

Parametrix No. 553-1550-067

Ryan Gardiner, Project Manager  
Washington State Department of Ecology  
Toxics Cleanup Program  
15700 Dayton Ave. N.  
Shoreline, Washington 98133

Re: South Park Landfill First Quarter 2024 Progress Report

Dear Ryan:

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

## General Activities During the 2024 First 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 Seattle Public Utilities (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.
- All recommended repairs in the cap inspections were completed on SRDS property.

### CenterPoint South Park LLC 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.
- Performed cap maintenance at areas with exposed geomembrane. Dead grass was removed, and new sod was installed and reseeded by a landscaping company.

### Overall Settlement Parcels

- The 2023 Operations, Maintenance, and Monitoring Annual Report was finalized and submitted to Ecology.
- The 2024 first quarter compliance monitoring was completed. SPU staff conducted the gas monitoring and the Parametrix team conducted the groundwater monitoring.
- Parametrix reviewed field measurements and completed data management for the 2024 first quarter compliance monitoring events.
- The 2024 annual cap inspection was conducted by the Site Coordinator in March. A report summarizing the observations is being prepared.



- Several areas of concern identified during the cap inspections in the rights-of-way were repaired by the Seattle Department of Transportation under the coordination of SPU.

## **Deviations from Samples, Required Tasks, CAP, or Schedule**

There were no deviations to report this quarter.

## **Data Summary**

The perimeter gas probes were monitored by SPU on February 1, 2024. The recorded monitoring data are included as an attachment. All concentrations were less than the regulatory action limit of 5 percent by volume. Methane was detected at the following gas probes:

Probe	CH4 (% by volume)	Blocked	Comments
GP-27	0.1%	No	Below trigger values

The groundwater wells were monitored by the Site Coordinator between February 5 and 7, 2024. The monitoring samples were analyzed by Analytical Resources, Incorporated. Data validation is complete and a trend and concentration trigger assessment for vinyl chloride was performed. A draft data summary table, updated time-series plots, and the final lab reports for the 2024 first quarter are included as attachments to this progress report.

Data management is complete for the 2024 first quarter compliance monitoring event.

## **Upcoming Activities**

### **SRDS Property**

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

### **CenterPoint Property**

- Ongoing remote monitoring of the CenterPoint property landfill gas system blowers.
- Complete the second quarter 2024 operation and maintenance of the landfill gas system.

### **Overall Settlement Parcels**

- SPU and the Site Coordinator will complete the second quarter 2024 compliance monitoring.
- The Site Coordinator will work with a drilling subcontractor to install supplemental gas probes as described in the approved Supplemental Gas Probes Work Plan and repair damaged probe GP-28.
- The 2024 annual cap reinspection report will be finalized and submitted to Ecology.
- SPU will coordinate with Seattle Department of Transportation on repair of the remaining areas of concern identified during the cap inspections in the rights-of-way.
- The Site Coordinator will inspect cap maintenance completed by property owners.



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  
Suzanne Hildreth, SPU Solid Waste Transfer Station Manager  
Lucie Harpster, SPU Solid Waste Transfer Station Manager



# Attachments

- 1 – Landfill Gas and Groundwater Compliance Monitoring Field Sheets,  
First Quarter 2024
- 2 – Draft Groundwater Quality Data Summary, First Quarter 2024
- 3 – Draft Groundwater Quality Time Series Plots  
through First Quarter 2024
- 4 – First Quarter 2024 Groundwater Laboratory Data



# Attachment 1

Landfill Gas Compliance Monitoring  
Field Sheets  
First Quarter 2024



**South Park Landfill**  
**First Quarter 2024 Gas Probe Monitoring Data**

<b>Gas Probe</b>	<b>Date</b>	<b>Time</b>	<b>Rel. Press. inches H2O</b>	<b>CH4 %</b>	<b>CO2 %</b>	<b>O2 %</b>	<b>Balance %</b>	<b>Blocked (Y/N)</b>	<b>Baro. Press. inches Hg</b>
SP00GP26	2/1/2024	8:48	-0.03	0.0	2.2	16.5	81.3	N	29.45
SP00GP23	2/1/2024	9:02	0.00	0.0	0.2	21.4	78.4	N	29.46
SP00GP07	2/1/2024	9:09	0.01	0.0	1.2	18.4	80.4	N	29.48
SP00GP16	2/1/2024	9:30	0.02	0.0	8.3	10.3	81.4	N	29.47
SP00GP29	2/1/2024	9:35	-0.05	0.0	12.3	0.1	87.6	N	29.46
SP00GP28	2/1/2024	9:41	0.01	0.0	0.1	21.0	78.9	N	29.46
SP00GP27	2/1/2024	9:47	0.02	0.1	9.2	0.0	90.7	N	29.46
SP00GP33	2/1/2024	9:55	-0.02	0.0	0.9	19.6	79.5	N	29.47
SP00GP09	2/1/2024	10:02	0.01	0.0	8.7	10.0	81.3	N	29.47
SP00GP37	2/1/2024	10:13	0.06	0.0	8.3	4.0	87.7	N	29.47
SP00GP38	2/1/2024	10:21	-0.01	0.0	12.7	2.9	84.4	N	29.47
SP00GP11	2/1/2024	10:37	-0.03	0.0	1.1	20.0	78.9	Y	29.48
SP00GP13	2/1/2024	10:43	1.11	0.0	0.9	19.9	79.2	N	29.47
SP00GP03	2/1/2024	10:48	-0.01	0.0	1.7	17.3	81.0	N	29.47
SP00GP15	2/1/2024	11:10	2.04	0.0	1.2	19.3	79.5	N	29.49
SP00GP31	2/1/2024	11:17	0.07	0.0	1.7	16.3	82.0	N	29.48
SP00GP32	2/1/2024	11:38	-2.08	0.0	0.1	16.5	83.4	Y	29.48

Device ID GEM™5000; G5 V1\_15\_12; LSGAM:6\_0\_20160627; {5306575199}

# Water Level Measurement Field Report

DATE <u>2/5/2024</u>	JOB NO. 553-1550-067
PROJECT: South Park Landfill	CLIENT: Seattle Public Utilities
LOCATION: Seattle, WA	
WEATHER <u>cold, overcast</u>	TEMP <u>46's</u> ° at <u>7:30 AM</u> AM <u>46's</u> ° at <u>9:30 AM</u> PM
PRESENT AT SITE <u>C. Bourgeois &amp; R. Anderson</u>	

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	8:10	5.47		TOC	15.3	10-15	1.52
MW-14	7:35	2.23		TOC	21.8	11.5-21.5	0.8
* MW-29	7:56	5.69		TOC	30	20-30	-0.29
MW-18	8:19	13.73		TOC	40.4	30-40	1.25
MW-25	8:30	12.16		TOC	27	22-27	2.79
MW-32	9:29	9.12		TOC	24	19-24	-0.44
* MW-33	9:27	<del>10.23</del> 9.33	9.33	TOC	25	20-25	-0.47
MW-26	8:58	8.00		TOC	25	15-25	2.39
MW-27	9:03	6.67		TOC	20	10-20	2.04
MW-10	8:30	11.41		TOC	45	35-45	1.65
MW-24	8:56	7.21		TOC	45.3	35-45	1.56
MW-08	9:05	6.70		TOC	45.6	35.5 - 45.5	1.88
MW-30	8:40	8.48		TOC	13	8-13	-0.53
MW-31	8:45	9.33		TOC	23	18-23	-0.46

Comments: not a typo!!

\* MW-33 monument flooded. Allowed to equilibrate for 5 min.

TOC - top of PVC casing      SG - staff gauge

SIGNED: Ch...

\* MW-29 not flooded above TOC which is abnormal. Plug seemed sealed. MW-29 opened 5 minutes before reading. See back.

**GROUNDWATER SAMPLE COLLECTION FORM**

# South Park Landfill

Project No.: 553-1550-067

Date: 2/6/24

Well ID: MW-08

Sampling Organization: Parametrix

Samplers: C. Bourgeois & R. Anderson

Purge Data Screened Interval (ft bgs): 35.6-45.6

Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 6.81

Purge Water Disposal Method: O/W/S

Purge Device peristaltic

Pump Intake Depth: 40.0 ft

Begin Purge Time: 830

End Purge Time: 910

Time	Depth to Water (feet below MP)	PSP	Pump Setting	ml/min	litres Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
840	6.88		25	270	1.25	10.8	1.12	1591	6.97	-63.6	4.27	fairly clear
845	"		"	"	2.50	10.8	0.77	1364	6.95	-79.9	1.12	"
850	"		"	"	3.1	10.9	0.50	1565	6.94	-86.6	1.11	"
855	"		"	"	4.0	10.9	0.40	1564	6.93	-91.5	1.08	"
900	"		"	"	4.0	10.9	0.34	1559	6.92	-93.7	1.06	"
905	"		"	"	5.5	10.9	0.27	1551	6.92	-95.5	1.15	"
910	"		"	"								

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

**Sampling Data**

Sample ID: SPL-GW\_MW08-0224

Time Collected: 910

Weather: overcast, drizzle

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**

no maintenance required.  
faulty cap on one V.C bottle. has bubble



# South Park Landfill

Project No.: 553-1550-067

Date: 2/5/20

Well ID: MW-10

Sampling Organization: Parametrix

Samplers: C. Bourgeois & R. Anderson

Purge Data Screened Interval (ft bgs): 35.0-45.0

Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 11.41

Purge Water Disposal Method: O/WS

Purge Device: peristaltic

Pump Intake Depth: 40.0 ft

Begin Purge Time: 1210

End Purge Time: 1240

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
1215	11.42	2.2	250	"	13.3	0.38	1282	6.74	-65.0	1.03	Fairly clear
1220	"	"	"	"	13.4	0.34	1423	6.72	-102.6	3.03	"
1225	11.41	"	"	"	13.4	0.28	1450	6.76	-117.3	0.98	"
1230	"	"	"	"	13.5	0.24	1488	6.80	-125.9	4.03	"
1235	11.40	"	"	"	13.4	0.23	1494	6.81	-129.1	2.21	"
1240	"	"	"	"	13.4	0.22	1499	6.82	-131.4	3.65	"

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

**Sampling Data**

Sample ID: SPL-GW-MW10-0224

Time Collected: 1245

Weather: Drizzle; W/S F

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

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**

~~No additional information required~~

# South Park Landfill

Project No.: 553-1550-067 Date: 2/7/24 Well ID: MW-12

Sampling Organization: Parametrix Samplers: C. Bourgeois & R. Anderson

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

Initial Depth of Water (Ft below TOC): 5.41 Purge Water Disposal Method: O/WS

Purge Device dedicated bladder pump Pump Intake Depth: 12.5 ft

Begin Purge Time: 9:10 End Purge Time: 9:45

Time	Depth to Water (feet below MP)	PSI Pump Setting	ml/min Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
9:15	5.41	9	275	~1.0	10.3	2.53	350.1	6.73	39.1	7.18	clear
9:20	5.41	"	"	2.5	10.3	1.63	354.8	6.67	59.1	7.21	"
9:25	5.41	"	"	3.75	10.4	1.46	354.9	6.65	68.0	4.17	"
9:30	5.41	"	"	5.0	10.4	1.33	357.3	6.64	72.9	4.67	"
9:35	5.41	"	"	6.5	10.3	1.21	356.3	6.64	78.0	4.08	"
9:40	5.41	"	"	7.25	10.3	1.12	360.9	6.64	77.4	4.17	"
9:45	5.41	"	"	8.5	10.4	1.10	365.2	6.65	71.0	4.11	"
					10.4	1.09					

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

**Sampling Data**

Sample ID: SPL-GW\_MW12-0224 Time Collected: 9:55 Weather: overcast; mild 40's F

Sample Description (Color, Turbidity, Odor, Other): Sparsely turbidity in sample

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

Duplicate Sample Collected:  Yes  No If yes, ID: SPL-GW\_MW60-0224 to 1030

MS/MSD Collected:  Yes  No

**Additional Information/Comments**

Proper tubing at well head; current set up working fine

# South Park Landfill

Project No.: 553-1550-067

Date: 2/7/24

Well ID: MW-14

Sampling Organization: Parametrix

Samplers: C. Bourgeois & R. Anderson

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

Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 220

Purge Water Disposal Method: O/WS

Purge Device: dedicated bladder pump

Pump Intake Depth: 16.5 ft

Begin Purge Time: 1030

End Purge Time: 1140

Time	Depth to Water (feet below MP)	Pump Setting (psi)	Purge Rate (ml/min)	Cum. Vol. Purged (L)	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1035	2.32	12.5	300	1.75	13.5	1.72	614.2	7.34	-44.0	75.2	yellow, flakes
1040	"	"	250	2.20	13.7	0.67	527.2	7.13	-53.4	580	orange
1045	"	"	"	3.75	13.5	0.42	487.0	7.09	-40.4	199	yellow
1050	"	"	"	5.00	13.5	0.33	474.3	7.08	-35.8	164	"
1055	"	"	"	6.5	13.4	0.27	468.5	7.04	-34.1	68.7	"
1100	"	"	"	7.81	13.5	0.24	466.6	7.00	-24.2	24.8	"
1105	"	"	"	9.00	13.5	0.25	465.8	6.98	-24.4	21.1	"
1110	"	"	"	10.16	13.5	0.23	465.1	6.97	-35.0	21.2	"
1115	"	"	"	11.60	13.5	0.24	464.4	6.96	-35.7	11.9	Rel. clear
1120	"	"	"	13.00	13.5	0.23	464.5	6.96	-36.5	13.7	Rel. clear
1125	"	"	"	14.00	13.5	0.22	464.6	6.96	-37.2	11.8	"
1130	"	"	"	16.00	13.5	0.22	464.7	6.97	-37.8	7.28	"
1135	"	"	"	"	13.5	0.20	465.0	6.96	-38.4	7.26	"
1140	"	"	"	"	13.5	0.20	465.1	6.96	-38.7	6.69	"

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

**Sampling Data**

Sample ID: SPL-GW-MW14-0224

Time Collected: 1145

Weather: clear sky; low 50's F

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

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**

Bubbles coming up from below well head.  
Some tubing connected as MW-12/MW-18

# South Park Landfill

Project No.: 553-1550-067

Date: 2/7/24

Well ID: MW-18

Sampling Organization: Parametrix

Samplers: C. Bourgeois & R. Anderson

Purge Data Screened Interval (ft bgs): 30.0-40.0

Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 13.88

Purge Water Disposal Method: O/WS

Purge Device: dedicated bladder pump

Pump Intake Depth: 35.0 ft

Begin Purge Time: 800

End Purge Time: 840

Time	Depth to Water (feet below MP)	PSC Pump Setting	m/min Purge Rate	L Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
810	13.88	21	275	0.75	12.8	2.12	506.8	7.02	54.1	4.80	Rel. clear
815	"	"	"	3.50	13.2	0.70	570.7	6.97	-52.2	3.81	"
820	"	"	"	4.75	13.4	0.48	575.9	6.96	-63.7	7.12	"
825	13.89	"	"	6.50	13.3	0.32	581.3	6.96	-71.6	7.51	slightly yellow
830	"	"	"	7.90	13.3	0.29	585.4	6.96	-75.7	7.83	"
835	"	"	"	9.10	13.3	0.25	589.3	6.96	-79.0	7.21	"

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

**Sampling Data**

Sample ID: SPL-GW-MW18-0224

Time Collected: 840

Weather: Sunny, 50's F

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

slightly yellow w/ some 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**

No maintenance required, but proper tubing could help.

