, HCL	
23H0102-13 E	VOA Vial, Clear, 40 mL	
23H0102-13 F	VOA Vial, Clear, 40 mL	
23H0102-13 G	VOA Vial, Clear, 40 mL	

PJB
Preservation Confirmed By

08/04/23
Date

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

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: 23G0102

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 12:08 — 2.1 0.3 ____ ____ ____ ____

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

Temp Gun ID#: 90097088

Cooler Accepted by: SR Date: 8-2-23 Time: 12:08

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	7/27/23	

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

Samples Logged by: PIB Date: 08/04/23 Time: 11:10 Labels checked by: PIB

***** 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	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW12-0823

23H0102-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/01/2023 12:10

Instrument: NT20 Analyst: TWC — Analyzed: 08/04/2023 22:09

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-01 B

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*104*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW12-0823

23H0102-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/01/2023 12:10

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 12:14

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-01 E

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*95.9*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW12-0823

23H0102-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/01/2023 12:10

Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/17/2023 00:24

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-01 A 01

Preparation Batch: BLH0390 — Sample Size: 25 mL

Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	1.41	mg/L	D
Manganese	7439-96-5	5	0.00250	0.0993	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW14-0823

23H0102-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/01/2023 13:25

Instrument: NT20 Analyst: TWC — Analyzed: 08/04/2023 22:32

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-02 B

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*106*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW14-0823

23H0102-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/01/2023 13:25

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 12:35

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-02 E

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.3*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW14-0823

23H0102-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/01/2023 13:25

Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/17/2023 00:29

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-02 A 01

Preparation Batch: BLH0390 — Sample Size: 25 mL

Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	4.39	mg/L	D
Manganese	7439-96-5	10	0.00500	0.797	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW29-0823

23H0102-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/01/2023 14:45

Instrument: NT20 Analyst: TWC — Analyzed: 08/04/2023 22:55

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-03 B

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*106*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW29-0823

23H0102-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/01/2023 14:45

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 12:56

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-03 E

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.5*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW29-0823

23H0102-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/01/2023 14:45

Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/17/2023 00:34

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-03 A 01

Preparation Batch: BLH0390 — Sample Size: 25 mL

Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	23.4	mg/L	D
Manganese	7439-96-5	10	0.00500	0.562	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW18-0823

23H0102-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/01/2023 15:45
Instrument: NT20 Analyst: TWC — Analyzed: 08/04/2023 23:18

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-04 B
Preparation Batch: BLH0123 — Sample Size: 10 mL
Prepared: 08/04/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*109*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW18-0823

23H0102-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/01/2023 15:45

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 13:17

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-04 F

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0223	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.6*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW18-0823

23H0102-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/01/2023 15:45
Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/16/2023 23:21

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-04 A 01
Preparation Batch: BLH0390 — Sample Size: 25 mL
Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	16.1	mg/L	D
Manganese	7439-96-5	20	0.0100	1.17	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW32-0823

23H0102-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/02/2023 11:35

Instrument: NT20 Analyst: TWC — Analyzed: 08/04/2023 23:42

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-05 B

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.44	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*108*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW32-0823

23H0102-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/02/2023 11:35

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 13:39

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-05 E

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.279	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*99.1*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW32-0823

23H0102-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/02/2023 11:35
Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/16/2023 23:26

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-05 A 01
Preparation Batch: BLH0390 — Sample Size: 25 mL
Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	18.6	mg/L	D
Manganese	7439-96-5	20	0.0100	1.45	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW33-0823

23H0102-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/02/2023 10:30

Instrument: NT20 Analyst: TWC — Analyzed: 08/05/2023 00:05

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-06 B

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*107*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW33-0823

23H0102-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/02/2023 10:30

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 14:00

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-06 G

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.168	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*99.0*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW33-0823

23H0102-06 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/02/2023 10:30

Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/16/2023 23:46

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-06 A 01

Preparation Batch: BLH0390 — Sample Size: 25 mL

Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	20.8	mg/L	D
Manganese	7439-96-5	50	0.0250	1.98	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW10-0823

