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December 21, 2020

Ms. Sarah Drummond
Tennessee Department of Environment and Conservation
Division of Solid Waste Management
3711 Middlebrook Pike
Knoxville, TN 37921-5602

RE: Groundwater Monitoring Report – 2nd Semi-Annual Event
Matlock Bend Landfill
SNL #53-103-0203

Dear Ms. Drummond:

Please find enclosed a copy of the groundwater monitoring report generated from the second semi-annual groundwater event of 2020 at the Matlock Bend Landfill. This package includes data pertaining to site information, geologic summary, groundwater sampling, analytical laboratory reports, statistical analysis, and groundwater elevations and flow.

If you have any questions and/or comments, please feel free to call at (423) 303-7101.

Sincerely,

Robert Hudson
Environmental Compliance Coordinator

Enclosure

cc: Steve Field, Loudon County Solid Waste Department Chairman
Matt Dillard, Executive V.P. of Operations, Santek
Adam Hall, Landfill Manager, Santek

MATLOCK BEND LANDFILL – PHASE I & PHASE II/IV UPGRADE
GROUNDWATER MONITORING REPORT
2nd SEMI-ANNUAL EVENT - 2020

SANTEK PROJECT NO. 200-2010.3

PREPARED BY:
SANTEK WASTE SERVICES, LLC
650 25TH STREET NW, SUITE 100
CLEVELAND, TN 37311

DECEMBER 2020

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1.0 INTRODUCTION

In accordance with the Tennessee Department of Environment and Conservation's Solid Waste Processing and Disposal Rule 0400-11-01-.04(7), Santek Waste Services, LLC (Santek) is submitting the groundwater monitoring report for the second semi-annual event for 2020 at the Matlock Bend Landfill. The sampling and analytical were performed in accordance with the Tennessee Department of Environment and Conservation's Solid Waste Processing and Disposal Rules as well as the site's approved groundwater monitoring plan dated December 1996. The groundwater monitoring plan is incorporated in the landfill's Operations Plan. The site's groundwater monitoring network consists of six monitoring wells, three downgradient wells for Phase I, two downgradient wells for Phase II/IV, with one upgradient well for both phases. MW-4R is the upgradient well for Phase I and Phase II/IV. MW-01, MW-1A, and MW-02 are the downgradient wells for Phase I; MW-03 and MW-05 are the downgradient wells for Phase II/IV. In accordance with the TDEC groundwater report review dated September 30, 2016, Santek is now monitoring the facility as one unit with one upgradient monitoring location (MW-4R). However, once Phase I ends the post-closure care period on January 21, 2028, the downgradient monitoring wells associated with Phase I will no longer continue to be monitored. Santek performed the sampling for this groundwater event. Santek contracted with Analytical Environmental Services, Inc. (AES) to perform all analytical testing.

1.1 SITE INFORMATION

The Matlock Bend Landfill is located approximately five miles west of Loudon, TN, at latitude N 35° 44' 48" and longitude W 84° 24' 43". The site consists of 37.4 constructed acres of ridge-top and sloped hillside topography bordering Tennessee Highway 72 for approximately 250 feet extending northward 4,800 feet.

2.0 SAMPLING AND ANALYTICAL

The groundwater sampling event was performed by Santek on October 26 and 27, 2020. All samples were analyzed for Appendix I constituents, as well as the required additional 14 parameters at the Phase I wells (MW-01, MW-1A, MW-02, and MW-03). All samples were submitted to AES for analysis. A duplicate was obtained from MW-02. Confirmation samples were collected at MW-01, MW-02, and MW-03 on December 1, 2020 to investigate cobalt and zinc* detections. Field sampling logs are provided in Appendix A. Analytical results are provided in Appendix B.

3.0 STATISTICAL ANALYSIS

3.1 Statistical Analysis Method

In accordance with the TDEC comment letter dated April 8, 2019, the groundwater statistical analysis method has been modified for the above referenced site. Santek contracted Atlantic Coast Consulting, Inc. (ACC), located in Roswell, Georgia, to perform the groundwater statistical analysis and prepare a statistical analysis report for the second groundwater event of 2020. ACC utilized procedures and published guidance provided in *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance*, March 2009 and ATSM standard D631298 (2017), "Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs". The completed groundwater statistical analysis report is located in Appendix C.

3.2 Statistical Analysis Summary

The summary is located in ACC's letter in Appendix C.

4.0 FLOW DIRECTION AND RATES

Phase I Geological Summary:

Geologic information of Phase I is based on a Hydrogeologic Evaluation dated January 18, 1984, by G.N. Pruitt (TNDSWM). Phase I is located on a discontinuous, highly dissected upland with elevations ranging from approximately 865 feet (MSL) to 1,020 feet (MSL). The evaluation indicates a thick cover of silty-clayey soil which covers the majority of the site, the absence of shallow groundwater, and the absence of perennial springs and streams. No bedrock outcrops were viewed on site; however, an exposed dolomite limestone ledge resides east of the southeast property boundary. This rock exposure appears to originate from either the uppermost part of the Longview dolomite formation or the lower portion of the Newalla dolomite formation, both belonging to the Knox Group. Phase I is located in the Valley and Ridge physiographic region consisting of northeast/southwest trending valleys and ridges.

Phase II/IV Geological Summary:

Geologic information for Phase II/IV is based on a Hydrogeologic Investigation Report prepared by Theta Engineering, Inc. dated January 11, 1996. Phase II/IV is located in the Valley and Ridge physiographic region consisting commonly of northeast/southwest trending valleys and ridges. This area consists of discontinuous, highly dissected upland with elevations ranging from approximately 865 feet to 1,020 feet. Bedrock formations include the Copper Ridge Dolomite Formation and the Longview Dolomite Formation, both of which belong to the Knox Group. The area is dominantly covered by silty-clayey soil originating from the Fullerton, Clarksville, and Nolichucky Series.

Groundwater Flow:

The overall groundwater flow of Phase I is towards the southwest and will eventually flow to the Tennessee River. The groundwater flow rate ranges from 1.79×10^{-3} ft/day at MW-1A to 2.64×10^{-3} ft/day at MW-02. Groundwater flow direction of Phase II/IV locally flows towards the west and will ultimately flow to the Tennessee River. The groundwater flow rate ranges from 2.55×10^{-3} ft/day at MW-03 to 7.18×10^{-3} ft/day at MW-05. Groundwater flow rate and direction have been determined for each well and are included in Appendix D. A groundwater potentiometric contour map along with the Phase I and Phase II/IV limits is included in Appendix E.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The groundwater monitoring network at this site is adequately monitoring the uppermost aquifer and no changes are recommended at this time.

TABLE 1

Table 1

Loudon County (Matlock Bend) Landfill

Constituents Detected Summary Table - 2nd Half 2020 Monitoring Event

Monitoring Location	Constituent	Reporting Limit (mg/L)	Event Result (mg/L)	MCL/GWPS (mg/L)	SSI
MW-1	Barium	0.01	0.056	2	No
	Cadmium	0.0007	0.00192	0.005	Yes
	Calcium	0.1	1.96	NA	No
	Chloride	1	2.96	250[1]	No
	Fluoride	1	1.35	4	Yes
	Magnesium	0.1	1.65	NA	No
	Nickel	0.005	0.0311	0.1	Yes
	Nitrogen (Nitrate)	0.25	1.52	10	No
	Potassium	0.1	2.78	NA	No
	Sodium	0.5	2.03	NA	No
	Sulfate	1	3.29	250[1]	No
	TOC	1	8.23	NA	No
	TDS	1	264	500[1]	No
	Zinc	0.01	0.312	6[2]	No
MW-1A	Barium	0.01	0.349	2	No
	COD	10	77.5	NA	No
	Calcium	10	182	NA	No
	Chloride	20	655	250[1]	No
	Iron	0.1	0.137	0.3[1]	No
	Magnesium	10	62.9	NA	No
	Manganese	0.005	0.159	0.48[2]	No
	Nitrogen (Ammonia)	2.5	13	NA	No
	Nitrogen (Nitrate)	2.5	13	10	No
	Potassium	10	104	NA	No
	Sodium	50	319	NA	No
	Sulfate	1	31.9	250[1]	No
	TOC	1	13.2	NA	No
	TDS	2	1,510	500[1]	No
	Zinc	0.01	0.0112	6[2]	No
MW-2	Barium	0.01	0.0948	2	No
	Calcium	1	17.3	NA	No
	Chloride	1	4.43	250[1]	No
	Cobalt	0.005	0.0635	0.006[2]	No
	Iron	0.1	0.194	0.3[1]	No
	Magnesium	0.1	5.06	NA	No
	Manganese	0.01	0.179	0.48[2]	No
	Nickel	0.005	0.011	0.1	No
	Nitrogen (Nitrate)	0.25	3.87	10	No
	Potassium	0.1	7.38	NA	No
	Sodium	5	32.5	NA	No
	Sulfate	1	1.27	250[1]	No

	TOC	1	4.3	NA	No
	TDS	1	39	500[1]	No
	Thallium	0.0005	0.000582	0.002	Yes
	Zinc	0.01	0.0286	6[2]	Yes
MW-3	Arsenic	0.0025	0.00296	0.01	Yes
	Barium	0.01	0.0419	2	No
	Calcium	0.1	19,600	NA	No
	Chloride	10	67.7	250[1]	No
	Cobalt	0.005	0.0442	0.006[2]	Yes
	COD	10	18.5	NA	No
	Fluoride	1	1.31	4	Yes
	Iron	0.1	0.405	0.3[1]	No
	Magnesium	0.1	6.25	NA	No
	Manganese	0.05	6.6	0.48[2]	No
	Nickel	0.005	0.00832	0.1	No
	Nitrogen (Ammonia)	0.2	4.32	NA	No
	Potassium	0.1	5.58	NA	No
	Sodium	10	31.6	NA	No
	Sulfate	1	27.1	250[1]	No
	TOC	1	7.52	NA	No
	TDS	1	192	500[1]	No
MW-4R	Barium	0.01	0.0328	2	No
MW-05	Barium	0.01	0.0228	2	No
	Nickel	0.005	0.00503	0.1	No
	Zinc	0.01	0.0135	6[2]	No
MW-1 Confirmation Sample (12/1/20)	Barium	0.01	0.075	2	No
MW-2 Confirmation Sample (12/1/20)	Barium	0.01	0.0541	2	No
	Beryllium	0.001	0.00152	0.004	No
	Cadmium	0.0007	0.0017	0.005	No
	Nickel	0.005	0.0286	0.1	No
	Zinc	0.01	0.276	6[2]	Yes
MW-3 Confirmation Sample (12/1/20)	Arsenic	0.0025	0.00276	0.01	No
	Barium	0.01	0.0624	2	No
	Cobalt	0.005	0.0491	0.006[2]	Yes
	Nickel	0.005	0.00651	0.1	No
	Zinc	0.01	0.0167	6[2]	No

[1] - EPA National Secondary Drinking Water Regulations secondary standard

[2] - EPA Regional Screening Level

APPENDIX A

DATE: 10/26/20

FIELD SAMPLING LOG	WELL NO: MW-01
Location: Loudon County, TN	Site: Matlock Bend Landfill
Client/Operator: Santek Waste Services, LLC	Project No:
Purge Start: (Date) 10/26/20 (Time) 12:03 PM	Purge End: (Date) 10/26/20 (Time) 12:31 PM
Purged by: Wilbourne Markham	
Depth Measurement Ref. Point* 830.87 ft	Well Csg. ID: 2"

Equipment Used to Measure (Make, Model, etc)

DTW Solinst pH Horiba Cond. Horiba T° Horiba .

Measure Well TD: 45.00 (-)Orig. DTW: 8.70 (=) Wtr. Col. Thick: 36.30 .

(x) **2"=0.16** 4"=0.65 6"=1.47 Gals./ft. (=) 5.80 Gals./Csg. Vol. (x) 3 Csg. Vol. (=) 17.42 Total Purge Gals.

GW elev. Ref. 830.87 ft.(-) DTW 8.70 ft. = 822.17 ft.

Purge/Sample Method: ☒ Pump (indicate type) SamplePro
☐ Bailer (indicate type) _

Decon. Method: Distilled Rinse
Purge Wtr. Containerized ? (N) Avg Purge Rate: 180 mL/min
Weather: Partly Cloudy (75°F)

Actual Time	Elapsed Time	Vol. Purged (Liters)	Depth to Wtr (ft)	Depth of Pump Intake (ft)	Temp (°C)	pH	Cond. (umhos) mS/cm	Turbidity (NTU)	Comments
12:15	00:12	2.16	8.85	35.00	20.33	6.75	2.22	1.1	Clear
12:20	00:17	3.06	8.85	35.00	20.19	6.96	1.34	132	Cloudy
12:25	00:22	3.96	8.85	35.00	20.19	6.89	1.19	145	Cloudy
12:30	00:27	4.86	8.85	35.00	20.08	6.89	1.19	132	Cloudy

Average Linear velocity $v = \frac{Ki}{n}$ Where

K= Hydraulic Conductivity (ft/min)
i = Gradient (ft/ft)
n = effective porosity

v=[K_____ft/min. (x) GW elev._____ft. (-) GW elev. _____ft] -_____
distance_____ft
v=_____ft./min. = _____ft day

.18 Clay/Silt
.20 Silt w/sand
.25 sand
.3 sand and gravel

Comments: Metals Sample Turbidity = 8.8 NTU's. VOC samples collected at 12:31 PM on 10/26/20. Metals sample collected at 12:05 PM on 10/27/20.

*All Depths in Feet below Ref. Point on Wellhead Generally Top of Casing (TOC) DTW= Depth to Water

DATE: 10/26/20

FIELD SAMPLING LOG	WELL NO: MW-1A
Location: Loudon County, TN	Site: Matlock Bend Landfill
Client/Operator: Santek Waste Services, LLC	Project No:
Purge Start: (Date) 10/26/20 (Time) 10:49 PM	Purge End: (Date) 10/26/20 (Time) 11:18 PM
Purged by: Wilbourne Markham	
Depth Measurement Ref. Point* 805.13 ft	Well Csg. ID: 2"

Equipment Used to Measure (Make, Model, etc)

DTW Solinst pH Horiba Cond. Horiba T° Horiba .

Measure Well TD: 38.00 (-)Orig. DTW: 11.11 (=) Wtr. Col. Thick: 26.89 .

(x) **2"=0.16** 4"=0.65 6"=1.47 Gals./ft. (=) 4.30 Gals./Csg. Vol. (x) 3 Csg. Vol. (=) 12.91 Total Purge Gals.

GW elev. Ref. 805.13 ft.(-) DTW 11.11 ft. = 794.02 ft.

Purge/Sample Method: ☒ Pump (indicate type) SamplePro
☐ Bailer (indicate type) _

Decon. Method: Distilled Rinse
Purge Wtr. Containerized ? (N) Avg Purge Rate: 375 mL/min
Weather: Cloudy (68°F)

Actual Time	Elapsed Time	Vol. Purged (Liters)	Depth to Wtr (ft)	Depth of Pump Intake (ft)	Temp (°C)	pH	Cond. (umhos) mS/cm	Turbidity (NTU)	Comments
11:02	00:13	4.87	11.57	28.00	20.44	6.28	0.097	6.3	Clear
11:07	00:18	6.75	11.58	28.00	20.59	6.66	2.17	6.0	Clear
11:12	00:23	8.62	11.58	28.00	20.63	6.88	2.74	5.5	Clear
11:17	00:28	10.5	11.58	28.00	20.61	6.97	2.76	5.6	Clear

Average Linear velocity $v = \frac{Ki}{n}$ Where

K= Hydraulic Conductivity (ft/min)
i = Gradient (ft/ft)
n = effective porosity

v=[K ft/min. (x) GW elev. ft. (-) GW elev. ft] - .18 Clay/Silt
distance ft .20 Silt w/sand
v= ft./min. = ft day .25 sand
.3 sand and gravel

Comments: Metals Sample Turbidity = 5.6 NTU's. Samples collected at 11:18 AM on 10/26/20.

*All Depths in Feet below Ref. Point on Wellhead Generally Top of Casing (TOC) DTW= Depth to Water

DATE: 10/27/20

FIELD SAMPLING LOG	WELL NO: MW-02
Location: Loudon County, TN	Site: Matlock Bend Landfill
Client/Operator: Santek Waste Services, LLC	Project No:
Purge Start: (Date) 10/27/20 (Time) 10:55 AM	Purge End: (Date) 10/27/20 (Time) 11:26 AM
Purged by: Wilbourne Markham	
Depth Measurement Ref. Point* 825.20 ft	Well Csg. ID: 2"

Equipment Used to Measure (Make, Model, etc)

DTW Solinst pH Horiba Cond. Horiba T° Horiba .

Measure Well TD: 43.10 (-)Orig. DTW: 20.57 (=) Wtr. Col. Thick: 22.53 .
(20.48 WL on 10/26/20)

(x) 2"=0.16 4"=0.65 6"=1.47 Gals./ft. (=) 3.60 Gals./Csg. Vol. (x) 3 Csg. Vol. (=) 10.81 Total Purge Gals.

GW elev. Ref. 825.20 ft.(-) DTW 20.48 ft. = 804.72 ft.

Purge/Sample Method: ☒ Pump (indicate type) SamplePro
☐ Bailer (indicate type) _

Decon. Method: Distilled Rinse
Purge Wtr. Containerized ? (N) Avg Purge Rate: 120 mL/min
Weather: Cloudy (62°F)

Actual Time	Elapsed Time	Vol. Purged (Liters)	Depth to Wtr (ft)	Depth of Pump Intake (ft)	Temp (°C)	pH	Cond. (umhos) mS/cm	Turbidity (NTU)	Comments
11:10	00:15	1.80	20.81	34.00	18.02	6.58	0.347	4.5	Clear
11:15	00:20	2.40	21.36	34.00	18.18	6.47	0.338	3.6	Clear
11:20	00:25	3.00	21.60	34.00	18.14	6.45	0.300	3.2	Clear
11:25	00:30	3.60	21.85	34.00	18.05	6.51	0.301	1.7	Clear

Average Linear velocity $v = \frac{Ki}{n}$ Where

K= Hydraulic Conductivity (ft/min)
i = Gradient (ft/ft)
n = effective porosity

v=[K ft/min. (x) GW elev. ft. (-) GW elev. ft] - .18 Clay/Silt
distance ft .20 Silt w/sand
v= ft./min. = ft day .25 sand
.3 sand and gravel

Comments: Metals Sample Turbidity = 1.7 NTU's. Samples collected at 11:26 AM on 10/27/20. Duplicate collected here.

*All Depths in Feet below Ref. Point on Wellhead Generally Top of Casing (TOC) DTW= Depth to Water

DATE: 10/26/20

FIELD SAMPLING LOG	WELL NO: MW-03
Location: Loudon County, TN	Site: Matlock Bend Landfill
Client/Operator: Santek Waste Services, LLC	Project No:
Purge Start: (Date) 10/26/20 (Time) 3:53 PM	Purge End: (Date) 10/26/20 (Time) 4:21 PM
Purged by: Wilbourne Markham	
Depth Measurement Ref. Point* 867.86 ft	Well Csg. ID: 2"

Equipment Used to Measure (Make, Model, etc)

DTW Solinst pH Horiba Cond. Horiba T° Horiba .

Measure Well TD: 41.60 (-)Orig. DTW: 13.79 (=) Wtr. Col. Thick: 27.81 .

(x) **2"=0.16** 4"=0.65 6"=1.47 Gals./ft. (=) 4.44 Gals./Csg. Vol. (x) 3 Csg. Vol. (=) 13.35 Total Purge Gals.

GW elev. Ref. 867.86 ft.(-) DTW 13.79 ft. = 854.07 ft.

Purge/Sample Method: ☒ Pump (indicate type) SamplePro
☐ Bailer (indicate type) _

Decon. Method: Distilled Rinse
Purge Wtr. Containerized ? (N) Avg Purge Rate: 120 mL/min
Weather: Cloudy (75°F)

Actual Time	Elapsed Time	Vol. Purged (Liters)	Depth to Wtr (ft)	Depth of Pump Intake (ft)	Temp (°C)	pH	Cond. (umhos) mS/cm	Turbidity (NTU)	Comments
4:05	00:12	1.44	13.81	34.00	22.69	8.14	0.259	15.5	Clear
4:10	00:17	2.04	14.76	34.00	22.33	7.04	0.309	14.2	Clear
4:15	00:22	2.64	14.95	34.00	22.27	6.73	0.325	9.2	Clear
4:20	00:27	3.24	14.98	34.00	22.06	6.71	0.335	5.6	Clear

Average Linear velocity $v = \frac{Ki}{n}$ Where

K= Hydraulic Conductivity (ft/min)
i = Gradient (ft/ft)
n = effective porosity

v=[K ft/min. (x) GW elev. ft. (-) GW elev. ft] - .18 Clay/Silt
distance ft .20 Silt w/sand
v= ft./min. = ft day .25 sand
.3 sand and gravel

Comments: Metals Sample Turbidity = 5.6 NTU's. Samples collected at 4:21 PM on 10/26/20.

*All Depths in Feet below Ref. Point on Wellhead Generally Top of Casing (TOC) DTW= Depth to Water

DATE: 10/26/20

FIELD SAMPLING LOG	WELL NO: MW-4R
Location: Loudon County, TN	Site: Matlock Bend Landfill
Client/Operator: Santek Waste Services, LLC	Project No:
Purge Start: (Date) 10/26/20 (Time) 1:15 PM	Purge End: (Date) 10/26/20 (Time) 1:46 PM
Purged by: Wilbourne Markham	
Depth Measurement Ref. Point* 992.32 ft	Well Csg. ID: 2"

Equipment Used to Measure (Make, Model, etc)

DTW Solinst pH Horiba Cond. Horiba T° Horiba .

Measure Well TD: 106.50 (-)Orig. DTW: 99.25 (=) Wtr. Col. Thick: 7.25 .

(x) **2"=0.16** 4"=0.65 6"=1.47 Gals./ft. (=) 1.16 Gals./Csg. Vol. (x) 3 Csg. Vol. (=) 3.48 Total Purge Gals.

GW elev. Ref. 992.32 ft.(-) DTW 99.25 ft. = 893.07 ft.

Purge/Sample Method: ☒ Pump (indicate type) SamplePro
☐ Bailer (indicate type) __

Decon. Method: Distilled Rinse
Purge Wtr. Containerized ? (N) Avg Purge Rate: 110 mL/min
Weather: Cloudy (75°F)

Actual Time	Elapsed Time	Vol. Purged (Liters)	Depth to Wtr (ft)	Depth of Pump Intake (ft)	Temp (°C)	pH	Cond. (umhos) mS/cm	Turbidity (NTU)	Comments
1:30	00:15	1.65	99.38	106.00	21.51	6.71	0.416	16.4	Clear
1:35	00:20	2.20	99.41	106.00	21.67	6.81	0.312	12.2	Clear
1:40	00:25	2.75	99.47	106.00	21.87	6.91	0.264	9.3	Clear
1:45	00:30	3.30	99.51	106.00	21.96	6.97	0.241	9.1	Clear

Average Linear velocity $v = \frac{Ki}{n}$ Where

K= Hydraulic Conductivity (ft/min)
i = Gradient (ft/ft)
n = effective porosity

v=[K ft/min. (x) GW elev. ft. (-) GW elev. ft] - .18 Clay/Silt
distance ft .20 Silt w/sand
v= ft./min. = ft day .25 sand
.3 sand and gravel

Comments: Metals Sample Turbidity = 9.1 NTU's. Samples collected at 1:46 PM on 10/26/20.

*All Depths in Feet below Ref. Point on Wellhead Generally Top of Casing (TOC) DTW= Depth to Water

DATE: 10/26/20

FIELD SAMPLING LOG	WELL NO: MW-05
Location: Loudon County, TN	Site: Matlock Bend Landfill
Client/Operator: Santek Waste Services, LLC	Project No:
Purge Start: (Date) 10/26/20 (Time) 2:30 PM	Purge End: (Date) 10/26/20 (Time) 3:06 PM
Purged by: Wilbourne Markham	
Depth Measurement Ref. Point* 936.84 ft	Well Csg. ID: 2"

Equipment Used to Measure (Make, Model, etc)

DTW Solinst pH Horiba Cond. Horiba T° Horiba .

Measure Well TD: 172.71 (-)Orig. DTW: 94.90 (=) Wtr. Col. Thick: 77.81 .

(x) **2"=0.16** 4"=0.65 6"=1.47 Gals./ft. (=) 12.44 Gals./Csg. Vol. (x) 3 Csg. Vol. (=) 37.35 Total Purge Gals.

GW elev. Ref. 936.84 ft.(-) DTW 94.90 ft. = 841.94 ft.

Purge/Sample Method: ☒ Pump (indicate type) SamplePro
☐ Bailer (indicate type) _

Decon. Method: Distilled Rinse
Purge Wtr. Containerized ? (N) Avg Purge Rate: 180 mL/min
Weather: Cloudy (80°F)

Actual Time	Elapsed Time	Vol. Purged (Liters)	Depth to Wtr (ft)	Depth of Pump Intake (ft)	Temp (°C)	pH	Cond. (umhos) mS/cm	Turbidity (NTU)	Comments
2:50	00:20	3.60	94.95	163.00	23.90	7.38	0.206	29.4	Cloudy
2:55	00:25	4.50	95.25	163.00	23.81	7.57	0.222	20.4	Cloudy
3:00	00:30	5.40	95.25	163.00	23.79	7.77	0.234	13.8	Clear
3:05	00:35	6.30	95.25	163.00	23.61	7.85	0.240	8.9	Clear

Average Linear velocity $v = \frac{Ki}{n}$ Where

K= Hydraulic Conductivity (ft/min)
i = Gradient (ft/ft)
n = effective porosity

v=[K ft/min. (x) GW elev. ft. (-) GW elev. ft] - .18 Clay/Silt
distance ft .20 Silt w/sand
v= ft./min. = ft day .25 sand
.3 sand and gravel

Comments: Metals Sample Turbidity = 8.9 NTU's. Samples collected at 3:06 PM on 10/26/20.

*All Depths in Feet below Ref. Point on Wellhead Generally Top of Casing (TOC) DTW= Depth to Water

CONFIRMATION SAMPLE FIELD LOGS

DATE: 12/1/20

FIELD SAMPLING LOG	WELL NO: MW-01
Location: Loudon County, TN	Site: Matlock Bend Landfill
Client/Operator: Santek Waste Services, LLC	Project No:
Purge Start: (Date) 12/1/20 (Time) 12:58 PM	Purge End: (Date) 12/1/20 (Time) 1:27 PM
Purged by: Wilbourne Markham	
Depth Measurement Ref. Point* 830.87 ft	Well Csg. ID: 2"

Equipment Used to Measure (Make, Model, etc)

DTW Solinst pH Horiba Cond. Horiba T° Horiba .

Measure Well TD: 45.00 (-)Orig. DTW: 8.96 (=) Wtr. Col. Thick: 36.04 .
(8.70 WL on 10/26/20)

(x) **2"=0.16** 4"=0.65 6"=1.47 Gals./ft. (=) 5.76 Gals./Csg. Vol. (x) 3 Csg. Vol. (=) 17.30 Total Purge Gals.

GW elev. Ref. 830.87 ft.(-) DTW 8.70 ft. = 822.17 ft.

Purge/Sample Method: ☒ Pump (indicate type) SamplePro
☐ Bailer (indicate type) _

Decon. Method: Distilled Rinse
Purge Wtr. Containerized ? (N) Avg Purge Rate: 180 mL/min
Weather: Partly Cloudy (33°F)

Actual Time	Elapsed Time	Vol. Purged (Liters)	Depth to Wtr (ft)	Depth of Pump Intake (ft)	Temp (°C)	pH	Cond. (umhos) mS/cm	Turbidity (NTU)	Comments
1:11	00:13	2.34	9.02	35.00	8.81	8.36	0.450	7.4	Clear
1:16	00:18	3.24	9.10	35.00	8.43	8.41	0.422	6.1	Clear
1:21	00:23	4.14	9.11	35.00	8.62	8.47	0.408	2.3	Clear
1:26	00:28	5.04	9.11	35.00	8.85	8.38	0.404	2.6	Clear

Average Linear velocity $v = \frac{Ki}{n}$ Where

K= Hydraulic Conductivity (ft/min)
i = Gradient (ft/ft)
n = effective porosity

v=[K ft/min. (x) GW elev. ft. (-) GW elev. ft] - .18 Clay/Silt
distance ft .20 Silt w/sand
v= ft./min. = ft day .25 sand
.3 sand and gravel

Comments: Metals Sample Turbidity = 2.6 NTU's. Metals samples collected at 1:27 PM on 12/1/20.

*All Depths in Feet below Ref. Point on Wellhead Generally Top of Casing (TOC) DTW= Depth to Water

DATE: 12/1/20

FIELD SAMPLING LOG	WELL NO: MW-02
Location: Loudon County, TN	Site: Matlock Bend Landfill
Client/Operator: Santek Waste Services, LLC	Project No:
Purge Start: (Date) 12/1/20 (Time) 3:05 PM	Purge End: (Date) 12/1/20 (Time) 3:34 PM
Purged by: Wilbourne Markham	
Depth Measurement Ref. Point* 825.20 ft	Well Csg. ID: 2"

Equipment Used to Measure (Make, Model, etc)

DTW Solinst pH Horiba Cond. Horiba T° Horiba .

Measure Well TD: 43.10 (-)Orig. DTW: 18.89 (=) Wtr. Col. Thick: 24.21 .
(20.48 WL on 10/26/20)

(x) 2"=0.16 4"=0.65 6"=1.47 Gals./ft. (=) 3.87 Gals./Csg. Vol. (x) 3 Csg. Vol. (=) 11.62 Total Purge Gals.

GW elev. Ref. 825.20 ft.(-) DTW 20.48 ft. = 804.72 ft.

Purge/Sample Method: ☒ Pump (indicate type) SamplePro
☐ Bailer (indicate type) _

Decon. Method: Distilled Rinse
Purge Wtr. Containerized ? (N) Avg Purge Rate: 120 mL/min
Weather: Cloudy (35°F)

Actual Time	Elapsed Time	Vol. Purged (Liters)	Depth to Wtr (ft)	Depth of Pump Intake (ft)	Temp (°C)	pH	Cond. (umhos) mS/cm	Turbidity (NTU)	Comments
3:18	00:13	1.56	19.16	34.00	6.00	6.94	0.240	8.5	Clear
3:23	00:18	2.16	19.50	34.00	6.40	7.45	0.270	7.0	Clear
3:28	00:23	2.76	19.73	34.00	6.56	7.56	0.319	5.8	Clear
3:33	00:28	3.36	19.96	34.00	6.82	7.57	0.320	6.4	Clear

Average Linear velocity $v = \frac{Ki}{n}$ Where

K= Hydraulic Conductivity (ft/min)
i = Gradient (ft/ft)
n = effective porosity

v=[K_____ft/min. (x) GW elev._____ft. (-) GW elev. _____ft] -_____
distance_____ft
v=_____ft./min. = _____ft day

.18 Clay/Silt
.20 Silt w/sand
.25 sand
.3 sand and gravel

Comments: Metals Sample Turbidity = 6.4 NTU's. Metals sample collected at 3:34 PM on 12/1/20.

*All Depths in Feet below Ref. Point on Wellhead Generally Top of Casing (TOC) DTW= Depth to Water

DATE: 12/1/20

FIELD SAMPLING LOG	WELL NO: MW-03
Location: Loudon County, TN	Site: Matlock Bend Landfill
Client/Operator: Santek Waste Services, LLC	Project No:
Purge Start: (Date) 12/1/20 (Time) 2:00 PM	Purge End: (Date) 12/1/20 (Time) 2:31 PM
Purged by: Wilbourne Markham	
Depth Measurement Ref. Point* 867.86 ft	Well Csg. ID: 2"

Equipment Used to Measure (Make, Model, etc)

DTW Solinst pH Horiba Cond. Horiba T° Horiba .

Measure Well TD: 41.60 (-)Orig. DTW: 13.49 (=) Wtr. Col. Thick: 28.11 .
(13.79 WL on 10/26/20)

2"=0.16
(x) 4"=0.65 Gals./ft. (=) 4.49 Gals./Csg. Vol. (x) 3 Csg. Vol. (=) 13.50 Total Purge Gals.
6"=1.47

GW elev. Ref. 867.86 ft.(-) DTW 13.79 ft. = 854.07 ft.

Purge/Sample Method: ☒ Pump (indicate type) SamplePro
☐ Bailer (indicate type) _

Decon. Method: Distilled Rinse
Purge Wtr. Containerized ? (N) Avg Purge Rate: 120 mL/min
Weather: Partly Cloudy (36°F)

Actual Time	Elapsed Time	Vol. Purged (Liters)	Depth to Wtr (ft)	Depth of Pump Intake (ft)	Temp (°C)	pH	Cond. (umhos) mS/cm	Turbidity (NTU)	Comments
2:15	00:15	1.80	13.61	32.00	5.92	7.68	0.412	10.8	Clear
2:20	00:20	2.40	14.05	32.00	6.55	7.30	0.382	8.7	Clear
2:25	00:25	3.00	14.42	32.00	6.83	7.17	0.372	9.5	Clear
2:30	00:30	3.60	14.71	32.00	7.50	7.09	0.365	7.7	Clear

Average Linear velocity $v = \frac{Ki}{n}$ Where

K= Hydraulic Conductivity (ft/min)
i = Gradient (ft/ft)
n = effective porosity

v=[K_____ft/min. (x) GW elev._____ft. (-) GW elev. _____ft] -_____
distance_____ft
v=_____ft./min. = _____ft day

.18 Clay/Silt
.20 Silt w/sand
.25 sand
.3 sand and gravel

Comments: Metals Sample Turbidity = 7.7 NTU's. Metals sample collected at 2:31 PM on 12/1/20.

*All Depths in Feet below Ref. Point on Wellhead Generally Top of Casing (TOC) DTW= Depth to Water

APPENDIX B

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

November 04, 2020

Robert Hudson
Santek Waste Services, LLC

650 25th Street NW, Suite 100
Cleveland TN 37311

RE: Loudon Co (Matlock Bend) Landfill

Dear Robert Hudson: Order No: 2010S77

Analytical Environmental Services, Inc. received 6 samples on 10/27/2020 9:41:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES's accreditations are as follows:
-NELAP/State of Florida Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, Air & Emissions Volatile Organics, and Drinking Water Microbiology & Metals, effective 07/01/20-06/30/21.
State of Georgia, Department of Natural Resources ID #800 for analysis of Drinking Water Metals, effective through 06/30/21 and Total Coliforms/ E. coli, effective 04/20/20-04/24/23.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Metals and PCM Asbestos), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 11/01/21.
These results relate only to the items tested as received. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Chris Pafford

Project Manager

3080 Presidential Drive • Atlanta, Georgia 30340 • Tel: 770.457.8177 • Fax: 770.457.8188 • Toll Free: 800.972.4889
www.aesatlanta.com

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

Analytical Environmental Services, Inc.
3080 Presidential Drive, Atlanta, GA 30340 Phone: (770) 457-8177

CHAIN OF CUSTODY

Work Order: 2010577
Page ___ of ___

COMPANY:	ADDRESS:
Santek Waste Services, LLC	650 25th St. NW, Suite 100 Cleveland, TN 37311
PHONE: (423) 303-7101	EMAIL: rhudson@santekwasteservices.com
SAMPLED BY: Wilbourne Markham	SIGNATURE:

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	GRAB	COMPOSITE	MATRIX (see codes)	App I VOC (8260)	App I VOC (8011)	App I Metals (Hg, Ni)	Total Ca, Fe, Mg, K, Na	Diss Mn	COD, NH_3	TDS	F, Cl, NO_3, SO_4	CN	TOC	Fluoride			REMARKS	Number of Containers
	ANALYSIS REQUESTED																				
	PRESERVATION (see codes)																				
1	MW-01	10/26/20	12:31 PM	X		GW	X	X			X	X	X	X	X	X	X				
2	MW-1A	10/26/20	11:18 AM	X		GW	X	X	X	X	X	X	X	X	X	X	X				
3	MW-03	10/26/20	4:21 PM	X		GW	X	X	X	X	X	X	X	X	X	X	X				
4	MW-4R	10/26/20	1:46 PM	X		GW	X	X	X	X	X	X	X	X	X	X	X				
5	MW-05	10/26/20	3:06 PM	X		GW	X	X	X	X	X	X	X	X	X	X	X				
6	Trip Blank						X														
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					

Visit our website www.aesatlanta.com for downloadable COCs and to log in to your AESAccess account.

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME
1. WC Markham	10/26/20 6:21 PM	1. Brea Hill	10/27/20 9:41
2.		2.	
3		3	

SPECIAL INSTRUCTIONS/COMMENTS: See Chris Patford + Project History

SHIPMENT METHOD
OUT: / / VIA:
IN: / / VIA:
Client (FedEx) UPS US mail courier
other: _____

PROJECT INFORMATION
PROJECT NAME: London Co (Mutlock Bend) Landfill
PROJECT #:
SITE ADDRESS:
SEND REPORT TO: R. Hudson
INVOICE TO (IF DIFFERENT FROM ABOVE):
QUOTE #: _____ PO#: _____

RECEIPT
Total # of Containers

Turnaround Time (TAT) Request
- [x] Standard
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same-Day Rush (auth req.)
- [ ] Other _____

REGULATORY PROGRAM (if any):
DATA PACKAGE: I ○ II ○ III ○ IV ○

Submission of samples to the laboratory constitutes acceptance of AES's Terms & Conditions. Client assumes sole responsibility for damage or loss of samples before we accept them. Samples received after 3PM or on Saturday are considered as received the following business day. If no TAT is marked on COC, AES will proceed with standard TAT. Samples are disposed of 30 days after completion of report unless other arrangements are made.

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water ST=Stormwater WW = Waste Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify)

Preservative Codes: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

4.30.20_COC

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc

Date: 4-Nov-20

Client: Santek Waste Services, LLC
Project: Loudon Co (Matlock Bend) Landfill
Lab ID: 2010S77

Case Narrative

Sample Receiving Nonconformance:

Sample bottles were not received for COD, NH3, Dissolved Metals, TDS, Cyanide or TOC for sample IDs "MW-04R" and "MW-05." Per Robert Hudson the analyses were not required and the lab proceeded with analysis per project requirements for "Ground Water Monitoring Information" list. Samples for Metals were split and preserved for sample 2010S77-001 to meet list requirements but were later received under workorder 2010U18. Analysis was stopped on 2010S77-001 for Appendix 1 metals and Mercury.

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-01
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 12:31:00 PM
Lab ID:	2010S77-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Organic Carbon (TOC) by SM5310B								
Organic Carbon, Total	8.23	1.00		mg/L	R438291	1	10/28/2020 16:17	GK
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	264	1		mg/L	304929	1	10/28/2020 12:45	NN
Nitrogen, Ammonia (as N) E350.1				**(E350.1)**				
Nitrogen, Ammonia (As N)	BRL	0.200		mg/L	305165	1	11/02/2020 10:47	TL
MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011				**(SW8011)**				
1,2-Dibromo-3-chloropropane	BRL	0.196		ug/L	305134	1	11/02/2020 17:35	SB
1,2-Dibromoethane	BRL	0.049		ug/L	305134	1	11/02/2020 17:35	SB
Surr: 4-Bromofluorobenzene	107	73.6-140		%REC	305134	1	11/02/2020 17:35	SB
Inorganic Anions by IC EPA 300.0								
Chloride	29.6	1.00		mg/L	R438493	1	10/27/2020 20:35	IP
Fluoride	1.35	1.00		mg/L	R438493	1	10/27/2020 20:35	IP
Nitrogen, Nitrate (As N)	1.52	0.250		mg/L	R438493	1	10/27/2020 20:35	IP
Sulfate	3.29	1.00		mg/L	R438493	1	10/27/2020 20:35	IP
Dissolved Metals by ICP/MS SW6020B				**(SW3005A)**				
Manganese	BRL	10.0		ug/L	305036	1	11/02/2020 12:50	AS
Cyanide SW9014				**(SW9010C)**				
Cyanide, Total	BRL	0.200		mg/L	305213	1	11/03/2020 11:24	CB
Chemical Oxygen Demand (COD) E410.4								
Chemical Oxygen Demand	BRL	10.0		mg/L	R438594	1	11/02/2020 16:10	AT
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
1,1,1-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
1,1,2-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
1,1-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
1,1-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
1,2,3-Trichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
1,2-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
1,2-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
1,2-Dichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
1,4-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
2-Butanone	BRL	50		ug/L	305194	1	10/30/2020 17:08	OM
2-Hexanone	BRL	10		ug/L	305194	1	10/30/2020 17:08	OM
4-Methyl-2-pentanone	BRL	10		ug/L	305194	1	10/30/2020 17:08	OM
Acetone	BRL	50		ug/L	305194	1	10/30/2020 17:08	OM
Acrylonitrile	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-01
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 12:31:00 PM
Lab ID:	2010S77-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
Benzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Bromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Bromodichloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Bromoform	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Bromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Carbon disulfide	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Carbon tetrachloride	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Chlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Chloroethane	BRL	10		ug/L	305194	1	10/30/2020 17:08	OM
Chloroform	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Chloromethane	BRL	10		ug/L	305194	1	10/30/2020 17:08	OM
cis-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
cis-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Dibromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Dibromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Ethylbenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Iodomethane	BRL	10		ug/L	305194	1	10/30/2020 17:08	OM
m,p-Xylene	BRL	10		ug/L	305194	1	10/30/2020 17:08	OM
Methylene chloride	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
o-Xylene	BRL	10		ug/L	305194	1	10/30/2020 17:08	OM
Styrene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Tetrachloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Toluene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
trans-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
trans-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	305194	1	10/30/2020 17:08	OM
Trichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Trichlorofluoromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:08	OM
Vinyl acetate	BRL	10		ug/L	305194	1	10/30/2020 17:08	OM
Vinyl chloride	BRL	2.0		ug/L	305194	1	10/30/2020 17:08	OM
Surr: 4-Bromofluorobenzene	103	64-125		%REC	305194	1	10/30/2020 17:08	OM
Surr: Dibromofluoromethane	108	76.4-125		%REC	305194	1	10/30/2020 17:08	OM
Surr: Toluene-d8	99.4	78.3-116		%REC	305194	1	10/30/2020 17:08	OM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-1A
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 11:18:00 AM
Lab ID:	2010S77-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Organic Carbon (TOC) by SM5310B								
Organic Carbon, Total	13.2	1.00		mg/L	R438291	1	10/28/2020 15:04	GK
Total Metals by ICP/MS SW6020B					**(SW3005A)**			
Calcium	182000	10000		ug/L	305067	100	11/03/2020 16:29	AS
Iron	137	100		ug/L	305067	1	10/30/2020 17:39	AS
Magnesium	62900	10000		ug/L	305067	100	11/03/2020 16:29	AS
Potassium	104000	10000		ug/L	305067	100	11/03/2020 16:29	AS
Sodium	319000	50000		ug/L	305067	100	11/03/2020 16:29	AS
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	1510	2		mg/L	304929	1	10/28/2020 12:45	NN
Nitrogen, Ammonia (as N) E350.1					**(E350.1)**			
Nitrogen, Ammonia (As N)	1.48	0.200		mg/L	305165	1	11/02/2020 10:49	TL
MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011					**(SW8011)**			
1,2-Dibromo-3-chloropropane	BRL	0.039		ug/L	305134	1	11/02/2020 18:04	SB
1,2-Dibromoethane	BRL	0.020		ug/L	305134	1	11/02/2020 18:04	SB
Surr: 4-Bromofluorobenzene	107	73.6-140		%REC	305134	1	11/02/2020 18:04	SB
Mercury, Total SW7470A					**(SW7470A)**			
Mercury	BRL	0.00050		mg/L	305171	1	11/02/2020 18:53	SK
Inorganic Anions by IC EPA 300.0								
Chloride	655	20.0		mg/L	R438493	20	10/28/2020 12:57	IP
Fluoride	BRL	1.00		mg/L	R438493	1	10/27/2020 20:45	IP
Nitrogen, Nitrate (As N)	13.0	2.50		mg/L	R438493	10	10/28/2020 00:45	IP
Sulfate	31.9	1.00		mg/L	R438493	1	10/27/2020 20:45	IP
Dissolved Metals by ICP/MS SW6020B					**(SW3005A)**			
Manganese	159	5.00		ug/L	305036	1	11/02/2020 12:17	AS
Cyanide SW9014					**(SW9010C)**			
Cyanide, Total	BRL	0.010		mg/L	305213	1	11/03/2020 11:17	CB
Chemical Oxygen Demand (COD) E410.4								
Chemical Oxygen Demand	77.5	10.0		mg/L	R438594	1	11/02/2020 16:10	AT
APPENDIX I VOLATILE ORGANICS SW8260D					**(SW5030B)**			
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
1,1,1-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
1,1,2-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
1,1-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
1,1-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-1A
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 11:18:00 AM
Lab ID:	2010S77-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
1,2,3-Trichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
1,2-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
1,2-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
1,2-Dichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
1,4-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
2-Butanone	BRL	50		ug/L	305194	1	10/30/2020 17:33	OM
2-Hexanone	BRL	10		ug/L	305194	1	10/30/2020 17:33	OM
4-Methyl-2-pentanone	BRL	10		ug/L	305194	1	10/30/2020 17:33	OM
Acetone	BRL	50		ug/L	305194	1	10/30/2020 17:33	OM
Acrylonitrile	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Benzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Bromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Bromodichloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Bromoform	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Bromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Carbon disulfide	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Carbon tetrachloride	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Chlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Chloroethane	BRL	10		ug/L	305194	1	10/30/2020 17:33	OM
Chloroform	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Chloromethane	BRL	10		ug/L	305194	1	10/30/2020 17:33	OM
cis-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
cis-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Dibromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Dibromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Ethylbenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Iodomethane	BRL	10		ug/L	305194	1	10/30/2020 17:33	OM
m,p-Xylene	BRL	10		ug/L	305194	1	10/30/2020 17:33	OM
Methylene chloride	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
o-Xylene	BRL	10		ug/L	305194	1	10/30/2020 17:33	OM
Styrene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Tetrachloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Toluene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
trans-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
trans-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	305194	1	10/30/2020 17:33	OM
Trichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Trichlorofluoromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:33	OM
Vinyl acetate	BRL	10		ug/L	305194	1	10/30/2020 17:33	OM
Vinyl chloride	BRL	2.0		ug/L	305194	1	10/30/2020 17:33	OM
Surr: 4-Bromofluorobenzene	98.6	64-125		%REC	305194	1	10/30/2020 17:33	OM
Surr: Dibromofluoromethane	101	76.4-125		%REC	305194	1	10/30/2020 17:33	OM
Surr: Toluene-d8	102	78.3-116		%REC	305194	1	10/30/2020 17:33	OM
APPENDIX I METALS SW6020B				**(SW3005A)**				

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-1A
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 11:18:00 AM
Lab ID:	2010S77-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I METALS SW6020B					**(SW3005A)**			
Antimony	BRL	0.00150		mg/L	305067	1	10/30/2020 17:39	AS
Arsenic	BRL	0.00250		mg/L	305067	1	10/30/2020 17:39	AS
Barium	0.349	0.0100		mg/L	305067	1	10/30/2020 17:39	AS
Beryllium	BRL	0.00100		mg/L	305067	1	10/30/2020 17:39	AS
Cadmium	BRL	0.000700		mg/L	305067	1	10/30/2020 17:39	AS
Chromium	BRL	0.00500		mg/L	305067	1	10/30/2020 17:39	AS
Cobalt	BRL	0.00500		mg/L	305067	1	10/30/2020 17:39	AS
Copper	BRL	0.00200		mg/L	305067	1	10/30/2020 17:39	AS
Lead	BRL	0.00100		mg/L	305067	1	10/30/2020 17:39	AS
Nickel	BRL	0.00500		mg/L	305067	1	10/30/2020 17:39	AS
Selenium	BRL	0.00500		mg/L	305067	1	10/30/2020 17:39	AS
Silver	BRL	0.00100		mg/L	305067	1	10/30/2020 17:39	AS
Thallium	BRL	0.000500		mg/L	305067	1	10/30/2020 17:39	AS
Vanadium	BRL	0.00500		mg/L	305067	1	10/30/2020 17:39	AS
Zinc	0.0112	0.0100		mg/L	305067	1	10/30/2020 17:39	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-03
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 4:21:00 PM
Lab ID:	2010S77-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Organic Carbon (TOC) by SM5310B								
Organic Carbon, Total	7.52	1.00		mg/L	R438291	1	10/28/2020 15:58	GK
Total Metals by ICP/MS SW6020B					(SW3005A)			
Calcium	19600	100		ug/L	305067	1	10/30/2020 18:01	AS
Iron	405	100		ug/L	305067	1	10/30/2020 18:01	AS
Magnesium	6250	100		ug/L	305067	1	10/30/2020 18:01	AS
Potassium	5580	100		ug/L	305067	1	10/30/2020 18:01	AS
Sodium	31600	10000		ug/L	305067	20	11/03/2020 16:47	AS
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	192	1		mg/L	304929	1	10/28/2020 12:45	NN
Nitrogen, Ammonia (as N) E350.1					(E350.1)			
Nitrogen, Ammonia (As N)	4.32	0.200		mg/L	305165	1	11/02/2020 11:05	TL
MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011					(SW8011)			
1,2-Dibromo-3-chloropropane	BRL	0.040		ug/L	305134	1	11/02/2020 19:01	SB
1,2-Dibromoethane	BRL	0.020		ug/L	305134	1	11/02/2020 19:01	SB
Surr: 4-Bromofluorobenzene	106	73.6-140		%REC	305134	1	11/02/2020 19:01	SB
Mercury, Total SW7470A					(SW7470A)			
Mercury	BRL	0.00050		mg/L	305171	1	11/02/2020 19:05	SK
Inorganic Anions by IC EPA 300.0								
Chloride	67.7	10.0		mg/L	R438493	10	10/28/2020 12:46	IP
Fluoride	1.31	1.00		mg/L	R438493	1	10/27/2020 21:18	IP
Nitrogen, Nitrate (As N)	BRL	0.250		mg/L	R438493	1	10/27/2020 21:18	IP
Sulfate	27.1	1.00		mg/L	R438493	1	10/27/2020 21:18	IP
Dissolved Metals by ICP/MS SW6020B					(SW3005A)			
Manganese	6660	50.0		ug/L	305036	10	11/03/2020 14:42	AS
Cyanide SW9014					(SW9010C)			
Cyanide, Total	BRL	0.200		mg/L	305213	1	11/03/2020 11:28	CB
Chemical Oxygen Demand (COD) E410.4								
Chemical Oxygen Demand	18.5	10.0		mg/L	R438594	1	11/02/2020 16:10	AT
APPENDIX I VOLATILE ORGANICS SW8260D					(SW5030B)			
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
1,1,1-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
1,1,2-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
1,1-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
1,1-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-03
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 4:21:00 PM
Lab ID:	2010S77-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
1,2,3-Trichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
1,2-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
1,2-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
1,2-Dichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
1,4-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
2-Butanone	BRL	50		ug/L	305194	1	10/30/2020 17:57	OM
2-Hexanone	BRL	10		ug/L	305194	1	10/30/2020 17:57	OM
4-Methyl-2-pentanone	BRL	10		ug/L	305194	1	10/30/2020 17:57	OM
Acetone	BRL	50		ug/L	305194	1	10/30/2020 17:57	OM
Acrylonitrile	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Benzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Bromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Bromodichloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Bromoform	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Bromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Carbon disulfide	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Carbon tetrachloride	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Chlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Chloroethane	BRL	10		ug/L	305194	1	10/30/2020 17:57	OM
Chloroform	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Chloromethane	BRL	10		ug/L	305194	1	10/30/2020 17:57	OM
cis-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
cis-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Dibromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Dibromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Ethylbenzene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Iodomethane	BRL	10		ug/L	305194	1	10/30/2020 17:57	OM
m,p-Xylene	BRL	10		ug/L	305194	1	10/30/2020 17:57	OM
Methylene chloride	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
o-Xylene	BRL	10		ug/L	305194	1	10/30/2020 17:57	OM
Styrene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Tetrachloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Toluene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
trans-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
trans-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	305194	1	10/30/2020 17:57	OM
Trichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Trichlorofluoromethane	BRL	5.0		ug/L	305194	1	10/30/2020 17:57	OM
Vinyl acetate	BRL	10		ug/L	305194	1	10/30/2020 17:57	OM
Vinyl chloride	BRL	2.0		ug/L	305194	1	10/30/2020 17:57	OM
Surr: 4-Bromofluorobenzene	104	64-125		%REC	305194	1	10/30/2020 17:57	OM
Surr: Dibromofluoromethane	109	76.4-125		%REC	305194	1	10/30/2020 17:57	OM
Surr: Toluene-d8	100	78.3-116		%REC	305194	1	10/30/2020 17:57	OM
APPENDIX I METALS SW6020B				**(SW3005A)**				

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-03
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 4:21:00 PM
Lab ID:	2010S77-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I METALS SW6020B					**(SW3005A)**			
Antimony	BRL	0.00150		mg/L	305067	1	10/30/2020 18:01	AS
Arsenic	0.00296	0.00250		mg/L	305067	1	10/30/2020 18:01	AS
Barium	0.0419	0.0100		mg/L	305067	1	10/30/2020 18:01	AS
Beryllium	BRL	0.00100		mg/L	305067	1	10/30/2020 18:01	AS
Cadmium	BRL	0.000700		mg/L	305067	1	10/30/2020 18:01	AS
Chromium	BRL	0.00500		mg/L	305067	1	10/30/2020 18:01	AS
Cobalt	0.0442	0.00500		mg/L	305067	1	10/30/2020 18:01	AS
Copper	BRL	0.00200		mg/L	305067	1	10/30/2020 18:01	AS
Lead	BRL	0.00100		mg/L	305067	1	10/30/2020 18:01	AS
Nickel	0.00832	0.00500		mg/L	305067	1	10/30/2020 18:01	AS
Selenium	BRL	0.00500		mg/L	305067	1	10/30/2020 18:01	AS
Silver	BRL	0.00100		mg/L	305067	1	10/30/2020 18:01	AS
Thallium	BRL	0.000500		mg/L	305067	1	10/30/2020 18:01	AS
Vanadium	BRL	0.00500		mg/L	305067	1	10/30/2020 18:01	AS
Zinc	BRL	0.0100		mg/L	305067	1	10/30/2020 18:01	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-4R
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 1:46:00 PM
Lab ID:	2010S77-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011				**(SW8011)**				
1,2-Dibromo-3-chloropropane	BRL	0.040		ug/L	305134	1	11/02/2020 19:30	SB
1,2-Dibromoethane	BRL	0.020		ug/L	305134	1	11/02/2020 19:30	SB
Surr: 4-Bromofluorobenzene	109	73.6-140		%REC	305134	1	11/02/2020 19:30	SB
Mercury, Total SW7470A				**(SW7470A)**				
Mercury	BRL	0.00050		mg/L	305171	1	11/02/2020 19:09	SK
Inorganic Anions by IC E300.0								
Fluoride	BRL	1.00		mg/L	R438544	1	10/30/2020 21:59	IP
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
1,1,1-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
1,1,2-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
1,1-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
1,1-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
1,2,3-Trichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
1,2-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
1,2-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
1,2-Dichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
1,4-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
2-Butanone	BRL	50		ug/L	305194	1	10/30/2020 18:22	OM
2-Hexanone	BRL	10		ug/L	305194	1	10/30/2020 18:22	OM
4-Methyl-2-pentanone	BRL	10		ug/L	305194	1	10/30/2020 18:22	OM
Acetone	BRL	50		ug/L	305194	1	10/30/2020 18:22	OM
Acrylonitrile	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Benzene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Bromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Bromodichloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Bromoform	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Bromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Carbon disulfide	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Carbon tetrachloride	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Chlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Chloroethane	BRL	10		ug/L	305194	1	10/30/2020 18:22	OM
Chloroform	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Chloromethane	BRL	10		ug/L	305194	1	10/30/2020 18:22	OM
cis-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
cis-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Dibromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Dibromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Ethylbenzene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Iodomethane	BRL	10		ug/L	305194	1	10/30/2020 18:22	OM
m,p-Xylene	BRL	10		ug/L	305194	1	10/30/2020 18:22	OM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-4R
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 1:46:00 PM
Lab ID:	2010S77-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
Methylene chloride	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
o-Xylene	BRL	10		ug/L	305194	1	10/30/2020 18:22	OM
Styrene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Tetrachloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Toluene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
trans-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
trans-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	305194	1	10/30/2020 18:22	OM
Trichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Trichlorofluoromethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:22	OM
Vinyl acetate	BRL	10		ug/L	305194	1	10/30/2020 18:22	OM
Vinyl chloride	BRL	2.0		ug/L	305194	1	10/30/2020 18:22	OM
Surr: 4-Bromofluorobenzene	98.8	64-125		%REC	305194	1	10/30/2020 18:22	OM
Surr: Dibromofluoromethane	99.9	76.4-125		%REC	305194	1	10/30/2020 18:22	OM
Surr: Toluene-d8	102	78.3-116		%REC	305194	1	10/30/2020 18:22	OM
APPENDIX I METALS SW6020B				**(SW3005A)**				
Antimony	BRL	0.00150		mg/L	305067	1	10/30/2020 18:04	AS
Arsenic	BRL	0.00250		mg/L	305067	1	10/30/2020 18:04	AS
Barium	0.0328	0.0100		mg/L	305067	1	10/30/2020 18:04	AS
Beryllium	BRL	0.00100		mg/L	305067	1	10/30/2020 18:04	AS
Cadmium	BRL	0.000700		mg/L	305067	1	10/30/2020 18:04	AS
Chromium	BRL	0.00500		mg/L	305067	1	10/30/2020 18:04	AS
Cobalt	BRL	0.00500		mg/L	305067	1	10/30/2020 18:04	AS
Copper	BRL	0.00200		mg/L	305067	1	10/30/2020 18:04	AS
Lead	BRL	0.00100		mg/L	305067	1	10/30/2020 18:04	AS
Nickel	BRL	0.00500		mg/L	305067	1	10/30/2020 18:04	AS
Selenium	BRL	0.00500		mg/L	305067	1	10/30/2020 18:04	AS
Silver	BRL	0.00100		mg/L	305067	1	10/30/2020 18:04	AS
Thallium	BRL	0.000500		mg/L	305067	1	10/30/2020 18:04	AS
Vanadium	BRL	0.00500		mg/L	305067	1	10/30/2020 18:04	AS
Zinc	BRL	0.0100		mg/L	305067	1	10/30/2020 18:04	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-05
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 3:06:00 PM
Lab ID:	2010S77-005	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011				**(SW8011)**				
1,2-Dibromo-3-chloropropane	BRL	0.040		ug/L	305134	1	11/02/2020 19:59	SB
1,2-Dibromoethane	BRL	0.020		ug/L	305134	1	11/02/2020 19:59	SB
Surr: 4-Bromofluorobenzene	105	73.6-140		%REC	305134	1	11/02/2020 19:59	SB
Mercury, Total SW7470A				**(SW7470A)**				
Mercury	BRL	0.00050		mg/L	305171	1	11/02/2020 19:25	SK
Inorganic Anions by IC E300.0								
Fluoride	BRL	1.00		mg/L	R438544	1	10/30/2020 22:15	IP
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
1,1,1-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
1,1,2-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
1,1-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
1,1-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
1,2,3-Trichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
1,2-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
1,2-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
1,2-Dichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
1,4-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
2-Butanone	BRL	50		ug/L	305194	1	10/30/2020 18:46	OM
2-Hexanone	BRL	10		ug/L	305194	1	10/30/2020 18:46	OM
4-Methyl-2-pentanone	BRL	10		ug/L	305194	1	10/30/2020 18:46	OM
Acetone	BRL	50		ug/L	305194	1	10/30/2020 18:46	OM
Acrylonitrile	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Benzene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Bromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Bromodichloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Bromoform	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Bromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Carbon disulfide	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Carbon tetrachloride	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Chlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Chloroethane	BRL	10		ug/L	305194	1	10/30/2020 18:46	OM
Chloroform	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Chloromethane	BRL	10		ug/L	305194	1	10/30/2020 18:46	OM
cis-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
cis-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Dibromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Dibromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Ethylbenzene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Iodomethane	BRL	10		ug/L	305194	1	10/30/2020 18:46	OM
m,p-Xylene	BRL	10		ug/L	305194	1	10/30/2020 18:46	OM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-05
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/26/2020 3:06:00 PM
Lab ID:	2010S77-005	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
Methylene chloride	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
o-Xylene	BRL	10		ug/L	305194	1	10/30/2020 18:46	OM
Styrene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Tetrachloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Toluene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
trans-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
trans-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	305194	1	10/30/2020 18:46	OM
Trichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Trichlorofluoromethane	BRL	5.0		ug/L	305194	1	10/30/2020 18:46	OM
Vinyl acetate	BRL	10		ug/L	305194	1	10/30/2020 18:46	OM
Vinyl chloride	BRL	2.0		ug/L	305194	1	10/30/2020 18:46	OM
Surr: 4-Bromofluorobenzene	99.4	64-125		%REC	305194	1	10/30/2020 18:46	OM
Surr: Dibromofluoromethane	106	76.4-125		%REC	305194	1	10/30/2020 18:46	OM
Surr: Toluene-d8	102	78.3-116		%REC	305194	1	10/30/2020 18:46	OM
APPENDIX I METALS SW6020B				**(SW3005A)**				
Antimony	BRL	0.00150		mg/L	305067	1	10/30/2020 18:06	AS
Arsenic	BRL	0.00250		mg/L	305067	1	10/30/2020 18:06	AS
Barium	0.0228	0.0100		mg/L	305067	1	10/30/2020 18:06	AS
Beryllium	BRL	0.00100		mg/L	305067	1	10/30/2020 18:06	AS
Cadmium	BRL	0.000700		mg/L	305067	1	10/30/2020 18:06	AS
Chromium	BRL	0.00500		mg/L	305067	1	10/30/2020 18:06	AS
Cobalt	BRL	0.00500		mg/L	305067	1	10/30/2020 18:06	AS
Copper	BRL	0.00200		mg/L	305067	1	10/30/2020 18:06	AS
Lead	BRL	0.00100		mg/L	305067	1	10/30/2020 18:06	AS
Nickel	0.00503	0.00500		mg/L	305067	1	10/30/2020 18:06	AS
Selenium	BRL	0.00500		mg/L	305067	1	10/30/2020 18:06	AS
Silver	BRL	0.00100		mg/L	305067	1	10/30/2020 18:06	AS
Thallium	BRL	0.000500		mg/L	305067	1	10/30/2020 18:06	AS
Vanadium	BRL	0.00500		mg/L	305067	1	10/30/2020 18:06	AS
Zinc	0.0135	0.0100		mg/L	305067	1	10/30/2020 18:06	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	Trip Blank
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020
Lab ID:	2010S77-006	**Matrix:**	Trip Blank

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,1,1-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,1,2-Trichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,1-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,1-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,2,3-Trichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,2-Dibromo-3-chloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,2-Dibromoethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,2-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,2-Dichloroethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,2-Dichloropropane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
1,4-Dichlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
2-Butanone	BRL	50		ug/L	305194	1	10/30/2020 19:11	OM
2-Hexanone	BRL	10		ug/L	305194	1	10/30/2020 19:11	OM
4-Methyl-2-pentanone	BRL	10		ug/L	305194	1	10/30/2020 19:11	OM
Acetone	BRL	50		ug/L	305194	1	10/30/2020 19:11	OM
Acrylonitrile	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Benzene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Bromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Bromodichloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Bromoform	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Bromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Carbon disulfide	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Carbon tetrachloride	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Chlorobenzene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Chloroethane	BRL	10		ug/L	305194	1	10/30/2020 19:11	OM
Chloroform	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Chloromethane	BRL	10		ug/L	305194	1	10/30/2020 19:11	OM
cis-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
cis-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Dibromochloromethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Dibromomethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Ethylbenzene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Iodomethane	BRL	10		ug/L	305194	1	10/30/2020 19:11	OM
m,p-Xylene	BRL	10		ug/L	305194	1	10/30/2020 19:11	OM
Methylene chloride	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
o-Xylene	BRL	10		ug/L	305194	1	10/30/2020 19:11	OM
Styrene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Tetrachloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Toluene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
trans-1,2-Dichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
trans-1,3-Dichloropropene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	305194	1	10/30/2020 19:11	OM
Trichloroethene	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 4-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	Trip Blank
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020
Lab ID:	2010S77-006	**Matrix:**	Trip Blank

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
Trichlorofluoromethane	BRL	5.0		ug/L	305194	1	10/30/2020 19:11	OM
Vinyl acetate	BRL	10		ug/L	305194	1	10/30/2020 19:11	OM
Vinyl chloride	BRL	2.0		ug/L	305194	1	10/30/2020 19:11	OM
Surr: 4-Bromofluorobenzene	102	64-125		%REC	305194	1	10/30/2020 19:11	OM
Surr: Dibromofluoromethane	109	76.4-125		%REC	305194	1	10/30/2020 19:11	OM
Surr: Toluene-d8	102	78.3-116		%REC	305194	1	10/30/2020 19:11	OM

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

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ANALYTICAL ENVIRONMENTAL SERVICES, INC.

SAMPLE/COOLER RECEIPT CHECKLIST

1. Client Name: **Santek Waste Services, LLC** AES Work Order Number: **2010S77**

2. Carrier: FedEx ■ UPS ☐ USPS ☐ Client ☐ Courier ☐ Other _____

		Yes	No	N/A	Details	Comments
3.	Shipping container/cooler received in good condition?	◉	○	○	damagec ☐ leaking ☐ other ☐	
4.	Custody seals present on shipping container?	○	◉	○		
5.	Custody seals intact on shipping container?	○	○	◉		
6.	Temperature blanks present?	○	◉	○		
7.	Cooler temperature(s) within limits of 0-6°C? [See item 13 and 14 for temperature recordings.]	◉	○	○	Cooling initiated for recently collected samples / ice present ☐	
8.	Chain of Custody (COC) present?	◉	○	○		
9.	Chain of Custody signed, dated, and timed when relinquished and received?	◉	○	○		
10.	Sampler name and/or signature on COC?	◉	○	○		
11.	Were all samples received within holding time?	◉	○	○		
12.	TAT marked on the COC?	◉	○	○	If no TAT indicated, proceeded with standard TAT per Terms & Conditions. ☐	

13. Cooler 1 Temperature 0.3 °C Cooler 2 Temperature _____ °C Cooler 3 Temperature _____ °C Cooler 4 Temperature _____ °C

14. Cooler 5 Temperature _____ °C Cooler 6 Temperature _____ °C Cooler 7 Temperature _____ °C Cooler 8 Temperature _____ °C

15. Comments: _____

I certify that I have completed sections 1-15 (dated initials). ARS 10/27/20

		Yes	No	N/A	Details	Comments
16.	Were sample containers intact upon receipt?	◉	○	○		
17.	Custody seals present on sample containers?	○	◉	○		
18.	Custody seals intact on sample containers?	○	○	◉		
19.	Do sample container labels match the COC?	◉	○	○	incomplete info ☐ illegible ☐ no label ☐ other ☐	
20.	Are analyses requested indicated on the COC?	◉	○	○		
21.	Were all of the samples listed on the COC received?	◉	○	○	samples received but not listed on COC ☐ samples listed on COC not received ☐	
22.	Was the sample collection date/time noted?	◉	○	○		
23.	Did we receive sufficient sample volume for indicated analyses?	○	◉	○		
24.	Were samples received in appropriate containers?	◉	○	○		
25.	Were VOA samples received without headspace (< 1/4" bubble)?	◉	○	○		
26.	Were trip blanks submitted?	◉	○	○	listed on COC ■ not listed on COC ☐	

27. Comments: _____

I certify that I have completed sections 16-27 (dated initials). FM 10/27/20

This section only applies to samples where pH can be checked at Sample Receipt.

		Yes	No	N/A	Details	Comments
28.	Have containers needing chemical preservation been checked? *	◉	○	○		
29.	Containers meet preservation guidelines?	○	◉	○		
30.	Was pH adjusted at Sample Receipt?	◉	○	○		

* Note: Certain analyses require chemical preservation but must be checked in the laboratory and not upon Sample Receipt such as Coliforms, VOCs and Oil & Grease/TPH. This also excludes metals by EPA 200.7, 200.8 and 245.1 which will be verified between 16 and 24 hours after preservation.

I certify that I have completed sections 28-30 (dated initials). FM 10/27/20

Locked

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Lab Order: 2010S77

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
2010S77-001A	MW-01	10/26/2020 12:31:00PM	Groundwater	APPENDIX I VOLATILE ORGANICS		10/29/2020 12:20:00 PM	10/30/2020
2010S77-001B	MW-01	10/26/2020 12:31:00PM	Groundwater	MICRO-EXTRACTABLE VOCs		10/30/2020 9:35:41 AM	11/02/2020
2010S77-001C	MW-01	10/26/2020 12:31:00PM	Groundwater	Dissolved Metals by ICP/MS		10/28/2020 4:00:00 PM	11/02/2020
2010S77-001D	MW-01	10/26/2020 12:31:00PM	Groundwater	Nitrogen, Ammonia (as N)		11/2/2020 9:00:00 AM	11/02/2020
2010S77-001D	MW-01	10/26/2020 12:31:00PM	Groundwater	Chemical Oxygen Demand (COD)			11/02/2020
2010S77-001E	MW-01	10/26/2020 12:31:00PM	Groundwater	Inorganic Anions by IC			10/27/2020
2010S77-001F	MW-01	10/26/2020 12:31:00PM	Groundwater	Cyanide		11/2/2020 12:18:00 PM	11/03/2020
2010S77-001G	MW-01	10/26/2020 12:31:00PM	Groundwater	Total Organic Carbon by SM5310B			10/28/2020
2010S77-001H	MW-01	10/26/2020 12:31:00PM	Groundwater	Residue, Dissolved (TDS) by SM2540C		10/28/2020 10:00:00 AM	10/28/2020
2010S77-002A	MW-1A	10/26/2020 11:18:00AM	Groundwater	APPENDIX I VOLATILE ORGANICS		10/29/2020 12:20:00 PM	10/30/2020
2010S77-002B	MW-1A	10/26/2020 11:18:00AM	Groundwater	MICRO-EXTRACTABLE VOCs		10/30/2020 9:35:41 AM	11/02/2020
2010S77-002C	MW-1A	10/26/2020 11:18:00AM	Groundwater	APPENDIX I METALS		10/29/2020 3:18:00 PM	10/30/2020
2010S77-002C	MW-1A	10/26/2020 11:18:00AM	Groundwater	Total Metals by ICP/MS		10/29/2020 3:18:00 PM	10/30/2020
2010S77-002C	MW-1A	10/26/2020 11:18:00AM	Groundwater	Total Metals by ICP/MS		10/29/2020 3:18:00 PM	11/03/2020
2010S77-002C	MW-1A	10/26/2020 11:18:00AM	Groundwater	TOTAL MERCURY		11/2/2020 12:10:00 PM	11/02/2020
2010S77-002D	MW-1A	10/26/2020 11:18:00AM	Groundwater	Dissolved Metals by ICP/MS		10/28/2020 4:00:00 PM	11/02/2020
2010S77-002E	MW-1A	10/26/2020 11:18:00AM	Groundwater	Nitrogen, Ammonia (as N)		11/2/2020 9:00:00 AM	11/02/2020
2010S77-002E	MW-1A	10/26/2020 11:18:00AM	Groundwater	Chemical Oxygen Demand (COD)			11/02/2020
2010S77-002F	MW-1A	10/26/2020 11:18:00AM	Groundwater	Inorganic Anions by IC			10/27/2020
2010S77-002F	MW-1A	10/26/2020 11:18:00AM	Groundwater	Inorganic Anions by IC			10/28/2020
2010S77-002G	MW-1A	10/26/2020 11:18:00AM	Groundwater	Cyanide		11/2/2020 12:18:00 PM	11/03/2020
2010S77-002H	MW-1A	10/26/2020 11:18:00AM	Groundwater	Total Organic Carbon by SM5310B			10/28/2020
2010S77-002I	MW-1A	10/26/2020 11:18:00AM	Groundwater	Residue, Dissolved (TDS) by SM2540C		10/28/2020 10:00:00 AM	10/28/2020
2010S77-003A	MW-03	10/26/2020 4:21:00PM	Groundwater	APPENDIX I VOLATILE ORGANICS		10/29/2020 12:20:00 PM	10/30/2020
2010S77-003B	MW-03	10/26/2020 4:21:00PM	Groundwater	MICRO-EXTRACTABLE VOCs		10/30/2020 9:35:41 AM	11/02/2020
2010S77-003C	MW-03	10/26/2020 4:21:00PM	Groundwater	APPENDIX I METALS		10/29/2020 3:18:00 PM	10/30/2020
2010S77-003C	MW-03	10/26/2020 4:21:00PM	Groundwater	Total Metals by ICP/MS		10/29/2020 3:18:00 PM	10/30/2020
2010S77-003C	MW-03	10/26/2020 4:21:00PM	Groundwater	Total Metals by ICP/MS		10/29/2020 3:18:00 PM	11/03/2020
2010S77-003C	MW-03	10/26/2020 4:21:00PM	Groundwater	TOTAL MERCURY		11/2/2020 12:10:00 PM	11/02/2020

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Lab Order: 2010S77

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
2010S77-003D	MW-03	10/26/2020 4:21:00PM	Groundwater	Dissolved Metals by ICP/MS		10/28/2020 4:00:00 PM	11/03/2020
2010S77-003E	MW-03	10/26/2020 4:21:00PM	Groundwater	Nitrogen, Ammonia (as N)		11/2/2020 9:00:00 AM	11/02/2020
2010S77-003E	MW-03	10/26/2020 4:21:00PM	Groundwater	Chemical Oxygen Demand (COD)			11/02/2020
2010S77-003F	MW-03	10/26/2020 4:21:00PM	Groundwater	Inorganic Anions by IC			10/27/2020
2010S77-003F	MW-03	10/26/2020 4:21:00PM	Groundwater	Inorganic Anions by IC			10/28/2020
2010S77-003G	MW-03	10/26/2020 4:21:00PM	Groundwater	Cyanide		11/2/2020 12:18:00 PM	11/03/2020
2010S77-003H	MW-03	10/26/2020 4:21:00PM	Groundwater	Total Organic Carbon by SM5310B			10/28/2020
2010S77-003I	MW-03	10/26/2020 4:21:00PM	Groundwater	Residue, Dissolved (TDS) by SM2540C		10/28/2020 10:00:00 AM	10/28/2020
2010S77-004A	MW-4R	10/26/2020 1:46:00PM	Groundwater	APPENDIX I VOLATILE ORGANICS		10/29/2020 12:20:00 PM	10/30/2020
2010S77-004B	MW-4R	10/26/2020 1:46:00PM	Groundwater	MICRO-EXTRACTABLE VOCs		10/30/2020 9:35:41 AM	11/02/2020
2010S77-004C	MW-4R	10/26/2020 1:46:00PM	Groundwater	APPENDIX I METALS		10/29/2020 3:18:00 PM	10/30/2020
2010S77-004C	MW-4R	10/26/2020 1:46:00PM	Groundwater	TOTAL MERCURY		11/2/2020 12:10:00 PM	11/02/2020
2010S77-004D	MW-4R	10/26/2020 1:46:00PM	Groundwater	Inorganic Anions by IC			10/30/2020
2010S77-005A	MW-05	10/26/2020 3:06:00PM	Groundwater	APPENDIX I VOLATILE ORGANICS		10/29/2020 12:20:00 PM	10/30/2020
2010S77-005B	MW-05	10/26/2020 3:06:00PM	Groundwater	MICRO-EXTRACTABLE VOCs		10/30/2020 9:35:41 AM	11/02/2020
2010S77-005C	MW-05	10/26/2020 3:06:00PM	Groundwater	APPENDIX I METALS		10/29/2020 3:18:00 PM	10/30/2020
2010S77-005C	MW-05	10/26/2020 3:06:00PM	Groundwater	TOTAL MERCURY		11/2/2020 12:10:00 PM	11/02/2020
2010S77-005D	MW-05	10/26/2020 3:06:00PM	Groundwater	Inorganic Anions by IC			10/30/2020
2010S77-006A	Trip Blank	10/27/2020 12:00:00AM	Trip Blank	APPENDIX I VOLATILE ORGANICS		10/29/2020 12:20:00 PM	10/30/2020

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 304929

Sample ID: **MB-304929**	Client ID:				Units: **mg/L**		Prep Date: **10/28/2020**		Run No: **438177**
SampleType: **MBLK**	TestCode: **Residue, Dissolved (TDS) by SM2540C**				BatchID: **304929**		Analysis Date: **10/28/2020**		Seq No: **9970468**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **2010S77-001HDUP**	Client ID: **MW-01**				Units: **mg/L**		Prep Date: **10/28/2020**		Run No: **438177**
SampleType: **DUP**	TestCode: **Residue, Dissolved (TDS) by SM2540C**				BatchID: **304929**		Analysis Date: **10/28/2020**		Seq No: **9970470**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	265.0	10						264.0	0.378	5	

Sample ID: **2010T55-006CDUP**	Client ID:				Units: **mg/L**		Prep Date: **10/28/2020**		Run No: **438177**
SampleType: **DUP**	TestCode: **Residue, Dissolved (TDS) by SM2540C**				BatchID: **304929**		Analysis Date: **10/28/2020**		Seq No: **9970481**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	4340	20						4294	1.07	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305036

Sample ID: **MB-305036**	Client ID:				Units: **ug/L**		Prep Date: **10/28/2020**		Run No: **438636**
SampleType: **MBLK**	TestCode: **Dissolved Metals by ICP/MS SW6020B**				BatchID: **305036**		Analysis Date: **11/02/2020**		Seq No: **9980775**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Manganese	BRL	5.00									

Sample ID: **LCS-305036**	Client ID:				Units: **ug/L**		Prep Date: **10/28/2020**		Run No: **438636**
SampleType: **LCS**	TestCode: **Dissolved Metals by ICP/MS SW6020B**				BatchID: **305036**		Analysis Date: **11/02/2020**		Seq No: **9980776**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Manganese	91.87	5.00	100.0		91.9	80	120				

Sample ID: **2010S77-002DMS**	Client ID: **MW-1A**				Units: **ug/L**		Prep Date: **10/28/2020**		Run No: **438636**
SampleType: **MS**	TestCode: **Dissolved Metals by ICP/MS SW6020B**				BatchID: **305036**		Analysis Date: **11/02/2020**		Seq No: **9980778**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Manganese	259.7	5.00	100.0	158.9	101	75	125				

Sample ID: **2010S77-002DMSD**	Client ID: **MW-1A**				Units: **ug/L**		Prep Date: **10/28/2020**		Run No: **438636**
SampleType: **MSD**	TestCode: **Dissolved Metals by ICP/MS SW6020B**				BatchID: **305036**		Analysis Date: **11/02/2020**		Seq No: **9980779**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Manganese	265.0	5.00	100.0	158.9	106	75	125	259.7	2.02	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305067

Sample ID: **MB-305067**	Client ID:		Units: **ug/L**	Prep Date: **10/29/2020**	Run No: **438578**
SampleType: **MBLK**	TestCode: **Total Metals by ICP/MS SW6020B**		BatchID: **305067**	Analysis Date: **10/30/2020**	Seq No: **9978176**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Calcium	BRL	100									
Iron	BRL	100									
Magnesium	BRL	100									
Potassium	BRL	100									

Sample ID: **MB-305067**	Client ID:		Units: **mg/L**	Prep Date: **10/29/2020**	Run No: **438579**
SampleType: **MBLK**	TestCode: **APPENDIX I METALS SW6020B**		BatchID: **305067**	Analysis Date: **10/30/2020**	Seq No: **9978232**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	BRL	0.00150									
Arsenic	BRL	0.00250									
Barium	BRL	0.0100									
Beryllium	BRL	0.00100									
Cadmium	BRL	0.000700									
Chromium	BRL	0.00500									
Cobalt	BRL	0.00500									
Copper	BRL	0.00200									
Lead	BRL	0.00100									
Nickel	BRL	0.00500									
Selenium	BRL	0.00500									
Silver	BRL	0.00100									
Thallium	BRL	0.000500									
Vanadium	BRL	0.00500									
Zinc	BRL	0.0100									

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305067

Sample ID: **MB-305067**	Client ID:				Units: **ug/L**		Prep Date: **10/29/2020**		Run No: **438804**
SampleType: **MBLK**	TestCode: **Total Metals by ICP/MS** **SW6020B**				BatchID: **305067**		Analysis Date: **11/03/2020**		Seq No: **9984469**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sodium	BRL	500									

Sample ID: **LCS-305067**	Client ID:				Units: **ug/L**		Prep Date: **10/29/2020**		Run No: **438578**
SampleType: **LCS**	TestCode: **Total Metals by ICP/MS** **SW6020B**				BatchID: **305067**		Analysis Date: **10/30/2020**		Seq No: **9978177**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Calcium	1022	100	1000		102	80	120				
Iron	1074	100	1000		107	80	120				
Magnesium	950.3	100	1000		95.0	80	120				
Potassium	972.1	100	1000		97.2	80	120				

Sample ID: **LCS-305067**	Client ID:				Units: **mg/L**		Prep Date: **10/29/2020**		Run No: **438579**
SampleType: **LCS**	TestCode: **APPENDIX I METALS** **SW6020B**				BatchID: **305067**		Analysis Date: **10/30/2020**		Seq No: **9978233**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	0.1002	0.00600	0.1000		100	80	120				
Arsenic	0.09606	0.0100	0.1000		96.1	80	120				
Barium	0.1008	0.0200	0.1000		101	80	120				
Beryllium	0.09644	0.00400	0.1000		96.4	80	120				
Cadmium	0.09751	0.00500	0.1000		97.5	80	120				
Chromium	0.09060	0.0200	0.1000		90.6	80	120				
Cobalt	0.09572	0.0500	0.1000		95.7	80	120				
Copper	0.08977	0.0200	0.1000		89.8	80	120				
Lead	0.1050	0.0100	0.1000		105	80	120				
Nickel	0.08897	0.0400	0.1000		89.0	80	120				
Selenium	0.09328	0.0500	0.1000		93.3	80	120				
Silver	0.01081	0.00500	0.0100		108	80	120				
Thallium	0.1058	0.00200	0.1000		106	80	120				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305067