# South Park Landfill

Project No.: 553-1550-067

Date: 2/6/24

Well ID: MW-24

Sampling Organization: Parametrix

Samplers: C. Bourgeois & R. Anderson

Purge Data Screened Interval (ft bgs): 35.0-45.0

Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 7.30

Purge Water Disposal Method: O/WS

Purge Device: dedicated bladder pump

Pump Intake Depth: 40.0 ft

Begin Purge Time: 1150

End Purge Time: 1315

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
<del>1200</del>	<del>7.30</del>	<del>25</del>	<del>250</del>	<del>2.0</del>	<del>11.6</del>	<del>0.49</del>	<del>1046</del>	<del>6.76</del>	<del>-50.2</del>	<del>38.9</del>	<del>slightly yellow</del>
1205	7.32	"	"	3.0	11.7	0.29	1063	6.77	-70.3	14.2	"
1210	"	"	"	4.0	11.7	0.22	1066	6.77	-80.5	8.74	relatively clear
1215	"	"	"	5.1	11.7	0.20	1066	6.77	-84.9	44.7	slightly yellow
1220	"	"	"	6.1	11.8	0.19	1066	6.77	-87.1	65.0	" & Phos
1225	"	"	"	7.4	11.7	0.18	1065	6.77	-88.8	74.2	"
1230	"	"	"	8.1	11.8	0.16	1065	6.78	-90.0	76.0	"
1235	"	"	"	9.0	12.0	0.16	1065	6.77	-91.3	67.2	"
1240	"	"	"	10.0	12.2	0.13	1064	6.77	-92.2	61.2	"
1245	"	"	"	12.1	12.1	0.10	1067	6.77	-93.5	30.0	"
1250	"	"	"	12.75	11.0	0.17	1059	6.79	-92.2	30.1	"
1255	"	"	"	13.5	11.8	0.14	1066	6.78	-93.8	25.2	"
1300	"	"	"	14.25	11.7	0.13	1066	6.78	-93.8	19.5	"
1305	"	"	"	~15.25	11.8	0.16	1067	6.78	-94.5	13.1	"
1310	"	"	"	~16.25	11.8	0.13	1067	6.78	-95.0	9.38	"
1315	"	"	"	0.75	11.8	0.12	1063	6.77	-95.1	8.78	"
				1.75	11.9	0.12	1067	6.78	-95.6	9.01	"

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

Sampling Data

Sample ID: SPL-GW-MW24-0224

Time Collected: 1320

Weather: Breezy, 40's 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

needs new lock

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067

Date: 2/5/24

Well ID: MW-25

Sampling Organization: Parametrix

Samplers: C. Bourgeois & R. Anderson

Purge Data Screened Interval (ft bgs): 22.0-27.0 Well Casing/Diameter: PVC/2 in  
 Initial Depth of Water (Ft below TOC): 12.17 Purge Water Disposal Method: OWS  
 Purge Device dedicated bladder pump Pump Intake Depth: 24.5 ft  
 Begin Purge Time: 1330 End Purge Time: 1355

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
1335	12.16	18	2.00	"	13.4	3.54	1144	6.55	-73.9	3.65	small collection
1340	12.17	"	"	"	13.3	0.29	1173	6.55	-84.5	6.65	slightly yellow
1345	"	"	"	"	13.3	0.26	1193	6.55	-91.4	4.25	relatively clear
1350	"	"	"	"	13.4	0.20	1202	6.56	-95.6	4.18	"
1355	"	"	"	"	13.3	0.17	1213	6.56	-99.1	3.55	"

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

Sampling Data

Sample ID: SPL-GW-MW25-0224 Time Collected: 1400 Weather: Drizzly; 40°  
 Sample Description (Color, Turbidity, Odor, Other):  
 Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese  
 Duplicate Sample Collected:  Yes  No If yes, ID: SPL-GW\_MW61-0224 ~ 1500  
 MS/MSD Collected:  Yes  No

Additional Information/Comments



# South Park Landfill

Project No.: 553-1550-067

Date: 2/6/27

Well ID: MW-26

Sampling Organization: Parametrix

Samplers: C. Bourgeois & R. Anderson

Purge Data Screened Interval (ft bgs): 15.0-25.0

Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 8.07

Purge Water Disposal Method: O/WS

Purge Device: dedicated bladder pump

Pump Intake Depth: 20.0 ft

Begin Purge Time: 1358

End Purge Time: 1440

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
1400	8.02	18	250	5.5	12.0	2.37	313.1	6.44	-43.3	4.14	clear
1405	8.02	"	"	6.25	12.0	1.20	271.5	6.37	-20.3	34.2	* visible turb.
1410	"	"	"	7.6	12.0	0.64	253.6	6.32	-7.2	17.1	"
1415	"	"	"	8.8	12.1	0.49	247.7	6.31	-0.9	17.3	"
1420	"	"	"	11.0	12.0	0.39	242.3	6.30	3.3	6.71	"
1425	"	"	"	11.75	12.0	0.37	242.1	6.29	5.5	7.61	"
1430	"	"	"	12.5	12.1	0.33	241.1	6.29	6.9	4.61	"
1435	"	"	"	13.5	12.0	0.30	242.4	6.29	8.3	3.52	"
1440	"	"	"	15	12.1	0.26	243.5	6.29	9.5	3.62	"

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

Sampling Data

Sample ID: SPL-GW\_MW26-0224

Time Collected: 1445

Weather: cold, overcast

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

No maintenance necessary

**GROUNDWATER SAMPLE COLLECTION FORM**

# South Park Landfill

Project No.: 553-1550-067 Date: 2/6/24 Well ID: MW-27

Sampling Organization: Parametrix Samplers: C. Bourgeois & R. Anderson

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

Initial Depth of Water (Ft below TOC): 6.75 Purge Water Disposal Method: OWS

Purge Device dedicated bladder pump Pump Intake Depth: 15.0 ft

Begin Purge Time: 732 End Purge Time: 1115

Time	Depth to Water (feet below MP)	10 25 PS: Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
940	6.80	<del>225</del>	215	~10 L	10.3	3.03	342.3	6.83	29.4	719	opaque orange
945	6.82	"	"	10.75	10.4	2.00	323.4	6.68	45.1	756	less opaque
950	6.77	"	"	11.25	10.5	1.20	316.5	6.63	51.0	240	"
955	6.77	"	225	17.75	10.7	0.75	326.7	6.63	39.1	127	much less orange
1000	"	"	"	17.25	10.8	0.56	340.9	6.62	26.3	71.7	"
1005	"	"	"	17.25	10.9	0.42	358.9	6.67	15.2	39.2	"
1010	"	"	"	~15.25	11.0	0.32	384.0	6.67	2.8	29.7	"
1015	6.71	"	"	0.25	11.0	3.61	406.8	6.65	-8.1	27.2	"
1020	"	"	"	~1.0	11.0	3.42	408.4	6.64	-12.6	24.6	"
1025	"	"	"	3.25	11.1	3.10	420.1	6.65	-20.2	22.4	"
1030	"	"	"	4.0	11.1	3.00	425.9	6.64	-25.7	21.4	clear
1035	"	"	"	5.25	11.1	2.74	432.1	6.65	-30.2	20.5	"
1040	"	"	"	"	11.1	2.54	435.2	6.65	-34.7	18.0	"
1045	"	"	"	"	11.1	2.50	437.8	6.68	-38.0	17.4	"
1050	"	"	"	"	11.1	2.22	439.0	6.66	-40.8	18.1	"
1055	"	"	"	"	11.1	2.17	444.4	6.66	-43.8	14.7	"
1100	"	"	"	"	11.1	2.03	445.9	6.66	-46.0	14.8	"
1105	"	"	"	"	11.1	1.88	447.9	6.66	-47.8	14.6	"
1110	"	"	"	"	11.1	1.85	448.2	6.66	-49.0	13.0	"
1115	"	"	"	"	11.1	1.76	450.5	6.67	-50.4	13.5	"

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

**Sampling Data**

Sample ID: SPL-GW-MW27-0224 Time Collected: 1120 Weather: cold, overcast

Sample Description (Color, Turbidity, Odor, Other): \_\_\_\_\_

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**

*no account the monument lid needs repair, also ballards bent. Modern machine using cleaning equipment on them.*



# South Park Landfill

2/6/24

Project No.: 553-1550-067

Date:

Well ID: MW-29

Sampling Organization: Parametrix

Samplers: C. Bourgeois & R. Anderson

Purge Data Screened Interval (ft bgs): 20.0-30.0

Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 5.57

Purge Water Disposal Method: O/WS

Purge Device peristaltic pump 1532

Pump Intake Depth: 25.0 ft

Begin Purge Time: 1532

End Purge Time: 1600

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
1535	5.57	2.5	250	1.0	11.9	2.12	769	6.84	-49.6	3.02	Relatively clean
1540	"	"	"	1.75	12.0	0.83	775	6.87	-69.7	3.30	"
1545	6.91	"	"	3.25	12.1	0.88	778	6.87	-86.5	4.3	"
1550	6.96	"	"	4.50	12.1	0.90	774	6.89	-91.7	15.8	"
1555	6.98	"	"	6.0	12.1	0.23	765	6.91	-95.8	14.9	"

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

**Sampling Data**

Sample ID: SPL-GW\_MW29-0224

Time Collected: 1600

Weather: Sunny; low 50's F

Sample Description (Color, Turbidity, Odor, Other): Relatively turbid - flakes present

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**

No maintenance necessary

# South Park Landfill

Project No.: 553-1550-067 Date: 2/7/24 Well ID: MW-30

Sampling Organization: Parametrix Samplers: C. Bourgeois & R. Anderson

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

Initial Depth of Water (Ft below TOC): 8.67 Purge Water Disposal Method: O/WS

Purge Device peristaltic pump Pump Intake Depth: 10.5 ft

Begin Purge Time: 1220 End Purge Time: 1310

Time	Depth to Water (feet below MP)	Pump Setting	Purge Rate <sup>ml/min</sup>	Cum. Vol. Purged <sup>L</sup>	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1225	8.67	2.5	2.75	1.75	11.7	1.76	400.7	6.87	3.3	79.8	Lowish
1230	"	"	"	2.90	11.7	0.47	416.3	6.81	20.1	12.6	Rel. clear
1235	"	"	"	4.00	11.7	0.34	425.7	6.82	23.9	9.45	"
1240	"	"	"	5.50	11.8	0.30	426.4	6.77	26.6	8.75	"
1245	8.70	"	"	7.00	11.7	0.39	420.2	6.80	28.2	5.21	"
1250	"	"	"	8.75	11.7	0.53	410.2	6.74	32.0	7.35	Flakes
1255	8.71	"	"	10.50	11.8	0.65	399.5	6.76	34.2	4.11	Rel. clear
1300	8.73	"	"	12.00	11.7	0.76	344.7	6.72	38.2	3.45	Rel. clear
1305	"	"	"	13.50	11.7	0.75	396.3	6.73	38.6	4.81	"
1310	"	"	"	15.00	11.6	0.79	395.4	6.73	41.5	2.86	"
Stabilization Criteria					3%	10%, or 3<0.5	3%	± 0.1	± 10 mv	10% or 3 < 5 NTU	

**Sampling Data**

Sample ID: SPL-GW\_MW30-0224 Time Collected: 1315 Weather: clear, mild 40'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**

No maintenance necessary

# South Park Landfill

Project No.: 553-1550-067

Date: 2/7/24

Well ID: MW-31

Sampling Organization: Parametrix

Samplers: C. Bourgeois & R. Anderson

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

Initial Depth of Water (Ft below TOC): 9.45      Purge Water Disposal Method: O/W

Purge Device: peristaltic pump      Pump Intake Depth: 20.5ft

Begin Purge Time: 1315      End Purge Time: 1415

Time	Depth to Water (feet below MP)	psi	gal/min	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1320	9.45	15	260	"	13.2	1.08	468.1	6.66	24.1	48.0	slightly yellow
1325	"	"	"	2.0	13.6	0.45	568.7	6.75	-23.7	37.5	"
1330	"	"	"	2.95	13.7	0.32	592.6	6.77	-38.8	27.5	"
1335	"	"	"	3.90	13.7	0.26	597.5	6.80	-45.8	18.7	"
1340	"	"	"	4.50	13.7	0.23	599.7	6.79	-48.7	12.8	"
1345	"	"	"	6.00	13.7	0.22	599.7	6.78	-52.7	15.8	"
1350	"	"	"	6.50	13.7	0.23	599.0	6.78	-54.2	10.2	"
1355	"	"	"	8.00	13.7	0.19	598.9	6.77	-55.7	9.80	"
1400	"	"	"	8.90	13.7	0.20	598.1	6.76	-56.8	11.2	"
1405	"	"	"	9.20	13.7	0.19	597.8	6.76	-57.9	11.0	"
1410	"	"	"	10.50	13.8	0.23	594.6	6.76	-58.4	10.9	"

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

**Sampling Data**

Sample ID: SPL-GW\_MW31-0224      Time Collected: 1415      Weather: Sunny; low 50's F

Sample Description (Color, Turbidity, Odor, Other): slightly yellow

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**

no maintenance

# South Park Landfill

Project No.: 553-1550-067

Date: 2/5/24

Well ID: MW-32

Sampling Organization: Parametrix

Samplers: C. Bourgeois & R. Anderson

Purge Data Screened Interval (ft bgs): 19.0-24.0

Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 9.12

Purge Water Disposal Method: OWS

Purge Device: peristaltic pump

Pump Intake Depth: 21.5 ft

Begin Purge Time: 10:47

End Purge Time: 11:15

Time	Depth to Water (feet below 9.25 MP)	Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1050	9.25	2.5	260	0.25	13.4	0.68	886	6.85	-106.7	2.81	large flecks
1055	9.25	"	"	2.0	13.4	0.43	877	6.85	-112.1	2.46	
1100	"	"	"	3.25	13.5	0.35	867	6.83	-114.2	6.80	Jet black flecks
1105	"	"	"	4.5	13.5	0.33	866	6.83	-114.5	2.72	"
1110	"	"	"	"	13.5	0.30	864	6.82	-114.1	0.62	"
1115	"	"	"	"	13.5	0.28	868	6.82	-114.2	1.18	"

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

**Sampling Data**

Sample ID: SPL-GW\_MW32-0224

Time Collected: 1120

Weather: Overcast - 40's F

Sample Description (Color, Turbidity, Odor, Other): Slightly yellow

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**

No maintenance required on well

# South Park Landfill

Project No.: 553-1550-067 Date: 2/5/21 Well ID: MW-33

Sampling Organization: Parametrix Samplers: C. Bourgeois & R. Anderson

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

Initial Depth of Water (Ft below TOC): 10.33 Purge Water Disposal Method: OWS

Purge Device peristaltic pump Pump Intake Depth: 22.5ft

Begin Purge Time: 948 End Purge Time: 1010

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
950	9.31	2.5	215	0	14.3	0.61	1328	6.83	-117.6	1.31	clear, odorless
955	9.31	2.6	260	2.25	14.8	0.61	1355	6.80	-122.2	0.59	"
1000	9.31	"	"	3.25	14.8	0.47	1357	6.79	-124.9	1.35	"
1005	9.31	"	"	"	14.8	0.39	1354	6.79	-126.5	0.59	"
1010	9.31	"	"	"	14.9	0.39	1354	6.79	-127.9	0.66	"

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

**Sampling Data**

Sample ID: SPL-GW-MW33-0224 Time Collected: 10:15 Weather: drizzle, cold

Sample Description (Color, Turbidity, Odor, Other): clear bit with pale yellow/gold coloring

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**

monument act needs new gasket.