23H0102-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/02/2023 09:25

Instrument: NT20 Analyst: TWC — Analyzed: 08/05/2023 00:28

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-07 B

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.69	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*106*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW10-0823

23H0102-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/02/2023 09:25

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 14:21

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-07 D

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.121	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*100*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW10-0823

23H0102-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/02/2023 09:25
Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/16/2023 23:36

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-07 A 01
Preparation Batch: BLH0390 — Sample Size: 25 mL
Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	45.8	mg/L	D
Manganese	7439-96-5	50	0.0250	2.51	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW60-0823

23H0102-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/02/2023 11:00

Instrument: NT20 Analyst: TWC — Analyzed: 08/05/2023 00:51

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-08 B

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*106*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW60-0823

23H0102-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/02/2023 11:00
Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 14:43

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-08 E
Preparation Batch: BLH0163 — Sample Size: 10 mL
Prepared: 08/07/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.164	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*99.2*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW60-0823

23H0102-08 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/02/2023 11:00

Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/16/2023 23:31

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-08 A 01

Preparation Batch: BLH0390 — Sample Size: 25 mL

Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	19.5	mg/L	D
Manganese	7439-96-5	20	0.0100	1.92	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW80-0823

23H0102-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/01/2023 09:20

Instrument: NT20 Analyst: TWC — Analyzed: 08/05/2023 01:15

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-09 A

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*114*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW80-0823

23H0102-09 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/01/2023 09:20

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 15:04

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-09 B

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.7*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW25-0823

23H0102-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/02/2023 08:45

Instrument: NT20 Analyst: TWC — Analyzed: 08/05/2023 01:38

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-10 B

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.21	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*105*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW25-0823

23H0102-10 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/02/2023 08:45

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 15:25

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-10 E

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.311	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.5*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW25-0823

23H0102-10 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/02/2023 08:45

Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/16/2023 23:41

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-10 A 01

Preparation Batch: BLH0390 — Sample Size: 25 mL

Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	35.9	mg/L	D
Manganese	7439-96-5	50	0.0250	2.88	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW08-0823

23H0102-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/01/2023 09:20

Instrument: NT20 Analyst: TWC — Analyzed: 08/05/2023 02:01

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-11 B

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*110*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW08-0823

23H0102-11 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/01/2023 09:20

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 15:46

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-11 H

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0721	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*101*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW08-0823

23H0102-11 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/01/2023 09:20

Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/17/2023 00:49

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-11 A 01

Preparation Batch: BLH0390 — Sample Size: 25 mL

Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	17.1	mg/L	D
Manganese	7439-96-5	20	0.0100	0.979	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW27-0823

23H0102-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/01/2023 10:45

Instrument: NT20 Analyst: TWC — Analyzed: 08/05/2023 02:24

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-12 B

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*109*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW27-0823

23H0102-12 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/01/2023 10:45

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 16:08

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-12 F

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0955	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*101*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW27-0823

23H0102-12 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/01/2023 10:45

Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/17/2023 00:39

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-12 A 01

Preparation Batch: BLH0390 — Sample Size: 25 mL

Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	28.8	mg/L	D
Manganese	7439-96-5	10	0.00500	0.683	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW61-0823

23H0102-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 08/01/2023 09:45

Instrument: NT20 Analyst: TWC — Analyzed: 08/05/2023 02:48

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-13 B

Preparation Batch: BLH0123 — Sample Size: 10 mL

Prepared: 08/04/2023 — 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
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*109*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW61-0823

23H0102-13 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 08/01/2023 09:45

Instrument: NT16 Analyst: TWC — Analyzed: 08/07/2023 16:29

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 23H0102-13 E

Preparation Batch: BLH0163 — Sample Size: 10 mL

Prepared: 08/07/2023 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0704	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*101*	*%*	

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

SPL-GW-MW61-0823

23H0102-13 (Water)