Sample ID: **LCS-305067**	Client ID:			Units: **mg/L**	Prep Date: **10/29/2020**	Run No: **438579**
SampleType: **LCS**	TestCode: **APPENDIX I METALS**	**SW6020B**		BatchID: **305067**	Analysis Date: **10/30/2020**	Seq No: **9978233**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Vanadium	0.08783	0.0500	0.1000		87.8	80	120				
Zinc	0.08964	0.0200	0.1000		89.6	80	120				

Sample ID: **LCS-305067**	Client ID:			Units: **ug/L**	Prep Date: **10/29/2020**	Run No: **438804**
SampleType: **LCS**	TestCode: **Total Metals by ICP/MS**	**SW6020B**		BatchID: **305067**	Analysis Date: **11/03/2020**	Seq No: **9984470**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Sodium	1020	500	1000		102	80	120				

Sample ID: **2010S77-002CMS**	Client ID: **MW-1A**			Units: **ug/L**	Prep Date: **10/29/2020**	Run No: **438578**
SampleType: **MS**	TestCode: **Total Metals by ICP/MS**	**SW6020B**		BatchID: **305067**	Analysis Date: **10/30/2020**	Seq No: **9978179**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1060	100	1000	136.5	92.4	75	125				

Sample ID: **2010S77-002CMS**	Client ID: **MW-1A**			Units: **mg/L**	Prep Date: **10/29/2020**	Run No: **438579**
SampleType: **MS**	TestCode: **APPENDIX I METALS**	**SW6020B**		BatchID: **305067**	Analysis Date: **10/30/2020**	Seq No: **9978235**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	0.1021	0.00600	0.1000		102	75	125				
Arsenic	0.1035	0.0100	0.1000		103	75	125				
Barium	0.4551	0.0200	0.1000	0.3487	106	75	125				
Beryllium	0.1016	0.00400	0.1000		102	75	125				
Cadmium	0.09603	0.00500	0.1000	0.0003792	95.6	75	125				
Chromium	0.09725	0.0200	0.1000		97.3	75	125				
Cobalt	0.1006	0.0500	0.1000	0.0006964	99.9	75	125				
Copper	0.09325	0.0200	0.1000		93.2	75	125				
Lead	0.09743	0.0100	0.1000		97.4	75	125				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305067

Sample ID: **2010S77-002CMS**	Client ID: **MW-1A**				Units: **mg/L**	Prep Date: **10/29/2020**	Run No: **438579**		
SampleType: **MS**	TestCode: **APPENDIX I METALS** **SW6020B**				BatchID: **305067**	Analysis Date: **10/30/2020**	Seq No: **9978235**		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nickel	0.09694	0.0400	0.1000	0.004733	92.2	75	125				
Selenium	0.09756	0.0500	0.1000		97.6	75	125				
Silver	0.01020	0.00500	0.0100		102	75	125				
Thallium	0.09878	0.00200	0.1000		98.8	75	125				
Vanadium	0.1003	0.0500	0.1000		100	75	125				
Zinc	0.1086	0.0200	0.1000	0.01123	97.3	75	125				

Sample ID: **2010S77-002CMS**	Client ID: **MW-1A**				Units: **ug/L**	Prep Date: **10/29/2020**	Run No: **438804**		
SampleType: **MS**	TestCode: **Total Metals by ICP/MS** **SW6020B**				BatchID: **305067**	Analysis Date: **11/03/2020**	Seq No: **9984472**		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Calcium	167000	10000	1000	182100	-1520	75	125				S
Magnesium	55380	10000	1000	62940	-756	75	125				S
Potassium	91630	10000	1000	104400	-1280	75	125				S
Sodium	280700	50000	1000	319000	-3830	75	125				S

Sample ID: **2010S77-002CMSD**	Client ID: **MW-1A**				Units: **ug/L**	Prep Date: **10/29/2020**	Run No: **438578**		
SampleType: **MSD**	TestCode: **Total Metals by ICP/MS** **SW6020B**				BatchID: **305067**	Analysis Date: **10/30/2020**	Seq No: **9978181**		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1048	100	1000	136.5	91.2	75	125	1060	1.10	20	

Sample ID: **2010S77-002CMSD**	Client ID: **MW-1A**				Units: **mg/L**	Prep Date: **10/29/2020**	Run No: **438579**		
SampleType: **MSD**	TestCode: **APPENDIX I METALS** **SW6020B**				BatchID: **305067**	Analysis Date: **10/30/2020**	Seq No: **9978236**		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	0.1050	0.00600	0.1000		105	75	125	0.1021	2.79	20	
Arsenic	0.1054	0.0100	0.1000		105	75	125	0.1035	1.83	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305067

Sample ID: **2010S77-002CMSD**	Client ID: **MW-1A**				Units: **mg/L**		Prep Date: **10/29/2020**		Run No: **438579**	
SampleType: **MSD**	TestCode: **APPENDIX I METALS**	**SW6020B**			BatchID: **305067**		Analysis Date: **10/30/2020**		Seq No: **9978236**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Barium	0.4662	0.0200	0.1000	0.3487	118	75	125	0.4551	2.42	20	
Beryllium	0.1045	0.00400	0.1000		105	75	125	0.1016	2.83	20	
Cadmium	0.09795	0.00500	0.1000	0.0003792	97.6	75	125	0.09603	1.98	20	
Chromium	0.1007	0.0200	0.1000		101	75	125	0.09725	3.49	20	
Cobalt	0.1018	0.0500	0.1000	0.0006964	101	75	125	0.1006	1.15	20	
Copper	0.09808	0.0200	0.1000		98.1	75	125	0.09325	5.05	20	
Lead	0.09876	0.0100	0.1000		98.8	75	125	0.09743	1.36	20	
Nickel	0.1020	0.0400	0.1000	0.004733	97.2	75	125	0.09694	5.05	20	
Selenium	0.09877	0.0500	0.1000		98.8	75	125	0.09756	1.24	20	
Silver	0.01033	0.00500	0.0100		103	75	125	0.01020	1.21	20	
Thallium	0.1006	0.00200	0.1000		101	75	125	0.09878	1.85	20	
Vanadium	0.1045	0.0500	0.1000		104	75	125	0.1003	4.08	20	
Zinc	0.1093	0.0200	0.1000	0.01123	98.1	75	125	0.1086	0.669	20	

Sample ID: **2010S77-002CMSD**	Client ID: **MW-1A**				Units: **ug/L**		Prep Date: **10/29/2020**		Run No: **438804**	
SampleType: **MSD**	TestCode: **Total Metals by ICP/MS**	**SW6020B**			BatchID: **305067**		Analysis Date: **11/03/2020**		Seq No: **9984473**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Calcium	183300	10000	1000	182100	117	75	125	167000	9.32	20	
Magnesium	65200	10000	1000	62940	225	75	125	55380	16.3	20	S
Potassium	109100	10000	1000	104400	471	75	125	91630	17.4	20	S
Sodium	320100	50000	1000	319000	112	75	125	280700	13.1	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305134

Sample ID: **MB-305134**	Client ID:				Units: **ug/L**		Prep Date: **10/30/2020**		Run No: **438663**	
SampleType: **MBLK**	TestCode: **MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011**				BatchID: **305134**		Analysis Date: **11/02/2020**		Seq No: **9980340**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
1,2-Dibromo-3-chloropropane	BRL	0.040								
1,2-Dibromoethane	BRL	0.020								
Surr: 4-Bromofluorobenzene	4.700	0	5.000		94.0	73.6	140			

Sample ID: **LCS-305134**	Client ID:				Units: **ug/L**		Prep Date: **10/30/2020**		Run No: **438663**	
SampleType: **LCS**	TestCode: **MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011**				BatchID: **305134**		Analysis Date: **11/02/2020**		Seq No: **9980341**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
1,2-Dibromo-3-chloropropane	0.1020	0.040	0.1000		102	60	140			
1,2-Dibromoethane	0.1030	0.020	0.1000		103	60	140			
Surr: 4-Bromofluorobenzene	5.278	0	5.000		106	73.6	140			

Sample ID: **LCSD-305134**	Client ID:				Units: **ug/L**		Prep Date: **10/30/2020**		Run No: **438663**	
SampleType: **LCSD**	TestCode: **MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011**				BatchID: **305134**		Analysis Date: **11/02/2020**		Seq No: **9980342**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
1,2-Dibromo-3-chloropropane	0.1070	0.040	0.1000		107	60	140	0.1020	4.78	14.6
1,2-Dibromoethane	0.1040	0.020	0.1000		104	60	140	0.1030	0.966	15.6
Surr: 4-Bromofluorobenzene	5.087	0	5.000		102	73.6	140	5.278	0	0

Sample ID: **2010U18-002BMS**	Client ID:				Units: **ug/L**		Prep Date: **10/30/2020**		Run No: **438663**	
SampleType: **MS**	TestCode: **MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011**				BatchID: **305134**		Analysis Date: **11/02/2020**		Seq No: **9980390**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
1,2-Dibromo-3-chloropropane	0.1033	0.039	0.0984		105	60.8	136			
1,2-Dibromoethane	0.1004	0.020	0.0984		102	70	131			
Surr: 4-Bromofluorobenzene	5.524	0	4.920		112	73.6	140			

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305134

Sample ID: **2010S77-002BDUP** Client ID: **MW-1A** Units: **ug/L** Prep Date: **10/30/2020** Run No: **438663**
SampleType: **DUP** TestCode: **MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011** BatchID: **305134** Analysis Date: **11/02/2020** Seq No: **9980385**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,2-Dibromo-3-chloropropane	BRL	0.040						0	0	30	
1,2-Dibromoethane	BRL	0.020						0	0	30	
Surr: 4-Bromofluorobenzene	5.593	0	4.948		113	73.6	140	5.248	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305165

Sample ID: **MB-305165**	Client ID:				Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438552**
SampleType: **MBLK**	TestCode: **Nitrogen, Ammonia (as N) E350.1**				BatchID: **305165**		Analysis Date: **11/02/2020**		Seq No: **9978428**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	BRL	0.200									

Sample ID: **LCS-305165**	Client ID:				Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438552**
SampleType: **LCS**	TestCode: **Nitrogen, Ammonia (as N) E350.1**				BatchID: **305165**		Analysis Date: **11/02/2020**		Seq No: **9978429**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	5.400	0.200	5.000		108	90	110				

Sample ID: **2010T16-002CMS**	Client ID:				Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438552**
SampleType: **MS**	TestCode: **Nitrogen, Ammonia (as N) E350.1**				BatchID: **305165**		Analysis Date: **11/02/2020**		Seq No: **9978468**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	5.400	0.200	5.000		108	90	110				

Sample ID: **2010T17-002CMS**	Client ID:				Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438552**
SampleType: **MS**	TestCode: **Nitrogen, Ammonia (as N) E350.1**				BatchID: **305165**		Analysis Date: **11/02/2020**		Seq No: **9978470**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	5.650	0.200	5.000	0.2440	108	90	110				

Sample ID: **2010T16-002CMSD**	Client ID:				Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438552**
SampleType: **MSD**	TestCode: **Nitrogen, Ammonia (as N) E350.1**				BatchID: **305165**		Analysis Date: **11/02/2020**		Seq No: **9978469**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	5.370	0.200	5.000		107	90	110	5.400	0.557	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305171

Sample ID: **MB-305171**	Client ID:					Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438642**	
SampleType: **MBLK**	TestCode: **Mercury, Total SW7470A**					BatchID: **305171**		Analysis Date: **11/02/2020**		Seq No: **9980404**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	BRL	0.00020									

Sample ID: **LCS-305171**	Client ID:					Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438642**	
SampleType: **LCS**	TestCode: **Mercury, Total SW7470A**					BatchID: **305171**		Analysis Date: **11/02/2020**		Seq No: **9980405**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.003911	0.00020	0.0040		97.8	80	120				

Sample ID: **2010S77-002CMS**	Client ID: **MW-1A**					Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438642**	
SampleType: **MS**	TestCode: **Mercury, Total SW7470A**					BatchID: **305171**		Analysis Date: **11/02/2020**		Seq No: **9980407**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.003910	0.00020	0.0040		97.8	75	125				

Sample ID: **2010S77-002CMSD**	Client ID: **MW-1A**					Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438642**	
SampleType: **MSD**	TestCode: **Mercury, Total SW7470A**					BatchID: **305171**		Analysis Date: **11/02/2020**		Seq No: **9980408**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.003869	0.00020	0.0040		96.7	75	125	0.003910	1.05	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305194

Sample ID: **MB-305194** Client ID: Units: **ug/L** Prep Date: **10/29/2020** Run No: **438492**
SampleType: **MBLK** TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D** BatchID: **305194** Analysis Date: **10/29/2020** Seq No: **9977678**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	BRL	5.0									
1,1,1-Trichloroethane	BRL	5.0									
1,1,2,2-Tetrachloroethane	BRL	5.0									
1,1,2-Trichloroethane	BRL	5.0									
1,1-Dichloroethane	BRL	5.0									
1,1-Dichloroethene	BRL	5.0									
1,2,3-Trichloropropane	BRL	5.0									
1,2-Dibromo-3-chloropropane	BRL	5.0									
1,2-Dibromoethane	BRL	5.0									
1,2-Dichlorobenzene	BRL	5.0									
1,2-Dichloroethane	BRL	5.0									
1,2-Dichloropropane	BRL	5.0									
1,4-Dichlorobenzene	BRL	5.0									
2-Butanone	BRL	50									
2-Hexanone	BRL	10									
4-Methyl-2-pentanone	BRL	10									
Acetone	BRL	50									
Acrylonitrile	BRL	5.0									
Benzene	BRL	5.0									
Bromochloromethane	BRL	5.0									
Bromodichloromethane	BRL	5.0									
Bromoform	BRL	5.0									
Bromomethane	BRL	5.0									
Carbon disulfide	BRL	5.0									
Carbon tetrachloride	BRL	5.0									
Chlorobenzene	BRL	5.0									
Chloroethane	BRL	10									

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305194

Sample ID: **MB-305194**	Client ID:	Units: **ug/L**	Prep Date: **10/29/2020**	Run No: **438492**
SampleType: **MBLK**	TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D**	BatchID: **305194**	Analysis Date: **10/29/2020**	Seq No: **9977678**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloroform	BRL	5.0									
Chloromethane	BRL	10									
cis-1,2-Dichloroethene	BRL	5.0									
cis-1,3-Dichloropropene	BRL	5.0									
Dibromochloromethane	BRL	5.0									
Dibromomethane	BRL	5.0									
Ethylbenzene	BRL	5.0									
Iodomethane	BRL	10									
m,p-Xylene	BRL	10									
Methylene chloride	BRL	5.0									
o-Xylene	BRL	10									
Styrene	BRL	5.0									
Tetrachloroethene	BRL	5.0									
Toluene	BRL	5.0									
trans-1,2-Dichloroethene	BRL	5.0									
trans-1,3-Dichloropropene	BRL	5.0									
trans-1,4-Dichloro-2-butene	BRL	10									
Trichloroethene	BRL	5.0									
Trichlorofluoromethane	BRL	5.0									
Vinyl acetate	BRL	10									
Vinyl chloride	BRL	2.0									
Surr: 4-Bromofluorobenzene	48.89	0	50.00		97.8	64	125				
Surr: Dibromofluoromethane	50.90	0	50.00		102	76.4	125				
Surr: Toluene-d8	48.93	0	50.00		97.9	78.3	116				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305194

Sample ID: **LCS-305194** Client ID: Units: **ug/L** Prep Date: **10/29/2020** Run No: **438492**
SampleType: **LCS** TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D** BatchID: **305194** Analysis Date: **10/29/2020** Seq No: **9977676**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1-Dichloroethene	21.75	5.0	20.00		109	69.2	141				
Benzene	21.83	5.0	20.00		109	72.3	126				
Chlorobenzene	21.37	5.0	20.00		107	73.3	135				
Toluene	21.92	5.0	20.00		110	70.5	128				
Trichloroethene	21.69	5.0	20.00		108	70.3	133				
Surr: 4-Bromofluorobenzene	49.34	0	50.00		98.7	64	125				
Surr: Dibromofluoromethane	51.16	0	50.00		102	76.4	125				
Surr: Toluene-d8	50.53	0	50.00		101	78.3	116				

Sample ID: **2010Q62-003AMS** Client ID: Units: **ug/L** Prep Date: **10/29/2020** Run No: **438492**
SampleType: **MS** TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D** BatchID: **305194** Analysis Date: **11/02/2020** Seq No: **9978879**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1-Dichloroethene	21.94	5.0	20.00		110	63.8	146				
Benzene	22.42	5.0	20.00		112	70.2	137				
Chlorobenzene	22.72	5.0	20.00		114	72.7	141				
Toluene	22.40	5.0	20.00		112	67	141				
Trichloroethene	22.65	5.0	20.00		113	69.3	141				
Surr: 4-Bromofluorobenzene	51.04	0	50.00		102	64	125				
Surr: Dibromofluoromethane	51.52	0	50.00		103	76.4	125				
Surr: Toluene-d8	50.59	0	50.00		101	78.3	116				

Sample ID: **2010Q62-003AMSD** Client ID: Units: **ug/L** Prep Date: **10/29/2020** Run No: **438492**
SampleType: **MSD** TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D** BatchID: **305194** Analysis Date: **11/02/2020** Seq No: **9978880**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1-Dichloroethene	21.23	5.0	20.00		106	63.8	146	21.94	3.29	20.8	
Benzene	21.84	5.0	20.00		109	70.2	137	22.42	2.62	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305194

Sample ID: **2010Q62-003AMSD** Client ID:
SampleType: **MSD** TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D**
Units: **ug/L** BatchID: **305194**
Prep Date: **10/29/2020** Analysis Date: **11/02/2020**
Run No: **438492** Seq No: **9978880**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chlorobenzene	21.81	5.0	20.00		109	72.7	141	22.72	4.09	20	
Toluene	22.00	5.0	20.00		110	67	141	22.40	1.80	20	
Trichloroethene	22.06	5.0	20.00		110	69.3	141	22.65	2.64	17.9	
Surr: 4-Bromofluorobenzene	51.54	0	50.00		103	64	125	51.04	0	0	
Surr: Dibromofluoromethane	53.00	0	50.00		106	76.4	125	51.52	0	0	
Surr: Toluene-d8	52.04	0	50.00		104	78.3	116	50.59	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: 305213

Sample ID: **MB-305213**	Client ID:					Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438679**	
SampleType: **MBLK**	TestCode: **Cyanide SW9014**					BatchID: **305213**		Analysis Date: **11/03/2020**		Seq No: **9981364**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	BRL	0.010									

Sample ID: **LCS-305213**	Client ID:					Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438679**	
SampleType: **LCS**	TestCode: **Cyanide SW9014**					BatchID: **305213**		Analysis Date: **11/03/2020**		Seq No: **9981373**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	0.2220	0.010	0.2500		88.8	85	115				

Sample ID: **2010S77-002GMS**	Client ID: **MW-1A**					Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438679**	
SampleType: **MS**	TestCode: **Cyanide SW9014**					BatchID: **305213**		Analysis Date: **11/03/2020**		Seq No: **9981367**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	0.2220	0.010	0.2500		88.8	70	130				

Sample ID: **2010S77-002GMSD**	Client ID: **MW-1A**					Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438679**	
SampleType: **MSD**	TestCode: **Cyanide SW9014**					BatchID: **305213**		Analysis Date: **11/03/2020**		Seq No: **9981368**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Cyanide, Total	0.2020	0.010	0.2500		80.8	70	130	0.2220	9.43	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: R438291

Sample ID: **MB-R438291**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438291**	
SampleType: **MBLK**	TestCode: **Total Organic Carbon (TOC) by SM5310B**				BatchID: **R438291**		Analysis Date: **10/28/2020**		Seq No: **9969673**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Organic Carbon, Total	BRL	1.00									

Sample ID: **LCS-IC**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438291**	
SampleType: **LCS**	TestCode: **Total Organic Carbon (TOC) by SM5310B**				BatchID: **R438291**		Analysis Date: **10/28/2020**		Seq No: **9969672**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Organic Carbon, Total	25.94	1.00	25.00		104	90	110				

Sample ID: **LCS-R438291**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438291**	
SampleType: **LCS**	TestCode: **Total Organic Carbon (TOC) by SM5310B**				BatchID: **R438291**		Analysis Date: **10/28/2020**		Seq No: **9969671**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Organic Carbon, Total	25.37	1.00	25.00		101	90	110				

Sample ID: **2010S77-002HMS**	Client ID: **MW-1A**				Units: **mg/L**		Prep Date:		Run No: **438291**	
SampleType: **MS**	TestCode: **Total Organic Carbon (TOC) by SM5310B**				BatchID: **R438291**		Analysis Date: **10/28/2020**		Seq No: **9969676**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Organic Carbon, Total	31.54	1.00	25.00	13.15	73.6	80	120				S

Sample ID: **2010S77-002HMSD**	Client ID: **MW-1A**				Units: **mg/L**		Prep Date:		Run No: **438291**	
SampleType: **MSD**	TestCode: **Total Organic Carbon (TOC) by SM5310B**				BatchID: **R438291**		Analysis Date: **10/28/2020**		Seq No: **9969677**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Organic Carbon, Total	31.26	1.00	25.00	13.15	72.4	80	120	31.54	0.892	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: R438493

Sample ID: **MB-R438493**	Client ID:			Units: **mg/L**	Prep Date:		Run No: **438493**
SampleType: **MBLK**	TestCode: **Inorganic Anions by IC** **EPA 300.0**			BatchID: **R438493**	Analysis Date: **10/27/2020**		Seq No: **9975709**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloride	BRL	1.00									
Fluoride	BRL	0.200									
Nitrogen, Nitrate (As N)	BRL	0.250									
Sulfate	BRL	1.00									

Sample ID: **LCS-R438493**	Client ID:			Units: **mg/L**	Prep Date:		Run No: **438493**
SampleType: **LCS**	TestCode: **Inorganic Anions by IC** **EPA 300.0**			BatchID: **R438493**	Analysis Date: **10/27/2020**		Seq No: **9975708**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloride	10.37	1.00	10.00		104	90	110				
Fluoride	4.710	0.200	5.000		94.2	90	110				
Nitrogen, Nitrate (As N)	5.352	0.250	5.000		107	90	110				
Sulfate	26.54	1.00	25.00		106	90	110				

Sample ID: **2010S46-003GMS**	Client ID:			Units: **mg/L**	Prep Date:		Run No: **438493**
SampleType: **MS**	TestCode: **Inorganic Anions by IC** **EPA 300.0**			BatchID: **R438493**	Analysis Date: **10/28/2020**		Seq No: **9975737**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloride	15.29	1.00	10.00	5.261	100	90	110				
Fluoride	5.094	0.200	5.000		102	90	110				
Nitrogen, Nitrate (As N)	5.440	0.250	5.000		109	90	110				
Sulfate	29.91	1.00	25.00	4.076	103	90	110				

Sample ID: **2010S77-001EMS**	Client ID: **MW-01**			Units: **mg/L**	Prep Date:		Run No: **438493**
SampleType: **MS**	TestCode: **Inorganic Anions by IC** **EPA 300.0**			BatchID: **R438493**	Analysis Date: **10/28/2020**		Seq No: **9975739**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloride	37.33	1.00	10.00	29.62	77.0	90	110				S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: R438493

Sample ID: **2010S77-001EMS**	Client ID: **MW-01**				Units: **mg/L**		Prep Date:		Run No: **438493**	
SampleType: **MS**	TestCode: **Inorganic Anions by IC** **EPA 300.0**				BatchID: **R438493**		Analysis Date: **10/28/2020**		Seq No: **9975739**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Fluoride	5.091	0.200	5.000	1.349	74.8	90	110				S
Nitrogen, Nitrate (As N)	6.922	0.250	5.000	1.518	108	90	110				
Sulfate	29.20	1.00	25.00	3.288	104	90	110				

Sample ID: **2010S46-003GMSD**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438493**	
SampleType: **MSD**	TestCode: **Inorganic Anions by IC** **EPA 300.0**				BatchID: **R438493**		Analysis Date: **10/28/2020**		Seq No: **9975738**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloride	15.49	1.00	10.00	5.261	102	90	110	15.29	1.30	20	
Fluoride	5.197	0.200	5.000		104	90	110	5.094	1.99	20	
Nitrogen, Nitrate (As N)	5.498	0.250	5.000		110	90	110	5.440	1.07	20	
Sulfate	30.18	1.00	25.00	4.076	104	90	110	29.91	0.909	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: R438544

Sample ID: **MB-R438544**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438544**	
SampleType: **MBLK**	TestCode: **Inorganic Anions by IC** **E300.0**				BatchID: **R438544**		Analysis Date: **10/30/2020**		Seq No: **9977498**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Fluoride	BRL	0.200									

Sample ID: **LCS-R438544**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438544**	
SampleType: **LCS**	TestCode: **Inorganic Anions by IC** **E300.0**				BatchID: **R438544**		Analysis Date: **10/30/2020**		Seq No: **9977497**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Fluoride	5.126	0.200	5.000		103	90	110				

Sample ID: **2010Q77-005CMS**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438544**	
SampleType: **MS**	TestCode: **Inorganic Anions by IC** **E300.0**				BatchID: **R438544**		Analysis Date: **10/31/2020**		Seq No: **9977512**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Fluoride	4.133	0.200	5.000	0.5223	72.2	90	110				S

Sample ID: **2010Q77-005CMSD**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438544**	
SampleType: **MSD**	TestCode: **Inorganic Anions by IC** **E300.0**				BatchID: **R438544**		Analysis Date: **10/31/2020**		Seq No: **9977511**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Fluoride	4.119	0.200	5.000	0.5223	71.9	90	110	4.133	0.344	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010S77

ANALYTICAL QC SUMMARY REPORT

BatchID: R438594

Sample ID: **MB-R438594**	Client ID:					Units: **mg/L**		Prep Date:		Run No: **438594**	
SampleType: **MBLK**	TestCode: **Chemical Oxygen Demand (COD) E410.4**					BatchID: **R438594**		Analysis Date: **11/02/2020**		Seq No: **9979498**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	BRL	10.0									

Sample ID: **LCS-R438594**	Client ID:					Units: **mg/L**		Prep Date:		Run No: **438594**	
SampleType: **LCS**	TestCode: **Chemical Oxygen Demand (COD) E410.4**					BatchID: **R438594**		Analysis Date: **11/02/2020**		Seq No: **9979499**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	500.1	10.0	500.0		100	90	110				

Sample ID: **2010P63-001AMS**	Client ID:					Units: **mg/L**		Prep Date:		Run No: **438594**	
SampleType: **MS**	TestCode: **Chemical Oxygen Demand (COD) E410.4**					BatchID: **R438594**		Analysis Date: **11/02/2020**		Seq No: **9979501**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	432.0	12.5	375.0	34.39	106	90	110				

Sample ID: **2010T30-002AMS**	Client ID:					Units: **mg/L**		Prep Date:		Run No: **438594**	
SampleType: **MS**	TestCode: **Chemical Oxygen Demand (COD) E410.4**					BatchID: **R438594**		Analysis Date: **11/02/2020**		Seq No: **9979516**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	551.3	12.5	375.0	195.7	94.8	90	110				

Sample ID: **2010P63-001AMSD**	Client ID:					Units: **mg/L**		Prep Date:		Run No: **438594**	
SampleType: **MSD**	TestCode: **Chemical Oxygen Demand (COD) E410.4**					BatchID: **R438594**		Analysis Date: **11/02/2020**		Seq No: **9979502**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	423.5	12.5	375.0	34.39	104	90	110	432.0	1.99	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

End of Report

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

November 05, 2020

Robert Hudson
Santek Waste Services, LLC

650 25th Street NW, Suite 100
Cleveland TN 37311

RE: Loudon Co (Matlock Bend) Landfill

Dear Robert Hudson: Order No: 2010U18

Analytical Environmental Services, Inc. received 5 samples on 10/28/2020 9:45:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES's accreditations are as follows:
-NELAP/State of Florida Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, Air & Emissions Volatile Organics, and Drinking Water Microbiology & Metals, effective 07/01/20-06/30/21.
State of Georgia, Department of Natural Resources ID #800 for analysis of Drinking Water Metals, effective through 06/30/21 and Total Coliforms/ E. coli, effective 04/20/20-04/24/23.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Metals and PCM Asbestos), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 11/01/21.
These results relate only to the items tested as received. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Chris Pafford
Project Manager

AES | ANALYTICAL ENVIRONMENTAL SERVICES, INC.

Analytical Environmental Services, Inc.
3080 Presidential Drive, Atlanta, GA 30340 Phone: (770) 457-8177

CHAIN OF CUSTODY

Work Order: 2010018
Page ___ of ___

COMPANY	ADDRESS
Santek Waste Services, LLC	650 25th St. NW, Suite 100 Cleveland, TN 37311
PHONE: (423) 303-7101	EMAIL: rhudson@santekwasteservices.com
SAMPLED BY: Wilbourne Markham	SIGNATURE:

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	GRAB	COMPOSITE	MATRIX (see codes)	App IVOC (8260)	App I VOC (8011)	App I Metals (Tot+Dis) Hg	Total Fe, Mn, K, Na	Diss Mn	COD, NH_3	TDS	F, Cl, NO_3, SO_4	CN	TOC	Fluoride			REMARKS
	PRESERVATION (see codes)																			
1	MW-01	10/27/20	12:05 PM	X		GW			X	X										
2	MW-02	10/27/20	11:26 AM	X		GW	X	X	X	X	X	X	X	X	X	X	X			
3	Equipment Blank	10/27/20	12:30 PM	X		W	X	X	X	X	X	X	X	X	X	X	X			
4	Duplicate	10/27/20	11:50 AM	X		GW	X	X	X	X	X	X	X	X	X	X	X			
5	Trip Blank			X		W	X													
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				

Visit our website www.aesatlanta.com for downloadable COCs and to log in to your AESAccess account.

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1.	10/27/20 3:00 PM	1. M Cartwright	10/28 9:45
2.		2.	
3.		3.	

SPECIAL INSTRUCTIONS/COMMENTS: See Chris Patford + Project History

SHIPMENT METHOD
OUT: / / VIA:
IN: / / VIA:
Client (FedEx) UPS US mail courier
other: _____

PROJECT INFORMATION
PROJECT NAME: UR ~~Matlock~~ Loudon Co (Matlock Bend) Landfill
PROJECT #:
SITE ADDRESS:
SEND REPORT TO: R. Hudson
INVOICE TO (IF DIFFERENT FROM ABOVE):
QUOTE #: _____ PO#: _____

RECEIPT
Total # of Containers: 11

Turnaround Time (TAT) Request
- [X] Standard
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same-Day Rush (auth req.)
- [ ] Other _____

REGULATORY PROGRAM (if any):
DATA PACKAGE: I ○ II ○ III ○ IV ○

Submission of samples to the laboratory constitutes acceptance of AES's Terms & Conditions. Client assumes sole responsibility for damage or loss of samples before we accept them. Samples received after 3PM or on Saturday are considered as received the following business day. If no TAT is marked on COC, AES will proceed with standard TAT. Samples are disposed of 30 days after completion of report unless other arrangements are made.

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water ST=Stormwater WW = Waste Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify)

Preservative Codes: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

4.30.20_COC

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client:	Santek Waste Services, LLC
Project:	Loudon Co (Matlock Bend) Landfill
Lab ID:	2010U18

Case Narrative

Sample Receiving Nonconformance:

One of two vials of the Trip Blank were received broken. The laboratory proceeded with analysis using the remaining vial.

Total Metals Analysis by Method 6020B:

Due to sample matrix, sample 2010U18-001A required dilution during analysis resulting in elevated reporting limits.

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-01
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020 12:05:00 PM
Lab ID:	2010U18-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020B					(SW3005A)			
Antimony	BRL	1.50		ug/L	305070	1	11/02/2020 16:04	AS
Arsenic	BRL	2.50		ug/L	305070	1	11/02/2020 16:04	AS
Barium	56.6	10.0		ug/L	305070	1	11/02/2020 16:04	AS
Beryllium	BRL	2.50		ug/L	305070	5	11/04/2020 18:20	AS
Cadmium	1.92	0.700		ug/L	305070	1	11/02/2020 16:04	AS
Calcium	1960	100		ug/L	305070	1	11/04/2020 17:36	AS
Chromium	BRL	5.00		ug/L	305070	1	11/02/2020 16:04	AS
Cobalt	BRL	5.00		ug/L	305070	1	11/02/2020 16:04	AS
Copper	BRL	2.00		ug/L	305070	1	11/02/2020 16:04	AS
Iron	BRL	100		ug/L	305070	1	11/02/2020 16:04	AS
Lead	BRL	1.00		ug/L	305070	1	11/02/2020 16:04	AS
Magnesium	1650	100		ug/L	305070	1	11/02/2020 16:04	AS
Nickel	31.1	5.00		ug/L	305070	1	11/02/2020 16:04	AS
Potassium	2780	100		ug/L	305070	1	11/02/2020 16:04	AS
Selenium	BRL	5.00		ug/L	305070	1	11/02/2020 16:04	AS
Silver	BRL	1.00		ug/L	305070	1	11/02/2020 16:04	AS
Sodium	2030	500		ug/L	305070	1	11/02/2020 16:04	AS
Thallium	BRL	0.500		ug/L	305070	1	11/02/2020 16:04	AS
Vanadium	BRL	5.00		ug/L	305070	1	11/02/2020 16:04	AS
Zinc	312	10.0		ug/L	305070	1	11/02/2020 16:04	AS
Mercury, Total SW7470A					(SW7470A)			
Mercury	BRL	0.00200		mg/L	305236	1	11/03/2020 00:14	SK

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-02
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020 11:26:00 AM
Lab ID:	2010U18-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Organic Carbon (TOC) by SM5310B								
Organic Carbon, Total	4.30	1.00		mg/L	R438434	1	10/29/2020 18:55	GK
Total Metals by ICP/MS SW6020B					(SW3005A)			
Antimony	BRL	1.50		ug/L	305070	1	11/02/2020 16:26	AS
Arsenic	BRL	2.50		ug/L	305070	1	11/02/2020 16:26	AS
Barium	94.8	10.0		ug/L	305070	1	11/02/2020 16:26	AS
Beryllium	BRL	1.00		ug/L	305070	1	11/02/2020 16:26	AS
Cadmium	BRL	0.700		ug/L	305070	1	11/02/2020 16:26	AS
Calcium	17300	1000		ug/L	305070	10	11/04/2020 12:19	AS
Chromium	BRL	5.00		ug/L	305070	1	11/02/2020 16:26	AS
Cobalt	63.5	5.00		ug/L	305070	1	11/02/2020 16:26	AS
Copper	BRL	2.00		ug/L	305070	1	11/02/2020 16:26	AS
Iron	194	100		ug/L	305070	1	11/02/2020 16:26	AS
Lead	BRL	1.00		ug/L	305070	1	11/02/2020 16:26	AS
Magnesium	5060	100		ug/L	305070	1	11/02/2020 16:26	AS
Nickel	11.0	5.00		ug/L	305070	1	11/02/2020 16:26	AS
Potassium	7380	100		ug/L	305070	1	11/02/2020 16:26	AS
Selenium	BRL	5.00		ug/L	305070	1	11/02/2020 16:26	AS
Silver	BRL	1.00		ug/L	305070	1	11/02/2020 16:26	AS
Sodium	32500	5000		ug/L	305070	10	11/04/2020 12:19	AS
Thallium	0.582	0.500		ug/L	305070	1	11/02/2020 16:26	AS
Vanadium	BRL	5.00		ug/L	305070	1	11/02/2020 16:26	AS
Zinc	28.6	10.0		ug/L	305070	1	11/02/2020 16:26	AS
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	39	1		mg/L	305008	1	10/29/2020 15:00	NN
Nitrogen, Ammonia (as N) E350.1					(E350.1)			
Nitrogen, Ammonia (As N)	BRL	0.200		mg/L	305308	1	11/03/2020 14:13	TL
MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011					(SW8011)			
1,2-Dibromo-3-chloropropane	BRL	0.200		ug/L	305134	1	11/02/2020 20:28	SB
1,2-Dibromoethane	BRL	0.050		ug/L	305134	1	11/02/2020 20:28	SB
Surr: 4-Bromofluorobenzene	110	73.6-140		%REC	305134	1	11/02/2020 20:28	SB
Mercury, Total SW7470A					(SW7470A)			
Mercury	BRL	0.00050		mg/L	305236	1	11/03/2020 00:18	SK
Inorganic Anions by IC EPA 300.0								
Chloride	4.43	1.00		mg/L	R438705	1	10/28/2020 17:32	IP
Fluoride	BRL	1.00		mg/L	R438877	1	11/03/2020 19:59	IP
Nitrogen, Nitrate (As N)	3.87	0.250		mg/L	R438705	1	10/28/2020 17:32	IP
Sulfate	1.27	1.00		mg/L	R438705	1	10/28/2020 17:32	IP
Dissolved Metals by ICP/MS SW6020B					(SW3005A)			

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-02
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020 11:26:00 AM
Lab ID:	2010U18-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Dissolved Metals by ICP/MS SW6020B				(SW3005A)				
Manganese	179	10.0		ug/L	305036	1	11/02/2020 13:24	AS
Cyanide SW9014				(SW9010C)				
Cyanide, Total	BRL	0.200		mg/L	305292	1	11/03/2020 15:31	CB
Chemical Oxygen Demand (COD) E410.4								
Chemical Oxygen Demand	BRL	10.0		mg/L	R438517	1	10/30/2020 16:15	AT
APPENDIX I VOLATILE ORGANICS SW8260D				(SW5030B)				
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
1,1,1-Trichloroethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
1,1,2-Trichloroethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
1,1-Dichloroethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
1,1-Dichloroethene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
1,2,3-Trichloropropane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
1,2-Dichlorobenzene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
1,2-Dichloroethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
1,2-Dichloropropane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
1,4-Dichlorobenzene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
2-Butanone	BRL	50		ug/L	305128	1	10/29/2020 23:44	CM
2-Hexanone	BRL	10		ug/L	305128	1	10/29/2020 23:44	CM
4-Methyl-2-pentanone	BRL	10		ug/L	305128	1	10/29/2020 23:44	CM
Acetone	BRL	50		ug/L	305128	1	10/29/2020 23:44	CM
Acrylonitrile	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Benzene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Bromochloromethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Bromodichloromethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Bromoform	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Bromomethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Carbon disulfide	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Carbon tetrachloride	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Chlorobenzene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Chloroethane	BRL	10		ug/L	305128	1	10/29/2020 23:44	CM
Chloroform	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Chloromethane	BRL	10		ug/L	305128	1	10/29/2020 23:44	CM
cis-1,2-Dichloroethene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
cis-1,3-Dichloropropene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Dibromochloromethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Dibromomethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Ethylbenzene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Iodomethane	BRL	10		ug/L	305128	1	10/29/2020 23:44	CM
m,p-Xylene	BRL	10		ug/L	305128	1	10/29/2020 23:44	CM
Methylene chloride	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
o-Xylene	BRL	10		ug/L	305128	1	10/29/2020 23:44	CM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-02
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020 11:26:00 AM
Lab ID:	2010U18-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
Styrene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Tetrachloroethene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Toluene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
trans-1,2-Dichloroethene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
trans-1,3-Dichloropropene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	305128	1	10/29/2020 23:44	CM
Trichloroethene	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Trichlorofluoromethane	BRL	5.0		ug/L	305128	1	10/29/2020 23:44	CM
Vinyl acetate	BRL	10		ug/L	305128	1	10/29/2020 23:44	CM
Vinyl chloride	BRL	2.0		ug/L	305128	1	10/29/2020 23:44	CM
Surr: 4-Bromofluorobenzene	96.4	64-125		%REC	305128	1	10/29/2020 23:44	CM
Surr: Dibromofluoromethane	95.4	76.4-125		%REC	305128	1	10/29/2020 23:44	CM
Surr: Toluene-d8	101	78.3-116		%REC	305128	1	10/29/2020 23:44	CM

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	Equipment Blank
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020 12:30:00 PM
Lab ID:	2010U18-003	**Matrix:**	Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Organic Carbon (TOC) by SM5310B								
Organic Carbon, Total	BRL	1.00		mg/L	R438434	1	10/29/2020 21:03	GK
Total Metals by ICP/MS SW6020B					(SW3005A)			
Antimony	BRL	1.50		ug/L	305070	1	11/02/2020 16:29	AS
Arsenic	BRL	2.50		ug/L	305070	1	11/02/2020 16:29	AS
Barium	BRL	10.0		ug/L	305070	1	11/02/2020 16:29	AS
Beryllium	BRL	1.00		ug/L	305070	1	11/02/2020 16:29	AS
Cadmium	BRL	0.700		ug/L	305070	1	11/02/2020 16:29	AS
Calcium	BRL	100		ug/L	305070	1	11/02/2020 16:29	AS
Chromium	BRL	5.00		ug/L	305070	1	11/02/2020 16:29	AS
Cobalt	BRL	5.00		ug/L	305070	1	11/02/2020 16:29	AS
Copper	BRL	2.00		ug/L	305070	1	11/02/2020 16:29	AS
Iron	BRL	100		ug/L	305070	1	11/02/2020 16:29	AS
Lead	BRL	1.00		ug/L	305070	1	11/02/2020 16:29	AS
Magnesium	BRL	100		ug/L	305070	1	11/02/2020 16:29	AS
Nickel	BRL	5.00		ug/L	305070	1	11/02/2020 16:29	AS
Potassium	BRL	100		ug/L	305070	1	11/02/2020 16:29	AS
Selenium	BRL	5.00		ug/L	305070	1	11/02/2020 16:29	AS
Silver	BRL	1.00		ug/L	305070	1	11/02/2020 16:29	AS
Sodium	BRL	500		ug/L	305070	1	11/02/2020 16:29	AS
Thallium	BRL	0.500		ug/L	305070	1	11/02/2020 16:29	AS
Vanadium	BRL	5.00		ug/L	305070	1	11/02/2020 16:29	AS
Zinc	BRL	10.0		ug/L	305070	1	11/02/2020 16:29	AS
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	BRL	1		mg/L	305008	1	10/29/2020 15:00	NN
Nitrogen, Ammonia (as N) E350.1					(E350.1)			
Nitrogen, Ammonia (As N)	BRL	0.200		mg/L	305308	1	11/03/2020 14:15	TL
MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011					(SW8011)			
1,2 Dibromo 3 chloropropane	BRL	0.200		ug/L	305134	1	11/02/2020 21:26	SB
1,2-Dibromoethane	BRL	0.050		ug/L	305134	1	11/02/2020 21:26	SB
Surr: 4-Bromofluorobenzene	106	73.6-140		%REC	305134	1	11/02/2020 21:26	SB
Mercury, Total SW7470A					(SW7470A)			
Mercury	BRL	0.00050		mg/L	305236	1	11/03/2020 00:22	SK
Inorganic Anions by IC EPA 300.0								
Chloride	2.04	1.00		mg/L	R438705	1	10/28/2020 17:42	IP
Fluoride	BRL	1.00		mg/L	R438877	1	11/03/2020 20:15	IP
Nitrogen, Nitrate (As N)	BRL	0.250		mg/L	R438705	1	10/28/2020 17:42	IP
Sulfate	BRL	1.00		mg/L	R438705	1	10/28/2020 17:42	IP
Dissolved Metals by ICP/MS SW6020B					(SW3005A)			

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	Equipment Blank
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020 12:30:00 PM
Lab ID:	2010U18-003	**Matrix:**	Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Dissolved Metals by ICP/MS SW6020B					**(SW3005A)**			
Manganese	BRL	10.0		ug/L	305036	1	11/02/2020 13:26	AS
Cyanide SW9014					**(SW9010C)**			
Cyanide, Total	BRL	0.200		mg/L	305292	1	11/03/2020 15:32	CB
Chemical Oxygen Demand (COD) E410.4								
Chemical Oxygen Demand	BRL	10.0		mg/L	R438517	1	10/30/2020 16:15	AT
APPENDIX I VOLATILE ORGANICS SW8260D					**(SW5030B)**			
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
1,1,1-Trichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
1,1,2-Trichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
1,1-Dichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
1,1-Dichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
1,2,3-Trichloropropane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
1,2-Dichlorobenzene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
1,2-Dichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
1,2-Dichloropropane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
1,4-Dichlorobenzene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
2-Butanone	BRL	50		ug/L	305128	1	10/30/2020 00:06	CM
2-Hexanone	BRL	10		ug/L	305128	1	10/30/2020 00:06	CM
4-Methyl-2-pentanone	BRL	10		ug/L	305128	1	10/30/2020 00:06	CM
Acetone	BRL	50		ug/L	305128	1	10/30/2020 00:06	CM
Acrylonitrile	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Benzene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Bromochloromethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Bromodichloromethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Bromoform	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Bromomethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Carbon disulfide	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Carbon tetrachloride	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Chlorobenzene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Chloroethane	BRL	10		ug/L	305128	1	10/30/2020 00:06	CM
Chloroform	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Chloromethane	BRL	10		ug/L	305128	1	10/30/2020 00:06	CM
cis-1,2-Dichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
cis-1,3-Dichloropropene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Dibromochloromethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Dibromomethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Ethylbenzene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Iodomethane	BRL	10		ug/L	305128	1	10/30/2020 00:06	CM
m,p-Xylene	BRL	10		ug/L	305128	1	10/30/2020 00:06	CM
Methylene chloride	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
o-Xylene	BRL	10		ug/L	305128	1	10/30/2020 00:06	CM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	Equipment Blank
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020 12:30:00 PM
Lab ID:	2010U18-003	**Matrix:**	Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
Styrene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Tetrachloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Toluene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
trans-1,2-Dichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
trans-1,3-Dichloropropene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	305128	1	10/30/2020 00:06	CM
Trichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Trichlorofluoromethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:06	CM
Vinyl acetate	BRL	10		ug/L	305128	1	10/30/2020 00:06	CM
Vinyl chloride	BRL	2.0		ug/L	305128	1	10/30/2020 00:06	CM
Surr: 4-Bromofluorobenzene	93.7	64-125		%REC	305128	1	10/30/2020 00:06	CM
Surr: Dibromofluoromethane	97.9	76.4-125		%REC	305128	1	10/30/2020 00:06	CM
Surr: Toluene-d8	96.8	78.3-116		%REC	305128	1	10/30/2020 00:06	CM

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	Duplicate
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020 11:50:00 AM
Lab ID:	2010U18-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Organic Carbon (TOC) by SM5310B								
Organic Carbon, Total	6.18	1.00		mg/L	R438434	1	10/29/2020 21:23	GK
Total Metals by ICP/MS SW6020B					(SW3005A)			
Antimony	BRL	1.50		ug/L	305070	1	11/02/2020 16:31	AS
Arsenic	BRL	2.50		ug/L	305070	1	11/02/2020 16:31	AS
Barium	98.0	10.0		ug/L	305070	1	11/02/2020 16:31	AS
Beryllium	BRL	1.00		ug/L	305070	1	11/02/2020 16:31	AS
Cadmium	BRL	0.700		ug/L	305070	1	11/02/2020 16:31	AS
Calcium	18400	1000		ug/L	305070	10	11/04/2020 12:21	AS
Chromium	BRL	5.00		ug/L	305070	1	11/02/2020 16:31	AS
Cobalt	66.5	5.00		ug/L	305070	1	11/02/2020 16:31	AS
Copper	BRL	2.00		ug/L	305070	1	11/02/2020 16:31	AS
Iron	206	100		ug/L	305070	1	11/02/2020 16:31	AS
Lead	BRL	1.00		ug/L	305070	1	11/02/2020 16:31	AS
Magnesium	5160	100		ug/L	305070	1	11/02/2020 16:31	AS
Nickel	10.2	5.00		ug/L	305070	1	11/02/2020 16:31	AS
Potassium	7770	100		ug/L	305070	1	11/02/2020 16:31	AS
Selenium	BRL	5.00		ug/L	305070	1	11/02/2020 16:31	AS
Silver	BRL	1.00		ug/L	305070	1	11/02/2020 16:31	AS
Sodium	33800	5000		ug/L	305070	10	11/04/2020 12:21	AS
Thallium	0.585	0.500		ug/L	305070	1	11/02/2020 16:31	AS
Vanadium	BRL	5.00		ug/L	305070	1	11/02/2020 16:31	AS
Zinc	19.0	10.0		ug/L	305070	1	11/02/2020 16:31	AS
Residue, Dissolved (TDS) by SM2540C								
Residue, Dissolved (TDS)	42	1		mg/L	305008	1	10/29/2020 15:00	NN
Nitrogen, Ammonia (as N) E350.1					(E350.1)			
Nitrogen, Ammonia (As N)	BRL	0.200		mg/L	305308	1	11/03/2020 14:17	TL
MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011					(SW8011)			
1,2-Dibromo-3-chloropropane	BRL	0.199		ug/L	305134	1	11/02/2020 22:24	SB
1,2-Dibromoethane	BRL	0.050		ug/L	305134	1	11/02/2020 22:24	SB
Surr: 4-Bromofluorobenzene	104	73.6-140		%REC	305134	1	11/02/2020 22:24	SB
Mercury, Total SW7470A					(SW7470A)			
Mercury	BRL	0.00050		mg/L	305236	1	11/03/2020 00:26	SK
Inorganic Anions by IC EPA 300.0								
Chloride	4.86	1.00		mg/L	R438705	1	10/28/2020 17:21	IP
Fluoride	BRL	1.00		mg/L	R438877	1	11/03/2020 20:31	IP
Nitrogen, Nitrate (As N)	4.01	0.250		mg/L	R438705	1	10/28/2020 17:21	IP
Sulfate	BRL	1.00		mg/L	R438705	1	10/28/2020 17:21	IP
Dissolved Metals by ICP/MS SW6020B					(SW3005A)			

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	Duplicate
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020 11:50:00 AM
Lab ID:	2010U18-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Dissolved Metals by ICP/MS SW6020B				(SW3005A)				
Manganese	148	10.0		ug/L	305036	1	11/02/2020 13:29	AS
Cyanide SW9014				(SW9010C)				
Cyanide, Total	BRL	0.200		mg/L	305292	1	11/03/2020 15:21	CB
Chemical Oxygen Demand (COD) E410.4								
Chemical Oxygen Demand	BRL	10.0		mg/L	R438602	1	11/02/2020 17:00	AT
APPENDIX I VOLATILE ORGANICS SW8260D				(SW5030B)				
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
1,1,1-Trichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
1,1,2-Trichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
1,1-Dichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
1,1-Dichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
1,2-Dibromoethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
1,2-Dichlorobenzene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
1,2-Dichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
1,2-Dichloropropane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
1,4-Dichlorobenzene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
2-Butanone	BRL	50		ug/L	305128	1	10/30/2020 00:29	CM
2-Hexanone	BRL	10		ug/L	305128	1	10/30/2020 00:29	CM
4-Methyl-2-pentanone	BRL	10		ug/L	305128	1	10/30/2020 00:29	CM
Acetone	BRL	50		ug/L	305128	1	10/30/2020 00:29	CM
Acrylonitrile	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Benzene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Bromochloromethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Bromodichloromethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Bromoform	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Bromomethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Carbon disulfide	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Carbon tetrachloride	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Chlorobenzene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Chloroethane	BRL	10		ug/L	305128	1	10/30/2020 00:29	CM
Chloroform	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Chloromethane	BRL	10		ug/L	305128	1	10/30/2020 00:29	CM
cis-1,2-Dichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
cis-1,3-Dichloropropene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Dibromochloromethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Dibromomethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Ethylbenzene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Iodomethane	BRL	10		ug/L	305128	1	10/30/2020 00:29	CM
m,p-Xylene	BRL	10		ug/L	305128	1	10/30/2020 00:29	CM
Methylene chloride	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
o-Xylene	BRL	10		ug/L	305128	1	10/30/2020 00:29	CM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	Duplicate
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/27/2020 11:50:00 AM
Lab ID:	2010U18-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
Styrene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Tetrachloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Toluene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
trans-1,2-Dichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
trans-1,3-Dichloropropene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	305128	1	10/30/2020 00:29	CM
Trichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Trichlorofluoromethane	BRL	5.0		ug/L	305128	1	10/30/2020 00:29	CM
Vinyl acetate	BRL	10		ug/L	305128	1	10/30/2020 00:29	CM
Vinyl chloride	BRL	2.0		ug/L	305128	1	10/30/2020 00:29	CM
Surr: 4-Bromofluorobenzene	97.8	64-125		%REC	305128	1	10/30/2020 00:29	CM
Surr: Dibromofluoromethane	97.4	76.4-125		%REC	305128	1	10/30/2020 00:29	CM
Surr: Toluene-d8	99.8	78.3-116		%REC	305128	1	10/30/2020 00:29	CM

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	Trip Blank
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/28/2020
Lab ID:	2010U18-005	**Matrix:**	Trip Blank

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,1,1-Trichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,1,2-Trichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,1-Dichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,1-Dichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,2,3-Trichloropropane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,2-Dibromo-3-chloropropane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,2-Dibromoethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,2-Dichlorobenzene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,2-Dichloroethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,2-Dichloropropane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
1,4-Dichlorobenzene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
2-Butanone	BRL	50		ug/L	305128	1	10/30/2020 19:26	JE
2-Hexanone	BRL	10		ug/L	305128	1	10/30/2020 19:26	JE
4-Methyl-2-pentanone	BRL	10		ug/L	305128	1	10/30/2020 19:26	JE
Acetone	BRL	50		ug/L	305128	1	10/30/2020 19:26	JE
Acrylonitrile	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Benzene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Bromochloromethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Bromodichloromethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Bromoform	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Bromomethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Carbon disulfide	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Carbon tetrachloride	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Chlorobenzene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Chloroethane	BRL	10		ug/L	305128	1	10/30/2020 19:26	JE
Chloroform	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Chloromethane	BRL	10		ug/L	305128	1	10/30/2020 19:26	JE
cis-1,2-Dichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
cis-1,3-Dichloropropene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Dibromochloromethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Dibromomethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Ethylbenzene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Iodomethane	BRL	10		ug/L	305128	1	10/30/2020 19:26	JE
m,p-Xylene	BRL	10		ug/L	305128	1	10/30/2020 19:26	JE
Methylene chloride	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
o-Xylene	BRL	10		ug/L	305128	1	10/30/2020 19:26	JE
Styrene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Tetrachloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Toluene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
trans-1,2-Dichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
trans-1,3-Dichloropropene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	305128	1	10/30/2020 19:26	JE
Trichloroethene	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 5-Nov-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	Trip Blank
Project Name:	Loudon Co (Matlock Bend) Landfill	**Collection Date:**	10/28/2020
Lab ID:	2010U18-005	**Matrix:**	Trip Blank

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260D				**(SW5030B)**				
Trichlorofluoromethane	BRL	5.0		ug/L	305128	1	10/30/2020 19:26	JE
Vinyl acetate	BRL	10		ug/L	305128	1	10/30/2020 19:26	JE
Vinyl chloride	BRL	2.0		ug/L	305128	1	10/30/2020 19:26	JE
Surr: 4-Bromofluorobenzene	103	64-125		%REC	305128	1	10/30/2020 19:26	JE
Surr: Dibromofluoromethane	99.1	76.4-125		%REC	305128	1	10/30/2020 19:26	JE
Surr: Toluene-d8	105	78.3-116		%REC	305128	1	10/30/2020 19:26	JE

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Clear Save as

ANALYTICAL ENVIRONMENTAL SERVICES, INC

SAMPLE/COOLER RECEIPT CHECKLIST

1. Client Name: **Santek Waste Services, LLC** AES Work Order Number: **2010U18**

2. Carrier: FedEx ■ UPS ☐ USPS ☐ Client ☐ Courier ☐ Other _____

		Yes	No	N/A	Details	Comments
3.	Shipping container/cooler received in good condition?	◉	○	○	damaged ☐ leaking ☐ other ☐	
4.	Custody seals present on shipping container?	○	◉	○		
5.	Custody seals intact on shipping container?	○	○	◉		
6.	Temperature blanks present?	◉	○	○		
7.	Cooler temperature(s) within limits of 0-6°C? [See item 13 and 14 for temperature recordings.]	◉	○	○	Cooling initiated for recently collected samples / ice present ☐	
8.	Chain of Custody (COC) present?	◉	○	○		
9.	Chain of Custody signed, dated, and timed when relinquished and received?	◉	○	○		
10.	Sampler name and/or signature on COC?	◉	○	○		
11.	Were all samples received within holding time?	◉	○	○		
12.	TAT marked on the COC?	◉	○	○	If no TAT indicated, proceeded with standard TAT per Terms & Conditions. ☐	

13. Cooler 1 Temperature 1.9 °C Cooler 2 Temperature _____ °C Cooler 3 Temperature _____ °C Cooler 4 Temperature _____ °C

14. Cooler 5 Temperature _____ °C Cooler 6 Temperature _____ °C Cooler 7 Temperature _____ °C Cooler 8 Temperature _____ °C

15. Comments: _____

I certify that I have completed sections 1-15 (dated initials). BH 10/28/20

		Yes	No	N/A	Details	Comments
16.	Were sample containers intact upon receipt?	○	◉	○		
17.	Custody seals present on sample containers?	○	◉	○		
18.	Custody seals intact on sample containers?	○	○	◉		
19.	Do sample container labels match the COC?	◉	○	○	incomplete info ☐ illegible ☐ no label ☐ other ☐	
20.	Are analyses requested indicated on the COC?	◉	○	○		
21.	Were all of the samples listed on the COC received?	◉	○	○	samples received but not listed on COC ☐ samples listed on COC not received ☐	
22.	Was the sample collection date/time noted?	◉	○	○		
23.	Did we receive sufficient sample volume for indicated analyses?	◉	○	○		
24.	Were samples received in appropriate containers?	◉	○	○		
25.	Were VOA samples received without headspace (< 1/4" bubble)?	◉	○	○		
26.	Were trip blanks submitted?	◉	○	○	listed on COC ■ not listed on COC ☐	

27. Comments: _____

I certify that I have completed sections 16-27 (dated initials). BH 10/28/20

This section only applies to samples where pH can be checked at Sample Receipt.

		Yes	No	N/A	Details	Comments
28.	Have containers needing chemical preservation been checked? *	◉	○	○		
29.	Containers meet preservation guidelines?	◉	○	○		
30.	Was pH adjusted at Sample Receipt?	○	○	◉		

* Note: Certain analyses require chemical preservation but must be checked in the laboratory and not upon Sample Receipt such as Coliforms, VOCs and Oil & Grease/TPH.
This also excludes metals by EPA 200.7, 200.8 and 245.1 which will be verified between 16 and 24 hours after preservation.

I certify that I have completed sections 28-30 (dated initials). BH 10/28/20

Locked

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Lab Order: 2010U18

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
2010U18-001A	MW-01	10/27/2020 12:05:00PM	Groundwater	Total Metals by ICP/MS		10/30/2020 9:07:00AM	11/02/2020
2010U18-001A	MW-01	10/27/2020 12:05:00PM	Groundwater	Total Metals by ICP/MS		10/30/2020 9:07:00AM	11/04/2020
2010U18-001A	MW-01	10/27/2020 12:05:00PM	Groundwater	TOTAL MERCURY		11/2/2020 6:14:00PM	11/03/2020
2010U18-002A	MW-02	10/27/2020 11:26:00AM	Groundwater	APPENDIX I VOLATILE ORGANICS		10/29/2020 7:14:00PM	10/29/2020
2010U18-002B	MW-02	10/27/2020 11:26:00AM	Groundwater	MICRO-EXTRACTABLE VOCs		10/30/2020 9:35:41AM	11/02/2020
2010U18-002C	MW-02	10/27/2020 11:26:00AM	Groundwater	Total Metals by ICP/MS		10/30/2020 9:07:00AM	11/02/2020
2010U18-002C	MW-02	10/27/2020 11:26:00AM	Groundwater	Total Metals by ICP/MS		10/30/2020 9:07:00AM	11/04/2020
2010U18-002C	MW-02	10/27/2020 11:26:00AM	Groundwater	TOTAL MERCURY		11/2/2020 6:14:00PM	11/03/2020
2010U18-002D	MW-02	10/27/2020 11:26:00AM	Groundwater	Dissolved Metals by ICP/MS		10/29/2020 12:03:00PM	11/02/2020
2010U18-002E	MW-02	10/27/2020 11:26:00AM	Groundwater	Nitrogen, Ammonia (as N)		11/3/2020 10:00:00AM	11/03/2020
2010U18-002E	MW-02	10/27/2020 11:26:00AM	Groundwater	Chemical Oxygen Demand (COD)			10/30/2020
2010U18-002F	MW-02	10/27/2020 11:26:00AM	Groundwater	Residue, Dissolved (TDS) by SM2540C		10/29/2020 11:35:00AM	10/29/2020
2010U18-002G	MW-02	10/27/2020 11:26:00AM	Groundwater	Inorganic Anions by IC			10/28/2020
2010U18-002G	MW-02	10/27/2020 11:26:00AM	Groundwater	Inorganic Anions by IC			11/03/2020
2010U18-002H	MW-02	10/27/2020 11:26:00AM	Groundwater	Cyanide		11/3/2020 10:20:00AM	11/03/2020
2010U18-002I	MW-02	10/27/2020 11:26:00AM	Groundwater	Total Organic Carbon by SM5310B			10/29/2020
2010U18-003A	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	APPENDIX I VOLATILE ORGANICS		10/29/2020 7:14:00PM	10/30/2020
2010U18-003B	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	MICRO-EXTRACTABLE VOCs		10/30/2020 9:35:41AM	11/02/2020
2010U18-003C	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	Total Metals by ICP/MS		10/30/2020 9:07:00AM	11/02/2020
2010U18-003C	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	TOTAL MERCURY		11/2/2020 6:14:00PM	11/03/2020
2010U18-003D	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	Dissolved Metals by ICP/MS		10/29/2020 12:03:00PM	11/02/2020
2010U18-003E	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	Nitrogen, Ammonia (as N)		11/3/2020 10:00:00AM	11/03/2020
2010U18-003E	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	Chemical Oxygen Demand (COD)			10/30/2020
2010U18-003F	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	Residue, Dissolved (TDS) by SM2540C		10/29/2020 11:35:00AM	10/29/2020
2010U18-003G	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	Inorganic Anions by IC			10/28/2020
2010U18-003G	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	Inorganic Anions by IC			11/03/2020
2010U18-003H	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	Cyanide		11/3/2020 10:20:00AM	11/03/2020
2010U18-003I	Equipment Blank	10/27/2020 12:30:00PM	Aqueous	Total Organic Carbon by SM5310B			10/29/2020
2010U18-004A	Duplicate	10/27/2020 11:50:00AM	Groundwater	APPENDIX I VOLATILE ORGANICS		10/29/2020 7:14:00PM	10/30/2020

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Lab Order: 2010U18

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
2010U18-004B	Duplicate	10/27/2020 11:50:00AM	Groundwater	MICRO-EXTRACTABLE VOCs		10/30/2020 9:35:41AM	11/02/2020
2010U18-004C	Duplicate	10/27/2020 11:50:00AM	Groundwater	Total Metals by ICP/MS		10/30/2020 9:07:00AM	11/02/2020
2010U18-004C	Duplicate	10/27/2020 11:50:00AM	Groundwater	Total Metals by ICP/MS		10/30/2020 9:07:00AM	11/04/2020
2010U18-004C	Duplicate	10/27/2020 11:50:00AM	Groundwater	TOTAL MERCURY		11/2/2020 6:14:00PM	11/03/2020
2010U18-004D	Duplicate	10/27/2020 11:50:00AM	Groundwater	Dissolved Metals by ICP/MS		10/29/2020 12:03:00PM	11/02/2020
2010U18-004E	Duplicate	10/27/2020 11:50:00AM	Groundwater	Nitrogen, Ammonia (as N)		11/3/2020 10:00:00AM	11/03/2020
2010U18-004E	Duplicate	10/27/2020 11:50:00AM	Groundwater	Chemical Oxygen Demand (COD)			11/02/2020
2010U18-004F	Duplicate	10/27/2020 11:50:00AM	Groundwater	Residue, Dissolved (TDS) by SM2540C		10/29/2020 11:35:00AM	10/29/2020
2010U18-004G	Duplicate	10/27/2020 11:50:00AM	Groundwater	Inorganic Anions by IC			10/28/2020
2010U18-004G	Duplicate	10/27/2020 11:50:00AM	Groundwater	Inorganic Anions by IC			11/03/2020
2010U18-004H	Duplicate	10/27/2020 11:50:00AM	Groundwater	Cyanide		11/3/2020 10:20:00AM	11/03/2020
2010U18-004I	Duplicate	10/27/2020 11:50:00AM	Groundwater	Total Organic Carbon by SM5310B			10/29/2020
2010U18-005A	Trip Blank	10/28/2020 12:00:00AM	Trip Blank	APPENDIX I VOLATILE ORGANICS		10/29/2020 7:14:00PM	10/30/2020

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305008

Sample ID: **MB-305008**	Client ID:					Units: **mg/L**		Prep Date: **10/29/2020**		Run No: **438323**	
SampleType: **MBLK**	TestCode: **Residue, Dissolved (TDS) by SM2540C**					BatchID: **305008**		Analysis Date: **10/29/2020**		Seq No: **9976051**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	BRL	10									

Sample ID: **2010T56-002FDUP**	Client ID:					Units: **mg/L**		Prep Date: **10/29/2020**		Run No: **438323**	
SampleType: **DUP**	TestCode: **Residue, Dissolved (TDS) by SM2540C**					BatchID: **305008**		Analysis Date: **10/29/2020**		Seq No: **9976053**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	445.0	10						444.0	0.225	5	

Sample ID: **2010V09-001CDUP**	Client ID:					Units: **mg/L**		Prep Date: **10/29/2020**		Run No: **438323**	
SampleType: **DUP**	TestCode: **Residue, Dissolved (TDS) by SM2540C**					BatchID: **305008**		Analysis Date: **10/29/2020**		Seq No: **9976064**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Residue, Dissolved (TDS)	1026	10						1070	4.20	5	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305036

Sample ID: **MB-305036**	Client ID:				Units: **ug/L**		Prep Date: **10/28/2020**		Run No: **438636**
SampleType: **MBLK**	TestCode: **Dissolved Metals by ICP/MS SW6020B**				BatchID: **305036**		Analysis Date: **11/02/2020**		Seq No: **9980775**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Manganese	BRL	5.00									

Sample ID: **LCS-305036**	Client ID:				Units: **ug/L**		Prep Date: **10/28/2020**		Run No: **438636**
SampleType: **LCS**	TestCode: **Dissolved Metals by ICP/MS SW6020B**				BatchID: **305036**		Analysis Date: **11/02/2020**		Seq No: **9980776**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Manganese	91.87	5.00	100.0		91.9	80	120				

Sample ID: **2010S77-002DMS**	Client ID:				Units: **ug/L**		Prep Date: **10/28/2020**		Run No: **438636**
SampleType: **MS**	TestCode: **Dissolved Metals by ICP/MS SW6020B**				BatchID: **305036**		Analysis Date: **11/02/2020**		Seq No: **9980778**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Manganese	259.7	5.00	100.0	158.9	101	75	125				

Sample ID: **2010S77-002DMSD**	Client ID:				Units: **ug/L**		Prep Date: **10/28/2020**		Run No: **438636**
SampleType: **MSD**	TestCode: **Dissolved Metals by ICP/MS SW6020B**				BatchID: **305036**		Analysis Date: **11/02/2020**		Seq No: **9980779**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Manganese	265.0	5.00	100.0	158.9	106	75	125	259.7	2.02	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305070

Sample ID: **MB-305070** Client ID: Units: **ug/L** Prep Date: **10/30/2020** Run No: **438684**
SampleType: **MBLK** TestCode: **Total Metals by ICP/MS SW6020B** BatchID: **305070** Analysis Date: **11/02/2020** Seq No: **9980870**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	BRL	1.50									
Arsenic	BRL	2.50									
Barium	BRL	10.0									
Beryllium	BRL	1.00									
Cadmium	BRL	0.700									
Calcium	BRL	100									
Chromium	BRL	5.00									
Cobalt	BRL	5.00									
Copper	BRL	2.00									
Iron	BRL	100									
Lead	BRL	1.00									
Magnesium	BRL	100									
Nickel	BRL	5.00									
Potassium	BRL	100									
Selenium	BRL	5.00									
Silver	BRL	1.00									
Sodium	BRL	500									
Thallium	BRL	0.500									
Vanadium	BRL	5.00									
Zinc	BRL	10.0									

Sample ID: **LCS-305070** Client ID: Units: **ug/L** Prep Date: **10/30/2020** Run No: **438684**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS SW6020B** BatchID: **305070** Analysis Date: **11/02/2020** Seq No: **9980871**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	108.2	5.00	100.0		108	80	120				
Arsenic	99.05	5.00	100.0		99.1	80	120				
Barium	96.31	10.0	100.0		96.3	80	120				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305070

Sample ID: **LCS-305070** Client ID: Units: **ug/L** Prep Date: **10/30/2020** Run No: **438684**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS SW6020B** BatchID: **305070** Analysis Date: **11/02/2020** Seq No: **9980871**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Beryllium	113.7	1.00	100.0		114	80	120				
Cadmium	104.3	0.700	100.0		104	80	120				
Calcium	889.5	100	1000		88.9	80	120				
Chromium	111.3	5.00	100.0		111	80	120				
Cobalt	98.32	5.00	100.0		98.3	80	120				
Copper	94.90	2.00	100.0		94.9	80	120				
Iron	1083	100	1000		108	80	120				
Lead	104.8	1.00	100.0		105	80	120				
Magnesium	1139	100	1000		114	80	120				
Nickel	104.5	5.00	100.0		105	80	120				
Potassium	1136	100	1000		114	80	120				
Selenium	103.8	5.00	100.0		104	80	120				
Silver	10.87	1.00	10.00		109	80	120				
Sodium	925.3	500	1000		92.5	80	120				
Thallium	104.7	1.00	100.0		105	80	120				
Vanadium	97.08	5.00	100.0		97.1	80	120				
Zinc	111.5	10.0	100.0		112	80	120				

Sample ID: **2010U18-001AMS** Client ID: **MW-01** Units: **ug/L** Prep Date: **10/30/2020** Run No: **438684**
SampleType: **MS** TestCode: **Total Metals by ICP/MS SW6020B** BatchID: **305070** Analysis Date: **11/02/2020** Seq No: **9980873**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	105.9	5.00	100.0		106	75	125				
Arsenic	102.6	5.00	100.0		103	75	125				
Barium	152.4	10.0	100.0	56.57	95.8	75	125				
Beryllium	108.1	1.00	100.0	2.354	106	75	125				
Cadmium	106.0	0.700	100.0	1.924	104	75	125				
Calcium	2624	100	1000	1789	83.5	75	125				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305070

Sample ID: **2010U18-001AMS** Client ID: **MW-01** Units: **ug/L** Prep Date: **10/30/2020** Run No: **438684**
SampleType: **MS** TestCode: **Total Metals by ICP/MS SW6020B** BatchID: **305070** Analysis Date: **11/02/2020** Seq No: **9980873**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chromium	108.4	5.00	100.0		108	75	125				
Cobalt	95.95	5.00	100.0	0.2979	95.7	75	125				
Copper	95.29	2.00	100.0		95.3	75	125				
Iron	1100	100	1000	72.63	103	75	125				
Lead	104.4	1.00	100.0		104	75	125				
Magnesium	2709	100	1000	1654	105	75	125				
Nickel	133.7	5.00	100.0	31.05	103	75	125				
Potassium	3850	100	1000	2783	107	75	125				
Selenium	102.9	5.00	100.0		103	75	125				
Silver	10.76	1.00	10.00		108	75	125				
Sodium	2946	500	1000	2027	92.0	75	125				
Thallium	105.3	1.00	100.0		105	75	125				
Vanadium	95.72	5.00	100.0		95.7	75	125				
Zinc	425.1	10.0	100.0	311.8	113	75	125				

Sample ID: **2010U18-001AMSD** Client ID: **MW-01** Units: **ug/L** Prep Date: **10/30/2020** Run No: **438684**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS SW6020B** BatchID: **305070** Analysis Date: **11/02/2020** Seq No: **9980874**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	107.3	5.00	100.0		107	75	125	105.9	1.32	20	
Arsenic	101.7	5.00	100.0		102	75	125	102.6	0.919	20	
Barium	152.0	10.0	100.0	56.57	95.4	75	125	152.4	0.279	20	
Beryllium	107.0	1.00	100.0	2.354	105	75	125	108.1	1.01	20	
Cadmium	106.1	0.700	100.0	1.924	104	75	125	106.0	0.160	20	
Calcium	2711	100	1000	1789	92.3	75	125	2624	3.28	20	
Chromium	104.6	5.00	100.0		105	75	125	108.4	3.57	20	
Cobalt	95.19	5.00	100.0	0.2979	94.9	75	125	95.95	0.794	20	
Copper	93.66	2.00	100.0		93.7	75	125	95.29	1.72	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Sartek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305070

Sample ID: **2010U18-001AMSD** Client ID: **MW-01** Units: **ug/L** Prep Date: **10/30/2020** Run No: **438684**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS SW6020B** BatchID: **305070** Analysis Date: **11/02/2020** Seq No: **9980874**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Iron	1074	100	1000	72.63	100	75	125	1100	2.40	20	
Lead	104.3	1.00	100.0		104	75	125	104.4	0.048	20	
Magnesium	2692	100	1000	1654	104	75	125	2709	0.642	20	
Nickel	133.5	5.00	100.0	31.05	102	75	125	133.7	0.204	20	
Potassium	3718	100	1000	2783	93.5	75	125	3850	3.49	20	
Selenium	102.2	5.00	100.0		102	75	125	102.9	0.717	20	
Silver	10.84	1.00	10.00		108	75	125	10.76	0.697	20	
Sodium	2872	500	1000	2027	84.5	75	125	2946	2.56	20	
Thallium	104.6	1.00	100.0		105	75	125	105.3	0.683	20	
Vanadium	94.49	5.00	100.0		94.5	75	125	95.72	1.30	20	
Zinc	420.3	10.0	100.0	311.8	108	75	125	425.1	1.15	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305128

Sample ID: **MB-305128** Client ID: Units: **ug/L** Prep Date: **10/29/2020** Run No: **438431**
SampleType: **MBLK** TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D** BatchID: **305128** Analysis Date: **10/29/2020** Seq No: **9973859**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	BRL	5.0									
1,1,1-Trichloroethane	BRL	5.0									
1,1,2,2-Tetrachloroethane	BRL	5.0									
1,1,2-Trichloroethane	BRL	5.0									
1,1-Dichloroethane	BRL	5.0									
1,1-Dichloroethene	BRL	5.0									
1,2,3-Trichloropropane	BRL	5.0									
1,2-Dibromo-3-chloropropane	BRL	5.0									
1,2-Dibromoethane	BRL	5.0									
1,2-Dichlorobenzene	BRL	5.0									
1,2-Dichloroethane	BRL	5.0									
1,2-Dichloropropane	BRL	5.0									
1,4-Dichlorobenzene	BRL	5.0									
2-Butanone	BRL	50									
2-Hexanone	BRL	10									
4-Methyl-2-pentanone	BRL	10									
Acetone	BRL	50									
Acrylonitrile	BRL	5.0									
Benzene	BRL	5.0									
Bromochloromethane	BRL	5.0									
Bromodichloromethane	BRL	5.0									
Bromoform	BRL	5.0									
Bromomethane	BRL	5.0									
Carbon disulfide	BRL	5.0									
Carbon tetrachloride	BRL	5.0									
Chlorobenzene	BRL	5.0									
Chloroethane	BRL	10									

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305128

Sample ID: **MB-305128** Client ID: Units: **ug/L** Prep Date: **10/29/2020** Run No: **438431**
SampleType: **MBLK** TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D** BatchID: **305128** Analysis Date: **10/29/2020** Seq No: **9973859**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloroform	BRL	5.0									
Chloromethane	BRL	10									
cis-1,2-Dichloroethene	BRL	5.0									
cis-1,3-Dichloropropene	BRL	5.0									
Dibromochloromethane	BRL	5.0									
Dibromomethane	BRL	5.0									
Ethylbenzene	BRL	5.0									
Iodomethane	BRL	10									
m,p-Xylene	BRL	10									
Methylene chloride	BRL	5.0									
o-Xylene	BRL	10									
Styrene	BRL	5.0									
Tetrachloroethene	BRL	5.0									
Toluene	BRL	5.0									
trans-1,2-Dichloroethene	BRL	5.0									
trans-1,3-Dichloropropene	BRL	5.0									
trans-1,4-Dichloro-2-butene	BRL	10									
Trichloroethene	BRL	5.0									
Trichlorofluoromethane	BRL	5.0									
Vinyl acetate	BRL	10									
Vinyl chloride	BRL	2.0									
Surr: 4-Bromofluorobenzene	48.72	0	50.00		97.4	64	125				
Surr: Dibromofluoromethane	46.52	0	50.00		93.0	76.4	125				
Surr: Toluene-d8	50.68	0	50.00		101	78.3	116				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305128

Sample ID: **LCS-305128** Client ID:
SampleType: **LCS** TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D**
Units: **ug/L** Prep Date: **10/29/2020** Run No: **438431**
BatchID: **305128** Analysis Date: **10/29/2020** Seq No: **9973866**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1-Dichloroethene	17.63	5.0	20.00		88.2	69.2	141				
Benzene	18.59	5.0	20.00		93.0	72.3	126				
Chlorobenzene	18.87	5.0	20.00		94.4	73.3	135				
Toluene	19.56	5.0	20.00		97.8	70.5	128				
Trichloroethene	18.96	5.0	20.00		94.8	70.3	133				
Surr: 4-Bromofluorobenzene	50.00	0	50.00		100	64	125				
Surr: Dibromofluoromethane	47.30	0	50.00		94.6	76.4	125				
Surr: Toluene-d8	51.37	0	50.00		103	78.3	116				

Sample ID: **2010Q82-019AMS** Client ID:
SampleType: **MS** TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D**
Units: **ug/L** Prep Date: **10/29/2020** Run No: **438431**
BatchID: **305128** Analysis Date: **10/30/2020** Seq No: **9975968**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1-Dichloroethene	23.06	5.0	20.00		115	63.8	146				
Benzene	21.49	5.0	20.00		107	70.2	137				
Chlorobenzene	21.16	5.0	20.00		106	72.7	141				
Toluene	22.39	5.0	20.00	0.4300	110	67	141				
Trichloroethene	20.74	5.0	20.00		104	69.3	141				
Surr: 4-Bromofluorobenzene	51.06	0	50.00		102	64	125				
Surr: Dibromofluoromethane	47.81	0	50.00		95.6	76.4	125				
Surr: Toluene-d8	50.93	0	50.00		102	78.3	116				

Sample ID: **2010Q82-019AMSD** Client ID:
SampleType: **MSD** TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D**
Units: **ug/L** Prep Date: **10/29/2020** Run No: **438431**
BatchID: **305128** Analysis Date: **10/30/2020** Seq No: **9975969**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1-Dichloroethene	21.67	5.0	20.00		108	63.8	146	23.06	6.22	20.8	
Benzene	20.59	5.0	20.00		103	70.2	137	21.49	4.28	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305128

Sample ID: **2010Q82-019AMSD** Client ID: Units: **ug/L** Prep Date: **10/29/2020** Run No: **438431**
SampleType: **MSD** TestCode: **APPENDIX I VOLATILE ORGANICS SW8260D** BatchID: **305128** Analysis Date: **10/30/2020** Seq No: **9975969**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chlorobenzene	20.19	5.0	20.00		101	72.7	141	21.16	4.69	20	
Toluene	20.89	5.0	20.00	0.4300	102	67	141	22.39	6.93	20	
Trichloroethene	20.06	5.0	20.00		100	69.3	141	20.74	3.33	17.9	
Surr: 4-Bromofluorobenzene	50.53	0	50.00		101	64	125	51.06	0	0	
Surr: Dibromofluoromethane	49.00	0	50.00		98.0	76.4	125	47.81	0	0	
Surr: Toluene-d8	50.01	0	50.00		100	78.3	116	50.93	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305134

Sample ID: **MB-305134** Client ID: Units: **ug/L** Prep Date: **10/30/2020** Run No: **438663**
SampleType: **MBLK** TestCode: **MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011** BatchID: **305134** Analysis Date: **11/02/2020** Seq No: **9980340**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,2-Dibromo-3-chloropropane	BRL	0.040									
1,2-Dibromoethane	BRL	0.020									
Surr: 4-Bromofluorobenzene	4.700	0	5.000		94.0	73.6	140				

Sample ID: **LCS-305134** Client ID: Units: **ug/L** Prep Date: **10/30/2020** Run No: **438663**
SampleType: **LCS** TestCode: **MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011** BatchID: **305134** Analysis Date: **11/02/2020** Seq No: **9980341**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,2-Dibromo-3-chloropropane	0.1020	0.040	0.1000		102	60	140				
1,2-Dibromoethane	0.1030	0.020	0.1000		103	60	140				
Surr: 4-Bromofluorobenzene	5.278	0	5.000		106	73.6	140				

Sample ID: **LCSD-305134** Client ID: Units: **ug/L** Prep Date: **10/30/2020** Run No: **438663**
SampleType: **LCSD** TestCode: **MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011** BatchID: **305134** Analysis Date: **11/02/2020** Seq No: **9980342**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,2-Dibromo-3-chloropropane	0.1070	0.040	0.1000		107	60	140	0.1020	4.78	14.6	
1,2-Dibromoethane	0.1040	0.020	0.1000		104	60	140	0.1030	0.966	15.6	
Surr: 4-Bromofluorobenzene	5.087	0	5.000		102	73.6	140	5.278	0	0	