# Attachment 2

Draft Groundwater Quality Data Summary  
First Quarter 2024



**Groundwater Quality Data Summary, First Quarter 2024, South Park Landfill**

Parameter	Units	Cleanup Level	Upgradient Wells				Downgradient Wells											Trip Blanks		
			A-Zone				Perched Zone	A-Zone						B-Zone					MW-80	MW-81
			MW-12	MW-60 (MW-12 Dup)	MW-14	MW-29	MW-30 <sup>1</sup>	MW-25	MW-61 (MW-25 Dup)	MW-26	MW-27	MW-31 <sup>1</sup>	MW-32 <sup>2</sup>	MW-33 <sup>2</sup>	MW-08	MW-10	MW-18 <sup>2</sup>	MW-24	MW-80	MW-81
2/7/24	2/7/24	2/7/24	2/6/24	2/7/24	2/5/24	2/5/24	2/6/24	2/6/24	2/7/24	2/5/24	2/5/24	2/6/24	2/5/24	2/7/24	2/6/24	2/6/24	2/7/24			
<b>Field Parameters</b>																				
Temperature	C		10.4	--	13.5	12.1	11.6	13.3	--	12.1	11.1	13.8	13.5	14.9	10.9	13.4	13.3	11.9	--	--
Dissolved Oxygen	mg/L		1.10	--	0.20	0.23	0.79	0.17	--	0.26	1.76	0.23	0.28	0.39	0.27	0.22	0.25	0.12	--	--
Specific Conductivity	µS/cm		365.2	--	465.1	765	395.4	1213	--	243.5	450.5	594.6	868	1354	1551	1499	589.3	1067	--	--
pH	units		6.65	--	6.96	6.91	6.73	6.56	--	6.29	6.67	6.76	6.82	6.79	6.92	6.82	6.96	6.78	--	--
Redox	mv		71.0	--	-38.7	-95.8	41.5	-99.1	--	9.5	-50.4	-58.4	-114.2	-127.9	-95.5	-131.4	-79.0	-95.6	--	--
Turbidity	NTU		4.11	--	6.69	14.9	2.86	3.55	--	3.62	13.5	10.9	1.18	0.66	1.15	3.65	7.21	9.01	--	--
<b>Metals</b>																				
Iron, Total	mg/L	27 A-Zone 31 B-Zone	1.14	1.28	3.26	21.7	2.47	35.6	33.6	5.42	12.7	20.7	15.5	16.3	--	--	--	--	--	--
Manganese, Total	mg/L	2.2	0.130	0.150	0.778	0.587	0.0490	2.73	2.69	0.0688	0.385	0.858	1.40	1.62	1.09	2.05	0.866	1.73	--	--
<b>Volatile Organic Compounds</b>																				
Vinyl Chloride	µg/L	0.29	0.0200 U	0.0200 U	0.0200 U	0.0496	0.0422	0.417	0.411	0.0420	0.0569	0.402 <sup>1</sup>	0.195	0.125	0.0660	0.109	0.0200 U	0.0325	0.0200 U	0.0200 U
Cis-1,2-Dichloroethene	µg/L	16	0.20 UJ	0.20 U	0.20 U	0.20 U	0.26	0.20 UJ	0.20 U	0.42	0.20 U	0.20 U	0.44	0.20 U	0.20 U	0.74	0.20 U	0.20 U	0.20 U	0.20 U

**Notes:**

- <sup>1</sup> MW-30 and MW-31 monitor the former Glitsa property and are not CPOC wells.
- <sup>2</sup> 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.
- UJ = The analyte was not detected above a detection limit that may be inaccurate or imprecise.

**Abbreviations:**

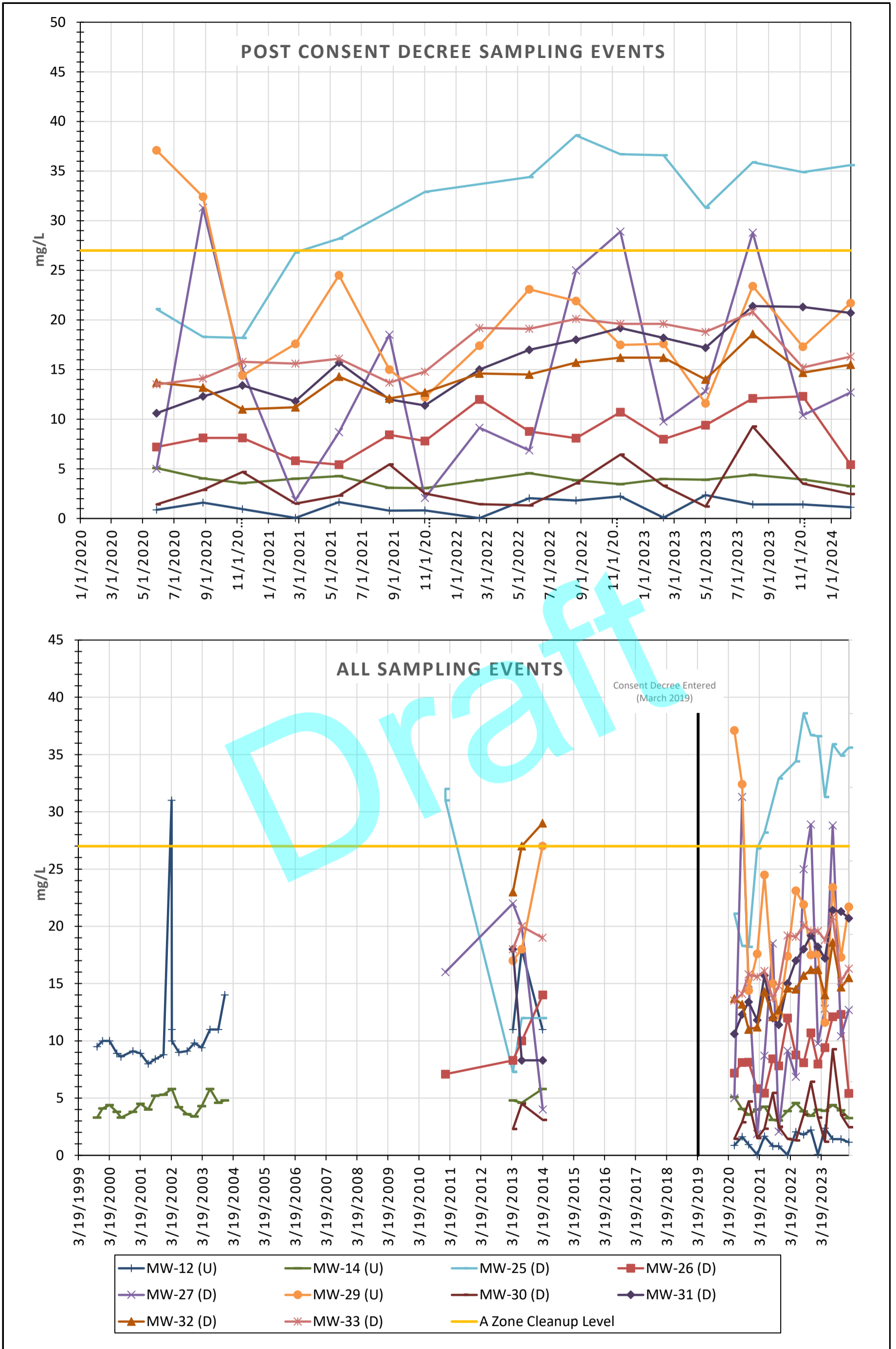
- µg/L Micrograms per liter
- mg/L Milligrams per liter
- µS/cm Microsiemens per centimeter
- NTU Nephelometric Turbidity unit
- CPOC Conditional point of compliance

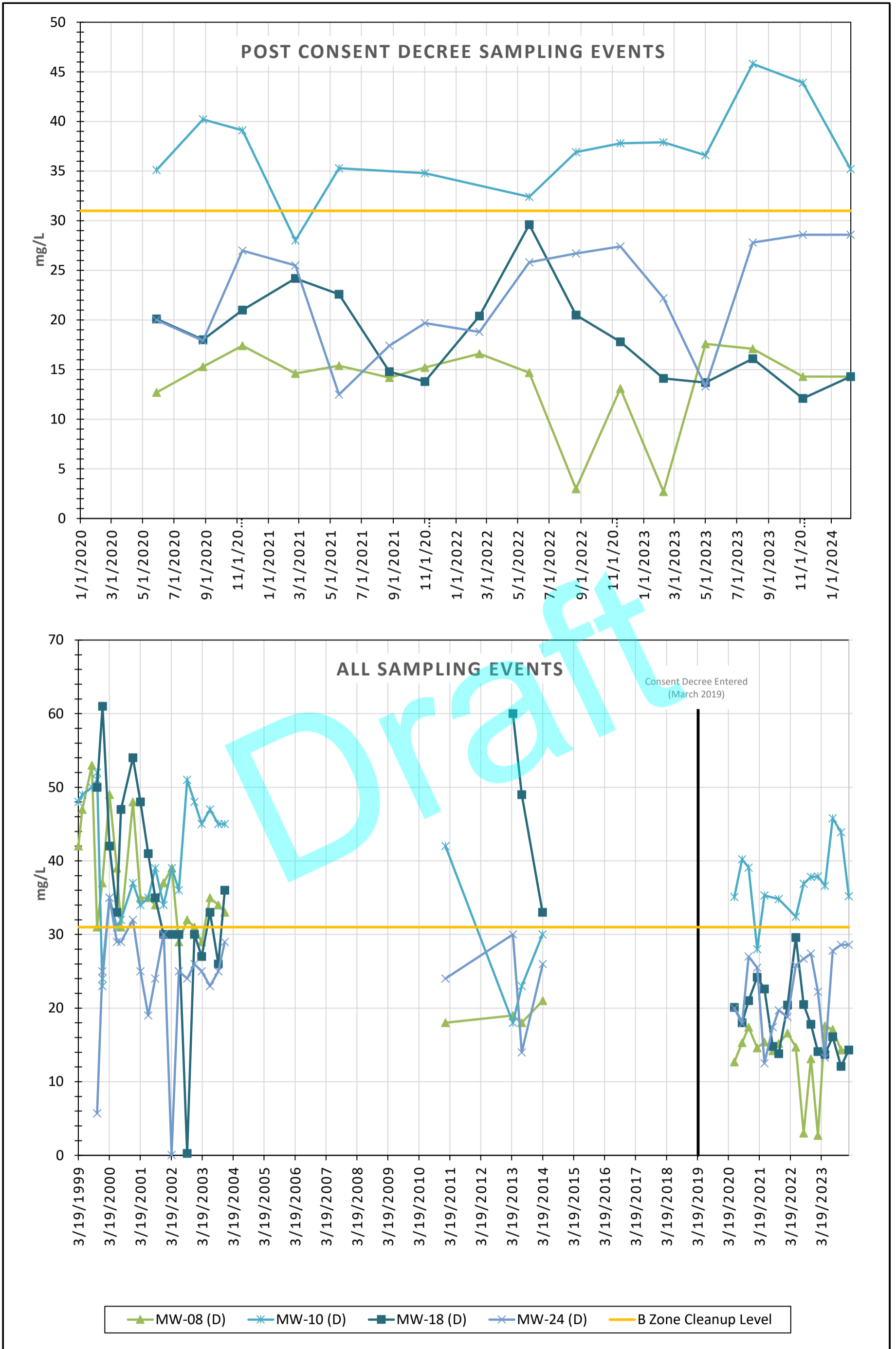
# Attachment 3

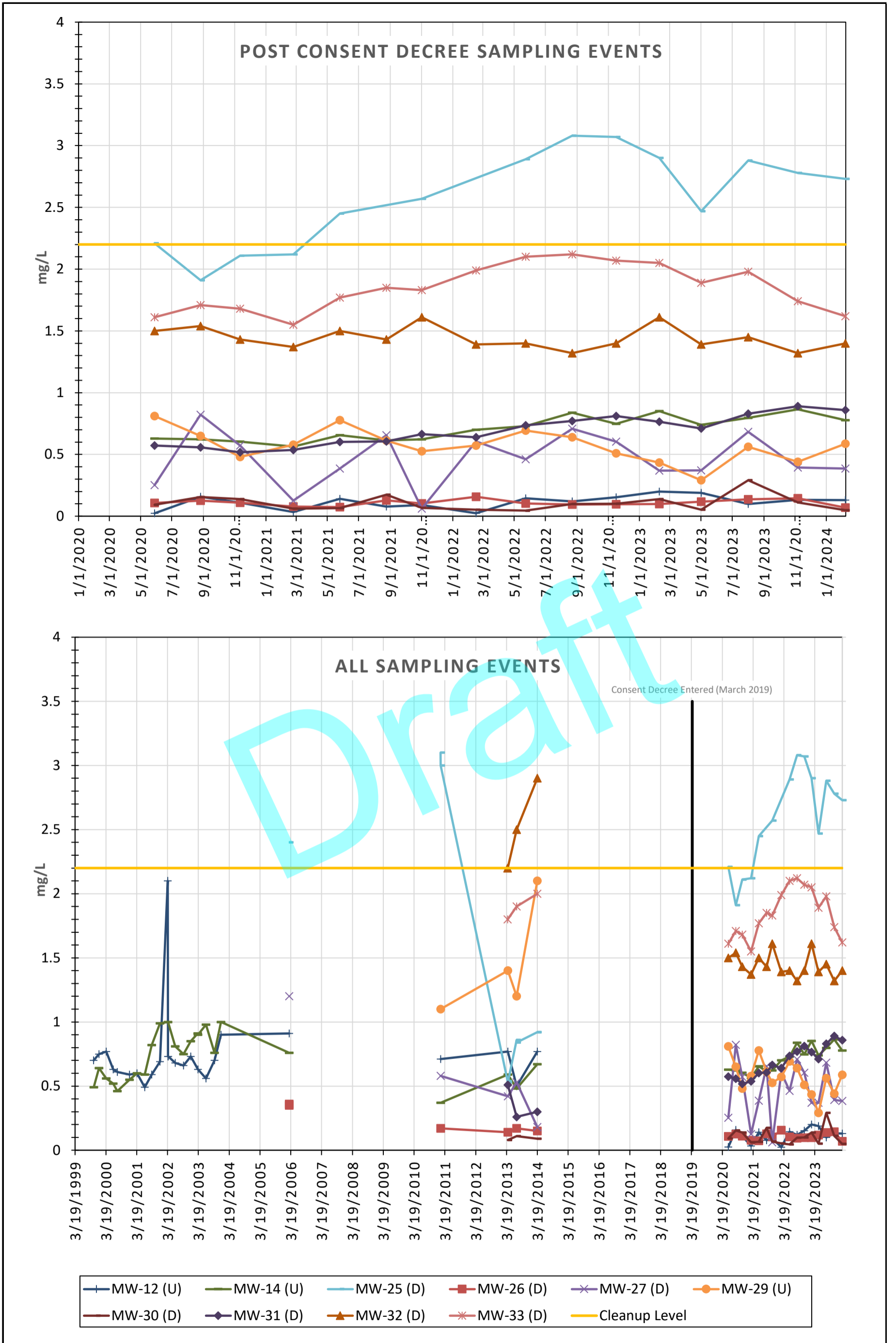
Draft Groundwater Quality Time Series  
Plots through First Quarter 2024