Metals and Metallic Compounds

Method: EPA 6020B — Sampled: 08/01/2023 09:45

Instrument: ICPMS1 Analyst: MCB — Analyzed: 08/17/2023 00:44

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 23H0102-13 A 01

Preparation Batch: BLH0390 — Sample Size: 25 mL

Prepared: 08/15/2023 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	16.1	mg/L	D
Manganese	7439-96-5	10	0.00500	0.934	mg/L	D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLH0123 - EPA 8260D

Instrument: NT20 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0123-BLK1)				Prepared: 04-Aug-2023 Analyzed: 04-Aug-2023 21:23						
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.29		ug/L	*5.0000*		*106*	*80-129*			
LCS (BLH0123-BS1)				Prepared: 04-Aug-2023 Analyzed: 04-Aug-2023 20:14						
cis-1,2-Dichloroethene	9.16	0.20	ug/L	10.000		91.6	80-121			
Surrogate: 1,2-Dichloroethane-d4	4.91		ug/L	*5.0000*		*98.1*	*80-129*			
LCS Dup (BLH0123-BSD1)				Prepared: 04-Aug-2023 Analyzed: 04-Aug-2023 20:37						
cis-1,2-Dichloroethene	9.14	0.20	ug/L	10.000		91.4	80-121	0.29	30	
Surrogate: 1,2-Dichloroethane-d4	4.81		ug/L	*5.0000*		*96.2*	*80-129*			
Matrix Spike (BLH0123-MS1)	**Source: 23H0102-06**			Prepared: 04-Aug-2023 Analyzed: 05-Aug-2023 03:57						
cis-1,2-Dichloroethene	8.89	0.20	ug/L	10.000	ND	88.9	80-121			
Surrogate: 1,2-Dichloroethane-d4	5.00		ug/L	*5.0000*	*5.36*	*100*	*80-129*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike (BLH0123-MS2)	**Source: 23H0102-11**			Prepared: 04-Aug-2023 Analyzed: 05-Aug-2023 04:44						
cis-1,2-Dichloroethene	9.58	0.20	ug/L	10.000	ND	95.8	80-121			
Surrogate: 1,2-Dichloroethane-d4	4.85		ug/L	*5.0000*	*5.50*	*97.1*	*80-129*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLH0123-MSD1)	**Source: 23H0102-06**			Prepared: 04-Aug-2023 Analyzed: 05-Aug-2023 04:20						
cis-1,2-Dichloroethene	9.14	0.20	ug/L	10.000	ND	91.4	80-121	2.86	30	
Surrogate: 1,2-Dichloroethane-d4	4.76		ug/L	*5.0000*	*5.36*	*95.3*	*80-129*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLH0123-MSD2)	**Source: 23H0102-11**			Prepared: 04-Aug-2023 Analyzed: 05-Aug-2023 05:07						
cis-1,2-Dichloroethene	9.15	0.20	ug/L	10.000	ND	91.5	80-121	4.56	30	
Surrogate: 1,2-Dichloroethane-d4	4.76		ug/L	*5.0000*	*5.50*	*95.2*	*80-129*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLH0163 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0163-BLK1)				Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 11:43						
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4840		ug/L	*5000.0*		*96.9*	*80-129*			
LCS (BLH0163-BS1)				Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 10:02						
Vinyl chloride	2.13	0.0200	ug/L	2.0000		106	62-141			
Surrogate: 1,2-Dichloroethane-d4	4790		ug/L	*5000.0*		*95.9*	*80-129*			
LCS Dup (BLH0163-BSD1)				Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 11:00						
Vinyl chloride	2.39	0.0200	ug/L	2.0000		119	62-141	11.40	30	
Surrogate: 1,2-Dichloroethane-d4	4770		ug/L	*5000.0*		*95.4*	*80-129*			
Matrix Spike (BLH0163-MS1)	**Source: 23H0102-06**			Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 18:36						
Vinyl chloride	2.32	0.0200	ug/L	2.0000	0.168	108	62-141			
Surrogate: 1,2-Dichloroethane-d4	5040		ug/L	*5000.0*	*4950*	*101*	*80-129*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike (BLH0163-MS2)	**Source: 23H0102-11**			Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 19:18						