Sample ID: **2010U18-002BMS** Client ID: **MW-02** Units: **ug/L** Prep Date: **10/30/2020** Run No: **438663**
SampleType: **MS** TestCode: **MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011** BatchID: **305134** Analysis Date: **11/02/2020** Seq No: **9980390**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,2-Dibromo-3-chloropropane	0.1033	0.039	0.0984		105	60.8	136				
1,2-Dibromoethane	0.1004	0.020	0.0984		102	70	131				
Surr: 4-Bromofluorobenzene	5.524	0	4.920		112	73.6	140				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305134

Sample ID: **2010S77-002BDUP** Client ID: Units: **ug/L** Prep Date: **10/30/2020** Run No: **438663**
SampleType: **DUP** TestCode: **MICRO-EXTRACTABLE VOLATILE ORGANICS SW8011** BatchID: **305134** Analysis Date: **11/02/2020** Seq No: **9980385**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,2-Dibromo-3-chloropropane	BRL	0.040						0	0	30	
1,2-Dibromoethane	BRL	0.020						0	0	30	
Surr: 4-Bromofluorobenzene	5.593	0	4.948		113	73.6	140	5.248	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Report ng Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305236

Sample ID: **MB-305236**	Client ID:				Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438667**
SampleType: **MBLK**	TestCode: **Mercury, Total SW7470A**				BatchID: **305236**		Analysis Date: **11/02/2020**		Seq No: **9980441**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	BRL	0.00020									

Sample ID: **LCS-305236**	Client ID:				Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438667**
SampleType: **LCS**	TestCode: **Mercury, Total SW7470A**				BatchID: **305236**		Analysis Date: **11/02/2020**		Seq No: **9980442**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.003552	0.00020	0.0040		88.8	80	120				

Sample ID: **2010T36-001BMS**	Client ID:				Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438667**
SampleType: **MS**	TestCode: **Mercury, Total SW7470A**				BatchID: **305236**		Analysis Date: **11/02/2020**		Seq No: **9980444**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.003575	0.00020	0.0040		89.4	75	125				

Sample ID: **2010T36-001BMSD**	Client ID:				Units: **mg/L**		Prep Date: **11/02/2020**		Run No: **438667**
SampleType: **MSD**	TestCode: **Mercury, Total SW7470A**				BatchID: **305236**		Analysis Date: **11/02/2020**		Seq No: **9980445**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Mercury	0.003627	0.00020	0.0040		90.7	75	125	0.003575	1.44	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305292

Sample ID: **MB-305292**	Client ID:					Units: **mg/L**		Prep Date: **11/03/2020**		Run No: **438720**
SampleType: **MBLK**	TestCode: **Cyanide SW9014**					BatchID: **305292**		Analysis Date: **11/03/2020**		Seq No: **9982590**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Cyanide, Total	BRL	0.010								

Sample ID: **LCS-305292**	Client ID:					Units: **mg/L**		Prep Date: **11/03/2020**		Run No: **438720**
SampleType: **LCS**	TestCode: **Cyanide SW9014**					BatchID: **305292**		Analysis Date: **11/03/2020**		Seq No: **9982592**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Cyanide, Total	0.2360	0.010	0.2500		94.4	85	115			

Sample ID: **2010U18-004HMS**	Client ID: **Duplicate**					Units: **mg/L**		Prep Date: **11/03/2020**		Run No: **438720**
SampleType: **MS**	TestCode: **Cyanide SW9014**					BatchID: **305292**		Analysis Date: **11/03/2020**		Seq No: **9982596**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Cyanide, Total	0.2290	0.010	0.2500		91.6	70	130			

Sample ID: **2010V11-005EMS**	Client ID:					Units: **mg/L**		Prep Date: **11/03/2020**		Run No: **438720**
SampleType: **MS**	TestCode: **Cyanide SW9014**					BatchID: **305292**		Analysis Date: **11/03/2020**		Seq No: **9982625**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Cyanide, Total	0.2280	0.010	0.2500		91.2	70	130			

Sample ID: **2010U18-004HMSD**	Client ID: **Duplicate**					Units: **mg/L**		Prep Date: **11/03/2020**		Run No: **438720**
SampleType: **MSD**	TestCode: **Cyanide SW9014**					BatchID: **305292**		Analysis Date: **11/03/2020**		Seq No: **9982598**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Cyanide, Total	0.2300	0.010	0.2500		92.0	70	130	0.2290	0.436	20

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: 305308

Sample ID: **MB-305308**	Client ID:				Units: **mg/L**	Prep Date: **11/03/2020**	Run No: **438707**
SampleType: **MBLK**	TestCode: **Nitrogen, Ammonia (as N)** **E350.1**				BatchID: **305308**	Analysis Date: **11/03/2020**	Seq No: **9984554**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	BRL	0.200									

Sample ID: **LCS-305308**	Client ID:				Units: **mg/L**	Prep Date: **11/03/2020**	Run No: **438707**
SampleType: **LCS**	TestCode: **Nitrogen, Ammonia (as N)** **E350.1**				BatchID: **305308**	Analysis Date: **11/03/2020**	Seq No: **9984555**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	4.770	0.200	5.000		95.4	90	110				

Sample ID: **2010T90-001CMS**	Client ID:				Units: **mg/L**	Prep Date: **11/03/2020**	Run No: **438707**
SampleType: **MS**	TestCode: **Nitrogen, Ammonia (as N)** **E350.1**				BatchID: **305308**	Analysis Date: **11/03/2020**	Seq No: **9984613**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	5.780	0.200	5.000	0.6150	103	90	110				

Sample ID: **2010U53-002AMS**	Client ID:				Units: **mg/L**	Prep Date: **11/03/2020**	Run No: **438707**
SampleType: **MS**	TestCode: **Nitrogen, Ammonia (as N)** **E350.1**				BatchID: **305308**	Analysis Date: **11/03/2020**	Seq No: **9984610**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	5.180	0.200	5.000		104	90	110				

Sample ID: **2010U53-002AMSD**	Client ID:				Units: **mg/L**	Prep Date: **11/03/2020**	Run No: **438707**
SampleType: **MSD**	TestCode: **Nitrogen, Ammonia (as N)** **E350.1**				BatchID: **305308**	Analysis Date: **11/03/2020**	Seq No: **9984612**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	5.150	0.200	5.000		103	90	110	5.180	0.581	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Sartek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: R438434

Sample ID: **MB-R438434**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438434**
SampleType: **MBLK**	TestCode: **Total Organic Carbon (TOC) by SM5310B**				BatchID: **R438434**		Analysis Date: **10/29/2020**		Seq No: **9974792**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Organic Carbon, Total	BRL	1.00									

Sample ID: **LCS-R438434**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438434**
SampleType: **LCS**	TestCode: **Total Organic Carbon (TOC) by SM5310B**				BatchID: **R438434**		Analysis Date: **10/29/2020**		Seq No: **9974790**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Organic Carbon, Total	25.71	1.00	25.00		103	90	110				

Sample ID: **2010U18-002IMS**	Client ID: **MW-02**				Units: **mg/L**		Prep Date:		Run No: **438434**
SampleType: **MS**	TestCode: **Total Organic Carbon (TOC) by SM5310B**				BatchID: **R438434**		Analysis Date: **10/29/2020**		Seq No: **9974795**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Organic Carbon, Total	27.96	1.00	25.00	4.300	94.6	80	120				

Sample ID: **2010U18-002IMSD**	Client ID: **MW-02**				Units: **mg/L**		Prep Date:		Run No: **438434**
SampleType: **MSD**	TestCode: **Total Organic Carbon (TOC) by SM5310B**				BatchID: **R438434**		Analysis Date: **10/29/2020**		Seq No: **9974796**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Organic Carbon, Total	28.60	1.00	25.00	4.300	97.2	80	120	27.96	2.26	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Report ng Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: R438517

Sample ID: **MB-R438517**	Client ID:				Units: **mg/L**	Prep Date:		Run No: **438517**	
SampleType: **MBLK**	TestCode: **Chemical Oxygen Demand (COD) E410.4**				BatchID: **R438517**	Analysis Date: **10/30/2020**		Seq No: **9977221**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	BRL	10.0									

Sample ID: **LCS-R438517**	Client ID:				Units: **mg/L**	Prep Date:		Run No: **438517**	
SampleType: **LCS**	TestCode: **Chemical Oxygen Demand (COD) E410.4**				BatchID: **R438517**	Analysis Date: **10/30/2020**		Seq No: **9977222**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	500.1	10.0	500.0		100	90	110				

Sample ID: **2010R58-001CMS**	Client ID:				Units: **mg/L**	Prep Date:		Run No: **438517**	
SampleType: **MS**	TestCode: **Chemical Oxygen Demand (COD) E410.4**				BatchID: **R438517**	Analysis Date: **10/30/2020**		Seq No: **9977237**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	571.1	12.5	375.0	218.4	94.1	90	110				

Sample ID: **2010U80-001BMS**	Client ID:				Units: **mg/L**	Prep Date:		Run No: **438517**	
SampleType: **MS**	TestCode: **Chemical Oxygen Demand (COD) E410.4**				BatchID: **R438517**	Analysis Date: **10/30/2020**		Seq No: **9977224**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	383.7	12.5	375.0	13.94	98.6	90	110				

Sample ID: **2010U80-001BMSD**	Client ID:				Units: **mg/L**	Prep Date:		Run No: **438517**	
SampleType: **MSD**	TestCode: **Chemical Oxygen Demand (COD) E410.4**				BatchID: **R438517**	Analysis Date: **10/30/2020**		Seq No: **9977225**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	375.2	12.5	375.0	13.94	96.3	90	110	383.7	2.24	30	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: R438602

Sample ID: **MB-R438602**	Client ID:					Units: **mg/L**		Prep Date:		Run No: **438602**
SampleType: **MBLK**	TestCode: **Chemical Oxygen Demand (COD) E410.4**					BatchID: **R438602**		Analysis Date: **11/02/2020**		Seq No: **9980579**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Chemical Oxygen Demand	BRL	10.0								

Sample ID: **LCS-R438602**	Client ID:					Units: **mg/L**		Prep Date:		Run No: **438602**
SampleType: **LCS**	TestCode: **Chemical Oxygen Demand (COD) E410.4**					BatchID: **R438602**		Analysis Date: **11/02/2020**		Seq No: **9980580**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Chemical Oxygen Demand	500.1	10.0	500.0		100	90	110			

Sample ID: **2010T50-001EMS**	Client ID:					Units: **mg/L**		Prep Date:		Run No: **438602**
SampleType: **MS**	TestCode: **Chemical Oxygen Demand (COD) E410.4**					BatchID: **R438602**		Analysis Date: **11/02/2020**		Seq No: **9980582**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Chemical Oxygen Demand	457.6	12.5	375.0	88.91	98.3	90	110			

Sample ID: **2010U87-001EMS**	Client ID:					Units: **mg/L**		Prep Date:		Run No: **438602**
SampleType: **MS**	TestCode: **Chemical Oxygen Demand (COD) E410.4**					BatchID: **R438602**		Analysis Date: **11/02/2020**		Seq No: **9980599**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Chemical Oxygen Demand	417.8	12.5	375.0	45.74	99.2	90	110			

Sample ID: **2010T50-001EMSD**	Client ID:					Units: **mg/L**		Prep Date:		Run No: **438602**
SampleType: **MSD**	TestCode: **Chemical Oxygen Demand (COD) E410.4**					BatchID: **R438602**		Analysis Date: **11/02/2020**		Seq No: **9980583**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Chemical Oxygen Demand	449.0	12.5	375.0	88.91	96.0	90	110	457.6	1.88	30

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: R438602

Sample ID: **2010B83-009ADUP**	Client ID:				Units: **mg/L**		Prep Date:			Run No: **438602**	
SampleType: **DUP**	TestCode: **Chemical Oxygen Demand (COD) E410.4**				BatchID: **R438602**		Analysis Date: **11/02/2020**			Seq No: **9980617**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	211.6	10.0						0	0	25	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: R438705

Sample ID: **MB-R438705**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438705**	
SampleType: **MBLK**	TestCode: **Inorganic Anions by IC** **EPA 300.0**				BatchID: **R438705**		Analysis Date: **10/28/2020**		Seq No: **9981666**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Chloride	BRL	1.00								
Nitrogen, Nitrate (As N)	BRL	0.250								
Sulfate	BRL	1.00								

Sample ID: **LCS-R438705**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438705**	
SampleType: **LCS**	TestCode: **Inorganic Anions by IC** **EPA 300.0**				BatchID: **R438705**		Analysis Date: **10/28/2020**		Seq No: **9981665**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Chloride	10.44	1.00	10.00		104	90	110			
Nitrogen, Nitrate (As N)	5.307	0.250	5.000		106	90	110			
Sulfate	25.63	1.00	25.00		103	90	110			

Sample ID: **2010U14-020AMS**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438705**	
SampleType: **MS**	TestCode: **Inorganic Anions by IC** **EPA 300.0**				BatchID: **R438705**		Analysis Date: **10/28/2020**		Seq No: **9981690**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Chloride	17.68	1.00	10.00	9.311	83.7	90	110			S
Nitrogen, Nitrate (As N)	5.317	0.250	5.000	0.1709	103	90	110			
Sulfate	31.92	1.00	25.00	6.873	100	90	110			

Sample ID: **2010U18-003GMS**	Client ID: **Equipment Blank**				Units: **mg/L**		Prep Date:		Run No: **438705**	
SampleType: **MS**	TestCode: **Inorganic Anions by IC** **EPA 300.0**				BatchID: **R438705**		Analysis Date: **10/28/2020**		Seq No: **9981688**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Chloride	10.45	1.00	10.00	2.039	84.1	90	110			S
Nitrogen, Nitrate (As N)	5.351	0.250	5.000		107	90	110			
Sulfate	25.81	1.00	25.00	0.7227	100	90	110			

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: Loudon Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: R438705

Sample ID: **2010U18-003GMSD** Client ID: **Equipment Blank** Units: **mg/L** Prep Date: Run No: **438705**
SampleType: **MSD** TestCode: **Inorganic Anions by IC** **EPA 300.0** BatchID: **R438705** Analysis Date: **10/28/2020** Seq No: **9981689**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Chloride	10.39	1.00	10.00	2.039	83.6	90	110	10.45	0.553	20	S
Nitrogen, Nitrate (As N)	5.342	0.250	5.000		107	90	110	5.351	0.164	20	
Sulfate	25.91	1.00	25.00	0.7227	101	90	110	25.81	0.385	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 5-Nov-20

Client: Santek Waste Services, LLC
Project Name: London Co (Matlock Bend) Landfill
Workorder: 2010U18

ANALYTICAL QC SUMMARY REPORT

BatchID: R438877

Sample ID: **MB-R438877**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438877**	
SampleType: **MBLK**	TestCode: **Inorganic Anions by IC** **EPA 300.0**				BatchID: **R438877**		Analysis Date: **11/03/2020**		Seq No: **9987009**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Fluoride	BRL	0.200									

Sample ID: **LCS-R438877**	Client ID:				Units: **mg/L**		Prep Date:		Run No: **438877**	
SampleType: **LCS**	TestCode: **Inorganic Anions by IC** **EPA 300.0**				BatchID: **R438877**		Analysis Date: **11/03/2020**		Seq No: **9987008**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Fluoride	4.999	0.200	5.000		100.0	90	110				

Sample ID: **2010U18-002GMS**	Client ID: **MW-02**				Units: **mg/L**		Prep Date:		Run No: **438877**	
SampleType: **MS**	TestCode: **Inorganic Anions by IC** **EPA 300.0**				BatchID: **R438877**		Analysis Date: **11/03/2020**		Seq No: **9987015**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Fluoride	4.550	0.200	5.000	0.3034	84.9	90	110				S

Sample ID: **2010U18-002GMSD**	Client ID: **MW-02**				Units: **mg/L**		Prep Date:		Run No: **438877**	
SampleType: **MSD**	TestCode: **Inorganic Anions by IC** **EPA 300.0**				BatchID: **R438877**		Analysis Date: **11/03/2020**		Seq No: **9987016**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Fluoride	4.613	0.200	5.000	0.3034	86.2	90	110	4.550	1.37	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

End of Report

CONFIRMATION SAMPLE ANALYTICAL RESULTS

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

December 09, 2020

Robert Hudson
Santek Waste Services, LLC

650 25th Street NW, Suite 100
Cleveland TN 37311

RE: Loudon Co. (Matlock Bend) Landfill

Dear Robert Hudson: Order No: 2012240

Analytical Environmental Services, Inc. received 3 samples on 12/2/2020 11:54:00 AM for the analyses presented in following report.

"No problems were encountered during the analyses except as noted in the Case Narrative or by qualifiers in the report or QC Summary. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits.
AES's accreditations are as follows:
-NELAP/State of Florida Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, Air & Emissions Volatile Organics, and Drinking Water Microbiology & Metals, effective 07/01/20-06/30/21.
State of Georgia, Department of Natural Resources ID #800 for analysis of Drinking Water Metals, effective through 06/30/21 and Total Coliforms/ E. coli, effective 04/20/20-04/24/23.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Metals and PCM Asbestos), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 11/01/21.
These results relate only to the items tested as received. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Chris Pafford
Project Manager

3080 Presidential Drive • Atlanta, Georgia 30340 • Tel: 770.457.8177 • Fax: 770.457.8188 • Toll Free: 800.972.4889
www.aesatlanta.com

ANALYTICAL ENVIRONMENTAL SERVICES, INC.
3080 Presidential Drive Atlanta, GA 30340-3704
Phone: (770) 457-8177 / Toll-Free: (800) 972-4889 / Fax: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 2012240

Date: 12/1/20 Page ____ of ____

COMPANY:	ADDRESS:
Santek Waste Services, LLC	650 25th St. NW, Suite 100 Cleveland, TN 37311
PHONE: (423) 303-7101	EMAIL: rhudson@santekwasteservices.com
SAMPLED BY: W. Markham	SIGNATURE: W C Markham

#	SAMPLE ID	SAMPLED: DATE	SAMPLED: TIME	GRAB	COMPOSITE	MATRIX (see codes)	ANALYSIS REQUESTED: App I metals	PRESERVATION (see codes)	REMARKS	Number of Containers
1	MW-01	12/11/20	1:27 PM	X		GW	X			
2	MW-02	12/11/20	3:34 PM	X		GW	X			
3	MW-03	12/11/20	2:31 PM	X		GW	X			
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

Visit our website www.aesatlanta.com for downloadable COCs and to log in to your AESAccess account.

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1. W C Markham	121120 5:00PM	1. Ralph Mi	12/2/20 11:54
2.		2.	
3.		3.	

SPECIAL INSTRUCTIONS/COMMENTS:
See Chris Pafford + Project History

SHIPMENT METHOD
(OUT) / / VIA:
IN: / / VIA:
client (FedEx) UPS US mail courier
other: ____

PROJECT INFORMATION

PROJECT NAME: Loudon Co. (Methodist Bend) Landfill
PROJECT #:
SITE ADDRESS:
SEND REPORT TO: R. Hudson
INVOICE TO (IF DIFFERENT FROM ABOVE):
QUOTE #: ____ PO#: ____

RECEIPT

Total # of Containers

Turnaround Time (TAT) Request
- [X] Standard
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same-Day Rush (auth req.)
- [ ] Other ____

STATE PROGRAM (if any) ____
E-mail? [ ] Fax? [ ]
DATA PACKAGE: I ○ II ○ III ○ IV ○

Submission of samples to the laboratory constitutes acceptance of AES's Terms & Conditions. Client assumes sole responsibility for damage or loss of samples before we accept them. Samples received after 3PM or on Saturday are considered as received the following business day. If no TAT is marked on COC, AES will proceed with standard TAT. Samples are disposed of 30 days after completion of report unless other arrangements are made.

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water ST=Stormwater WW = Waste Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify)

Preservative Codes: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

7.11.18_CO

White Copy - Original, Yellow Copy - Client

Analytical Environmental Services, Inc **Date:** 9-Dec-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-01
Project Name:	Loudon Co. (Matlock Bend) Landfill	**Collection Date:**	12/1/2020 1:27:00 PM
Lab ID:	2012240-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Mercury, Total SW7470A					**(SW7470A)**			
Mercury	BRL	0.00050		mg/L	306946	1	12/07/2020 15:38	SK
APPENDIX I METALS SW6020B					**(SW3005A)**			
Antimony	BRL	0.00150		mg/L	306841	1	12/04/2020 16:30	AS
Arsenic	BRL	0.00250		mg/L	306841	1	12/04/2020 16:30	AS
Barium	0.0750	0.0100		mg/L	306841	1	12/04/2020 16:30	AS
Beryllium	BRL	0.00100		mg/L	306841	1	12/04/2020 16:30	AS
Cadmium	BRL	0.000700		mg/L	306841	1	12/04/2020 16:30	AS
Chromium	BRL	0.00500		mg/L	306841	1	12/04/2020 16:30	AS
Cobalt	BRL	0.00500		mg/L	306841	1	12/04/2020 16:30	AS
Copper	BRL	0.00200		mg/L	306841	1	12/04/2020 16:30	AS
Lead	BRL	0.00100		mg/L	306841	1	12/04/2020 16:30	AS
Nickel	BRL	0.00500		mg/L	306841	1	12/04/2020 16:30	AS
Selenium	BRL	0.00500		mg/L	306841	1	12/04/2020 16:30	AS
Silver	BRL	0.00100		mg/L	306841	1	12/04/2020 16:30	AS
Thallium	BRL	0.000500		mg/L	306841	1	12/04/2020 16:30	AS
Vanadium	BRL	0.00500		mg/L	306841	1	12/04/2020 16:30	AS
Zinc	BRL	0.0100		mg/L	306841	1	12/04/2020 16:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Dec-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-02
Project Name:	Loudon Co. (Matlock Bend) Landfill	**Collection Date:**	12/1/2020 3:34:00 PM
Lab ID:	2012240-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Mercury, Total SW7470A					**(SW7470A)**			
Mercury	BRL	0.00050		mg/L	306946	1	12/07/2020 15:54	SK
APPENDIX I METALS SW6020B					**(SW3005A)**			
Antimony	BRL	0.00150		mg/L	306841	1	12/04/2020 16:52	AS
Arsenic	BRL	0.00250		mg/L	306841	1	12/04/2020 16:52	AS
Barium	0.0541	0.0100		mg/L	306841	1	12/04/2020 16:52	AS
Beryllium	0.00152	0.00100		mg/L	306841	1	12/04/2020 16:52	AS
Cadmium	0.00170	0.000700		mg/L	306841	1	12/04/2020 16:52	AS
Chromium	BRL	0.00500		mg/L	306841	1	12/04/2020 16:52	AS
Cobalt	BRL	0.00500		mg/L	306841	1	12/04/2020 16:52	AS
Copper	BRL	0.00200		mg/L	306841	1	12/04/2020 16:52	AS
Lead	BRL	0.00100		mg/L	306841	1	12/04/2020 16:52	AS
Nickel	0.0286	0.00500		mg/L	306841	1	12/04/2020 16:52	AS
Selenium	BRL	0.00500		mg/L	306841	1	12/04/2020 16:52	AS
Silver	BRL	0.00100		mg/L	306841	1	12/04/2020 16:52	AS
Thallium	BRL	0.000500		mg/L	306841	1	12/04/2020 16:52	AS
Vanadium	BRL	0.00500		mg/L	306841	1	12/04/2020 16:52	AS
Zinc	0.276	0.0100		mg/L	306841	1	12/04/2020 16:52	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Dec-20

Client:	Santek Waste Services, LLC	**Client Sample ID:**	MW-03
Project Name:	Loudon Co. (Matlock Bend) Landfill	**Collection Date:**	12/1/2020 2:31:00 PM
Lab ID:	2012240-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Mercury, Total SW7470A					(SW7470A)			
Mercury	BRL	0.00050		mg/L	306946	1	12/07/2020 16:10	SK
APPENDIX I METALS SW6020B					(SW3005A)			
Antimony	BRL	0.00150		mg/L	306841	1	12/04/2020 16:54	AS
Arsenic	0.00276	0.00250		mg/L	306841	1	12/04/2020 16:54	AS
Barium	0.0624	0.0100		mg/L	306841	1	12/04/2020 16:54	AS
Beryllium	BRL	0.00100		mg/L	306841	1	12/04/2020 16:54	AS
Cadmium	BRL	0.000700		mg/L	306841	1	12/04/2020 16:54	AS
Chromium	BRL	0.00500		mg/L	306841	1	12/04/2020 16:54	AS
Cobalt	0.0491	0.00500		mg/L	306841	1	12/04/2020 16:54	AS
Copper	BRL	0.00200		mg/L	306841	1	12/04/2020 16:54	AS
Lead	BRL	0.00100		mg/L	306841	1	12/04/2020 16:54	AS
Nickel	0.00651	0.00500		mg/L	306841	1	12/04/2020 16:54	AS
Selenium	BRL	0.00500		mg/L	306841	1	12/04/2020 16:54	AS
Silver	BRL	0.00100		mg/L	306841	1	12/04/2020 16:54	AS
Thallium	BRL	0.000500		mg/L	306841	1	12/04/2020 16:54	AS
Vanadium	BRL	0.00500		mg/L	306841	1	12/04/2020 16:54	AS
Zinc	0.0167	0.0100		mg/L	306841	1	12/04/2020 16:54	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	F	Analyzed in the lab which is a deviation from the method
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Clear Save as

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

SAMPLE/COOLER RECEIPT CHECKLIST

1. Client Name: **Santek Waste Services, LLC** AES Work Order Number: **2012240**

2. Carrier: FedEx ■ UPS ☐ USPS ☐ Client ☐ Courier ☐ Other _____

		Yes	No	N/A	Details	Comments
3.	Shipping container/cooler received in good condition?	◉	○	○	damaged ☐ leaking ☐ other ☐	
4.	Custody seals present on shipping container?	○	◉	○		
5.	Custody seals intact on shipping container?	○	○	◉		
6.	Temperature blanks present?	○	◉	○		
7.	Cooler temperature(s) within limits of 0-6°C? [See item 13 and 14 for temperature recordings.]	◉	○	○	Cooling initiated for recently collected samples / ice present ☐	
8.	Chain of Custody (COC) present?	◉	○	○		
9.	Chain of Custody signed, dated, and timed when relinquished and received?	◉	○	○		
10.	Sampler name and/or signature on COC?	◉	○	○		
11.	Were all samples received within holding time?	◉	○	○		
12.	TAT marked on the COC?	◉	○	○	If no TAT indicated, proceeded with standard TAT per Terms & Conditions. ☐	

13. Cooler 1 Temperature 1.4 °C Cooler 2 Temperature _____ °C Cooler 3 Temperature _____ °C Cooler 4 Temperature _____ °C

14. Cooler 5 Temperature _____ °C Cooler 6 Temperature _____ °C Cooler 7 Temperature _____ °C Cooler 8 Temperature _____ °C

15. Comments: _____

I certify that I have completed sections 1-15 (dated initials). ARS 12/2/20

		Yes	No	N/A	Details	Comments
16.	Were sample containers intact upon receipt?	◉	○	○		
17.	Custody seals present on sample containers?	○	◉	○		
18.	Custody seals intact on sample containers?	○	○	◉		
19.	Do sample container labels match the COC?	◉	○	○	incomplete info ☐ illegible ☐ no label ☐ other ☐	
20.	Are analyses requested indicated on the COC?	◉	○	○		
21.	Were all of the samples listed on the COC received?	◉	○	○	samples received but not listed on COC ☐ samples listed on COC not received ☐	
22.	Was the sample collection date/time noted?	◉	○	○		
23.	Did we receive sufficient sample volume for indicated analyses?	◉	○	○		
24.	Were samples received in appropriate containers?	◉	○	○		
25.	Were VOA samples received without headspace (< 1/4" bubble)?	○	○	◉		
26.	Were trip blanks submitted?	○	○	◉	listed on COC ☐ not listed on COC ☐	

27. Comments: _____

I certify that I have completed sections 16-27 (dated initials). BS 12/03/20

This section only applies to samples where pH can be checked at Sample Receipt.

		Yes	No	N/A	Details	Comments
28.	Have containers needing chemical preservation been checked? *	◉	○	○		
29.	Containers meet preservation guidelines?	◉	○	○		
30.	Was pH adjusted at Sample Receipt?	○	○	◉		

* Note: Certain analyses require chemical preservation but must be checked in the laboratory and not upon Sample Receipt such as Coliforms, VOCs and Oil & Grease/TPH. This also excludes metals by EPA 200.7, 200.8 and 245.1 which will be verified between 16 and 24 hours after preservation.

I certify that I have completed sections 28-30 (dated initials). BS 12/03/20

Locked

Client: Santek Waste Services, LLC
Project Name: Loudon Co. (Matlock Bend) Landfill
Workorder: 2012240

ANALYTICAL QC SUMMARY REPORT

BatchID: 306841

Sample ID: **MB-306841** Client ID: Units: **mg/L** Prep Date: **12/04/2020** Run No: **441361**
SampleType: **MBLK** TestCode: **APPENDIX I METALS** **SW6020B** BatchID: **306841** Analysis Date: **12/04/2020** Seq No: **10052696**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	BRL	0.00150									
Arsenic	BRL	0.00250									
Barium	BRL	0.0100									
Beryllium	BRL	0.00100									
Cadmium	BRL	0.000700									
Chromium	BRL	0.00500									
Cobalt	BRL	0.00500									
Copper	BRL	0.00200									
Lead	BRL	0.00100									
Nickel	BRL	0.00500									
Selenium	BRL	0.00500									
Silver	BRL	0.00100									
Thallium	BRL	0.000500									
Vanadium	BRL	0.00500									
Zinc	BRL	0.0100									

Sample ID: **LCS-306841** Client ID: Units: **mg/L** Prep Date: **12/04/2020** Run No: **441361**
SampleType: **LCS** TestCode: **APPENDIX I METALS** **SW6020B** BatchID: **306841** Analysis Date: **12/04/2020** Seq No: **10052697**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	0.1034	0.00600	0.1000		103	80	120				
Arsenic	0.1014	0.0100	0.1000		101	80	120				
Barium	0.1034	0.0200	0.1000		103	80	120				
Beryllium	0.09941	0.00400	0.1000		99.4	80	120				
Cadmium	0.1112	0.00500	0.1000		111	80	120				
Chromium	0.1044	0.0200	0.1000		104	80	120				
Cobalt	0.1075	0.0500	0.1000		107	80	120				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co. (Matlock Bend) Landfill
Workorder: 2012240

ANALYTICAL QC SUMMARY REPORT

BatchID: 306841

Sample ID: **LCS-306841** Client ID: Units: **mg/L** Prep Date: **12/04/2020** Run No: **441361**
SampleType: **LCS** TestCode: **APPENDIX I METALS** **SW6020B** BatchID: **306841** Analysis Date: **12/04/2020** Seq No: **10052697**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	0.1083	0.0200	0.1000		108	80	120				
Lead	0.1137	0.0100	0.1000		114	80	120				
Nickel	0.1073	0.0400	0.1000		107	80	120				
Selenium	0.1108	0.0500	0.1000		111	80	120				
Silver	0.01159	0.00500	0.0100		116	80	120				
Thallium	0.1151	0.00200	0.1000		115	80	120				
Vanadium	0.1036	0.0500	0.1000		104	80	120				
Zinc	0.1082	0.0200	0.1000		108	80	120				

Sample ID: **2012240-001AMS** Client ID: **MW-01** Units: **mg/L** Prep Date: **12/04/2020** Run No: **441361**
SampleType: **MS** TestCode: **APPENDIX I METALS** **SW6020B** BatchID: **306841** Analysis Date: **12/04/2020** Seq No: **10052699**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	0.1047	0.00600	0.1000		105	75	125				
Arsenic	0.09913	0.0100	0.1000		99.1	75	125				
Barium	0.1880	0.0200	0.1000	0.07503	113	75	125				
Beryllium	0.09849	0.00400	0.1000		98.5	75	125				
Cadmium	0.1093	0.00500	0.1000		109	75	125				
Chromium	0.1043	0.0200	0.1000		104	75	125				
Cobalt	0.1047	0.0500	0.1000		105	75	125				
Copper	0.1052	0.0200	0.1000		105	75	125				
Lead	0.1148	0.0100	0.1000		115	75	125				
Nickel	0.1045	0.0400	0.1000	0.001657	103	75	125				
Selenium	0.1115	0.0500	0.1000		112	75	125				
Silver	0.01177	0.00500	0.0100		118	75	125				
Thallium	0.1162	0.00200	0.1000		116	75	125				
Vanadium	0.1052	0.0500	0.1000		105	75	125				
Zinc	0.1076	0.0200	0.1000		108	75	125				

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co. (Matlock Bend) Landfill
Workorder: 2012240

ANALYTICAL QC SUMMARY REPORT

BatchID: 306841

Sample ID: **2012240-001AMSD** Client ID: **MW-01** Units: **mg/L** Prep Date: **12/04/2020** Run No: **441361**
SampleType: **MSD** TestCode: **APPENDIX I METALS SW6020B** BatchID: **306841** Analysis Date: **12/04/2020** Seq No: **10052700**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Antimony	0.1022	0.00600	0.1000		102	75	125	0.1047	2.37	20	
Arsenic	0.09772	0.0100	0.1000		97.7	75	125	0.09913	1.43	20	
Barium	0.1833	0.0200	0.1000	0.07503	108	75	125	0.1880	2.52	20	
Beryllium	0.09456	0.00400	0.1000		94.6	75	125	0.09849	4.08	20	
Cadmium	0.1089	0.00500	0.1000		109	75	125	0.1093	0.430	20	
Chromium	0.1028	0.0200	0.1000		103	75	125	0.1043	1.48	20	
Cobalt	0.1035	0.0500	0.1000		104	75	125	0.1047	1.12	20	
Copper	0.1031	0.0200	0.1000		103	75	125	0.1052	2.03	20	
Lead	0.1132	0.0100	0.1000		113	75	125	0.1148	1.38	20	
Nickel	0.1032	0.0400	0.1000	0.001657	102	75	125	0.1045	1.28	20	
Selenium	0.1097	0.0500	0.1000		110	75	125	0.1115	1.68	20	
Silver	0.01155	0.00500	0.0100		115	75	125	0.01177	1.90	20	
Thallium	0.1144	0.00200	0.1000		114	75	125	0.1162	1.55	20	
Vanadium	0.1040	0.0500	0.1000		104	75	125	0.1052	1.15	20	
Zinc	0.1045	0.0200	0.1000		105	75	125	0.1076	2.89	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Santek Waste Services, LLC
Project Name: Loudon Co. (Matlock Bend) Landfill
Workorder: 2012240

ANALYTICAL QC SUMMARY REPORT

BatchID: 306946

Sample ID: **MB-306946**	Client ID:				Units: **mg/L**		Prep Date: **12/07/2020**		Run No: **441409**	
SampleType: **MBLK**	TestCode: **Mercury, Total SW7470A**				BatchID: **306946**		Analysis Date: **12/07/2020**		Seq No: **10055055**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Mercury	BRL	0.00020								

Sample ID: **LCS-306946**	Client ID:				Units: **mg/L**		Prep Date: **12/07/2020**		Run No: **441409**	
SampleType: **LCS**	TestCode: **Mercury, Total SW7470A**				BatchID: **306946**		Analysis Date: **12/07/2020**		Seq No: **10055056**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Mercury	0.003832	0.00020	0.0040		95.8	80	120			

Sample ID: **2011T98-001BMS**	Client ID:				Units: **mg/L**		Prep Date: **12/07/2020**		Run No: **441409**	
SampleType: **MS**	TestCode: **Mercury, Total SW7470A**				BatchID: **306946**		Analysis Date: **12/07/2020**		Seq No: **10055060**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Mercury	0.003989	0.00020	0.0040		99.7	75	125			

Sample ID: **2011T98-001BMSD**	Client ID:				Units: **mg/L**		Prep Date: **12/07/2020**		Run No: **441409**	
SampleType: **MSD**	TestCode: **Mercury, Total SW7470A**				BatchID: **306946**		Analysis Date: **12/07/2020**		Seq No: **10055061**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Mercury	0.003972	0.00020	0.0040		99.3	75	125	0.003989	0.427	20

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

End of Report

APPENDIX C

ATLANTIC COAST
CONSULTING, INC.
1150 Northmeadow Pkwy
Suite 100
Roswell, GA 30076
770.594.5998
www.atlcc.net

December 22, 2020

Mr. Will Markham
Environmental Compliance Coordinator
Santek Environmental
650 25th Street NW, Suite 100
Cleveland, TN 37311

RE: Statistical Analysis of Groundwater Monitoring Data
Matlock Bend Landfill
SNL # 53-103-0203
Loudon County, Tennessee

Dear Mr. Markham:

As requested, Atlantic Coast Consulting, Inc. (ACC) has performed statistical analysis of the second 2020 semi-annual groundwater monitoring data for the subject facility. ACC has used procedures and guidance provided in *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance*, March 2009 and ASTM standard D6312-98 (2017), *"Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs"*. The methodologies used comply with the Tennessee Department of Environment and Conservation (TDEC) Rules of Solid Waste Management Chapter 0400-11-01-.04. Statistical calculations have been performed using Starpoint Software's ChemStat® program.

All inorganic analytes included in Chapter 0400-11-01-Appendix I have been statistically evaluated for hydraulically downgradient monitoring wells. During detection monitoring, volatile organic compounds (VOCs) are not statistically evaluated as they are typically not present in background groundwater conditions at the facility (unless determined otherwise by an Alternate Source Demonstration - ASD). VOC concentrations are instead compared to the laboratory's practical quantification limit (PQL). The methodology, results, and determination of statistically significant increases over background (SSIs) are detailed in the following sections of this letter. Additionally, as requested by TDEC water quality parameter data from locations hydraulically downgradient from Phase I (MW-1, MW-1A, MW-2, and MW-3) have also been included in this analysis.

Methodology

Appendix I Analytes

Per ASTM and EPA guidance, intra-well statistical analysis is generally preferable to inter-well comparisons. Based on a review of the historical database for the facility, it appears that the single upgradient well (MW-4R) does not adequately characterize the spatial variability of groundwater conditions. Therefore, intra-well statistical procedures have been implemented for this analysis (as opposed to inter-well procedures).

Based on input from TDEC, lower laboratory reporting limits compared to historical have been used in monitoring events since 2017. Therefore, the older historical data are no longer used for statistical analyses. There currently are a total of 9 sample sets available for inclusion in the statistical analysis. For the purposes of this event the first 8 rounds of data are treated as background and the current result is compared to those results.

In cases where an analyte is detected at a frequency of greater than 25% during the background period, the following steps are taken:

- The data is screened for outliers using Dixon's Test for Outliers.
- Outliers are removed from the database and significant trends are evaluated to determine any data adjustments are necessary.
- A combined Shewart-CUSUM Control Chart is produced and used to determine if an SSI is present.

In cases where an analyte is detected at a frequency of less than 25% during the background period, a non-parametric prediction limit is calculated and used to determine if an SSI is present. Regardless of whether a Shewart-CUSUM Control Chart or a non-parametric prediction limit is used, an initial SSI requires a verification process. Due to the limited available background data set, statistics may be overly sensitive and even trace levels of constituents present in site background may cause SSIs. Therefore, 90-day resampling is not recommended in the case of every SSI. Where a concentration exceeds an MCL or other relevant groundwater protection standard, a verification sample shall be collected and analyzed within a 90-day period following initial SSI determination. For SSIs caused by trace metals at levels higher than background, but at levels below protection standards the result may be verified during the next semi-annual monitoring event.

Additional Water Quality Parameters

A suite of water quality parameters (ammonia, calcium, chemical oxygen demand, chloride, cyanide, iron, magnesium, manganese, nitrate, potassium, total organic carbon, total dissolved solids, sodium, and sulfate) are routinely collected from a subset of site monitoring wells (MW-1, MW-1A, MW-2, and MW-3). These data sets are evaluated for increasing or decreasing trends by Sen's Slope Test. Significant trends for these parameters are not used to determine SSIs but are used to evaluated changes over time at locations.

Results

Appendix I Analytes

Based on a review of the historical database and the calculated frequencies of detections the following Appendix I parameters were detected greater than or equal to 25% during background monitoring: barium (all locations), copper (MW-1A and MW-3), cobalt (MW-3), lead (MW-1A and MW-3), nickel (MW-3), and zinc (MW-1A, MW-2, MW-3, and MW-5). The analytes with a frequency of greater than 25% were evaluated by Dixon's Test for Outliers, and significant outliers were removed. The November 2018 barium result from MW-5 and April 2020 zinc result from MW-2 were removed from background. In general, the removal of outliers allows for a more conservative statistical exceedance threshold criteria (i.e. the removal of anomalously high concentrations in background results in a lower control limit). Tables presenting all historical concentrations and time-trend graphs for each analyte are provided in Attachment A. The results of outlier testing are provided in Attachment B.

After the removal of outliers in the background data set, Shewart-CUSUM control charts were produced for each result with a detection frequency in background greater than 25%. A non-parametric prediction limit was used to evaluate all other results. The statistical output for the Shewart-CUSUM control charts and non-parametric prediction limit testing are provided in Attachment C.

During this event, unverified SSIs were initially identified for the following samples: arsenic from MW-3 (0.00296 milligrams per liter – mg/L), cadmium from MW-1 (0.00192 mg/L), cobalt from MW-2 and MW-3 (0.0635 and 0.0442 mg/L, respectively), fluoride from MW-1 and MW-3 (1.35 and 1.31 mg/L, respectively), nickel from MW-1 (0.0311 mg/L), and thallium from MW-2 (0.000582 mg/L). These results are slightly above the respective limited available historical intra-well data sets; however, the actual concentrations are well below relevant MCLs. Two of the analytes with unverified SSIs (cobalt and nickel) do not have established MCLs. These metals have historically been detected in multiple site groundwater well samples, including upgradient location MW-4R. In the case of nickel at MW-1 the concentration is less than the USEPA generic screening level for tap water of 0.39 mg/L and immediate resampling is not necessary. The concentrations of cobalt at MW-2 and MW-3 exceed the generic screening level of 0.006 mg/L; these results were resampled on December 2, 2020 (Pass 2 of 3 verification). Cobalt was not detected in the MW-2 resample (ND < 0.005 mg/L) and is therefore not an SSI. Cobalt was detected in the MW-3 resample at a concentration similar to the initial sample (0.0491 mg/L) and therefore remains at an SSI level. The remaining unverified SSIs should be re-evaluated following the first 2021 monitoring event.

The only previously identified SSIs that were again identified during this event were concentrations of zinc from MW-1 and MW-2 (0.312 and 0.0286 mg/L, respectively). These results were also resampled on December 2, 2020 (Pass 3 of 3 verification). Zinc was not detected in the MW-1 resample (ND < 0.010 mg/L) but was reported at a level of 0.276 mg/L in the MW-2 sample. Therefore, zinc is a not an SSI for MW-1 but is a verified SSI for MW-2.

An ASD that addresses the occurrences of cobalt at MW-3 and zinc at MW-2 has been prepared by Santek and is included in Appendix F of the Second 2020 Semiannual Groundwater Monitoring Report.

Unverified SSIs were identified during the first 2020 statistical analysis: barium at MW-5, cadmium at MW-2, lead at MW-1, and nickel at MW-2 did not re-occur and therefore remain unverified.

Non-SSI levels of other Appendix I analytes were detected in samples from all site wells and are attributed to their occurrence in site background. Consistent with historical results, no VOCs were detected in any sample. At leachate sample is collected annually (during the first semiannual monitoring event). Historical leachate data are included in Attachment A.

Additional Water Quality Parameters

Water quality parameter data were evaluated for significant trends using Sen's Slope Test. Most tests (44 of 48) indicate no significant increasing or decreasing trends. Three tests for MW-1A (chloride, magnesium, and total dissolved solids) and one test for MW-2 (sodium) indicated increasing trends. These data will be used to provide insight into changing conditions in the event of a future verified site related SSI for an Appendix I analyte.

Summary

Based on a review of the statistical output, two zinc concentrations (MW-1 and MW-2) reported during this event exceeded a statistical limit for the second time and were resampled on December 2, 2020 (Pass 3 of 3 verification sample). The zinc SSI was verified for MW-2 (not verified for MW-1). Unverified cobalt SSIs at MW-2 and MW-3 were also resampled (Pass 2 of 3). Cobalt was not verified for MW-2 but remained at an SSI level for MW-3. An ASD that addresses the occurrences of cobalt at MW-3 and zinc MW-2 is included in Appendix F of the Second 2020 Semiannual Groundwater Monitoring Report. Other unverified SSIs are at levels well below relevant MCLs or other typically referenced standards. It is therefore recommended that these detections be re-evaluated following the first 2021 monitoring event. Consistent with historical results, no VOCs were detected in any well sample. Based on these results, it is recommended that all site wells remain in detection monitoring at this time.

Sincerely,
ATLANTIC COAST CONSULTING, INC.

Evan B. Perry, P.G.
Enclosures
copy: ACC Project File

ATTACHMENT A

ATTACHMENT A

Historical Concentrations & Time-Trend Graphs

Concentrations (ppb)

Parameter: Antimony

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 54
Percent Non-Detects: 100%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	9 (100%)	11/17/2017	ND<1.5	ND<1.5
			3/7/2018	ND<1.5	ND<1.5
			5/3/2018	ND<1.5	ND<1.5
			5/23/2018	ND<1.5	ND<1.5
			11/14/2018	ND<1.5	ND<1.5
			5/30/2019	ND<1.5	ND<1.5
			11/26/2019	ND<6	ND<6
			4/10/2020	ND<1.5	ND<1.5
			10/26/2020	ND<1.5	ND<1.5

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	9 (100%)	11/16/2017	ND<1.5	ND<1.5
			3/7/2018	ND<1.5	ND<1.5
			5/3/2018	ND<1.5	ND<1.5
			5/23/2018	ND<1.5	ND<1.5
			11/14/2018	ND<1.5	ND<1.5
			5/29/2019	ND<1.5	ND<1.5
			11/26/2019	ND<1.5	ND<1.5
			4/10/2020	ND<1.5	ND<1.5
			10/27/2020	ND<1.5	ND<1.5
MW-03	9	9 (100%)	11/16/2017	ND<1.5	ND<1.5
			3/26/2018	ND<1.5	ND<1.5
			5/7/2018	ND<1.5	ND<1.5
			5/23/2018	ND<1.5	ND<1.5
			11/13/2018	ND<1.5	ND<1.5
			5/29/2019	ND<1.5	ND<1.5
			11/26/2019	ND<1.5	ND<1.5
			4/9/2020	ND<1.5	ND<1.5
			10/26/2020	ND<1.5	ND<1.5
MW-05	9	9 (100%)	11/16/2017	ND<1.5	ND<1.5
			3/7/2018	ND<1.5	ND<1.5
			5/3/2018	ND<1.5	ND<1.5
			5/22/2018	ND<1.5	ND<1.5
			11/13/2018	ND<1.5	ND<1.5
			5/29/2019	ND<1.5	ND<1.5
			11/26/2019	ND<6	ND<6
			4/9/2020	ND<1.5	ND<1.5
			10/26/2020	ND<1.5	ND<1.5
MW-1A	9	9 (100%)	11/16/2017	ND<1.5	ND<1.5

			3/7/2018	ND<1.5	ND<1.5
			5/3/2018	ND<1.5	ND<1.5
			5/23/2018	ND<1.5	ND<1.5
			11/14/2018	ND<1.5	ND<1.5
			5/29/2019	ND<1.5	ND<1.5
			11/26/2019	ND<1.5	ND<1.5
			4/9/2020	ND<1.5	ND<1.5
			10/26/2020	ND<1.5	ND<1.5
MW-01	9	9 (100%)	11/17/2017	ND<1.5	ND<1.5
			3/26/2018	ND<2	ND<2
			5/7/2018	ND<2	ND<2
			5/23/2018	ND<2	ND<2
			11/14/2018	ND<2	ND<2
			5/30/2019	ND<2	ND<2
			11/26/2019	ND<2	ND<2
			4/10/2020	ND<1.5	ND<1.5
			10/27/2020	ND<1.5	ND<1.5

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	14 (73.6842%)	4/17/2002	ND<6	ND<6
			4/29/2004	ND<6	ND<6
			4/11/2005	ND<6	ND<6
			3/27/2006	ND<6	ND<6
			3/22/2007	ND<6	ND<6
			3/27/2008	ND<6	ND<6
			4/2/2009	ND<6	ND<6
			4/7/2010	ND<60	ND<60
			1/5/2011	ND<6	ND<6
			3/15/2012	ND<6	ND<6
			3/28/2013	8.75	8.75
			3/25/2014	ND<60	ND<60
			4/1/2015	ND<6	ND<6
			5/24/2016	8.23	8.23
			5/25/2017	30.6	30.6
			5/23/2018	10.7	10.7
			5/29/2019	8.56	8.56
			5/15/2020	ND<6	ND<6
			5/15/2020	ND<6	ND<6
Duplicate	1	1 (100%)	10/27/2020	ND<1.5	ND<1.5
Equipment Blank	1	1 (100%)	10/27/2020	ND<1.5	ND<1.5

Concentrations (ppb)

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 53
Percent Non-Detects: 98.1481%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	9 (100%)	11/17/2017	ND<2.5	ND<2.5
			3/7/2018	ND<2.5	ND<2.5
			5/3/2018	ND<2.5	ND<2.5
			5/23/2018	ND<2.5	ND<2.5
			11/14/2018	ND<2.5	ND<2.5
			5/30/2019	ND<2.5	ND<2.5
			11/26/2019	ND<10	ND<10
			4/10/2020	ND<2.5	ND<2.5
			10/26/2020	ND<2.5	ND<2.5

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	9 (100%)	11/16/2017	ND<2.5	ND<2.5
			3/7/2018	ND<2.5	ND<2.5
			5/3/2018	ND<2.5	ND<2.5
			5/23/2018	ND<2.5	ND<2.5
			11/14/2018	ND<2.5	ND<2.5
			5/29/2019	ND<2.5	ND<2.5
			11/26/2019	ND<2.5	ND<2.5
			4/10/2020	ND<2.5	ND<2.5
			10/27/2020	ND<2.5	ND<2.5
MW-03	9	8 (88.8889%)	11/16/2017	ND<2.5	ND<2.5
			3/26/2018	ND<2.5	ND<2.5
			5/7/2018	ND<2.5	ND<2.5
			5/23/2018	ND<2.5	ND<2.5
			11/13/2018	ND<2.5	ND<2.5
			5/29/2019	ND<2.5	ND<2.5
			11/26/2019	ND<2.5	ND<2.5
			4/9/2020	ND<2.5	ND<2.5
			10/26/2020	2.96	2.96
MW-05	9	9 (100%)	11/16/2017	ND<2.5	ND<2.5
			3/7/2018	ND<2.5	ND<2.5
			5/3/2018	ND<2.5	ND<2.5
			5/22/2018	ND<2.5	ND<2.5
			11/13/2018	ND<2.5	ND<2.5
			5/29/2019	ND<2.5	ND<2.5
			11/26/2019	ND<10	ND<10
			4/9/2020	ND<2.5	ND<2.5
			10/26/2020	ND<2.5	ND<2.5
MW-1A	9	9 (100%)	11/16/2017	ND<2.5	ND<2.5

			3/7/2018	ND<2.5	ND<2.5
			5/3/2018	ND<2.5	ND<2.5
			5/23/2018	ND<2.5	ND<2.5
			11/14/2018	ND<2.5	ND<2.5
			5/29/2019	ND<2.5	ND<2.5
			11/26/2019	ND<2.5	ND<2.5
			4/9/2020	ND<2.5	ND<2.5
			10/26/2020	ND<2.5	ND<2.5
MW-01	9	9 (100%)	11/17/2017	ND<3	ND<3
			3/26/2018	ND<3	ND<3
			5/7/2018	ND<2.5	ND<2.5
			5/23/2018	ND<3	ND<3
			11/14/2018	ND<3	ND<3
			5/30/2019	ND<3	ND<3
			11/26/2019	ND<3	ND<3
			4/10/2020	ND<2.5	ND<2.5
			10/27/2020	ND<2.5	ND<2.5

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	7 (36.8421%)	4/17/2002	ND<50	ND<50
			4/29/2004	224	224
			4/11/2005	168	168
			3/27/2006	79.3	79.3
			3/22/2007	50.7	50.7
			3/27/2008	ND<50	ND<50
			4/2/2009	ND<50	ND<50
			4/7/2010	ND<500	ND<500
			1/5/2011	ND<50	ND<50
			3/15/2012	ND<50	ND<50
			3/28/2013	69.7	69.7
			3/25/2014	ND<500	ND<500
			4/1/2015	69.6	69.6
			5/24/2016	116	116
			5/25/2017	61.3	61.3
			5/23/2018	109	109
			5/29/2019	105	105
			5/15/2020	34.5	34.5
			5/15/2020	34.5	34.5
Duplicate	1	1 (100%)	10/27/2020	ND<2.5	ND<2.5
Equipment Blank	1	1 (100%)	10/27/2020	ND<2.5	ND<2.5

Concentrations (ppb)

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 2
Percent Non-Detects: 3.7037%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	0 (0%)	11/17/2017	11.3	11.3
			3/7/2018	21.3	21.3
			5/3/2018	10.1	10.1
			5/23/2018	11.8	11.8
			11/14/2018	16.4	16.4
			5/30/2019	11.3	11.3
			11/26/2019	20.5	20.5
			4/10/2020	10.1	10.1
			10/26/2020	32.8	32.8

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	0 (0%)	11/16/2017	87.1	87.1
			3/7/2018	67.2	67.2
			5/3/2018	104	104
			5/23/2018	69.3	69.3
			11/14/2018	99.5	99.5
			5/29/2019	201	201
			11/26/2019	181	181
			4/10/2020	65.3	65.3
			10/27/2020	94.8	94.8
MW-03	9	0 (0%)	11/16/2017	62.7	62.7
			3/26/2018	53.7	53.7
			5/7/2018	79.8	79.8
			5/23/2018	102	102
			11/13/2018	142	142
			5/29/2019	81.5	81.5
			11/26/2019	44.9	44.9
			4/9/2020	81.5	81.5
			10/26/2020	41.9	41.9
MW-05	9	2 (22.2222%)	11/16/2017	ND<10	ND<10
			3/7/2018	ND<10	ND<10
			5/3/2018	11.9	11.9
			5/22/2018	10.2	10.2
			11/13/2018	10.6	10.6
			5/29/2019	10.5	10.5
			11/26/2019	172	172
			4/9/2020	32.4	32.4
			10/26/2020	22.8	22.8
MW-1A	9	0 (0%)	11/16/2017	87.1	87.1

			3/7/2018	67.2	67.2
			5/3/2018	104	104
			5/23/2018	104	104
			11/14/2018	99.5	99.5
			5/29/2019	201	201
			11/26/2019	181	181
			4/9/2020	257	257
			10/26/2020	349	349
MW-01	9	0 (0%)	11/17/2017	33	33
			3/26/2018	30.6	30.6
			5/7/2018	29.8	29.8
			5/23/2018	29.4	29.4
			11/14/2018	50.4	50.4
			5/30/2019	33.4	33.4
			11/26/2019	33.2	33.2
			4/10/2020	27.6	27.6
			10/27/2020	56.6	56.6

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	11 (57.8947%)	4/17/2002	ND<2000	ND<2000
			4/29/2004	2610	2610
			4/11/2005	2790	2790
			3/27/2006	ND<2000	ND<2000
			3/22/2007	ND<2000	ND<2000
			3/27/2008	ND<2000	ND<2000
			4/2/2009	ND<2000	ND<2000
			4/7/2010	ND<20000	ND<20000
			1/5/2011	ND<2000	ND<2000
			3/15/2012	ND<2000	ND<2000
			3/28/2013	ND<2000	ND<2000
			3/25/2014	ND<2000	ND<2000
			4/1/2015	ND<2000	ND<2000
			5/24/2016	687	687
			5/25/2017	523	523
			5/23/2018	556	556
			5/29/2019	711	711
			5/15/2020	495	495
			5/15/2020	495	495
Duplicate	1	0 (0%)	10/27/2020	98	98
Equipment Blank	1	1 (100%)	10/27/2020	ND<10	ND<10

Concentrations (ppb)

Parameter: Beryllium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 54
Percent Non-Detects: 100%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	9 (100%)	11/17/2017	ND<1	ND<1
			3/7/2018	ND<1	ND<1
			5/3/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/30/2019	ND<1	ND<1
			11/26/2019	ND<4	ND<4
			4/10/2020	ND<1	ND<1
			10/26/2020	ND<1	ND<1

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	9 (100%)	11/16/2017	ND<1	ND<1
			3/7/2018	ND<1	ND<1
			5/3/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/29/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/10/2020	ND<1	ND<1
			10/27/2020	ND<1	ND<1
MW-03	9	9 (100%)	11/16/2017	ND<1	ND<1
			3/26/2018	ND<1	ND<1
			5/7/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/13/2018	ND<1	ND<1
			5/29/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/9/2020	ND<1	ND<1
			10/26/2020	ND<1	ND<1
MW-05	9	9 (100%)	11/16/2017	ND<1	ND<1
			3/7/2018	ND<1	ND<1
			5/3/2018	ND<1	ND<1
			5/22/2018	ND<1	ND<1
			11/13/2018	ND<1	ND<1
			5/29/2019	ND<1	ND<1
			11/26/2019	ND<4	ND<4
			4/9/2020	ND<1	ND<1
			10/26/2020	ND<1	ND<1
MW-1A	9	9 (100%)	11/16/2017	ND<1	ND<1

			3/7/2018	ND<1	ND<1
			5/3/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/29/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/9/2020	ND<1	ND<1
			10/26/2020	ND<1	ND<1
MW-01	9	9 (100%)	11/17/2017	ND<1	ND<1
			3/26/2018	ND<1	ND<1
			5/7/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/30/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/10/2020	ND<1	ND<1
			10/27/2020	ND<2.5	ND<2.5

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	19 (100%)	4/17/2002	ND<4	ND<4
			4/29/2004	ND<4	ND<4
			4/11/2005	ND<4	ND<4
			3/27/2006	ND<4	ND<4
			3/22/2007	ND<4	ND<4
			3/27/2008	ND<4	ND<4
			4/2/2009	ND<4	ND<4
			4/7/2010	ND<4	ND<4
			1/5/2011	ND<4	ND<4
			3/15/2012	ND<4	ND<4
			3/28/2013	ND<4	ND<4
			3/25/2014	ND<4	ND<4
			4/1/2015	ND<4	ND<4
			5/24/2016	ND<4	ND<4
			5/25/2017	ND<4	ND<4
			5/23/2018	ND<4	ND<4
			5/29/2019	ND<4	ND<4
			5/15/2020	ND<4	ND<4
			5/15/2020	ND<4	ND<4
Duplicate	1	1 (100%)	10/27/2020	ND<1	ND<1
Equipment Blank	1	1 (100%)	10/27/2020	ND<1	ND<1

Concentrations (ppb)

Parameter: Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 52
Percent Non-Detects: 96.2963%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	9 (100%)	11/17/2017	ND<0.7	ND<0.7
			3/7/2018	ND<0.7	ND<0.7
			5/3/2018	ND<0.7	ND<0.7
			5/23/2018	ND<0.7	ND<0.7
			11/14/2018	ND<0.7	ND<0.7
			5/30/2019	ND<0.7	ND<0.7
			11/26/2019	ND<5	ND<5
			4/10/2020	ND<0.7	ND<0.7
			10/26/2020	ND<0.7	ND<0.7

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	8 (88.8889%)	11/16/2017	ND<0.7	ND<0.7
			3/7/2018	ND<0.7	ND<0.7
			5/3/2018	ND<0.7	ND<0.7
			5/23/2018	ND<0.7	ND<0.7
			11/14/2018	ND<0.7	ND<0.7
			5/29/2019	ND<0.7	ND<0.7
			11/26/2019	ND<0.7	ND<0.7
			4/10/2020	0.938	0.938
			10/27/2020	ND<0.7	ND<0.7
MW-03	9	9 (100%)	11/16/2017	ND<0.7	ND<0.7
			3/26/2018	ND<0.7	ND<0.7
			5/7/2018	ND<0.7	ND<0.7
			5/23/2018	ND<0.7	ND<0.7
			11/13/2018	ND<0.7	ND<0.7
			5/29/2019	ND<0.7	ND<0.7
			11/26/2019	ND<0.7	ND<0.7
			4/9/2020	ND<0.7	ND<0.7
			10/26/2020	ND<0.7	ND<0.7
MW-05	9	9 (100%)	11/16/2017	ND<0.7	ND<0.7
			3/7/2018	ND<0.7	ND<0.7
			5/3/2018	ND<0.7	ND<0.7
			5/22/2018	ND<0.7	ND<0.7
			11/13/2018	ND<0.7	ND<0.7
			5/29/2019	ND<0.7	ND<0.7
			11/26/2019	ND<5	ND<5
			4/9/2020	ND<0.7	ND<0.7
			10/26/2020	ND<0.7	ND<0.7
MW-1A	9	9 (100%)	11/16/2017	ND<0.7	ND<0.7

			3/7/2018	ND<0.7	ND<0.7
			5/3/2018	ND<0.7	ND<0.7
			5/23/2018	ND<0.7	ND<0.7
			11/14/2018	ND<0.7	ND<0.7
			5/29/2019	ND<0.7	ND<0.7
			11/26/2019	ND<0.7	ND<0.7
			4/9/2020	ND<0.7	ND<0.7
			10/26/2020	ND<0.7	ND<0.7
MW-01	9	8 (88.8889%)	11/17/2017	ND<1	ND<1
			3/26/2018	ND<1	ND<1
			5/7/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/30/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/10/2020	ND<0.7	ND<0.7
			10/27/2020	1.92	1.92

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	17 (89.4737%)	4/17/2002	ND<5	ND<5
			4/29/2004	ND<5	ND<5
			4/11/2005	ND<5	ND<5
			3/27/2006	ND<5	ND<5
			3/22/2007	ND<5	ND<5
			3/27/2008	ND<5	ND<5
			4/2/2009	ND<5	ND<5
			4/7/2010	ND<50	ND<50
			1/5/2011	ND<5	ND<5
			3/15/2012	ND<5	ND<5
			3/28/2013	ND<5	ND<5
			3/25/2014	ND<5	ND<5
			4/1/2015	ND<5	ND<5
			5/24/2016	ND<5	ND<5
			5/25/2017	1.25	1.25
			5/23/2018	1.32	1.32
			5/29/2019	ND<5	ND<5
			5/15/2020	ND<5	ND<5
			5/15/2020	ND<5	ND<5
Duplicate	1	1 (100%)	10/27/2020	ND<0.7	ND<0.7
Equipment Blank	1	1 (100%)	10/27/2020	ND<0.7	ND<0.7

Concentrations (ppb)

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 52
Percent Non-Detects: 96.2963%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	8 (88.8889%)	11/17/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/30/2019	ND<5	ND<5
			11/26/2019	ND<20	ND<20
			4/10/2020	5.28	5.28
			10/26/2020	ND<5	ND<5

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	8 (88.8889%)	11/16/2017	5	5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/10/2020	ND<5	ND<5
			10/27/2020	ND<5	ND<5
MW-03	9	9 (100%)	11/16/2017	ND<5	ND<5
			3/26/2018	ND<5	ND<5
			5/7/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/13/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-05	9	9 (100%)	11/16/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/22/2018	ND<5	ND<5
			11/13/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<20	ND<20
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-1A	9	9 (100%)	11/16/2017	ND<5	ND<5

			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-01	9	9 (100%)	11/17/2017	ND<5	ND<5
			3/26/2018	ND<5	ND<5
			5/7/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/30/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/10/2020	ND<5	ND<5
			10/27/2020	ND<5	ND<5

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	9 (47.3684%)	4/17/2002	ND<100	ND<100
			4/29/2004	106	106
			4/11/2005	145	145
			3/27/2006	ND<100	ND<100
			3/22/2007	ND<100	ND<100
			3/27/2008	ND<100	ND<100
			4/2/2009	ND<100	ND<100
			4/7/2010	ND<1000	ND<1000
			1/5/2011	ND<100	ND<100
			3/15/2012	ND<100	ND<100
			3/28/2013	136	136
			3/25/2014	ND<1000	ND<1000
			4/1/2015	230	230
			5/24/2016	584	584
			5/25/2017	163	163
			5/23/2018	296	296
			5/29/2019	321	321
			5/15/2020	102	102
			5/15/2020	102	102
Duplicate	1	1 (100%)	10/27/2020	ND<5	ND<5
Equipment Blank	1	1 (100%)	10/27/2020	ND<5	ND<5

Concentrations (ppb)

Parameter: Cobalt

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 44
Percent Non-Detects: 81.4815%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	7 (77.7778%)	11/17/2017	ND<5	ND<5
			3/7/2018	13.6	13.6
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	6.86	6.86
			5/30/2019	ND<5	ND<5
			11/26/2019	ND<50	ND<50
			4/10/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	8 (88.8889%)	11/16/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/10/2020	ND<5	ND<5
			10/27/2020	63.5	63.5
MW-03	9	2 (22.2222%)	11/16/2017	9.74	9.74
			3/26/2018	ND<5	ND<5
			5/7/2018	10.3	10.3
			5/23/2018	13.3	13.3
			11/13/2018	18.9	18.9
			5/29/2019	11.7	11.7
			11/26/2019	ND<5	ND<5
			4/9/2020	10.7	10.7
			10/26/2020	44.2	44.2
MW-05	9	9 (100%)	11/16/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/22/2018	ND<5	ND<5
			11/13/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<50	ND<50
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-1A	9	9 (100%)	11/16/2017	ND<5	ND<5

			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-01	9	9 (100%)	11/17/2017	ND<5	ND<5
			3/26/2018	ND<5	ND<5
			5/7/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/30/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/10/2020	ND<5	ND<5
			10/27/2020	ND<5	ND<5

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	4 (21.0526%)	4/17/2002	19.5	19.5
			4/29/2004	36.5	36.5
			4/11/2005	53	53
			3/27/2006	40.1	40.1
			3/22/2007	30.6	30.6
			3/27/2008	25.5	25.5
			4/2/2009	14.4	14.4
			4/7/2010	ND<1000	ND<1000
			1/5/2011	37.2	37.2
			3/15/2012	10	10
			3/28/2013	87.1	87.1
			3/25/2014	ND<100	ND<100
			4/1/2015	82.6	82.6
			5/24/2016	151	151
			5/25/2017	74.3	74.3
			5/23/2018	97.5	97.5
			5/29/2019	99.7	99.7
			5/15/2020	ND<50	ND<50
			5/15/2020	ND<50	ND<50
Duplicate	1	0 (0%)	10/27/2020	66.5	66.5
Equipment Blank	1	1 (100%)	10/27/2020	ND<5	ND<5

Concentrations (ppb)

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 43
Percent Non-Detects: 79.6296%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	7 (77.7778%)	11/17/2017	ND<2	ND<2
			3/7/2018	ND<2	ND<2
			5/3/2018	ND<2	ND<2
			5/23/2018	ND<2	ND<2
			11/14/2018	ND<2	ND<2
			5/30/2019	2.4	2.4
			11/26/2019	ND<20	ND<20
			4/10/2020	3.29	3.29
			10/26/2020	ND<2	ND<2

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	8 (88.8889%)	11/16/2017	ND<2	ND<2
			3/7/2018	ND<2	ND<2
			5/3/2018	2.2	2.2
			5/23/2018	ND<2	ND<2
			11/14/2018	ND<2	ND<2
			5/29/2019	ND<2	ND<2
			11/26/2019	ND<2	ND<2
			4/10/2020	ND<2	ND<2
			10/27/2020	ND<2	ND<2
MW-03	9	3 (33.3333%)	11/16/2017	5.2	5.2
			3/26/2018	3.91	3.91
			5/7/2018	3.21	3.21
			5/23/2018	3.35	3.35
			11/13/2018	2.09	2.09
			5/29/2019	2.36	2.36
			11/26/2019	ND<2	ND<2
			4/9/2020	ND<2	ND<2
			10/26/2020	ND<2	ND<2
MW-05	9	9 (100%)	11/16/2017	ND<2	ND<2
			3/7/2018	ND<2	ND<2
			5/3/2018	ND<2	ND<2
			5/22/2018	ND<2	ND<2
			11/13/2018	ND<2	ND<2
			5/29/2019	ND<2	ND<2
			11/26/2019	ND<20	ND<20
			4/9/2020	ND<2	ND<2
			10/26/2020	ND<2	ND<2
MW-1A	9	7 (77.7778%)	11/16/2017	ND<2	ND<2

			3/7/2018	ND<2	ND<2
			5/3/2018	2.2	2.2
			5/23/2018	2.2	2.2
			11/14/2018	ND<2	ND<2
			5/29/2019	ND<2	ND<2
			11/26/2019	ND<2	ND<2
			4/9/2020	ND<2	ND<2
			10/26/2020	ND<2	ND<2
MW-01	9	9 (100%)	11/17/2017	ND<2	ND<2
			3/26/2018	ND<2	ND<2
			5/7/2018	ND<2	ND<2
			5/23/2018	ND<2	ND<2
			11/14/2018	ND<2	ND<2
			5/30/2019	ND<2	ND<2
			11/26/2019	ND<2	ND<2
			4/10/2020	ND<2	ND<2
			10/27/2020	ND<2	ND<2

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	11 (57.8947%)	4/17/2002	ND<10	ND<10
			4/29/2004	31.9	31.9
			4/11/2005	14.6	14.6
			3/27/2006	ND<10	ND<10
			3/22/2007	ND<10	ND<10
			3/27/2008	ND<10	ND<10
			4/2/2009	ND<10	ND<10
			4/7/2010	ND<1000	ND<1000
			1/5/2011	ND<10	ND<10
			3/15/2012	ND<10	ND<10
			3/28/2013	15.9	15.9
			3/25/2014	ND<100	ND<100
			4/1/2015	25.3	25.3
			5/24/2016	88.3	88.3
			5/25/2017	39.6	39.6
			5/23/2018	33	33
			5/29/2019	24.9	24.9
			5/15/2020	ND<20	ND<20
			5/15/2020	ND<20	ND<20
Duplicate	1	1 (100%)	10/27/2020	ND<2	ND<2
Equipment Blank	1	1 (100%)	10/27/2020	ND<2	ND<2

Concentrations (ppb)

Parameter: Fluoride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 52
Percent Non-Detects: 96.2963%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	9 (100%)	11/17/2017	ND<1000	ND<1000
			3/7/2018	ND<1000	ND<1000
			5/3/2018	ND<1000	ND<1000
			5/23/2018	ND<1000	ND<1000
			11/14/2018	ND<1000	ND<1000
			5/30/2019	ND<1000	ND<1000
			11/26/2019	ND<200	ND<200
			4/10/2020	ND<1000	ND<1000
			10/26/2020	ND<1000	ND<1000

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	9 (100%)	11/16/2017	ND<1000	ND<1000
			3/7/2018	ND<1000	ND<1000
			5/3/2018	ND<1000	ND<1000
			5/23/2018	ND<1000	ND<1000
			11/14/2018	ND<1000	ND<1000
			5/29/2019	ND<1000	ND<1000
			11/26/2019	ND<1000	ND<1000
			4/15/2020	ND<1000	ND<1000
			10/27/2020	ND<1000	ND<1000
MW-03	9	8 (88.8889%)	11/16/2017	ND<1000	ND<1000
			3/26/2018	ND<1000	ND<1000
			5/7/2018	ND<1000	ND<1000
			5/23/2018	ND<1000	ND<1000
			11/13/2018	ND<1000	ND<1000
			5/29/2019	ND<1000	ND<1000
			11/26/2019	ND<1000	ND<1000
			4/15/2020	ND<1000	ND<1000
			10/26/2020	1310	1310
MW-05	9	9 (100%)	11/16/2017	ND<1000	ND<1000
			3/7/2018	ND<1000	ND<1000
			5/3/2018	ND<1000	ND<1000
			5/22/2018	ND<1000	ND<1000
			11/13/2018	ND<1000	ND<1000
			5/29/2019	ND<1000	ND<1000
			11/26/2019	ND<200	ND<200
			4/9/2020	ND<1000	ND<1000
			10/26/2020	ND<1000	ND<1000
MW-1A	9	9 (100%)	11/16/2017	ND<1000	ND<1000

			3/7/2018	ND<1000	ND<1000
			5/3/2018	ND<1000	ND<1000
			5/23/2018	ND<1000	ND<1000
			11/14/2018	ND<1000	ND<1000
			5/29/2019	ND<1000	ND<1000
			11/26/2019	ND<1000	ND<1000
			4/15/2020	ND<1000	ND<1000
			10/26/2020	ND<1000	ND<1000
MW-01	9	8 (88.8889%)	11/17/2017	ND<1000	ND<1000
			3/26/2018	ND<1000	ND<1000
			5/7/2018	ND<1000	ND<1000
			5/23/2018	ND<1000	ND<1000
			11/14/2018	ND<1000	ND<1000
			5/30/2019	ND<1000	ND<1000
			11/26/2019	ND<200	ND<200
			4/15/2020	ND<1000	ND<1000
			10/26/2020	1350	1350

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	19 (100%)	4/17/2002	ND<4000	ND<4000
			4/29/2004	ND<4000	ND<4000
			4/11/2005	ND<4000	ND<4000
			3/27/2006	ND<4000	ND<4000
			3/22/2007	ND<4000	ND<4000
			3/27/2008	ND<4000	ND<4000
			4/2/2009	ND<4000	ND<4000
			4/7/2010	ND<4000	ND<4000
			1/5/2011	ND<4000	ND<4000
			3/15/2012	ND<4000	ND<4000
			3/28/2013	ND<4000	ND<4000
			3/25/2014	ND<4000	ND<4000
			4/1/2015	ND<4000	ND<4000
			5/24/2016	ND<4000	ND<4000
			5/25/2017	ND<4000	ND<4000
			5/23/2018	ND<4000	ND<4000
			5/29/2019	ND<4000	ND<4000
			5/15/2020	ND<200	ND<200
			5/15/2020	ND<4000	ND<4000
Duplicate	1	1 (100%)	10/27/2020	ND<1000	ND<1000
Equipment Blank	1	1 (100%)	10/27/2020	ND<1000	ND<1000

Concentrations (ppb)

Parameter: Lead

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 44
Percent Non-Detects: 81.4815%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	6 (66.6667%)	11/17/2017	ND<1	ND<1
			3/7/2018	ND<1	ND<1
			5/3/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	1.1	1.1
			5/30/2019	1.11	1.11
			11/26/2019	ND<10	ND<10
			4/10/2020	2.89	2.89
			10/26/2020	ND<1	ND<1

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	8 (88.8889%)	11/16/2017	ND<1	ND<1
			3/7/2018	ND<1	ND<1
			5/3/2018	1.39	1.39
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/29/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/10/2020	ND<1	ND<1
			10/27/2020	ND<1	ND<1
MW-03	9	6 (66.6667%)	11/16/2017	1.39	1.39
			3/26/2018	ND<1	ND<1
			5/7/2018	ND<1	ND<1
			5/23/2018	2.14	2.14
			11/13/2018	ND<1	ND<1
			5/29/2019	1.32	1.32
			11/26/2019	ND<1	ND<1
			4/9/2020	ND<1	ND<1
			10/26/2020	ND<1	ND<1
MW-05	9	9 (100%)	11/16/2017	ND<1	ND<1
			3/7/2018	ND<1	ND<1
			5/3/2018	ND<1	ND<1
			5/22/2018	ND<1	ND<1
			11/13/2018	ND<1	ND<1
			5/29/2019	ND<1	ND<1
			11/26/2019	ND<10	ND<10
			4/9/2020	ND<1	ND<1
			10/26/2020	ND<1	ND<1
MW-1A	9	7 (77.7778%)	11/16/2017	ND<1	ND<1

			3/7/2018	ND<1	ND<1
			5/3/2018	1.39	1.39
			5/23/2018	1.39	1.39
			11/14/2018	ND<1	ND<1
			5/29/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/9/2020	ND<1	ND<1
			10/26/2020	ND<1	ND<1
MW-01	9	8 (88.8889%)	11/17/2017	ND<1	ND<1
			3/26/2018	ND<1	ND<1
			5/7/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/30/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/10/2020	1.2	1.2
			10/27/2020	ND<1	ND<1

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	13 (68.4211%)	4/17/2002	ND<50	ND<50
			4/29/2004	57.1	57.1
			4/11/2005	ND<50	ND<50
			3/27/2006	ND<50	ND<50
			3/22/2007	ND<50	ND<50
			3/27/2008	ND<50	ND<50
			4/2/2009	ND<50	ND<50
			4/7/2010	ND<150	ND<150
			1/5/2011	ND<50	ND<50
			3/15/2012	ND<50	ND<50
			3/28/2013	ND<15	ND<15
			3/25/2014	ND<150	ND<150
			4/1/2015	30.4	30.4
			5/24/2016	116	116
			5/25/2017	20.1	20.1
			5/23/2018	27.4	27.4
			5/29/2019	18.2	18.2
			5/15/2020	ND<10	ND<10
			5/15/2020	ND<10	ND<10
Duplicate	1	1 (100%)	10/27/2020	ND<1	ND<1
Equipment Blank	1	1 (100%)	10/27/2020	ND<1	ND<1

Concentrations (ppb)

Parameter: Mercury

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 53
Percent Non-Detects: 98.1481%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	9 (100%)	11/17/2017	ND<0.5	ND<0.5
			3/7/2018	ND<0.5	ND<0.5
			5/3/2018	ND<0.5	ND<0.5
			5/23/2018	ND<0.5	ND<0.5
			11/14/2018	ND<0.5	ND<0.5
			5/30/2019	ND<0.5	ND<0.5
			11/26/2019	ND<2	ND<2
			4/10/2020	ND<0.5	ND<0.5
			10/26/2020	ND<0.5	ND<0.5

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	9 (100%)	11/16/2017	ND<0.5	ND<0.5
			3/7/2018	ND<0.5	ND<0.5
			5/3/2018	ND<0.5	ND<0.5
			5/23/2018	ND<0.5	ND<0.5
			11/14/2018	ND<0.5	ND<0.5
			5/29/2019	ND<0.5	ND<0.5
			11/26/2019	ND<0.5	ND<0.5
			4/10/2020	ND<0.5	ND<0.5
			10/27/2020	ND<0.5	ND<0.5
MW-03	9	8 (88.8889%)	11/16/2017	ND<0.5	ND<0.5
			3/26/2018	ND<0.5	ND<0.5
			5/7/2018	ND<0.5	ND<0.5
			5/23/2018	ND<0.5	ND<0.5
			11/13/2018	ND<0.5	ND<0.5
			5/29/2019	0.91	0.91
			11/26/2019	ND<0.5	ND<0.5
			4/9/2020	ND<0.5	ND<0.5
			10/26/2020	ND<0.5	ND<0.5
MW-05	9	9 (100%)	11/16/2017	ND<0.5	ND<0.5
			3/7/2018	ND<0.5	ND<0.5
			5/3/2018	ND<0.5	ND<0.5
			5/22/2018	ND<0.5	ND<0.5
			11/13/2018	ND<0.5	ND<0.5
			5/29/2019	ND<0.5	ND<0.5
			11/26/2019	ND<2	ND<2
			4/9/2020	ND<0.5	ND<0.5
			10/26/2020	ND<0.5	ND<0.5
MW-1A	9	9 (100%)	11/16/2017	ND<0.5	ND<0.5

			3/7/2018	ND<0.5	ND<0.5
			5/3/2018	ND<0.5	ND<0.5
			5/23/2018	ND<0.5	ND<0.5
			11/14/2018	ND<0.5	ND<0.5
			5/29/2019	ND<0.5	ND<0.5
			11/26/2019	ND<0.5	ND<0.5
			4/9/2020	ND<0.5	ND<0.5
			10/26/2020	ND<0.5	ND<0.5
MW-01	9	9 (100%)	11/17/2017	ND<1	ND<1
			3/26/2018	ND<1	ND<1
			5/7/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/30/2019	ND<1	ND<1
			11/26/2019	ND<2	ND<2
			4/10/2020	ND<0.5	ND<0.5
			10/27/2020	ND<2	ND<2

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	19 (100%)	4/17/2002	ND<2	ND<2
			4/29/2004	ND<2	ND<2
			4/11/2005	ND<2	ND<2
			3/27/2006	ND<2	ND<2
			3/22/2007	ND<2	ND<2
			3/27/2008	ND<2	ND<2
			4/2/2009	ND<2	ND<2
			4/7/2010	ND<2	ND<2
			1/5/2011	ND<2	ND<2
			3/15/2012	ND<2	ND<2
			3/28/2013	ND<2	ND<2
			3/25/2014	ND<2	ND<2
			4/1/2015	ND<2	ND<2
			5/24/2016	ND<2	ND<2
			5/25/2017	ND<2	ND<2
			5/23/2018	ND<2	ND<2
			5/29/2019	ND<2	ND<2
			5/15/2020	ND<2	ND<2
			5/15/2020	ND<2	ND<2
Duplicate	1	1 (100%)	10/27/2020	ND<0.5	ND<0.5
Equipment Blank	1	1 (100%)	10/27/2020	ND<0.5	ND<0.5

Concentrations (ppb)

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 36
Percent Non-Detects: 66.6667%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	3 (33.3333%)	11/17/2017	7.69	7.69
			3/7/2018	14.3	14.3
			5/3/2018	ND<5	ND<5
			5/23/2018	8.3	8.3
			11/14/2018	13.7	13.7
			5/30/2019	8.2	8.2
			11/26/2019	ND<40	ND<40
			4/10/2020	6.37	6.37
			10/26/2020	ND<5	ND<5

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	7 (77.7778%)	11/16/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/10/2020	18.4	18.4
			10/27/2020	11	11
MW-03	9	1 (11.1111%)	11/16/2017	7.5	7.5
			3/26/2018	7.51	7.51
			5/7/2018	8.75	8.75
			5/23/2018	10.5	10.5
			11/13/2018	11.3	11.3
			5/29/2019	9.23	9.23
			11/26/2019	ND<5	ND<5
			4/9/2020	9.51	9.51
			10/26/2020	8.32	8.32
MW-05	9	8 (88.8889%)	11/16/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/22/2018	ND<5	ND<5
			11/13/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<40	ND<40
			4/9/2020	ND<5	ND<5
			10/26/2020	5.03	5.03
MW-1A	9	9 (100%)	11/16/2017	ND<5	ND<5