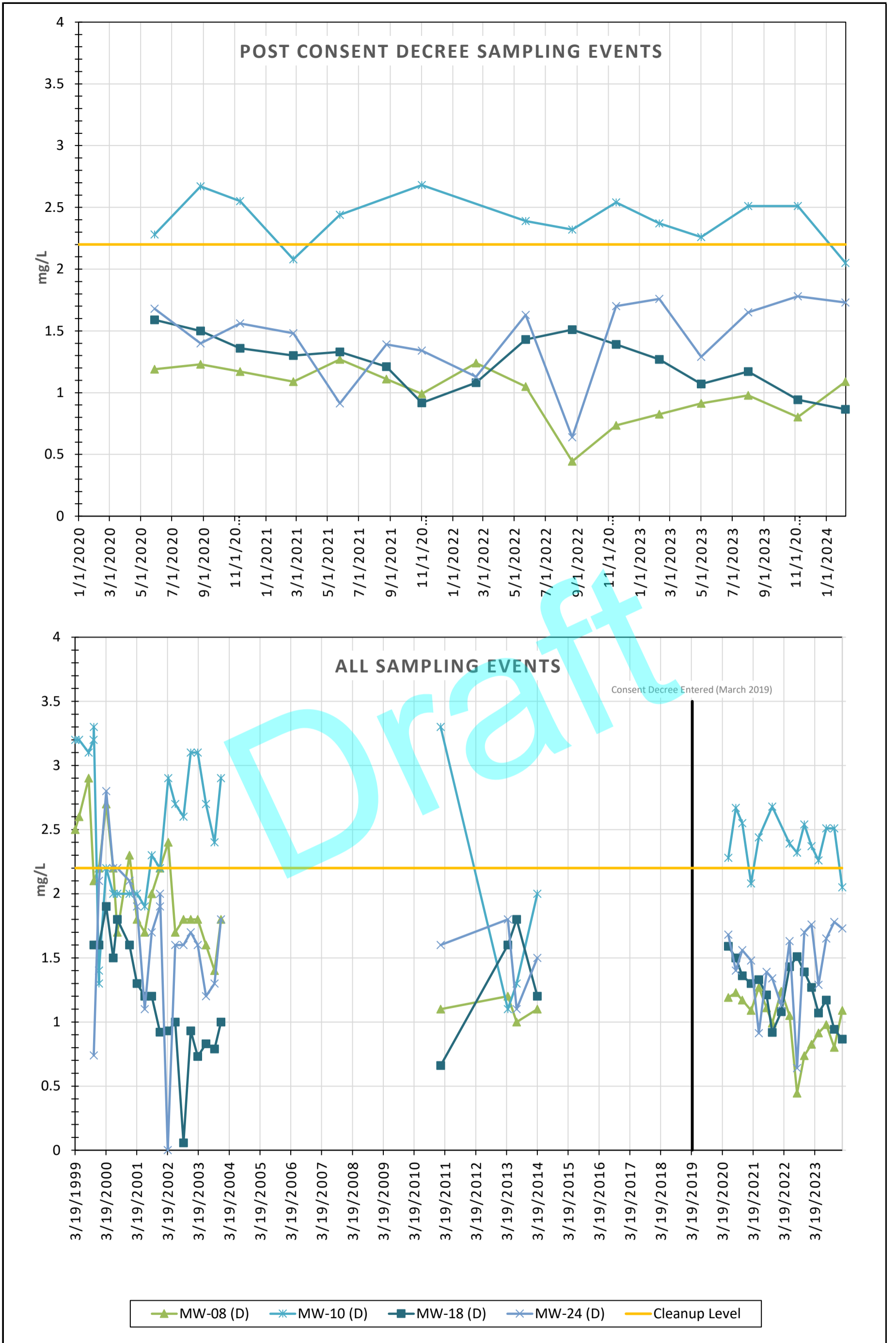


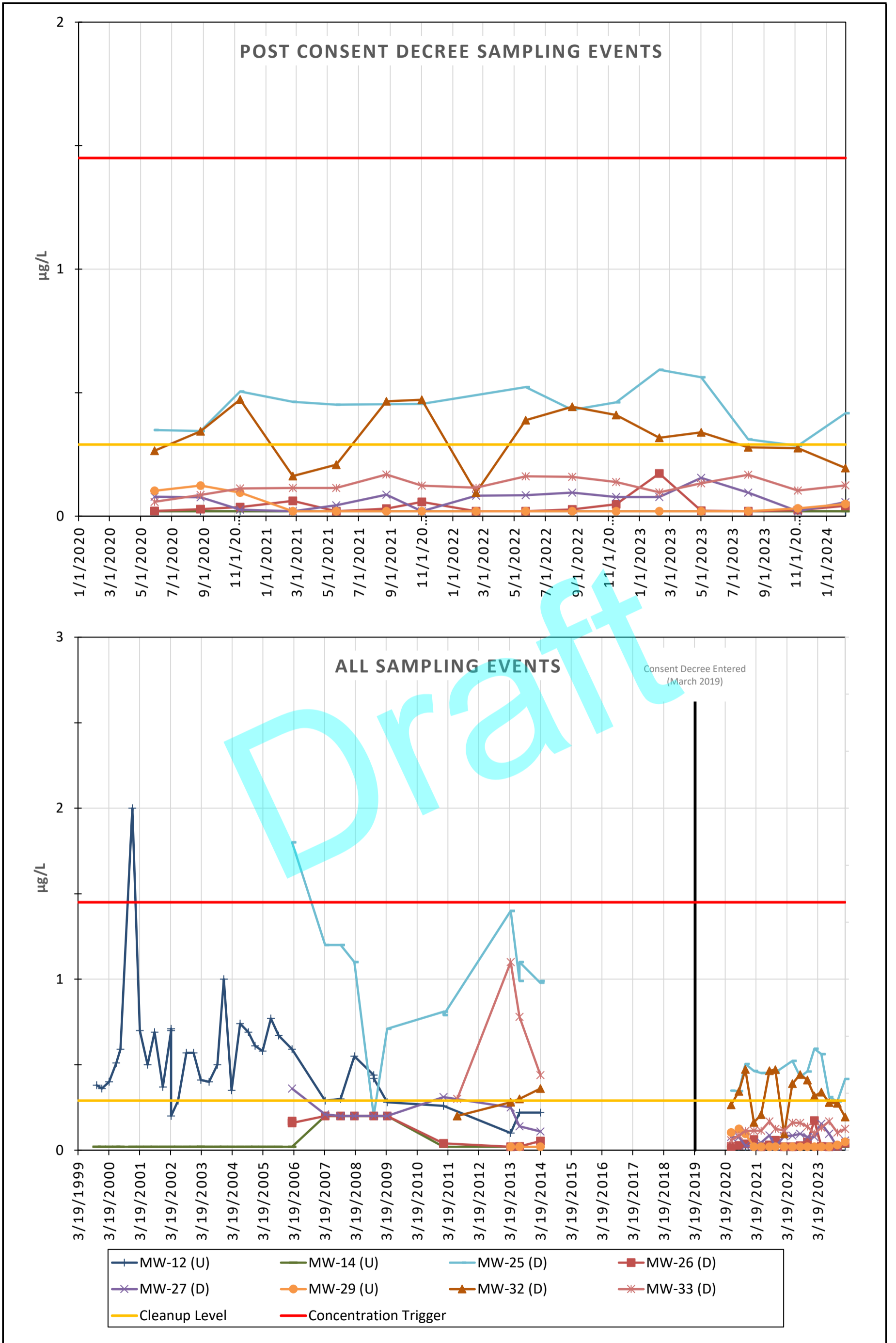


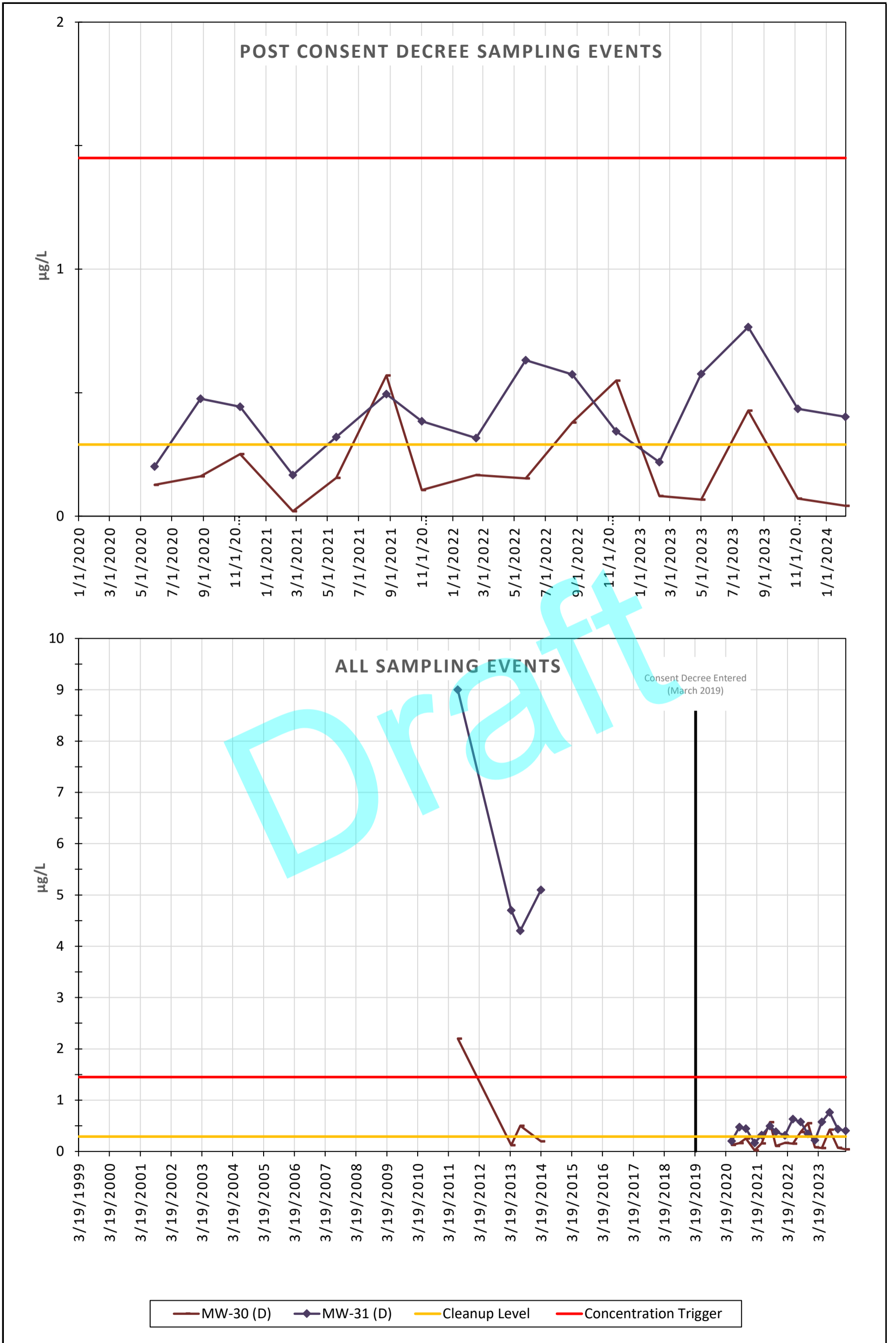


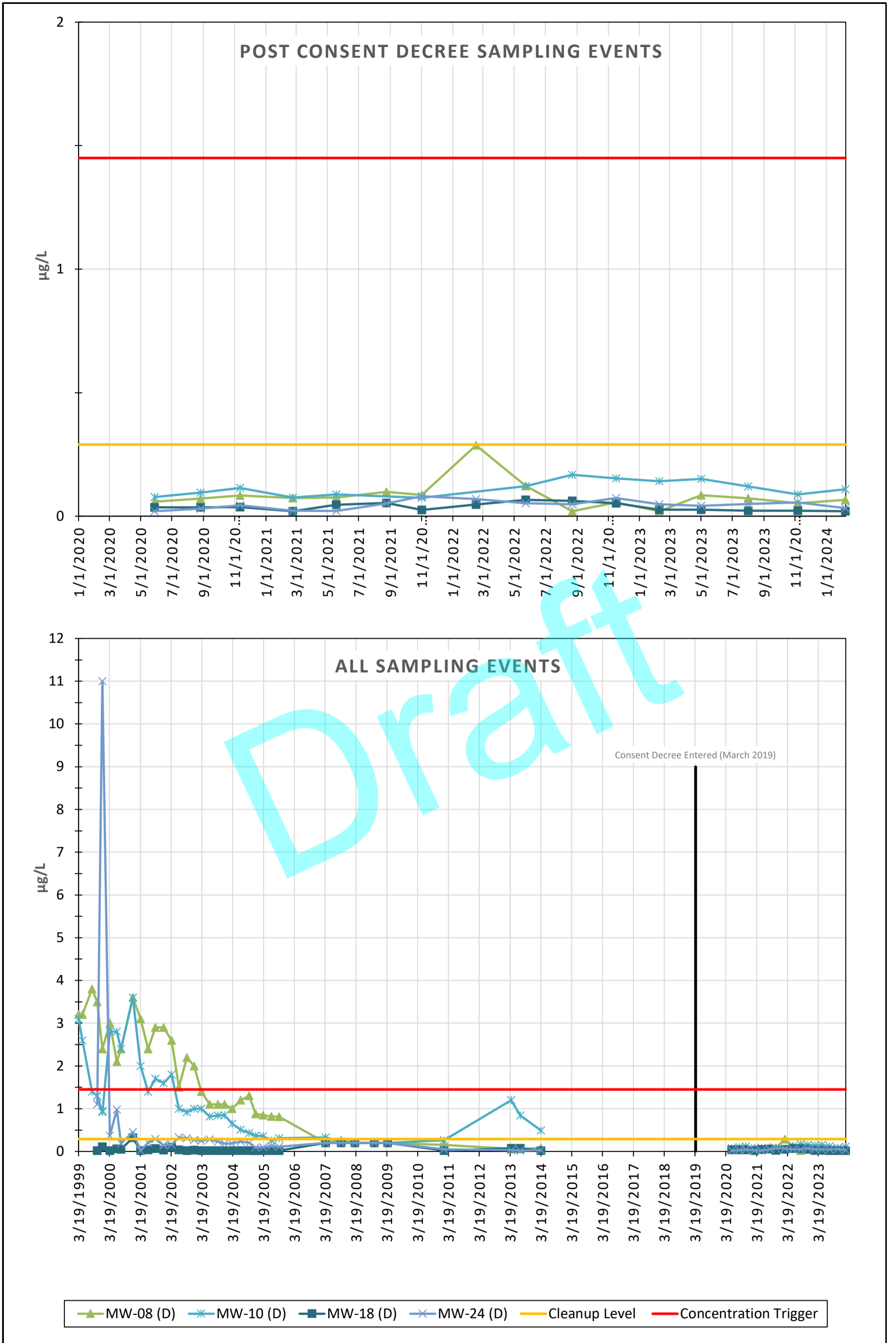




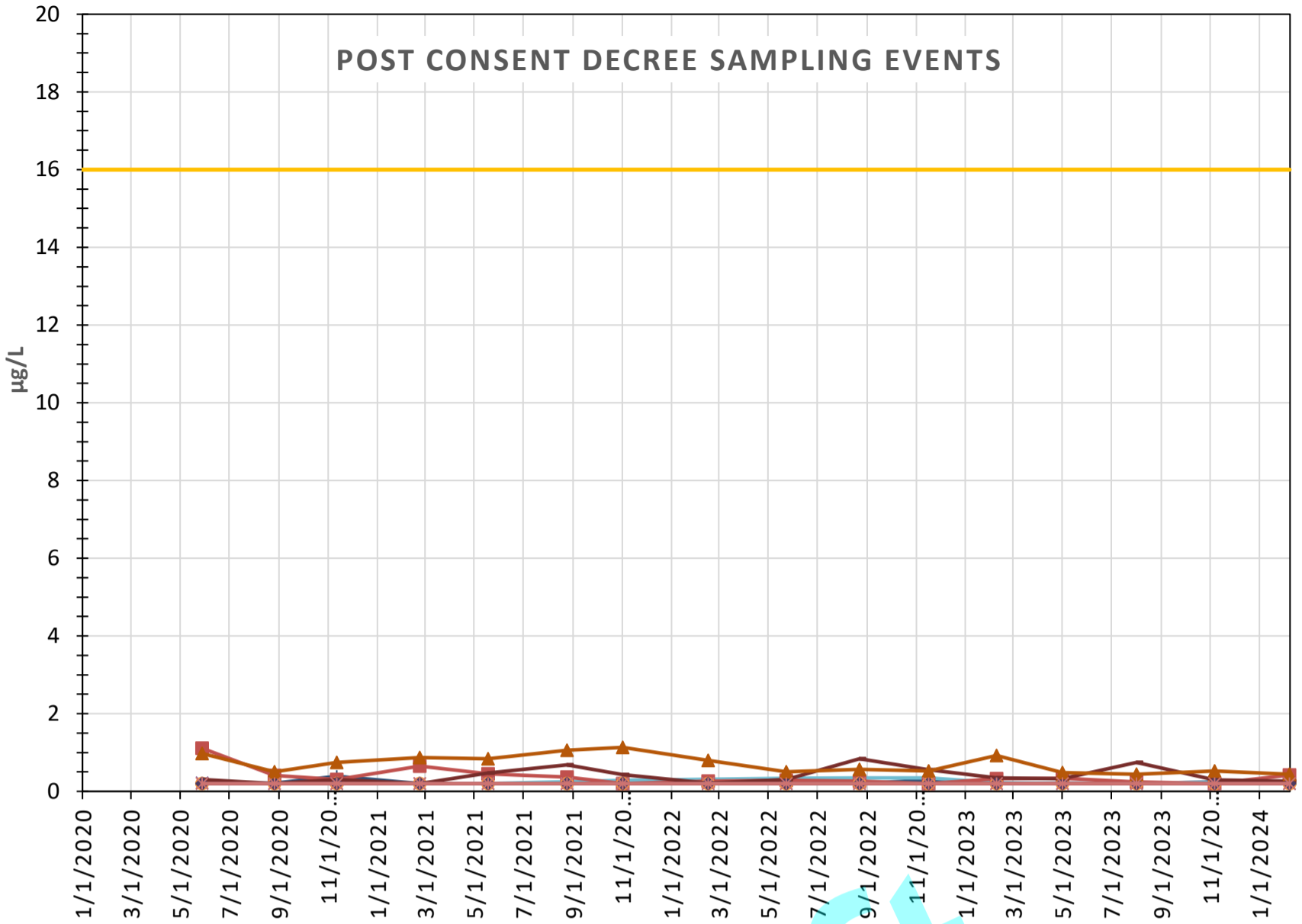




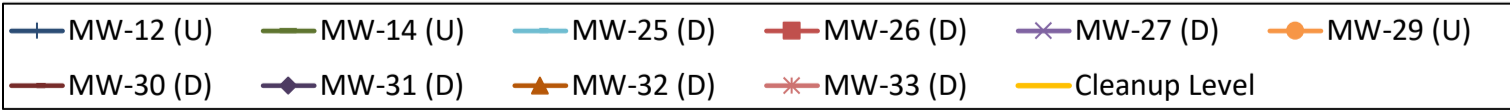
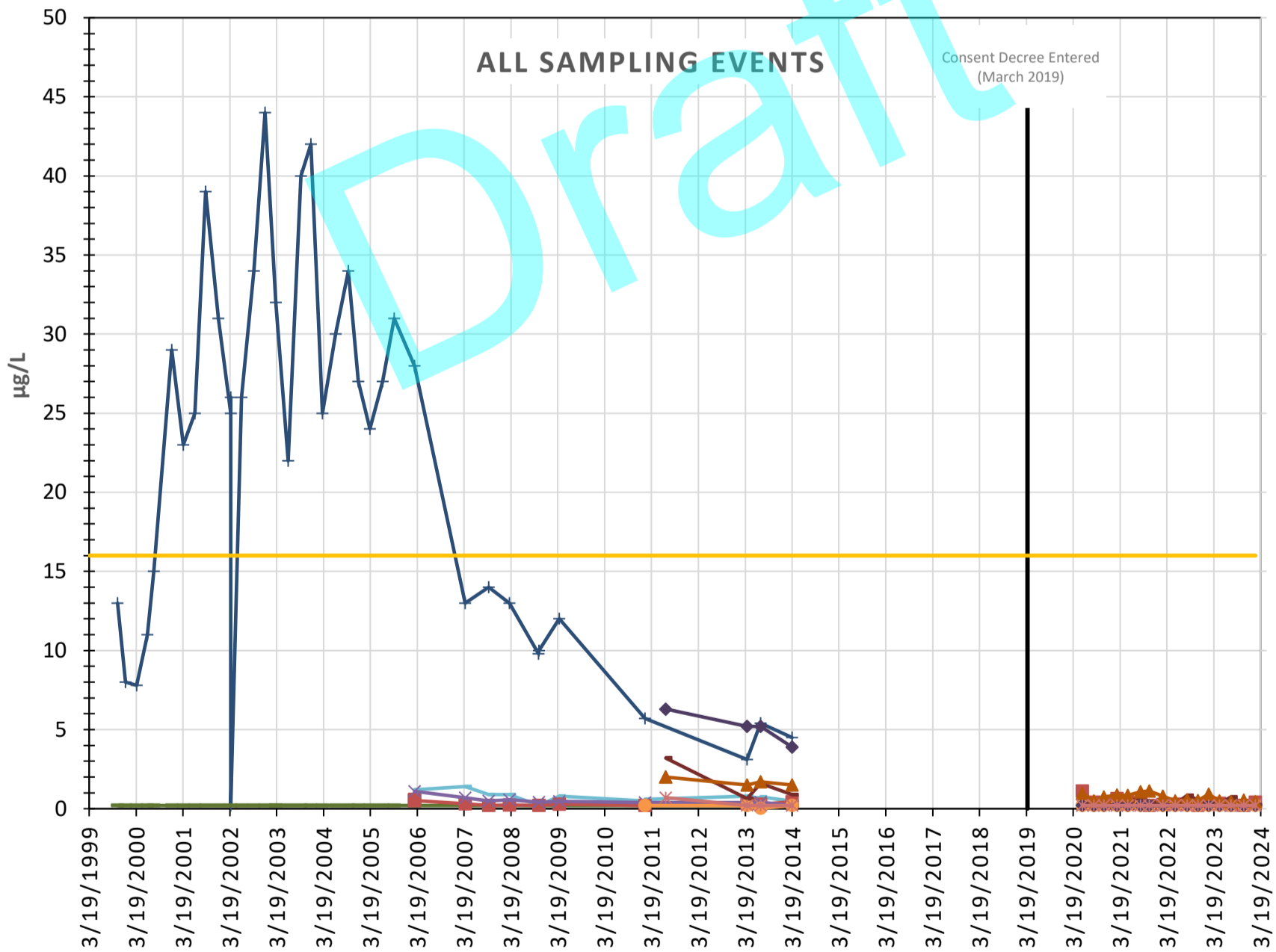




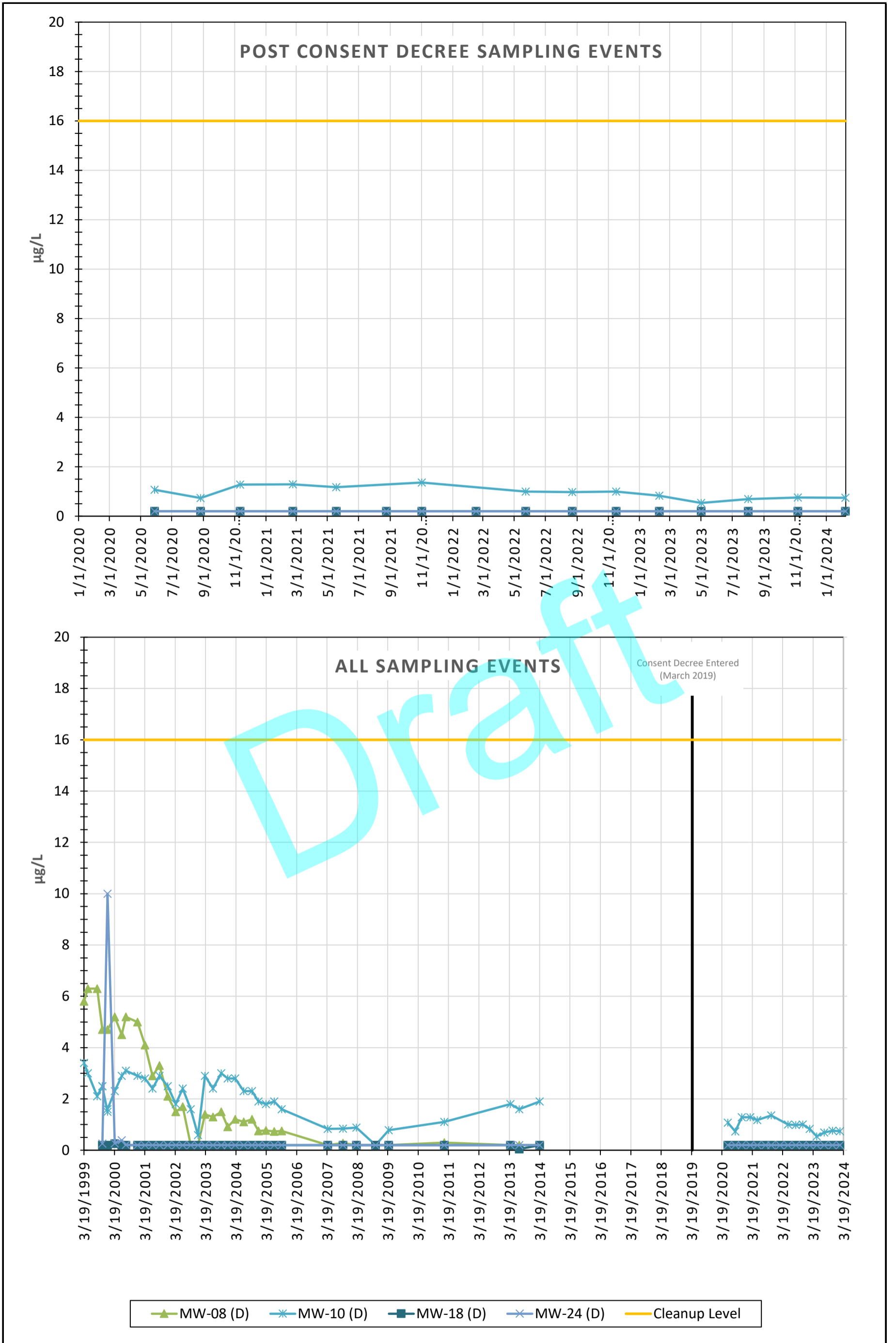
### POST CONSENT DECREE SAMPLING EVENTS



### ALL SAMPLING EVENTS







# Attachment 4

First Quarter 2024 Groundwater  
Laboratory Data





**Analytical Resources, LLC**  
Analytical Chemists and Consultants  
Tukwila, WA

26 February 2024

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)  
24B0127

Associated SDG ID(s)  
N/A

-----

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed 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.*


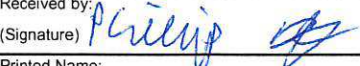


# Chain of Custody Record & Laboratory Analysis Request

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

ARI Assigned Number: <b>24B0127</b>	Turn-around Requested: 2 weeks	Date: <b>2/6/2024</b>
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: Coolers: _____ Temps: _____

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments			
Samplers: Chris Bourgeois HWA					cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn											
Sample ID	Date	Time	Matrix	Number of Containers														
<del>SPL-GW-MW12-0224</del>			water	13	X	X	X											MS/MSD
<del>SPL-GW-MW14-0224</del>			water	7	X	X	X											
SPL-GW-MW29-0224	2/6/24	1600	water	7	X	X	X											
<del>SPL-GW-MW18-0224</del>			water	7	X	X	X											
SPL-GW-MW32-0224	2/5/24	1120	water	7	X	X	X											
SPL-GW-MW33-0224	2/5/24	1015	water	7	X	X	X											
SPL-GW-MW10-0224	2/5/24	1245	water	7	X	X	X											
<del>SPL-GW-MW60-0224</del>			water	7	X	X	X											
SPL-GW-MW80-0224	2/6/24		water	2	X	X												

Comments/Special Instructions	Relinquished by: (Signature) 	Received by: (Signature) 	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: <b>Richard Anderson</b>	Printed Name: <b>Phillip Bates</b>	Printed Name:	Printed Name:
	Company: <b>Turner Geosciences</b>	Company: <b>AR</b>	Company:	Company:
	Date & Time: <b>2/6/24 4:45 pm</b>	Date & Time: <b>2/10/24 16:45</b>	Date & Time:	Date & Time:

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

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



# Chain of Custody Record & Laboratory Analysis Request

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

ARI Assigned Number: <b>24B0127</b>	Turn-around Requested: 2 weeks	Date: <b>2/6/24</b>
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: <b>2</b> of <b>2</b>
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: <b>1</b> Cooler Temps: <b>5.4</b>

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments			
Client Project #: 553-1550-067		Samplers: Chris Bourgeois HWA			cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn											