Vinyl chloride	2.20	0.0200	ug/L	2.0000	0.0721	107	62-141			
Surrogate: 1,2-Dichloroethane-d4	4960		ug/L	*5000.0*	*5030*	*99.2*	*80-129*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLH0163-MSD1)	**Source: 23H0102-06**			Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 18:57						
Vinyl chloride	2.30	0.0200	ug/L	2.0000	0.168	107	62-141	0.92	30	
Surrogate: 1,2-Dichloroethane-d4	5010		ug/L	*5000.0*	*4950*	*100*	*80-129*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLH0163-MSD2)	**Source: 23H0102-11**			Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 19:40						
Vinyl chloride	2.22	0.0200	ug/L	2.0000	0.0721	108	62-141	0.87	30	
Surrogate: 1,2-Dichloroethane-d4	4950		ug/L	*5000.0*	*5030*	*99.0*	*80-129*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLH0390 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0390-BLK1)				Prepared: 15-Aug-2023 Analyzed: 15-Aug-2023 17:23							
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 (BLH0390-BS1)				Prepared: 15-Aug-2023 Analyzed: 15-Aug-2023 17:28							
Iron	54	5.12	0.0360	mg/L	5.0001		102	80-120			
Iron	57	5.05	0.0360	mg/L	5.0001		101	80-120			
Manganese	55	0.0267	0.000500	mg/L	0.025000		107	80-120			
Duplicate (BLH0390-DUP1)		**Source: 23H0102-06**		Prepared: 15-Aug-2023 Analyzed: 16-Aug-2023 23:51							
Iron	54	19.7	1.80	mg/L		20.8			5.24	20	D
Manganese	55	1.88	0.0250	mg/L		1.98			5.01	20	D
Duplicate (BLH0390-DUP2)		**Source: 23H0102-11**		Prepared: 15-Aug-2023 Analyzed: 17-Aug-2023 00:54							
Iron	54	16.0	0.720	mg/L		17.1			6.88	20	D
Manganese	55	0.942	0.0100	mg/L		0.979			3.79	20	D
Matrix Spike (BLH0390-MS1)		**Source: 23H0102-06**		Prepared: 15-Aug-2023 Analyzed: 16-Aug-2023 23:56							
Iron	54	25.9	1.80	mg/L	5.0001	20.8	102	75-125			D
Manganese	55	1.99	0.0250	mg/L	0.025000	1.98	27.6	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BLH0390-MS2)		**Source: 23H0102-11**		Prepared: 15-Aug-2023 Analyzed: 17-Aug-2023 00:59							
Iron	54	21.5	0.720	mg/L	5.0001	17.1	88.7	75-125			D
Manganese	55	0.972	0.0100	mg/L	0.025000	0.979	-25.6	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLH0390-MSD1)		**Source: 23H0102-06**		Prepared: 15-Aug-2023 Analyzed: 17-Aug-2023 00:01							
Iron	54	24.9	1.80	mg/L	5.0001	20.8	81.8	75-125	3.96	20	D
Manganese	55	1.91	0.0250	mg/L	0.025000	1.98	-285	75-125	4.01	20	HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLH0390-MSD2)		**Source: 23H0102-11**		Prepared: 15-Aug-2023 Analyzed: 17-Aug-2023 01:04							
Iron	54	22.6	0.720	mg/L	5.0001	17.1	111	75-125	5.01	20	D
Manganese	55	1.01	0.0100	mg/L	0.025000	0.979	128	75-125	3.86	20	HC, D

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLH0390 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

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

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

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 8260D in Water	
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
EPA 8260D-SIM in Water	
Vinyl chloride	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2024

Seattle Public Utilities	Project: South Park Landfill -Parametrix Water	
700-5th Ave, Ste 4900, Box 34018	Project Number: 553-1550-067	**Reported:**
Seattle WA, 98124-4018	Project Manager: Min-Soon Yim	21-Aug-2023 18:42

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.