			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-01	9	8 (88.8889%)	11/17/2017	ND<5	ND<5
			3/26/2018	ND<5	ND<5
			5/7/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/30/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/10/2020	ND<5	ND<5
			10/27/2020	31.1	31.1

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	9 (47.3684%)	4/17/2002	ND<100	ND<100
			4/29/2004	ND<100	ND<100
			4/11/2005	144	144
			3/27/2006	114	114
			3/22/2007	ND<100	ND<100
			3/27/2008	ND<100	ND<100
			4/2/2009	ND<100	ND<100
			4/7/2010	ND<1000	ND<1000
			1/5/2011	ND<100	ND<100
			3/15/2012	ND<100	ND<100
			3/28/2013	258	258
			3/25/2014	ND<1000	ND<1000
			4/1/2015	240	240
			5/24/2016	618	618
			5/25/2017	255	255
			5/23/2018	327	327
			5/29/2019	293	293
			5/15/2020	164	164
			5/15/2020	164	164
Duplicate	1	0 (0%)	10/27/2020	10.2	10.2
Equipment Blank	1	1 (100%)	10/27/2020	ND<5	ND<5

Concentrations (ppb)

Parameter: Selenium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 54
Percent Non-Detects: 100%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	9 (100%)	11/17/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/30/2019	ND<5	ND<5
			11/26/2019	ND<50	ND<50
			4/10/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	9 (100%)	11/16/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/10/2020	ND<5	ND<5
			10/27/2020	ND<5	ND<5
MW-03	9	9 (100%)	11/16/2017	ND<5	ND<5
			3/26/2018	ND<5	ND<5
			5/7/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/13/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-05	9	9 (100%)	11/16/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/22/2018	ND<5	ND<5
			11/13/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<50	ND<50
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-1A	9	9 (100%)	11/16/2017	ND<5	ND<5

			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-01	9	9 (100%)	11/17/2017	ND<5	ND<5
			3/26/2018	ND<5	ND<5
			5/7/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/30/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/10/2020	ND<5	ND<5
			10/27/2020	ND<5	ND<5

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	11 (57.8947%)	4/17/2002	ND<10	ND<10
			4/29/2004	ND<10	ND<10
			4/11/2005	10.5	10.5
			3/27/2006	20.2	20.2
			3/22/2007	12.2	12.2
			3/27/2008	21.3	21.3
			4/2/2009	ND<10	ND<10
			4/7/2010	ND<100	ND<100
			1/5/2011	12.8	12.8
			3/15/2012	ND<10	ND<10
			3/28/2013	14.1	14.1
			3/25/2014	ND<100	ND<100
			4/1/2015	13.1	13.1
			5/24/2016	69.7	69.7
			5/25/2017	ND<10	ND<10
			5/23/2018	ND<5	ND<5
			5/29/2019	ND<50	ND<50
			5/15/2020	ND<50	ND<50
			5/15/2020	ND<50	ND<50
Duplicate	1	1 (100%)	10/27/2020	ND<5	ND<5
Equipment Blank	1	1 (100%)	10/27/2020	ND<5	ND<5

Concentrations (ppb)

Parameter: Silver

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 54
Percent Non-Detects: 100%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	9 (100%)	11/17/2017	ND<1	ND<1
			3/7/2018	ND<1	ND<1
			5/3/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/30/2019	ND<1	ND<1
			11/26/2019	ND<5	ND<5
			4/10/2020	ND<1	ND<1
			10/26/2020	ND<1	ND<1

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	9 (100%)	11/16/2017	ND<1	ND<1
			3/7/2018	ND<1	ND<1
			5/3/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/29/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/10/2020	ND<1	ND<1
			10/27/2020	ND<1	ND<1
MW-03	9	9 (100%)	11/16/2017	ND<1	ND<1
			3/26/2018	ND<1	ND<1
			5/7/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/13/2018	ND<1	ND<1
			5/29/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/9/2020	ND<1	ND<1
			10/26/2020	ND<1	ND<1
MW-05	9	9 (100%)	11/16/2017	ND<1	ND<1
			3/7/2018	ND<1	ND<1
			5/3/2018	ND<1	ND<1
			5/22/2018	ND<1	ND<1
			11/13/2018	ND<1	ND<1
			5/29/2019	ND<1	ND<1
			11/26/2019	ND<5	ND<5
			4/9/2020	ND<1	ND<1
			10/26/2020	ND<1	ND<1
MW-1A	9	9 (100%)	11/16/2017	ND<1	ND<1

			3/7/2018	ND<1	ND<1
			5/3/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/29/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/9/2020	ND<1	ND<1
			10/26/2020	ND<1	ND<1
MW-01	9	9 (100%)	11/17/2017	ND<1	ND<1
			3/26/2018	ND<1	ND<1
			5/7/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/30/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/10/2020	ND<1	ND<1
			10/27/2020	ND<1	ND<1

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	19 (100%)	4/17/2002	ND<50	ND<50
			4/29/2004	ND<50	ND<50
			4/11/2005	ND<50	ND<50
			3/27/2006	ND<50	ND<50
			3/22/2007	ND<50	ND<50
			3/27/2008	ND<50	ND<50
			4/2/2009	ND<50	ND<50
			4/7/2010	ND<50	ND<50
			1/5/2011	ND<50	ND<50
			3/15/2012	ND<50	ND<50
			3/28/2013	ND<50	ND<50
			3/25/2014	ND<50	ND<50
			4/1/2015	ND<50	ND<50
			5/24/2016	ND<50	ND<50
			5/25/2017	ND<50	ND<50
			5/23/2018	ND<50	ND<50
			5/29/2019	ND<50	ND<50
			5/15/2020	ND<5	ND<5
			5/15/2020	ND<50	ND<50
Duplicate	1	1 (100%)	10/27/2020	ND<1	ND<1
Equipment Blank	1	1 (100%)	10/27/2020	ND<1	ND<1

Concentrations (ppb)

Parameter: Sodium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 34
Total Non-Detect: 0
Percent Non-Detects: 0%
Total Background Measurements: 1
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	1	0 (0%)	4/10/2020	2580	2580

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-01	8	0 (0%)	5/25/2017	9400	9400
			11/16/2017	10700	10700
			5/22/2018	12400	12400
			11/13/2018	12100	12100
			5/29/2019	13600	13600
			11/26/2019	13300	13300
			4/10/2020	8930	8930
			10/27/2020	2030	2030
MW-02	8	0 (0%)	5/25/2017	2150	2150
			11/16/2017	2550	2550
			5/22/2018	3190	3190
			11/13/2018	3230	3230
			5/29/2019	2720	2720
			11/26/2019	2800	2800
			4/10/2020	2820	2820
			10/27/2020	32500	32500
MW-03	8	0 (0%)	5/25/2017	42300	42300
			11/16/2017	24600	24600
			5/22/2018	28900	28900
			11/13/2018	46000	46000
			5/29/2019	38600	38600
			11/26/2019	36500	36500
			4/9/2020	39000	39000
			10/26/2020	31600	31600
MW-1A	8	0 (0%)	5/25/2017	46600	46600
			11/16/2017	29300	29300
			5/22/2018	31100	31100
			11/13/2018	39.6	39.6
			5/29/2019	14000	14000
			11/26/2019	12400	12400
			4/9/2020	223000	223000
			10/26/2020	319000	319000
MW-05	1	0 (0%)	4/9/2020	793	793

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	1	0 (0%)	5/15/2020	613000	613000
Duplicate	1	0 (0%)	10/27/2020	33800	33800
Equipment Blank	1	1 (100%)	10/27/2020	ND<500	ND<500

Concentrations (ppb)

Parameter: Thallium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 50
Percent Non-Detects: 92.5926%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	8 (88.8889%)	11/17/2017	ND<0.5	ND<0.5
			3/7/2018	ND<0.5	ND<0.5
			5/3/2018	ND<0.5	ND<0.5
			5/23/2018	ND<0.5	ND<0.5
			11/14/2018	ND<0.5	ND<0.5
			5/30/2019	1.79	1.79
			11/26/2019	ND<2	ND<2
			4/10/2020	ND<0.5	ND<0.5
			10/26/2020	ND<0.5	ND<0.5

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	8 (88.8889%)	11/16/2017	ND<0.5	ND<0.5
			3/7/2018	ND<0.5	ND<0.5
			5/3/2018	ND<0.5	ND<0.5
			5/23/2018	ND<0.5	ND<0.5
			11/14/2018	ND<0.5	ND<0.5
			5/29/2019	ND<0.5	ND<0.5
			11/26/2019	ND<0.5	ND<0.5
			4/10/2020	ND<0.5	ND<0.5
			10/27/2020	0.582	0.582
MW-03	9	9 (100%)	11/16/2017	ND<0.5	ND<0.5
			3/26/2018	ND<0.5	ND<0.5
			5/7/2018	ND<0.5	ND<0.5
			5/23/2018	ND<0.5	ND<0.5
			11/13/2018	ND<0.5	ND<0.5
			5/29/2019	ND<0.5	ND<0.5
			11/26/2019	ND<0.5	ND<0.5
			4/9/2020	ND<0.5	ND<0.5
			10/26/2020	ND<0.5	ND<0.5
MW-05	9	8 (88.8889%)	11/16/2017	ND<0.5	ND<0.5
			3/7/2018	ND<0.5	ND<0.5
			5/3/2018	ND<0.5	ND<0.5
			5/22/2018	ND<0.5	ND<0.5
			11/13/2018	ND<0.5	ND<0.5
			5/29/2019	0.934	0.934
			11/26/2019	ND<2	ND<2
			4/9/2020	ND<0.5	ND<0.5
			10/26/2020	ND<0.5	ND<0.5
MW-1A	9	8 (88.8889%)	11/16/2017	ND<0.5	ND<0.5

			3/7/2018	ND<0.5	ND<0.5
			5/3/2018	ND<0.5	ND<0.5
			5/23/2018	0.5	0.5
			11/14/2018	ND<0.5	ND<0.5
			5/29/2019	ND<0.5	ND<0.5
			11/26/2019	ND<0.5	ND<0.5
			4/9/2020	ND<0.5	ND<0.5
			10/26/2020	ND<0.5	ND<0.5
MW-01	9	9 (100%)	11/17/2017	ND<1	ND<1
			3/26/2018	ND<1	ND<1
			5/7/2018	ND<1	ND<1
			5/23/2018	ND<1	ND<1
			11/14/2018	ND<1	ND<1
			5/30/2019	ND<1	ND<1
			11/26/2019	ND<1	ND<1
			4/10/2020	ND<0.5	ND<0.5
			10/27/2020	ND<0.5	ND<0.5

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	19 (100%)	4/17/2002	ND<2	ND<2
			4/29/2004	ND<2	ND<2
			4/11/2005	ND<2	ND<2
			3/27/2006	ND<2	ND<2
			3/22/2007	ND<2	ND<2
			3/27/2008	ND<2	ND<2
			4/2/2009	ND<2	ND<2
			4/7/2010	ND<2	ND<2
			1/5/2011	ND<2	ND<2
			3/15/2012	ND<2	ND<2
			3/28/2013	ND<2	ND<2
			3/25/2014	ND<2	ND<2
			4/1/2015	ND<2	ND<2
			5/24/2016	ND<2	ND<2
			5/25/2017	ND<2	ND<2
			5/23/2018	ND<2	ND<2
			5/29/2019	ND<2	ND<2
			5/15/2020	ND<2	ND<2
			5/15/2020	ND<2	ND<2
Duplicate	1	0 (0%)	10/27/2020	0.585	0.585
Equipment Blank	1	1 (100%)	10/27/2020	ND<0.5	ND<0.5

Concentrations (ppb)

Parameter: Vanadium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 52
Percent Non-Detects: 96.2963%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	7 (77.7778%)	11/17/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	5.53	5.53
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/30/2019	ND<5	ND<5
			11/26/2019	ND<50	ND<50
			4/10/2020	6.47	6.47
			10/26/2020	ND<5	ND<5

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	9 (100%)	11/16/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/10/2020	ND<5	ND<5
			10/27/2020	ND<5	ND<5
MW-03	9	9 (100%)	11/16/2017	ND<5	ND<5
			3/26/2018	ND<5	ND<5
			5/7/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/13/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-05	9	9 (100%)	11/16/2017	ND<5	ND<5
			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/22/2018	ND<5	ND<5
			11/13/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<50	ND<50
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-1A	9	9 (100%)	11/16/2017	ND<5	ND<5

			3/7/2018	ND<5	ND<5
			5/3/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/29/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/9/2020	ND<5	ND<5
			10/26/2020	ND<5	ND<5
MW-01	9	9 (100%)	11/17/2017	ND<5	ND<5
			3/26/2018	ND<5	ND<5
			5/7/2018	ND<5	ND<5
			5/23/2018	ND<5	ND<5
			11/14/2018	ND<5	ND<5
			5/30/2019	ND<5	ND<5
			11/26/2019	ND<5	ND<5
			4/10/2020	ND<5	ND<5
			10/27/2020	ND<5	ND<5

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	7 (36.8421%)	4/17/2002	ND<10	ND<10
			4/29/2004	55.4	55.4
			4/11/2005	34.3	34.3
			3/27/2006	14.2	14.2
			3/22/2007	14.2	14.2
			3/27/2008	11.4	11.4
			4/2/2009	ND<10	ND<10
			4/7/2010	ND<100	ND<100
			1/5/2011	25.5	25.5
			3/15/2012	ND<10	ND<10
			3/28/2013	48.5	48.5
			3/25/2014	108	108
			4/1/2015	101	101
			5/24/2016	158	158
			5/25/2017	53.8	53.8
			5/23/2018	ND<5	ND<5
			5/29/2019	91.9	91.9
			5/15/2020	ND<50	ND<50
			5/15/2020	ND<50	ND<50
Duplicate	1	1 (100%)	10/27/2020	ND<5	ND<5
Equipment Blank	1	1 (100%)	10/27/2020	ND<5	ND<5

Concentrations (ppb)

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 54
Total Non-Detect: 17
Percent Non-Detects: 31.4815%
Total Background Measurements: 9
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	9	1 (11.1111%)	11/17/2017	21.2	21.2
			3/7/2018	32.9	32.9
			5/3/2018	12.6	12.6
			5/23/2018	16.6	16.6
			11/14/2018	33.2	33.2
			5/30/2019	46	46
			11/26/2019	20.9	20.9
			4/10/2020	43.4	43.4
			10/26/2020	ND<10	ND<10

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-02	9	1 (11.1111%)	11/16/2017	ND<10	ND<10
			3/7/2018	14.3	14.3
			5/3/2018	14.9	14.9
			5/23/2018	12.5	12.5
			11/14/2018	14	14
			5/29/2019	12.4	12.4
			11/26/2019	15.2	15.2
			4/10/2020	163	163
			10/27/2020	28.6	28.6
MW-03	9	2 (22.2222%)	11/16/2017	11.9	11.9
			3/26/2018	28.2	28.2
			5/7/2018	10	10
			5/23/2018	15.5	15.5
			11/13/2018	13.2	13.2
			5/29/2019	12.2	12.2
			11/26/2019	15.3	15.3
			4/9/2020	ND<10	ND<10
			10/26/2020	ND<10	ND<10
MW-05	9	4 (44.4444%)	11/16/2017	ND<10	ND<10
			3/7/2018	10.3	10.3
			5/3/2018	ND<10	ND<10
			5/22/2018	11.7	11.7
			11/13/2018	11.8	11.8
			5/29/2019	12.2	12.2
			11/26/2019	ND<10	ND<10
			4/9/2020	ND<10	ND<10
			10/26/2020	13.5	13.5
MW-1A	9	2 (22.2222%)	11/16/2017	ND<10	ND<10

			3/7/2018	14.3	14.3
			5/3/2018	14.9	14.9
			5/23/2018	14.9	14.9
			11/14/2018	14	14
			5/29/2019	12.4	12.4
			11/26/2019	15.2	15.2
			4/9/2020	ND<10	ND<10
			10/26/2020	11.2	11.2
MW-01	9	7 (77.7778%)	11/17/2017	ND<10	ND<10
			3/26/2018	ND<10	ND<10
			5/7/2018	ND<10	ND<10
			5/23/2018	ND<10	ND<10
			11/14/2018	ND<10	ND<10
			5/30/2019	ND<10	ND<10
			11/26/2019	ND<10	ND<10
			4/10/2020	13.8	13.8
			10/27/2020	312	312

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	19	0 (0%)	4/17/2002	44.4	44.4
			4/29/2004	918	918
			4/11/2005	209	209
			3/27/2006	66.5	66.5
			3/22/2007	32.5	32.5
			3/27/2008	66.8	66.8
			4/2/2009	67.5	67.5
			4/7/2010	420	420
			1/5/2011	176	176
			3/15/2012	191	191
			3/28/2013	1640	1640
			3/25/2014	922	922
			4/1/2015	512	512
			5/24/2016	770	770
			5/25/2017	206	206
			5/23/2018	301	301
			5/29/2019	301	301
			5/15/2020	87.6	87.6
			5/15/2020	87.6	87.6
Duplicate	1	0 (0%)	10/27/2020	19	19
Equipment Blank	1	1 (100%)	10/27/2020	ND<10	ND<10

Concentrations (ppb)

Parameter: Calcium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 10
Total Non-Detect: 0
Percent Non-Detects: 0%
Total Background Measurements: 1
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	1	0 (0%)	4/10/2020	4290	4290

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-03	2	0 (0%)	4/9/2020 10/26/2020	16900 19600	16900 19600
MW-05	1	0 (0%)	4/9/2020	29500	29500
MW-1A	2	0 (0%)	4/9/2020 10/26/2020	122000 182000	122000 182000
MW-01	2	0 (0%)	4/10/2020 10/27/2020	50900 1960	50900 1960
MW-02	2	0 (0%)	4/10/2020 10/27/2020	17500 17300	17500 17300

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	1	0 (0%)	5/15/2020	200000	200000
Duplicate	1	0 (0%)	10/27/2020	18400	18400
Equipment Blank	1	1 (100%)	10/27/2020	ND<100	ND<100

Concentrations (ppb)

Parameter: Chemical Oxygen Demand

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 32
Total Non-Detect: 21
Percent Non-Detects: 65.625%
Total Background Measurements: 0
There are 0 background locations

Loc.	Meas.	ND	Date	Conc.	Original

There are 4 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-01	8	5 (62.5%)	5/25/2017	ND<10000	ND<10000
			11/16/2017	ND<10000	ND<10000
			5/22/2018	23300	23300
			11/13/2018	27300	27300
			5/29/2019	ND<10000	ND<10000
			11/26/2019	11700	11700
			4/10/2020	ND<10000	ND<10000
			10/26/2020	ND<10000	ND<10000
MW-02	8	8 (100%)	5/25/2017	ND<10000	ND<10000
			11/16/2017	ND<10000	ND<10000
			5/22/2018	ND<10000	ND<10000
			11/13/2018	ND<10000	ND<10000
			5/29/2019	ND<10000	ND<10000
			11/26/2019	ND<10000	ND<10000
			4/10/2020	ND<10000	ND<10000
			10/27/2020	ND<10000	ND<10000
MW-03	8	3 (37.5%)	5/25/2017	ND<10000	ND<10000
			11/16/2017	24000	24000
			5/22/2018	ND<10000	ND<10000
			11/13/2018	18400	18400
			5/29/2019	11200	11200
			11/26/2019	ND<10000	ND<10000
			4/9/2020	20400	20400
			10/26/2020	18500	18500
MW-1A	8	5 (62.5%)	5/25/2017	ND<10000	ND<10000
			11/16/2017	ND<10000	ND<10000
			5/22/2018	ND<10000	ND<10000
			11/13/2018	ND<10000	ND<10000
			5/29/2019	ND<10000	ND<10000
			11/26/2019	16200	16200
			4/9/2020	27200	27200
			10/26/2020	77500	77500

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

LEACHATE	1	0 (0%)	5/15/2020	1.17e+006	1.17e+006
Duplicate	1	1 (100%)	10/27/2020	ND<10000	ND<10000
Equipment Blank	1	1 (100%)	10/27/2020	ND<10000	ND<10000

Concentrations (ppb)

Parameter: Chloride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 33
Total Non-Detect: 0
Percent Non-Detects: 0%
Total Background Measurements: 0
There are 0 background locations

Loc.	Meas.	ND	Date	Conc.	Original

There are 4 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-01	8	0 (0%)	5/25/2017	20100	20100
			11/16/2017	28700	28700
			5/22/2018	24900	24900
			11/13/2018	23900	23900
			5/29/2019	31000	31000
			11/26/2019	37100	37100
			4/15/2020	17300	17300
			10/26/2020	29600	29600
MW-02	8	0 (0%)	5/25/2017	2580	2580
			11/16/2017	2890	2890
			5/22/2018	2790	2790
			11/13/2018	2780	2780
			5/29/2019	2750	2750
			11/26/2019	5340	5340
			4/15/2020	2580	2580
			10/27/2020	4430	4430
MW-03	8	0 (0%)	5/25/2017	44600	44600
			11/16/2017	37600	37600
			5/22/2018	35800	35800
			11/13/2018	73100	73100
			5/29/2019	43500	43500
			11/26/2019	56800	56800
			4/15/2020	44000	44000
			10/26/2020	67700	67700
MW-1A	9	0 (0%)	5/25/2017	128000	128000
			11/16/2017	77800	77800
			5/22/2018	86700	86700
			11/13/2018	90200	90200
			5/29/2019	383000	383000
			11/26/2019	314000	314000
			4/15/2020	497000	497000
			9/2/2020	744000	744000
			10/26/2020	655000	655000

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

LEACHATE	1	0 (0%)	5/15/2020	556000	556000
Duplicate	1	0 (0%)	10/27/2020	4860	4860
Equipment Blank	1	0 (0%)	10/27/2020	2040	2040

Concentrations (ppb)

Parameter: Cyanide, Total

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 32
Total Non-Detect: 28
Percent Non-Detects: 87.5%
Total Background Measurements: 0
There are 0 background locations

Loc.	Meas.	ND	Date	Conc.	Original

There are 4 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-01	8	7 (87.5%)	5/25/2017	ND<200	ND<200
			11/16/2017	ND<200	ND<200
			5/22/2018	ND<200	ND<200
			11/13/2018	ND<200	ND<200
			5/29/2019	ND<200	ND<200
			11/26/2019	10	10
			4/10/2020	ND<200	ND<200
			10/26/2020	ND<200	ND<200
MW-02	8	7 (87.5%)	5/25/2017	ND<200	ND<200
			11/16/2017	ND<200	ND<200
			5/22/2018	ND<200	ND<200
			11/13/2018	ND<200	ND<200
			5/29/2019	ND<200	ND<200
			11/26/2019	10	10
			4/10/2020	ND<200	ND<200
			10/27/2020	ND<200	ND<200
MW-03	8	7 (87.5%)	5/25/2017	ND<200	ND<200
			11/16/2017	ND<200	ND<200
			5/22/2018	ND<200	ND<200
			11/13/2018	ND<200	ND<200
			5/29/2019	ND<200	ND<200
			11/26/2019	10	10
			4/9/2020	ND<200	ND<200
			10/26/2020	ND<200	ND<200
MW-1A	8	7 (87.5%)	5/25/2017	ND<200	ND<200
			11/16/2017	ND<200	ND<200
			5/22/2018	ND<200	ND<200
			11/13/2018	ND<200	ND<200
			5/29/2019	ND<200	ND<200
			11/26/2019	10	10
			4/9/2020	ND<200	ND<200
			10/26/2020	ND<10	ND<10

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

LEACHATE	1	1 (100%)	5/15/2020	ND<10	ND<10
Duplicate	1	1 (100%)	10/27/2020	ND<200	ND<200
Equipment Blank	1	1 (100%)	10/27/2020	ND<200	ND<200

Concentrations (ppb)

Parameter: Iron

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 35
Total Non-Detect: 11
Percent Non-Detects: 31.4286%
Total Background Measurements: 1
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	1	0 (0%)	4/10/2020	2540	2540

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-01	9	1 (11.1111%)	5/25/2017	273	273
			11/16/2017	147	147
			5/22/2018	124	124
			11/13/2018	126	126
			5/29/2019	183	183
			11/26/2019	323	323
			4/10/2020	1080	1080
			9/2/2020	475	475
			10/27/2020	ND<100	ND<100
MW-02	8	3 (37.5%)	5/25/2017	265	265
			11/16/2017	ND<100	ND<100
			5/22/2018	ND<100	ND<100
			11/13/2018	327	327
			5/29/2019	ND<100	ND<100
			11/26/2019	167	167
			4/10/2020	116	116
			10/27/2020	194	194
MW-03	8	2 (25%)	5/25/2017	139	139
			11/16/2017	467	467
			5/22/2018	1370	1370
			11/13/2018	160	160
			5/29/2019	323	323
			11/26/2019	ND<100	ND<100
			4/9/2020	ND<100	ND<100
			10/26/2020	405	405
MW-1A	8	4 (50%)	5/25/2017	ND<100	ND<100
			11/16/2017	137	137
			5/22/2018	ND<100	ND<100
			11/13/2018	ND<100	ND<100
			5/29/2019	350	350
			11/26/2019	238	238
			4/9/2020	ND<100	ND<100
			10/26/2020	137	137
MW-05	1	1 (100%)	4/9/2020	ND<100	ND<100

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	1	0 (0%)	5/15/2020	19200	19200
Duplicate	1	0 (0%)	10/27/2020	206	206
Equipment Blank	1	1 (100%)	10/27/2020	ND<100	ND<100

Concentrations (ppb)

Parameter: Magnesium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 34
Total Non-Detect: 0
Percent Non-Detects: 0%
Total Background Measurements: 1
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	1	0 (0%)	4/10/2020	2250	2250

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-1A	8	0 (0%)	2/25/2017	28400	28400
			11/16/2017	31600	31600
			5/22/2018	28800	28800
			11/13/2018	28900	28900
			5/29/2019	41500	41500
			11/26/2019	38200	38200
			4/9/2020	38100	38100
			10/26/2020	62900	62900
MW-01	8	0 (0%)	5/25/2017	28500	28500
			11/16/2017	24900	24900
			5/22/2018	32700	32700
			11/13/2018	28300	28300
			5/29/2019	39600	39600
			11/26/2019	32300	32300
			4/10/2020	34000	34000
			10/27/2020	1650	1650
MW-02	8	0 (0%)	5/25/2017	1360	1360
			11/16/2017	1770	1770
			5/22/2018	1730	1730
			11/13/2018	2670	2670
			5/29/2019	1860	1860
			11/26/2019	1370	1370
			4/10/2020	12700	12700
			10/27/2020	5060	5060
MW-03	8	0 (0%)	5/25/2017	4290	4290
			11/16/2017	2460	2460
			5/22/2018	4340	4340
			11/13/2018	5820	5820
			5/29/2019	3790	3790
			11/26/2019	3750	3750
			4/9/2020	5010	5010
			10/26/2020	6250	6250
MW-05	1	0 (0%)	4/9/2020	18000	18000

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	1	0 (0%)	5/15/2020	66000	66000
Duplicate	1	0 (0%)	10/27/2020	5160	5160
Equipment Blank	1	1 (100%)	10/27/2020	ND<100	ND<100

Concentrations (ppb)

Parameter: Manganese

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 34
Total Non-Detect: 12
Percent Non-Detects: 35.2941%
Total Background Measurements: 0
There are 0 background locations

Loc.	Meas.	ND	Date	Conc.	Original
There are 4 compliance locations					
Loc.	**Meas.**	**ND**	**Date**	**Conc.**	**Original**
MW-02	9	0 (0%)	2/25/2017	98.9	98.9
			11/16/2017	144	144
			5/22/2018	88.6	88.6
			11/13/2018	134	134
			5/29/2019	142	142
			11/26/2019	149	149
			4/10/2020	60.2	60.2
			9/2/2020	119	119
			10/27/2020	179	179
MW-03	9	0 (0%)	2/25/2017	1690	1690
			11/16/2017	2310	2310
			5/22/2018	2360	2360
			11/13/2018	4210	4210
			5/29/2019	3360	3360
			11/26/2019	2160	2160
			4/9/2020	2270	2270
			9/2/2020	4090	4090
			10/26/2020	6660	6660
MW-1A	8	4 (50%)	2/25/2017	ND<10	ND<10
			11/16/2017	ND<10	ND<10
			5/22/2018	ND<10	ND<10
			11/13/2018	ND<10	ND<10
			5/29/2019	12.2	12.2
			11/26/2019	43.5	43.5
			4/9/2020	11.5	11.5
			10/26/2020	159	159
MW-01	8	8 (100%)	5/25/2017	ND<10	ND<10
			11/16/2017	ND<10	ND<10
			5/22/2018	ND<10	ND<10
			11/13/2018	ND<10	ND<10
			5/29/2019	ND<10	ND<10
			11/26/2019	ND<10	ND<10
			4/10/2020	ND<10	ND<10
			10/26/2020	ND<10	ND<10
There are 3 unused locations					
Loc.	**Meas.**	**ND**	**Date**	**Conc.**	**Original**

LEACHATE	1	0 (0%)	5/15/2020	2170	2170
Duplicate	1	0 (0%)	10/27/2020	148	148
Equipment Blank	1	1 (100%)	10/27/2020	ND<10	ND<10

Concentrations (ppb)

Parameter: Nitrogen, Ammonia (As N)

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 32
Total Non-Detect: 21
Percent Non-Detects: 65.625%
Total Background Measurements: 0
There are 0 background locations

Loc.	Meas.	ND	Date	Conc.	Original

There are 4 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-01	8	8 (100%)	5/25/2017	ND<200	ND<200
			11/16/2017	ND<200	ND<200
			5/22/2018	ND<200	ND<200
			11/13/2018	ND<200	ND<200
			5/29/2019	ND<200	ND<200
			11/26/2019	ND<200	ND<200
			4/10/2020	ND<200	ND<200
			10/26/2020	ND<200	ND<200
MW-02	8	8 (100%)	5/25/2017	ND<200	ND<200
			11/16/2017	ND<200	ND<200
			5/22/2018	ND<200	ND<200
			11/13/2018	ND<200	ND<200
			5/29/2019	ND<200	ND<200
			11/26/2019	ND<200	ND<200
			4/10/2020	ND<200	ND<200
			10/27/2020	ND<200	ND<200
MW-03	8	0 (0%)	5/25/2017	4570	4570
			11/16/2017	3840	3840
			5/22/2018	1930	1930
			11/13/2018	2220	2220
			5/29/2019	1740	1740
			11/26/2019	1170	1170
			4/9/2020	3180	3180
			10/26/2020	4320	4320
MW-1A	8	5 (62.5%)	5/25/2017	ND<200	ND<200
			11/16/2017	ND<200	ND<200
			5/22/2018	ND<200	ND<200
			11/13/2018	ND<200	ND<200
			5/29/2019	645	645
			11/26/2019	ND<200	ND<200
			4/9/2020	2150	2150
			10/26/2020	1480	1480

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

LEACHATE	1	0 (0%)	5/15/2020	557000	557000
Duplicate	1	1 (100%)	10/27/2020	ND<200	ND<200
Equipment Blank	1	1 (100%)	10/27/2020	ND<200	ND<200

Concentrations (ppb)

Parameter: Nitrogen, Nitrate (As N)

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 35
Total Non-Detect: 4
Percent Non-Detects: 11.4286%
Total Background Measurements: 0
There are 0 background locations

Loc.	Meas.	ND	Date	Conc.	Original

There are 4 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-01	8	1 (12.5%)	5/25/2017	10000	10000
			11/16/2017	10000	10000
			5/22/2018	10000	10000
			11/13/2018	10000	10000
			5/29/2019	10000	10000
			11/26/2019	2110	2110
			4/15/2020	ND<10000	ND<10000
			10/26/2020	1520	1520
MW-02	9	1 (11.1111%)	5/25/2017	10000	10000
			11/16/2017	10000	10000
			5/22/2018	10000	10000
			11/13/2018	10000	10000
			5/29/2019	10000	10000
			11/26/2019	4350	4350
			4/15/2020	ND<10000	ND<10000
			9/2/2020	10000	10000
			10/27/2020	3870	3870
MW-03	9	2 (22.2222%)	5/25/2017	10000	10000
			11/16/2017	10000	10000
			5/22/2018	10000	10000
			11/13/2018	10000	10000
			5/29/2019	10000	10000
			11/26/2019	820	820
			4/15/2020	ND<10000	ND<10000
			9/2/2020	10000	10000
			10/26/2020	ND<250	ND<250
MW-1A	9	0 (0%)	5/25/2017	10000	10000
			11/16/2017	10000	10000
			5/22/2018	10000	10000
			11/13/2018	10000	10000
			5/29/2019	10000	10000
			11/26/2019	12200	12200
			4/15/2020	10600	10600
			9/2/2020	10000	10000
			10/26/2020	13000	13000

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	1	1 (100%)	5/15/2020	ND<250	ND<250
Duplicate	1	0 (0%)	10/27/2020	4010	4010
Equipment Blank	1	1 (100%)	10/27/2020	ND<250	ND<250

Concentrations (ppb)

Parameter: Potassium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 34
Total Non-Detect: 0
Percent Non-Detects: 0%
Total Background Measurements: 1
There is 1 background location

Loc.	Meas.	ND	Date	Conc.	Original
MW-4R	1	0 (0%)	4/10/2020	2840	2840

There are 5 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-01	8	0 (0%)	5/25/2017	2540	2540
			11/16/2017	3140	3140
			5/22/2018	2860	2860
			11/13/2018	3280	3280
			5/29/2019	2860	2860
			11/26/2019	3180	3180
			4/10/2020	2220	2220
			10/27/2020	2780	2780
MW-02	8	0 (0%)	5/25/2017	2430	2430
			11/16/2017	2330	2330
			5/22/2018	2500	2500
			11/13/2018	2940	2940
			5/29/2019	2910	2910
			11/26/2019	2160	2160
			4/10/2020	2840	2840
			10/27/2020	7380	7380
MW-03	8	0 (0%)	5/25/2017	5070	5070
			11/16/2017	4450	4450
			5/22/2018	4350	4350
			11/13/2018	6520	6520
			5/29/2019	5010	5010
			11/26/2019	5070	5070
			4/9/2020	6820	6820
			10/26/2020	5580	5580
MW-1A	8	0 (0%)	5/25/2017	15300	15300
			11/16/2017	11700	11700
			5/22/2018	10600	10600
			11/13/2018	14400	14400
			5/29/2019	37800	37800
			11/26/2019	33400	33400
			4/9/2020	74800	74800
			10/26/2020	104000	104000
MW-05	1	0 (0%)	4/9/2020	993	993

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original
LEACHATE	1	0 (0%)	5/15/2020	231000	231000
Duplicate	1	0 (0%)	10/27/2020	7770	7770
Equipment Blank	1	1 (100%)	10/27/2020	ND<100	ND<100

Concentrations (ppb)

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 32
Total Non-Detect: 1
Percent Non-Detects: 3.125%
Total Background Measurements: 0
There are 0 background locations

Loc.	Meas.	ND	Date	Conc.	Original

There are 4 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-01	8	0 (0%)	5/25/2017	3440	3440
			11/16/2017	4670	4670
			5/22/2018	3440	3440
			11/13/2018	4230	4230
			5/29/2019	4360	4360
			11/26/2019	6160	6160
			4/15/2020	7540	7540
			10/26/2020	3290	3290
MW-02	8	1 (12.5%)	5/25/2017	1000	1000
			11/16/2017	8100	8100
			5/22/2018	1000	1000
			11/13/2018	1000	1000
			5/29/2019	1000	1000
			11/26/2019	1000	1000
			4/15/2020	ND<1000	ND<1000
			10/27/2020	1270	1270
MW-03	8	0 (0%)	5/25/2017	26700	26700
			11/16/2017	20700	20700
			5/22/2018	25300	25300
			11/13/2018	31200	31200
			5/29/2019	28500	28500
			11/26/2019	28600	28600
			4/15/2020	28300	28300
			10/26/2020	27100	27100
MW-1A	8	0 (0%)	5/25/2017	36200	36200
			11/16/2017	26900	26900
			5/22/2018	28200	28200
			11/13/2018	30500	30500
			5/29/2019	27000	27000
			11/26/2019	33000	33000
			4/15/2020	31800	31800
			10/26/2020	31900	31900

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

LEACHATE	1	0 (0%)	5/15/2020	2420	2420
Duplicate	1	1 (100%)	10/27/2020	ND<1000	ND<1000
Equipment Blank	1	1 (100%)	10/27/2020	ND<1000	ND<1000

Concentrations (ppb)

Parameter: Organic Carbon, Total

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 32
Total Non-Detect: 9
Percent Non-Detects: 28.125%
Total Background Measurements: 0
There are 0 background locations

Loc.	Meas.	ND	Date	Conc.	Original

There are 4 compliance locations

Loc.	Meas.	ND	Date	Conc.	Original
MW-01	8	3 (37.5%)	5/25/2017	20000	20000
			11/16/2017	ND<1000	ND<1000
			5/22/2018	ND<1000	ND<1000
			11/13/2018	11200	11200
			5/29/2019	9140	9140
			11/26/2019	3000	3000
			4/10/2020	ND<1000	ND<1000
			10/26/2020	8230	8230
MW-02	8	4 (50%)	5/25/2017	10000	10000
			11/16/2017	ND<1000	ND<1000
			5/22/2018	ND<1000	ND<1000
			11/13/2018	2870	2870
			5/29/2019	2340	2340
			11/26/2019	ND<1000	ND<1000
			4/10/2020	ND<1000	ND<1000
			10/27/2020	4300	4300
MW-03	8	0 (0%)	5/25/2017	20000	20000
			11/16/2017	3700	3700
			5/22/2018	2210	2210
			11/13/2018	8350	8350
			5/29/2019	5800	5800
			11/26/2019	6080	6080
			4/9/2020	4130	4130
			10/26/2020	7520	7520
MW-1A	8	2 (25%)	5/25/2017	20000	20000
			11/16/2017	ND<1000	ND<1000
			5/22/2018	2210	2210
			11/13/2018	15100	15100
			5/29/2019	7530	7530
			11/26/2019	2210	2210
			4/9/2020	ND<1000	ND<1000
			10/26/2020	13200	13200

There are 3 unused locations

Loc.	Meas.	ND	Date	Conc.	Original

LEACHATE	1	0 (0%)	5/15/2020	377000	377000
Duplicate	1	0 (0%)	10/27/2020	6180	6180
Equipment Blank	1	1 (100%)	10/27/2020	ND<1000	ND<1000

Concentrations (ppb)

Parameter: Residue, Dissolved (TDS)

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements: 34
Total Non-Detect: 0
Percent Non-Detects: 0%
Total Background Measurements: 0
There are 0 background locations

Loc.	Meas.	ND	Date	Conc.	Original

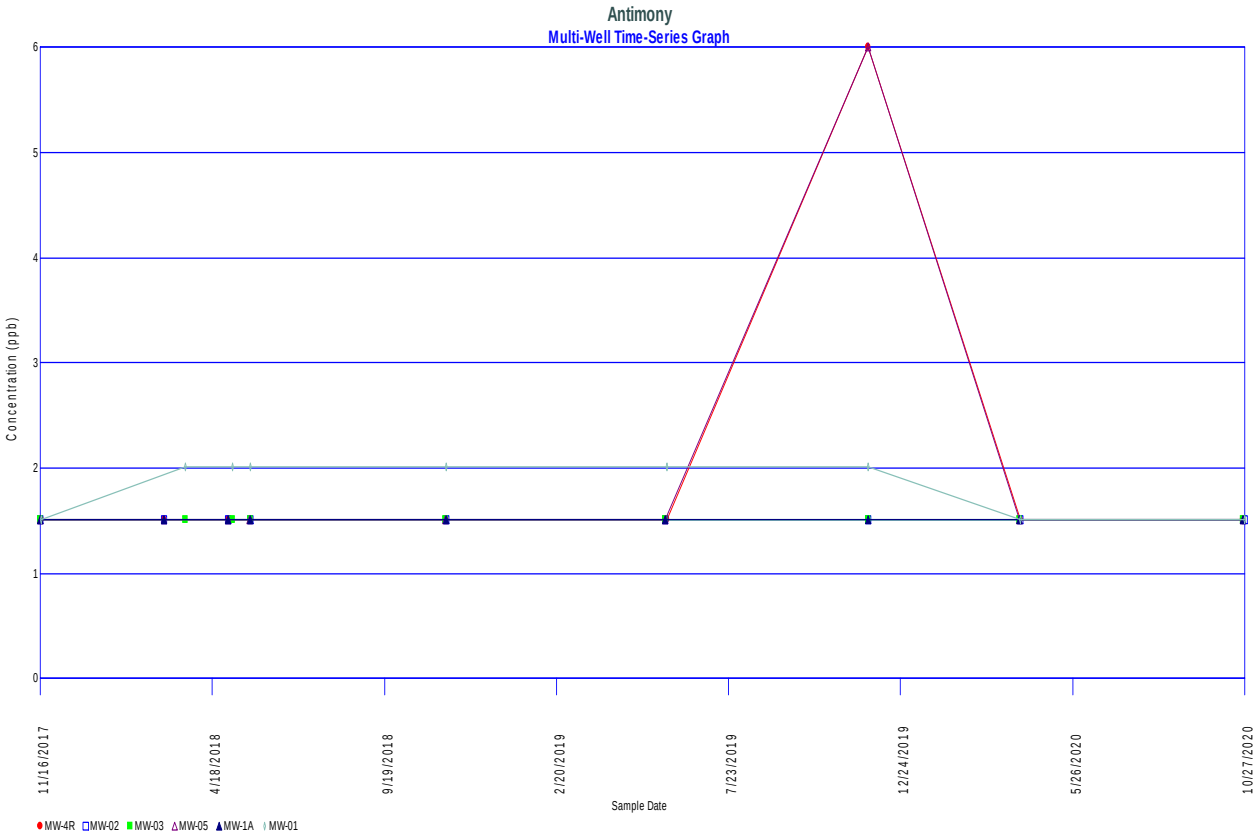
There are 4 compliance locations

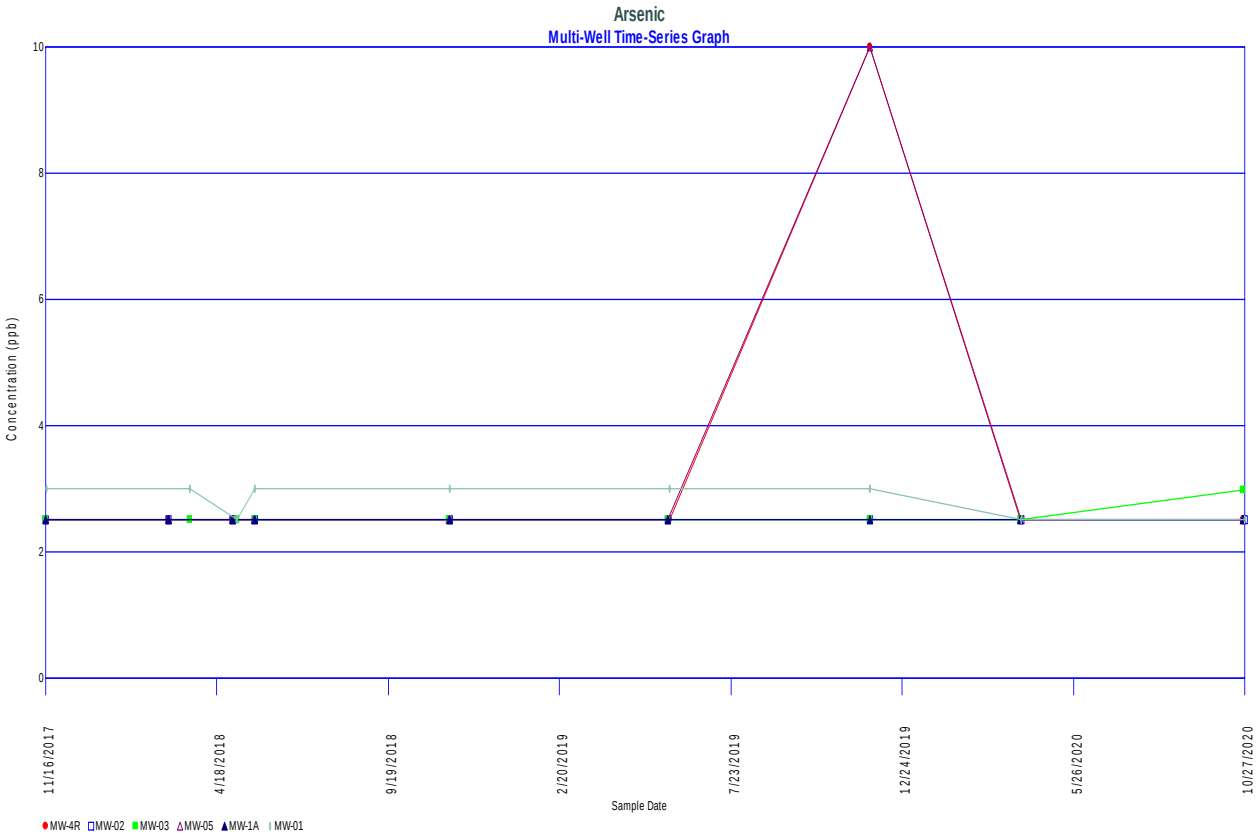
Loc.	Meas.	ND	Date	Conc.	Original
MW-01	8	0 (0%)	5/25/2017	270000	270000
			11/16/2017	307000	307000
			5/22/2018	324000	324000
			11/13/2018	303000	303000
			5/29/2019	314000	314000
			11/26/2019	301000	301000
			4/10/2020	268000	268000
			10/26/2020	264000	264000
MW-02	9	0 (0%)	5/25/2017	63000	63000
			11/16/2017	72000	72000
			5/22/2018	82000	82000
			11/13/2018	72000	72000
			5/29/2019	79000	79000
			11/26/2019	60000	60000
			4/10/2020	95000	95000
			9/2/2020	1.49e+006	1.49e+006
			10/27/2020	39000	39000
MW-03	8	0 (0%)	5/25/2017	155000	155000
			11/16/2017	148000	148000
			5/22/2018	180000	180000
			11/13/2018	219000	219000
			5/29/2019	164000	164000
			11/26/2019	187000	187000
			4/9/2020	186000	186000
			10/26/2020	192000	192000
MW-1A	9	0 (0%)	5/25/2017	505000	505000
			11/16/2017	449000	449000
			5/22/2018	574000	574000
			11/13/2018	532000	532000
			5/29/2019	996000	996000
			11/26/2019	869000	869000
			4/9/2020	1.26e+006	1.26e+006
			9/2/2020	1.49e+006	1.49e+006
			10/26/2020	1.51e+006	1.51e+006

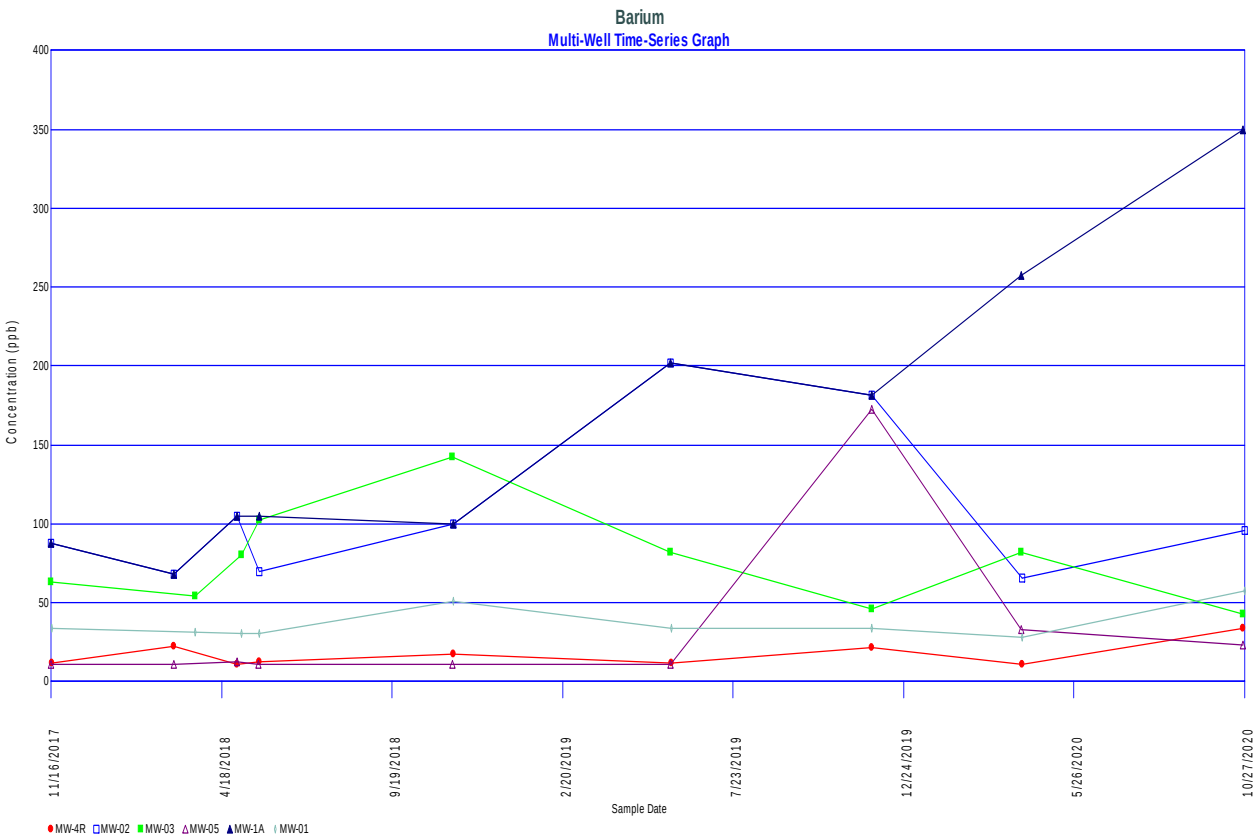
There are 3 unused locations

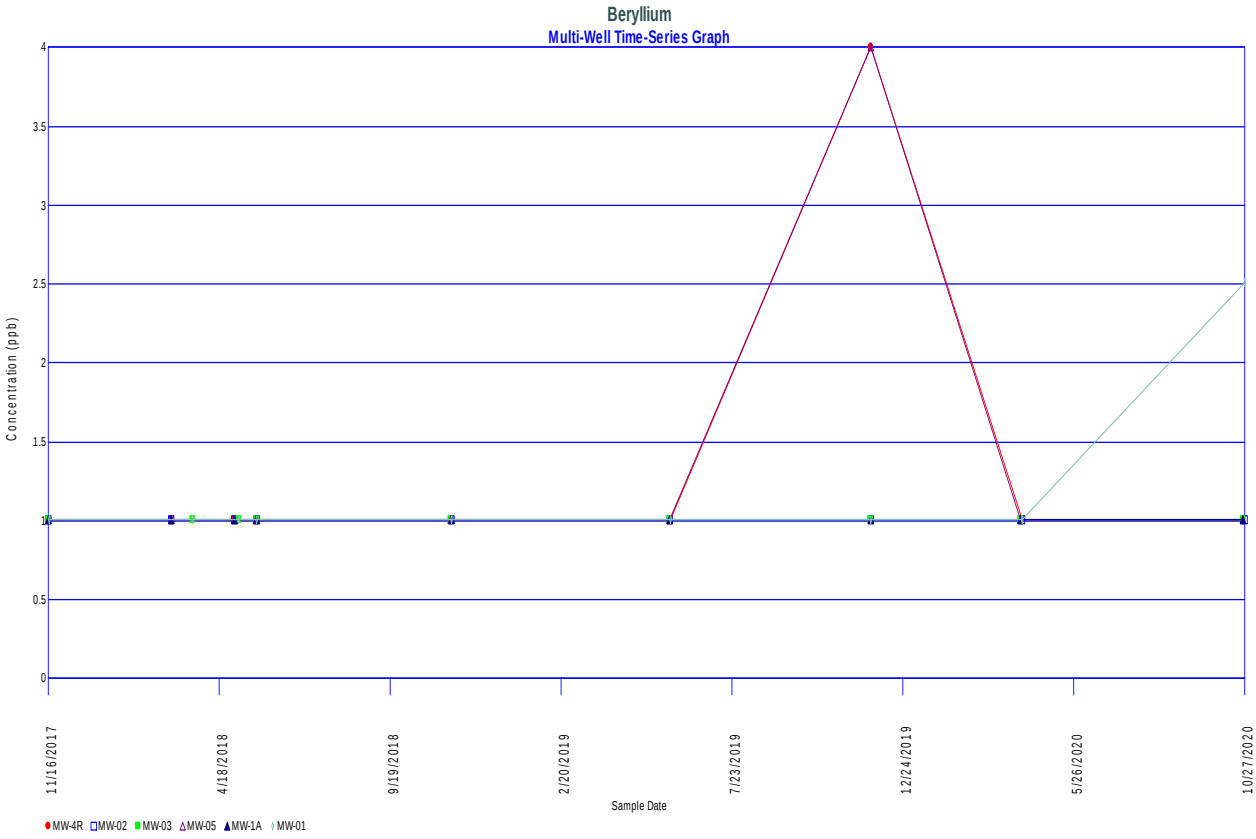
Loc.	Meas.	ND	Date	Conc.	Original

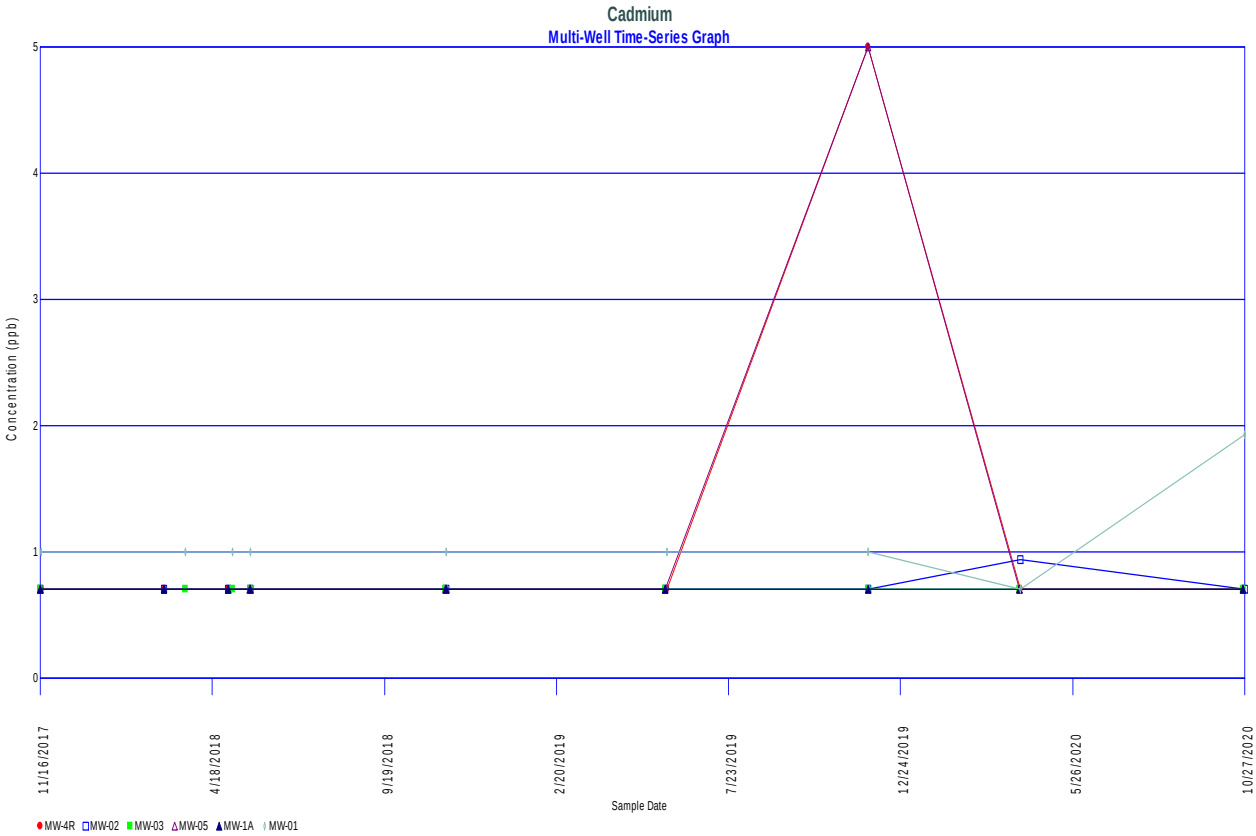
LEACHATE	1	0 (0%)	5/15/2020	2.46e+006	2.46e+006
Duplicate	1	0 (0%)	10/27/2020	42000	42000
Equipment Blank	1	1 (100%)	10/27/2020	ND<1000	ND<1000

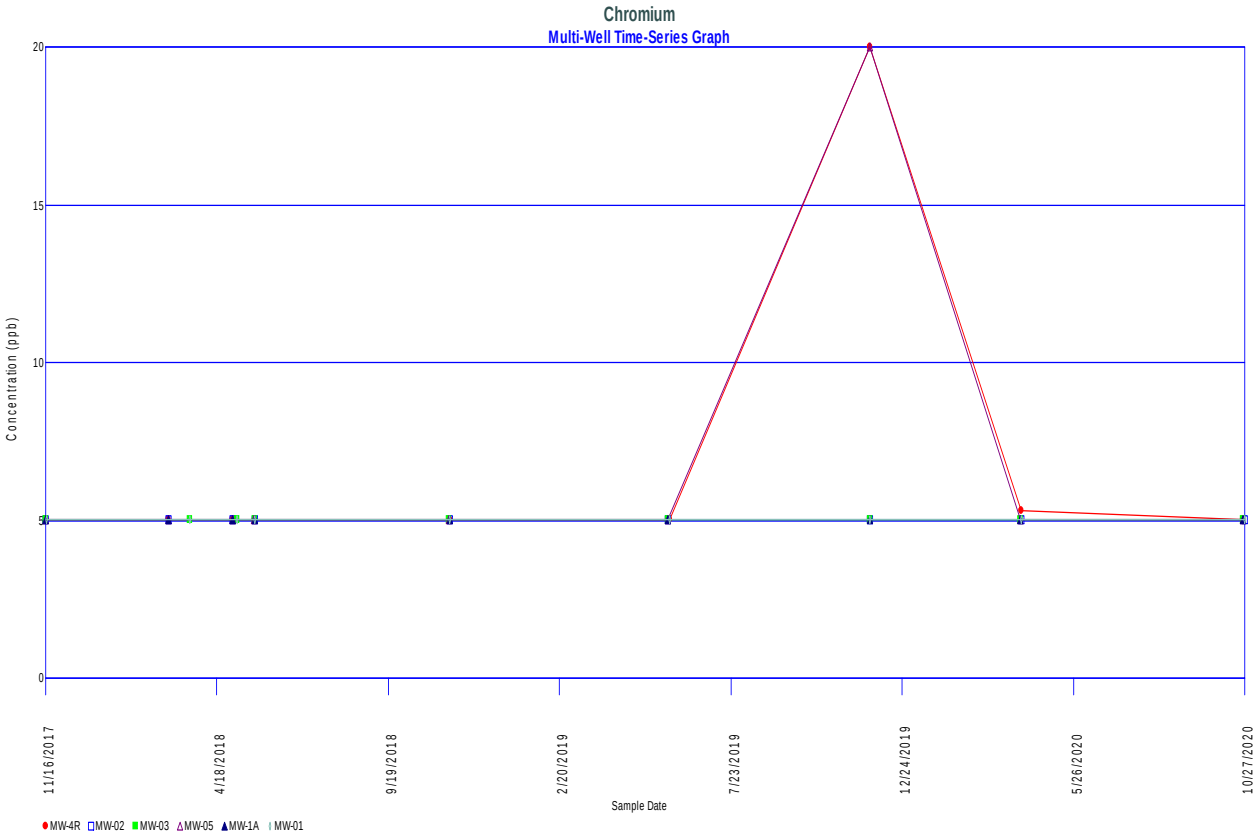

Antimony
Multi-Well Time-Series Graph
Concentration (ppb)
0
1
2
3
4
5
6
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

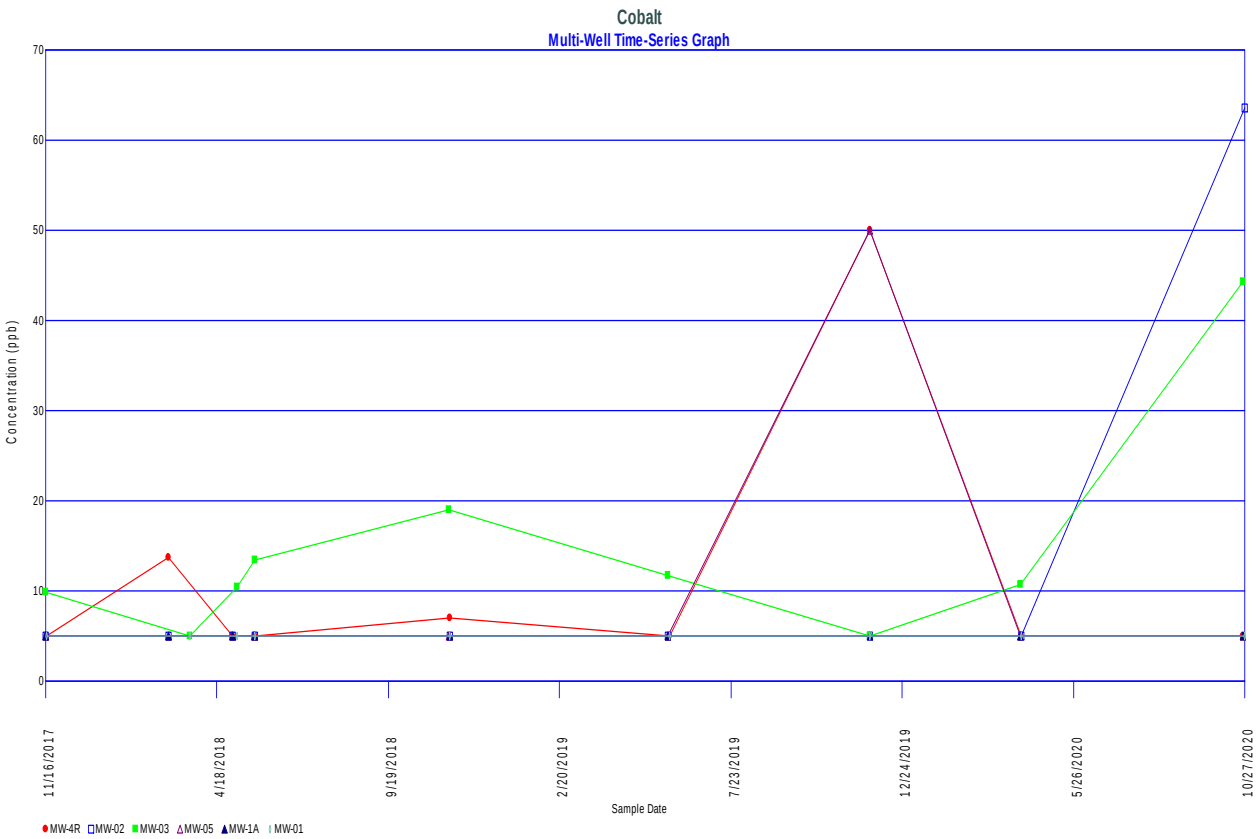

Arsenic
Multi-Well Time-Series Graph
Concentration (ppb)
10
8
6
4
2
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

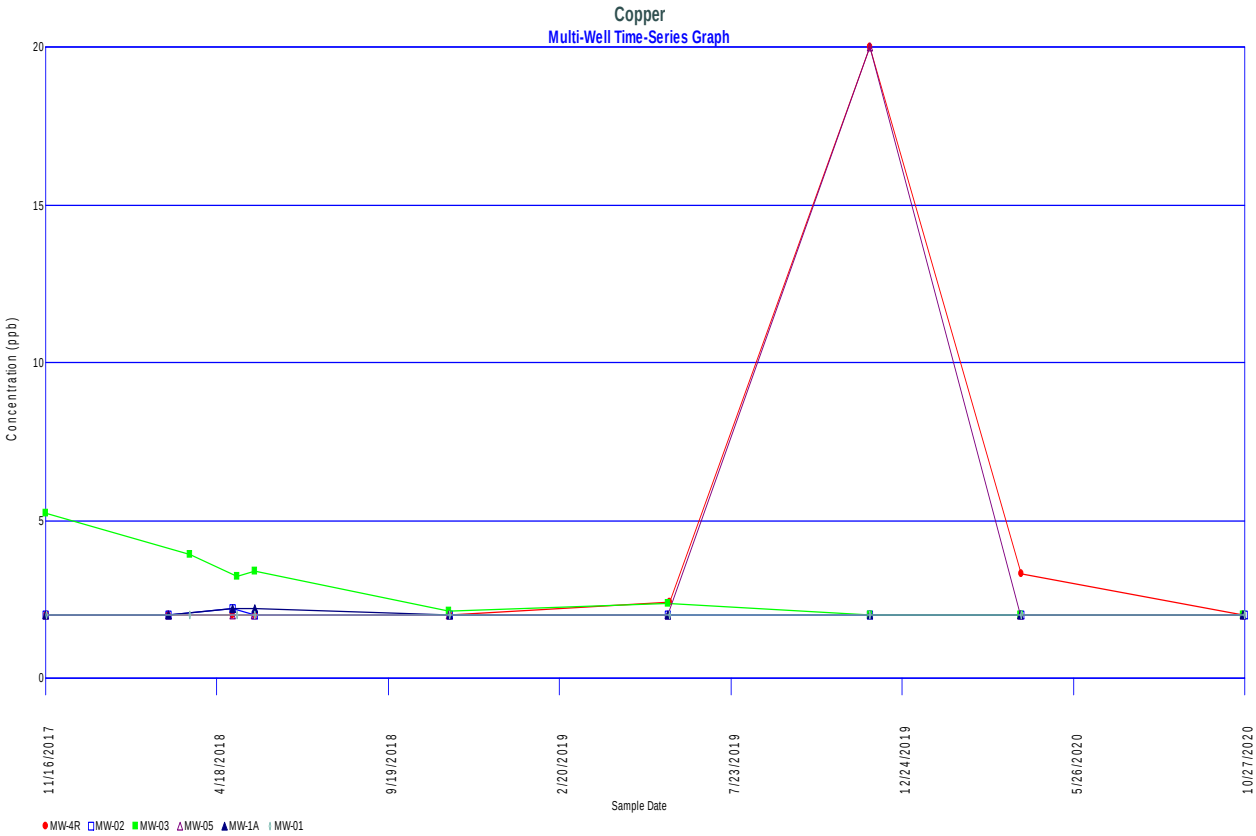

Barium
Multi-Well Time-Series Graph
Concentration (ppb)
400
350
300
250
200
150
100
50
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

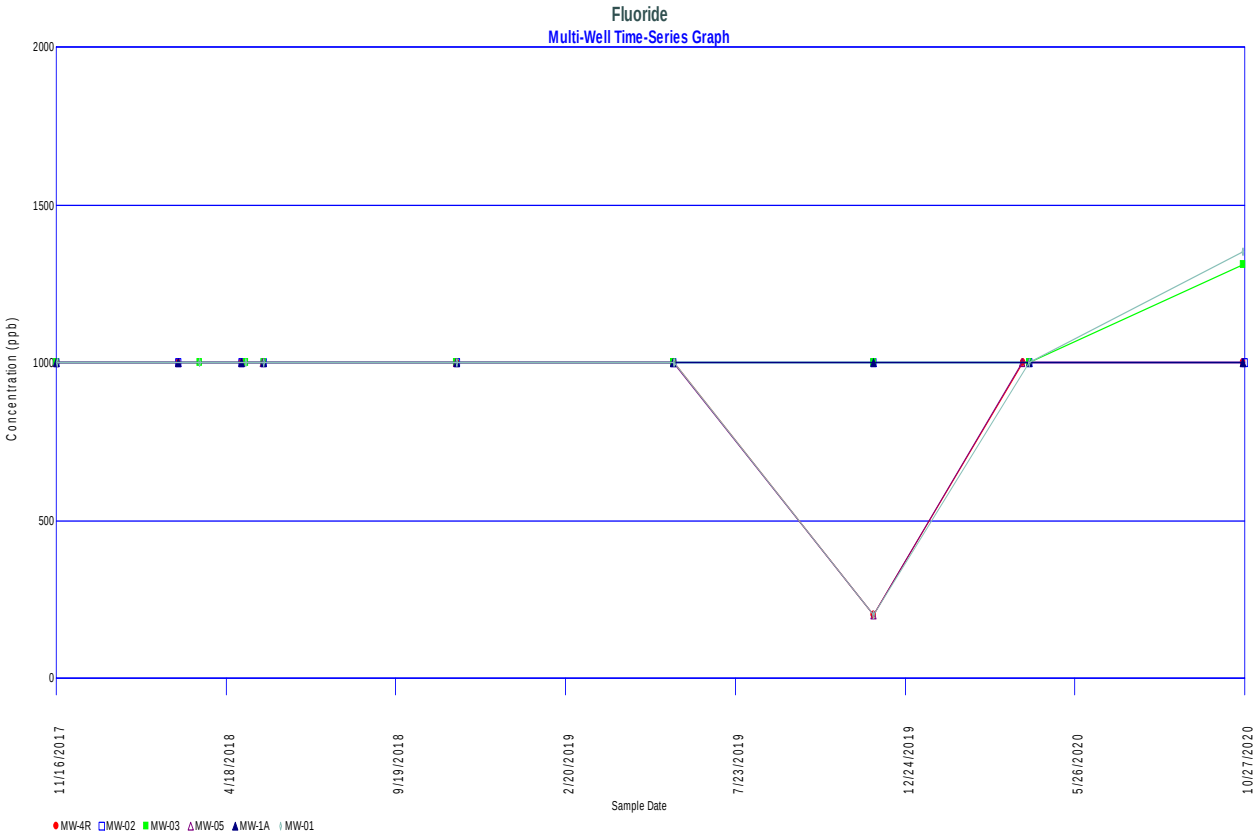

Beryllium
Multi-Well Time-Series Graph
Concentration (ppb)
4
3.5
3
2.5
2
1.5
1
0.5
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

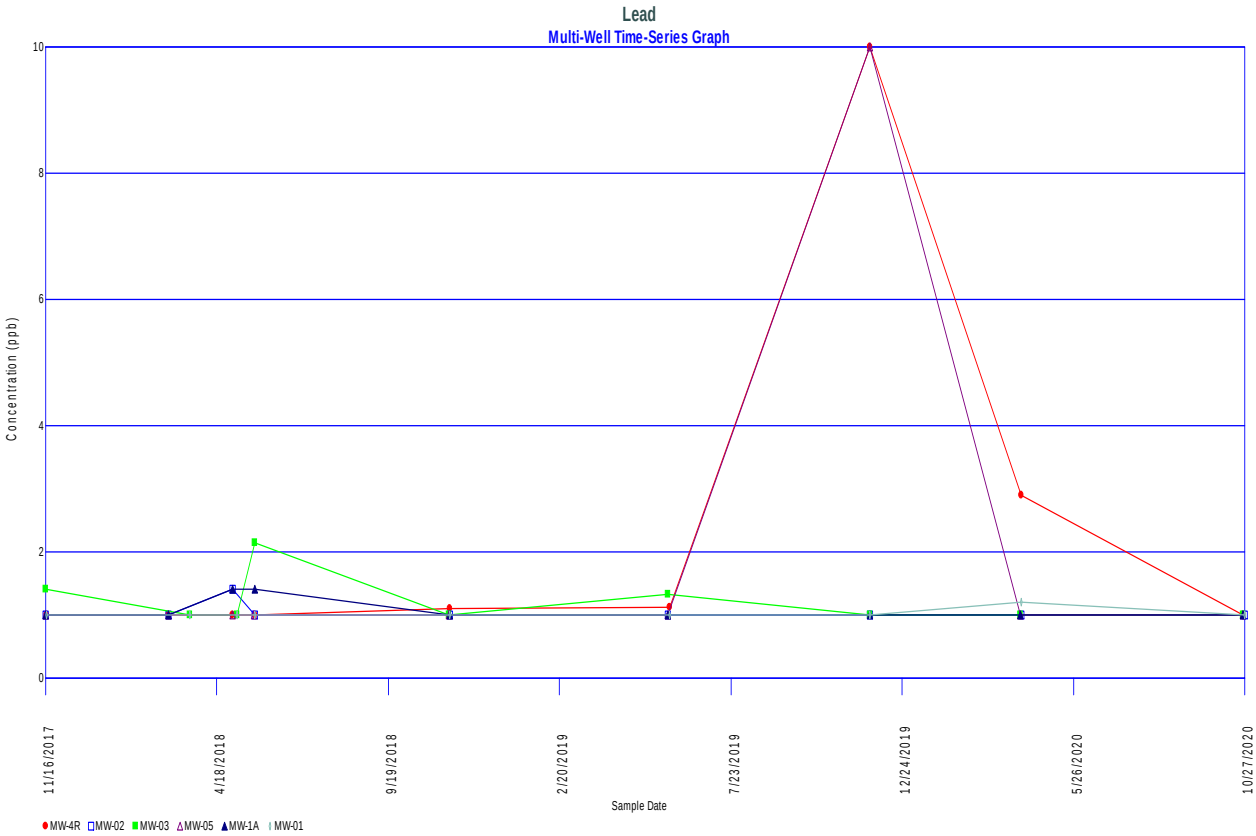

Cadmium
Multi-Well Time-Series Graph
Concentration (ppb)
0
1
2
3
4
5
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

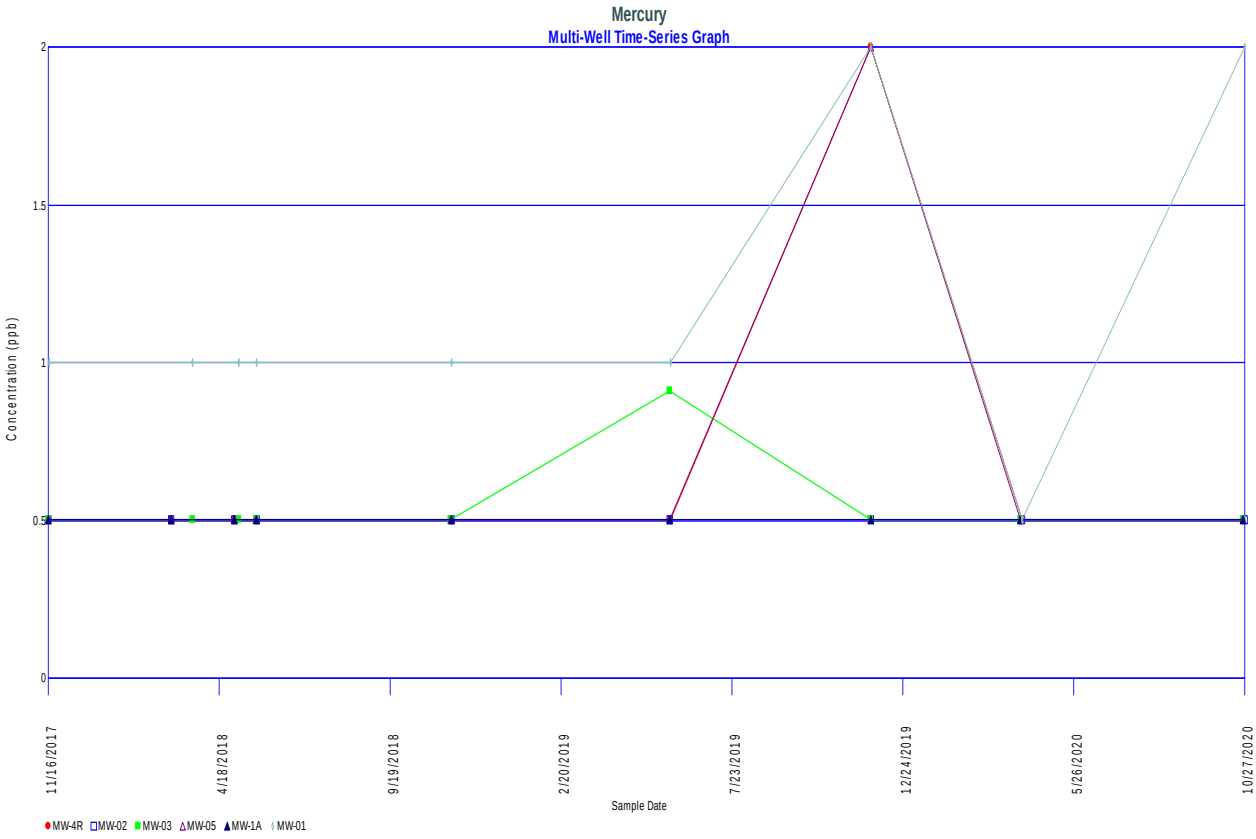

Chromium
Multi-Well Time-Series Graph
Concentration (ppb)
20
15
10
5
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

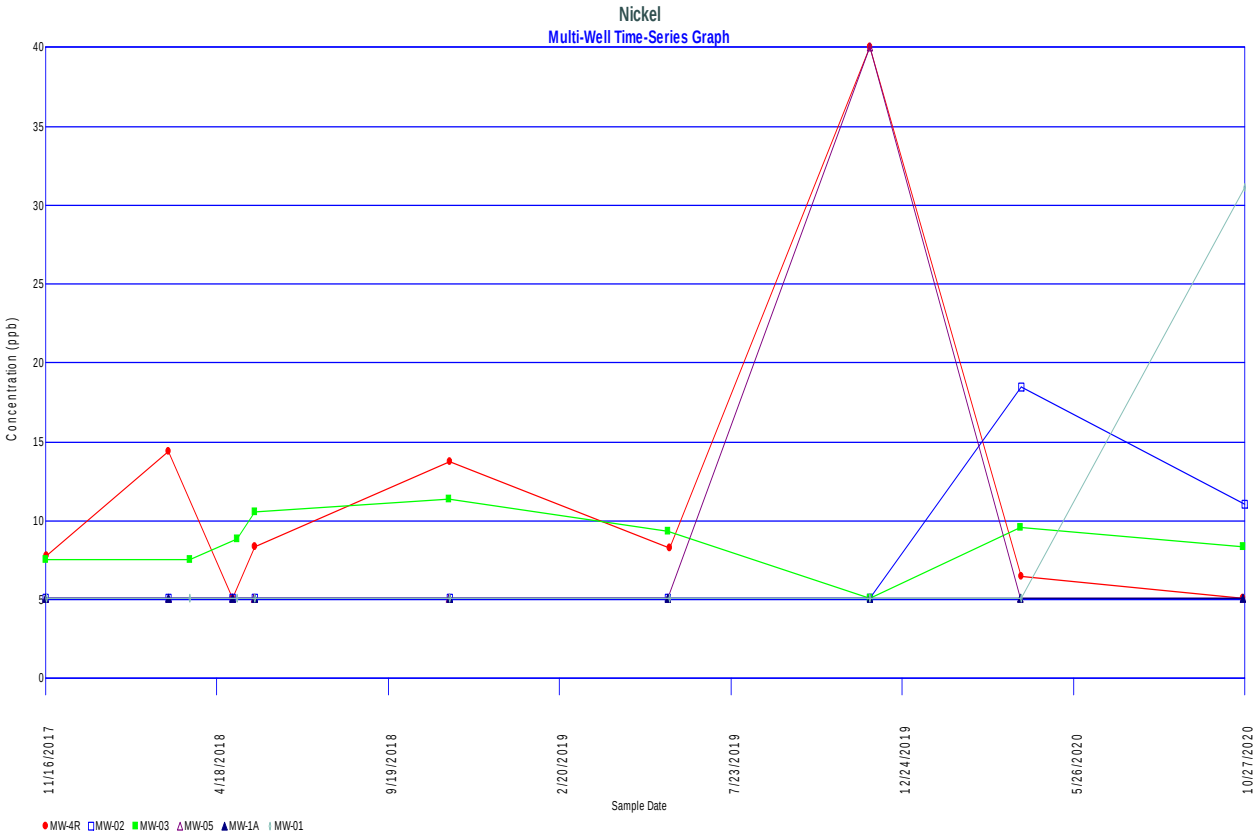

Cobalt
Multi-Well Time-Series Graph
Concentration (ppb)
70
60
50
40
30
20
10
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

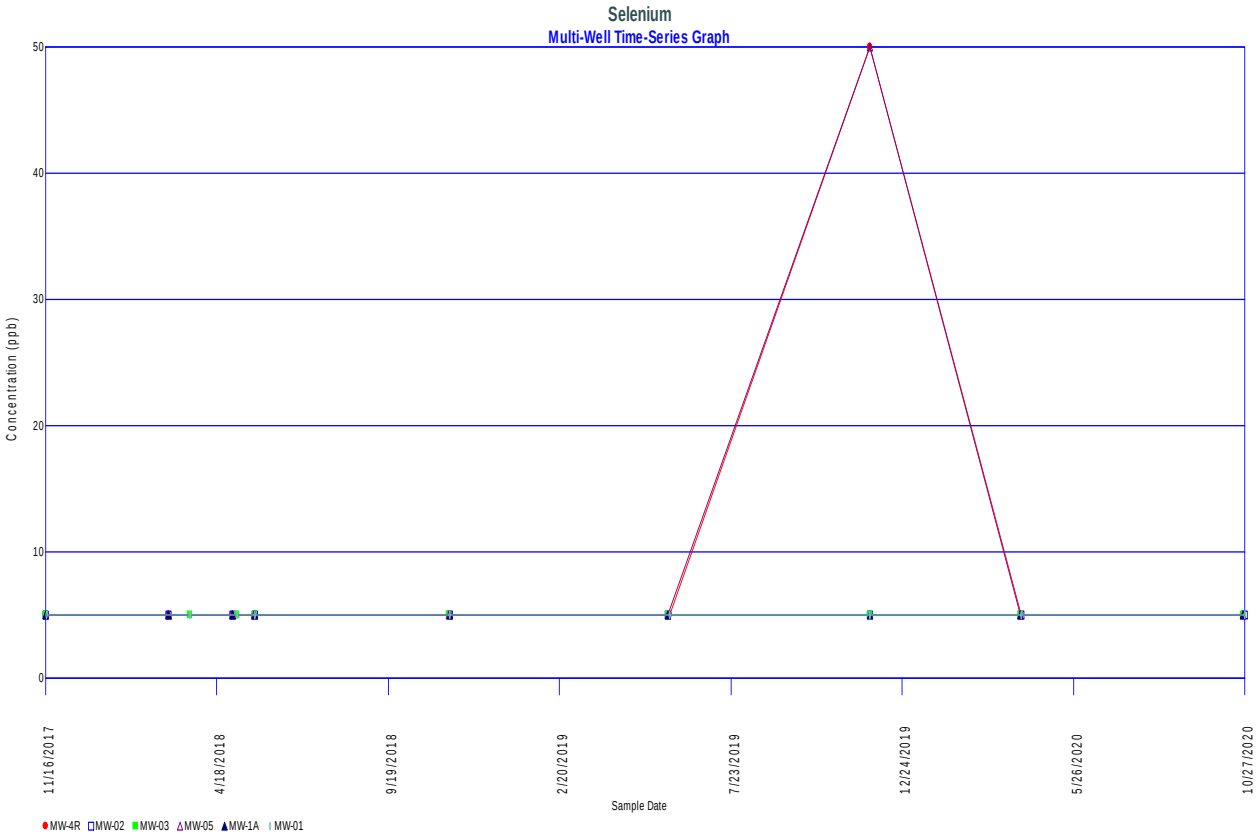

Copper
Multi-Well Time-Series Graph
Concentration (ppb)
20
15
10
5
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