Sample ID	Date	Time	Matrix	Number of Containers														
SPL-GW-MW25-0224	2/5/24	1400	water	13	X	X	X											MS/MSD
<del>SPL-GW-MW30-0224</del>			<del>water</del>	<del>7</del>	<del>X</del>	<del>X</del>	<del>X</del>											
<del>SPL-GW-MW31-0224</del>			<del>water</del>	<del>7</del>	<del>X</del>	<del>X</del>	<del>X</del>											
SPL-GW-MW24-0224	2/6/24	1320	water	7	X	X	X											
SPL-GW-MW26-0224	2/6/24	1445	water	7	X	X	X											
SPL-GW-MW08-0224	2/6/24	0910	water	7	X	X	X											
SPL-GW-MW27-0224	2/6/24	1120	water	7	X	X	X											
SPL-GW-MW61-0224	2/5/24	1500	water	7	X	X	X											
<del>SPL-GW-MW81-0224</del>			<del>water</del>	<del>2</del>	<del>X</del>	<del>X</del>												
Comments/Special Instructions	Relinquished by: (Signature) <i>[Signature]</i>				Received by: (Signature) <i>[Signature]</i>				Relinquished by: (Signature)				Received by: (Signature)					
	Printed Name: <b>Richard Anderson</b>				Printed Name: <b>Phillip Bowers</b>				Printed Name:				Printed Name:					
	Company: <b>Hurst Geosciences</b>				Company: <b>AR</b>				Company:				Company:					
	Date & Time: <b>2/6/24 4:45pm</b>				Date & Time: <b>2/6/24 16:45</b>				Date & Time:				Date & Time:					

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

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



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

Project: South Park Landfill -Parametrix Water  
Project Number: 553-155-067  
Project Manager: Min-Soon Yim

**Reported:**  
26-Feb-2024 10:57

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW29-0224	24B0127-01	Water	06-Feb-2024 16:00	06-Feb-2024 16:45
SPL-GW-MW32-0224	24B0127-02	Water	05-Feb-2024 11:20	06-Feb-2024 16:45
SPL-GW-MW33-0224	24B0127-03	Water	05-Feb-2024 10:15	06-Feb-2024 16:45
SPL-GW-MW10-0224	24B0127-04	Water	05-Feb-2024 12:45	06-Feb-2024 16:45
SPL-GW-MW80-0224	24B0127-05	Water	05-Feb-2024 00:00	06-Feb-2024 16:45
SPL-GW-MW25-0224	24B0127-06	Water	05-Feb-2024 14:00	06-Feb-2024 16:45
SPL-GW-MW24-0224	24B0127-07	Water	06-Feb-2024 13:20	06-Feb-2024 16:45
SPL-GW-MW26-0224	24B0127-08	Water	06-Feb-2024 14:45	06-Feb-2024 16:45
SPL-GW-MW08-0224	24B0127-09	Water	06-Feb-2024 09:10	06-Feb-2024 16:45
SPL-GW-MW27-0224	24B0127-10	Water	06-Feb-2024 11:20	06-Feb-2024 16:45
SPL-GW-MW61-0224	24B0127-11	Water	05-Feb-2024 15:00	06-Feb-2024 16:45



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

Project: South Park Landfill -Parametrix Water  
Project Number: 553-155-067  
Project Manager: Min-Soon Yim

Reported:  
26-Feb-2024 10:57

## Work Order Case Narrative

**Client:** Seattle Public Utilities  
**Project:** South Park Landfill  
**Work Order:** 24B0127

### Sample receipt

Samples as listed on the preceding page were received February 6, 2024 under ARI work order 24B0127}. 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 with the exception of analytes flagged on the associated forms.