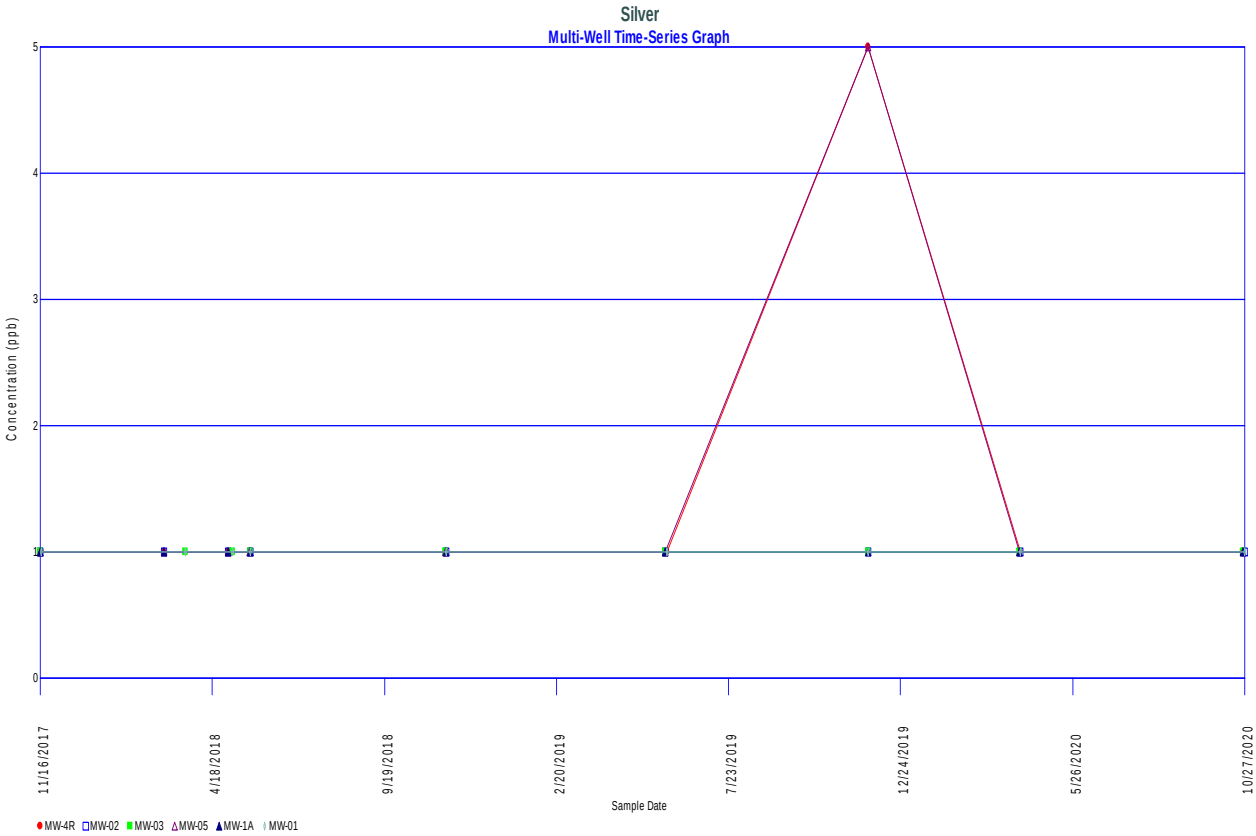

Fluoride
Multi-Well Time-Series Graph
2000
1500
1000
500
0
Concentration (ppb)
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

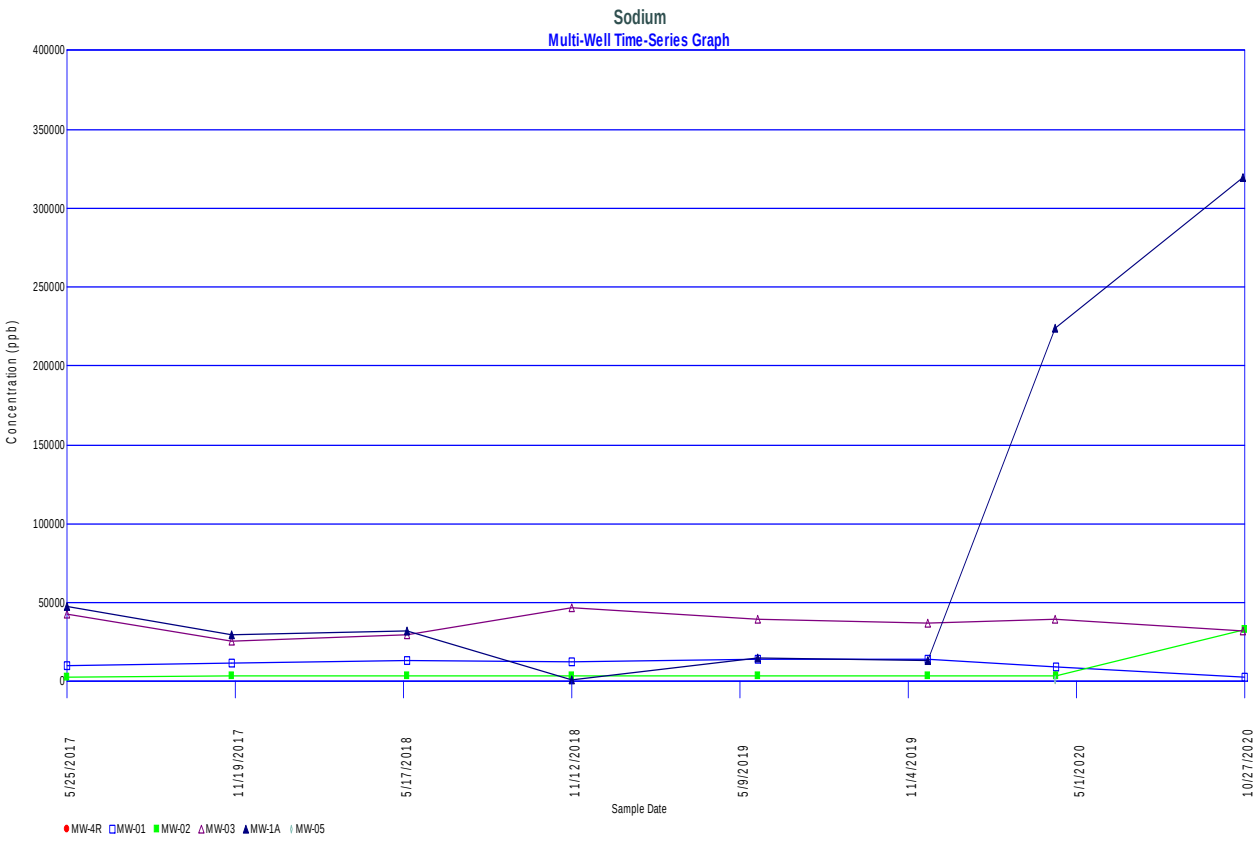

Lead
Multi-Well Time-Series Graph
Concentration (ppb)
10
8
6
4
2
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

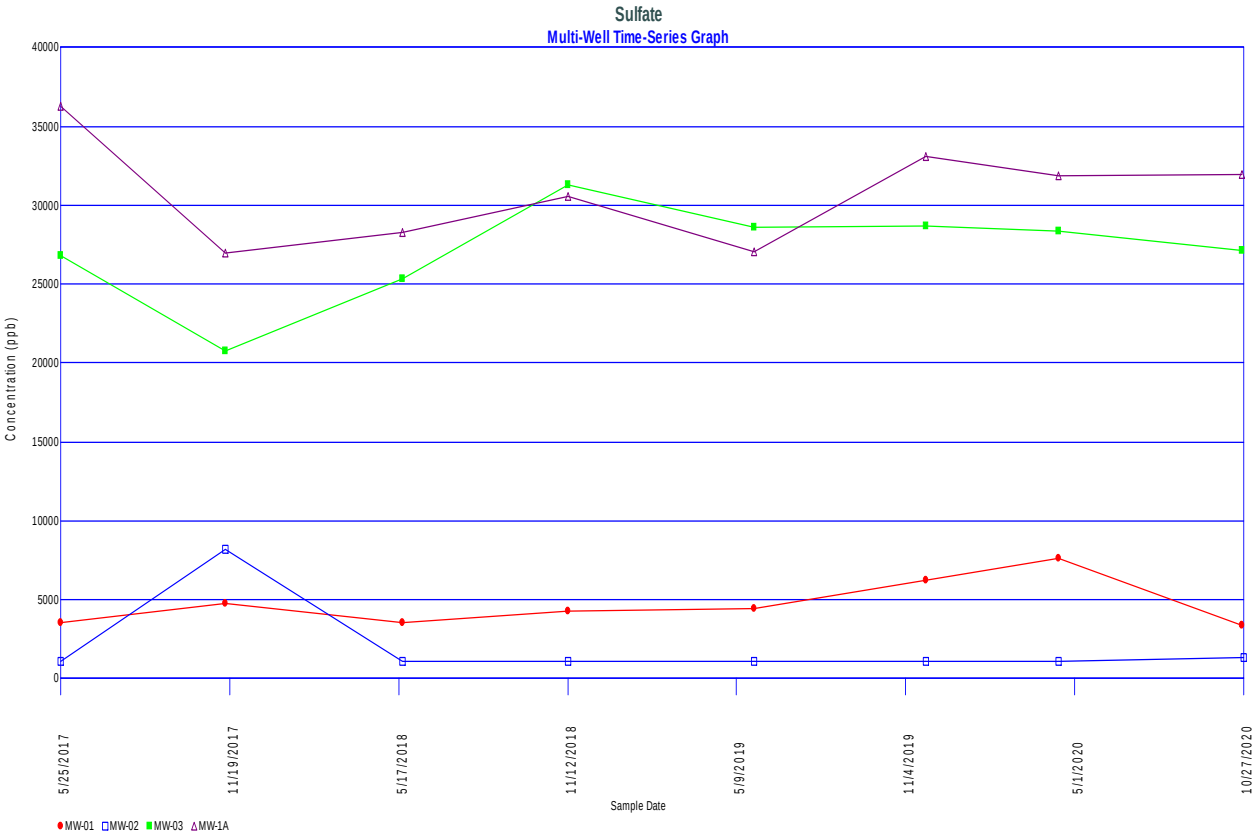

Mercury
Multi-Well Time-Series Graph
Concentration (ppb)
2
1.5
1
0.5
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

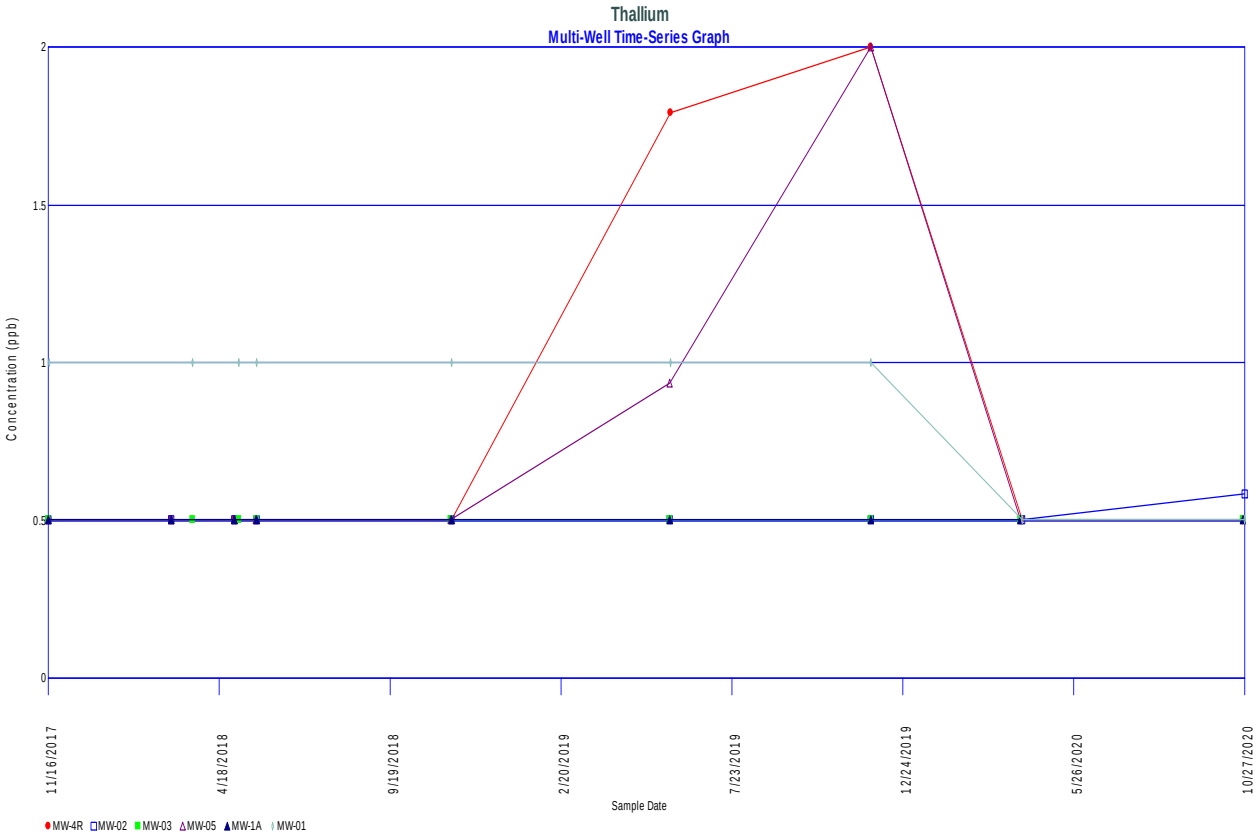

Nickel
Multi-Well Time-Series Graph
Concentration (ppb)
40
35
30
25
20
15
10
5
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

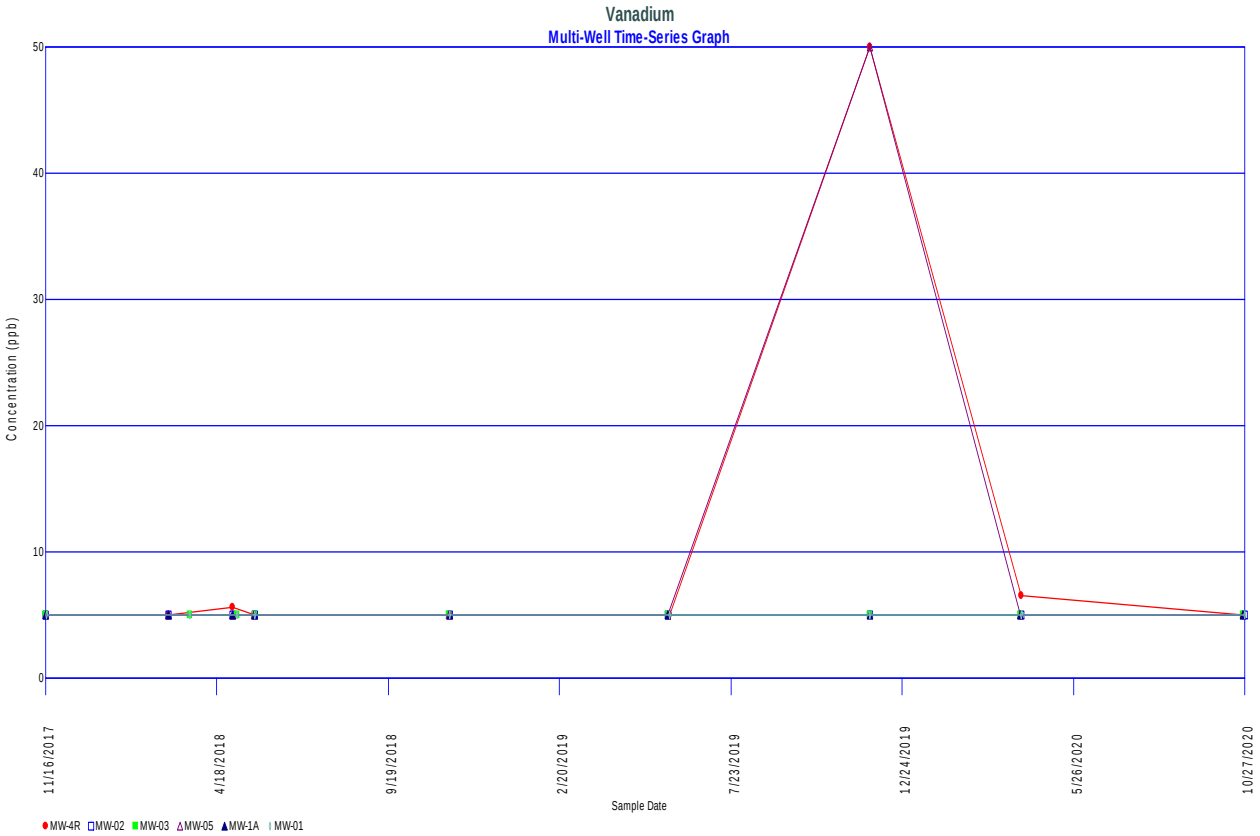

Selenium
Multi-Well Time-Series Graph
Concentration (ppb)
50
40
30
20
10
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

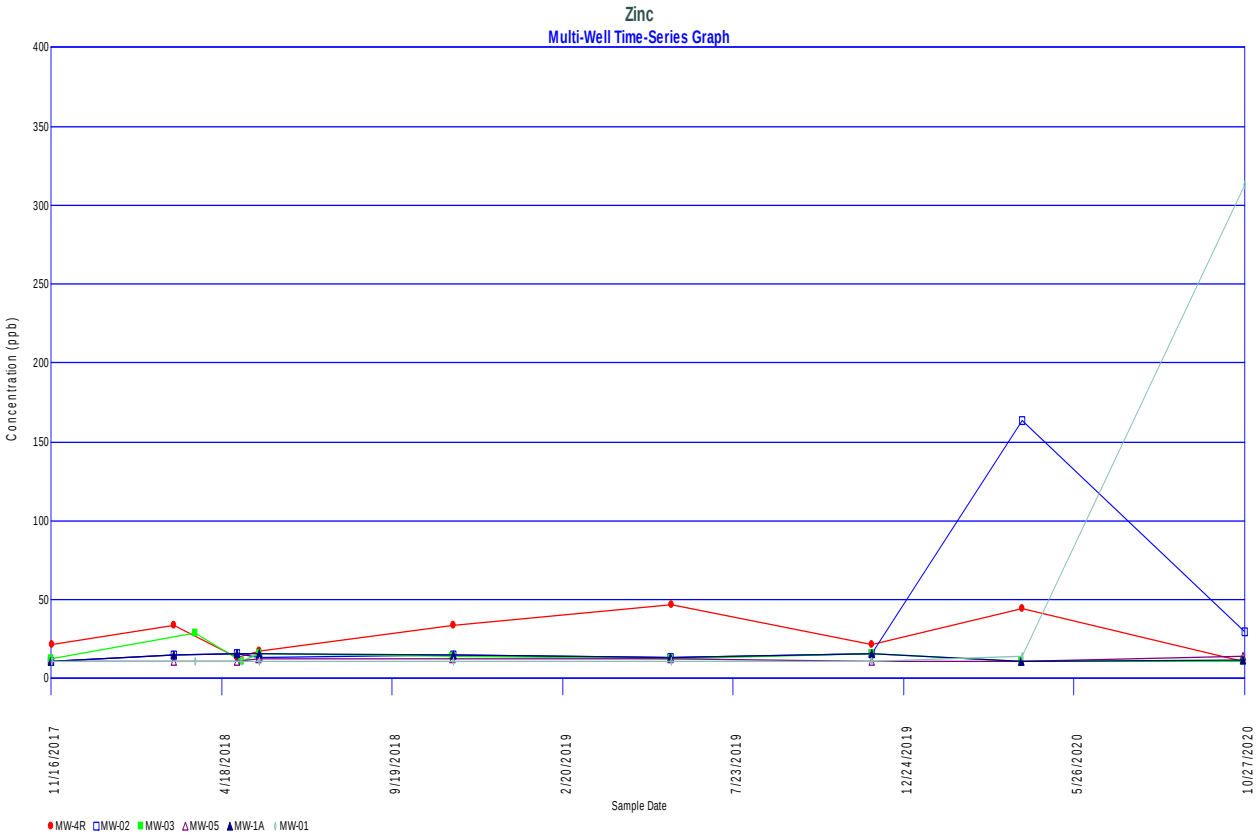

Silver
Multi-Well Time-Series Graph
Concentration (ppb)
5
4
3
2
1
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

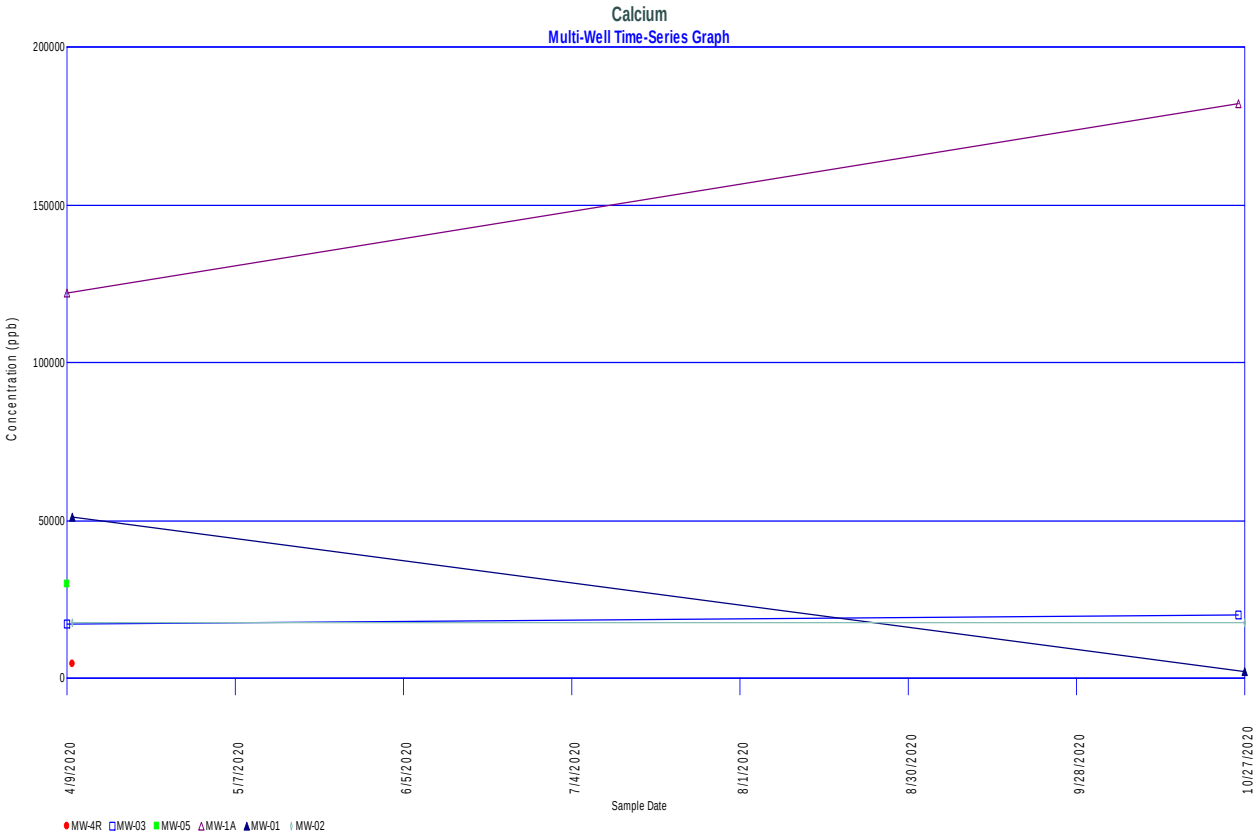

Sodium
Multi-Well Time-Series Graph
Concentration (ppb)
400000
350000
300000
250000
200000
150000
100000
50000
0
5/25/2017
11/19/2017
5/17/2018
11/12/2018
5/9/2019
11/4/2019
5/1/2020
10/27/2020
Sample Date
MW-4R
MW-01
MW-02
MW-03
MW-1A
MW-05

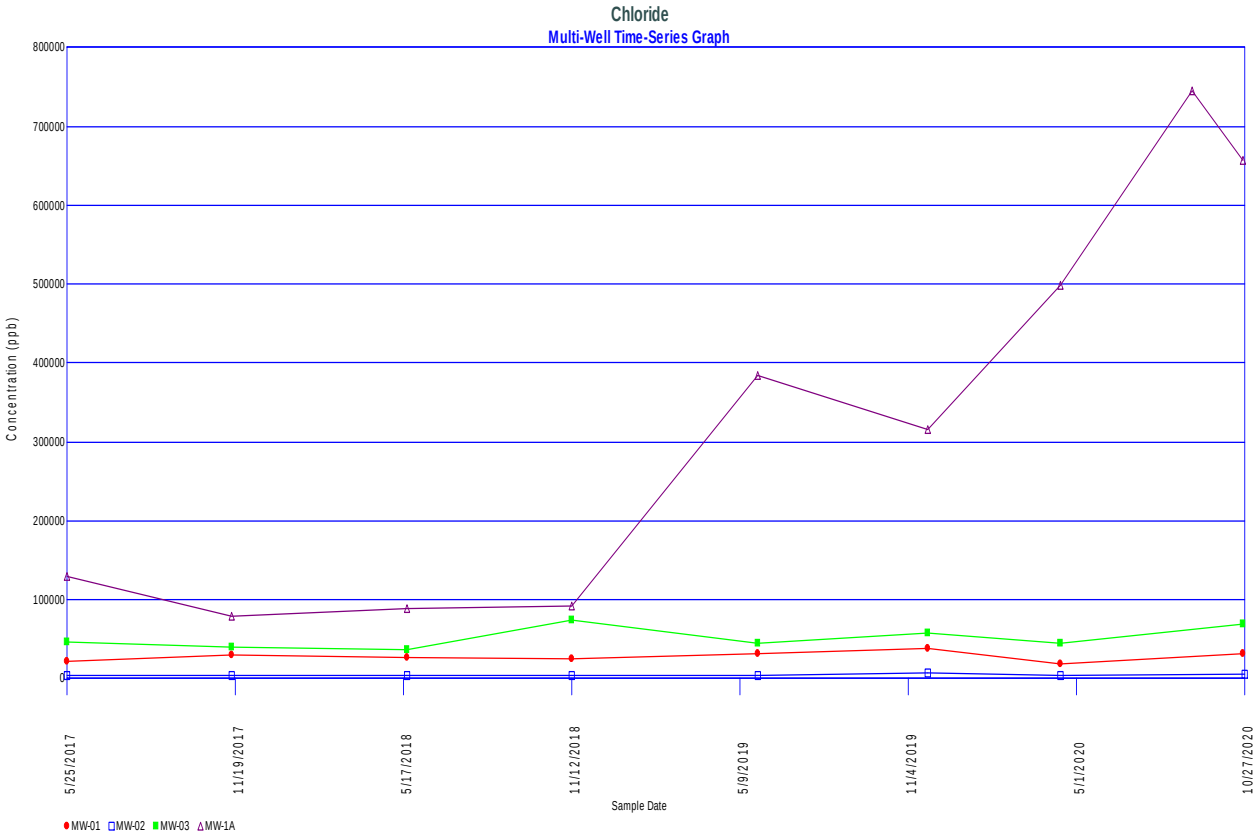

Sulfate
Multi-Well Time-Series Graph
40000
35000
30000
25000
20000
15000
10000
5000
0
Concentration (ppb)
5/25/2017
11/19/2017
5/17/2018
11/12/2018
5/9/2019
11/4/2019
5/1/2020
10/27/2020
Sample Date
MW-01
MW-02
MW-03
MW-1A

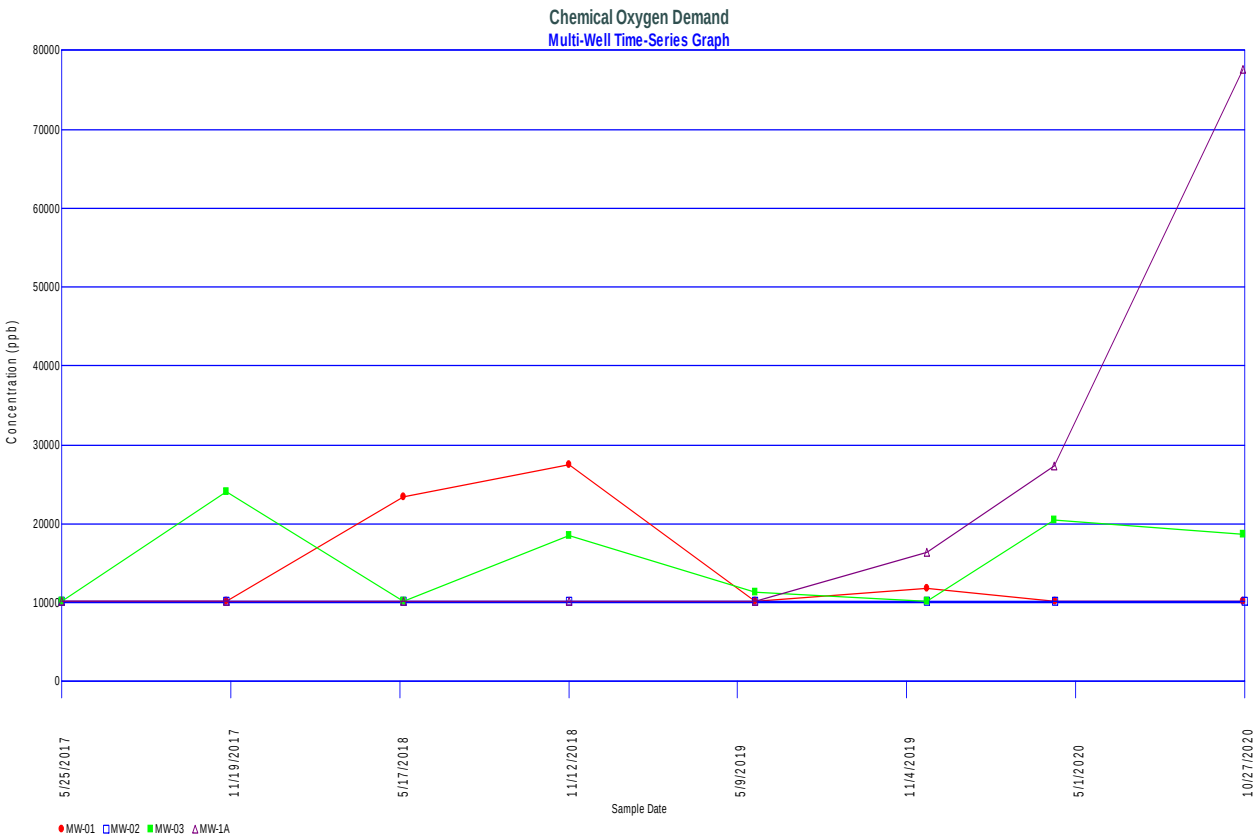

Thallium
Multi-Well Time-Series Graph
Concentration (ppb)
2
1.5
1
0.5
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

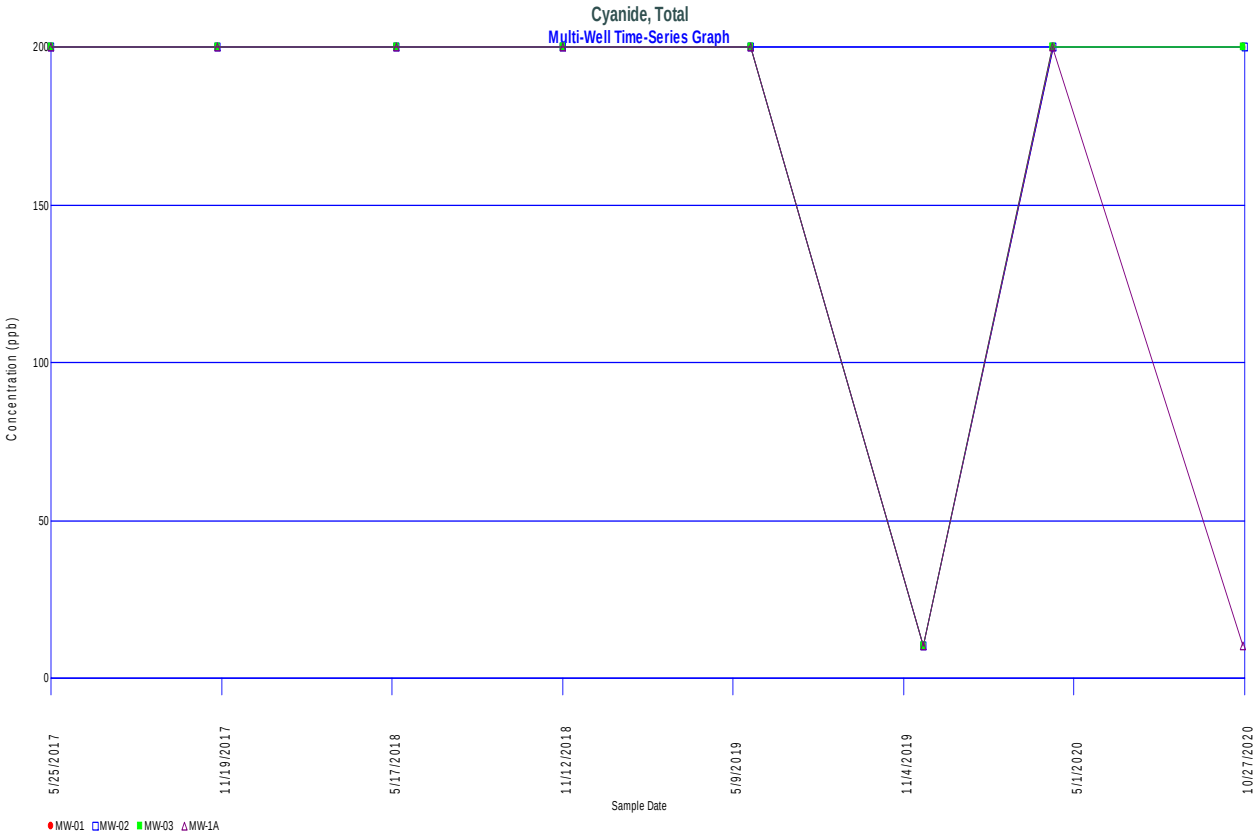

Vanadium
Multi-Well Time-Series Graph
Concentration (ppb)
50
40
30
20
10
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

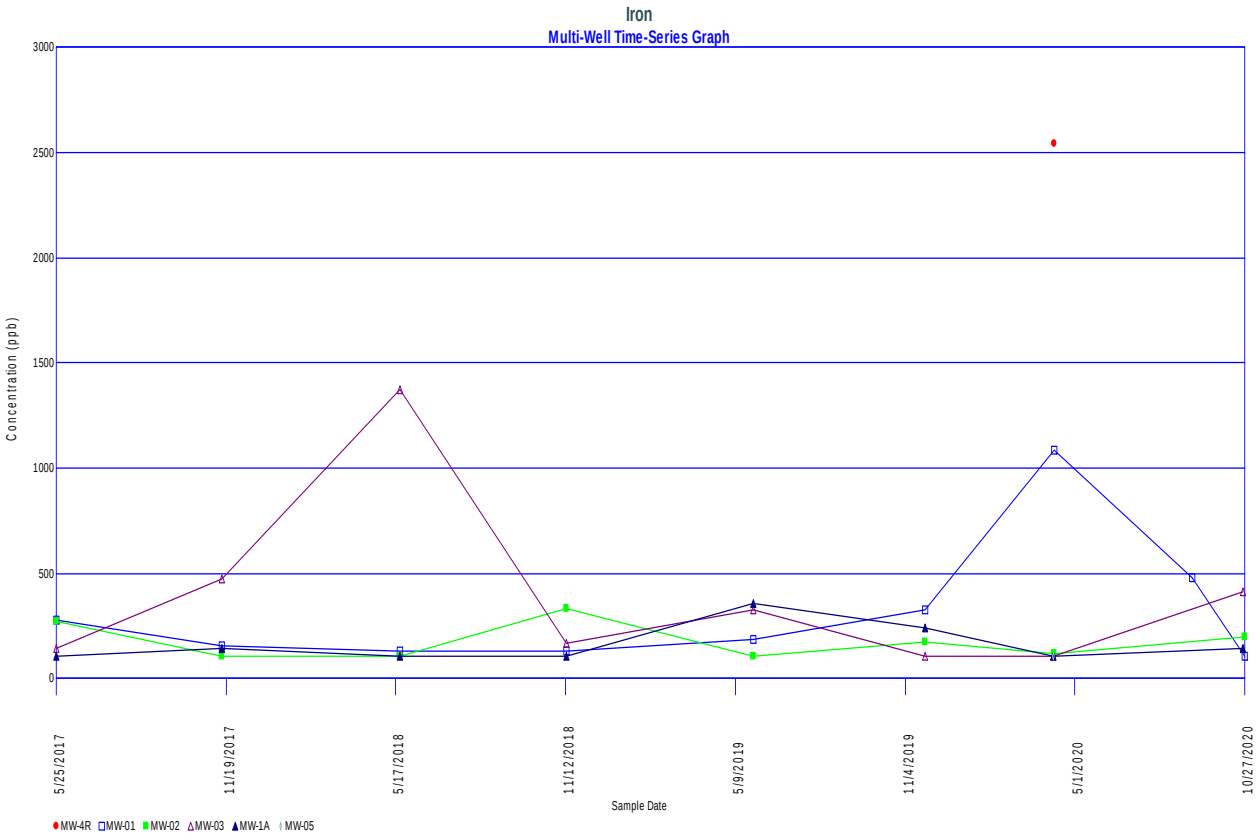

Zinc
Multi-Well Time-Series Graph
Concentration (ppb)
400
350
300
250
200
150
100
50
0
11/16/2017
4/18/2018
9/19/2018
2/20/2019
7/23/2019
12/24/2019
5/26/2020
10/27/2020
Sample Date
MW-4R
MW-02
MW-03
MW-05
MW-1A
MW-01

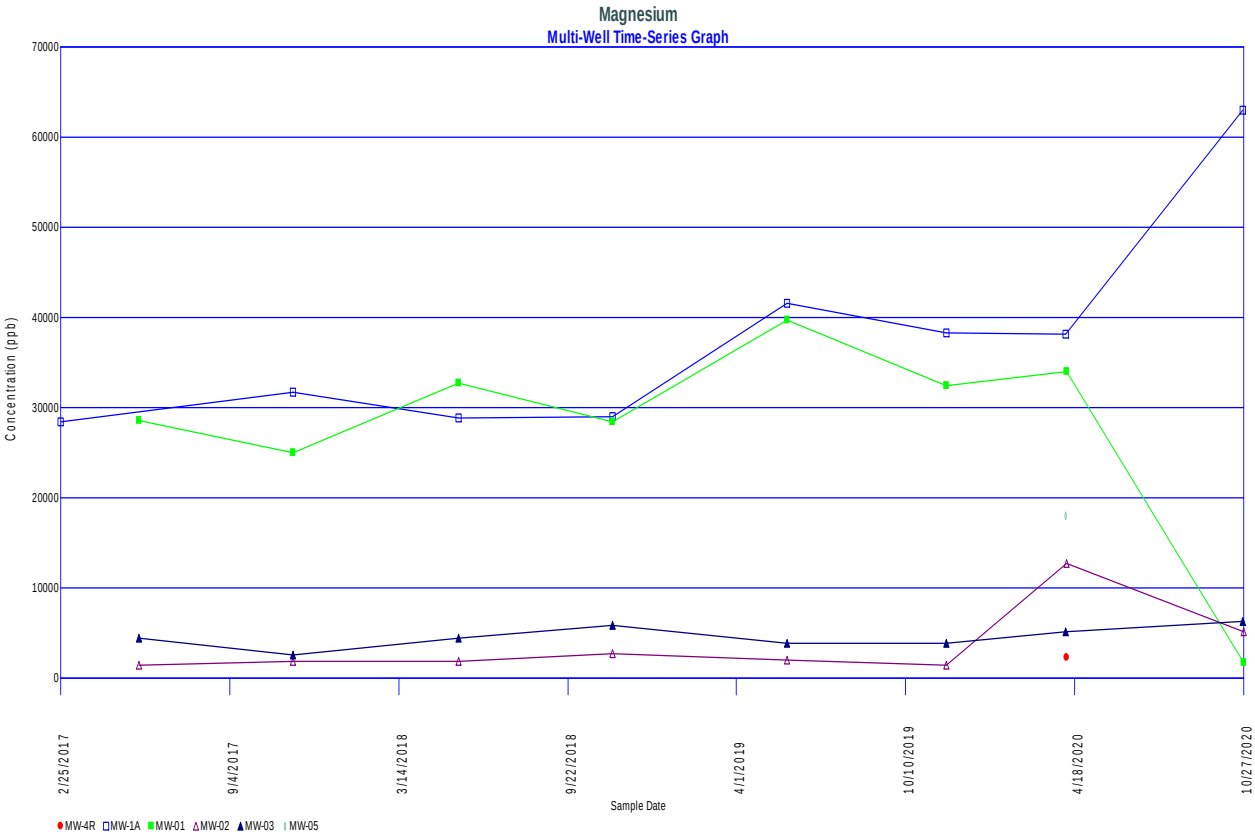

Calcium
Multi-Well Time-Series Graph
200000
150000
100000
50000
0
Concentration (ppb)
4/9/2020
5/7/2020
6/5/2020
7/4/2020
8/1/2020
8/30/2020
9/28/2020
10/27/2020
Sample Date
MW-4R
MW-03
MW-05
MW-1A
MW-01
MW-02

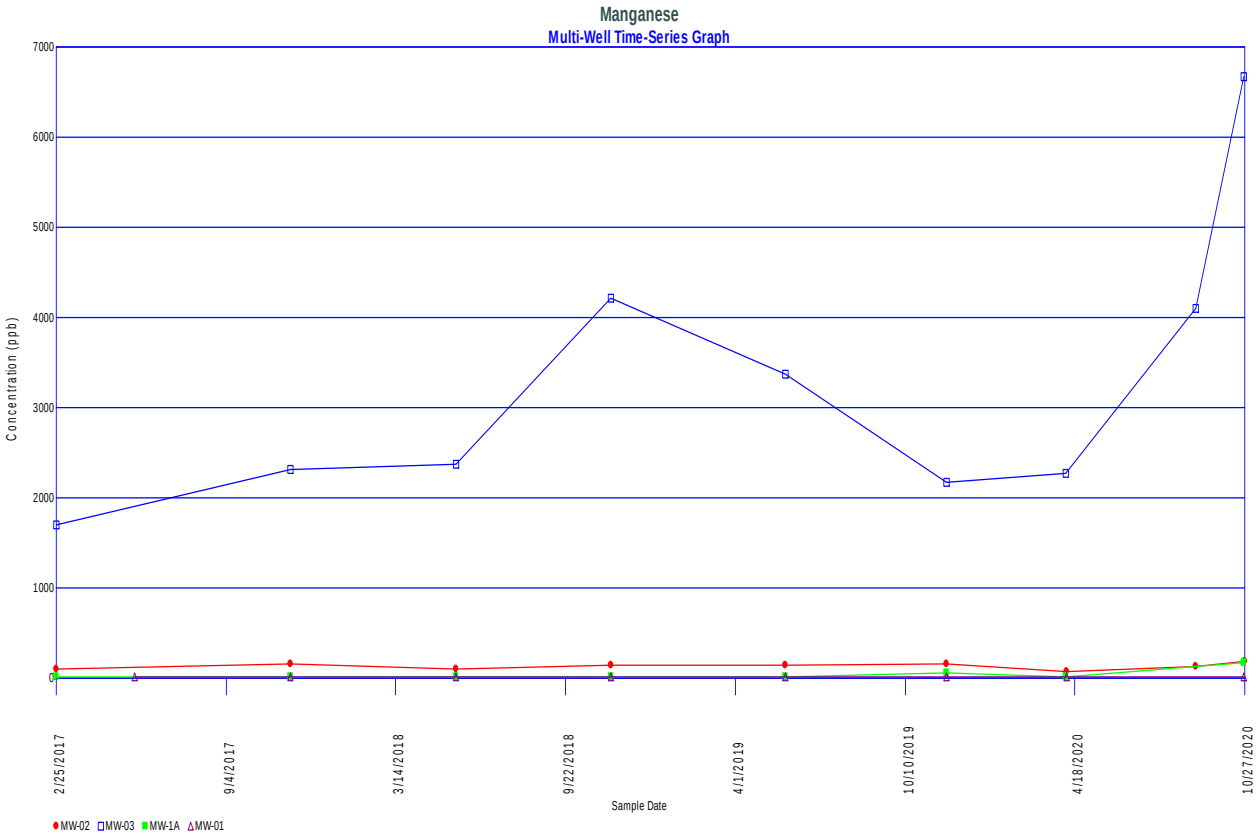

Chloride
Multi-Well Time-Series Graph
800000
700000
600000
500000
400000
300000
200000
100000
0
Concentration (ppb)
5/25/2017
11/19/2017
5/17/2018
11/12/2018
5/9/2019
11/4/2019
5/1/2020
10/27/2020
Sample Date
MW-01
MW-02
MW-03
MW-1A

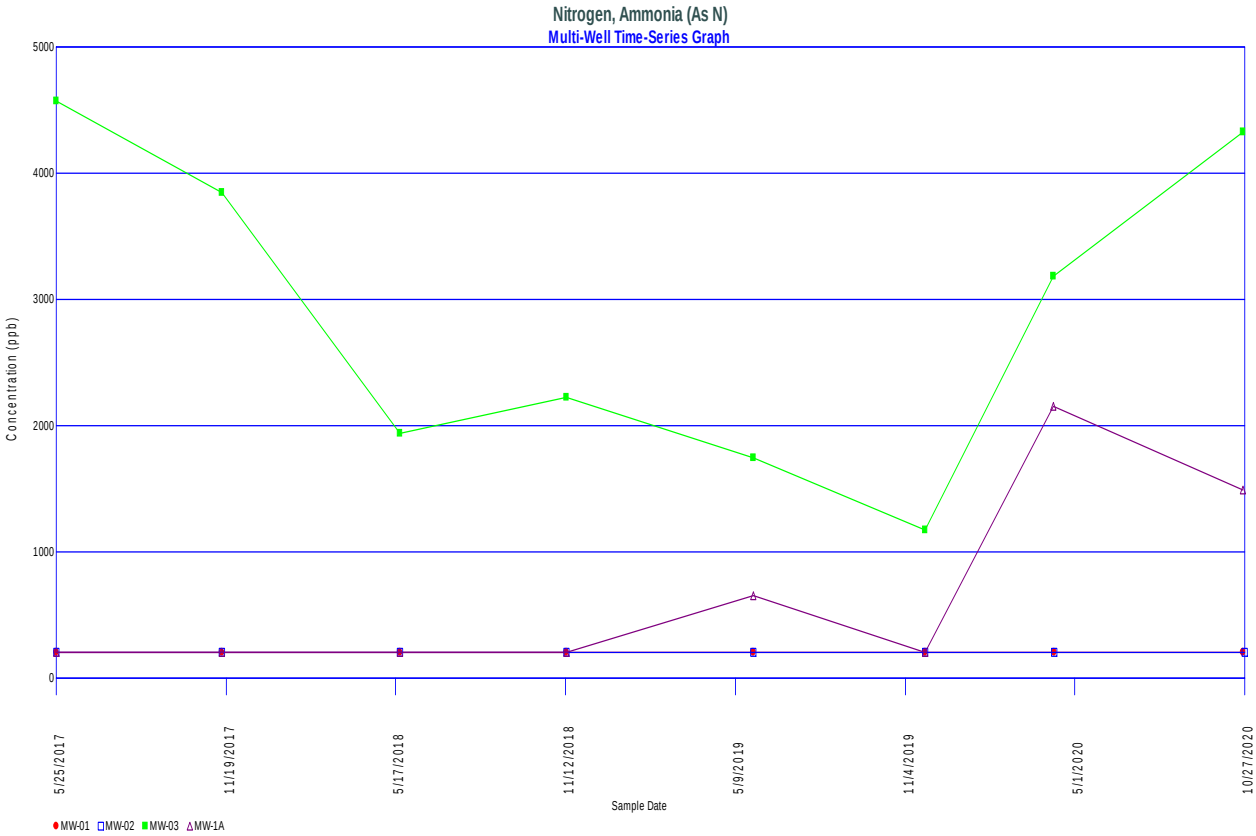

Chemical Oxygen Demand
Multi-Well Time-Series Graph
Concentration (ppb)
80000
70000
60000
50000
40000
30000
20000
10000
0
5/25/2017
11/19/2017
5/17/2018
11/12/2018
5/9/2019
11/4/2019
5/1/2020
10/27/2020
Sample Date
MW-01
MW-02
MW-03
MW-1A

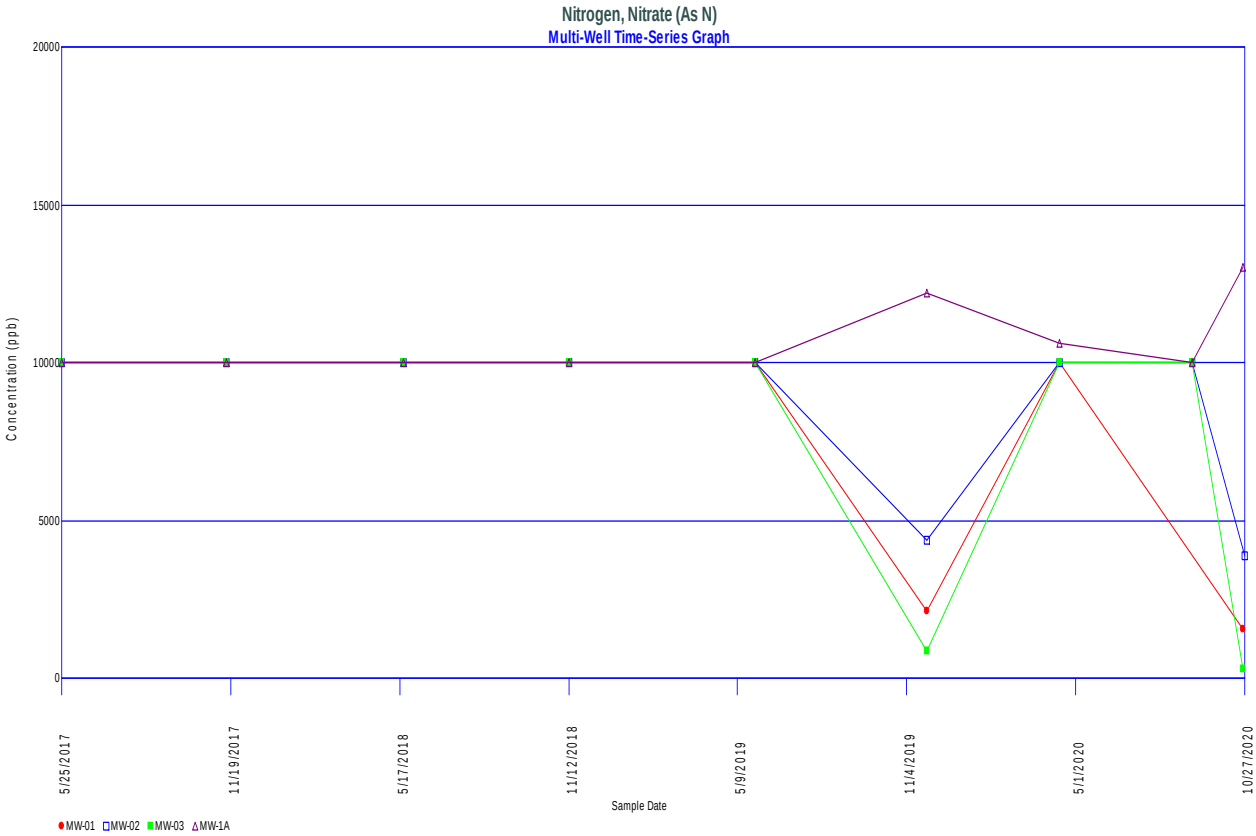

Cyanide, Total
Multi-Well Time-Series Graph
200
150
100
50
0
Concentration (ppb)
5/25/2017
11/19/2017
5/17/2018
11/12/2018
5/9/2019
11/4/2019
5/1/2020
10/27/2020
Sample Date
MW-01
MW-02
MW-03
MW-1A

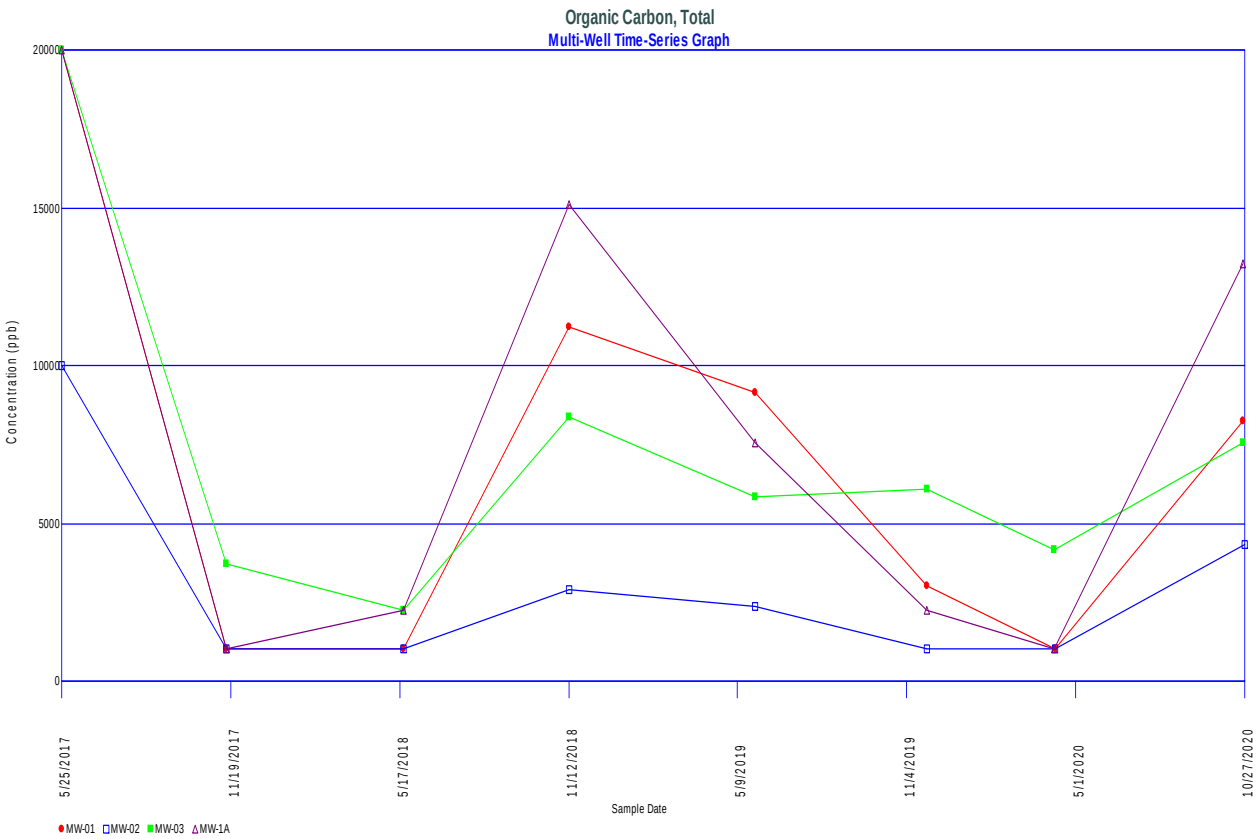

Iron
Multi-Well Time-Series Graph
3000
2500
2000
1500
1000
500
0
Concentration (ppb)
5/25/2017
11/19/2017
5/17/2018
11/12/2018
5/9/2019
11/4/2019
5/1/2020
10/27/2020
Sample Date
MW-4R
MW-01
MW-02
MW-03
MW-1A
MW-05

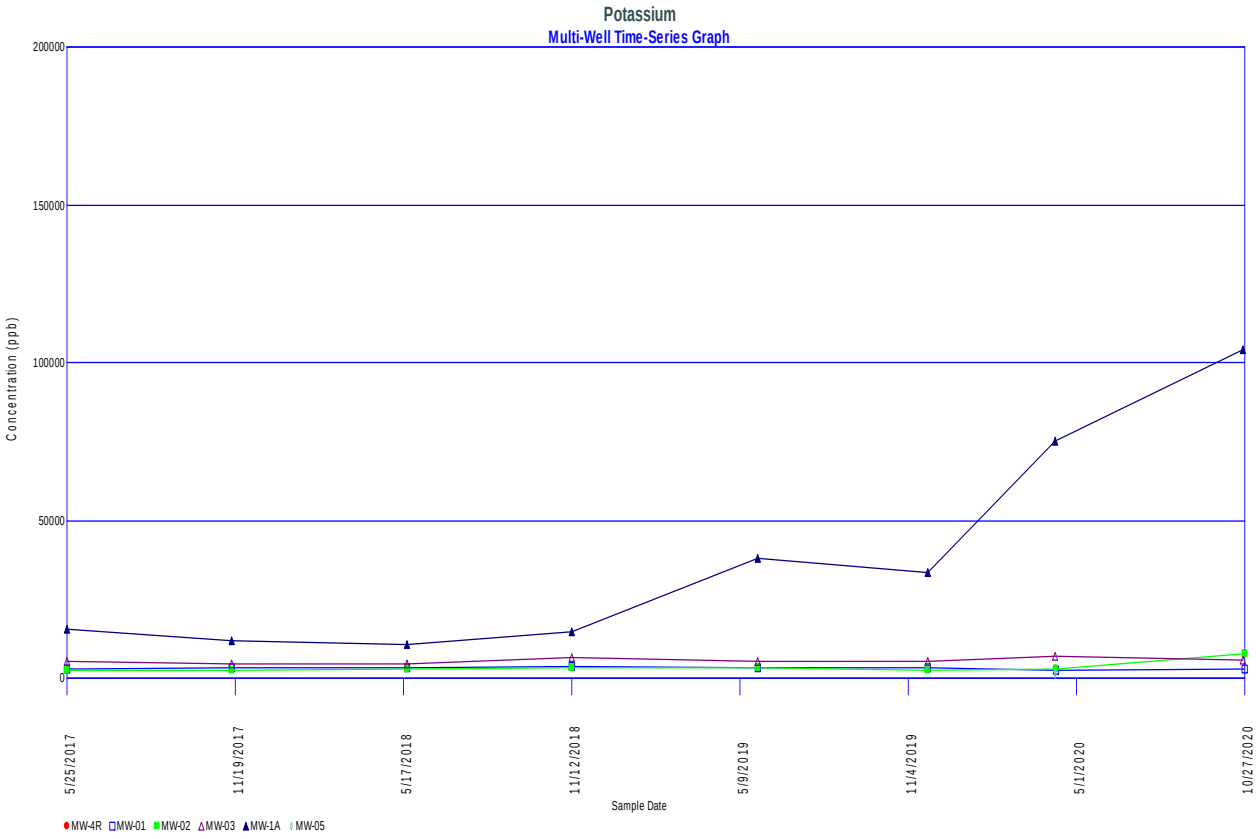

Magnesium
Multi-Well Time-Series Graph
Concentration (ppb)
70000
60000
50000
40000
30000
20000
10000
0
2/25/2017
9/4/2017
3/14/2018
9/22/2018
4/1/2019
10/10/2019
4/18/2020
10/27/2020
Sample Date
MW-4R
MW-1A
MW-01
MW-02
MW-03
MW-05

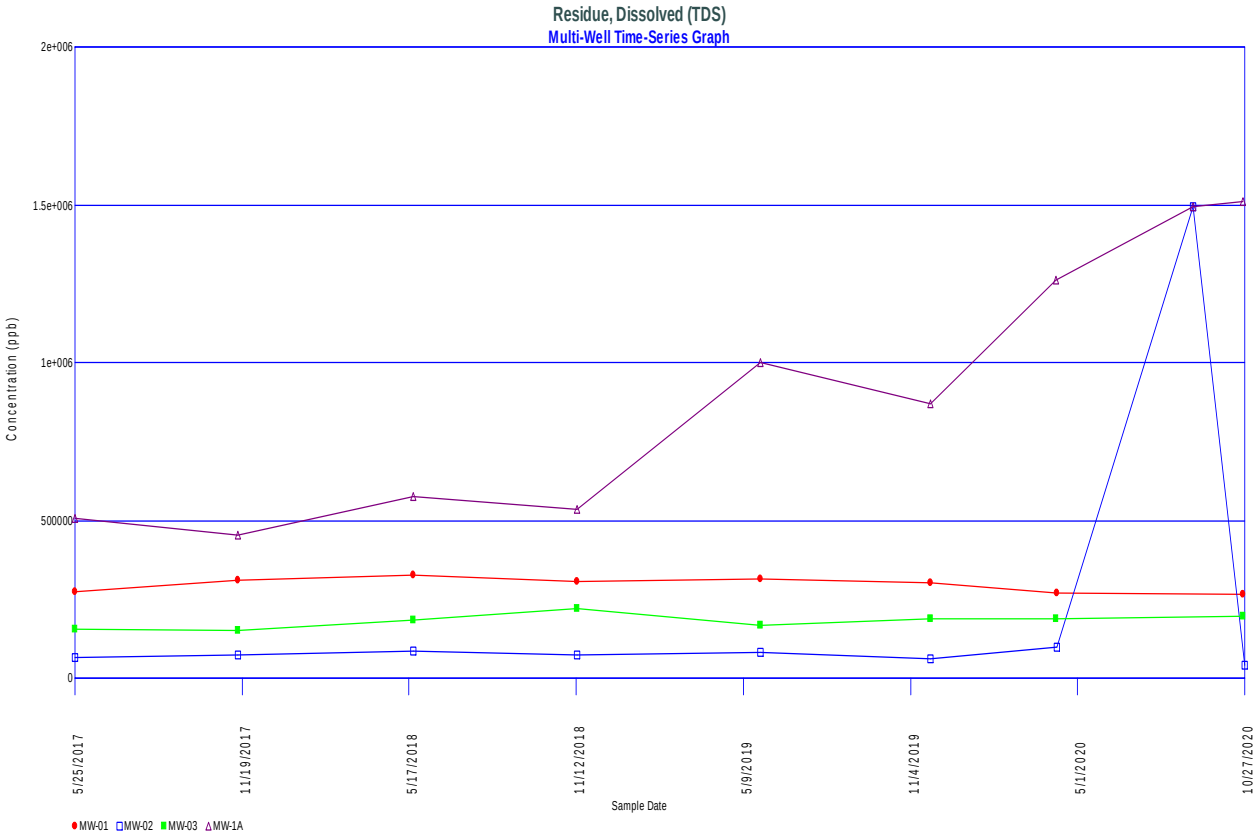

Manganese
Multi-Well Time-Series Graph
Concentration (ppb)
7000
6000
5000
4000
3000
2000
1000
0
2/25/2017
9/4/2017
3/14/2018
9/22/2018
4/1/2019
10/10/2019
4/18/2020
10/27/2020
Sample Date
MW-02
MW-03
MW-1A
MW-01


Nitrogen, Ammonia (As N)
Multi-Well Time-Series Graph
5000
4000
3000
2000
1000
0
Concentration (ppb)
5/25/2017
11/19/2017
5/17/2018
11/12/2018
5/9/2019
11/4/2019
5/1/2020
10/27/2020
Sample Date
MW-01
MW-02
MW-03
MW-1A


Nitrogen, Nitrate (As N)
Multi-Well Time-Series Graph
20000
15000
10000
5000
0
Concentration (ppb)
5/25/2017
11/19/2017
5/17/2018
11/12/2018
5/9/2019
11/4/2019
5/1/2020
10/27/2020
Sample Date
MW-01
MW-02
MW-03
MW-1A


Organic Carbon, Total
Multi-Well Time-Series Graph
20000
15000
10000
5000
0
Concentration (ppb)
5/25/2017
11/19/2017
5/17/2018
11/12/2018
5/9/2019
11/4/2019
5/1/2020
10/27/2020
Sample Date
MW-01
MW-02
MW-03
MW-1A


Potassium
Multi-Well Time-Series Graph
200000
150000
100000
50000
0
Concentration (ppb)
5/25/2017
11/19/2017
5/17/2018
11/12/2018
5/9/2019
11/4/2019
5/1/2020
10/27/2020
Sample Date
MW-4R
MW-01
MW-02
MW-03
MW-1A
MW-05


Residue, Dissolved (TDS)
Multi-Well Time-Series Graph
2e+006
1.5e+006
1e+006
500000
0
Concentration (ppb)
5/25/2017
11/19/2017
5/17/2018
11/12/2018
5/9/2019
11/4/2019
5/1/2020
10/27/2020
Sample Date
MW-01
MW-02
MW-03
MW-1A

ATTACHMENT B

Dixon's Outlier Results

ATTACHMENT B

Dixon's Test for Outliers

Parameter: Barium

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.809524	0.310345	0.554	50.4
2	0.0344828	0.310345	0.507	None

Loc.	Date	Conc.	Outlier
MW-01	11/17/2017	33	FALSE
	3/26/2018	30.6	FALSE
	5/7/2018	29.8	FALSE
	5/23/2018	29.4	FALSE
	11/14/2018	**50.4**	**TRUE**
	5/30/2019	33.4	FALSE
	11/26/2019	33.2	FALSE
	4/10/2020	27.6	FALSE

Dixon's Test for Outliers

Parameter: Barium

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.329606	0.148729	0.554	None

Loc.	Date	Conc.	Outlier
MW-1A	11/16/2017	87.1	FALSE
	3/7/2018	67.2	FALSE
	5/3/2018	104	FALSE
	5/23/2018	104	FALSE
	11/14/2018	99.5	FALSE
	5/29/2019	201	FALSE
	11/26/2019	181	FALSE
	4/9/2020	257	FALSE

Dixon's Test for Outliers

Parameter: Barium

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.149477	0.0164218	0.554	None

Loc.	Date	Conc.	Outlier
MW-02	11/16/2017	87.1	FALSE
	3/7/2018	67.2	FALSE
	5/3/2018	104	FALSE
	5/23/2018	69.3	FALSE
	11/14/2018	99.5	FALSE
	5/29/2019	201	FALSE
	11/26/2019	181	FALSE
	4/10/2020	65.3	FALSE

Dixon's Test for Outliers

Parameter: Barium

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.453001	0.154116	0.554	None

Loc.	Date	Conc.	Outlier
MW-03	11/16/2017	62.7	FALSE
	3/26/2018	53.7	FALSE
	5/7/2018	79.8	FALSE
	5/23/2018	102	FALSE
	11/13/2018	142	FALSE
	5/29/2019	81.5	FALSE
	11/26/2019	44.9	FALSE
	4/9/2020	81.5	FALSE

Dixon's Test for Outliers

Parameter: Barium

Location: MW-05

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.861728	0	0.554	172
2	0.915179	0	0.507	32.4
3	0.684211	0	0.56	11.9
4	0.166667	0	0.642	None

Loc.	Date	Conc.	Outlier
MW-05	11/16/2017	ND<10	FALSE
	3/7/2018	ND<10	FALSE
	5/3/2018	**11.9**	**TRUE**
	5/22/2018	10.2	FALSE
	11/13/2018	10.6	FALSE
	5/29/2019	10.5	FALSE
	11/26/2019	**172**	**TRUE**
	4/9/2020	**32.4**	**TRUE**

Dixon's Test for Outliers

Parameter: Copper

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0	0	0.554	None

Loc.	Date	Conc.	Outlier
MW-1A	11/16/2017	ND<2	FALSE
	3/7/2018	ND<2	FALSE
	5/3/2018	2.2	FALSE
	5/23/2018	2.2	FALSE
	11/14/2018	ND<2	FALSE
	5/29/2019	ND<2	FALSE
	11/26/2019	ND<2	FALSE
	4/9/2020	ND<2	FALSE

Dixon's Test for Outliers

Parameter: Copper

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.403125	0	0.554	None

Loc.	Date	Conc.	Outlier
MW-03	11/16/2017	5.2	FALSE
	3/26/2018	3.91	FALSE
	5/7/2018	3.21	FALSE
	5/23/2018	3.35	FALSE
	11/13/2018	2.09	FALSE
	5/29/2019	2.36	FALSE
	11/26/2019	ND<2	FALSE
	4/9/2020	ND<2	FALSE

Dixon's Test for Outliers

Parameter: Lead

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0	0	0.554	None

Loc.	Date	Conc.	Outlier
MW-1A	11/16/2017	ND<1	FALSE
	3/7/2018	ND<1	FALSE
	5/3/2018	1.39	FALSE
	5/23/2018	1.39	FALSE
	11/14/2018	ND<1	FALSE
	5/29/2019	ND<1	FALSE
	11/26/2019	ND<1	FALSE
	4/9/2020	ND<1	FALSE

Dixon's Test for Outliers

Parameter: Lead

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.657895	0	0.554	2.14
2	0.179487	0	0.507	None

Loc.	Date	Conc.	Outlier
MW-03	11/16/2017	1.39	FALSE
	3/26/2018	ND<1	FALSE
	5/7/2018	ND<1	FALSE
	5/23/2018	**2.14**	**TRUE**
	11/13/2018	ND<1	FALSE
	5/29/2019	1.32	FALSE
	11/26/2019	ND<1	FALSE
	4/9/2020	ND<1	FALSE

Dixon's Test for Outliers

Parameter: Cobalt

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.402878	0	0.554	None

Loc.	Date	Conc.	Outlier
MW-03	11/16/2017	9.74	FALSE
	3/26/2018	ND<5	FALSE
	5/7/2018	10.3	FALSE
	5/23/2018	13.3	FALSE
	11/13/2018	18.9	FALSE
	5/29/2019	11.7	FALSE
	11/26/2019	ND<5	FALSE
	4/9/2020	10.7	FALSE

Dixon's Test for Outliers

Parameter: Nickel

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.210526	0.454545	0.554	None

Loc.	Date	Conc.	Outlier
MW-03	11/16/2017	7.5	FALSE
	3/26/2018	7.51	FALSE
	5/7/2018	8.75	FALSE
	5/23/2018	10.5	FALSE
	11/13/2018	11.3	FALSE
	5/29/2019	9.23	FALSE
	11/26/2019	ND<5	FALSE
	4/9/2020	9.51	FALSE

Dixon's Test for Outliers

Parameter: Zinc

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.0576923	0	0.554	None

Loc.	Date	Conc.	Outlier
MW-1A	11/16/2017	ND<10	FALSE
	3/7/2018	14.3	FALSE
	5/3/2018	14.9	FALSE
	5/23/2018	14.9	FALSE
	11/14/2018	14	FALSE
	5/29/2019	12.4	FALSE
	11/26/2019	15.2	FALSE
	4/9/2020	ND<10	FALSE

Dixon's Test for Outliers

Parameter: Zinc

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.981408	0.461538	0.554	163
2	0.0576923	0.461538	0.507	None

Loc.	Date	Conc.	Outlier
MW-02	11/16/2017	ND<10	FALSE
	3/7/2018	14.3	FALSE
	5/3/2018	14.9	FALSE
	5/23/2018	12.5	FALSE
	11/14/2018	14	FALSE
	5/29/2019	12.4	FALSE
	11/26/2019	15.2	FALSE
	4/10/2020	**163**	**TRUE**

Dixon's Test for Outliers

Parameter: Zinc

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.697802	0	0.554	28.2
2	0.0363636	0	0.507	None

Loc.	Date	Conc.	Outlier
MW-03	11/16/2017	11.9	FALSE
	3/26/2018	**28.2**	**TRUE**
	5/7/2018	10	FALSE
	5/23/2018	15.5	FALSE
	11/13/2018	13.2	FALSE
	5/29/2019	12.2	FALSE
	11/26/2019	15.3	FALSE
	4/9/2020	ND<10	FALSE

Dixon's Test for Outliers

Parameter: Zinc

Location: MW-05

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

For 8 Measurements...
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.181818	0	0.554	None

Loc.	Date	Conc.	Outlier
MW-05	11/16/2017	ND<10	FALSE
	3/7/2018	10.3	FALSE
	5/3/2018	ND<10	FALSE
	5/22/2018	11.7	FALSE
	11/13/2018	11.8	FALSE
	5/29/2019	12.2	FALSE
	11/26/2019	ND<10	FALSE
	4/9/2020	ND<10	FALSE

ATTACHMENT C

Statistical Analysis

ATTACHMENT C

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Antimony

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 2
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<1.5
	3/26/2018	ND<2
	5/7/2018	ND<2
	5/23/2018	ND<2
	11/14/2018	ND<2
	5/30/2019	ND<2
	11/26/2019	ND<2
	4/10/2020	ND<1.5

Date	Count	Mean	Significant
10/27/2020	1	1.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Antimony

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1.5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1.5
	3/7/2018	ND<1.5
	5/3/2018	ND<1.5
	5/23/2018	ND<1.5
	11/14/2018	ND<1.5
	5/29/2019	ND<1.5
	11/26/2019	ND<1.5
	4/10/2020	ND<1.5

Date	Count	Mean	Significant
10/27/2020	1	1.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-03

Parameter: Antimony

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1.5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1.5
	3/26/2018	ND<1.5
	5/7/2018	ND<1.5
	5/23/2018	ND<1.5
	11/13/2018	ND<1.5
	5/29/2019	ND<1.5
	11/26/2019	ND<1.5
	4/9/2020	ND<1.5

Date	Count	Mean	Significant
10/26/2020	1	1.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Antimony

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 6
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1.5
	3/7/2018	ND<1.5
	5/3/2018	ND<1.5
	5/22/2018	ND<1.5
	11/13/2018	ND<1.5
	5/29/2019	ND<1.5
	11/26/2019	ND<6
	4/9/2020	ND<1.5

Date	Count	Mean	Significant
10/26/2020	1	1.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Antimony

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1.5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1.5
	3/7/2018	ND<1.5
	5/3/2018	ND<1.5
	5/23/2018	ND<1.5
	11/14/2018	ND<1.5
	5/29/2019	ND<1.5
	11/26/2019	ND<1.5
	4/9/2020	ND<1.5

Date	Count	Mean	Significant
10/26/2020	1	1.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 3
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<3
	3/26/2018	ND<3
	5/7/2018	ND<2.5
	5/23/2018	ND<3
	11/14/2018	ND<3
	5/30/2019	ND<3
	11/26/2019	ND<3
	4/10/2020	ND<2.5

Date	Count	Mean	Significant
10/27/2020	1	2.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 2.5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<2.5
	3/7/2018	ND<2.5
	5/3/2018	ND<2.5
	5/23/2018	ND<2.5
	11/14/2018	ND<2.5
	5/29/2019	ND<2.5
	11/26/2019	ND<2.5
	4/10/2020	ND<2.5

Date	Count	Mean	Significant
10/27/2020	1	2.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-03

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 2.5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<2.5
	3/26/2018	ND<2.5
	5/7/2018	ND<2.5
	5/23/2018	ND<2.5
	11/13/2018	ND<2.5
	5/29/2019	ND<2.5
	11/26/2019	ND<2.5
	4/9/2020	ND<2.5

Date	Count	Mean	Significant
10/26/2020	**1**	**2.96**	**TRUE**

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 10
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<2.5
	3/7/2018	ND<2.5
	5/3/2018	ND<2.5
	5/22/2018	ND<2.5
	11/13/2018	ND<2.5
	5/29/2019	ND<2.5
	11/26/2019	ND<10
	4/9/2020	ND<2.5

Date	Count	Mean	Significant
10/26/2020	1	2.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Arsenic

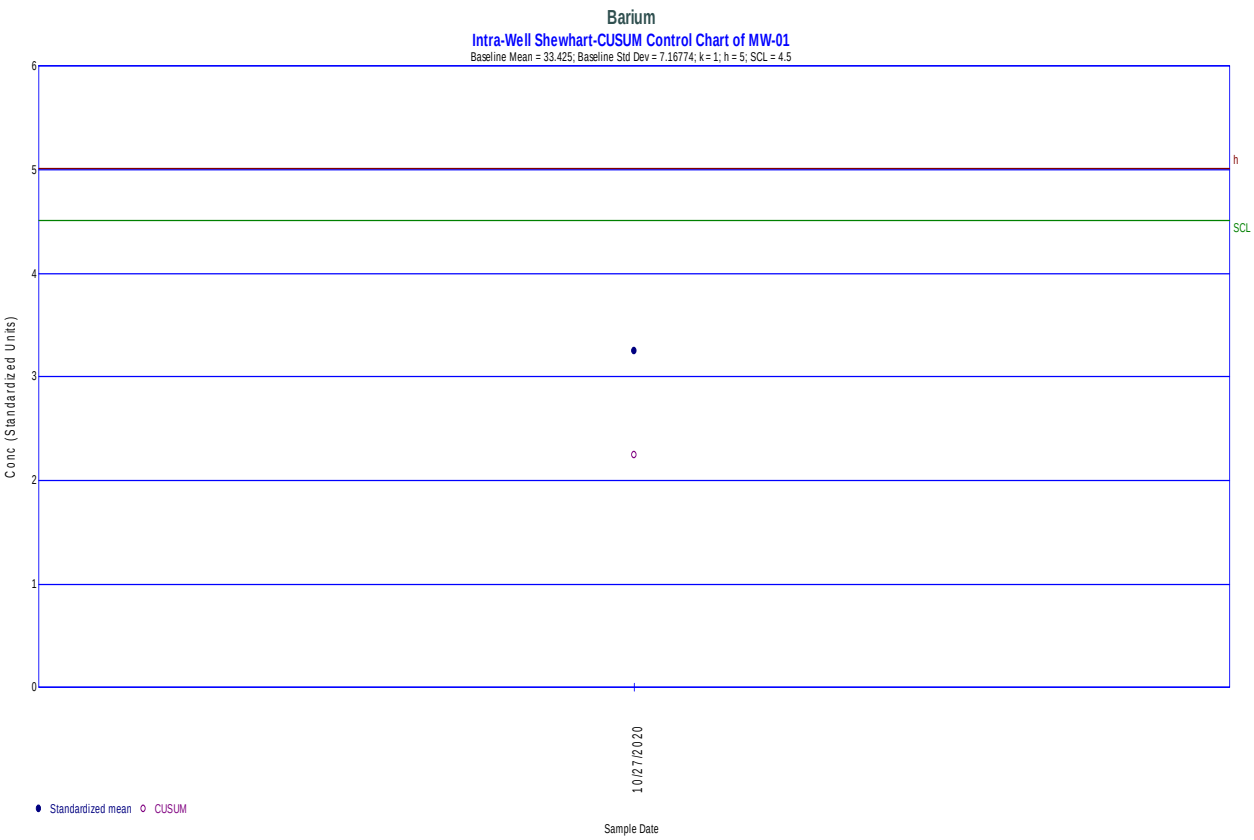
Original Data (Not Transformed)

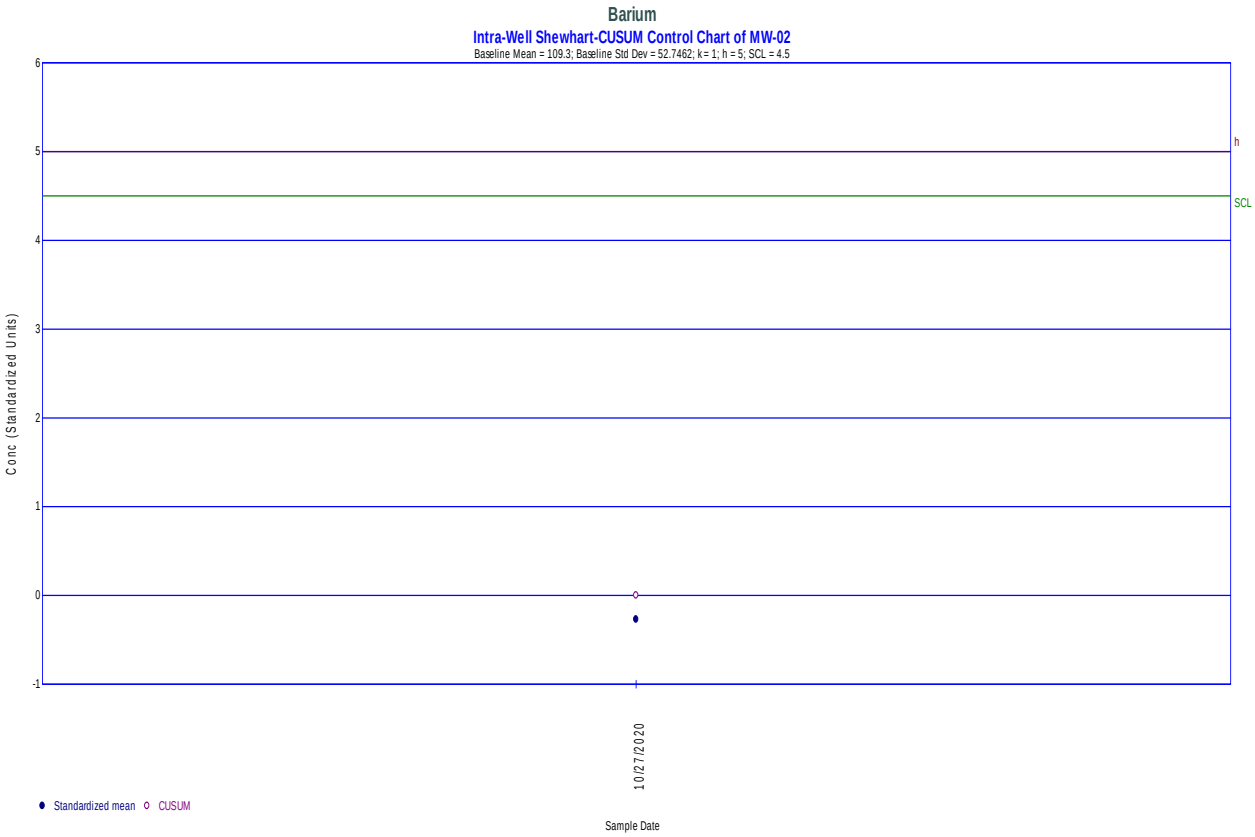
Non-Detects Replaced with Detection Limit