### 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

700-5th Ave, Ste 4900, Box 34018

Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Project Manager: Min-Soon Yim

**Reported:**

26-Feb-2024 10:57

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

24B0127

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
24B0127-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24B0127-01 B	VOA Vial, Clear, 40 mL, HCL	
24B0127-01 C	VOA Vial, Clear, 40 mL, HCL	
24B0127-01 D	VOA Vial, Clear, 40 mL, HCL	
24B0127-01 E	VOA Vial, Clear, 40 mL	
24B0127-01 F	VOA Vial, Clear, 40 mL	
24B0127-01 G	VOA Vial, Clear, 40 mL	
24B0127-02 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24B0127-02 B	VOA Vial, Clear, 40 mL, HCL	
24B0127-02 C	VOA Vial, Clear, 40 mL, HCL	
24B0127-02 D	VOA Vial, Clear, 40 mL, HCL	
24B0127-02 E	VOA Vial, Clear, 40 mL	
24B0127-02 F	VOA Vial, Clear, 40 mL	
24B0127-02 G	VOA Vial, Clear, 40 mL	
24B0127-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24B0127-03 B	VOA Vial, Clear, 40 mL, HCL	
24B0127-03 C	VOA Vial, Clear, 40 mL, HCL	
24B0127-03 D	VOA Vial, Clear, 40 mL, HCL	
24B0127-03 E	VOA Vial, Clear, 40 mL	
24B0127-03 F	VOA Vial, Clear, 40 mL	
24B0127-03 G	VOA Vial, Clear, 40 mL	
24B0127-04 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24B0127-04 B	VOA Vial, Clear, 40 mL, HCL	
24B0127-04 C	VOA Vial, Clear, 40 mL, HCL	
24B0127-04 D	VOA Vial, Clear, 40 mL, HCL	
24B0127-04 E	VOA Vial, Clear, 40 mL	
24B0127-04 F	VOA Vial, Clear, 40 mL	
24B0127-04 G	VOA Vial, Clear, 40 mL	
24B0127-05 A	VOA Vial, Clear, 40 mL, HCL	
24B0127-05 B	VOA Vial, Clear, 40 mL	
24B0127-06 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24B0127-06 B	VOA Vial, Clear, 40 mL, HCL	
24B0127-06 C	VOA Vial, Clear, 40 mL, HCL	
24B0127-06 D	VOA Vial, Clear, 40 mL, HCL	



WORK ORDER

24B0127

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

24B0127-06 E	VOA Vial, Clear, 40 mL, HCL	
24B0127-06 F	VOA Vial, Clear, 40 mL, HCL	
24B0127-06 G	VOA Vial, Clear, 40 mL, HCL	
24B0127-06 H	VOA Vial, Clear, 40 mL	
24B0127-06 I	VOA Vial, Clear, 40 mL	
24B0127-06 J	VOA Vial, Clear, 40 mL	
24B0127-06 K	VOA Vial, Clear, 40 mL	
24B0127-06 L	VOA Vial, Clear, 40 mL	
24B0127-06 M	VOA Vial, Clear, 40 mL	
24B0127-07 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24B0127-07 B	VOA Vial, Clear, 40 mL, HCL	
24B0127-07 C	VOA Vial, Clear, 40 mL, HCL	
24B0127-07 D	VOA Vial, Clear, 40 mL, HCL	
24B0127-07 E	VOA Vial, Clear, 40 mL	
24B0127-07 F	VOA Vial, Clear, 40 mL	
24B0127-07 G	VOA Vial, Clear, 40 mL	
24B0127-08 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24B0127-08 B	VOA Vial, Clear, 40 mL, HCL	
24B0127-08 C	VOA Vial, Clear, 40 mL, HCL	
24B0127-08 D	VOA Vial, Clear, 40 mL, HCL	
24B0127-08 E	VOA Vial, Clear, 40 mL	
24B0127-08 F	VOA Vial, Clear, 40 mL	
24B0127-08 G	VOA Vial, Clear, 40 mL	
24B0127-09 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24B0127-09 B	VOA Vial, Clear, 40 mL, HCL	
24B0127-09 C	VOA Vial, Clear, 40 mL, HCL	
24B0127-09 D	VOA Vial, Clear, 40 mL, HCL	
24B0127-09 E	VOA Vial, Clear, 40 mL	
24B0127-09 F	VOA Vial, Clear, 40 mL	
24B0127-09 G	VOA Vial, Clear, 40 mL	
24B0127-10 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24B0127-10 B	VOA Vial, Clear, 40 mL, HCL	
24B0127-10 C	VOA Vial, Clear, 40 mL, HCL	
24B0127-10 D	VOA Vial, Clear, 40 mL, HCL	
24B0127-10 E	VOA Vial, Clear, 40 mL	
24B0127-10 F	VOA Vial, Clear, 40 mL	



WORK ORDER

24B0127

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

24B0127-10 G	VOA Vial, Clear, 40 mL	
24B0127-11 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
24B0127-11 B	VOA Vial, Clear, 40 mL, HCL	
24B0127-11 C	VOA Vial, Clear, 40 mL, HCL	
24B0127-11 D	VOA Vial, Clear, 40 mL, HCL	
24B0127-11 E	VOA Vial, Clear, 40 mL	
24B0127-11 F	VOA Vial, Clear, 40 mL	
24B0127-11 G	VOA Vial, Clear, 40 mL	

KFC

Preservation Confirmed By

2/27/24

Date





# Cooler Receipt Form

ARI Client: SPU  
 COC No(s): \_\_\_\_\_ (NA)  
 Assigned ARI Job No: 24B0127

Project Name: South Park Landfill  
 Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_  
 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 16:45 5.4 \_\_\_\_\_  
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: J209709  
 Cooler Accepted by: PIB Date: 2/10/24 Time: 16:45

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

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

Samples Logged by: KFC Date: 2/10/24 Time: 0853 Labels checked by: KFC

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

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

**Additional Notes, Discrepancies, & Resolutions:**

By: \_\_\_\_\_ Date: \_\_\_\_\_



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW29-0224**  
**24B0127-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Sampled: 02/06/2024 16:00
Instrument: NT3 Analyst: PKC	Analyzed: 02/07/2024 19:07
Sample Preparation:	Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 24B0127-01 D
	Preparation Batch: BMB0200 Sample Size: 10 mL
	Prepared: 02/07/2024 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	90.3	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW29-0224**  
**24B0127-01 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/06/2024 16:00
Instrument: NT16 Analyst: PAB	Analyzed: 02/08/2024 15:14
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-01 E
Preparation Batch: BMB0231	Sample Size: 10 mL
Prepared: 02/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0496	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>107</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW29-0224**  
**24B0127-01 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 02/06/2024 16:00
Instrument: ICPMS2 Analyst: HAL	Preparation Batch: BMB0461	Final Volume: 25 mL	Analyzed: 02/22/2024 19:38
Sample Preparation:	Prepared: 02/16/2024	Extract ID: 24B0127-01 A	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	21.7	mg/L	D
Manganese	7439-96-5	10	0.00500	0.587	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW32-0224**  
**24B0127-02 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 02/05/2024 11:20
Instrument: NT3 Analyst: PKC	Preparation Batch: BMB0200	Analyzed: 02/07/2024 19:29
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24B0127-02 B
	Final Volume: 10 mL	
Prepared: 02/07/2024		

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.44	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>100</i>	<i>%</i>	





Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
--	--	---------------------------------------

**SPL-GW-MW32-0224**  
**24B0127-02 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/05/2024 11:20
Instrument: NT16 Analyst: PAB	Analyzed: 02/08/2024 15:35
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-02 E
Preparation Batch: BMB0231	Sample Size: 10 mL
Prepared: 02/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.195	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>106</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW32-0224**  
**24B0127-02 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 02/05/2024 11:20
Instrument: ICPMS2 Analyst: HAL	Preparation Batch: BMB0461	Final Volume: 25 mL	Analyzed: 02/22/2024 19:40
Sample Preparation:	Prepared: 02/16/2024	Extract ID: 24B0127-02 A	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	15.5	mg/L	D
Manganese	7439-96-5	20	0.0100	1.40	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW33-0224**  
**24B0127-03 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Sampled: 02/05/2024 10:15
Instrument: NT3 Analyst: PKC	Analyzed: 02/07/2024 19:51
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-03 B
Preparation Batch: BMB0200	Sample Size: 10 mL
Prepared: 02/07/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	102	%	



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**SPL-GW-MW33-0224**  
**24B0127-03 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/05/2024 10:15
Instrument: NT16 Analyst: PAB	Analyzed: 02/08/2024 15:55
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-03 E
Preparation Batch: BMB0231	Sample Size: 10 mL
Prepared: 02/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.125	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>106</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW33-0224**  
**24B0127-03 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 02/05/2024 10:15
Instrument: ICPMS2 Analyst: HAL	Preparation Batch: BMB0461	Final Volume: 25 mL	Analyzed: 02/22/2024 19:42
Sample Preparation:	Prepared: 02/16/2024	Extract ID: 24B0127-03 A	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	16.3	mg/L	D
Manganese	7439-96-5	20	0.0100	1.62	mg/L	D



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**SPL-GW-MW10-0224**  
**24B0127-04 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Sampled: 02/05/2024 12:45
Instrument: NT3 Analyst: PKC	Analyzed: 02/07/2024 20:13
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-04 C
Preparation Batch: BMB0200	Sample Size: 10 mL
Prepared: 02/07/2024	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	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	102	%	



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**SPL-GW-MW10-0224**  
**24B0127-04 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/05/2024 12:45
Instrument: NT16 Analyst: PAB	Analyzed: 02/08/2024 16:16
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-04 E
Preparation Batch: BMB0231	Sample Size: 10 mL
Prepared: 02/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.109	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>106</i>	<i>%</i>	



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**SPL-GW-MW10-0224**  
**24B0127-04 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 02/05/2024 12:45
Instrument: ICPMS2 Analyst: HAL	Preparation Batch: BMB0461	Final Volume: 25 mL	Analyzed: 02/22/2024 19:43
Sample Preparation:	Prepared: 02/16/2024	Extract ID: 24B0127-04 A	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	35.2	mg/L	D
Manganese	7439-96-5	20	0.0100	2.05	mg/L	D





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**SPL-GW-MW80-0224**  
**24B0127-05 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 02/05/2024 00:00
Instrument: NT3 Analyst: PKC	Preparation Batch: BMB0200	Analyzed: 02/07/2024 20:35
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24B0127-05 A
	Final Volume: 10 mL	
Prepared: 02/07/2024		

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>91.4</i>	<i>%</i>	



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**SPL-GW-MW80-0224**  
**24B0127-05 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/05/2024 00:00
Instrument: NT16 Analyst: PAB	Analyzed: 02/08/2024 16:37
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-05 B
Preparation Batch: BMB0231	Sample Size: 10 mL
Prepared: 02/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>105</i>	<i>%</i>	



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**SPL-GW-MW25-0224**  
**24B0127-06 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Sampled: 02/05/2024 14:00
Instrument: NT3 Analyst: PKC	Analyzed: 02/13/2024 17:56
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-06 C
Preparation Batch: BMB0362	Sample Size: 10 mL
Prepared: 02/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	114	%	



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**SPL-GW-MW25-0224**  
**24B0127-06 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/05/2024 14:00
Instrument: NT16 Analyst: PAB	Analyzed: 02/08/2024 16:57
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-06 H
Preparation Batch: BMB0231	Sample Size: 10 mL
Prepared: 02/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.417	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>104</i>	<i>%</i>	



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**SPL-GW-MW25-0224**  
**24B0127-06 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Instrument: ICPMS1	Analyst: DOE	Sampled: 02/05/2024 14:00	Analyzed: 02/21/2024 22:16
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMB0461	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 02/16/2024		Extract ID: 24B0127-06 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Manganese	7439-96-5	50	0.0250	2.73	mg/L	D



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**SPL-GW-MW25-0224**  
**24B0127-06 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Instrument: ICPMS2 Analyst: HAL	Sampled: 02/05/2024 14:00 Analyzed: 02/22/2024 20:04
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMB0461 Prepared: 02/16/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24B0127-06 A

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	35.6	mg/L	D



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**SPL-GW-MW24-0224**  
**24B0127-07 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Sampled: 02/06/2024 13:20
Instrument: NT3 Analyst: PKC	Analyzed: 02/13/2024 18:18
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-07 C
Preparation Batch: BMB0362	Sample Size: 10 mL
Prepared: 02/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	115	%	





Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW24-0224**  
**24B0127-07 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/06/2024 13:20
Instrument: NT16 Analyst: PAB	Analyzed: 02/08/2024 17:18
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-07 E
Preparation Batch: BMB0231	Sample Size: 10 mL
Prepared: 02/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0325	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>107</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW24-0224**  
**24B0127-07 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sampled: 02/06/2024 13:20
Instrument: ICPMS2 Analyst: HAL	Preparation Batch: BMB0461	Analyzed: 02/22/2024 19:45
Sample Preparation:	Prepared: 02/16/2024	Extract ID: 24B0127-07 A
	Sample Size: 25 mL	
	Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	28.6	mg/L	D
Manganese	7439-96-5	20	0.0100	1.73	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW26-0224**  
**24B0127-08 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 02/06/2024 14:45
Instrument: NT3 Analyst: PKC	Preparation Batch: BMB0362	Analyzed: 02/13/2024 18:40
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24B0127-08 D
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.42	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	108	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW26-0224**  
**24B0127-08 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/06/2024 14:45
Instrument: NT16 Analyst: PAB	Analyzed: 02/08/2024 17:38
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-08 F
Preparation Batch: BMB0231	Sample Size: 10 mL
Prepared: 02/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0420	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>107</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW26-0224**  
**24B0127-08 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 02/06/2024 14:45
Instrument: ICPMS2 Analyst: HAL	Preparation Batch: BMB0461	Final Volume: 25 mL	Analyzed: 02/22/2024 19:47
Sample Preparation:	Prepared: 02/16/2024	Extract ID: 24B0127-08 A	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	5.42	mg/L	D
Manganese	7439-96-5	5	0.00250	0.0688	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW08-0224**  
**24B0127-09 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Sampled: 02/06/2024 09:10
Instrument: NT3 Analyst: PKC	Analyzed: 02/13/2024 19:02
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-09 C
Preparation Batch: BMB0362	Sample Size: 10 mL
Prepared: 02/13/2024	Final Volume: 10 mL

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW08-0224**  
**24B0127-09 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/06/2024 09:10
Instrument: NT16 Analyst: PAB	Analyzed: 02/08/2024 17:59
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-09 F
Preparation Batch: BMB0231	Sample Size: 10 mL
Prepared: 02/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0660	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>106</i>	<i>%</i>	





Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW08-0224**  
**24B0127-09 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 02/06/2024 09:10
Instrument: ICPMS2 Analyst: HAL	Preparation Batch: BMB0461	Final Volume: 25 mL	Analyzed: 02/22/2024 19:49
Sample Preparation:	Prepared: 02/16/2024	Extract ID: 24B0127-09 A	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	14.3	mg/L	D
Manganese	7439-96-5	10	0.00500	1.09	mg/L	D



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

Project: South Park Landfill -Parametrix Water  
Project Number: 553-155-067  
Project Manager: Min-Soon Yim

**Reported:**  
26-Feb-2024 10:57

**SPL-GW-MW27-0224**  
**24B0127-10 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 02/06/2024 11:20  
Instrument: NT3 Analyst: PKC Analyzed: 02/13/2024 19:25

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 24B0127-10 C  
Preparation Batch: BMB0362 Sample Size: 10 mL  
Prepared: 02/13/2024 Final Volume: 10 mL

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW27-0224**  
**24B0127-10 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/06/2024 11:20
Instrument: NT16 Analyst: PAB	Analyzed: 02/08/2024 18:19
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-10 E
Preparation Batch: BMB0231	Sample Size: 10 mL
Prepared: 02/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0569	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>106</i>	<i>%</i>	



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**SPL-GW-MW27-0224**  
**24B0127-10 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Instrument: ICPMS2 Analyst: HAL	Sampled: 02/06/2024 11:20	Analyzed: 02/22/2024 19:50
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMB0461 Prepared: 02/16/2024	Sample Size: 25 mL Final Volume: 25 mL	Extract ID: 24B0127-10 A

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	12.7	mg/L	D
Manganese	7439-96-5	10	0.00500	0.385	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW61-0224**  
**24B0127-11 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Sampled: 02/05/2024 15:00
Instrument: NT3 Analyst: PKC	Analyzed: 02/13/2024 19:47
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-11 C
Preparation Batch: BMB0362	Sample Size: 10 mL
Prepared: 02/13/2024	Final Volume: 10 mL

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW61-0224**  
**24B0127-11 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/05/2024 15:00
Instrument: NT16 Analyst: PAB	Analyzed: 02/08/2024 18:40
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0127-11 E
Preparation Batch: BMB0231	Sample Size: 10 mL
Prepared: 02/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.411	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>105</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**SPL-GW-MW61-0224**  
**24B0127-11 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 02/05/2024 15:00
Instrument: ICPMS2 Analyst: HAL	Preparation Batch: BMB0461	Final Volume: 25 mL	Analyzed: 02/22/2024 19:52
Sample Preparation:	Prepared: 02/16/2024	Extract ID: 24B0127-11 A	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	33.6	mg/L	D
Manganese	7439-96-5	10	0.00500	2.69	mg/L	D





Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BMB0200 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMB0200-BLK1)</b>					Prepared: 07-Feb-2024 Analyzed: 07-Feb-2024 13:12					
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4.69		ug/L	5.00		93.7	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BMB0200 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BMB0200-BS1)</b>				Prepared: 07-Feb-2024 Analyzed: 07-Feb-2024 11:19						
cis-1,2-Dichloroethene	8.86	0.20	ug/L	10.0		88.6	80-121			
Surrogate: 1,2-Dichloroethane-d4	4.99		ug/L	5.00		99.8	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BMB0200 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BMB0200-BSD1)</b>					Prepared: 07-Feb-2024 Analyzed: 07-Feb-2024 12:04					
cis-1,2-Dichloroethene	9.90	0.20	ug/L	10.0		99.0	80-121	11.10	30	
Surrogate: 1,2-Dichloroethane-d4	4.84		ug/L	5.00		96.9	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BMB0200 - EPA 8260D**

**Volatile Organic Compounds - Quality Control**

**Batch BMB0362 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMB0362-BLK2)</b>										
				Prepared: 13-Feb-2024 Analyzed: 13-Feb-2024 12:44						
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4.91		ug/L	5.00		98.1	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - Quality Control**

**Batch BMB0362 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BMB0362-BS2)</b>					Prepared: 13-Feb-2024 Analyzed: 13-Feb-2024 11:15					
cis-1,2-Dichloroethene	10.3	0.20	ug/L	10.0		103	80-121			
Surrogate: 1,2-Dichloroethane-d4	5.39		ug/L	5.00		108	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - Quality Control**

**Batch BMB0362 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BMB0362-BSD2)</b>					Prepared: 13-Feb-2024 Analyzed: 13-Feb-2024 11:59					
cis-1,2-Dichloroethene	10.8	0.20	ug/L	10.0		108	80-121	5.17	30	
Surrogate: 1,2-Dichloroethane-d4	5.00		ug/L	5.00		99.9	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - Quality Control**

**Batch BMB0362 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Matrix Spike (BMB0362-MS1)</b>		<b>Source: 24B0127-06</b>		Prepared: 13-Feb-2024		Analyzed: 13-Feb-2024 21:14				
cis-1,2-Dichloroethene	7.21	0.20	ug/L	10.0	ND	70.5	80-121			*
Surrogate: 1,2-Dichloroethane-d4	5.53		ug/L	5.00	5.70	111	80-129			

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - Quality Control**

**Batch BMB0362 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Matrix Spike Dup (BMB0362-MSD1)</b>		<b>Source: 24B0127-06</b>		Prepared: 13-Feb-2024		Analyzed: 13-Feb-2024 21:36				
cis-1,2-Dichloroethene	6.88	0.20	ug/L	10.0	ND	67.2	80-121	4.66	30	*
Surrogate: 1,2-Dichloroethane-d4	5.80		ug/L	5.00	5.70	116	80-129			

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





Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BMB0362 - EPA 8260D**

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BMB0231 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PAB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMB0231-BLK1)</b>					Prepared: 08-Feb-2024 Analyzed: 08-Feb-2024 11:04					
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4990		ug/L	5000		99.9	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BMB0231 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PAB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BMB0231-BS1)</b>					Prepared: 08-Feb-2024 Analyzed: 08-Feb-2024 09:54					
Vinyl chloride	2.39	0.0200	ug/L	2.00		120	62-141			
Surrogate: 1,2-Dichloroethane-d4	5090		ug/L	5000		102	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BMB0231 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PAB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BMB0231-BSD1)</b>					Prepared: 08-Feb-2024 Analyzed: 08-Feb-2024 10:15					
Vinyl chloride	1.94	0.0200	ug/L	2.00		97.1	62-141	20.80	30	
Surrogate: 1,2-Dichloroethane-d4	5140		ug/L	5000		103	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BMB0231 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PAB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Matrix Spike (BMB0231-MS1)</b>		<b>Source: 24B0127-06</b>		Prepared: 08-Feb-2024		Analyzed: 08-Feb-2024 19:21				
Vinyl chloride	2.37	0.0200	ug/L	2.00	0.417	97.5	62-141			
Surrogate: 1,2-Dichloroethane-d4	5420		ug/L	5000	5190	108	80-129			

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BMB0231 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PAB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Matrix Spike Dup (BMB0231-MSD1)</b>		<b>Source: 24B0127-06</b>		Prepared: 08-Feb-2024		Analyzed: 08-Feb-2024 19:41				
Vinyl chloride	2.35	0.0200	ug/L	2.00	0.417	96.4	62-141	0.95	30	
Surrogate: 1,2-Dichloroethane-d4	5380		ug/L	5000	5190	108	80-129			

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

Batch BMB0231 - EPA 8260D-SIM

Analysis by: Analytical Resources, LLC

**Metals and Metallic Compounds - Quality Control**

Batch BMB0461 - EPA 6020B

Instrument: ICPMS1 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMB0461-BLK2)</b>			Prepared: 16-Feb-2024 Analyzed: 21-Feb-2024 18:59								
Manganese	55	ND	0.000500	mg/L							U
<b>LCS (BMB0461-BS2)</b>			Prepared: 16-Feb-2024 Analyzed: 21-Feb-2024 19:04								
Manganese	55	0.0253	0.000500	mg/L	0.0250		101	80-120			
<b>Duplicate (BMB0461-DUP2)</b>			Source: 24B0127-06		Prepared: 16-Feb-2024 Analyzed: 21-Feb-2024 22:21						
Manganese	55	2.71	0.0250	mg/L		2.73			0.67	20	D
<b>Matrix Spike (BMB0461-MS2)</b>			Source: 24B0127-06		Prepared: 16-Feb-2024 Analyzed: 21-Feb-2024 22:26						
Manganese	55	2.65	0.0250	mg/L	0.0250	2.73	-304	75-125			HC, D

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

<b>Matrix Spike Dup (BMB0461-MSD2)</b>			Source: 24B0127-06		Prepared: 16-Feb-2024 Analyzed: 21-Feb-2024 22:31						
Manganese	55	2.74	0.0250	mg/L	0.0250	2.73	39.4	75-125	3.18	20	HC, D

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

Instrument: ICPMS2 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMB0461-BLK3)</b>			Prepared: 16-Feb-2024 Analyzed: 22-Feb-2024 19:17								
Iron	54	ND	0.0360	mg/L							U
<b>LCS (BMB0461-BS3)</b>			Prepared: 16-Feb-2024 Analyzed: 22-Feb-2024 19:19								
Iron	54	4.99	0.0360	mg/L	5.00		99.7	80-120			
<b>Duplicate (BMB0461-DUP4)</b>			Source: 24B0127-06		Prepared: 16-Feb-2024 Analyzed: 22-Feb-2024 20:05						
Iron	54	34.6	1.80	mg/L		35.6			2.90	20	D
<b>Matrix Spike (BMB0461-MS4)</b>			Source: 24B0127-06		Prepared: 16-Feb-2024 Analyzed: 22-Feb-2024 20:07						
Iron	54	39.8	1.80	mg/L	5.00	35.6	84.2	75-125			D

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds - Quality Control**

**Batch BMB0461 - EPA 6020B**

Instrument: ICPMS2 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Matrix Spike Dup (BMB0461-MSD4)</b>			<b>Source: 24B0127-06</b>			Prepared: 16-Feb-2024 Analyzed: 22-Feb-2024 20:09					
Iron	54	40.7	1.80	mg/L	5.00	35.6	101	75-125	2.14	20	D

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 26-Feb-2024 10:57
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**Certified Analyses included in this Report**

Analyte	Certifications
<b>EPA 6020B in Water</b>	
Iron-54	NELAP,WADOE,DoD-ELAP
Manganese-55	NELAP,WADOE,DoD-ELAP
<b>EPA 8260D in Water</b>	
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
<b>EPA 8260D-SIM in Water</b>	
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
WADOE	WA Dept of Ecology	C558	06/30/2024
WA-DW	Ecology - Drinking Water	C558	06/30/2024





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

Project: South Park Landfill -Parametrix Water  
Project Number: 553-155-067  
Project Manager: Min-Soon Yim

**Reported:**  
26-Feb-2024 10:57

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



**Analytical Resources, LLC**  
Analytical Chemists and Consultants  
Tukwila, WA

28 February 2024

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)  
24B0164

Associated SDG ID(s)  
N/A

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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 enclosed 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.*



# Chain of Custody Record & Laboratory Analysis Request

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

ARI Assigned Number: <b>24B0164</b>	Turn-around Requested: 2 weeks	Date: <b>2/7/24</b>
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: <b>1</b> of <b>2</b>
Client Contact: Laura Lee	Phone: 206 394-3665	No. of Coolers: <b>2.8</b>
		Cooler Temps: <b>2.8</b>

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments			
Samplers: Chris Bourgeois HWA					cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn											
Sample ID	Date	Time	Matrix	Number of Containers														
SPL-GW-MW12-0224	2/7/24	955	water	13	X	X	X											MS/MSD
SPL-GW-MW14-0224	2/7/24	1145	water	7	X	X	X											
<del>SPL-GW-MW29-0224</del>			<del>water</del>	<del>7</del>	<del>X</del>	<del>X</del>	<del>X</del>											
SPL-GW-MW18-0224	2/7/24	840	water	7	X	X	X											
<del>SPL-GW-MW32-0224</del>			<del>water</del>	<del>7</del>	<del>X</del>	<del>X</del>	<del>X</del>											
<del>SPL-GW-MW33-0224</del>			<del>water</del>	<del>7</del>	<del>X</del>	<del>X</del>	<del>X</del>											
<del>SPL-GW-MW10-0224</del>			<del>water</del>	<del>7</del>	<del>X</del>	<del>X</del>	<del>X</del>											
SPL-GW-MW60-0224	2/7/24	1030	water	7	X	X	X											
<del>SPL-GW-MW80-0224</del>			<del>water</del>	<del>2</del>	<del>X</del>	<del>X</del>												

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: <b>Richard Anderson</b>	Printed Name: <b>Kevin Cruz</b>	Printed Name:	Printed Name:
	Company: <b>HWA Sciences</b>	Company: <b>ARIC</b>	Company:	Company:
	Date & Time: <b>2/7/24 2:47 pm</b>	Date & Time: <b>020724 1447</b>	Date & Time:	Date & Time:

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



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



# Chain of Custody Record & Laboratory Analysis Request

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

ARI Assigned Number: <b>24B0164</b>	Turn-around Requested: 2 weeks	Date: <b>2/7/24</b>
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: <b>2</b> of <b>2</b>
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: Cooler Temps: <b>2.8</b>

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments		
Client Project #: 553-1550-067		Samplers: Chris Bourgeois HWA			cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn										
Sample ID	Date	Time	Matrix	Number of Containers													
<del>SPL-GW-MW25-0224</del>			water	13	X	X	X										MS/MSD
SPL-GW-MW30-0224	2/2/24	1315	water	7	X	X	X										
SPL-GW-MW31-0224	2/7/24	1415	water	7	X	X	X										
<del>SPL-GW-MW24-0224</del>			water	7	X	X	X										
<del>SPL-GW-MW26-0224</del>			water	7	X	X	X										
<del>SPL-GW-MW08-0224</del>			water	7	X	X	X										
<del>SPL-GW-MW27-0224</del>			water	7	X	X	X										
<del>SPL-GW-MW61-0224</del>			water	7	X	X	X										
SPL-GW-MW81-0224	2/7/24	-	water	2	X	X											
Comments/Special Instructions	Relinquished by: (Signature) 		Received by: (Signature) 		Relinquished by: (Signature)					Received by: (Signature)							
	Printed Name: Richard Anderson		Printed Name: Kevin Cruz		Printed Name:					Printed Name:							
	Company: Hunt Geoservices		Company: ARIC		Company:					Company:							
	Date & Time: 2/7/24 2:47 pm		Date & Time: 020724 1447		Date & Time:					Date & Time:							

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

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



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

Project: South Park Landfill -Parametrix Water  
Project Number: 553-155-067  
Project Manager: Min-Soon Yim

**Reported:**  
28-Feb-2024 10:30

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW12-0224	24B0164-01	Water	07-Feb-2024 09:55	07-Feb-2024 14:47
SPL-GW-MW14-0224	24B0164-02	Water	07-Feb-2024 11:45	07-Feb-2024 14:47
SPL-GW-MW18-0224	24B0164-03	Water	07-Feb-2024 08:40	07-Feb-2024 14:47
SPL-GW-MW60-0224	24B0164-04	Water	07-Feb-2024 10:30	07-Feb-2024 14:47
SPL-GW-MW30-0223	24B0164-05	Water	07-Feb-2024 13:15	07-Feb-2024 14:47
SPL-GW-MW31-0223	24B0164-06	Water	07-Feb-2024 14:15	07-Feb-2024 14:47
SPL-GW-MW81-0224	24B0164-07	Water	07-Feb-2024 00:00	07-Feb-2024 14:47



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

Project: South Park Landfill -Parametrix Water  
Project Number: 553-155-067  
Project Manager: Min-Soon Yim

Reported:  
28-Feb-2024 10:30

## Work Order Case Narrative

**Client:** Seattle Public Utilities  
**Project:** South Park Landfill  
**Work Order:** 24B0164

### Sample receipt

Samples as listed on the preceding page were received February 7, 2024 under ARI work order 24B0164. 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 with the exception of analytes flagged on the associated forms.