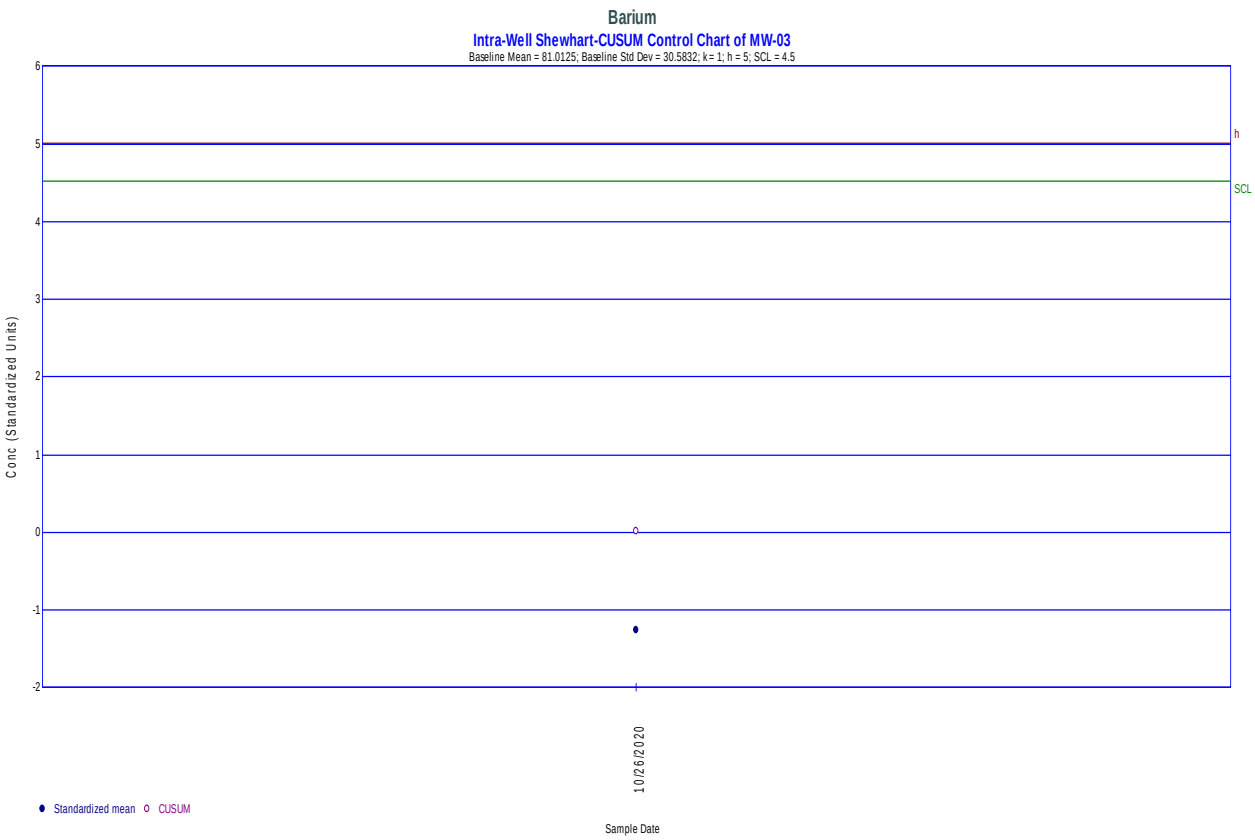
Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 2.5
Confidence Level = 88.9%
False Positive Rate = 11.1%

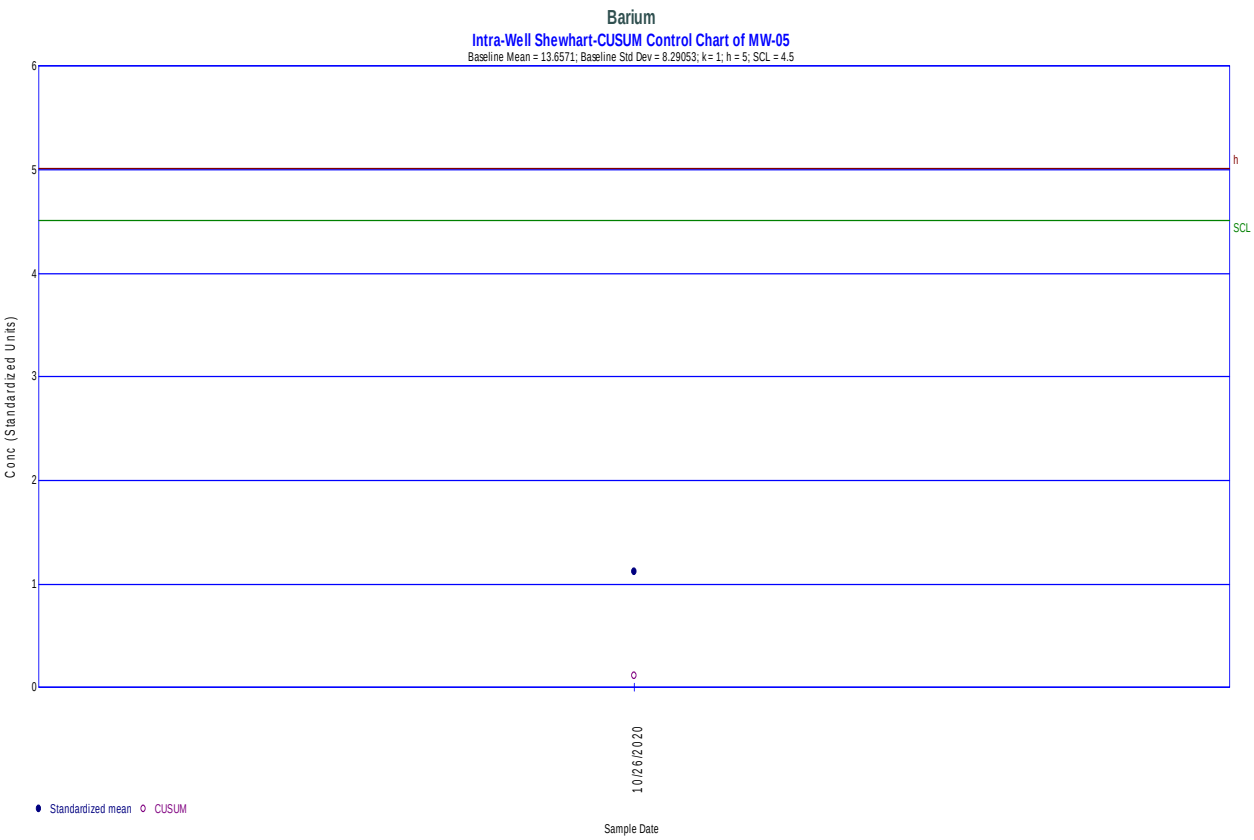
Baseline Measurements	Date	Value
	11/16/2017	ND<2.5
	3/7/2018	ND<2.5
	5/3/2018	ND<2.5
	5/23/2018	ND<2.5
	11/14/2018	ND<2.5
	5/29/2019	ND<2.5
	11/26/2019	ND<2.5
	4/9/2020	ND<2.5

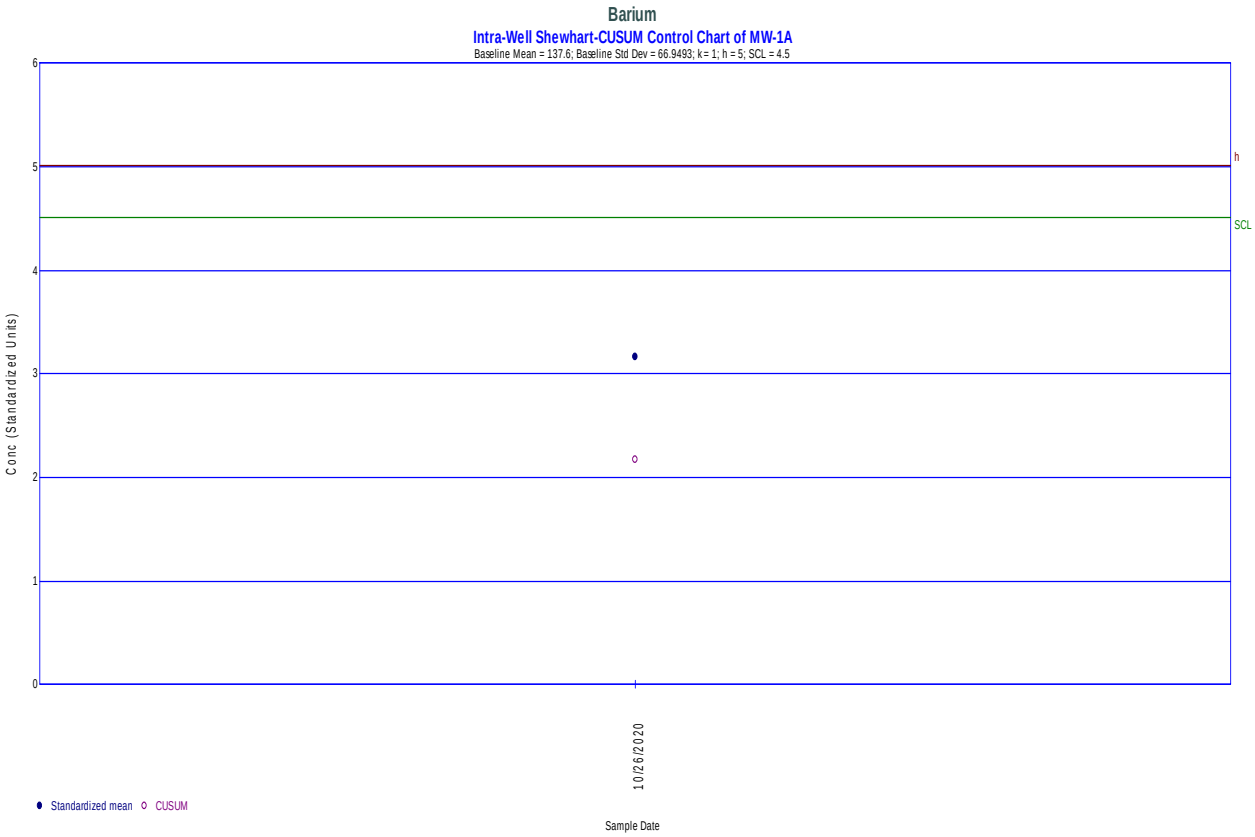
Date	Count	Mean	Significant
10/26/2020	1	2.5	FALSE


Barium
Intra-Well Shewhart-CUSUM Control Chart of MW-01
Baseline Mean = 33.425; Baseline Std Dev = 7.16774; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
6
5
4
3
2
1
0
h
SCL
10/27/2020
Standardized mean
CUSUM
Sample Date


Barium
Intra-Well Shewhart-CUSUM Control Chart of MW-02
Baseline Mean = 109.3; Baseline Std Dev = 52.7462; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
6
5
4
3
2
1
0
-1
h
SCL
10/27/2020
Standardized mean
CUSUM
Sample Date


Barium
Intra-Well Shewhart-CUSUM Control Chart of MW-03
Baseline Mean = 81.0125; Baseline Std Dev = 30.5832; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
6
5
4
3
2
1
0
-1
-2
h
SCL
10/26/2020
Standardized mean
CUSUM
Sample Date


Barium
Intra-Well Shewhart-CUSUM Control Chart of MW-05
Baseline Mean = 13.6571; Baseline Std Dev = 8.29053; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
6
5
4
3
2
1
0
h
SCL
10/26/2020
Standardized mean
CUSUM
Sample Date


Barium
Intra-Well Shewhart-CUSUM Control Chart of MW-1A
Baseline Mean = 137.6; Baseline Std Dev = 66.9493; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
6
5
4
3
2
1
0
h
SCL
10/26/2020
Standardized mean
CUSUM
Sample Date

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Beryllium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<1
	3/26/2018	ND<1
	5/7/2018	ND<1
	5/23/2018	ND<1
	11/14/2018	ND<1
	5/30/2019	ND<1
	11/26/2019	ND<1
	4/10/2020	ND<1

Date	Count	Mean	Significant
10/27/2020	**1**	**2.5**	**TRUE**

Note: Result is non-detect and therefore not an SSI. False positive result caused by higher than typical reporting limit due to laboratory dilution of sample.

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Beryllium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1
	3/7/2018	ND<1
	5/3/2018	ND<1
	5/23/2018	ND<1
	11/14/2018	ND<1
	5/29/2019	ND<1
	11/26/2019	ND<1
	4/10/2020	ND<1

Date	Count	Mean	Significant
10/27/2020	1	1	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-03

Parameter: Beryllium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1
	3/26/2018	ND<1
	5/7/2018	ND<1
	5/23/2018	ND<1
	11/13/2018	ND<1
	5/29/2019	ND<1
	11/26/2019	ND<1
	4/9/2020	ND<1

Date	Count	Mean	Significant
10/26/2020	1	1	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Beryllium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 4
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1
	3/7/2018	ND<1
	5/3/2018	ND<1
	5/22/2018	ND<1
	11/13/2018	ND<1
	5/29/2019	ND<1
	11/26/2019	ND<4
	4/9/2020	ND<1

Date	Count	Mean	Significant
10/26/2020	1	1	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Beryllium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1
	3/7/2018	ND<1
	5/3/2018	ND<1
	5/23/2018	ND<1
	11/14/2018	ND<1
	5/29/2019	ND<1
	11/26/2019	ND<1
	4/9/2020	ND<1

Date	Count	Mean	Significant
10/26/2020	1	1	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<1
	3/26/2018	ND<1
	5/7/2018	ND<1
	5/23/2018	ND<1
	11/14/2018	ND<1
	5/30/2019	ND<1
	11/26/2019	ND<1
	4/10/2020	ND<0.7

Date	Count	Mean	Significant
10/27/2020	1	1.92	TRUE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.5%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 0.938
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.7
	3/7/2018	ND<0.7
	5/3/2018	ND<0.7
	5/23/2018	ND<0.7
	11/14/2018	ND<0.7
	5/29/2019	ND<0.7
	11/26/2019	ND<0.7
	4/10/2020	0.938

Date	Count	Mean	Significant
10/27/2020	1	0.7	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-03

Parameter: Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 0.7
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.7
	3/26/2018	ND<0.7
	5/7/2018	ND<0.7
	5/23/2018	ND<0.7
	11/13/2018	ND<0.7
	5/29/2019	ND<0.7
	11/26/2019	ND<0.7
	4/9/2020	ND<0.7

Date	Count	Mean	Significant
10/26/2020	1	0.7	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.7
	3/7/2018	ND<0.7
	5/3/2018	ND<0.7
	5/22/2018	ND<0.7
	11/13/2018	ND<0.7
	5/29/2019	ND<0.7
	11/26/2019	ND<5
	4/9/2020	ND<0.7

Date	Count	Mean	Significant
10/26/2020	1	0.7	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 0.7
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.7
	3/7/2018	ND<0.7
	5/3/2018	ND<0.7
	5/23/2018	ND<0.7
	11/14/2018	ND<0.7
	5/29/2019	ND<0.7
	11/26/2019	ND<0.7
	4/9/2020	ND<0.7

Date	Count	Mean	Significant
10/26/2020	1	0.7	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<5
	3/26/2018	ND<5
	5/7/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/30/2019	ND<5
	11/26/2019	ND<5
	4/10/2020	ND<5

Date	Count	Mean	Significant
10/27/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.5%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/10/2020	ND<5

Date	Count	Mean	Significant
10/27/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-03

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/26/2018	ND<5
	5/7/2018	ND<5
	5/23/2018	ND<5
	11/13/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 20
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/22/2018	ND<5
	11/13/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<20
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Cobalt

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<5
	3/26/2018	ND<5
	5/7/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/30/2019	ND<5
	11/26/2019	ND<5
	4/10/2020	ND<5

Date	Count	Mean	Significant
10/27/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Cobalt

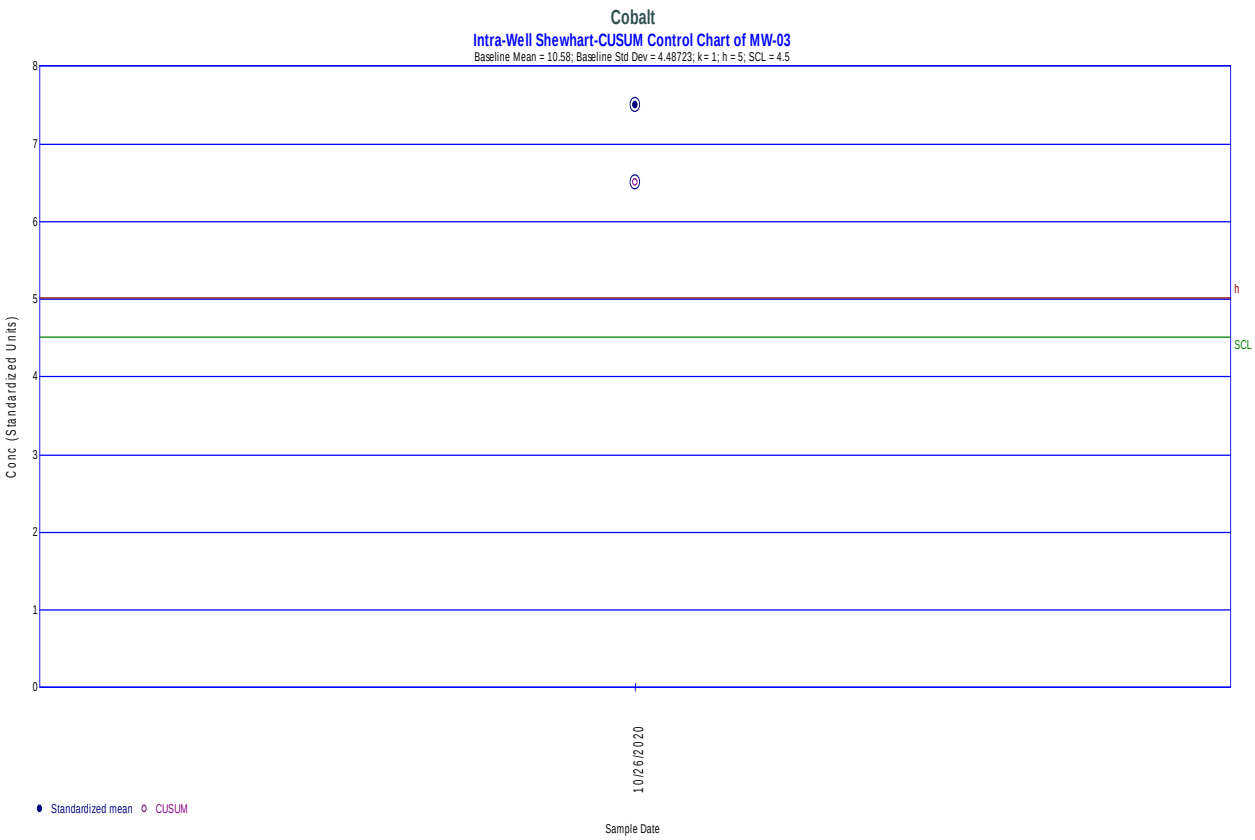
Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/10/2020	ND<5

Date	Count	Mean	Significant
10/27/2020	1	63.5	TRUE


Cobalt
Intra-Well Shewhart-CUSUM Control Chart of MW-03
Baseline Mean = 10.58; Baseline Std Dev = 4.48723; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
8
7
6
5
4
3
2
1
0
h
SCL
10/26/2020
Standardized mean
CUSUM
Sample Date

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Cobalt

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 50
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/22/2018	ND<5
	11/13/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<50
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Cobalt

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 2
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<2
	3/26/2018	ND<2
	5/7/2018	ND<2
	5/23/2018	ND<2
	11/14/2018	ND<2
	5/30/2019	ND<2
	11/26/2019	ND<2
	4/10/2020	ND<2

Date	Count	Mean	Significant
10/27/2020	1	2	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Copper

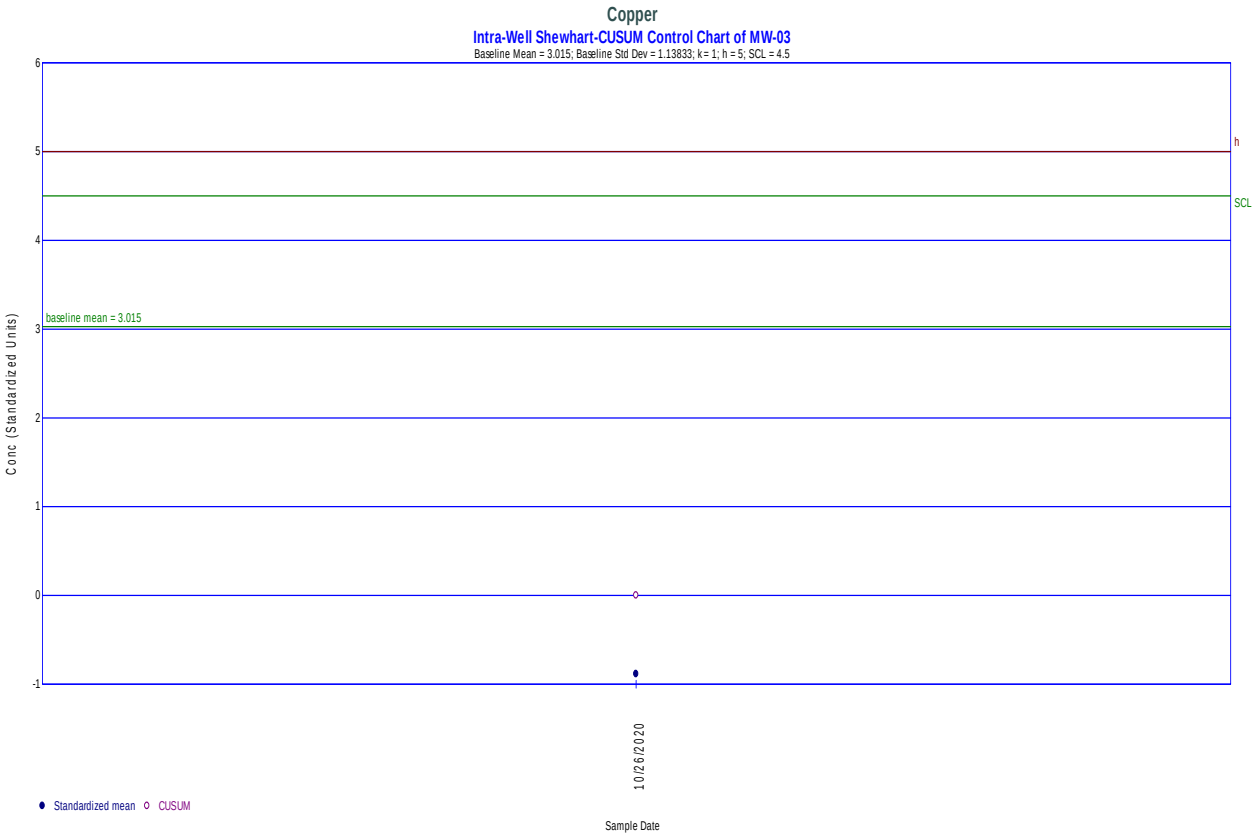
Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.5%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 2.2
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<2
	3/7/2018	ND<2
	5/3/2018	2.2
	5/23/2018	ND<2
	11/14/2018	ND<2
	5/29/2019	ND<2
	11/26/2019	ND<2
	4/10/2020	ND<2

Date	Count	Mean	Significant
10/27/2020	1	2	FALSE


Copper
Intra-Well Shewhart-CUSUM Control Chart of MW-03
Baseline Mean = 3.015; Baseline Std Dev = 1.13833; k = 1; h = 5; SCL = 4.5
6
5
4
3
2
1
0
-1
h
SCL
baseline mean = 3.015
Conc (Standardized Units)
10/26/2020
Standardized mean
CUSUM
Sample Date

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Copper

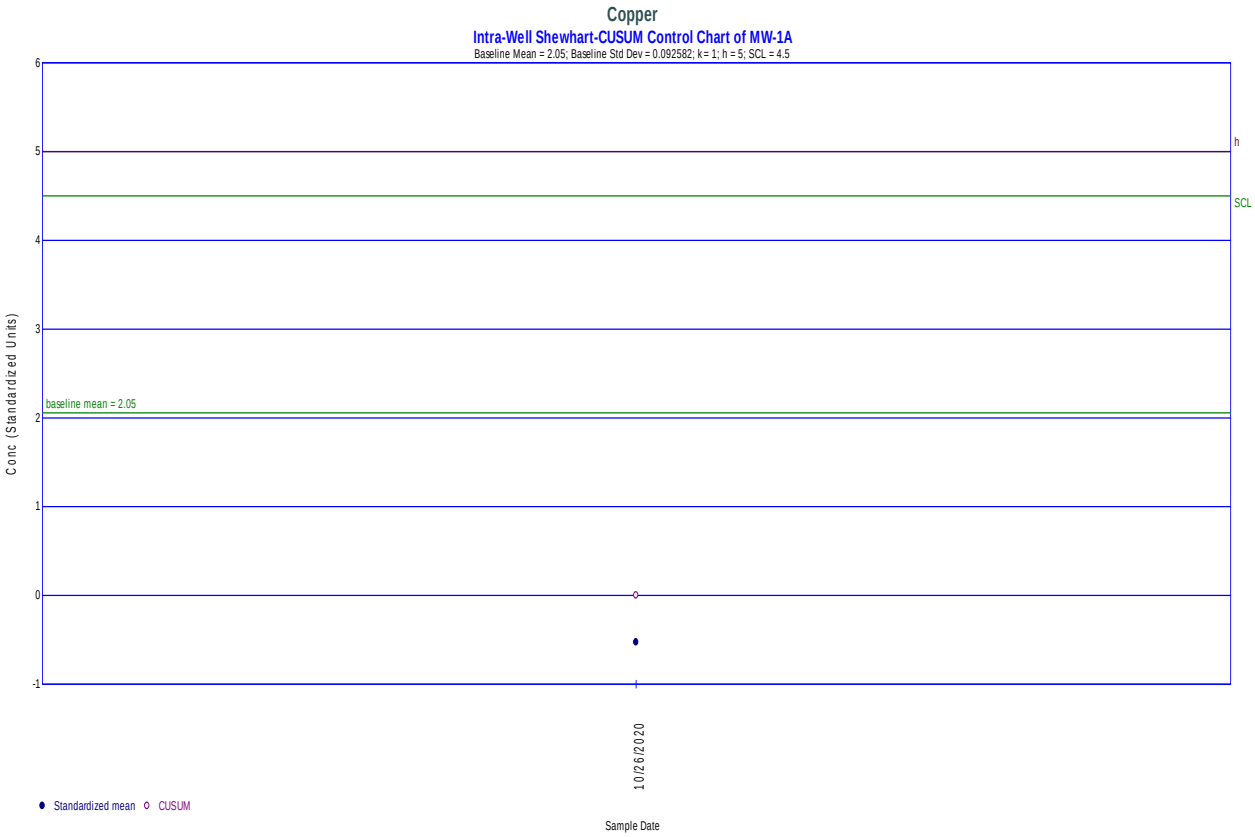
Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 20
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<2
	3/7/2018	ND<2
	5/3/2018	ND<2
	5/22/2018	ND<2
	11/13/2018	ND<2
	5/29/2019	ND<2
	11/26/2019	ND<20
	4/9/2020	ND<2

Date	Count	Mean	Significant
10/26/2020	1	2	FALSE


Copper
Intra-Well Shewhart-CUSUM Control Chart of MW-1A
Baseline Mean = 2.05; Baseline Std Dev = 0.092582; k = 1; h = 5; SCL = 4.5
6
5
4
3
2
1
0
-1
h
SCL
baseline mean = 2.05
Conc (Standardized Units)
10/26/2020
Standardized mean
CUSUM
Sample Date

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Fluoride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1000
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<1000
	3/26/2018	ND<1000
	5/7/2018	ND<1000
	5/23/2018	ND<1000
	11/14/2018	ND<1000
	5/30/2019	ND<1000
	11/26/2019	ND<200
	4/15/2020	ND<1000

Date	Count	Mean	Significant
10/26/2020	1	1350	TRUE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Fluoride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1000
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1000
	3/7/2018	ND<1000
	5/3/2018	ND<1000
	5/23/2018	ND<1000
	11/14/2018	ND<1000
	5/29/2019	ND<1000
	11/26/2019	ND<1000
	4/15/2020	ND<1000

Date	Count	Mean	Significant
10/27/2020	1	1000	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-03

Parameter: Fluoride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1000
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1000
	3/26/2018	ND<1000
	5/7/2018	ND<1000
	5/23/2018	ND<1000
	11/13/2018	ND<1000
	5/29/2019	ND<1000
	11/26/2019	ND<1000
	4/15/2020	ND<1000

Date	Count	Mean	Significant
10/26/2020	1	1310	TRUE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Fluoride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1000
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1000
	3/7/2018	ND<1000
	5/3/2018	ND<1000
	5/22/2018	ND<1000
	11/13/2018	ND<1000
	5/29/2019	ND<1000
	11/26/2019	ND<200
	4/9/2020	ND<1000

Date	Count	Mean	Significant
10/26/2020	1	1000	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Fluoride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1000
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1000
	3/7/2018	ND<1000
	5/3/2018	ND<1000
	5/23/2018	ND<1000
	11/14/2018	ND<1000
	5/29/2019	ND<1000
	11/26/2019	ND<1000
	4/15/2020	ND<1000

Date	Count	Mean	Significant
10/26/2020	1	1000	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Lead

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.5%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1.2
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<1
	3/26/2018	ND<1
	5/7/2018	ND<1
	5/23/2018	ND<1
	11/14/2018	ND<1
	5/30/2019	ND<1
	11/26/2019	ND<1
	4/10/2020	1.2

Date	Count	Mean	Significant
10/27/2020	1	1	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Lead

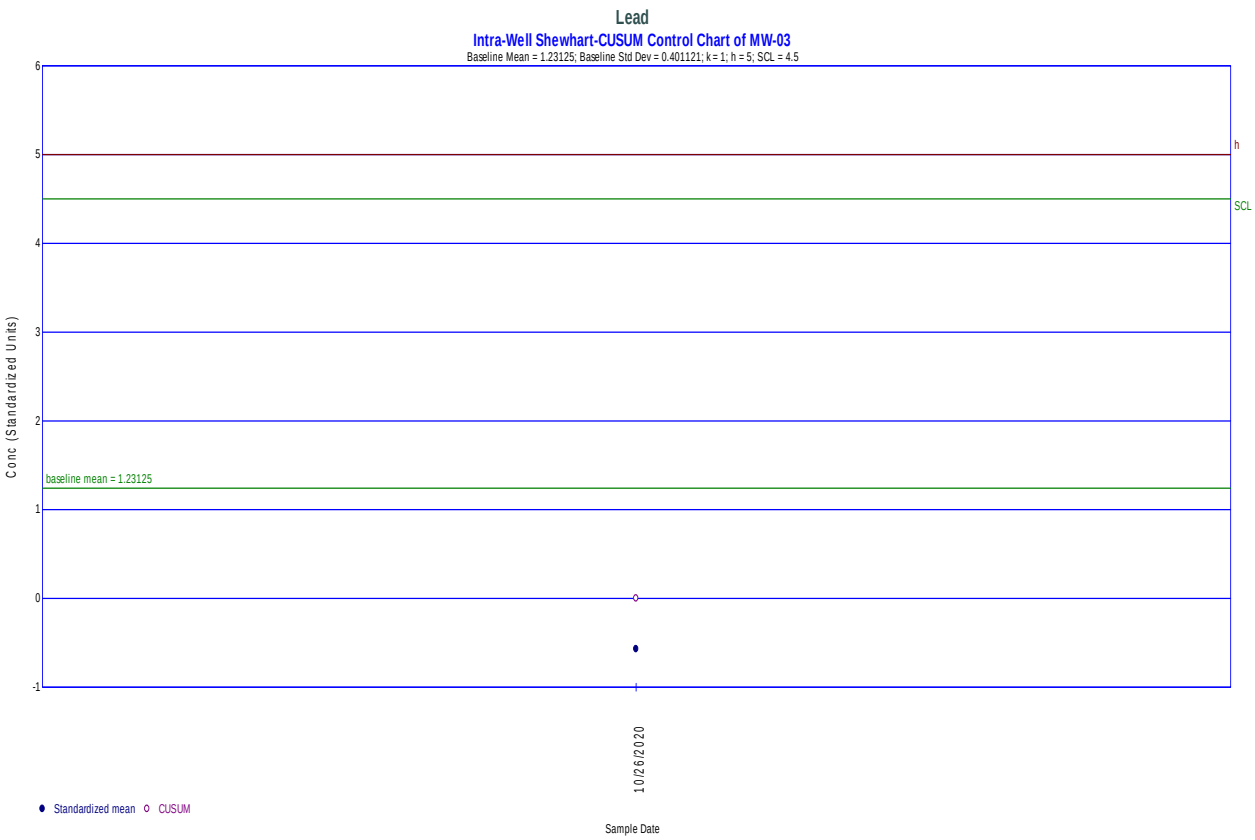
Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.5%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1.39
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1
	3/7/2018	ND<1
	5/3/2018	1.39
	5/23/2018	ND<1
	11/14/2018	ND<1
	5/29/2019	ND<1
	11/26/2019	ND<1
	4/10/2020	ND<1

Date	Count	Mean	Significant
10/27/2020	1	1	FALSE


Lead
Intra-Well Shewhart-CUSUM Control Chart of MW-03
Baseline Mean = 1.23125; Baseline Std Dev = 0.401121; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
6
5
4
3
2
1
0
-1
h
SCL
baseline mean = 1.23125
10/26/2020
Standardized mean
CUSUM
Sample Date

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Lead

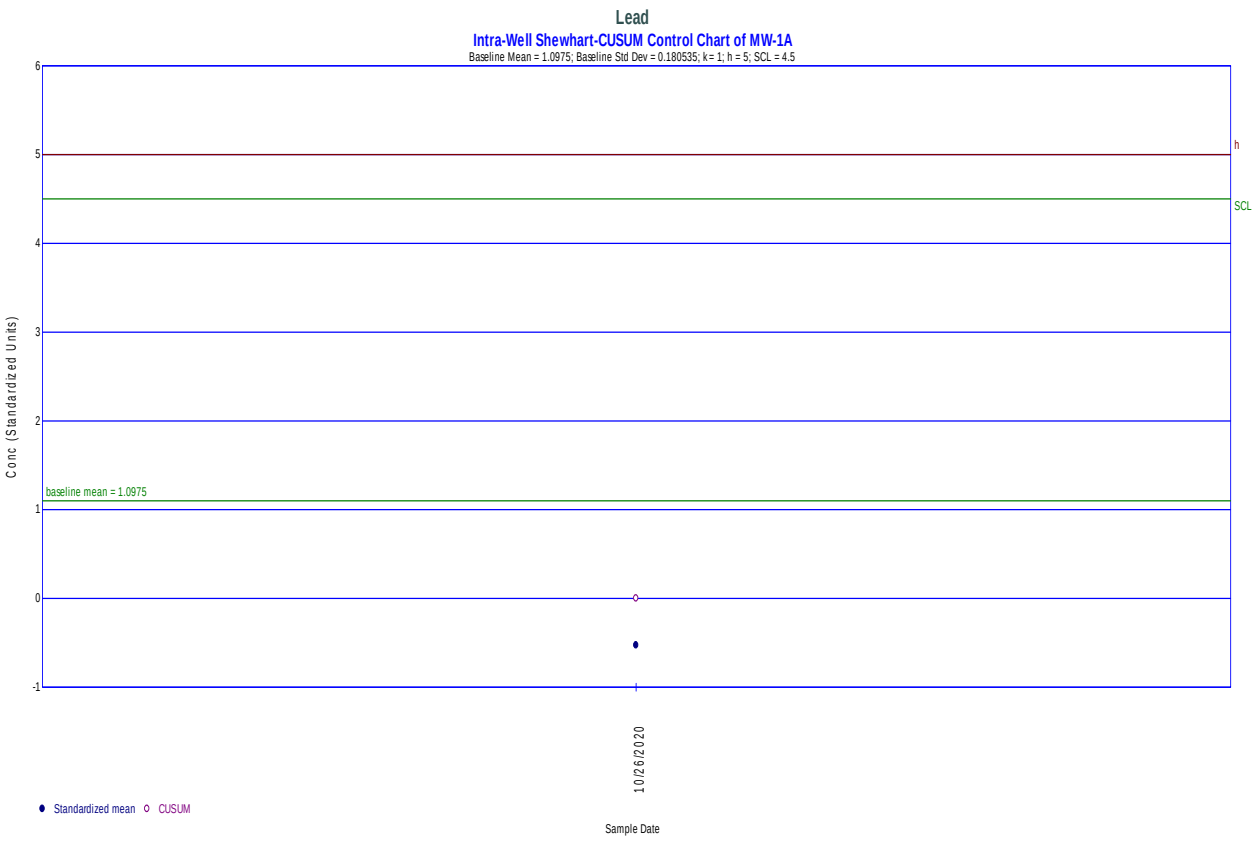
Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 10
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1
	3/7/2018	ND<1
	5/3/2018	ND<1
	5/22/2018	ND<1
	11/13/2018	ND<1
	5/29/2019	ND<1
	11/26/2019	ND<10
	4/9/2020	ND<1

Date	Count	Mean	Significant
10/26/2020	1	1	FALSE


Lead
Intra-Well Shewhart-CUSUM Control Chart of MW-1A
Baseline Mean = 1.0975; Baseline Std Dev = 0.180535; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
6
5
4
3
2
1
0
-1
h
SCL
baseline mean = 1.0975
10/26/2020
Standardized mean
CUSUM
Sample Date

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Mercury

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 2
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<1
	3/26/2018	ND<1
	5/7/2018	ND<1
	5/23/2018	ND<1
	11/14/2018	ND<1
	5/30/2019	ND<1
	11/26/2019	ND<2
	4/10/2020	ND<0.5

Date	Count	Mean	Significant
10/27/2020	1	2	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Mercury

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 0.5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.5
	3/7/2018	ND<0.5
	5/3/2018	ND<0.5
	5/23/2018	ND<0.5
	11/14/2018	ND<0.5
	5/29/2019	ND<0.5
	11/26/2019	ND<0.5
	4/10/2020	ND<0.5

Date	Count	Mean	Significant
10/27/2020	1	0.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-03

Parameter: Mercury

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.5%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 0.91
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.5
	3/26/2018	ND<0.5
	5/7/2018	ND<0.5
	5/23/2018	ND<0.5
	11/13/2018	ND<0.5
	5/29/2019	0.91
	11/26/2019	ND<0.5
	4/9/2020	ND<0.5

Date	Count	Mean	Significant
10/26/2020	1	0.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Mercury

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 2
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.5
	3/7/2018	ND<0.5
	5/3/2018	ND<0.5
	5/22/2018	ND<0.5
	11/13/2018	ND<0.5
	5/29/2019	ND<0.5
	11/26/2019	ND<2
	4/9/2020	ND<0.5

Date	Count	Mean	Significant
10/26/2020	1	0.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Mercury

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 0.5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.5
	3/7/2018	ND<0.5
	5/3/2018	ND<0.5
	5/23/2018	ND<0.5
	11/14/2018	ND<0.5
	5/29/2019	ND<0.5
	11/26/2019	ND<0.5
	4/9/2020	ND<0.5

Date	Count	Mean	Significant
10/26/2020	1	0.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<5
	3/26/2018	ND<5
	5/7/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/30/2019	ND<5
	11/26/2019	ND<5
	4/10/2020	ND<5

Date	Count	Mean	Significant
10/27/2020	**1**	**31.1**	**TRUE**

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Nickel

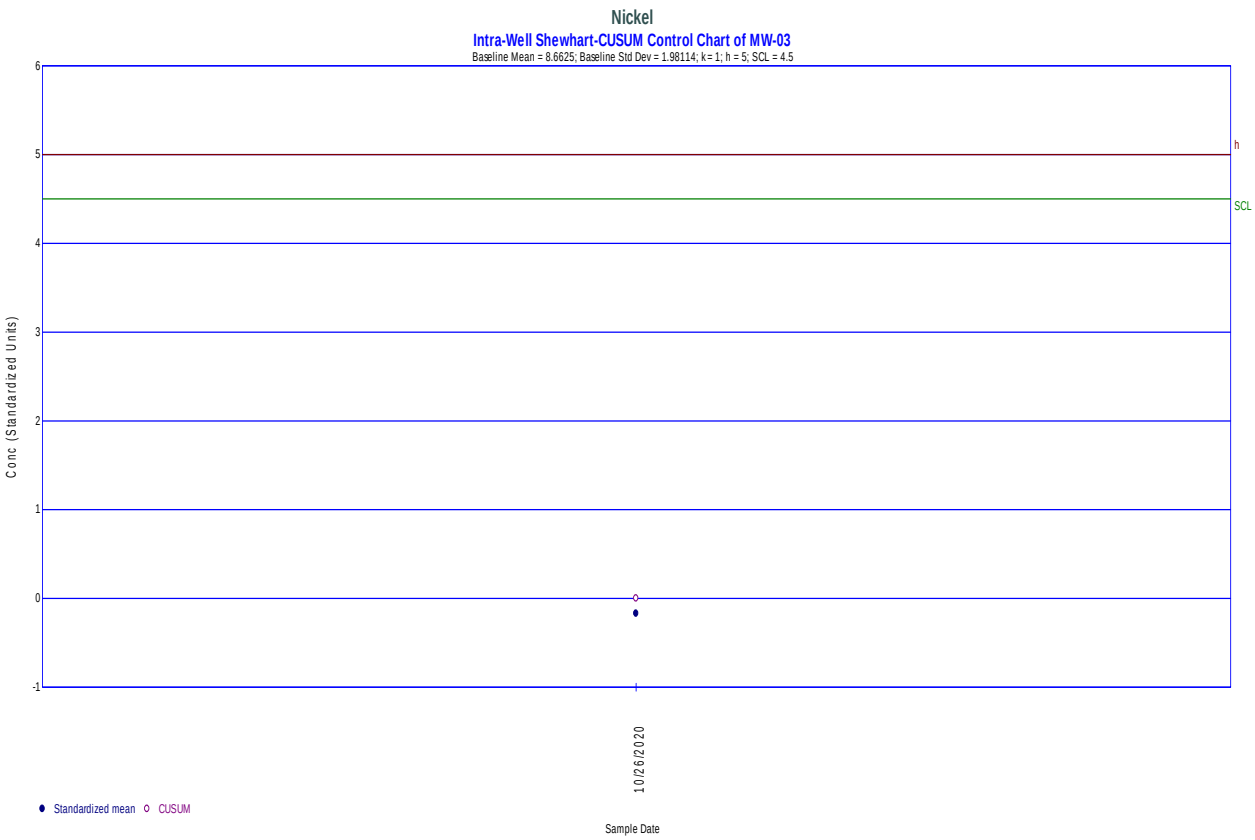
Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.5%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 18.4
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/10/2020	18.4

Date	Count	Mean	Significant
10/27/2020	1	11	FALSE


Nickel
Intra-Well Shewhart-CUSUM Control Chart of MW-03
Baseline Mean = 8.6625; Baseline Std Dev = 1.98114; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
6
5
4
3
2
1
0
-1
h
SCL
10/26/2020
Standardized mean
CUSUM
Sample Date

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 40
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/22/2018	ND<5
	11/13/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<40
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5.03	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Selenium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<5
	3/26/2018	ND<5
	5/7/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/30/2019	ND<5
	11/26/2019	ND<5
	4/10/2020	ND<5

Date	Count	Mean	Significant
10/27/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Selenium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/10/2020	ND<5

Date	Count	Mean	Significant
10/27/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-03

Parameter: Selenium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/26/2018	ND<5
	5/7/2018	ND<5
	5/23/2018	ND<5
	11/13/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Selenium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 50
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/22/2018	ND<5
	11/13/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<50
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Selenium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Silver

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<1
	3/26/2018	ND<1
	5/7/2018	ND<1
	5/23/2018	ND<1
	11/14/2018	ND<1
	5/30/2019	ND<1
	11/26/2019	ND<1
	4/10/2020	ND<1

Date	Count	Mean	Significant
10/27/2020	1	1	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Silver

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1
	3/7/2018	ND<1
	5/3/2018	ND<1
	5/23/2018	ND<1
	11/14/2018	ND<1
	5/29/2019	ND<1
	11/26/2019	ND<1
	4/10/2020	ND<1

Date	Count	Mean	Significant
10/27/2020	1	1	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-03

Parameter: Silver

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1
	3/26/2018	ND<1
	5/7/2018	ND<1
	5/23/2018	ND<1
	11/13/2018	ND<1
	5/29/2019	ND<1
	11/26/2019	ND<1
	4/9/2020	ND<1

Date	Count	Mean	Significant
10/26/2020	1	1	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Silver

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1
	3/7/2018	ND<1
	5/3/2018	ND<1
	5/22/2018	ND<1
	11/13/2018	ND<1
	5/29/2019	ND<1
	11/26/2019	ND<5
	4/9/2020	ND<1

Date	Count	Mean	Significant
10/26/2020	1	1	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Silver

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<1
	3/7/2018	ND<1
	5/3/2018	ND<1
	5/23/2018	ND<1
	11/14/2018	ND<1
	5/29/2019	ND<1
	11/26/2019	ND<1
	4/9/2020	ND<1

Date	Count	Mean	Significant
10/26/2020	1	1	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Thallium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 1
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<1
	3/26/2018	ND<1
	5/7/2018	ND<1
	5/23/2018	ND<1
	11/14/2018	ND<1
	5/30/2019	ND<1
	11/26/2019	ND<1
	4/10/2020	ND<0.5

Date	Count	Mean	Significant
10/27/2020	1	0.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Thallium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 0.5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.5
	3/7/2018	ND<0.5
	5/3/2018	ND<0.5
	5/23/2018	ND<0.5
	11/14/2018	ND<0.5
	5/29/2019	ND<0.5
	11/26/2019	ND<0.5
	4/10/2020	ND<0.5

Date	Count	Mean	Significant
10/27/2020	1	0.582	TRUE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-03

Parameter: Thallium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 0.5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.5
	3/26/2018	ND<0.5
	5/7/2018	ND<0.5
	5/23/2018	ND<0.5
	11/13/2018	ND<0.5
	5/29/2019	ND<0.5
	11/26/2019	ND<0.5
	4/9/2020	ND<0.5

Date	Count	Mean	Significant
10/26/2020	1	0.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Thallium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.5%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 2
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.5
	3/7/2018	ND<0.5
	5/3/2018	ND<0.5
	5/22/2018	ND<0.5
	11/13/2018	ND<0.5
	5/29/2019	0.934
	11/26/2019	ND<2
	4/9/2020	ND<0.5

Date	Count	Mean	Significant
10/26/2020	1	0.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Thallium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.5%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 0.5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<0.5
	3/7/2018	ND<0.5
	5/3/2018	ND<0.5
	5/23/2018	0.5
	11/14/2018	ND<0.5
	5/29/2019	ND<0.5
	11/26/2019	ND<0.5
	4/9/2020	ND<0.5

Date	Count	Mean	Significant
10/26/2020	1	0.5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Vanadium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/17/2017	ND<5
	3/26/2018	ND<5
	5/7/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/30/2019	ND<5
	11/26/2019	ND<5
	4/10/2020	ND<5

Date	Count	Mean	Significant
10/27/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-02

Parameter: Vanadium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/10/2020	ND<5

Date	Count	Mean	Significant
10/27/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-03

Parameter: Vanadium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/26/2018	ND<5
	5/7/2018	ND<5
	5/23/2018	ND<5
	11/13/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-05

Parameter: Vanadium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 50
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/22/2018	ND<5
	11/13/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<50
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1A

Parameter: Vanadium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 100%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 5
Confidence Level = 88.9%
False Positive Rate = 11.1%

Baseline Measurements	Date	Value
	11/16/2017	ND<5
	3/7/2018	ND<5
	5/3/2018	ND<5
	5/23/2018	ND<5
	11/14/2018	ND<5
	5/29/2019	ND<5
	11/26/2019	ND<5
	4/9/2020	ND<5

Date	Count	Mean	Significant
10/26/2020	1	5	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-01

Parameter: Zinc

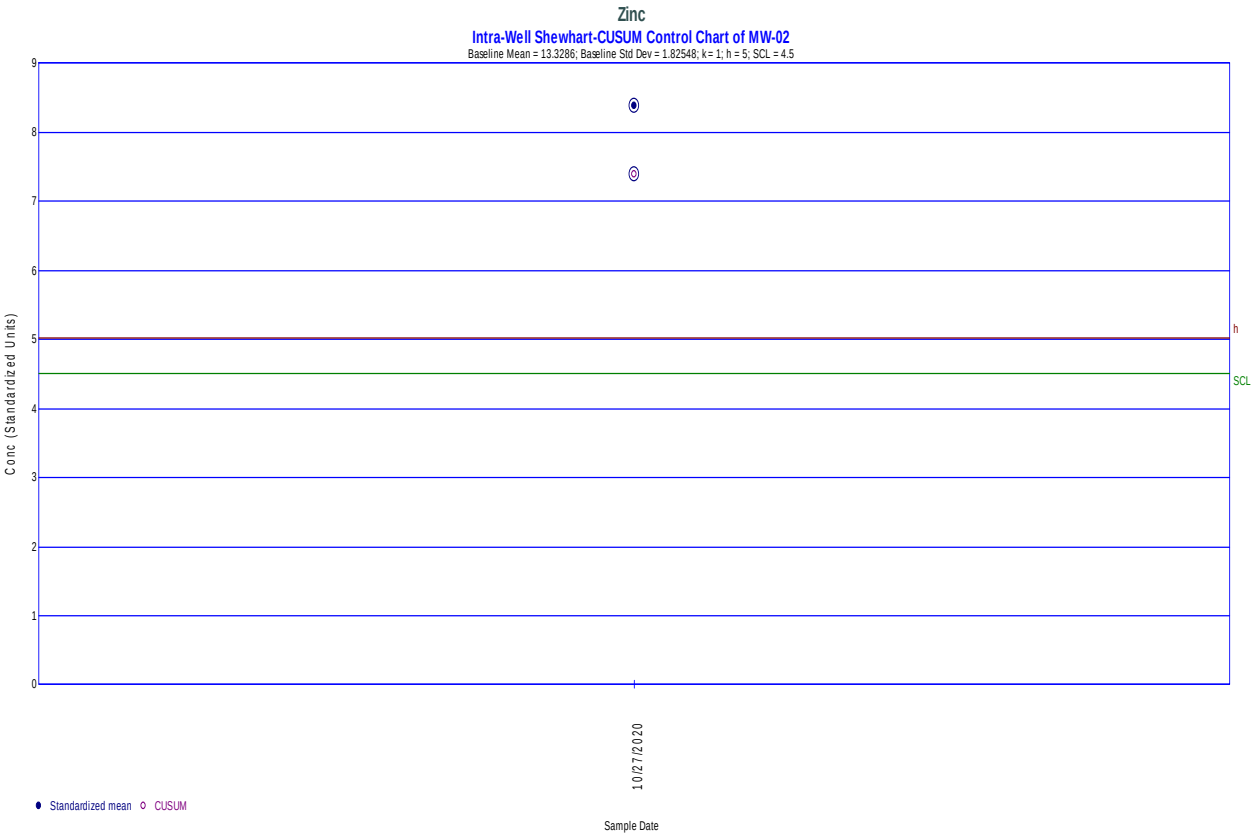
Original Data (Not Transformed)

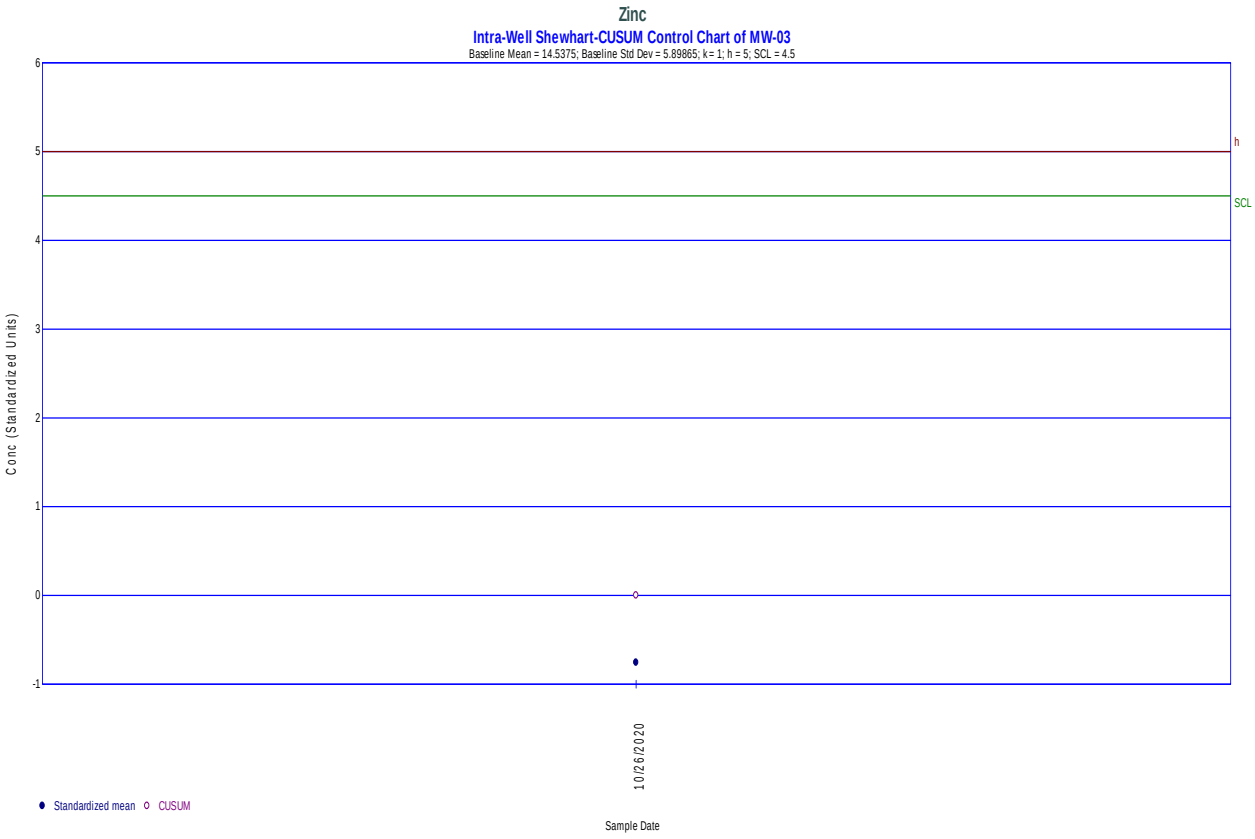
Non-Detects Replaced with Detection Limit

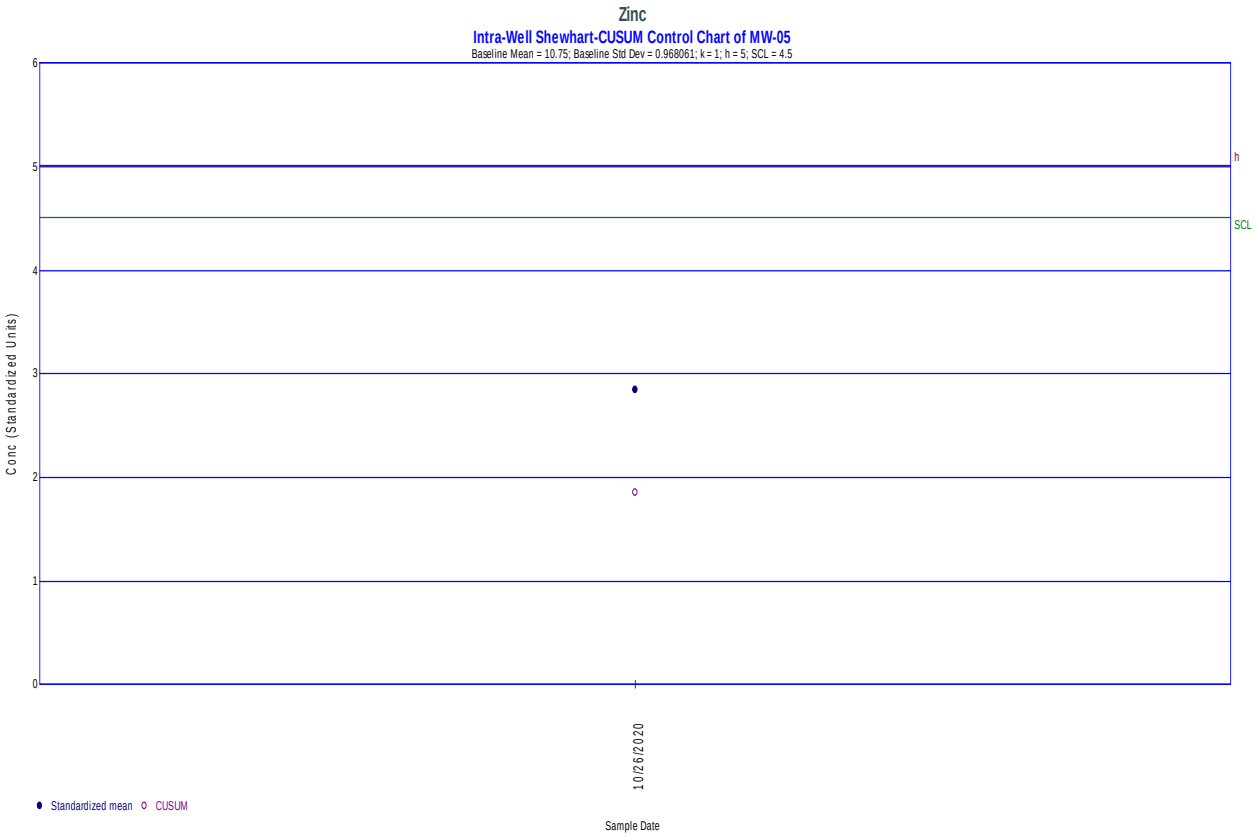
Total Percent Non-Detects = 87.5%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 8
Maximum Baseline Concentration = 13.8
Confidence Level = 88.9%
False Positive Rate = 11.1%

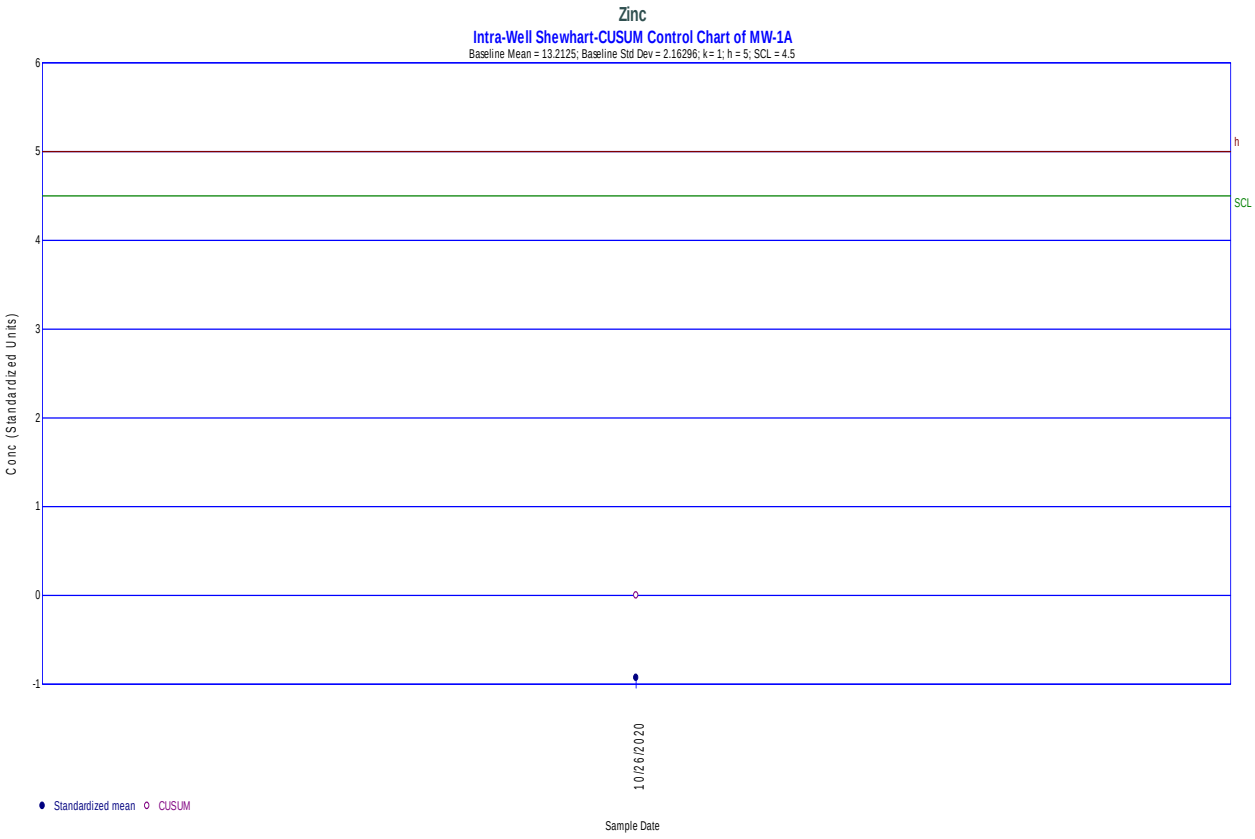
Baseline Measurements	Date	Value
	11/17/2017	ND<10
	3/26/2018	ND<10
	5/7/2018	ND<10
	5/23/2018	ND<10
	11/14/2018	ND<10
	5/30/2019	ND<10
	11/26/2019	ND<10
	4/10/2020	13.8

Date	Count	Mean	Significant
10/27/2020	1	312	TRUE


Zinc
Intra-Well Shewhart-CUSUM Control Chart of MW-02
Baseline Mean = 13.3286; Baseline Std Dev = 1.82548; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
9
8
7
6
5
4
3
2
1
0
h
SCL
10/27/2020
Standardized mean
CUSUM
Sample Date


Zinc
Intra-Well Shewhart-CUSUM Control Chart of MW-03
Baseline Mean = 14.5375; Baseline Std Dev = 5.89865; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
6
5
4
3
2
1
0
-1
h
SCL
10/26/2020
Standardized mean
CUSUM
Sample Date


Zinc
Intra-Well Shewhart-CUSUM Control Chart of MW-05
Baseline Mean = 10.75; Baseline Std Dev = 0.968061; k = 1; h = 5; SCL = 4.5
6
5
4
3
2
1
0
h
SCL
Conc (Standardized Units)
10/26/2020
Standardized mean
CUSUM
Sample Date


Zinc
Intra-Well Shewhart-CUSUM Control Chart of MW-1A
Baseline Mean = 13.2125; Baseline Std Dev = 2.16296; k = 1; h = 5; SCL = 4.5
Conc (Standardized Units)
6
5
4
3
2
1
0
-1
h
SCL
10/26/2020
Standardized mean
CUSUM
Sample Date

Sen's Slope Analysis

Parameter: Chemical Oxygen Demand

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
24000 (11/16/2017)	ND<10000 (5/25/2017)	(24000 - 10000)/(2 - 1)	14000
ND<10000 (5/22/2018)	ND<10000 (5/25/2017)	(10000 - 10000)/(3 - 1)	0
18400 (11/13/2018)	ND<10000 (5/25/2017)	(18400 - 10000)/(4 - 1)	2800
11200 (5/29/2019)	ND<10000 (5/25/2017)	(11200 - 10000)/(5 - 1)	300
ND<10000 (11/26/2019)	ND<10000 (5/25/2017)	(10000 - 10000)/(6 - 1)	0
20400 (4/9/2020)	ND<10000 (5/25/2017)	(20400 - 10000)/(7 - 1)	1733.33
18500 (10/26/2020)	ND<10000 (5/25/2017)	(18500 - 10000)/(8 - 1)	1214.29
ND<10000 (5/22/2018)	24000 (11/16/2017)	(10000 - 24000)/(3 - 2)	-14000
18400 (11/13/2018)	24000 (11/16/2017)	(18400 - 24000)/(4 - 2)	-2800
11200 (5/29/2019)	24000 (11/16/2017)	(11200 - 24000)/(5 - 2)	-4266.67
ND<10000 (11/26/2019)	24000 (11/16/2017)	(10000 - 24000)/(6 - 2)	-3500
20400 (4/9/2020)	24000 (11/16/2017)	(20400 - 24000)/(7 - 2)	-720
18500 (10/26/2020)	24000 (11/16/2017)	(18500 - 24000)/(8 - 2)	-916.667
18400 (11/13/2018)	ND<10000 (5/22/2018)	(18400 - 10000)/(4 - 3)	8400
11200 (5/29/2019)	ND<10000 (5/22/2018)	(11200 - 10000)/(5 - 3)	600
ND<10000 (11/26/2019)	ND<10000 (5/22/2018)	(10000 - 10000)/(6 - 3)	0
20400 (4/9/2020)	ND<10000 (5/22/2018)	(20400 - 10000)/(7 - 3)	2600
18500 (10/26/2020)	ND<10000 (5/22/2018)	(18500 - 10000)/(8 - 3)	1700
11200 (5/29/2019)	18400 (11/13/2018)	(11200 - 18400)/(5 - 4)	-7200
ND<10000 (11/26/2019)	18400 (11/13/2018)	(10000 - 18400)/(6 - 4)	-4200
20400 (4/9/2020)	18400 (11/13/2018)	(20400 - 18400)/(7 - 4)	666.667
18500 (10/26/2020)	18400 (11/13/2018)	(18500 - 18400)/(8 - 4)	25
ND<10000 (11/26/2019)	11200 (5/29/2019)	(10000 - 11200)/(6 - 5)	-1200
20400 (4/9/2020)	11200 (5/29/2019)	(20400 - 11200)/(7 - 5)	4600
18500 (10/26/2020)	11200 (5/29/2019)	(18500 - 11200)/(8 - 5)	2433.33
20400 (4/9/2020)	ND<10000 (11/26/2019)	(20400 - 10000)/(7 - 6)	10400
18500 (10/26/2020)	ND<10000 (11/26/2019)	(18500 - 10000)/(8 - 6)	4250
18500 (10/26/2020)	20400 (4/9/2020)	(18500 - 20400)/(8 - 7)	-1900

Number of Q values = 28

Ordered Q Values

n	Q
1	-14000
2	-7200
3	-4266.67
4	-4200
5	-3500
6	-2800
7	-1900

8	-1200
9	-916.667
10	-720
11	0
12	0
13	0
14	25
15	300
16	600
17	666.667
18	1214.29
19	1700
20	1733.33
21	2433.33
22	2600
23	2800
24	4250
25	4600
26	8400
27	10400
28	14000

Sen's Estimator (Median Q) is 162.5

Tied Group	Value	Members
1	10000	3

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 61.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 12.9167
M1 = (28 - 12.9167)/2.0 = 7.54164
M2 = (28 + 12.9167)/2.0 + 1 = 21.4584
Lower limit is -1200 = Q(8)
Upper limit is 2433.33 = Q(21)
-1200 < 0 < 2433.33 indicating no trend in data.

Sen's Slope Analysis

Parameter: Chemical Oxygen Demand

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<10000 (11/16/2017)	ND<10000 (5/25/2017)	(10000 - 10000)/(2 - 1)	0
ND<10000 (5/22/2018)	ND<10000 (5/25/2017)	(10000 - 10000)/(3 - 1)	0
ND<10000 (11/13/2018)	ND<10000 (5/25/2017)	(10000 - 10000)/(4 - 1)	0
ND<10000 (5/29/2019)	ND<10000 (5/25/2017)	(10000 - 10000)/(5 - 1)	0
16200 (11/26/2019)	ND<10000 (5/25/2017)	(16200 - 10000)/(6 - 1)	1240
27200 (4/9/2020)	ND<10000 (5/25/2017)	(27200 - 10000)/(7 - 1)	2866.67
77500 (10/26/2020)	ND<10000 (5/25/2017)	(77500 - 10000)/(8 - 1)	9642.86
ND<10000 (5/22/2018)	ND<10000 (11/16/2017)	(10000 - 10000)/(3 - 2)	0
ND<10000 (11/13/2018)	ND<10000 (11/16/2017)	(10000 - 10000)/(4 - 2)	0
ND<10000 (5/29/2019)	ND<10000 (11/16/2017)	(10000 - 10000)/(5 - 2)	0
16200 (11/26/2019)	ND<10000 (11/16/2017)	(16200 - 10000)/(6 - 2)	1550
27200 (4/9/2020)	ND<10000 (11/16/2017)	(27200 - 10000)/(7 - 2)	3440
77500 (10/26/2020)	ND<10000 (11/16/2017)	(77500 - 10000)/(8 - 2)	11250
ND<10000 (11/13/2018)	ND<10000 (5/22/2018)	(10000 - 10000)/(4 - 3)	0
ND<10000 (5/29/2019)	ND<10000 (5/22/2018)	(10000 - 10000)/(5 - 3)	0
16200 (11/26/2019)	ND<10000 (5/22/2018)	(16200 - 10000)/(6 - 3)	2066.67
27200 (4/9/2020)	ND<10000 (5/22/2018)	(27200 - 10000)/(7 - 3)	4300
77500 (10/26/2020)	ND<10000 (5/22/2018)	(77500 - 10000)/(8 - 3)	13500
ND<10000 (5/29/2019)	ND<10000 (11/13/2018)	(10000 - 10000)/(5 - 4)	0
16200 (11/26/2019)	ND<10000 (11/13/2018)	(16200 - 10000)/(6 - 4)	3100
27200 (4/9/2020)	ND<10000 (11/13/2018)	(27200 - 10000)/(7 - 4)	5733.33
77500 (10/26/2020)	ND<10000 (11/13/2018)	(77500 - 10000)/(8 - 4)	16875
16200 (11/26/2019)	ND<10000 (5/29/2019)	(16200 - 10000)/(6 - 5)	6200
27200 (4/9/2020)	ND<10000 (5/29/2019)	(27200 - 10000)/(7 - 5)	8600
77500 (10/26/2020)	ND<10000 (5/29/2019)	(77500 - 10000)/(8 - 5)	22500
27200 (4/9/2020)	16200 (11/26/2019)	(27200 - 16200)/(7 - 6)	11000
77500 (10/26/2020)	16200 (11/26/2019)	(77500 - 16200)/(8 - 6)	30650
77500 (10/26/2020)	27200 (4/9/2020)	(77500 - 27200)/(8 - 7)	50300

Number of Q values = 28

Ordered Q Values

n	Q
1	0
2	0
3	0
4	0
5	0
6	0
7	0

8	0
9	0
10	0
11	1240
12	1550
13	2066.67
14	2866.67
15	3100
16	3440
17	4300
18	5733.33
19	6200
20	8600
21	9642.86
22	11000
23	11250
24	13500
25	16875
26	22500
27	30650
28	50300

Sen's Estimator (Median Q) is 2983.33

Tied Group	Value	Members
1	10000	5

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 48.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 11.4747
M1 = (28 - 11.4747)/2.0 = 8.26263
M2 = (28 + 11.4747)/2.0 + 1 = 20.7374
Lower limit is 0 = Q(8)
Upper limit is 9642.86 = Q(21)
0 < 0 < 9642.86 indicating no trend in data.

Sen's Slope Analysis

Parameter: Chemical Oxygen Demand

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<10000 (11/16/2017)	ND<10000 (5/25/2017)	(10000 - 10000)/(2 - 1)	0
23300 (5/22/2018)	ND<10000 (5/25/2017)	(23300 - 10000)/(3 - 1)	6650
27300 (11/13/2018)	ND<10000 (5/25/2017)	(27300 - 10000)/(4 - 1)	5766.67
ND<10000 (5/29/2019)	ND<10000 (5/25/2017)	(10000 - 10000)/(5 - 1)	0
11700 (11/26/2019)	ND<10000 (5/25/2017)	(11700 - 10000)/(6 - 1)	340
ND<10000 (4/10/2020)	ND<10000 (5/25/2017)	(10000 - 10000)/(7 - 1)	0
ND<10000 (10/26/2020)	ND<10000 (5/25/2017)	(10000 - 10000)/(8 - 1)	0
23300 (5/22/2018)	ND<10000 (11/16/2017)	(23300 - 10000)/(3 - 2)	13300
27300 (11/13/2018)	ND<10000 (11/16/2017)	(27300 - 10000)/(4 - 2)	8650
ND<10000 (5/29/2019)	ND<10000 (11/16/2017)	(10000 - 10000)/(5 - 2)	0
11700 (11/26/2019)	ND<10000 (11/16/2017)	(11700 - 10000)/(6 - 2)	425
ND<10000 (4/10/2020)	ND<10000 (11/16/2017)	(10000 - 10000)/(7 - 2)	0
ND<10000 (10/26/2020)	ND<10000 (11/16/2017)	(10000 - 10000)/(8 - 2)	0
27300 (11/13/2018)	23300 (5/22/2018)	(27300 - 23300)/(4 - 3)	4000
ND<10000 (5/29/2019)	23300 (5/22/2018)	(10000 - 23300)/(5 - 3)	-6650
11700 (11/26/2019)	23300 (5/22/2018)	(11700 - 23300)/(6 - 3)	-3866.67
ND<10000 (4/10/2020)	23300 (5/22/2018)	(10000 - 23300)/(7 - 3)	-3325
ND<10000 (10/26/2020)	23300 (5/22/2018)	(10000 - 23300)/(8 - 3)	-2660
ND<10000 (5/29/2019)	27300 (11/13/2018)	(10000 - 27300)/(5 - 4)	-17300
11700 (11/26/2019)	27300 (11/13/2018)	(11700 - 27300)/(6 - 4)	-7800
ND<10000 (4/10/2020)	27300 (11/13/2018)	(10000 - 27300)/(7 - 4)	-5766.67
ND<10000 (10/26/2020)	27300 (11/13/2018)	(10000 - 27300)/(8 - 4)	-4325
11700 (11/26/2019)	ND<10000 (5/29/2019)	(11700 - 10000)/(6 - 5)	1700
ND<10000 (4/10/2020)	ND<10000 (5/29/2019)	(10000 - 10000)/(7 - 5)	0
ND<10000 (10/26/2020)	ND<10000 (5/29/2019)	(10000 - 10000)/(8 - 5)	0
ND<10000 (4/10/2020)	11700 (11/26/2019)	(10000 - 11700)/(7 - 6)	-1700
ND<10000 (10/26/2020)	11700 (11/26/2019)	(10000 - 11700)/(8 - 6)	-850
ND<10000 (10/26/2020)	ND<10000 (4/10/2020)	(10000 - 10000)/(8 - 7)	0

Number of Q values = 28

Ordered Q Values

n	Q
1	-17300
2	-7800
3	-6650
4	-5766.67
5	-4325
6	-3866.67
7	-3325

8	-2660
9	-1700
10	-850
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	340
22	425
23	1700
24	4000
25	5766.67
26	6650
27	8650
28	13300

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	10000	5

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 48.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 11.4747
M1 = (28 - 11.4747)/2.0 = 8.26263
M2 = (28 + 11.4747)/2.0 + 1 = 20.7374
Lower limit is -2660 = Q(8)
Upper limit is 340 = Q(21)
-2660 < 0 < 340 indicating no trend in data.

Sen's Slope Analysis

Parameter: Chemical Oxygen Demand

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<10000 (11/16/2017)	ND<10000 (5/25/2017)	(10000 - 10000)/(2 - 1)	0
ND<10000 (5/22/2018)	ND<10000 (5/25/2017)	(10000 - 10000)/(3 - 1)	0
ND<10000 (11/13/2018)	ND<10000 (5/25/2017)	(10000 - 10000)/(4 - 1)	0
ND<10000 (5/29/2019)	ND<10000 (5/25/2017)	(10000 - 10000)/(5 - 1)	0
ND<10000 (11/26/2019)	ND<10000 (5/25/2017)	(10000 - 10000)/(6 - 1)	0
ND<10000 (4/10/2020)	ND<10000 (5/25/2017)	(10000 - 10000)/(7 - 1)	0
ND<10000 (10/27/2020)	ND<10000 (5/25/2017)	(10000 - 10000)/(8 - 1)	0
ND<10000 (5/22/2018)	ND<10000 (11/16/2017)	(10000 - 10000)/(3 - 2)	0
ND<10000 (11/13/2018)	ND<10000 (11/16/2017)	(10000 - 10000)/(4 - 2)	0
ND<10000 (5/29/2019)	ND<10000 (11/16/2017)	(10000 - 10000)/(5 - 2)	0
ND<10000 (11/26/2019)	ND<10000 (11/16/2017)	(10000 - 10000)/(6 - 2)	0
ND<10000 (4/10/2020)	ND<10000 (11/16/2017)	(10000 - 10000)/(7 - 2)	0
ND<10000 (10/27/2020)	ND<10000 (11/16/2017)	(10000 - 10000)/(8 - 2)	0
ND<10000 (11/13/2018)	ND<10000 (5/22/2018)	(10000 - 10000)/(4 - 3)	0
ND<10000 (5/29/2019)	ND<10000 (5/22/2018)	(10000 - 10000)/(5 - 3)	0
ND<10000 (11/26/2019)	ND<10000 (5/22/2018)	(10000 - 10000)/(6 - 3)	0
ND<10000 (4/10/2020)	ND<10000 (5/22/2018)	(10000 - 10000)/(7 - 3)	0
ND<10000 (10/27/2020)	ND<10000 (5/22/2018)	(10000 - 10000)/(8 - 3)	0
ND<10000 (5/29/2019)	ND<10000 (11/13/2018)	(10000 - 10000)/(5 - 4)	0
ND<10000 (11/26/2019)	ND<10000 (11/13/2018)	(10000 - 10000)/(6 - 4)	0
ND<10000 (4/10/2020)	ND<10000 (11/13/2018)	(10000 - 10000)/(7 - 4)	0
ND<10000 (10/27/2020)	ND<10000 (11/13/2018)	(10000 - 10000)/(8 - 4)	0
ND<10000 (11/26/2019)	ND<10000 (5/29/2019)	(10000 - 10000)/(6 - 5)	0
ND<10000 (4/10/2020)	ND<10000 (5/29/2019)	(10000 - 10000)/(7 - 5)	0
ND<10000 (10/27/2020)	ND<10000 (5/29/2019)	(10000 - 10000)/(8 - 5)	0
ND<10000 (4/10/2020)	ND<10000 (11/26/2019)	(10000 - 10000)/(7 - 6)	0
ND<10000 (10/27/2020)	ND<10000 (11/26/2019)	(10000 - 10000)/(8 - 6)	0
ND<10000 (10/27/2020)	ND<10000 (4/10/2020)	(10000 - 10000)/(8 - 7)	0

Number of Q values = 28

Ordered Q Values

n	Q
1	0
2	0
3	0
4	0
5	0
6	0
7	0

8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	0

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	10000	8

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 1176
B = 0
C = 336
D = 0
E = 56
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 0
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 0
M1 = (28 - 0)/2.0 = 14
M2 = (28 + 0)/2.0 + 1 = 15
Lower limit is 0 = Q(14)
Upper limit is 0 = Q(15)
0 < 0 < 0 indicating no trend in data.