### 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

700-5th Ave, Ste 4900, Box 34018

Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Project Manager: Min-Soon Yim

**Reported:**

28-Feb-2024 10:30

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**

24B0164

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
24B0164-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2 PASS
24B0164-01 B	VOA Vial, Clear, 40 mL, HCL	
24B0164-01 C	VOA Vial, Clear, 40 mL, HCL	
24B0164-01 D	VOA Vial, Clear, 40 mL, HCL	
24B0164-01 E	VOA Vial, Clear, 40 mL, HCL	
24B0164-01 F	VOA Vial, Clear, 40 mL, HCL	
24B0164-01 G	VOA Vial, Clear, 40 mL, HCL	
24B0164-01 H	VOA Vial, Clear, 40 mL	
24B0164-01 I	VOA Vial, Clear, 40 mL	
24B0164-01 J	VOA Vial, Clear, 40 mL	
24B0164-01 K	VOA Vial, Clear, 40 mL	
24B0164-01 L	VOA Vial, Clear, 40 mL	
24B0164-01 M	VOA Vial, Clear, 40 mL	
24B0164-02 A	HDPE NM, 500 mL, 1:1 HNO3	<2 PASS
24B0164-02 E	VOA Vial, Clear, 40 mL, HCL	
24B0164-02 F	VOA Vial, Clear, 40 mL, HCL	
24B0164-02 G	VOA Vial, Clear, 40 mL, HCL	
24B0164-02 H	VOA Vial, Clear, 40 mL	
24B0164-02 I	VOA Vial, Clear, 40 mL	
24B0164-02 J	VOA Vial, Clear, 40 mL	
24B0164-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2 PASS
24B0164-03 E	VOA Vial, Clear, 40 mL, HCL	
24B0164-03 F	VOA Vial, Clear, 40 mL, HCL	
24B0164-03 G	VOA Vial, Clear, 40 mL, HCL	
24B0164-03 H	VOA Vial, Clear, 40 mL	
24B0164-03 I	VOA Vial, Clear, 40 mL	
24B0164-03 J	VOA Vial, Clear, 40 mL	
24B0164-04 A	HDPE NM, 500 mL, 1:1 HNO3	<2 PASS
24B0164-04 E	VOA Vial, Clear, 40 mL, HCL	
24B0164-04 F	VOA Vial, Clear, 40 mL, HCL	
24B0164-04 G	VOA Vial, Clear, 40 mL, HCL	
24B0164-04 H	VOA Vial, Clear, 40 mL	
24B0164-04 I	VOA Vial, Clear, 40 mL	
24B0164-04 J	VOA Vial, Clear, 40 mL	





WORK ORDER

24B0164

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

<b>Client:</b> Seattle Public Utilities	<b>Project Manager:</b> Kelly Bottem
<b>Project:</b> South Park Landfill -Parametrix Water	<b>Project Number:</b> 553-155-067

24B0164-05 A	HDPE NM, 500 mL, 1:1 HNO3	e2 pass
24B0164-05 E	VOA Vial, Clear, 40 mL, HCL	
24B0164-05 F	VOA Vial, Clear, 40 mL, HCL	
24B0164-05 G	VOA Vial, Clear, 40 mL, HCL	
24B0164-05 H	VOA Vial, Clear, 40 mL	
24B0164-05 I	VOA Vial, Clear, 40 mL	
24B0164-05 J	VOA Vial, Clear, 40 mL	
24B0164-06 A	HDPE NM, 500 mL, 1:1 HNO3	e2 pass
24B0164-06 E	VOA Vial, Clear, 40 mL, HCL	
24B0164-06 F	VOA Vial, Clear, 40 mL, HCL	
24B0164-06 G	VOA Vial, Clear, 40 mL, HCL	
24B0164-06 H	VOA Vial, Clear, 40 mL	
24B0164-06 I	VOA Vial, Clear, 40 mL	
24B0164-06 J	VOA Vial, Clear, 40 mL	
24B0164-07 A	VOA Vial, Clear, 40 mL	
24B0164-07 B	VOA Vial, Clear, 40 mL, HCL	

KFC

Preservation Confirmed By \_\_\_\_\_

020824

Date \_\_\_\_\_



# Cooler Receipt Form

ARI Client: SPU

Project Name: SPU South park landfill

COC No(s): \_\_\_\_\_ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_

Assigned ARI Job No: 2480164

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

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)  
 Time 1447 2.8

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 3009709

Cooler Accepted by: KFC Date: 02/07/24 Time: 1447

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

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

Samples Logged by: KFC Date: 02/08/24 Time: 1118 Labels checked by: KFC

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

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

**Additional Notes, Discrepancies, & Resolutions:**

By: \_\_\_\_\_ Date: \_\_\_\_\_



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW12-0224**  
**24B0164-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Sampled: 02/07/2024 09:55
Instrument: NT20 Analyst: LN	Analyzed: 02/13/2024 15:35
Sample Preparation:	Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 24B0164-01 E
	Preparation Batch: BMB0356 Sample Size: 10 mL
	Prepared: 02/13/2024 Final Volume: 10 mL

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW12-0224**  
**24B0164-01 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/07/2024 09:55
Instrument: NT16 Analyst: PAB	Analyzed: 02/09/2024 11:57
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0164-01 H
Preparation Batch: BMB0292	Sample Size: 10 mL
Prepared: 02/09/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>104</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW12-0224**  
**24B0164-01 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B		Sampled: 02/07/2024 09:55
Instrument: ICPMS1 Analyst: DOE		Analyzed: 02/26/2024 22:41
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Extract ID: 24B0164-01 A 01
	Preparation Batch: BMB0414	Sample Size: 25 mL
	Prepared: 02/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	1.14	mg/L	D
Manganese	7439-96-5	5	0.00250	0.130	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW14-0224**  
**24B0164-02 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 02/07/2024 11:45
Instrument: NT20 Analyst: LN	Preparation Batch: BMB0356	Analyzed: 02/13/2024 15:57
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24B0164-02 D
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	107	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW14-0224**  
**24B0164-02 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/07/2024 11:45
Instrument: NT16 Analyst: PAB	Analyzed: 02/09/2024 12:18
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0164-02 E
Preparation Batch: BMB0292	Sample Size: 10 mL
Prepared: 02/09/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>105</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW14-0224**  
**24B0164-02 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 02/07/2024 11:45
Instrument: ICPMS2 Analyst: HAL	Preparation Batch: BMB0414	Final Volume: 25 mL	Analyzed: 02/22/2024 20:10
Sample Preparation:	Prepared: 02/15/2024	Extract ID: 24B0164-02 A	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	3.26	mg/L	D
Manganese	7439-96-5	10	0.00500	0.778	mg/L	D





Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW18-0224**  
**24B0164-03 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 02/07/2024 08:40
Instrument: NT20 Analyst: LN	Preparation Batch: BMB0356	Analyzed: 02/13/2024 16:20
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24B0164-03 B
	Final Volume: 10 mL	
Prepared: 02/13/2024		

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW18-0224**  
**24B0164-03 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/07/2024 08:40
Instrument: NT16 Analyst: PAB	Analyzed: 02/09/2024 12:38
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0164-03 E
Preparation Batch: BMB0292	Sample Size: 10 mL
Prepared: 02/09/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>106</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW18-0224**  
**24B0164-03 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Instrument: ICPMS2 Analyst: HAL	Sampled: 02/07/2024 08:40	Analyzed: 02/22/2024 20:12
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMB0414 Prepared: 02/15/2024	Sample Size: 25 mL Final Volume: 25 mL	Extract ID: 24B0164-03 A

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	14.3	mg/L	D
Manganese	7439-96-5	10	0.00500	0.866	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW60-0224**  
**24B0164-04 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 02/07/2024 10:30
Instrument: NT20 Analyst: LN	Preparation Batch: BMB0356	Analyzed: 02/13/2024 16:43
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24B0164-04 B
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>109</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW60-0224**  
**24B0164-04 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/07/2024 10:30
Instrument: NT16 Analyst: PAB	Analyzed: 02/09/2024 12:59
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0164-04 E
Preparation Batch: BMB0292	Sample Size: 10 mL
Prepared: 02/09/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>106</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW60-0224**  
**24B0164-04 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Instrument: ICPMS2 Analyst: HAL	Sampled: 02/07/2024 10:30 Analyzed: 02/22/2024 20:14
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMB0414 Prepared: 02/15/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24B0164-04 A

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	1.28	mg/L	D
Manganese	7439-96-5	20	0.0100	0.150	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW30-0223**  
**24B0164-05 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Sampled: 02/07/2024 13:15
Instrument: NT20 Analyst: LN	Analyzed: 02/13/2024 17:06
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0164-05 B
Preparation Batch: BMB0356	Sample Size: 10 mL
Prepared: 02/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.26	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	107	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW30-0223**  
**24B0164-05 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/07/2024 13:15
Instrument: NT16 Analyst: PAB	Analyzed: 02/09/2024 13:20
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0164-05 E
Preparation Batch: BMB0292	Sample Size: 10 mL
Prepared: 02/09/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0422	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>104</i>	<i>%</i>	





Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW30-0223**  
**24B0164-05 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Instrument: ICPMS2 Analyst: HAL	Sampled: 02/07/2024 13:15	Analyzed: 02/22/2024 20:16
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMB0414 Prepared: 02/15/2024	Sample Size: 25 mL Final Volume: 25 mL	Extract ID: 24B0164-05 A

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	2.47	mg/L	D
Manganese	7439-96-5	5	0.00250	0.0490	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW31-0223**  
**24B0164-06 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 02/07/2024 14:15
Instrument: NT20 Analyst: LN	Preparation Batch: BMB0356	Analyzed: 02/13/2024 17:28
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24B0164-06 B
	Final Volume: 10 mL	

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW31-0223**  
**24B0164-06 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/07/2024 14:15
Instrument: NT16 Analyst: PAB	Analyzed: 02/09/2024 13:40
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0164-06 E
Preparation Batch: BMB0292	Sample Size: 10 mL
Prepared: 02/09/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.402	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>106</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW31-0223**  
**24B0164-06 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 02/07/2024 14:15
Instrument: ICPMS2 Analyst: HAL	Preparation Batch: BMB0414	Final Volume: 25 mL	Analyzed: 02/22/2024 20:17
Sample Preparation:	Prepared: 02/15/2024	Extract ID: 24B0164-06 A	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	20.7	mg/L	D
Manganese	7439-96-5	10	0.00500	0.858	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW81-0224**  
**24B0164-07 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 02/07/2024 00:00
Instrument: NT20 Analyst: LN	Preparation Batch: BMB0356	Analyzed: 02/13/2024 17:51
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24B0164-07 B
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	111	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**SPL-GW-MW81-0224**  
**24B0164-07 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 02/07/2024 00:00
Instrument: NT16 Analyst: PAB	Analyzed: 02/09/2024 11:16
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24B0164-07 A
Preparation Batch: BMB0292	Sample Size: 10 mL
Prepared: 02/09/2024	Final Volume: 10 mL

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



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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BMB0356 - EPA 8260D**

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMB0356-BLK1)</b>					Prepared: 13-Feb-2024 Analyzed: 13-Feb-2024 09:44					
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.42		ug/L	5.00		108	80-129			



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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BMB0356 - EPA 8260D**

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BMB0356-BS1)</b>					Prepared: 13-Feb-2024 Analyzed: 13-Feb-2024 08:58					
cis-1,2-Dichloroethene	9.74	0.20	ug/L	10.0		97.4	80-121			
Surrogate: 1,2-Dichloroethane-d4	4.97		ug/L	5.00		99.4	80-129			





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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - Quality Control**

**Batch BMB0356 - EPA 8260D**

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BMB0356-BSD1)</b>					Prepared: 13-Feb-2024 Analyzed: 13-Feb-2024 09:21					
cis-1,2-Dichloroethene	9.85	0.20	ug/L	10.0		98.5	80-121	1.06	30	
Surrogate: 1,2-Dichloroethane-d4	5.06		ug/L	5.00		101	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - Quality Control**

**Batch BMB0356 - EPA 8260D**

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Matrix Spike (BMB0356-MS2)</b>		<b>Source: 24B0164-01</b>		Prepared: 13-Feb-2024		Analyzed: 13-Feb-2024 18:14				
cis-1,2-Dichloroethene	8.16	0.20	ug/L	10.0	ND	79.8	80-121			*
Surrogate: 1,2-Dichloroethane-d4	5.05		ug/L	5.00	5.21	101	80-129			

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BMB0356 - EPA 8260D**

Instrument: NT20 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Matrix Spike Dup (BMB0356-MSD2)</b>		<b>Source: 24B0164-01</b>		Prepared: 13-Feb-2024		Analyzed: 13-Feb-2024 18:37				
cis-1,2-Dichloroethene	10.2	0.20	ug/L	10.0	ND	99.8	80-121	21.90	30	
Surrogate: 1,2-Dichloroethane-d4	5.15		ug/L	5.00	5.21	103	80-129			

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BMB0356 - EPA 8260D**

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BMB0292 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PAB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMB0292-BLK1)</b>				Prepared: 09-Feb-2024 Analyzed: 09-Feb-2024 10:01						
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5080		ug/L	5000		102	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BMB0292 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PAB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BMB0292-BS1)</b>					Prepared: 09-Feb-2024 Analyzed: 09-Feb-2024 08:29					
Vinyl chloride	2.28	0.0200	ug/L	2.00		114	62-141			
Surrogate: 1,2-Dichloroethane-d4	5170		ug/L	5000		103	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BMB0292 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PAB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BMB0292-BSD1)</b>					Prepared: 09-Feb-2024 Analyzed: 09-Feb-2024 08:49					
Vinyl chloride	1.91	0.0200	ug/L	2.00		95.3	62-141	18.10	30	
Surrogate: 1,2-Dichloroethane-d4	5180		ug/L	5000		104	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BMB0292 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PAB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Matrix Spike (BMB0292-MS1)</b>		<b>Source: 24B0164-01</b>		Prepared: 09-Feb-2024		Analyzed: 09-Feb-2024 18:07				
Vinyl chloride	1.80	0.0200	ug/L	2.00	ND	90.1	62-141			
Surrogate: 1,2-Dichloroethane-d4	5370		ug/L	5000	5220	107	80-129			

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



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BMB0292 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PAB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Matrix Spike Dup (BMB0292-MSD1)</b>		<b>Source: 24B0164-01</b>		Prepared: 09-Feb-2024		Analyzed: 09-Feb-2024 18:27				
Vinyl chloride	1.79	0.0200	ug/L	2.00	ND	89.6	62-141	0.57	30	
Surrogate: 1,2-Dichloroethane-d4	5380		ug/L	5000	5220	108	80-129			

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





Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	<b>Reported:</b> 28-Feb-2024 10:30
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

Batch BMB0292 - EPA 8260D-SIM

Analysis by: Analytical Resources, LLC

**Metals and Metallic Compounds - Quality Control**

Batch BMB0414 - 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
<b>Blank (BMB0414-BLK1)</b>			Prepared: 15-Feb-2024 Analyzed: 22-Feb-2024 17:52								
Manganese	55	ND	0.000500	mg/L							U
<b>LCS (BMB0414-BS1)</b>			Prepared: 15-Feb-2024 Analyzed: 22-Feb-2024 17:57								
Manganese	55	0.0253	0.000500	mg/L	0.0250		101	80-120			
<b>Duplicate (BMB0414-DUP2)</b>			<b>Source: 24B0164-01</b>		Prepared: 15-Feb-2024 Analyzed: 26-Feb-2024 22:44						
Iron	54	1.11	0.180	mg/L		1.14			2.15	20	D
Manganese	55	0.128	0.00250	mg/L		0.130			1.18	20	D
<b>Matrix Spike (BMB0414-MS2)</b>			<b>Source: 24B0164-01</b>		Prepared: 15-Feb-2024 Analyzed: 26-Feb-2024 22:46						
Iron	54	5.44	0.180	mg/L	5.00	1.14	86.0	75-125			D
Manganese	55	0.148	0.00250	mg/L	0.0250	0.130	72.1	75-125			HC, D

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

<b>Matrix Spike Dup (BMB0414-MSD2)</b>			<b>Source: 24B0164-01</b>		Prepared: 15-Feb-2024 Analyzed: 26-Feb-2024 22:48						
Iron	54	5.05	0.180	mg/L	5.00	1.14	78.3	75-125	7.36	20	D
Manganese	55	0.142	0.00250	mg/L	0.0250	0.130	50.4	75-125	3.73	20	HC, D

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

Instrument: ICPMS2 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMB0414-BLK2)</b>			Prepared: 15-Feb-2024 Analyzed: 22-Feb-2024 20:29								
Iron	54	ND	0.0360	mg/L							U
<b>LCS (BMB0414-BS2)</b>			Prepared: 15-Feb-2024 Analyzed: 22-Feb-2024 20:31								
Iron	54	5.03	0.0360	mg/L	5.00		101	80-120			



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

Project: South Park Landfill -Parametrix Water  
Project Number: 553-155-067  
Project Manager: Min-Soon Yim

**Reported:**  
28-Feb-2024 10:30

**Certified Analyses included in this Report**

Analyte	Certifications
<b>EPA 6020B in Water</b>	
Iron-54	NELAP,WADOE,DoD-ELAP
Manganese-55	NELAP,WADOE,DoD-ELAP
<b>EPA 8260D in Water</b>	
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
<b>EPA 8260D-SIM in Water</b>	
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
WADOE	WA Dept of Ecology	C558	06/30/2024
WA-DW	Ecology - Drinking Water	C558	06/30/2024



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

Project: South Park Landfill -Parametrix Water  
Project Number: 553-155-067  
Project Manager: Min-Soon Yim

**Reported:**  
28-Feb-2024 10:30

### 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)
- 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.