Sen's Slope Analysis

Parameter: Chloride

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
37600 (11/16/2017)	44600 (5/25/2017)	(37600 - 44600)/(2 - 1)	-7000
35800 (5/22/2018)	44600 (5/25/2017)	(35800 - 44600)/(3 - 1)	-4400
73100 (11/13/2018)	44600 (5/25/2017)	(73100 - 44600)/(4 - 1)	9500
43500 (5/29/2019)	44600 (5/25/2017)	(43500 - 44600)/(5 - 1)	-275
56800 (11/26/2019)	44600 (5/25/2017)	(56800 - 44600)/(6 - 1)	2440
44000 (4/15/2020)	44600 (5/25/2017)	(44000 - 44600)/(7 - 1)	-100
67700 (10/26/2020)	44600 (5/25/2017)	(67700 - 44600)/(8 - 1)	3300
35800 (5/22/2018)	37600 (11/16/2017)	(35800 - 37600)/(3 - 2)	-1800
73100 (11/13/2018)	37600 (11/16/2017)	(73100 - 37600)/(4 - 2)	17750
43500 (5/29/2019)	37600 (11/16/2017)	(43500 - 37600)/(5 - 2)	1966.67
56800 (11/26/2019)	37600 (11/16/2017)	(56800 - 37600)/(6 - 2)	4800
44000 (4/15/2020)	37600 (11/16/2017)	(44000 - 37600)/(7 - 2)	1280
67700 (10/26/2020)	37600 (11/16/2017)	(67700 - 37600)/(8 - 2)	5016.67
73100 (11/13/2018)	35800 (5/22/2018)	(73100 - 35800)/(4 - 3)	37300
43500 (5/29/2019)	35800 (5/22/2018)	(43500 - 35800)/(5 - 3)	3850
56800 (11/26/2019)	35800 (5/22/2018)	(56800 - 35800)/(6 - 3)	7000
44000 (4/15/2020)	35800 (5/22/2018)	(44000 - 35800)/(7 - 3)	2050
67700 (10/26/2020)	35800 (5/22/2018)	(67700 - 35800)/(8 - 3)	6380
43500 (5/29/2019)	73100 (11/13/2018)	(43500 - 73100)/(5 - 4)	-29600
56800 (11/26/2019)	73100 (11/13/2018)	(56800 - 73100)/(6 - 4)	-8150
44000 (4/15/2020)	73100 (11/13/2018)	(44000 - 73100)/(7 - 4)	-9700
67700 (10/26/2020)	73100 (11/13/2018)	(67700 - 73100)/(8 - 4)	-1350
56800 (11/26/2019)	43500 (5/29/2019)	(56800 - 43500)/(6 - 5)	13300
44000 (4/15/2020)	43500 (5/29/2019)	(44000 - 43500)/(7 - 5)	250
67700 (10/26/2020)	43500 (5/29/2019)	(67700 - 43500)/(8 - 5)	8066.67
44000 (4/15/2020)	56800 (11/26/2019)	(44000 - 56800)/(7 - 6)	-12800
67700 (10/26/2020)	56800 (11/26/2019)	(67700 - 56800)/(8 - 6)	5450
67700 (10/26/2020)	44000 (4/15/2020)	(67700 - 44000)/(8 - 7)	23700

Number of Q values = 28

Ordered Q Values

n	Q
1	-29600
2	-12800
3	-9700
4	-8150
5	-7000
6	-4400
7	-1800

8	-1350
9	-275
10	-100
11	250
12	1280
13	1966.67
14	2050
15	2440
16	3300
17	3850
18	4800
19	5016.67
20	5450
21	6380
22	7000
23	8066.67
24	9500
25	13300
26	17750
27	23700
28	37300

Sen's Estimator (Median Q) is 2245

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -1800 = Q(7)
Upper limit is 7000 = Q(22)
-1800 < 0 < 7000 indicating no trend in data.

Sen's Slope Analysis

Parameter: Chloride

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
77800 (11/16/2017)	128000 (5/25/2017)	(77800 - 128000)/(2 - 1)	-50200
86700 (5/22/2018)	128000 (5/25/2017)	(86700 - 128000)/(3 - 1)	-20650
90200 (11/13/2018)	128000 (5/25/2017)	(90200 - 128000)/(4 - 1)	-12600
383000 (5/29/2019)	128000 (5/25/2017)	(383000 - 128000)/(5 - 1)	63750
314000 (11/26/2019)	128000 (5/25/2017)	(314000 - 128000)/(6 - 1)	37200
497000 (4/15/2020)	128000 (5/25/2017)	(497000 - 128000)/(7 - 1)	61500
744000 (9/2/2020)	128000 (5/25/2017)	(744000 - 128000)/(8 - 1)	88000
655000 (10/26/2020)	128000 (5/25/2017)	(655000 - 128000)/(9 - 1)	65875
86700 (5/22/2018)	77800 (11/16/2017)	(86700 - 77800)/(3 - 2)	8900
90200 (11/13/2018)	77800 (11/16/2017)	(90200 - 77800)/(4 - 2)	6200
383000 (5/29/2019)	77800 (11/16/2017)	(383000 - 77800)/(5 - 2)	101733
314000 (11/26/2019)	77800 (11/16/2017)	(314000 - 77800)/(6 - 2)	59050
497000 (4/15/2020)	77800 (11/16/2017)	(497000 - 77800)/(7 - 2)	83840
744000 (9/2/2020)	77800 (11/16/2017)	(744000 - 77800)/(8 - 2)	111033
655000 (10/26/2020)	77800 (11/16/2017)	(655000 - 77800)/(9 - 2)	82457.1
90200 (11/13/2018)	86700 (5/22/2018)	(90200 - 86700)/(4 - 3)	3500
383000 (5/29/2019)	86700 (5/22/2018)	(383000 - 86700)/(5 - 3)	148150
314000 (11/26/2019)	86700 (5/22/2018)	(314000 - 86700)/(6 - 3)	75766.7
497000 (4/15/2020)	86700 (5/22/2018)	(497000 - 86700)/(7 - 3)	102575
744000 (9/2/2020)	86700 (5/22/2018)	(744000 - 86700)/(8 - 3)	131460
655000 (10/26/2020)	86700 (5/22/2018)	(655000 - 86700)/(9 - 3)	94716.7
383000 (5/29/2019)	90200 (11/13/2018)	(383000 - 90200)/(5 - 4)	292800
314000 (11/26/2019)	90200 (11/13/2018)	(314000 - 90200)/(6 - 4)	111900
497000 (4/15/2020)	90200 (11/13/2018)	(497000 - 90200)/(7 - 4)	135600
744000 (9/2/2020)	90200 (11/13/2018)	(744000 - 90200)/(8 - 4)	163450
655000 (10/26/2020)	90200 (11/13/2018)	(655000 - 90200)/(9 - 4)	112960
314000 (11/26/2019)	383000 (5/29/2019)	(314000 - 383000)/(6 - 5)	-69000
497000 (4/15/2020)	383000 (5/29/2019)	(497000 - 383000)/(7 - 5)	57000
744000 (9/2/2020)	383000 (5/29/2019)	(744000 - 383000)/(8 - 5)	120333
655000 (10/26/2020)	383000 (5/29/2019)	(655000 - 383000)/(9 - 5)	68000
497000 (4/15/2020)	314000 (11/26/2019)	(497000 - 314000)/(7 - 6)	183000
744000 (9/2/2020)	314000 (11/26/2019)	(744000 - 314000)/(8 - 6)	215000
655000 (10/26/2020)	314000 (11/26/2019)	(655000 - 314000)/(9 - 6)	113667
744000 (9/2/2020)	497000 (4/15/2020)	(744000 - 497000)/(8 - 7)	247000
655000 (10/26/2020)	497000 (4/15/2020)	(655000 - 497000)/(9 - 7)	79000
655000 (10/26/2020)	744000 (9/2/2020)	(655000 - 744000)/(9 - 8)	-89000

Number of Q values = 36

Ordered Q Values

n	Q
1	-89000
2	-69000
3	-50200
4	-20650
5	-12600
6	3500
7	6200
8	8900
9	37200
10	57000
11	59050
12	61500
13	63750
14	65875
15	68000
16	75766.7
17	79000
18	82457.1
19	83840
20	88000
21	94716.7
22	101733
23	102575
24	111033
25	111900
26	112960
27	113667
28	120333
29	131460
30	135600
31	148150
32	163450
33	183000
34	215000
35	247000
36	292800

Sen's Estimator (Median Q) is 83148.6

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
9/2/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0

a = 1656
b = 4536
c = 144
Group Variance = 92
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 15.7769
M1 = (36 - 15.7769)/2.0 = 10.1116
M2 = (36 + 15.7769)/2.0 + 1 = 26.8884
Lower limit is 57000 = Q(10)
Upper limit is 113667 = Q(27)
57000 > 0 indicating an upward trend in data.

Sen's Slope Analysis

Parameter: Chloride

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
28700 (11/16/2017)	20100 (5/25/2017)	(28700 - 20100)/(2 - 1)	8600
24900 (5/22/2018)	20100 (5/25/2017)	(24900 - 20100)/(3 - 1)	2400
23900 (11/13/2018)	20100 (5/25/2017)	(23900 - 20100)/(4 - 1)	1266.67
31000 (5/29/2019)	20100 (5/25/2017)	(31000 - 20100)/(5 - 1)	2725
37100 (11/26/2019)	20100 (5/25/2017)	(37100 - 20100)/(6 - 1)	3400
17300 (4/15/2020)	20100 (5/25/2017)	(17300 - 20100)/(7 - 1)	-466.667
29600 (10/26/2020)	20100 (5/25/2017)	(29600 - 20100)/(8 - 1)	1357.14
24900 (5/22/2018)	28700 (11/16/2017)	(24900 - 28700)/(3 - 2)	-3800
23900 (11/13/2018)	28700 (11/16/2017)	(23900 - 28700)/(4 - 2)	-2400
31000 (5/29/2019)	28700 (11/16/2017)	(31000 - 28700)/(5 - 2)	766.667
37100 (11/26/2019)	28700 (11/16/2017)	(37100 - 28700)/(6 - 2)	2100
17300 (4/15/2020)	28700 (11/16/2017)	(17300 - 28700)/(7 - 2)	-2280
29600 (10/26/2020)	28700 (11/16/2017)	(29600 - 28700)/(8 - 2)	150
23900 (11/13/2018)	24900 (5/22/2018)	(23900 - 24900)/(4 - 3)	-1000
31000 (5/29/2019)	24900 (5/22/2018)	(31000 - 24900)/(5 - 3)	3050
37100 (11/26/2019)	24900 (5/22/2018)	(37100 - 24900)/(6 - 3)	4066.67
17300 (4/15/2020)	24900 (5/22/2018)	(17300 - 24900)/(7 - 3)	-1900
29600 (10/26/2020)	24900 (5/22/2018)	(29600 - 24900)/(8 - 3)	940
31000 (5/29/2019)	23900 (11/13/2018)	(31000 - 23900)/(5 - 4)	7100
37100 (11/26/2019)	23900 (11/13/2018)	(37100 - 23900)/(6 - 4)	6600
17300 (4/15/2020)	23900 (11/13/2018)	(17300 - 23900)/(7 - 4)	-2200
29600 (10/26/2020)	23900 (11/13/2018)	(29600 - 23900)/(8 - 4)	1425
37100 (11/26/2019)	31000 (5/29/2019)	(37100 - 31000)/(6 - 5)	6100
17300 (4/15/2020)	31000 (5/29/2019)	(17300 - 31000)/(7 - 5)	-6850
29600 (10/26/2020)	31000 (5/29/2019)	(29600 - 31000)/(8 - 5)	-466.667
17300 (4/15/2020)	37100 (11/26/2019)	(17300 - 37100)/(7 - 6)	-19800
29600 (10/26/2020)	37100 (11/26/2019)	(29600 - 37100)/(8 - 6)	-3750
29600 (10/26/2020)	17300 (4/15/2020)	(29600 - 17300)/(8 - 7)	12300

Number of Q values = 28

Ordered Q Values

n	Q
1	-19800
2	-6850
3	-3800
4	-3750
5	-2400
6	-2280
7	-2200

8	-1900
9	-1000
10	-466.667
11	-466.667
12	150
13	766.667
14	940
15	1266.67
16	1357.14
17	1425
18	2100
19	2400
20	2725
21	3050
22	3400
23	4066.67
24	6100
25	6600
26	7100
27	8600
28	12300

Sen's Estimator (Median Q) is 1103.33

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -2200 = Q(7)
Upper limit is 3400 = Q(22)
-2200 < 0 < 3400 indicating no trend in data.

Sen's Slope Analysis

Parameter: Chloride

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
2890 (11/16/2017)	2580 (5/25/2017)	(2890 - 2580)/(2 - 1)	310
2790 (5/22/2018)	2580 (5/25/2017)	(2790 - 2580)/(3 - 1)	105
2780 (11/13/2018)	2580 (5/25/2017)	(2780 - 2580)/(4 - 1)	66.6667
2750 (5/29/2019)	2580 (5/25/2017)	(2750 - 2580)/(5 - 1)	42.5
5340 (11/26/2019)	2580 (5/25/2017)	(5340 - 2580)/(6 - 1)	552
2580 (4/15/2020)	2580 (5/25/2017)	(2580 - 2580)/(7 - 1)	0
4430 (10/27/2020)	2580 (5/25/2017)	(4430 - 2580)/(8 - 1)	264.286
2790 (5/22/2018)	2890 (11/16/2017)	(2790 - 2890)/(3 - 2)	-100
2780 (11/13/2018)	2890 (11/16/2017)	(2780 - 2890)/(4 - 2)	-55
2750 (5/29/2019)	2890 (11/16/2017)	(2750 - 2890)/(5 - 2)	-46.6667
5340 (11/26/2019)	2890 (11/16/2017)	(5340 - 2890)/(6 - 2)	612.5
2580 (4/15/2020)	2890 (11/16/2017)	(2580 - 2890)/(7 - 2)	-62
4430 (10/27/2020)	2890 (11/16/2017)	(4430 - 2890)/(8 - 2)	256.667
2780 (11/13/2018)	2790 (5/22/2018)	(2780 - 2790)/(4 - 3)	-10
2750 (5/29/2019)	2790 (5/22/2018)	(2750 - 2790)/(5 - 3)	-20
5340 (11/26/2019)	2790 (5/22/2018)	(5340 - 2790)/(6 - 3)	850
2580 (4/15/2020)	2790 (5/22/2018)	(2580 - 2790)/(7 - 3)	-52.5
4430 (10/27/2020)	2790 (5/22/2018)	(4430 - 2790)/(8 - 3)	328
2750 (5/29/2019)	2780 (11/13/2018)	(2750 - 2780)/(5 - 4)	-30
5340 (11/26/2019)	2780 (11/13/2018)	(5340 - 2780)/(6 - 4)	1280
2580 (4/15/2020)	2780 (11/13/2018)	(2580 - 2780)/(7 - 4)	-66.6667
4430 (10/27/2020)	2780 (11/13/2018)	(4430 - 2780)/(8 - 4)	412.5
5340 (11/26/2019)	2750 (5/29/2019)	(5340 - 2750)/(6 - 5)	2590
2580 (4/15/2020)	2750 (5/29/2019)	(2580 - 2750)/(7 - 5)	-85
4430 (10/27/2020)	2750 (5/29/2019)	(4430 - 2750)/(8 - 5)	560
2580 (4/15/2020)	5340 (11/26/2019)	(2580 - 5340)/(7 - 6)	-2760
4430 (10/27/2020)	5340 (11/26/2019)	(4430 - 5340)/(8 - 6)	-455
4430 (10/27/2020)	2580 (4/15/2020)	(4430 - 2580)/(8 - 7)	1850

Number of Q values = 28

Ordered Q Values

n	Q
1	-2760
2	-455
3	-100
4	-85
5	-66.6667
6	-62
7	-55

8	-52.5
9	-46.6667
10	-30
11	-20
12	-10
13	0
14	42.5
15	66.6667
16	105
17	256.667
18	264.286
19	310
20	328
21	412.5
22	552
23	560
24	612.5
25	850
26	1280
27	1850
28	2590

Sen's Estimator (Median Q) is 54.5833

Tied Group	Value	Members
1	2580	2

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 64.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.193
M1 = (28 - 13.193)/2.0 = 7.40348
M2 = (28 + 13.193)/2.0 + 1 = 21.5965
Lower limit is -55 = Q(7)
Upper limit is 552 = Q(22)
-55 < 0 < 552 indicating no trend in data.

Sen's Slope Analysis

Parameter: Cyanide, Total

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<200 (11/16/2017)	ND<200 (5/25/2017)	(200 - 200)/(2 - 1)	0
ND<200 (5/22/2018)	ND<200 (5/25/2017)	(200 - 200)/(3 - 1)	0
ND<200 (11/13/2018)	ND<200 (5/25/2017)	(200 - 200)/(4 - 1)	0
ND<200 (5/29/2019)	ND<200 (5/25/2017)	(200 - 200)/(5 - 1)	0
10 (11/26/2019)	ND<200 (5/25/2017)	(10 - 200)/(6 - 1)	-38
ND<200 (4/9/2020)	ND<200 (5/25/2017)	(200 - 200)/(7 - 1)	0
ND<200 (10/26/2020)	ND<200 (5/25/2017)	(200 - 200)/(8 - 1)	0
ND<200 (5/22/2018)	ND<200 (11/16/2017)	(200 - 200)/(3 - 2)	0
ND<200 (11/13/2018)	ND<200 (11/16/2017)	(200 - 200)/(4 - 2)	0
ND<200 (5/29/2019)	ND<200 (11/16/2017)	(200 - 200)/(5 - 2)	0
10 (11/26/2019)	ND<200 (11/16/2017)	(10 - 200)/(6 - 2)	-47.5
ND<200 (4/9/2020)	ND<200 (11/16/2017)	(200 - 200)/(7 - 2)	0
ND<200 (10/26/2020)	ND<200 (11/16/2017)	(200 - 200)/(8 - 2)	0
ND<200 (11/13/2018)	ND<200 (5/22/2018)	(200 - 200)/(4 - 3)	0
ND<200 (5/29/2019)	ND<200 (5/22/2018)	(200 - 200)/(5 - 3)	0
10 (11/26/2019)	ND<200 (5/22/2018)	(10 - 200)/(6 - 3)	-63.3333
ND<200 (4/9/2020)	ND<200 (5/22/2018)	(200 - 200)/(7 - 3)	0
ND<200 (10/26/2020)	ND<200 (5/22/2018)	(200 - 200)/(8 - 3)	0
ND<200 (5/29/2019)	ND<200 (11/13/2018)	(200 - 200)/(5 - 4)	0
10 (11/26/2019)	ND<200 (11/13/2018)	(10 - 200)/(6 - 4)	-95
ND<200 (4/9/2020)	ND<200 (11/13/2018)	(200 - 200)/(7 - 4)	0
ND<200 (10/26/2020)	ND<200 (11/13/2018)	(200 - 200)/(8 - 4)	0
10 (11/26/2019)	ND<200 (5/29/2019)	(10 - 200)/(6 - 5)	-190
ND<200 (4/9/2020)	ND<200 (5/29/2019)	(200 - 200)/(7 - 5)	0
ND<200 (10/26/2020)	ND<200 (5/29/2019)	(200 - 200)/(8 - 5)	0
ND<200 (4/9/2020)	10 (11/26/2019)	(200 - 10)/(7 - 6)	190
ND<200 (10/26/2020)	10 (11/26/2019)	(200 - 10)/(8 - 6)	95
ND<200 (10/26/2020)	ND<200 (4/9/2020)	(200 - 200)/(8 - 7)	0

Number of Q values = 28

Ordered Q Values

n	Q
1	-190
2	-95
3	-63.3333
4	-47.5
5	-38
6	0
7	0

8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	95
28	190

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	200	7

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 798
B = 0
C = 210
D = 0
E = 42
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 21
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 7.53766
M1 = (28 - 7.53766)/2.0 = 10.2312
M2 = (28 + 7.53766)/2.0 + 1 = 18.7688
Lower limit is 0 = Q(10)
Upper limit is 0 = Q(19)
0 < 0 < 0 indicating no trend in data.

Sen's Slope Analysis

Parameter: Cyanide, Total

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<200 (11/16/2017)	ND<200 (5/25/2017)	(200 - 200)/(2 - 1)	0
ND<200 (5/22/2018)	ND<200 (5/25/2017)	(200 - 200)/(3 - 1)	0
ND<200 (11/13/2018)	ND<200 (5/25/2017)	(200 - 200)/(4 - 1)	0
ND<200 (5/29/2019)	ND<200 (5/25/2017)	(200 - 200)/(5 - 1)	0
10 (11/26/2019)	ND<200 (5/25/2017)	(10 - 200)/(6 - 1)	-38
ND<200 (4/9/2020)	ND<200 (5/25/2017)	(200 - 200)/(7 - 1)	0
ND<10 (10/26/2020)	ND<200 (5/25/2017)	(10 - 200)/(8 - 1)	-27.1429
ND<200 (5/22/2018)	ND<200 (11/16/2017)	(200 - 200)/(3 - 2)	0
ND<200 (11/13/2018)	ND<200 (11/16/2017)	(200 - 200)/(4 - 2)	0
ND<200 (5/29/2019)	ND<200 (11/16/2017)	(200 - 200)/(5 - 2)	0
10 (11/26/2019)	ND<200 (11/16/2017)	(10 - 200)/(6 - 2)	-47.5
ND<200 (4/9/2020)	ND<200 (11/16/2017)	(200 - 200)/(7 - 2)	0
ND<10 (10/26/2020)	ND<200 (11/16/2017)	(10 - 200)/(8 - 2)	-31.6667
ND<200 (11/13/2018)	ND<200 (5/22/2018)	(200 - 200)/(4 - 3)	0
ND<200 (5/29/2019)	ND<200 (5/22/2018)	(200 - 200)/(5 - 3)	0
10 (11/26/2019)	ND<200 (5/22/2018)	(10 - 200)/(6 - 3)	-63.3333
ND<200 (4/9/2020)	ND<200 (5/22/2018)	(200 - 200)/(7 - 3)	0
ND<10 (10/26/2020)	ND<200 (5/22/2018)	(10 - 200)/(8 - 3)	-38
ND<200 (5/29/2019)	ND<200 (11/13/2018)	(200 - 200)/(5 - 4)	0
10 (11/26/2019)	ND<200 (11/13/2018)	(10 - 200)/(6 - 4)	-95
ND<200 (4/9/2020)	ND<200 (11/13/2018)	(200 - 200)/(7 - 4)	0
ND<10 (10/26/2020)	ND<200 (11/13/2018)	(10 - 200)/(8 - 4)	-47.5
10 (11/26/2019)	ND<200 (5/29/2019)	(10 - 200)/(6 - 5)	-190
ND<200 (4/9/2020)	ND<200 (5/29/2019)	(200 - 200)/(7 - 5)	0
ND<10 (10/26/2020)	ND<200 (5/29/2019)	(10 - 200)/(8 - 5)	-63.3333
ND<200 (4/9/2020)	10 (11/26/2019)	(200 - 10)/(7 - 6)	190
ND<10 (10/26/2020)	10 (11/26/2019)	(10 - 10)/(8 - 6)	0
ND<10 (10/26/2020)	ND<200 (4/9/2020)	(10 - 200)/(8 - 7)	-190

Number of Q values = 28

Ordered Q Values

n	Q
1	-190
2	-190
3	-95
4	-63.3333
5	-63.3333
6	-47.5
7	-47.5

8	-38
9	-38
10	-31.6667
11	-27.1429
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	190

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	200	6
2	10	2

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 528
B = 0
C = 120
D = 0
E = 32
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 36
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 9.86912
M1 = (28 - 9.86912)/2.0 = 9.06544
M2 = (28 + 9.86912)/2.0 + 1 = 19.9346
Lower limit is -38 = Q(9)
Upper limit is 0 = Q(20)
-38 < 0 < 0 indicating no trend in data.

Sen's Slope Analysis

Parameter: Cyanide, Total

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<200 (11/16/2017)	ND<200 (5/25/2017)	(200 - 200)/(2 - 1)	0
ND<200 (5/22/2018)	ND<200 (5/25/2017)	(200 - 200)/(3 - 1)	0
ND<200 (11/13/2018)	ND<200 (5/25/2017)	(200 - 200)/(4 - 1)	0
ND<200 (5/29/2019)	ND<200 (5/25/2017)	(200 - 200)/(5 - 1)	0
10 (11/26/2019)	ND<200 (5/25/2017)	(10 - 200)/(6 - 1)	-38
ND<200 (4/10/2020)	ND<200 (5/25/2017)	(200 - 200)/(7 - 1)	0
ND<200 (10/26/2020)	ND<200 (5/25/2017)	(200 - 200)/(8 - 1)	0
ND<200 (5/22/2018)	ND<200 (11/16/2017)	(200 - 200)/(3 - 2)	0
ND<200 (11/13/2018)	ND<200 (11/16/2017)	(200 - 200)/(4 - 2)	0
ND<200 (5/29/2019)	ND<200 (11/16/2017)	(200 - 200)/(5 - 2)	0
10 (11/26/2019)	ND<200 (11/16/2017)	(10 - 200)/(6 - 2)	-47.5
ND<200 (4/10/2020)	ND<200 (11/16/2017)	(200 - 200)/(7 - 2)	0
ND<200 (10/26/2020)	ND<200 (11/16/2017)	(200 - 200)/(8 - 2)	0
ND<200 (11/13/2018)	ND<200 (5/22/2018)	(200 - 200)/(4 - 3)	0
ND<200 (5/29/2019)	ND<200 (5/22/2018)	(200 - 200)/(5 - 3)	0
10 (11/26/2019)	ND<200 (5/22/2018)	(10 - 200)/(6 - 3)	-63.3333
ND<200 (4/10/2020)	ND<200 (5/22/2018)	(200 - 200)/(7 - 3)	0
ND<200 (10/26/2020)	ND<200 (5/22/2018)	(200 - 200)/(8 - 3)	0
ND<200 (5/29/2019)	ND<200 (11/13/2018)	(200 - 200)/(5 - 4)	0
10 (11/26/2019)	ND<200 (11/13/2018)	(10 - 200)/(6 - 4)	-95
ND<200 (4/10/2020)	ND<200 (11/13/2018)	(200 - 200)/(7 - 4)	0
ND<200 (10/26/2020)	ND<200 (11/13/2018)	(200 - 200)/(8 - 4)	0
10 (11/26/2019)	ND<200 (5/29/2019)	(10 - 200)/(6 - 5)	-190
ND<200 (4/10/2020)	ND<200 (5/29/2019)	(200 - 200)/(7 - 5)	0
ND<200 (10/26/2020)	ND<200 (5/29/2019)	(200 - 200)/(8 - 5)	0
ND<200 (4/10/2020)	10 (11/26/2019)	(200 - 10)/(7 - 6)	190
ND<200 (10/26/2020)	10 (11/26/2019)	(200 - 10)/(8 - 6)	95
ND<200 (10/26/2020)	ND<200 (4/10/2020)	(200 - 200)/(8 - 7)	0

Number of Q values = 28

Ordered Q Values

n	Q
1	-190
2	-95
3	-63.3333
4	-47.5
5	-38
6	0
7	0

8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	95
28	190

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	200	7

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 798
B = 0
C = 210
D = 0
E = 42
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 21
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 7.53766
M1 = (28 - 7.53766)/2.0 = 10.2312
M2 = (28 + 7.53766)/2.0 + 1 = 18.7688
Lower limit is 0 = Q(10)
Upper limit is 0 = Q(19)
0 < 0 < 0 indicating no trend in data.

Sen's Slope Analysis

Parameter: Cyanide, Total

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<200 (11/16/2017)	ND<200 (5/25/2017)	(200 - 200)/(2 - 1)	0
ND<200 (5/22/2018)	ND<200 (5/25/2017)	(200 - 200)/(3 - 1)	0
ND<200 (11/13/2018)	ND<200 (5/25/2017)	(200 - 200)/(4 - 1)	0
ND<200 (5/29/2019)	ND<200 (5/25/2017)	(200 - 200)/(5 - 1)	0
10 (11/26/2019)	ND<200 (5/25/2017)	(10 - 200)/(6 - 1)	-38
ND<200 (4/10/2020)	ND<200 (5/25/2017)	(200 - 200)/(7 - 1)	0
ND<200 (10/27/2020)	ND<200 (5/25/2017)	(200 - 200)/(8 - 1)	0
ND<200 (5/22/2018)	ND<200 (11/16/2017)	(200 - 200)/(3 - 2)	0
ND<200 (11/13/2018)	ND<200 (11/16/2017)	(200 - 200)/(4 - 2)	0
ND<200 (5/29/2019)	ND<200 (11/16/2017)	(200 - 200)/(5 - 2)	0
10 (11/26/2019)	ND<200 (11/16/2017)	(10 - 200)/(6 - 2)	-47.5
ND<200 (4/10/2020)	ND<200 (11/16/2017)	(200 - 200)/(7 - 2)	0
ND<200 (10/27/2020)	ND<200 (11/16/2017)	(200 - 200)/(8 - 2)	0
ND<200 (11/13/2018)	ND<200 (5/22/2018)	(200 - 200)/(4 - 3)	0
ND<200 (5/29/2019)	ND<200 (5/22/2018)	(200 - 200)/(5 - 3)	0
10 (11/26/2019)	ND<200 (5/22/2018)	(10 - 200)/(6 - 3)	-63.3333
ND<200 (4/10/2020)	ND<200 (5/22/2018)	(200 - 200)/(7 - 3)	0
ND<200 (10/27/2020)	ND<200 (5/22/2018)	(200 - 200)/(8 - 3)	0
ND<200 (5/29/2019)	ND<200 (11/13/2018)	(200 - 200)/(5 - 4)	0
10 (11/26/2019)	ND<200 (11/13/2018)	(10 - 200)/(6 - 4)	-95
ND<200 (4/10/2020)	ND<200 (11/13/2018)	(200 - 200)/(7 - 4)	0
ND<200 (10/27/2020)	ND<200 (11/13/2018)	(200 - 200)/(8 - 4)	0
10 (11/26/2019)	ND<200 (5/29/2019)	(10 - 200)/(6 - 5)	-190
ND<200 (4/10/2020)	ND<200 (5/29/2019)	(200 - 200)/(7 - 5)	0
ND<200 (10/27/2020)	ND<200 (5/29/2019)	(200 - 200)/(8 - 5)	0
ND<200 (4/10/2020)	10 (11/26/2019)	(200 - 10)/(7 - 6)	190
ND<200 (10/27/2020)	10 (11/26/2019)	(200 - 10)/(8 - 6)	95
ND<200 (10/27/2020)	ND<200 (4/10/2020)	(200 - 200)/(8 - 7)	0

Number of Q values = 28

Ordered Q Values

n	Q
1	-190
2	-95
3	-63.3333
4	-47.5
5	-38
6	0
7	0

8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	95
28	190

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	200	7

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 798
B = 0
C = 210
D = 0
E = 42
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 21
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 7.53766
M1 = (28 - 7.53766)/2.0 = 10.2312
M2 = (28 + 7.53766)/2.0 + 1 = 18.7688
Lower limit is 0 = Q(10)
Upper limit is 0 = Q(19)
0 < 0 < 0 indicating no trend in data.

Sen's Slope Analysis

Parameter: Iron

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
467 (11/16/2017)	139 (5/25/2017)	(467 - 139)/(2 - 1)	328
1370 (5/22/2018)	139 (5/25/2017)	(1370 - 139)/(3 - 1)	615.5
160 (11/13/2018)	139 (5/25/2017)	(160 - 139)/(4 - 1)	7
323 (5/29/2019)	139 (5/25/2017)	(323 - 139)/(5 - 1)	46
ND<100 (11/26/2019)	139 (5/25/2017)	(100 - 139)/(6 - 1)	-7.8
ND<100 (4/9/2020)	139 (5/25/2017)	(100 - 139)/(7 - 1)	-6.5
405 (10/26/2020)	139 (5/25/2017)	(405 - 139)/(8 - 1)	38
1370 (5/22/2018)	467 (11/16/2017)	(1370 - 467)/(3 - 2)	903
160 (11/13/2018)	467 (11/16/2017)	(160 - 467)/(4 - 2)	-153.5
323 (5/29/2019)	467 (11/16/2017)	(323 - 467)/(5 - 2)	-48
ND<100 (11/26/2019)	467 (11/16/2017)	(100 - 467)/(6 - 2)	-91.75
ND<100 (4/9/2020)	467 (11/16/2017)	(100 - 467)/(7 - 2)	-73.4
405 (10/26/2020)	467 (11/16/2017)	(405 - 467)/(8 - 2)	-10.3333
160 (11/13/2018)	1370 (5/22/2018)	(160 - 1370)/(4 - 3)	-1210
323 (5/29/2019)	1370 (5/22/2018)	(323 - 1370)/(5 - 3)	-523.5
ND<100 (11/26/2019)	1370 (5/22/2018)	(100 - 1370)/(6 - 3)	-423.333
ND<100 (4/9/2020)	1370 (5/22/2018)	(100 - 1370)/(7 - 3)	-317.5
405 (10/26/2020)	1370 (5/22/2018)	(405 - 1370)/(8 - 3)	-193
323 (5/29/2019)	160 (11/13/2018)	(323 - 160)/(5 - 4)	163
ND<100 (11/26/2019)	160 (11/13/2018)	(100 - 160)/(6 - 4)	-30
ND<100 (4/9/2020)	160 (11/13/2018)	(100 - 160)/(7 - 4)	-20
405 (10/26/2020)	160 (11/13/2018)	(405 - 160)/(8 - 4)	61.25
ND<100 (11/26/2019)	323 (5/29/2019)	(100 - 323)/(6 - 5)	-223
ND<100 (4/9/2020)	323 (5/29/2019)	(100 - 323)/(7 - 5)	-111.5
405 (10/26/2020)	323 (5/29/2019)	(405 - 323)/(8 - 5)	27.3333
ND<100 (4/9/2020)	ND<100 (11/26/2019)	(100 - 100)/(7 - 6)	0
405 (10/26/2020)	ND<100 (11/26/2019)	(405 - 100)/(8 - 6)	152.5
405 (10/26/2020)	ND<100 (4/9/2020)	(405 - 100)/(8 - 7)	305

Number of Q values = 28

Ordered Q Values

n	Q
1	-1210
2	-523.5
3	-423.333
4	-317.5
5	-223
6	-193
7	-153.5

8	-111.5
9	-91.75
10	-73.4
11	-48
12	-30
13	-20
14	-10.3333
15	-7.8
16	-6.5
17	0
18	7
19	27.3333
20	38
21	46
22	61.25
23	152.5
24	163
25	305
26	328
27	615.5
28	903

Sen's Estimator (Median Q) is -9.06667

Tied Group	Value	Members
1	100	2

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 64.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.193
M1 = (28 - 13.193)/2.0 = 7.40348
M2 = (28 + 13.193)/2.0 + 1 = 21.5965
Lower limit is -153.5 = Q(7)
Upper limit is 61.25 = Q(22)
-153.5 < 0 < 61.25 indicating no trend in data.

Sen's Slope Analysis

Parameter: Iron

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
137 (11/16/2017)	ND<100 (5/25/2017)	(137 - 100)/(2 - 1)	37
ND<100 (5/22/2018)	ND<100 (5/25/2017)	(100 - 100)/(3 - 1)	0
ND<100 (11/13/2018)	ND<100 (5/25/2017)	(100 - 100)/(4 - 1)	0
350 (5/29/2019)	ND<100 (5/25/2017)	(350 - 100)/(5 - 1)	62.5
238 (11/26/2019)	ND<100 (5/25/2017)	(238 - 100)/(6 - 1)	27.6
ND<100 (4/9/2020)	ND<100 (5/25/2017)	(100 - 100)/(7 - 1)	0
137 (10/26/2020)	ND<100 (5/25/2017)	(137 - 100)/(8 - 1)	5.28571
ND<100 (5/22/2018)	137 (11/16/2017)	(100 - 137)/(3 - 2)	-37
ND<100 (11/13/2018)	137 (11/16/2017)	(100 - 137)/(4 - 2)	-18.5
350 (5/29/2019)	137 (11/16/2017)	(350 - 137)/(5 - 2)	71
238 (11/26/2019)	137 (11/16/2017)	(238 - 137)/(6 - 2)	25.25
ND<100 (4/9/2020)	137 (11/16/2017)	(100 - 137)/(7 - 2)	-7.4
137 (10/26/2020)	137 (11/16/2017)	(137 - 137)/(8 - 2)	0
ND<100 (11/13/2018)	ND<100 (5/22/2018)	(100 - 100)/(4 - 3)	0
350 (5/29/2019)	ND<100 (5/22/2018)	(350 - 100)/(5 - 3)	125
238 (11/26/2019)	ND<100 (5/22/2018)	(238 - 100)/(6 - 3)	46
ND<100 (4/9/2020)	ND<100 (5/22/2018)	(100 - 100)/(7 - 3)	0
137 (10/26/2020)	ND<100 (5/22/2018)	(137 - 100)/(8 - 3)	7.4
350 (5/29/2019)	ND<100 (11/13/2018)	(350 - 100)/(5 - 4)	250
238 (11/26/2019)	ND<100 (11/13/2018)	(238 - 100)/(6 - 4)	69
ND<100 (4/9/2020)	ND<100 (11/13/2018)	(100 - 100)/(7 - 4)	0
137 (10/26/2020)	ND<100 (11/13/2018)	(137 - 100)/(8 - 4)	9.25
238 (11/26/2019)	350 (5/29/2019)	(238 - 350)/(6 - 5)	-112
ND<100 (4/9/2020)	350 (5/29/2019)	(100 - 350)/(7 - 5)	-125
137 (10/26/2020)	350 (5/29/2019)	(137 - 350)/(8 - 5)	-71
ND<100 (4/9/2020)	238 (11/26/2019)	(100 - 238)/(7 - 6)	-138
137 (10/26/2020)	238 (11/26/2019)	(137 - 238)/(8 - 6)	-50.5
137 (10/26/2020)	ND<100 (4/9/2020)	(137 - 100)/(8 - 7)	37

Number of Q values = 28

Ordered Q Values

n	Q
1	-138
2	-125
3	-112
4	-71
5	-50.5
6	-37
7	-18.5

8	-7.4
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	5.28571
17	7.4
18	9.25
19	25.25
20	27.6
21	37
22	37
23	46
24	62.5
25	69
26	71
27	125
28	250

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	100	4
2	137	2

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 174
B = 0
C = 24
D = 0
E = 14
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 55.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 12.2723
M1 = (28 - 12.2723)/2.0 = 7.86387
M2 = (28 + 12.2723)/2.0 + 1 = 21.1361
Lower limit is -7.4 = Q(8)
Upper limit is 37 = Q(21)
-7.4 < 0 < 37 indicating no trend in data.

Sen's Slope Analysis

Parameter: Iron

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
147 (11/16/2017)	273 (5/25/2017)	(147 - 273)/(2 - 1)	-126
124 (5/22/2018)	273 (5/25/2017)	(124 - 273)/(3 - 1)	-74.5
126 (11/13/2018)	273 (5/25/2017)	(126 - 273)/(4 - 1)	-49
183 (5/29/2019)	273 (5/25/2017)	(183 - 273)/(5 - 1)	-22.5
323 (11/26/2019)	273 (5/25/2017)	(323 - 273)/(6 - 1)	10
1080 (4/10/2020)	273 (5/25/2017)	(1080 - 273)/(7 - 1)	134.5
475 (9/2/2020)	273 (5/25/2017)	(475 - 273)/(8 - 1)	28.8571
ND<100 (10/27/2020)	273 (5/25/2017)	(100 - 273)/(9 - 1)	-21.625
124 (5/22/2018)	147 (11/16/2017)	(124 - 147)/(3 - 2)	-23
126 (11/13/2018)	147 (11/16/2017)	(126 - 147)/(4 - 2)	-10.5
183 (5/29/2019)	147 (11/16/2017)	(183 - 147)/(5 - 2)	12
323 (11/26/2019)	147 (11/16/2017)	(323 - 147)/(6 - 2)	44
1080 (4/10/2020)	147 (11/16/2017)	(1080 - 147)/(7 - 2)	186.6
475 (9/2/2020)	147 (11/16/2017)	(475 - 147)/(8 - 2)	54.6667
ND<100 (10/27/2020)	147 (11/16/2017)	(100 - 147)/(9 - 2)	-6.71429
126 (11/13/2018)	124 (5/22/2018)	(126 - 124)/(4 - 3)	2
183 (5/29/2019)	124 (5/22/2018)	(183 - 124)/(5 - 3)	29.5
323 (11/26/2019)	124 (5/22/2018)	(323 - 124)/(6 - 3)	66.3333
1080 (4/10/2020)	124 (5/22/2018)	(1080 - 124)/(7 - 3)	239
475 (9/2/2020)	124 (5/22/2018)	(475 - 124)/(8 - 3)	70.2
ND<100 (10/27/2020)	124 (5/22/2018)	(100 - 124)/(9 - 3)	-4
183 (5/29/2019)	126 (11/13/2018)	(183 - 126)/(5 - 4)	57
323 (11/26/2019)	126 (11/13/2018)	(323 - 126)/(6 - 4)	98.5
1080 (4/10/2020)	126 (11/13/2018)	(1080 - 126)/(7 - 4)	318
475 (9/2/2020)	126 (11/13/2018)	(475 - 126)/(8 - 4)	87.25
ND<100 (10/27/2020)	126 (11/13/2018)	(100 - 126)/(9 - 4)	-5.2
323 (11/26/2019)	183 (5/29/2019)	(323 - 183)/(6 - 5)	140
1080 (4/10/2020)	183 (5/29/2019)	(1080 - 183)/(7 - 5)	448.5
475 (9/2/2020)	183 (5/29/2019)	(475 - 183)/(8 - 5)	97.3333
ND<100 (10/27/2020)	183 (5/29/2019)	(100 - 183)/(9 - 5)	-20.75
1080 (4/10/2020)	323 (11/26/2019)	(1080 - 323)/(7 - 6)	757
475 (9/2/2020)	323 (11/26/2019)	(475 - 323)/(8 - 6)	76
ND<100 (10/27/2020)	323 (11/26/2019)	(100 - 323)/(9 - 6)	-74.3333
475 (9/2/2020)	1080 (4/10/2020)	(475 - 1080)/(8 - 7)	-605
ND<100 (10/27/2020)	1080 (4/10/2020)	(100 - 1080)/(9 - 7)	-490
ND<100 (10/27/2020)	475 (9/2/2020)	(100 - 475)/(9 - 8)	-375

Number of Q values = 36

Ordered Q Values

n	Q
1	-605
2	-490
3	-375
4	-126
5	-74.5
6	-74.3333
7	-49
8	-23
9	-22.5
10	-21.625
11	-20.75
12	-10.5
13	-6.71429
14	-5.2
15	-4
16	2
17	10
18	12
19	28.8571
20	29.5
21	44
22	54.6667
23	57
24	66.3333
25	70.2
26	76
27	87.25
28	97.3333
29	98.5
30	134.5
31	140
32	186.6
33	239
34	318
35	448.5
36	757

Sen's Estimator (Median Q) is 20.4286

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
9/2/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0

a = 1656
b = 4536
c = 144
Group Variance = 92
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 15.7769
M1 = (36 - 15.7769)/2.0 = 10.1116
M2 = (36 + 15.7769)/2.0 + 1 = 26.8884
Lower limit is -21.625 = Q(10)
Upper limit is 87.25 = Q(27)
-21.625 < 0 < 87.25 indicating no trend in data.

Sen's Slope Analysis

Parameter: Iron

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<100 (11/16/2017)	265 (5/25/2017)	(100 - 265)/(2 - 1)	-165
ND<100 (5/22/2018)	265 (5/25/2017)	(100 - 265)/(3 - 1)	-82.5
327 (11/13/2018)	265 (5/25/2017)	(327 - 265)/(4 - 1)	20.6667
ND<100 (5/29/2019)	265 (5/25/2017)	(100 - 265)/(5 - 1)	-41.25
167 (11/26/2019)	265 (5/25/2017)	(167 - 265)/(6 - 1)	-19.6
116 (4/10/2020)	265 (5/25/2017)	(116 - 265)/(7 - 1)	-24.8333
194 (10/27/2020)	265 (5/25/2017)	(194 - 265)/(8 - 1)	-10.1429
ND<100 (5/22/2018)	ND<100 (11/16/2017)	(100 - 100)/(3 - 2)	0
327 (11/13/2018)	ND<100 (11/16/2017)	(327 - 100)/(4 - 2)	113.5
ND<100 (5/29/2019)	ND<100 (11/16/2017)	(100 - 100)/(5 - 2)	0
167 (11/26/2019)	ND<100 (11/16/2017)	(167 - 100)/(6 - 2)	16.75
116 (4/10/2020)	ND<100 (11/16/2017)	(116 - 100)/(7 - 2)	3.2
194 (10/27/2020)	ND<100 (11/16/2017)	(194 - 100)/(8 - 2)	15.6667
327 (11/13/2018)	ND<100 (5/22/2018)	(327 - 100)/(4 - 3)	227
ND<100 (5/29/2019)	ND<100 (5/22/2018)	(100 - 100)/(5 - 3)	0
167 (11/26/2019)	ND<100 (5/22/2018)	(167 - 100)/(6 - 3)	22.3333
116 (4/10/2020)	ND<100 (5/22/2018)	(116 - 100)/(7 - 3)	4
194 (10/27/2020)	ND<100 (5/22/2018)	(194 - 100)/(8 - 3)	18.8
ND<100 (5/29/2019)	327 (11/13/2018)	(100 - 327)/(5 - 4)	-227
167 (11/26/2019)	327 (11/13/2018)	(167 - 327)/(6 - 4)	-80
116 (4/10/2020)	327 (11/13/2018)	(116 - 327)/(7 - 4)	-70.3333
194 (10/27/2020)	327 (11/13/2018)	(194 - 327)/(8 - 4)	-33.25
167 (11/26/2019)	ND<100 (5/29/2019)	(167 - 100)/(6 - 5)	67
116 (4/10/2020)	ND<100 (5/29/2019)	(116 - 100)/(7 - 5)	8
194 (10/27/2020)	ND<100 (5/29/2019)	(194 - 100)/(8 - 5)	31.3333
116 (4/10/2020)	167 (11/26/2019)	(116 - 167)/(7 - 6)	-51
194 (10/27/2020)	167 (11/26/2019)	(194 - 167)/(8 - 6)	13.5
194 (10/27/2020)	116 (4/10/2020)	(194 - 116)/(8 - 7)	78

Number of Q values = 28

Ordered Q Values

n	Q
1	-227
2	-165
3	-82.5
4	-80
5	-70.3333
6	-51
7	-41.25

8	-33.25
9	-24.8333
10	-19.6
11	-10.1429
12	0
13	0
14	0
15	3.2
16	4
17	8
18	13.5
19	15.6667
20	16.75
21	18.8
22	20.6667
23	22.3333
24	31.3333
25	67
26	78
27	113.5
28	227

Sen's Estimator (Median Q) is 1.6

Tied Group	Value	Members
1	100	3

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 61.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 12.9167
M1 = (28 - 12.9167)/2.0 = 7.54164
M2 = (28 + 12.9167)/2.0 + 1 = 21.4584
Lower limit is -33.25 = Q(8)
Upper limit is 18.8 = Q(21)
-33.25 < 0 < 18.8 indicating no trend in data.

Sen's Slope Analysis

Parameter: Magnesium

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
2460 (11/16/2017)	4290 (5/25/2017)	(2460 - 4290)/(2 - 1)	-1830
4340 (5/22/2018)	4290 (5/25/2017)	(4340 - 4290)/(3 - 1)	25
5820 (11/13/2018)	4290 (5/25/2017)	(5820 - 4290)/(4 - 1)	510
3790 (5/29/2019)	4290 (5/25/2017)	(3790 - 4290)/(5 - 1)	-125
3750 (11/26/2019)	4290 (5/25/2017)	(3750 - 4290)/(6 - 1)	-108
5010 (4/9/2020)	4290 (5/25/2017)	(5010 - 4290)/(7 - 1)	120
6250 (10/26/2020)	4290 (5/25/2017)	(6250 - 4290)/(8 - 1)	280
4340 (5/22/2018)	2460 (11/16/2017)	(4340 - 2460)/(3 - 2)	1880
5820 (11/13/2018)	2460 (11/16/2017)	(5820 - 2460)/(4 - 2)	1680
3790 (5/29/2019)	2460 (11/16/2017)	(3790 - 2460)/(5 - 2)	443.333
3750 (11/26/2019)	2460 (11/16/2017)	(3750 - 2460)/(6 - 2)	322.5
5010 (4/9/2020)	2460 (11/16/2017)	(5010 - 2460)/(7 - 2)	510
6250 (10/26/2020)	2460 (11/16/2017)	(6250 - 2460)/(8 - 2)	631.667
5820 (11/13/2018)	4340 (5/22/2018)	(5820 - 4340)/(4 - 3)	1480
3790 (5/29/2019)	4340 (5/22/2018)	(3790 - 4340)/(5 - 3)	-275
3750 (11/26/2019)	4340 (5/22/2018)	(3750 - 4340)/(6 - 3)	-196.667
5010 (4/9/2020)	4340 (5/22/2018)	(5010 - 4340)/(7 - 3)	167.5
6250 (10/26/2020)	4340 (5/22/2018)	(6250 - 4340)/(8 - 3)	382
3790 (5/29/2019)	5820 (11/13/2018)	(3790 - 5820)/(5 - 4)	-2030
3750 (11/26/2019)	5820 (11/13/2018)	(3750 - 5820)/(6 - 4)	-1035
5010 (4/9/2020)	5820 (11/13/2018)	(5010 - 5820)/(7 - 4)	-270
6250 (10/26/2020)	5820 (11/13/2018)	(6250 - 5820)/(8 - 4)	107.5
3750 (11/26/2019)	3790 (5/29/2019)	(3750 - 3790)/(6 - 5)	-40
5010 (4/9/2020)	3790 (5/29/2019)	(5010 - 3790)/(7 - 5)	610
6250 (10/26/2020)	3790 (5/29/2019)	(6250 - 3790)/(8 - 5)	820
5010 (4/9/2020)	3750 (11/26/2019)	(5010 - 3750)/(7 - 6)	1260
6250 (10/26/2020)	3750 (11/26/2019)	(6250 - 3750)/(8 - 6)	1250
6250 (10/26/2020)	5010 (4/9/2020)	(6250 - 5010)/(8 - 7)	1240

Number of Q values = 28

Ordered Q Values

n	Q
1	-2030
2	-1830
3	-1035
4	-275
5	-270
6	-196.667
7	-125

8	-108
9	-40
10	25
11	107.5
12	120
13	167.5
14	280
15	322.5
16	382
17	443.333
18	510
19	510
20	610
21	631.667
22	820
23	1240
24	1250
25	1260
26	1480
27	1680
28	1880

Sen's Estimator (Median Q) is 301.25

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -125 = Q(7)
Upper limit is 820 = Q(22)
-125 < 0 < 820 indicating no trend in data.

Sen's Slope Analysis

Parameter: Magnesium

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
31600 (11/16/2017)	28400 (2/25/2017)	(31600 - 28400)/(2 - 1)	3200
28800 (5/22/2018)	28400 (2/25/2017)	(28800 - 28400)/(3 - 1)	200
28900 (11/13/2018)	28400 (2/25/2017)	(28900 - 28400)/(4 - 1)	166.667
41500 (5/29/2019)	28400 (2/25/2017)	(41500 - 28400)/(5 - 1)	3275
38200 (11/26/2019)	28400 (2/25/2017)	(38200 - 28400)/(6 - 1)	1960
38100 (4/9/2020)	28400 (2/25/2017)	(38100 - 28400)/(7 - 1)	1616.67
62900 (10/26/2020)	28400 (2/25/2017)	(62900 - 28400)/(8 - 1)	4928.57
28800 (5/22/2018)	31600 (11/16/2017)	(28800 - 31600)/(3 - 2)	-2800
28900 (11/13/2018)	31600 (11/16/2017)	(28900 - 31600)/(4 - 2)	-1350
41500 (5/29/2019)	31600 (11/16/2017)	(41500 - 31600)/(5 - 2)	3300
38200 (11/26/2019)	31600 (11/16/2017)	(38200 - 31600)/(6 - 2)	1650
38100 (4/9/2020)	31600 (11/16/2017)	(38100 - 31600)/(7 - 2)	1300
62900 (10/26/2020)	31600 (11/16/2017)	(62900 - 31600)/(8 - 2)	5216.67
28900 (11/13/2018)	28800 (5/22/2018)	(28900 - 28800)/(4 - 3)	100
41500 (5/29/2019)	28800 (5/22/2018)	(41500 - 28800)/(5 - 3)	6350
38200 (11/26/2019)	28800 (5/22/2018)	(38200 - 28800)/(6 - 3)	3133.33
38100 (4/9/2020)	28800 (5/22/2018)	(38100 - 28800)/(7 - 3)	2325
62900 (10/26/2020)	28800 (5/22/2018)	(62900 - 28800)/(8 - 3)	6820
41500 (5/29/2019)	28900 (11/13/2018)	(41500 - 28900)/(5 - 4)	12600
38200 (11/26/2019)	28900 (11/13/2018)	(38200 - 28900)/(6 - 4)	4650
38100 (4/9/2020)	28900 (11/13/2018)	(38100 - 28900)/(7 - 4)	3066.67
62900 (10/26/2020)	28900 (11/13/2018)	(62900 - 28900)/(8 - 4)	8500
38200 (11/26/2019)	41500 (5/29/2019)	(38200 - 41500)/(6 - 5)	-3300
38100 (4/9/2020)	41500 (5/29/2019)	(38100 - 41500)/(7 - 5)	-1700
62900 (10/26/2020)	41500 (5/29/2019)	(62900 - 41500)/(8 - 5)	7133.33
38100 (4/9/2020)	38200 (11/26/2019)	(38100 - 38200)/(7 - 6)	-100
62900 (10/26/2020)	38200 (11/26/2019)	(62900 - 38200)/(8 - 6)	12350
62900 (10/26/2020)	38100 (4/9/2020)	(62900 - 38100)/(8 - 7)	24800

Number of Q values = 28

Ordered Q Values

n	Q
1	-3300
2	-2800
3	-1700
4	-1350
5	-100
6	100
7	166.667

8	200
9	1300
10	1616.67
11	1650
12	1960
13	2325
14	3066.67
15	3133.33
16	3200
17	3275
18	3300
19	4650
20	4928.57
21	5216.67
22	6350
23	6820
24	7133.33
25	8500
26	12350
27	12600
28	24800

Sen's Estimator (Median Q) is 3100

Time Period	Observations
2/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is 166.667 = Q(7)
Upper limit is 6350 = Q(22)
166.667 > 0 indicating an upward trend in data.

Sen's Slope Analysis

Parameter: Magnesium

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
24900 (11/16/2017)	28500 (5/25/2017)	(24900 - 28500)/(2 - 1)	-3600
32700 (5/22/2018)	28500 (5/25/2017)	(32700 - 28500)/(3 - 1)	2100
28300 (11/13/2018)	28500 (5/25/2017)	(28300 - 28500)/(4 - 1)	-66.6667
39600 (5/29/2019)	28500 (5/25/2017)	(39600 - 28500)/(5 - 1)	2775
32300 (11/26/2019)	28500 (5/25/2017)	(32300 - 28500)/(6 - 1)	760
34000 (4/10/2020)	28500 (5/25/2017)	(34000 - 28500)/(7 - 1)	916.667
1650 (10/27/2020)	28500 (5/25/2017)	(1650 - 28500)/(8 - 1)	-3835.71
32700 (5/22/2018)	24900 (11/16/2017)	(32700 - 24900)/(3 - 2)	7800
28300 (11/13/2018)	24900 (11/16/2017)	(28300 - 24900)/(4 - 2)	1700
39600 (5/29/2019)	24900 (11/16/2017)	(39600 - 24900)/(5 - 2)	4900
32300 (11/26/2019)	24900 (11/16/2017)	(32300 - 24900)/(6 - 2)	1850
34000 (4/10/2020)	24900 (11/16/2017)	(34000 - 24900)/(7 - 2)	1820
1650 (10/27/2020)	24900 (11/16/2017)	(1650 - 24900)/(8 - 2)	-3875
28300 (11/13/2018)	32700 (5/22/2018)	(28300 - 32700)/(4 - 3)	-4400
39600 (5/29/2019)	32700 (5/22/2018)	(39600 - 32700)/(5 - 3)	3450
32300 (11/26/2019)	32700 (5/22/2018)	(32300 - 32700)/(6 - 3)	-133.333
34000 (4/10/2020)	32700 (5/22/2018)	(34000 - 32700)/(7 - 3)	325
1650 (10/27/2020)	32700 (5/22/2018)	(1650 - 32700)/(8 - 3)	-6210
39600 (5/29/2019)	28300 (11/13/2018)	(39600 - 28300)/(5 - 4)	11300
32300 (11/26/2019)	28300 (11/13/2018)	(32300 - 28300)/(6 - 4)	2000
34000 (4/10/2020)	28300 (11/13/2018)	(34000 - 28300)/(7 - 4)	1900
1650 (10/27/2020)	28300 (11/13/2018)	(1650 - 28300)/(8 - 4)	-6662.5
32300 (11/26/2019)	39600 (5/29/2019)	(32300 - 39600)/(6 - 5)	-7300
34000 (4/10/2020)	39600 (5/29/2019)	(34000 - 39600)/(7 - 5)	-2800
1650 (10/27/2020)	39600 (5/29/2019)	(1650 - 39600)/(8 - 5)	-12650
34000 (4/10/2020)	32300 (11/26/2019)	(34000 - 32300)/(7 - 6)	1700
1650 (10/27/2020)	32300 (11/26/2019)	(1650 - 32300)/(8 - 6)	-15325
1650 (10/27/2020)	34000 (4/10/2020)	(1650 - 34000)/(8 - 7)	-32350

Number of Q values = 28

Ordered Q Values

n	Q
1	-32350
2	-15325
3	-12650
4	-7300
5	-6662.5
6	-6210
7	-4400

8	-3875
9	-3835.71
10	-3600
11	-2800
12	-133.333
13	-66.6667
14	325
15	760
16	916.667
17	1700
18	1700
19	1820
20	1850
21	1900
22	2000
23	2100
24	2775
25	3450
26	4900
27	7800
28	11300

Sen's Estimator (Median Q) is 542.5

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -4400 = Q(7)
Upper limit is 2000 = Q(22)
-4400 < 0 < 2000 indicating no trend in data.

Sen's Slope Analysis

Parameter: Magnesium

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
1770 (11/16/2017)	1360 (5/25/2017)	(1770 - 1360)/(2 - 1)	410
1730 (5/22/2018)	1360 (5/25/2017)	(1730 - 1360)/(3 - 1)	185
2670 (11/13/2018)	1360 (5/25/2017)	(2670 - 1360)/(4 - 1)	436.667
1860 (5/29/2019)	1360 (5/25/2017)	(1860 - 1360)/(5 - 1)	125
1370 (11/26/2019)	1360 (5/25/2017)	(1370 - 1360)/(6 - 1)	2
12700 (4/10/2020)	1360 (5/25/2017)	(12700 - 1360)/(7 - 1)	1890
5060 (10/27/2020)	1360 (5/25/2017)	(5060 - 1360)/(8 - 1)	528.571
1730 (5/22/2018)	1770 (11/16/2017)	(1730 - 1770)/(3 - 2)	-40
2670 (11/13/2018)	1770 (11/16/2017)	(2670 - 1770)/(4 - 2)	450
1860 (5/29/2019)	1770 (11/16/2017)	(1860 - 1770)/(5 - 2)	30
1370 (11/26/2019)	1770 (11/16/2017)	(1370 - 1770)/(6 - 2)	-100
12700 (4/10/2020)	1770 (11/16/2017)	(12700 - 1770)/(7 - 2)	2186
5060 (10/27/2020)	1770 (11/16/2017)	(5060 - 1770)/(8 - 2)	548.333
2670 (11/13/2018)	1730 (5/22/2018)	(2670 - 1730)/(4 - 3)	940
1860 (5/29/2019)	1730 (5/22/2018)	(1860 - 1730)/(5 - 3)	65
1370 (11/26/2019)	1730 (5/22/2018)	(1370 - 1730)/(6 - 3)	-120
12700 (4/10/2020)	1730 (5/22/2018)	(12700 - 1730)/(7 - 3)	2742.5
5060 (10/27/2020)	1730 (5/22/2018)	(5060 - 1730)/(8 - 3)	666
1860 (5/29/2019)	2670 (11/13/2018)	(1860 - 2670)/(5 - 4)	-810
1370 (11/26/2019)	2670 (11/13/2018)	(1370 - 2670)/(6 - 4)	-650
12700 (4/10/2020)	2670 (11/13/2018)	(12700 - 2670)/(7 - 4)	3343.33
5060 (10/27/2020)	2670 (11/13/2018)	(5060 - 2670)/(8 - 4)	597.5
1370 (11/26/2019)	1860 (5/29/2019)	(1370 - 1860)/(6 - 5)	-490
12700 (4/10/2020)	1860 (5/29/2019)	(12700 - 1860)/(7 - 5)	5420
5060 (10/27/2020)	1860 (5/29/2019)	(5060 - 1860)/(8 - 5)	1066.67
12700 (4/10/2020)	1370 (11/26/2019)	(12700 - 1370)/(7 - 6)	11330
5060 (10/27/2020)	1370 (11/26/2019)	(5060 - 1370)/(8 - 6)	1845
5060 (10/27/2020)	12700 (4/10/2020)	(5060 - 12700)/(8 - 7)	-7640

Number of Q values = 28

Ordered Q Values

n	Q
1	-7640
2	-810
3	-650
4	-490
5	-120
6	-100
7	-40

8	2
9	30
10	65
11	125
12	185
13	410
14	436.667
15	450
16	528.571
17	548.333
18	597.5
19	666
20	940
21	1066.67
22	1845
23	1890
24	2186
25	2742.5
26	3343.33
27	5420
28	11330

Sen's Estimator (Median Q) is 443.333

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -40 = Q(7)
Upper limit is 1845 = Q(22)
-40 < 0 < 1845 indicating no trend in data.

Sen's Slope Analysis

Parameter: Manganese

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
2310 (11/16/2017)	1690 (2/25/2017)	(2310 - 1690)/(2 - 1)	620
2360 (5/22/2018)	1690 (2/25/2017)	(2360 - 1690)/(3 - 1)	335
4210 (11/13/2018)	1690 (2/25/2017)	(4210 - 1690)/(4 - 1)	840
3360 (5/29/2019)	1690 (2/25/2017)	(3360 - 1690)/(5 - 1)	417.5
2160 (11/26/2019)	1690 (2/25/2017)	(2160 - 1690)/(6 - 1)	94
2270 (4/9/2020)	1690 (2/25/2017)	(2270 - 1690)/(7 - 1)	96.6667
4090 (9/2/2020)	1690 (2/25/2017)	(4090 - 1690)/(8 - 1)	342.857
6660 (10/26/2020)	1690 (2/25/2017)	(6660 - 1690)/(9 - 1)	621.25
2360 (5/22/2018)	2310 (11/16/2017)	(2360 - 2310)/(3 - 2)	50
4210 (11/13/2018)	2310 (11/16/2017)	(4210 - 2310)/(4 - 2)	950
3360 (5/29/2019)	2310 (11/16/2017)	(3360 - 2310)/(5 - 2)	350
2160 (11/26/2019)	2310 (11/16/2017)	(2160 - 2310)/(6 - 2)	-37.5
2270 (4/9/2020)	2310 (11/16/2017)	(2270 - 2310)/(7 - 2)	-8
4090 (9/2/2020)	2310 (11/16/2017)	(4090 - 2310)/(8 - 2)	296.667
6660 (10/26/2020)	2310 (11/16/2017)	(6660 - 2310)/(9 - 2)	621.429
4210 (11/13/2018)	2360 (5/22/2018)	(4210 - 2360)/(4 - 3)	1850
3360 (5/29/2019)	2360 (5/22/2018)	(3360 - 2360)/(5 - 3)	500
2160 (11/26/2019)	2360 (5/22/2018)	(2160 - 2360)/(6 - 3)	-66.6667
2270 (4/9/2020)	2360 (5/22/2018)	(2270 - 2360)/(7 - 3)	-22.5
4090 (9/2/2020)	2360 (5/22/2018)	(4090 - 2360)/(8 - 3)	346
6660 (10/26/2020)	2360 (5/22/2018)	(6660 - 2360)/(9 - 3)	716.667
3360 (5/29/2019)	4210 (11/13/2018)	(3360 - 4210)/(5 - 4)	-850
2160 (11/26/2019)	4210 (11/13/2018)	(2160 - 4210)/(6 - 4)	-1025
2270 (4/9/2020)	4210 (11/13/2018)	(2270 - 4210)/(7 - 4)	-646.667
4090 (9/2/2020)	4210 (11/13/2018)	(4090 - 4210)/(8 - 4)	-30
6660 (10/26/2020)	4210 (11/13/2018)	(6660 - 4210)/(9 - 4)	490
2160 (11/26/2019)	3360 (5/29/2019)	(2160 - 3360)/(6 - 5)	-1200
2270 (4/9/2020)	3360 (5/29/2019)	(2270 - 3360)/(7 - 5)	-545
4090 (9/2/2020)	3360 (5/29/2019)	(4090 - 3360)/(8 - 5)	243.333
6660 (10/26/2020)	3360 (5/29/2019)	(6660 - 3360)/(9 - 5)	825
2270 (4/9/2020)	2160 (11/26/2019)	(2270 - 2160)/(7 - 6)	110
4090 (9/2/2020)	2160 (11/26/2019)	(4090 - 2160)/(8 - 6)	965
6660 (10/26/2020)	2160 (11/26/2019)	(6660 - 2160)/(9 - 6)	1500
4090 (9/2/2020)	2270 (4/9/2020)	(4090 - 2270)/(8 - 7)	1820
6660 (10/26/2020)	2270 (4/9/2020)	(6660 - 2270)/(9 - 7)	2195
6660 (10/26/2020)	4090 (9/2/2020)	(6660 - 4090)/(9 - 8)	2570

Number of Q values = 36

Ordered Q Values

n	Q
1	-1200
2	-1025
3	-850
4	-646.667
5	-545
6	-66.6667
7	-37.5
8	-30
9	-22.5
10	-8
11	50
12	94
13	96.6667
14	110
15	243.333
16	296.667
17	335
18	342.857
19	346
20	350
21	417.5
22	490
23	500
24	620
25	621.25
26	621.429
27	716.667
28	825
29	840
30	950
31	965
32	1500
33	1820
34	1850
35	2195
36	2570

Sen's Estimator (Median Q) is 344.429

Time Period	Observations
2/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
9/2/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0

a = 1656
b = 4536
c = 144
Group Variance = 92
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 15.7769
M1 = (36 - 15.7769)/2.0 = 10.1116
M2 = (36 + 15.7769)/2.0 + 1 = 26.8884
Lower limit is -8 = Q(10)
Upper limit is 716.667 = Q(27)
-8 < 0 < 716.667 indicating no trend in data.

Sen's Slope Analysis

Parameter: Manganese

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<10 (11/16/2017)	ND<10 (2/25/2017)	(10 - 10)/(2 - 1)	0
ND<10 (5/22/2018)	ND<10 (2/25/2017)	(10 - 10)/(3 - 1)	0
ND<10 (11/13/2018)	ND<10 (2/25/2017)	(10 - 10)/(4 - 1)	0
12.2 (5/29/2019)	ND<10 (2/25/2017)	(12.2 - 10)/(5 - 1)	0.55
43.5 (11/26/2019)	ND<10 (2/25/2017)	(43.5 - 10)/(6 - 1)	6.7
11.5 (4/9/2020)	ND<10 (2/25/2017)	(11.5 - 10)/(7 - 1)	0.25
159 (10/26/2020)	ND<10 (2/25/2017)	(159 - 10)/(8 - 1)	21.2857
ND<10 (5/22/2018)	ND<10 (11/16/2017)	(10 - 10)/(3 - 2)	0
ND<10 (11/13/2018)	ND<10 (11/16/2017)	(10 - 10)/(4 - 2)	0
12.2 (5/29/2019)	ND<10 (11/16/2017)	(12.2 - 10)/(5 - 2)	0.733333
43.5 (11/26/2019)	ND<10 (11/16/2017)	(43.5 - 10)/(6 - 2)	8.375
11.5 (4/9/2020)	ND<10 (11/16/2017)	(11.5 - 10)/(7 - 2)	0.3
159 (10/26/2020)	ND<10 (11/16/2017)	(159 - 10)/(8 - 2)	24.8333
ND<10 (11/13/2018)	ND<10 (5/22/2018)	(10 - 10)/(4 - 3)	0
12.2 (5/29/2019)	ND<10 (5/22/2018)	(12.2 - 10)/(5 - 3)	1.1
43.5 (11/26/2019)	ND<10 (5/22/2018)	(43.5 - 10)/(6 - 3)	11.1667
11.5 (4/9/2020)	ND<10 (5/22/2018)	(11.5 - 10)/(7 - 3)	0.375
159 (10/26/2020)	ND<10 (5/22/2018)	(159 - 10)/(8 - 3)	29.8
12.2 (5/29/2019)	ND<10 (11/13/2018)	(12.2 - 10)/(5 - 4)	2.2
43.5 (11/26/2019)	ND<10 (11/13/2018)	(43.5 - 10)/(6 - 4)	16.75
11.5 (4/9/2020)	ND<10 (11/13/2018)	(11.5 - 10)/(7 - 4)	0.5
159 (10/26/2020)	ND<10 (11/13/2018)	(159 - 10)/(8 - 4)	37.25
43.5 (11/26/2019)	12.2 (5/29/2019)	(43.5 - 12.2)/(6 - 5)	31.3
11.5 (4/9/2020)	12.2 (5/29/2019)	(11.5 - 12.2)/(7 - 5)	-0.35
159 (10/26/2020)	12.2 (5/29/2019)	(159 - 12.2)/(8 - 5)	48.9333
11.5 (4/9/2020)	43.5 (11/26/2019)	(11.5 - 43.5)/(7 - 6)	-32
159 (10/26/2020)	43.5 (11/26/2019)	(159 - 43.5)/(8 - 6)	57.75
159 (10/26/2020)	11.5 (4/9/2020)	(159 - 11.5)/(8 - 7)	147.5

Number of Q values = 28

Ordered Q Values

n	Q
1	-32
2	-0.35
3	0
4	0
5	0
6	0
7	0

8	0
9	0.25
10	0.3
11	0.375
12	0.5
13	0.55
14	0.733333
15	1.1
16	2.2
17	6.7
18	8.375
19	11.1667
20	16.75
21	21.2857
22	24.8333
23	29.8
24	31.3
25	37.25
26	48.9333
27	57.75
28	147.5

Sen's Estimator (Median Q) is 0.916667

Tied Group	Value	Members
1	10	4

Time Period	Observations
2/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 56.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 12.382
M1 = (28 - 12.382)/2.0 = 7.809
M2 = (28 + 12.382)/2.0 + 1 = 21.191
Lower limit is 0 = Q(8)
Upper limit is 21.2857 = Q(21)
0 < 0 < 21.2857 indicating no trend in data.

Sen's Slope Analysis

Parameter: Manganese

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<10 (11/16/2017)	ND<10 (5/25/2017)	(10 - 10)/(2 - 1)	0
ND<10 (5/22/2018)	ND<10 (5/25/2017)	(10 - 10)/(3 - 1)	0
ND<10 (11/13/2018)	ND<10 (5/25/2017)	(10 - 10)/(4 - 1)	0
ND<10 (5/29/2019)	ND<10 (5/25/2017)	(10 - 10)/(5 - 1)	0
ND<10 (11/26/2019)	ND<10 (5/25/2017)	(10 - 10)/(6 - 1)	0
ND<10 (4/10/2020)	ND<10 (5/25/2017)	(10 - 10)/(7 - 1)	0
ND<10 (10/26/2020)	ND<10 (5/25/2017)	(10 - 10)/(8 - 1)	0
ND<10 (5/22/2018)	ND<10 (11/16/2017)	(10 - 10)/(3 - 2)	0
ND<10 (11/13/2018)	ND<10 (11/16/2017)	(10 - 10)/(4 - 2)	0
ND<10 (5/29/2019)	ND<10 (11/16/2017)	(10 - 10)/(5 - 2)	0
ND<10 (11/26/2019)	ND<10 (11/16/2017)	(10 - 10)/(6 - 2)	0
ND<10 (4/10/2020)	ND<10 (11/16/2017)	(10 - 10)/(7 - 2)	0
ND<10 (10/26/2020)	ND<10 (11/16/2017)	(10 - 10)/(8 - 2)	0
ND<10 (11/13/2018)	ND<10 (5/22/2018)	(10 - 10)/(4 - 3)	0
ND<10 (5/29/2019)	ND<10 (5/22/2018)	(10 - 10)/(5 - 3)	0
ND<10 (11/26/2019)	ND<10 (5/22/2018)	(10 - 10)/(6 - 3)	0
ND<10 (4/10/2020)	ND<10 (5/22/2018)	(10 - 10)/(7 - 3)	0
ND<10 (10/26/2020)	ND<10 (5/22/2018)	(10 - 10)/(8 - 3)	0
ND<10 (5/29/2019)	ND<10 (11/13/2018)	(10 - 10)/(5 - 4)	0
ND<10 (11/26/2019)	ND<10 (11/13/2018)	(10 - 10)/(6 - 4)	0
ND<10 (4/10/2020)	ND<10 (11/13/2018)	(10 - 10)/(7 - 4)	0
ND<10 (10/26/2020)	ND<10 (11/13/2018)	(10 - 10)/(8 - 4)	0
ND<10 (11/26/2019)	ND<10 (5/29/2019)	(10 - 10)/(6 - 5)	0
ND<10 (4/10/2020)	ND<10 (5/29/2019)	(10 - 10)/(7 - 5)	0
ND<10 (10/26/2020)	ND<10 (5/29/2019)	(10 - 10)/(8 - 5)	0
ND<10 (4/10/2020)	ND<10 (11/26/2019)	(10 - 10)/(7 - 6)	0
ND<10 (10/26/2020)	ND<10 (11/26/2019)	(10 - 10)/(8 - 6)	0
ND<10 (10/26/2020)	ND<10 (4/10/2020)	(10 - 10)/(8 - 7)	0

Number of Q values = 28

Ordered Q Values

n	Q
1	0
2	0
3	0
4	0
5	0
6	0
7	0

8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	0

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	10	8

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 1176
B = 0
C = 336
D = 0
E = 56
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 0
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 0
M1 = (28 - 0)/2.0 = 14
M2 = (28 + 0)/2.0 + 1 = 15
Lower limit is 0 = Q(14)
Upper limit is 0 = Q(15)
0 < 0 < 0 indicating no trend in data.

Sen's Slope Analysis

Parameter: Manganese

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
144 (11/16/2017)	98.9 (2/25/2017)	(144 - 98.9)/(2 - 1)	45.1
88.6 (5/22/2018)	98.9 (2/25/2017)	(88.6 - 98.9)/(3 - 1)	-5.15
134 (11/13/2018)	98.9 (2/25/2017)	(134 - 98.9)/(4 - 1)	11.7
142 (5/29/2019)	98.9 (2/25/2017)	(142 - 98.9)/(5 - 1)	10.775
149 (11/26/2019)	98.9 (2/25/2017)	(149 - 98.9)/(6 - 1)	10.02
60.2 (4/10/2020)	98.9 (2/25/2017)	(60.2 - 98.9)/(7 - 1)	-6.45
119 (9/2/2020)	98.9 (2/25/2017)	(119 - 98.9)/(8 - 1)	2.87143
179 (10/27/2020)	98.9 (2/25/2017)	(179 - 98.9)/(9 - 1)	10.0125
88.6 (5/22/2018)	144 (11/16/2017)	(88.6 - 144)/(3 - 2)	-55.4
134 (11/13/2018)	144 (11/16/2017)	(134 - 144)/(4 - 2)	-5
142 (5/29/2019)	144 (11/16/2017)	(142 - 144)/(5 - 2)	-0.666667
149 (11/26/2019)	144 (11/16/2017)	(149 - 144)/(6 - 2)	1.25
60.2 (4/10/2020)	144 (11/16/2017)	(60.2 - 144)/(7 - 2)	-16.76
119 (9/2/2020)	144 (11/16/2017)	(119 - 144)/(8 - 2)	-4.16667
179 (10/27/2020)	144 (11/16/2017)	(179 - 144)/(9 - 2)	5
134 (11/13/2018)	88.6 (5/22/2018)	(134 - 88.6)/(4 - 3)	45.4
142 (5/29/2019)	88.6 (5/22/2018)	(142 - 88.6)/(5 - 3)	26.7
149 (11/26/2019)	88.6 (5/22/2018)	(149 - 88.6)/(6 - 3)	20.1333
60.2 (4/10/2020)	88.6 (5/22/2018)	(60.2 - 88.6)/(7 - 3)	-7.1
119 (9/2/2020)	88.6 (5/22/2018)	(119 - 88.6)/(8 - 3)	6.08
179 (10/27/2020)	88.6 (5/22/2018)	(179 - 88.6)/(9 - 3)	15.0667
142 (5/29/2019)	134 (11/13/2018)	(142 - 134)/(5 - 4)	8
149 (11/26/2019)	134 (11/13/2018)	(149 - 134)/(6 - 4)	7.5
60.2 (4/10/2020)	134 (11/13/2018)	(60.2 - 134)/(7 - 4)	-24.6
119 (9/2/2020)	134 (11/13/2018)	(119 - 134)/(8 - 4)	-3.75
179 (10/27/2020)	134 (11/13/2018)	(179 - 134)/(9 - 4)	9
149 (11/26/2019)	142 (5/29/2019)	(149 - 142)/(6 - 5)	7
60.2 (4/10/2020)	142 (5/29/2019)	(60.2 - 142)/(7 - 5)	-40.9
119 (9/2/2020)	142 (5/29/2019)	(119 - 142)/(8 - 5)	-7.66667
179 (10/27/2020)	142 (5/29/2019)	(179 - 142)/(9 - 5)	9.25
60.2 (4/10/2020)	149 (11/26/2019)	(60.2 - 149)/(7 - 6)	-88.8
119 (9/2/2020)	149 (11/26/2019)	(119 - 149)/(8 - 6)	-15
179 (10/27/2020)	149 (11/26/2019)	(179 - 149)/(9 - 6)	10
119 (9/2/2020)	60.2 (4/10/2020)	(119 - 60.2)/(8 - 7)	58.8
179 (10/27/2020)	60.2 (4/10/2020)	(179 - 60.2)/(9 - 7)	59.4
179 (10/27/2020)	119 (9/2/2020)	(179 - 119)/(9 - 8)	60

Number of Q values = 36

Ordered Q Values

n	Q
1	-88.8
2	-55.4
3	-40.9
4	-24.6
5	-16.76
6	-15
7	-7.66667
8	-7.1
9	-6.45
10	-5.15
11	-5
12	-4.16667
13	-3.75
14	-0.666667
15	1.25
16	2.87143
17	5
18	6.08
19	7
20	7.5
21	8
22	9
23	9.25
24	10
25	10.0125
26	10.02
27	10.775
28	11.7
29	15.0667
30	20.1333
31	26.7
32	45.1
33	45.4
34	58.8
35	59.4
36	60

Sen's Estimator (Median Q) is 6.54

Time Period	Observations
2/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
9/2/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0

a = 1656
b = 4536
c = 144
Group Variance = 92
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 15.7769
M1 = (36 - 15.7769)/2.0 = 10.1116
M2 = (36 + 15.7769)/2.0 + 1 = 26.8884
Lower limit is -5.15 = Q(10)
Upper limit is 10.775 = Q(27)
-5.15 < 0 < 10.775 indicating no trend in data.

Sen's Slope Analysis

Parameter: Nitrogen, Ammonia (As N)

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
3840 (11/16/2017)	4570 (5/25/2017)	(3840 - 4570)/(2 - 1)	-730
1930 (5/22/2018)	4570 (5/25/2017)	(1930 - 4570)/(3 - 1)	-1320
2220 (11/13/2018)	4570 (5/25/2017)	(2220 - 4570)/(4 - 1)	-783.333
1740 (5/29/2019)	4570 (5/25/2017)	(1740 - 4570)/(5 - 1)	-707.5
1170 (11/26/2019)	4570 (5/25/2017)	(1170 - 4570)/(6 - 1)	-680
3180 (4/9/2020)	4570 (5/25/2017)	(3180 - 4570)/(7 - 1)	-231.667
4320 (10/26/2020)	4570 (5/25/2017)	(4320 - 4570)/(8 - 1)	-35.7143
1930 (5/22/2018)	3840 (11/16/2017)	(1930 - 3840)/(3 - 2)	-1910
2220 (11/13/2018)	3840 (11/16/2017)	(2220 - 3840)/(4 - 2)	-810
1740 (5/29/2019)	3840 (11/16/2017)	(1740 - 3840)/(5 - 2)	-700
1170 (11/26/2019)	3840 (11/16/2017)	(1170 - 3840)/(6 - 2)	-667.5
3180 (4/9/2020)	3840 (11/16/2017)	(3180 - 3840)/(7 - 2)	-132
4320 (10/26/2020)	3840 (11/16/2017)	(4320 - 3840)/(8 - 2)	80
2220 (11/13/2018)	1930 (5/22/2018)	(2220 - 1930)/(4 - 3)	290
1740 (5/29/2019)	1930 (5/22/2018)	(1740 - 1930)/(5 - 3)	-95
1170 (11/26/2019)	1930 (5/22/2018)	(1170 - 1930)/(6 - 3)	-253.333
3180 (4/9/2020)	1930 (5/22/2018)	(3180 - 1930)/(7 - 3)	312.5
4320 (10/26/2020)	1930 (5/22/2018)	(4320 - 1930)/(8 - 3)	478
1740 (5/29/2019)	2220 (11/13/2018)	(1740 - 2220)/(5 - 4)	-480
1170 (11/26/2019)	2220 (11/13/2018)	(1170 - 2220)/(6 - 4)	-525
3180 (4/9/2020)	2220 (11/13/2018)	(3180 - 2220)/(7 - 4)	320
4320 (10/26/2020)	2220 (11/13/2018)	(4320 - 2220)/(8 - 4)	525
1170 (11/26/2019)	1740 (5/29/2019)	(1170 - 1740)/(6 - 5)	-570
3180 (4/9/2020)	1740 (5/29/2019)	(3180 - 1740)/(7 - 5)	720
4320 (10/26/2020)	1740 (5/29/2019)	(4320 - 1740)/(8 - 5)	860
3180 (4/9/2020)	1170 (11/26/2019)	(3180 - 1170)/(7 - 6)	2010
4320 (10/26/2020)	1170 (11/26/2019)	(4320 - 1170)/(8 - 6)	1575
4320 (10/26/2020)	3180 (4/9/2020)	(4320 - 3180)/(8 - 7)	1140

Number of Q values = 28

Ordered Q Values

n	Q
1	-1910
2	-1320
3	-810
4	-783.333
5	-730
6	-707.5
7	-700

8	-680
9	-667.5
10	-570
11	-525
12	-480
13	-253.333
14	-231.667
15	-132
16	-95
17	-35.7143
18	80
19	290
20	312.5
21	320
22	478
23	525
24	720
25	860
26	1140
27	1575
28	2010

Sen's Estimator (Median Q) is -181.833

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -700 = Q(7)
Upper limit is 478 = Q(22)
-700 < 0 < 478 indicating no trend in data.

Sen's Slope Analysis

Parameter: Nitrogen, Ammonia (As N)

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<200 (11/16/2017)	ND<200 (5/25/2017)	(200 - 200)/(2 - 1)	0
ND<200 (5/22/2018)	ND<200 (5/25/2017)	(200 - 200)/(3 - 1)	0
ND<200 (11/13/2018)	ND<200 (5/25/2017)	(200 - 200)/(4 - 1)	0
645 (5/29/2019)	ND<200 (5/25/2017)	(645 - 200)/(5 - 1)	111.25
ND<200 (11/26/2019)	ND<200 (5/25/2017)	(200 - 200)/(6 - 1)	0
2150 (4/9/2020)	ND<200 (5/25/2017)	(2150 - 200)/(7 - 1)	325
1480 (10/26/2020)	ND<200 (5/25/2017)	(1480 - 200)/(8 - 1)	182.857
ND<200 (5/22/2018)	ND<200 (11/16/2017)	(200 - 200)/(3 - 2)	0
ND<200 (11/13/2018)	ND<200 (11/16/2017)	(200 - 200)/(4 - 2)	0
645 (5/29/2019)	ND<200 (11/16/2017)	(645 - 200)/(5 - 2)	148.333
ND<200 (11/26/2019)	ND<200 (11/16/2017)	(200 - 200)/(6 - 2)	0
2150 (4/9/2020)	ND<200 (11/16/2017)	(2150 - 200)/(7 - 2)	390
1480 (10/26/2020)	ND<200 (11/16/2017)	(1480 - 200)/(8 - 2)	213.333
ND<200 (11/13/2018)	ND<200 (5/22/2018)	(200 - 200)/(4 - 3)	0
645 (5/29/2019)	ND<200 (5/22/2018)	(645 - 200)/(5 - 3)	222.5
ND<200 (11/26/2019)	ND<200 (5/22/2018)	(200 - 200)/(6 - 3)	0
2150 (4/9/2020)	ND<200 (5/22/2018)	(2150 - 200)/(7 - 3)	487.5
1480 (10/26/2020)	ND<200 (5/22/2018)	(1480 - 200)/(8 - 3)	256
645 (5/29/2019)	ND<200 (11/13/2018)	(645 - 200)/(5 - 4)	445
ND<200 (11/26/2019)	ND<200 (11/13/2018)	(200 - 200)/(6 - 4)	0
2150 (4/9/2020)	ND<200 (11/13/2018)	(2150 - 200)/(7 - 4)	650
1480 (10/26/2020)	ND<200 (11/13/2018)	(1480 - 200)/(8 - 4)	320
ND<200 (11/26/2019)	645 (5/29/2019)	(200 - 645)/(6 - 5)	-445
2150 (4/9/2020)	645 (5/29/2019)	(2150 - 645)/(7 - 5)	752.5
1480 (10/26/2020)	645 (5/29/2019)	(1480 - 645)/(8 - 5)	278.333
2150 (4/9/2020)	ND<200 (11/26/2019)	(2150 - 200)/(7 - 6)	1950
1480 (10/26/2020)	ND<200 (11/26/2019)	(1480 - 200)/(8 - 6)	640
1480 (10/26/2020)	2150 (4/9/2020)	(1480 - 2150)/(8 - 7)	-670

Number of Q values = 28

Ordered Q Values

n	Q
1	-670
2	-445
3	0
4	0
5	0
6	0
7	0

8	0
9	0
10	0
11	0
12	0
13	111.25
14	148.333
15	182.857
16	213.333
17	222.5
18	256
19	278.333
20	320
21	325
22	390
23	445
24	487.5
25	640
26	650
27	752.5
28	1950

Sen's Estimator (Median Q) is 165.595

Tied Group	Value	Members
1	200	5

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 48.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 11.4747
M1 = (28 - 11.4747)/2.0 = 8.26263
M2 = (28 + 11.4747)/2.0 + 1 = 20.7374
Lower limit is 0 = Q(8)
Upper limit is 325 = Q(21)
0 < 0 < 325 indicating no trend in data.

Sen's Slope Analysis

Parameter: Nitrogen, Ammonia (As N)

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<200 (11/16/2017)	ND<200 (5/25/2017)	(200 - 200)/(2 - 1)	0
ND<200 (5/22/2018)	ND<200 (5/25/2017)	(200 - 200)/(3 - 1)	0
ND<200 (11/13/2018)	ND<200 (5/25/2017)	(200 - 200)/(4 - 1)	0
ND<200 (5/29/2019)	ND<200 (5/25/2017)	(200 - 200)/(5 - 1)	0
ND<200 (11/26/2019)	ND<200 (5/25/2017)	(200 - 200)/(6 - 1)	0
ND<200 (4/10/2020)	ND<200 (5/25/2017)	(200 - 200)/(7 - 1)	0
ND<200 (10/26/2020)	ND<200 (5/25/2017)	(200 - 200)/(8 - 1)	0
ND<200 (5/22/2018)	ND<200 (11/16/2017)	(200 - 200)/(3 - 2)	0
ND<200 (11/13/2018)	ND<200 (11/16/2017)	(200 - 200)/(4 - 2)	0
ND<200 (5/29/2019)	ND<200 (11/16/2017)	(200 - 200)/(5 - 2)	0
ND<200 (11/26/2019)	ND<200 (11/16/2017)	(200 - 200)/(6 - 2)	0
ND<200 (4/10/2020)	ND<200 (11/16/2017)	(200 - 200)/(7 - 2)	0
ND<200 (10/26/2020)	ND<200 (11/16/2017)	(200 - 200)/(8 - 2)	0
ND<200 (11/13/2018)	ND<200 (5/22/2018)	(200 - 200)/(4 - 3)	0
ND<200 (5/29/2019)	ND<200 (5/22/2018)	(200 - 200)/(5 - 3)	0
ND<200 (11/26/2019)	ND<200 (5/22/2018)	(200 - 200)/(6 - 3)	0
ND<200 (4/10/2020)	ND<200 (5/22/2018)	(200 - 200)/(7 - 3)	0
ND<200 (10/26/2020)	ND<200 (5/22/2018)	(200 - 200)/(8 - 3)	0
ND<200 (5/29/2019)	ND<200 (11/13/2018)	(200 - 200)/(5 - 4)	0
ND<200 (11/26/2019)	ND<200 (11/13/2018)	(200 - 200)/(6 - 4)	0
ND<200 (4/10/2020)	ND<200 (11/13/2018)	(200 - 200)/(7 - 4)	0
ND<200 (10/26/2020)	ND<200 (11/13/2018)	(200 - 200)/(8 - 4)	0
ND<200 (11/26/2019)	ND<200 (5/29/2019)	(200 - 200)/(6 - 5)	0
ND<200 (4/10/2020)	ND<200 (5/29/2019)	(200 - 200)/(7 - 5)	0
ND<200 (10/26/2020)	ND<200 (5/29/2019)	(200 - 200)/(8 - 5)	0
ND<200 (4/10/2020)	ND<200 (11/26/2019)	(200 - 200)/(7 - 6)	0
ND<200 (10/26/2020)	ND<200 (11/26/2019)	(200 - 200)/(8 - 6)	0
ND<200 (10/26/2020)	ND<200 (4/10/2020)	(200 - 200)/(8 - 7)	0

Number of Q values = 28

Ordered Q Values

n	Q
1	0
2	0
3	0
4	0
5	0
6	0
7	0

8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	0

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	200	8

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 1176
B = 0
C = 336
D = 0
E = 56
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 0
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 0
M1 = (28 - 0)/2.0 = 14
M2 = (28 + 0)/2.0 + 1 = 15
Lower limit is 0 = Q(14)
Upper limit is 0 = Q(15)
0 < 0 < 0 indicating no trend in data.

Sen's Slope Analysis

Parameter: Nitrogen, Ammonia (As N)

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<200 (11/16/2017)	ND<200 (5/25/2017)	(200 - 200)/(2 - 1)	0
ND<200 (5/22/2018)	ND<200 (5/25/2017)	(200 - 200)/(3 - 1)	0
ND<200 (11/13/2018)	ND<200 (5/25/2017)	(200 - 200)/(4 - 1)	0
ND<200 (5/29/2019)	ND<200 (5/25/2017)	(200 - 200)/(5 - 1)	0
ND<200 (11/26/2019)	ND<200 (5/25/2017)	(200 - 200)/(6 - 1)	0
ND<200 (4/10/2020)	ND<200 (5/25/2017)	(200 - 200)/(7 - 1)	0
ND<200 (10/27/2020)	ND<200 (5/25/2017)	(200 - 200)/(8 - 1)	0
ND<200 (5/22/2018)	ND<200 (11/16/2017)	(200 - 200)/(3 - 2)	0
ND<200 (11/13/2018)	ND<200 (11/16/2017)	(200 - 200)/(4 - 2)	0
ND<200 (5/29/2019)	ND<200 (11/16/2017)	(200 - 200)/(5 - 2)	0
ND<200 (11/26/2019)	ND<200 (11/16/2017)	(200 - 200)/(6 - 2)	0
ND<200 (4/10/2020)	ND<200 (11/16/2017)	(200 - 200)/(7 - 2)	0
ND<200 (10/27/2020)	ND<200 (11/16/2017)	(200 - 200)/(8 - 2)	0
ND<200 (11/13/2018)	ND<200 (5/22/2018)	(200 - 200)/(4 - 3)	0
ND<200 (5/29/2019)	ND<200 (5/22/2018)	(200 - 200)/(5 - 3)	0
ND<200 (11/26/2019)	ND<200 (5/22/2018)	(200 - 200)/(6 - 3)	0
ND<200 (4/10/2020)	ND<200 (5/22/2018)	(200 - 200)/(7 - 3)	0
ND<200 (10/27/2020)	ND<200 (5/22/2018)	(200 - 200)/(8 - 3)	0
ND<200 (5/29/2019)	ND<200 (11/13/2018)	(200 - 200)/(5 - 4)	0
ND<200 (11/26/2019)	ND<200 (11/13/2018)	(200 - 200)/(6 - 4)	0
ND<200 (4/10/2020)	ND<200 (11/13/2018)	(200 - 200)/(7 - 4)	0
ND<200 (10/27/2020)	ND<200 (11/13/2018)	(200 - 200)/(8 - 4)	0
ND<200 (11/26/2019)	ND<200 (5/29/2019)	(200 - 200)/(6 - 5)	0
ND<200 (4/10/2020)	ND<200 (5/29/2019)	(200 - 200)/(7 - 5)	0
ND<200 (10/27/2020)	ND<200 (5/29/2019)	(200 - 200)/(8 - 5)	0
ND<200 (4/10/2020)	ND<200 (11/26/2019)	(200 - 200)/(7 - 6)	0
ND<200 (10/27/2020)	ND<200 (11/26/2019)	(200 - 200)/(8 - 6)	0
ND<200 (10/27/2020)	ND<200 (4/10/2020)	(200 - 200)/(8 - 7)	0

Number of Q values = 28

Ordered Q Values

n	Q
1	0
2	0
3	0
4	0
5	0
6	0
7	0

8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	0

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	200	8

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 1176
B = 0
C = 336
D = 0
E = 56
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 0
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 0
M1 = (28 - 0)/2.0 = 14
M2 = (28 + 0)/2.0 + 1 = 15
Lower limit is 0 = Q(14)
Upper limit is 0 = Q(15)
0 < 0 < 0 indicating no trend in data.

Sen's Slope Analysis

Parameter: Nitrogen, Nitrate (As N)

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
10000 (11/16/2017)	10000 (5/25/2017)	(10000 - 10000)/(2 - 1)	0
10000 (5/22/2018)	10000 (5/25/2017)	(10000 - 10000)/(3 - 1)	0
10000 (11/13/2018)	10000 (5/25/2017)	(10000 - 10000)/(4 - 1)	0
10000 (5/29/2019)	10000 (5/25/2017)	(10000 - 10000)/(5 - 1)	0
820 (11/26/2019)	10000 (5/25/2017)	(820 - 10000)/(6 - 1)	-1836
ND<10000 (4/15/2020)	10000 (5/25/2017)	(10000 - 10000)/(7 - 1)	0
10000 (9/2/2020)	10000 (5/25/2017)	(10000 - 10000)/(8 - 1)	0
ND<250 (10/26/2020)	10000 (5/25/2017)	(250 - 10000)/(9 - 1)	-1218.75
10000 (5/22/2018)	10000 (11/16/2017)	(10000 - 10000)/(3 - 2)	0
10000 (11/13/2018)	10000 (11/16/2017)	(10000 - 10000)/(4 - 2)	0
10000 (5/29/2019)	10000 (11/16/2017)	(10000 - 10000)/(5 - 2)	0
820 (11/26/2019)	10000 (11/16/2017)	(820 - 10000)/(6 - 2)	-2295
ND<10000 (4/15/2020)	10000 (11/16/2017)	(10000 - 10000)/(7 - 2)	0
10000 (9/2/2020)	10000 (11/16/2017)	(10000 - 10000)/(8 - 2)	0
ND<250 (10/26/2020)	10000 (11/16/2017)	(250 - 10000)/(9 - 2)	-1392.86
10000 (11/13/2018)	10000 (5/22/2018)	(10000 - 10000)/(4 - 3)	0
10000 (5/29/2019)	10000 (5/22/2018)	(10000 - 10000)/(5 - 3)	0
820 (11/26/2019)	10000 (5/22/2018)	(820 - 10000)/(6 - 3)	-3060
ND<10000 (4/15/2020)	10000 (5/22/2018)	(10000 - 10000)/(7 - 3)	0
10000 (9/2/2020)	10000 (5/22/2018)	(10000 - 10000)/(8 - 3)	0
ND<250 (10/26/2020)	10000 (5/22/2018)	(250 - 10000)/(9 - 3)	-1625
10000 (5/29/2019)	10000 (11/13/2018)	(10000 - 10000)/(5 - 4)	0
820 (11/26/2019)	10000 (11/13/2018)	(820 - 10000)/(6 - 4)	-4590
ND<10000 (4/15/2020)	10000 (11/13/2018)	(10000 - 10000)/(7 - 4)	0
10000 (9/2/2020)	10000 (11/13/2018)	(10000 - 10000)/(8 - 4)	0
ND<250 (10/26/2020)	10000 (11/13/2018)	(250 - 10000)/(9 - 4)	-1950
820 (11/26/2019)	10000 (5/29/2019)	(820 - 10000)/(6 - 5)	-9180
ND<10000 (4/15/2020)	10000 (5/29/2019)	(10000 - 10000)/(7 - 5)	0
10000 (9/2/2020)	10000 (5/29/2019)	(10000 - 10000)/(8 - 5)	0
ND<250 (10/26/2020)	10000 (5/29/2019)	(250 - 10000)/(9 - 5)	-2437.5
ND<10000 (4/15/2020)	820 (11/26/2019)	(10000 - 820)/(7 - 6)	9180
10000 (9/2/2020)	820 (11/26/2019)	(10000 - 820)/(8 - 6)	4590
ND<250 (10/26/2020)	820 (11/26/2019)	(250 - 820)/(9 - 6)	-190
10000 (9/2/2020)	ND<10000 (4/15/2020)	(10000 - 10000)/(8 - 7)	0
ND<250 (10/26/2020)	ND<10000 (4/15/2020)	(250 - 10000)/(9 - 7)	-4875
ND<250 (10/26/2020)	10000 (9/2/2020)	(250 - 10000)/(9 - 8)	-9750

Number of Q values = 36

Ordered Q Values

n	Q
1	-9750
2	-9180
3	-4875
4	-4590
5	-3060
6	-2437.5
7	-2295
8	-1950
9	-1836
10	-1625
11	-1392.86
12	-1218.75
13	-190
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	0
29	0
30	0
31	0
32	0
33	0
34	0
35	4590
36	9180

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	10000	7

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
9/2/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 798
B = 0
C = 210

D = 0
E = 42
F = 0
a = 1656
b = 4536
c = 144
Group Variance = 47.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 11.3562
M1 = (36 - 11.3562)/2.0 = 12.3219
M2 = (36 + 11.3562)/2.0 + 1 = 24.6781
Lower limit is -1218.75 = Q(12)
Upper limit is 0 = Q(25)
-1218.75 < 0 < 0 indicating no trend in data.

Sen's Slope Analysis

Parameter: Nitrogen, Nitrate (As N)

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
10000 (11/16/2017)	10000 (5/25/2017)	(10000 - 10000)/(2 - 1)	0
10000 (5/22/2018)	10000 (5/25/2017)	(10000 - 10000)/(3 - 1)	0
10000 (11/13/2018)	10000 (5/25/2017)	(10000 - 10000)/(4 - 1)	0
10000 (5/29/2019)	10000 (5/25/2017)	(10000 - 10000)/(5 - 1)	0
12200 (11/26/2019)	10000 (5/25/2017)	(12200 - 10000)/(6 - 1)	440
10600 (4/15/2020)	10000 (5/25/2017)	(10600 - 10000)/(7 - 1)	100
10000 (9/2/2020)	10000 (5/25/2017)	(10000 - 10000)/(8 - 1)	0
13000 (10/26/2020)	10000 (5/25/2017)	(13000 - 10000)/(9 - 1)	375
10000 (5/22/2018)	10000 (11/16/2017)	(10000 - 10000)/(3 - 2)	0
10000 (11/13/2018)	10000 (11/16/2017)	(10000 - 10000)/(4 - 2)	0
10000 (5/29/2019)	10000 (11/16/2017)	(10000 - 10000)/(5 - 2)	0
12200 (11/26/2019)	10000 (11/16/2017)	(12200 - 10000)/(6 - 2)	550
10600 (4/15/2020)	10000 (11/16/2017)	(10600 - 10000)/(7 - 2)	120
10000 (9/2/2020)	10000 (11/16/2017)	(10000 - 10000)/(8 - 2)	0
13000 (10/26/2020)	10000 (11/16/2017)	(13000 - 10000)/(9 - 2)	428.571
10000 (11/13/2018)	10000 (5/22/2018)	(10000 - 10000)/(4 - 3)	0
10000 (5/29/2019)	10000 (5/22/2018)	(10000 - 10000)/(5 - 3)	0
12200 (11/26/2019)	10000 (5/22/2018)	(12200 - 10000)/(6 - 3)	733.333
10600 (4/15/2020)	10000 (5/22/2018)	(10600 - 10000)/(7 - 3)	150
10000 (9/2/2020)	10000 (5/22/2018)	(10000 - 10000)/(8 - 3)	0
13000 (10/26/2020)	10000 (5/22/2018)	(13000 - 10000)/(9 - 3)	500
10000 (5/29/2019)	10000 (11/13/2018)	(10000 - 10000)/(5 - 4)	0
12200 (11/26/2019)	10000 (11/13/2018)	(12200 - 10000)/(6 - 4)	1100
10600 (4/15/2020)	10000 (11/13/2018)	(10600 - 10000)/(7 - 4)	200
10000 (9/2/2020)	10000 (11/13/2018)	(10000 - 10000)/(8 - 4)	0
13000 (10/26/2020)	10000 (11/13/2018)	(13000 - 10000)/(9 - 4)	600
12200 (11/26/2019)	10000 (5/29/2019)	(12200 - 10000)/(6 - 5)	2200
10600 (4/15/2020)	10000 (5/29/2019)	(10600 - 10000)/(7 - 5)	300
10000 (9/2/2020)	10000 (5/29/2019)	(10000 - 10000)/(8 - 5)	0
13000 (10/26/2020)	10000 (5/29/2019)	(13000 - 10000)/(9 - 5)	750
10600 (4/15/2020)	12200 (11/26/2019)	(10600 - 12200)/(7 - 6)	-1600
10000 (9/2/2020)	12200 (11/26/2019)	(10000 - 12200)/(8 - 6)	-1100
13000 (10/26/2020)	12200 (11/26/2019)	(13000 - 12200)/(9 - 6)	266.667
10000 (9/2/2020)	10600 (4/15/2020)	(10000 - 10600)/(8 - 7)	-600
13000 (10/26/2020)	10600 (4/15/2020)	(13000 - 10600)/(9 - 7)	1200
13000 (10/26/2020)	10000 (9/2/2020)	(13000 - 10000)/(9 - 8)	3000

Number of Q values = 36

Ordered Q Values

n	Q
1	-1600
2	-1100
3	-600
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	100
20	120
21	150
22	200
23	266.667
24	300
25	375
26	428.571
27	440
28	500
29	550
30	600
31	733.333
32	750
33	1100
34	1200
35	2200
36	3000

Sen's Estimator (Median Q) is 50

Tied Group	Value	Members
1	10000	6

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
9/2/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 510
B = 0
C = 120

D = 0
E = 30
F = 0
a = 1656
b = 4536
c = 144
Group Variance = 63.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.1245
M1 = (36 - 13.1245)/2.0 = 11.4377
M2 = (36 + 13.1245)/2.0 + 1 = 25.5623
Lower limit is 0 = Q(11)
Upper limit is 428.571 = Q(26)
0 < 0 < 428.571 indicating no trend in data.

Sen's Slope Analysis

Parameter: Nitrogen, Nitrate (As N)

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
10000 (11/16/2017)	10000 (5/25/2017)	(10000 - 10000)/(2 - 1)	0
10000 (5/22/2018)	10000 (5/25/2017)	(10000 - 10000)/(3 - 1)	0
10000 (11/13/2018)	10000 (5/25/2017)	(10000 - 10000)/(4 - 1)	0
10000 (5/29/2019)	10000 (5/25/2017)	(10000 - 10000)/(5 - 1)	0
2110 (11/26/2019)	10000 (5/25/2017)	(2110 - 10000)/(6 - 1)	-1578
ND<10000 (4/15/2020)	10000 (5/25/2017)	(10000 - 10000)/(7 - 1)	0
1520 (10/26/2020)	10000 (5/25/2017)	(1520 - 10000)/(8 - 1)	-1211.43
10000 (5/22/2018)	10000 (11/16/2017)	(10000 - 10000)/(3 - 2)	0
10000 (11/13/2018)	10000 (11/16/2017)	(10000 - 10000)/(4 - 2)	0
10000 (5/29/2019)	10000 (11/16/2017)	(10000 - 10000)/(5 - 2)	0
2110 (11/26/2019)	10000 (11/16/2017)	(2110 - 10000)/(6 - 2)	-1972.5
ND<10000 (4/15/2020)	10000 (11/16/2017)	(10000 - 10000)/(7 - 2)	0
1520 (10/26/2020)	10000 (11/16/2017)	(1520 - 10000)/(8 - 2)	-1413.33
10000 (11/13/2018)	10000 (5/22/2018)	(10000 - 10000)/(4 - 3)	0
10000 (5/29/2019)	10000 (5/22/2018)	(10000 - 10000)/(5 - 3)	0
2110 (11/26/2019)	10000 (5/22/2018)	(2110 - 10000)/(6 - 3)	-2630
ND<10000 (4/15/2020)	10000 (5/22/2018)	(10000 - 10000)/(7 - 3)	0
1520 (10/26/2020)	10000 (5/22/2018)	(1520 - 10000)/(8 - 3)	-1696
10000 (5/29/2019)	10000 (11/13/2018)	(10000 - 10000)/(5 - 4)	0
2110 (11/26/2019)	10000 (11/13/2018)	(2110 - 10000)/(6 - 4)	-3945
ND<10000 (4/15/2020)	10000 (11/13/2018)	(10000 - 10000)/(7 - 4)	0
1520 (10/26/2020)	10000 (11/13/2018)	(1520 - 10000)/(8 - 4)	-2120
2110 (11/26/2019)	10000 (5/29/2019)	(2110 - 10000)/(6 - 5)	-7890
ND<10000 (4/15/2020)	10000 (5/29/2019)	(10000 - 10000)/(7 - 5)	0
1520 (10/26/2020)	10000 (5/29/2019)	(1520 - 10000)/(8 - 5)	-2826.67
ND<10000 (4/15/2020)	2110 (11/26/2019)	(10000 - 2110)/(7 - 6)	7890
1520 (10/26/2020)	2110 (11/26/2019)	(1520 - 2110)/(8 - 6)	-295
1520 (10/26/2020)	ND<10000 (4/15/2020)	(1520 - 10000)/(8 - 7)	-8480

Number of Q values = 28

Ordered Q Values

n	Q
1	-8480
2	-7890
3	-3945
4	-2826.67
5	-2630
6	-2120
7	-1972.5

8	-1696
9	-1578
10	-1413.33
11	-1211.43
12	-295
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	7890

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	10000	6

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 510
B = 0
C = 120
D = 0
E = 30
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 37
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 10.0053
M1 = (28 - 10.0053)/2.0 = 8.99737
M2 = (28 + 10.0053)/2.0 + 1 = 20.0026
Lower limit is -1578 = Q(9)
Upper limit is 0 = Q(20)
-1578 < 0 < 0 indicating no trend in data.

Sen's Slope Analysis

Parameter: Nitrogen, Nitrate (As N)

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
10000 (11/16/2017)	10000 (5/25/2017)	(10000 - 10000)/(2 - 1)	0
10000 (5/22/2018)	10000 (5/25/2017)	(10000 - 10000)/(3 - 1)	0
10000 (11/13/2018)	10000 (5/25/2017)	(10000 - 10000)/(4 - 1)	0
10000 (5/29/2019)	10000 (5/25/2017)	(10000 - 10000)/(5 - 1)	0
4350 (11/26/2019)	10000 (5/25/2017)	(4350 - 10000)/(6 - 1)	-1130
ND<10000 (4/15/2020)	10000 (5/25/2017)	(10000 - 10000)/(7 - 1)	0
10000 (9/2/2020)	10000 (5/25/2017)	(10000 - 10000)/(8 - 1)	0
3870 (10/27/2020)	10000 (5/25/2017)	(3870 - 10000)/(9 - 1)	-766.25
10000 (5/22/2018)	10000 (11/16/2017)	(10000 - 10000)/(3 - 2)	0
10000 (11/13/2018)	10000 (11/16/2017)	(10000 - 10000)/(4 - 2)	0
10000 (5/29/2019)	10000 (11/16/2017)	(10000 - 10000)/(5 - 2)	0
4350 (11/26/2019)	10000 (11/16/2017)	(4350 - 10000)/(6 - 2)	-1412.5
ND<10000 (4/15/2020)	10000 (11/16/2017)	(10000 - 10000)/(7 - 2)	0
10000 (9/2/2020)	10000 (11/16/2017)	(10000 - 10000)/(8 - 2)	0
3870 (10/27/2020)	10000 (11/16/2017)	(3870 - 10000)/(9 - 2)	-875.714
10000 (11/13/2018)	10000 (5/22/2018)	(10000 - 10000)/(4 - 3)	0
10000 (5/29/2019)	10000 (5/22/2018)	(10000 - 10000)/(5 - 3)	0
4350 (11/26/2019)	10000 (5/22/2018)	(4350 - 10000)/(6 - 3)	-1883.33
ND<10000 (4/15/2020)	10000 (5/22/2018)	(10000 - 10000)/(7 - 3)	0
10000 (9/2/2020)	10000 (5/22/2018)	(10000 - 10000)/(8 - 3)	0
3870 (10/27/2020)	10000 (5/22/2018)	(3870 - 10000)/(9 - 3)	-1021.67
10000 (5/29/2019)	10000 (11/13/2018)	(10000 - 10000)/(5 - 4)	0
4350 (11/26/2019)	10000 (11/13/2018)	(4350 - 10000)/(6 - 4)	-2825
ND<10000 (4/15/2020)	10000 (11/13/2018)	(10000 - 10000)/(7 - 4)	0
10000 (9/2/2020)	10000 (11/13/2018)	(10000 - 10000)/(8 - 4)	0
3870 (10/27/2020)	10000 (11/13/2018)	(3870 - 10000)/(9 - 4)	-1226
4350 (11/26/2019)	10000 (5/29/2019)	(4350 - 10000)/(6 - 5)	-5650
ND<10000 (4/15/2020)	10000 (5/29/2019)	(10000 - 10000)/(7 - 5)	0
10000 (9/2/2020)	10000 (5/29/2019)	(10000 - 10000)/(8 - 5)	0
3870 (10/27/2020)	10000 (5/29/2019)	(3870 - 10000)/(9 - 5)	-1532.5
ND<10000 (4/15/2020)	4350 (11/26/2019)	(10000 - 4350)/(7 - 6)	5650
10000 (9/2/2020)	4350 (11/26/2019)	(10000 - 4350)/(8 - 6)	2825
3870 (10/27/2020)	4350 (11/26/2019)	(3870 - 4350)/(9 - 6)	-160
10000 (9/2/2020)	ND<10000 (4/15/2020)	(10000 - 10000)/(8 - 7)	0
3870 (10/27/2020)	ND<10000 (4/15/2020)	(3870 - 10000)/(9 - 7)	-3065
3870 (10/27/2020)	10000 (9/2/2020)	(3870 - 10000)/(9 - 8)	-6130

Number of Q values = 36

Ordered Q Values

n	Q
1	-6130
2	-5650
3	-3065
4	-2825
5	-1883.33
6	-1532.5
7	-1412.5
8	-1226
9	-1130
10	-1021.67
11	-875.714
12	-766.25
13	-160
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	0
27	0
28	0
29	0
30	0
31	0
32	0
33	0
34	0
35	2825
36	5650

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	10000	7

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
9/2/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 798
B = 0
C = 210

D = 0
E = 42
F = 0
a = 1656
b = 4536
c = 144
Group Variance = 47.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 11.3562
M1 = (36 - 11.3562)/2.0 = 12.3219
M2 = (36 + 11.3562)/2.0 + 1 = 24.6781
Lower limit is -766.25 = Q(12)
Upper limit is 0 = Q(25)
-766.25 < 0 < 0 indicating no trend in data.

Sen's Slope Analysis

Parameter: Organic Carbon, Total

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
3700 (11/16/2017)	20000 (5/25/2017)	(3700 - 20000)/(2 - 1)	-16300
2210 (5/22/2018)	20000 (5/25/2017)	(2210 - 20000)/(3 - 1)	-8895
8350 (11/13/2018)	20000 (5/25/2017)	(8350 - 20000)/(4 - 1)	-3883.33
5800 (5/29/2019)	20000 (5/25/2017)	(5800 - 20000)/(5 - 1)	-3550
6080 (11/26/2019)	20000 (5/25/2017)	(6080 - 20000)/(6 - 1)	-2784
4130 (4/9/2020)	20000 (5/25/2017)	(4130 - 20000)/(7 - 1)	-2645
7520 (10/26/2020)	20000 (5/25/2017)	(7520 - 20000)/(8 - 1)	-1782.86
2210 (5/22/2018)	3700 (11/16/2017)	(2210 - 3700)/(3 - 2)	-1490
8350 (11/13/2018)	3700 (11/16/2017)	(8350 - 3700)/(4 - 2)	2325
5800 (5/29/2019)	3700 (11/16/2017)	(5800 - 3700)/(5 - 2)	700
6080 (11/26/2019)	3700 (11/16/2017)	(6080 - 3700)/(6 - 2)	595
4130 (4/9/2020)	3700 (11/16/2017)	(4130 - 3700)/(7 - 2)	86
7520 (10/26/2020)	3700 (11/16/2017)	(7520 - 3700)/(8 - 2)	636.667
8350 (11/13/2018)	2210 (5/22/2018)	(8350 - 2210)/(4 - 3)	6140
5800 (5/29/2019)	2210 (5/22/2018)	(5800 - 2210)/(5 - 3)	1795
6080 (11/26/2019)	2210 (5/22/2018)	(6080 - 2210)/(6 - 3)	1290
4130 (4/9/2020)	2210 (5/22/2018)	(4130 - 2210)/(7 - 3)	480
7520 (10/26/2020)	2210 (5/22/2018)	(7520 - 2210)/(8 - 3)	1062
5800 (5/29/2019)	8350 (11/13/2018)	(5800 - 8350)/(5 - 4)	-2550
6080 (11/26/2019)	8350 (11/13/2018)	(6080 - 8350)/(6 - 4)	-1135
4130 (4/9/2020)	8350 (11/13/2018)	(4130 - 8350)/(7 - 4)	-1406.67
7520 (10/26/2020)	8350 (11/13/2018)	(7520 - 8350)/(8 - 4)	-207.5
6080 (11/26/2019)	5800 (5/29/2019)	(6080 - 5800)/(6 - 5)	280
4130 (4/9/2020)	5800 (5/29/2019)	(4130 - 5800)/(7 - 5)	-835
7520 (10/26/2020)	5800 (5/29/2019)	(7520 - 5800)/(8 - 5)	573.333
4130 (4/9/2020)	6080 (11/26/2019)	(4130 - 6080)/(7 - 6)	-1950
7520 (10/26/2020)	6080 (11/26/2019)	(7520 - 6080)/(8 - 6)	720
7520 (10/26/2020)	4130 (4/9/2020)	(7520 - 4130)/(8 - 7)	3390

Number of Q values = 28

Ordered Q Values

n	Q
1	-16300
2	-8895
3	-3883.33
4	-3550
5	-2784
6	-2645
7	-2550

8	-1950
9	-1782.86
10	-1490
11	-1406.67
12	-1135
13	-835
14	-207.5
15	86
16	280
17	480
18	573.333
19	595
20	636.667
21	700
22	720
23	1062
24	1290
25	1795
26	2325
27	3390
28	6140

Sen's Estimator (Median Q) is -60.75

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -2550 = Q(7)
Upper limit is 720 = Q(22)
-2550 < 0 < 720 indicating no trend in data.

Sen's Slope Analysis

Parameter: Organic Carbon, Total

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<1000 (11/16/2017)	20000 (5/25/2017)	(1000 - 20000)/(2 - 1)	-19000
2210 (5/22/2018)	20000 (5/25/2017)	(2210 - 20000)/(3 - 1)	-8895
15100 (11/13/2018)	20000 (5/25/2017)	(15100 - 20000)/(4 - 1)	-1633.33
7530 (5/29/2019)	20000 (5/25/2017)	(7530 - 20000)/(5 - 1)	-3117.5
2210 (11/26/2019)	20000 (5/25/2017)	(2210 - 20000)/(6 - 1)	-3558
ND<1000 (4/9/2020)	20000 (5/25/2017)	(1000 - 20000)/(7 - 1)	-3166.67
13200 (10/26/2020)	20000 (5/25/2017)	(13200 - 20000)/(8 - 1)	-971.429
2210 (5/22/2018)	ND<1000 (11/16/2017)	(2210 - 1000)/(3 - 2)	1210
15100 (11/13/2018)	ND<1000 (11/16/2017)	(15100 - 1000)/(4 - 2)	7050
7530 (5/29/2019)	ND<1000 (11/16/2017)	(7530 - 1000)/(5 - 2)	2176.67
2210 (11/26/2019)	ND<1000 (11/16/2017)	(2210 - 1000)/(6 - 2)	302.5
ND<1000 (4/9/2020)	ND<1000 (11/16/2017)	(1000 - 1000)/(7 - 2)	0
13200 (10/26/2020)	ND<1000 (11/16/2017)	(13200 - 1000)/(8 - 2)	2033.33
15100 (11/13/2018)	2210 (5/22/2018)	(15100 - 2210)/(4 - 3)	12890
7530 (5/29/2019)	2210 (5/22/2018)	(7530 - 2210)/(5 - 3)	2660
2210 (11/26/2019)	2210 (5/22/2018)	(2210 - 2210)/(6 - 3)	0
ND<1000 (4/9/2020)	2210 (5/22/2018)	(1000 - 2210)/(7 - 3)	-302.5
13200 (10/26/2020)	2210 (5/22/2018)	(13200 - 2210)/(8 - 3)	2198
7530 (5/29/2019)	15100 (11/13/2018)	(7530 - 15100)/(5 - 4)	-7570
2210 (11/26/2019)	15100 (11/13/2018)	(2210 - 15100)/(6 - 4)	-6445
ND<1000 (4/9/2020)	15100 (11/13/2018)	(1000 - 15100)/(7 - 4)	-4700
13200 (10/26/2020)	15100 (11/13/2018)	(13200 - 15100)/(8 - 4)	-475
2210 (11/26/2019)	7530 (5/29/2019)	(2210 - 7530)/(6 - 5)	-5320
ND<1000 (4/9/2020)	7530 (5/29/2019)	(1000 - 7530)/(7 - 5)	-3265
13200 (10/26/2020)	7530 (5/29/2019)	(13200 - 7530)/(8 - 5)	1890
ND<1000 (4/9/2020)	2210 (11/26/2019)	(1000 - 2210)/(7 - 6)	-1210
13200 (10/26/2020)	2210 (11/26/2019)	(13200 - 2210)/(8 - 6)	5495
13200 (10/26/2020)	ND<1000 (4/9/2020)	(13200 - 1000)/(8 - 7)	12200

Number of Q values = 28

Ordered Q Values

n	Q
1	-19000
2	-8895
3	-7570
4	-6445
5	-5320
6	-4700
7	-3558

8	-3265
9	-3166.67
10	-3117.5
11	-1633.33
12	-1210
13	-971.429
14	-475
15	-302.5
16	0
17	0
18	302.5
19	1210
20	1890
21	2033.33
22	2176.67
23	2198
24	2660
25	5495
26	7050
27	12200
28	12890

Sen's Estimator (Median Q) is -388.75

Tied Group	Value	Members
1	1000	2
2	2210	2

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 36
B = 0
C = 0
D = 0
E = 4
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 63.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.0901
M1 = (28 - 13.0901)/2.0 = 7.45495
M2 = (28 + 13.0901)/2.0 + 1 = 21.5451
Lower limit is -3558 = Q(7)
Upper limit is 2176.67 = Q(22)
-3558 < 0 < 2176.67 indicating no trend in data.

Sen's Slope Analysis

Parameter: Organic Carbon, Total

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<1000 (11/16/2017)	20000 (5/25/2017)	(1000 - 20000)/(2 - 1)	-19000
ND<1000 (5/22/2018)	20000 (5/25/2017)	(1000 - 20000)/(3 - 1)	-9500
11200 (11/13/2018)	20000 (5/25/2017)	(11200 - 20000)/(4 - 1)	-2933.33
9140 (5/29/2019)	20000 (5/25/2017)	(9140 - 20000)/(5 - 1)	-2715
3000 (11/26/2019)	20000 (5/25/2017)	(3000 - 20000)/(6 - 1)	-3400
ND<1000 (4/10/2020)	20000 (5/25/2017)	(1000 - 20000)/(7 - 1)	-3166.67
8230 (10/26/2020)	20000 (5/25/2017)	(8230 - 20000)/(8 - 1)	-1681.43
ND<1000 (5/22/2018)	ND<1000 (11/16/2017)	(1000 - 1000)/(3 - 2)	0
11200 (11/13/2018)	ND<1000 (11/16/2017)	(11200 - 1000)/(4 - 2)	5100
9140 (5/29/2019)	ND<1000 (11/16/2017)	(9140 - 1000)/(5 - 2)	2713.33
3000 (11/26/2019)	ND<1000 (11/16/2017)	(3000 - 1000)/(6 - 2)	500
ND<1000 (4/10/2020)	ND<1000 (11/16/2017)	(1000 - 1000)/(7 - 2)	0
8230 (10/26/2020)	ND<1000 (11/16/2017)	(8230 - 1000)/(8 - 2)	1205
11200 (11/13/2018)	ND<1000 (5/22/2018)	(11200 - 1000)/(4 - 3)	10200
9140 (5/29/2019)	ND<1000 (5/22/2018)	(9140 - 1000)/(5 - 3)	4070
3000 (11/26/2019)	ND<1000 (5/22/2018)	(3000 - 1000)/(6 - 3)	666.667
ND<1000 (4/10/2020)	ND<1000 (5/22/2018)	(1000 - 1000)/(7 - 3)	0
8230 (10/26/2020)	ND<1000 (5/22/2018)	(8230 - 1000)/(8 - 3)	1446
9140 (5/29/2019)	11200 (11/13/2018)	(9140 - 11200)/(5 - 4)	-2060
3000 (11/26/2019)	11200 (11/13/2018)	(3000 - 11200)/(6 - 4)	-4100
ND<1000 (4/10/2020)	11200 (11/13/2018)	(1000 - 11200)/(7 - 4)	-3400
8230 (10/26/2020)	11200 (11/13/2018)	(8230 - 11200)/(8 - 4)	-742.5
3000 (11/26/2019)	9140 (5/29/2019)	(3000 - 9140)/(6 - 5)	-6140
ND<1000 (4/10/2020)	9140 (5/29/2019)	(1000 - 9140)/(7 - 5)	-4070
8230 (10/26/2020)	9140 (5/29/2019)	(8230 - 9140)/(8 - 5)	-303.333
ND<1000 (4/10/2020)	3000 (11/26/2019)	(1000 - 3000)/(7 - 6)	-2000
8230 (10/26/2020)	3000 (11/26/2019)	(8230 - 3000)/(8 - 6)	2615
8230 (10/26/2020)	ND<1000 (4/10/2020)	(8230 - 1000)/(8 - 7)	7230

Number of Q values = 28

Ordered Q Values

n	Q
1	-19000
2	-9500
3	-6140
4	-4100
5	-4070
6	-3400
7	-3400

8	-3166.67
9	-2933.33
10	-2715
11	-2060
12	-2000
13	-1681.43
14	-742.5
15	-303.333
16	0
17	0
18	0
19	500
20	666.667
21	1205
22	1446
23	2615
24	2713.33
25	4070
26	5100
27	7230
28	10200

Sen's Estimator (Median Q) is -522.917

Tied Group	Value	Members
1	1000	3

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 61.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 12.9167
M1 = (28 - 12.9167)/2.0 = 7.54164
M2 = (28 + 12.9167)/2.0 + 1 = 21.4584
Lower limit is -3166.67 = Q(8)
Upper limit is 1205 = Q(21)
-3166.67 < 0 < 1205 indicating no trend in data.

Sen's Slope Analysis

Parameter: Organic Carbon, Total

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
ND<1000 (11/16/2017)	10000 (5/25/2017)	(1000 - 10000)/(2 - 1)	-9000
ND<1000 (5/22/2018)	10000 (5/25/2017)	(1000 - 10000)/(3 - 1)	-4500
2870 (11/13/2018)	10000 (5/25/2017)	(2870 - 10000)/(4 - 1)	-2376.67
2340 (5/29/2019)	10000 (5/25/2017)	(2340 - 10000)/(5 - 1)	-1915
ND<1000 (11/26/2019)	10000 (5/25/2017)	(1000 - 10000)/(6 - 1)	-1800
ND<1000 (4/10/2020)	10000 (5/25/2017)	(1000 - 10000)/(7 - 1)	-1500
4300 (10/27/2020)	10000 (5/25/2017)	(4300 - 10000)/(8 - 1)	-814.286
ND<1000 (5/22/2018)	ND<1000 (11/16/2017)	(1000 - 1000)/(3 - 2)	0
2870 (11/13/2018)	ND<1000 (11/16/2017)	(2870 - 1000)/(4 - 2)	935
2340 (5/29/2019)	ND<1000 (11/16/2017)	(2340 - 1000)/(5 - 2)	446.667
ND<1000 (11/26/2019)	ND<1000 (11/16/2017)	(1000 - 1000)/(6 - 2)	0
ND<1000 (4/10/2020)	ND<1000 (11/16/2017)	(1000 - 1000)/(7 - 2)	0
4300 (10/27/2020)	ND<1000 (11/16/2017)	(4300 - 1000)/(8 - 2)	550
2870 (11/13/2018)	ND<1000 (5/22/2018)	(2870 - 1000)/(4 - 3)	1870
2340 (5/29/2019)	ND<1000 (5/22/2018)	(2340 - 1000)/(5 - 3)	670
ND<1000 (11/26/2019)	ND<1000 (5/22/2018)	(1000 - 1000)/(6 - 3)	0
ND<1000 (4/10/2020)	ND<1000 (5/22/2018)	(1000 - 1000)/(7 - 3)	0
4300 (10/27/2020)	ND<1000 (5/22/2018)	(4300 - 1000)/(8 - 3)	660
2340 (5/29/2019)	2870 (11/13/2018)	(2340 - 2870)/(5 - 4)	-530
ND<1000 (11/26/2019)	2870 (11/13/2018)	(1000 - 2870)/(6 - 4)	-935
ND<1000 (4/10/2020)	2870 (11/13/2018)	(1000 - 2870)/(7 - 4)	-623.333
4300 (10/27/2020)	2870 (11/13/2018)	(4300 - 2870)/(8 - 4)	357.5
ND<1000 (11/26/2019)	2340 (5/29/2019)	(1000 - 2340)/(6 - 5)	-1340
ND<1000 (4/10/2020)	2340 (5/29/2019)	(1000 - 2340)/(7 - 5)	-670
4300 (10/27/2020)	2340 (5/29/2019)	(4300 - 2340)/(8 - 5)	653.333
ND<1000 (4/10/2020)	ND<1000 (11/26/2019)	(1000 - 1000)/(7 - 6)	0
4300 (10/27/2020)	ND<1000 (11/26/2019)	(4300 - 1000)/(8 - 6)	1650
4300 (10/27/2020)	ND<1000 (4/10/2020)	(4300 - 1000)/(8 - 7)	3300

Number of Q values = 28

Ordered Q Values

n	Q
1	-9000
2	-4500
3	-2376.67
4	-1915
5	-1800
6	-1500
7	-1340

8	-935
9	-814.286
10	-670
11	-623.333
12	-530
13	0
14	0
15	0
16	0
17	0
18	0
19	357.5
20	446.667
21	550
22	653.333
23	660
24	670
25	935
26	1650
27	1870
28	3300

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	1000	4

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 56.6667
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 12.382
M1 = (28 - 12.382)/2.0 = 7.809
M2 = (28 + 12.382)/2.0 + 1 = 21.191
Lower limit is -935 = Q(8)
Upper limit is 550 = Q(21)
-935 < 0 < 550 indicating no trend in data.

Sen's Slope Analysis

Parameter: Residue, Dissolved (TDS)

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
148000 (11/16/2017)	155000 (5/25/2017)	(148000 - 155000)/(2 - 1)	-7000
180000 (5/22/2018)	155000 (5/25/2017)	(180000 - 155000)/(3 - 1)	12500
219000 (11/13/2018)	155000 (5/25/2017)	(219000 - 155000)/(4 - 1)	21333.3
164000 (5/29/2019)	155000 (5/25/2017)	(164000 - 155000)/(5 - 1)	2250
187000 (11/26/2019)	155000 (5/25/2017)	(187000 - 155000)/(6 - 1)	6400
186000 (4/9/2020)	155000 (5/25/2017)	(186000 - 155000)/(7 - 1)	5166.67
192000 (10/26/2020)	155000 (5/25/2017)	(192000 - 155000)/(8 - 1)	5285.71
180000 (5/22/2018)	148000 (11/16/2017)	(180000 - 148000)/(3 - 2)	32000
219000 (11/13/2018)	148000 (11/16/2017)	(219000 - 148000)/(4 - 2)	35500
164000 (5/29/2019)	148000 (11/16/2017)	(164000 - 148000)/(5 - 2)	5333.33
187000 (11/26/2019)	148000 (11/16/2017)	(187000 - 148000)/(6 - 2)	9750
186000 (4/9/2020)	148000 (11/16/2017)	(186000 - 148000)/(7 - 2)	7600
192000 (10/26/2020)	148000 (11/16/2017)	(192000 - 148000)/(8 - 2)	7333.33
219000 (11/13/2018)	180000 (5/22/2018)	(219000 - 180000)/(4 - 3)	39000
164000 (5/29/2019)	180000 (5/22/2018)	(164000 - 180000)/(5 - 3)	-8000
187000 (11/26/2019)	180000 (5/22/2018)	(187000 - 180000)/(6 - 3)	2333.33
186000 (4/9/2020)	180000 (5/22/2018)	(186000 - 180000)/(7 - 3)	1500
192000 (10/26/2020)	180000 (5/22/2018)	(192000 - 180000)/(8 - 3)	2400
164000 (5/29/2019)	219000 (11/13/2018)	(164000 - 219000)/(5 - 4)	-55000
187000 (11/26/2019)	219000 (11/13/2018)	(187000 - 219000)/(6 - 4)	-16000
186000 (4/9/2020)	219000 (11/13/2018)	(186000 - 219000)/(7 - 4)	-11000
192000 (10/26/2020)	219000 (11/13/2018)	(192000 - 219000)/(8 - 4)	-6750
187000 (11/26/2019)	164000 (5/29/2019)	(187000 - 164000)/(6 - 5)	23000
186000 (4/9/2020)	164000 (5/29/2019)	(186000 - 164000)/(7 - 5)	11000
192000 (10/26/2020)	164000 (5/29/2019)	(192000 - 164000)/(8 - 5)	9333.33
186000 (4/9/2020)	187000 (11/26/2019)	(186000 - 187000)/(7 - 6)	-1000
192000 (10/26/2020)	187000 (11/26/2019)	(192000 - 187000)/(8 - 6)	2500
192000 (10/26/2020)	186000 (4/9/2020)	(192000 - 186000)/(8 - 7)	6000

Number of Q values = 28

Ordered Q Values

n	Q
1	-55000
2	-16000
3	-11000
4	-8000
5	-7000
6	-6750
7	-1000

8	1500
9	2250
10	2333.33
11	2400
12	2500
13	5166.67
14	5285.71
15	5333.33
16	6000
17	6400
18	7333.33
19	7600
20	9333.33
21	9750
22	11000
23	12500
24	21333.3
25	23000
26	32000
27	35500
28	39000

Sen's Estimator (Median Q) is 5309.52

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -1000 = Q(7)
Upper limit is 11000 = Q(22)
-1000 < 0 < 11000 indicating no trend in data.

Sen's Slope Analysis

Parameter: Residue, Dissolved (TDS)

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
449000 (11/16/2017)	505000 (5/25/2017)	(449000 - 505000)/(2 - 1)	-56000
574000 (5/22/2018)	505000 (5/25/2017)	(574000 - 505000)/(3 - 1)	34500
532000 (11/13/2018)	505000 (5/25/2017)	(532000 - 505000)/(4 - 1)	9000
996000 (5/29/2019)	505000 (5/25/2017)	(996000 - 505000)/(5 - 1)	122750
869000 (11/26/2019)	505000 (5/25/2017)	(869000 - 505000)/(6 - 1)	72800
1.26e+006 (4/9/2020)	505000 (5/25/2017)	(1.26e+006 - 505000)/(7 - 1)	125833
1.49e+006 (9/2/2020)	505000 (5/25/2017)	(1.49e+006 - 505000)/(8 - 1)	140714
1.51e+006 (10/26/2020)	505000 (5/25/2017)	(1.51e+006 - 505000)/(9 - 1)	125625
574000 (5/22/2018)	449000 (11/16/2017)	(574000 - 449000)/(3 - 2)	125000
532000 (11/13/2018)	449000 (11/16/2017)	(532000 - 449000)/(4 - 2)	41500
996000 (5/29/2019)	449000 (11/16/2017)	(996000 - 449000)/(5 - 2)	182333
869000 (11/26/2019)	449000 (11/16/2017)	(869000 - 449000)/(6 - 2)	105000
1.26e+006 (4/9/2020)	449000 (11/16/2017)	(1.26e+006 - 449000)/(7 - 2)	162200
1.49e+006 (9/2/2020)	449000 (11/16/2017)	(1.49e+006 - 449000)/(8 - 2)	173500
1.51e+006 (10/26/2020)	449000 (11/16/2017)	(1.51e+006 - 449000)/(9 - 2)	151571
532000 (11/13/2018)	574000 (5/22/2018)	(532000 - 574000)/(4 - 3)	-42000
996000 (5/29/2019)	574000 (5/22/2018)	(996000 - 574000)/(5 - 3)	211000
869000 (11/26/2019)	574000 (5/22/2018)	(869000 - 574000)/(6 - 3)	98333.3
1.26e+006 (4/9/2020)	574000 (5/22/2018)	(1.26e+006 - 574000)/(7 - 3)	171500
1.49e+006 (9/2/2020)	574000 (5/22/2018)	(1.49e+006 - 574000)/(8 - 3)	183200
1.51e+006 (10/26/2020)	574000 (5/22/2018)	(1.51e+006 - 574000)/(9 - 3)	156000
996000 (5/29/2019)	532000 (11/13/2018)	(996000 - 532000)/(5 - 4)	464000
869000 (11/26/2019)	532000 (11/13/2018)	(869000 - 532000)/(6 - 4)	168500
1.26e+006 (4/9/2020)	532000 (11/13/2018)	(1.26e+006 - 532000)/(7 - 4)	242667
1.49e+006 (9/2/2020)	532000 (11/13/2018)	(1.49e+006 - 532000)/(8 - 4)	239500
1.51e+006 (10/26/2020)	532000 (11/13/2018)	(1.51e+006 - 532000)/(9 - 4)	195600
869000 (11/26/2019)	996000 (5/29/2019)	(869000 - 996000)/(6 - 5)	-127000
1.26e+006 (4/9/2020)	996000 (5/29/2019)	(1.26e+006 - 996000)/(7 - 5)	132000
1.49e+006 (9/2/2020)	996000 (5/29/2019)	(1.49e+006 - 996000)/(8 - 5)	164667
1.51e+006 (10/26/2020)	996000 (5/29/2019)	(1.51e+006 - 996000)/(9 - 5)	128500
1.26e+006 (4/9/2020)	869000 (11/26/2019)	(1.26e+006 - 869000)/(7 - 6)	391000
1.49e+006 (9/2/2020)	869000 (11/26/2019)	(1.49e+006 - 869000)/(8 - 6)	310500
1.51e+006 (10/26/2020)	869000 (11/26/2019)	(1.51e+006 - 869000)/(9 - 6)	213667
1.49e+006 (9/2/2020)	1.26e+006 (4/9/2020)	(1.49e+006 - 1.26e+006)/(8 - 7)	230000
1.51e+006 (10/26/2020)	1.26e+006 (4/9/2020)	(1.51e+006 - 1.26e+006)/(9 - 7)	125000
1.51e+006 (10/26/2020)	1.49e+006 (9/2/2020)	(1.51e+006 - 1.49e+006)/(9 - 8)	20000

Number of Q values = 36

Ordered Q Values

n	Q
1	-127000
2	-56000
3	-42000
4	9000
5	20000
6	34500
7	41500
8	72800
9	98333.3
10	105000
11	122750
12	125000
13	125000
14	125625
15	125833
16	128500
17	132000
18	140714
19	151571
20	156000
21	162200
22	164667
23	168500
24	171500
25	173500
26	182333
27	183200
28	195600
29	211000
30	213667
31	230000
32	239500
33	242667
34	310500
35	391000
36	464000

Sen's Estimator (Median Q) is 146143

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
9/2/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0

a = 1656
b = 4536
c = 144
Group Variance = 92
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 15.7769
M1 = (36 - 15.7769)/2.0 = 10.1116
M2 = (36 + 15.7769)/2.0 + 1 = 26.8884
Lower limit is 105000 = Q(10)
Upper limit is 183200 = Q(27)
105000 > 0 indicating an upward trend in data.

Sen's Slope Analysis

Parameter: Residue, Dissolved (TDS)

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
307000 (11/16/2017)	270000 (5/25/2017)	(307000 - 270000)/(2 - 1)	37000
324000 (5/22/2018)	270000 (5/25/2017)	(324000 - 270000)/(3 - 1)	27000
303000 (11/13/2018)	270000 (5/25/2017)	(303000 - 270000)/(4 - 1)	11000
314000 (5/29/2019)	270000 (5/25/2017)	(314000 - 270000)/(5 - 1)	11000
301000 (11/26/2019)	270000 (5/25/2017)	(301000 - 270000)/(6 - 1)	6200
268000 (4/10/2020)	270000 (5/25/2017)	(268000 - 270000)/(7 - 1)	-333.333
264000 (10/26/2020)	270000 (5/25/2017)	(264000 - 270000)/(8 - 1)	-857.143
324000 (5/22/2018)	307000 (11/16/2017)	(324000 - 307000)/(3 - 2)	17000
303000 (11/13/2018)	307000 (11/16/2017)	(303000 - 307000)/(4 - 2)	-2000
314000 (5/29/2019)	307000 (11/16/2017)	(314000 - 307000)/(5 - 2)	2333.33
301000 (11/26/2019)	307000 (11/16/2017)	(301000 - 307000)/(6 - 2)	-1500
268000 (4/10/2020)	307000 (11/16/2017)	(268000 - 307000)/(7 - 2)	-7800
264000 (10/26/2020)	307000 (11/16/2017)	(264000 - 307000)/(8 - 2)	-7166.67
303000 (11/13/2018)	324000 (5/22/2018)	(303000 - 324000)/(4 - 3)	-21000
314000 (5/29/2019)	324000 (5/22/2018)	(314000 - 324000)/(5 - 3)	-5000
301000 (11/26/2019)	324000 (5/22/2018)	(301000 - 324000)/(6 - 3)	-7666.67
268000 (4/10/2020)	324000 (5/22/2018)	(268000 - 324000)/(7 - 3)	-14000
264000 (10/26/2020)	324000 (5/22/2018)	(264000 - 324000)/(8 - 3)	-12000
314000 (5/29/2019)	303000 (11/13/2018)	(314000 - 303000)/(5 - 4)	11000
301000 (11/26/2019)	303000 (11/13/2018)	(301000 - 303000)/(6 - 4)	-1000
268000 (4/10/2020)	303000 (11/13/2018)	(268000 - 303000)/(7 - 4)	-11666.7
264000 (10/26/2020)	303000 (11/13/2018)	(264000 - 303000)/(8 - 4)	-9750
301000 (11/26/2019)	314000 (5/29/2019)	(301000 - 314000)/(6 - 5)	-13000
268000 (4/10/2020)	314000 (5/29/2019)	(268000 - 314000)/(7 - 5)	-23000
264000 (10/26/2020)	314000 (5/29/2019)	(264000 - 314000)/(8 - 5)	-16666.7
268000 (4/10/2020)	301000 (11/26/2019)	(268000 - 301000)/(7 - 6)	-33000
264000 (10/26/2020)	301000 (11/26/2019)	(264000 - 301000)/(8 - 6)	-18500
264000 (10/26/2020)	268000 (4/10/2020)	(264000 - 268000)/(8 - 7)	-4000

Number of Q values = 28

Ordered Q Values

n	Q
1	-33000
2	-23000
3	-21000
4	-18500
5	-16666.7
6	-14000
7	-13000

8	-12000
9	-11666.7
10	-9750
11	-7800
12	-7666.67
13	-7166.67
14	-5000
15	-4000
16	-2000
17	-1500
18	-1000
19	-857.143
20	-333.333
21	2333.33
22	6200
23	11000
24	11000
25	11000
26	17000
27	27000
28	37000

Sen's Estimator (Median Q) is -4500

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -13000 = Q(7)
Upper limit is 6200 = Q(22)
-13000 < 0 < 6200 indicating no trend in data.

Sen's Slope Analysis

Parameter: Residue, Dissolved (TDS)

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
72000 (11/16/2017)	63000 (5/25/2017)	(72000 - 63000)/(2 - 1)	9000
82000 (5/22/2018)	63000 (5/25/2017)	(82000 - 63000)/(3 - 1)	9500
72000 (11/13/2018)	63000 (5/25/2017)	(72000 - 63000)/(4 - 1)	3000
79000 (5/29/2019)	63000 (5/25/2017)	(79000 - 63000)/(5 - 1)	4000
60000 (11/26/2019)	63000 (5/25/2017)	(60000 - 63000)/(6 - 1)	-600
95000 (4/10/2020)	63000 (5/25/2017)	(95000 - 63000)/(7 - 1)	5333.33
1.49e+006 (9/2/2020)	63000 (5/25/2017)	(1.49e+006 - 63000)/(8 - 1)	203857
39000 (10/27/2020)	63000 (5/25/2017)	(39000 - 63000)/(9 - 1)	-3000
82000 (5/22/2018)	72000 (11/16/2017)	(82000 - 72000)/(3 - 2)	10000
72000 (11/13/2018)	72000 (11/16/2017)	(72000 - 72000)/(4 - 2)	0
79000 (5/29/2019)	72000 (11/16/2017)	(79000 - 72000)/(5 - 2)	2333.33
60000 (11/26/2019)	72000 (11/16/2017)	(60000 - 72000)/(6 - 2)	-3000
95000 (4/10/2020)	72000 (11/16/2017)	(95000 - 72000)/(7 - 2)	4600
1.49e+006 (9/2/2020)	72000 (11/16/2017)	(1.49e+006 - 72000)/(8 - 2)	236333
39000 (10/27/2020)	72000 (11/16/2017)	(39000 - 72000)/(9 - 2)	-4714.29
72000 (11/13/2018)	82000 (5/22/2018)	(72000 - 82000)/(4 - 3)	-10000
79000 (5/29/2019)	82000 (5/22/2018)	(79000 - 82000)/(5 - 3)	-1500
60000 (11/26/2019)	82000 (5/22/2018)	(60000 - 82000)/(6 - 3)	-7333.33
95000 (4/10/2020)	82000 (5/22/2018)	(95000 - 82000)/(7 - 3)	3250
1.49e+006 (9/2/2020)	82000 (5/22/2018)	(1.49e+006 - 82000)/(8 - 3)	281600
39000 (10/27/2020)	82000 (5/22/2018)	(39000 - 82000)/(9 - 3)	-7166.67
79000 (5/29/2019)	72000 (11/13/2018)	(79000 - 72000)/(5 - 4)	7000
60000 (11/26/2019)	72000 (11/13/2018)	(60000 - 72000)/(6 - 4)	-6000
95000 (4/10/2020)	72000 (11/13/2018)	(95000 - 72000)/(7 - 4)	7666.67
1.49e+006 (9/2/2020)	72000 (11/13/2018)	(1.49e+006 - 72000)/(8 - 4)	354500
39000 (10/27/2020)	72000 (11/13/2018)	(39000 - 72000)/(9 - 4)	-6600
60000 (11/26/2019)	79000 (5/29/2019)	(60000 - 79000)/(6 - 5)	-19000
95000 (4/10/2020)	79000 (5/29/2019)	(95000 - 79000)/(7 - 5)	8000
1.49e+006 (9/2/2020)	79000 (5/29/2019)	(1.49e+006 - 79000)/(8 - 5)	470333
39000 (10/27/2020)	79000 (5/29/2019)	(39000 - 79000)/(9 - 5)	-10000
95000 (4/10/2020)	60000 (11/26/2019)	(95000 - 60000)/(7 - 6)	35000
1.49e+006 (9/2/2020)	60000 (11/26/2019)	(1.49e+006 - 60000)/(8 - 6)	715000
39000 (10/27/2020)	60000 (11/26/2019)	(39000 - 60000)/(9 - 6)	-7000
1.49e+006 (9/2/2020)	95000 (4/10/2020)	(1.49e+006 - 95000)/(8 - 7)	1.395e+006
39000 (10/27/2020)	95000 (4/10/2020)	(39000 - 95000)/(9 - 7)	-28000
39000 (10/27/2020)	1.49e+006 (9/2/2020)	(39000 - 1.49e+006)/(9 - 8)	-1.451e+006

Number of Q values = 36

Ordered Q Values

n	Q
1	-1.451e+006
2	-28000
3	-19000
4	-10000
5	-10000
6	-7333.33
7	-7166.67
8	-7000
9	-6600
10	-6000
11	-4714.29
12	-3000
13	-3000
14	-1500
15	-600
16	0
17	2333.33
18	3000
19	3250
20	4000
21	4600
22	5333.33
23	7000
24	7666.67
25	8000
26	9000
27	9500
28	10000
29	35000
30	203857
31	236333
32	281600
33	354500
34	470333
35	715000
36	1.395e+006

Sen's Estimator (Median Q) is 3125

Tied Group	Value	Members
1	72000	2

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
9/2/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0

D = 0
E = 2
F = 0
a = 1656
b = 4536
c = 144
Group Variance = 91
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 15.6909
M1 = (36 - 15.6909)/2.0 = 10.1546
M2 = (36 + 15.6909)/2.0 + 1 = 26.8454
Lower limit is -6000 = Q(10)
Upper limit is 9500 = Q(27)
-6000 < 0 < 9500 indicating no trend in data.

Sen's Slope Analysis

Parameter: Sodium

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
24600 (11/16/2017)	42300 (5/25/2017)	(24600 - 42300)/(2 - 1)	-17700
28900 (5/22/2018)	42300 (5/25/2017)	(28900 - 42300)/(3 - 1)	-6700
46000 (11/13/2018)	42300 (5/25/2017)	(46000 - 42300)/(4 - 1)	1233.33
38600 (5/29/2019)	42300 (5/25/2017)	(38600 - 42300)/(5 - 1)	-925
36500 (11/26/2019)	42300 (5/25/2017)	(36500 - 42300)/(6 - 1)	-1160
39000 (4/9/2020)	42300 (5/25/2017)	(39000 - 42300)/(7 - 1)	-550
31600 (10/26/2020)	42300 (5/25/2017)	(31600 - 42300)/(8 - 1)	-1528.57
28900 (5/22/2018)	24600 (11/16/2017)	(28900 - 24600)/(3 - 2)	4300
46000 (11/13/2018)	24600 (11/16/2017)	(46000 - 24600)/(4 - 2)	10700
38600 (5/29/2019)	24600 (11/16/2017)	(38600 - 24600)/(5 - 2)	4666.67
36500 (11/26/2019)	24600 (11/16/2017)	(36500 - 24600)/(6 - 2)	2975
39000 (4/9/2020)	24600 (11/16/2017)	(39000 - 24600)/(7 - 2)	2880
31600 (10/26/2020)	24600 (11/16/2017)	(31600 - 24600)/(8 - 2)	1166.67
46000 (11/13/2018)	28900 (5/22/2018)	(46000 - 28900)/(4 - 3)	17100
38600 (5/29/2019)	28900 (5/22/2018)	(38600 - 28900)/(5 - 3)	4850
36500 (11/26/2019)	28900 (5/22/2018)	(36500 - 28900)/(6 - 3)	2533.33
39000 (4/9/2020)	28900 (5/22/2018)	(39000 - 28900)/(7 - 3)	2525
31600 (10/26/2020)	28900 (5/22/2018)	(31600 - 28900)/(8 - 3)	540
38600 (5/29/2019)	46000 (11/13/2018)	(38600 - 46000)/(5 - 4)	-7400
36500 (11/26/2019)	46000 (11/13/2018)	(36500 - 46000)/(6 - 4)	-4750
39000 (4/9/2020)	46000 (11/13/2018)	(39000 - 46000)/(7 - 4)	-2333.33
31600 (10/26/2020)	46000 (11/13/2018)	(31600 - 46000)/(8 - 4)	-3600
36500 (11/26/2019)	38600 (5/29/2019)	(36500 - 38600)/(6 - 5)	-2100
39000 (4/9/2020)	38600 (5/29/2019)	(39000 - 38600)/(7 - 5)	200
31600 (10/26/2020)	38600 (5/29/2019)	(31600 - 38600)/(8 - 5)	-2333.33
39000 (4/9/2020)	36500 (11/26/2019)	(39000 - 36500)/(7 - 6)	2500
31600 (10/26/2020)	36500 (11/26/2019)	(31600 - 36500)/(8 - 6)	-2450
31600 (10/26/2020)	39000 (4/9/2020)	(31600 - 39000)/(8 - 7)	-7400

Number of Q values = 28

Ordered Q Values

n	Q
1	-17700
2	-7400
3	-7400
4	-6700
5	-4750
6	-3600
7	-2450

8	-2333.33
9	-2333.33
10	-2100
11	-1528.57
12	-1160
13	-925
14	-550
15	200
16	540
17	1166.67
18	1233.33
19	2500
20	2525
21	2533.33
22	2880
23	2975
24	4300
25	4666.67
26	4850
27	10700
28	17100

Sen's Estimator (Median Q) is -175

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -2450 = Q(7)
Upper limit is 2880 = Q(22)
-2450 < 0 < 2880 indicating no trend in data.

Sen's Slope Analysis

Parameter: Sodium

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
29300 (11/16/2017)	46600 (5/25/2017)	(29300 - 46600)/(2 - 1)	-17300
31100 (5/22/2018)	46600 (5/25/2017)	(31100 - 46600)/(3 - 1)	-7750
39.6 (11/13/2018)	46600 (5/25/2017)	(39.6 - 46600)/(4 - 1)	-15520.1
14000 (5/29/2019)	46600 (5/25/2017)	(14000 - 46600)/(5 - 1)	-8150
12400 (11/26/2019)	46600 (5/25/2017)	(12400 - 46600)/(6 - 1)	-6840
223000 (4/9/2020)	46600 (5/25/2017)	(223000 - 46600)/(7 - 1)	29400
319000 (10/26/2020)	46600 (5/25/2017)	(319000 - 46600)/(8 - 1)	38914.3
31100 (5/22/2018)	29300 (11/16/2017)	(31100 - 29300)/(3 - 2)	1800
39.6 (11/13/2018)	29300 (11/16/2017)	(39.6 - 29300)/(4 - 2)	-14630.2
14000 (5/29/2019)	29300 (11/16/2017)	(14000 - 29300)/(5 - 2)	-5100
12400 (11/26/2019)	29300 (11/16/2017)	(12400 - 29300)/(6 - 2)	-4225
223000 (4/9/2020)	29300 (11/16/2017)	(223000 - 29300)/(7 - 2)	38740
319000 (10/26/2020)	29300 (11/16/2017)	(319000 - 29300)/(8 - 2)	48283.3
39.6 (11/13/2018)	31100 (5/22/2018)	(39.6 - 31100)/(4 - 3)	-31060.4
14000 (5/29/2019)	31100 (5/22/2018)	(14000 - 31100)/(5 - 3)	-8550
12400 (11/26/2019)	31100 (5/22/2018)	(12400 - 31100)/(6 - 3)	-6233.33
223000 (4/9/2020)	31100 (5/22/2018)	(223000 - 31100)/(7 - 3)	47975
319000 (10/26/2020)	31100 (5/22/2018)	(319000 - 31100)/(8 - 3)	57580
14000 (5/29/2019)	39.6 (11/13/2018)	(14000 - 39.6)/(5 - 4)	13960.4
12400 (11/26/2019)	39.6 (11/13/2018)	(12400 - 39.6)/(6 - 4)	6180.2
223000 (4/9/2020)	39.6 (11/13/2018)	(223000 - 39.6)/(7 - 4)	74320.1
319000 (10/26/2020)	39.6 (11/13/2018)	(319000 - 39.6)/(8 - 4)	79740.1
12400 (11/26/2019)	14000 (5/29/2019)	(12400 - 14000)/(6 - 5)	-1600
223000 (4/9/2020)	14000 (5/29/2019)	(223000 - 14000)/(7 - 5)	104500
319000 (10/26/2020)	14000 (5/29/2019)	(319000 - 14000)/(8 - 5)	101667
223000 (4/9/2020)	12400 (11/26/2019)	(223000 - 12400)/(7 - 6)	210600
319000 (10/26/2020)	12400 (11/26/2019)	(319000 - 12400)/(8 - 6)	153300
319000 (10/26/2020)	223000 (4/9/2020)	(319000 - 223000)/(8 - 7)	96000

Number of Q values = 28

Ordered Q Values

n	Q
1	-31060.4
2	-17300
3	-15520.1
4	-14630.2
5	-8550
6	-8150
7	-7750

8	-6840
9	-6233.33
10	-5100
11	-4225
12	-1600
13	1800
14	6180.2
15	13960.4
16	29400
17	38740
18	38914.3
19	47975
20	48283.3
21	57580
22	74320.1
23	79740.1
24	96000
25	101667
26	104500
27	153300
28	210600

Sen's Estimator (Median Q) is 10070.3

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/9/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -7750 = Q(7)
Upper limit is 74320.1 = Q(22)
-7750 < 0 < 74320.1 indicating no trend in data.

Sen's Slope Analysis

Parameter: Sodium

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
10700 (11/16/2017)	9400 (5/25/2017)	(10700 - 9400)/(2 - 1)	1300
12400 (5/22/2018)	9400 (5/25/2017)	(12400 - 9400)/(3 - 1)	1500
12100 (11/13/2018)	9400 (5/25/2017)	(12100 - 9400)/(4 - 1)	900
13600 (5/29/2019)	9400 (5/25/2017)	(13600 - 9400)/(5 - 1)	1050
13300 (11/26/2019)	9400 (5/25/2017)	(13300 - 9400)/(6 - 1)	780
8930 (4/10/2020)	9400 (5/25/2017)	(8930 - 9400)/(7 - 1)	-78.3333
2030 (10/27/2020)	9400 (5/25/2017)	(2030 - 9400)/(8 - 1)	-1052.86
12400 (5/22/2018)	10700 (11/16/2017)	(12400 - 10700)/(3 - 2)	1700
12100 (11/13/2018)	10700 (11/16/2017)	(12100 - 10700)/(4 - 2)	700
13600 (5/29/2019)	10700 (11/16/2017)	(13600 - 10700)/(5 - 2)	966.667
13300 (11/26/2019)	10700 (11/16/2017)	(13300 - 10700)/(6 - 2)	650
8930 (4/10/2020)	10700 (11/16/2017)	(8930 - 10700)/(7 - 2)	-354
2030 (10/27/2020)	10700 (11/16/2017)	(2030 - 10700)/(8 - 2)	-1445
12100 (11/13/2018)	12400 (5/22/2018)	(12100 - 12400)/(4 - 3)	-300
13600 (5/29/2019)	12400 (5/22/2018)	(13600 - 12400)/(5 - 3)	600
13300 (11/26/2019)	12400 (5/22/2018)	(13300 - 12400)/(6 - 3)	300
8930 (4/10/2020)	12400 (5/22/2018)	(8930 - 12400)/(7 - 3)	-867.5
2030 (10/27/2020)	12400 (5/22/2018)	(2030 - 12400)/(8 - 3)	-2074
13600 (5/29/2019)	12100 (11/13/2018)	(13600 - 12100)/(5 - 4)	1500
13300 (11/26/2019)	12100 (11/13/2018)	(13300 - 12100)/(6 - 4)	600
8930 (4/10/2020)	12100 (11/13/2018)	(8930 - 12100)/(7 - 4)	-1056.67
2030 (10/27/2020)	12100 (11/13/2018)	(2030 - 12100)/(8 - 4)	-2517.5
13300 (11/26/2019)	13600 (5/29/2019)	(13300 - 13600)/(6 - 5)	-300
8930 (4/10/2020)	13600 (5/29/2019)	(8930 - 13600)/(7 - 5)	-2335
2030 (10/27/2020)	13600 (5/29/2019)	(2030 - 13600)/(8 - 5)	-3856.67
8930 (4/10/2020)	13300 (11/26/2019)	(8930 - 13300)/(7 - 6)	-4370
2030 (10/27/2020)	13300 (11/26/2019)	(2030 - 13300)/(8 - 6)	-5635
2030 (10/27/2020)	8930 (4/10/2020)	(2030 - 8930)/(8 - 7)	-6900

Number of Q values = 28

Ordered Q Values

n	Q
1	-6900
2	-5635
3	-4370
4	-3856.67
5	-2517.5
6	-2335
7	-2074

8	-1445
9	-1056.67
10	-1052.86
11	-867.5
12	-354
13	-300
14	-300
15	-78.3333
16	300
17	600
18	600
19	650
20	700
21	780
22	900
23	966.667
24	1050
25	1300
26	1500
27	1500
28	1700

Sen's Estimator (Median Q) is -189.167

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -2074 = Q(7)
Upper limit is 900 = Q(22)
-2074 < 0 < 900 indicating no trend in data.

Sen's Slope Analysis

Parameter: Sodium

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
2550 (11/16/2017)	2150 (5/25/2017)	(2550 - 2150)/(2 - 1)	400
3190 (5/22/2018)	2150 (5/25/2017)	(3190 - 2150)/(3 - 1)	520
3230 (11/13/2018)	2150 (5/25/2017)	(3230 - 2150)/(4 - 1)	360
2720 (5/29/2019)	2150 (5/25/2017)	(2720 - 2150)/(5 - 1)	142.5
2800 (11/26/2019)	2150 (5/25/2017)	(2800 - 2150)/(6 - 1)	130
2820 (4/10/2020)	2150 (5/25/2017)	(2820 - 2150)/(7 - 1)	111.667
32500 (10/27/2020)	2150 (5/25/2017)	(32500 - 2150)/(8 - 1)	4335.71
3190 (5/22/2018)	2550 (11/16/2017)	(3190 - 2550)/(3 - 2)	640
3230 (11/13/2018)	2550 (11/16/2017)	(3230 - 2550)/(4 - 2)	340
2720 (5/29/2019)	2550 (11/16/2017)	(2720 - 2550)/(5 - 2)	56.6667
2800 (11/26/2019)	2550 (11/16/2017)	(2800 - 2550)/(6 - 2)	62.5
2820 (4/10/2020)	2550 (11/16/2017)	(2820 - 2550)/(7 - 2)	54
32500 (10/27/2020)	2550 (11/16/2017)	(32500 - 2550)/(8 - 2)	4991.67
3230 (11/13/2018)	3190 (5/22/2018)	(3230 - 3190)/(4 - 3)	40
2720 (5/29/2019)	3190 (5/22/2018)	(2720 - 3190)/(5 - 3)	-235
2800 (11/26/2019)	3190 (5/22/2018)	(2800 - 3190)/(6 - 3)	-130
2820 (4/10/2020)	3190 (5/22/2018)	(2820 - 3190)/(7 - 3)	-92.5
32500 (10/27/2020)	3190 (5/22/2018)	(32500 - 3190)/(8 - 3)	5862
2720 (5/29/2019)	3230 (11/13/2018)	(2720 - 3230)/(5 - 4)	-510
2800 (11/26/2019)	3230 (11/13/2018)	(2800 - 3230)/(6 - 4)	-215
2820 (4/10/2020)	3230 (11/13/2018)	(2820 - 3230)/(7 - 4)	-136.667
32500 (10/27/2020)	3230 (11/13/2018)	(32500 - 3230)/(8 - 4)	7317.5
2800 (11/26/2019)	2720 (5/29/2019)	(2800 - 2720)/(6 - 5)	80
2820 (4/10/2020)	2720 (5/29/2019)	(2820 - 2720)/(7 - 5)	50
32500 (10/27/2020)	2720 (5/29/2019)	(32500 - 2720)/(8 - 5)	9926.67
2820 (4/10/2020)	2800 (11/26/2019)	(2820 - 2800)/(7 - 6)	20
32500 (10/27/2020)	2800 (11/26/2019)	(32500 - 2800)/(8 - 6)	14850
32500 (10/27/2020)	2820 (4/10/2020)	(32500 - 2820)/(8 - 7)	29680

Number of Q values = 28

Ordered Q Values

n	Q
1	-510
2	-235
3	-215
4	-136.667
5	-130
6	-92.5
7	20

8	40
9	50
10	54
11	56.6667
12	62.5
13	80
14	111.667
15	130
16	142.5
17	340
18	360
19	400
20	520
21	640
22	4335.71
23	4991.67
24	5862
25	7317.5
26	9926.67
27	14850
28	29680

Sen's Estimator (Median Q) is 120.833

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/10/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is 20 = Q(7)
Upper limit is 4335.71 = Q(22)
20 > 0 indicating an upward trend in data.

Sen's Slope Analysis

Parameter: Sulfate

Location: MW-03

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
20700 (11/16/2017)	26700 (5/25/2017)	(20700 - 26700)/(2 - 1)	-6000
25300 (5/22/2018)	26700 (5/25/2017)	(25300 - 26700)/(3 - 1)	-700
31200 (11/13/2018)	26700 (5/25/2017)	(31200 - 26700)/(4 - 1)	1500
28500 (5/29/2019)	26700 (5/25/2017)	(28500 - 26700)/(5 - 1)	450
28600 (11/26/2019)	26700 (5/25/2017)	(28600 - 26700)/(6 - 1)	380
28300 (4/15/2020)	26700 (5/25/2017)	(28300 - 26700)/(7 - 1)	266.667
27100 (10/26/2020)	26700 (5/25/2017)	(27100 - 26700)/(8 - 1)	57.1429
25300 (5/22/2018)	20700 (11/16/2017)	(25300 - 20700)/(3 - 2)	4600
31200 (11/13/2018)	20700 (11/16/2017)	(31200 - 20700)/(4 - 2)	5250
28500 (5/29/2019)	20700 (11/16/2017)	(28500 - 20700)/(5 - 2)	2600
28600 (11/26/2019)	20700 (11/16/2017)	(28600 - 20700)/(6 - 2)	1975
28300 (4/15/2020)	20700 (11/16/2017)	(28300 - 20700)/(7 - 2)	1520
27100 (10/26/2020)	20700 (11/16/2017)	(27100 - 20700)/(8 - 2)	1066.67
31200 (11/13/2018)	25300 (5/22/2018)	(31200 - 25300)/(4 - 3)	5900
28500 (5/29/2019)	25300 (5/22/2018)	(28500 - 25300)/(5 - 3)	1600
28600 (11/26/2019)	25300 (5/22/2018)	(28600 - 25300)/(6 - 3)	1100
28300 (4/15/2020)	25300 (5/22/2018)	(28300 - 25300)/(7 - 3)	750
27100 (10/26/2020)	25300 (5/22/2018)	(27100 - 25300)/(8 - 3)	360
28500 (5/29/2019)	31200 (11/13/2018)	(28500 - 31200)/(5 - 4)	-2700
28600 (11/26/2019)	31200 (11/13/2018)	(28600 - 31200)/(6 - 4)	-1300
28300 (4/15/2020)	31200 (11/13/2018)	(28300 - 31200)/(7 - 4)	-966.667
27100 (10/26/2020)	31200 (11/13/2018)	(27100 - 31200)/(8 - 4)	-1025
28600 (11/26/2019)	28500 (5/29/2019)	(28600 - 28500)/(6 - 5)	100
28300 (4/15/2020)	28500 (5/29/2019)	(28300 - 28500)/(7 - 5)	-100
27100 (10/26/2020)	28500 (5/29/2019)	(27100 - 28500)/(8 - 5)	-466.667
28300 (4/15/2020)	28600 (11/26/2019)	(28300 - 28600)/(7 - 6)	-300
27100 (10/26/2020)	28600 (11/26/2019)	(27100 - 28600)/(8 - 6)	-750
27100 (10/26/2020)	28300 (4/15/2020)	(27100 - 28300)/(8 - 7)	-1200

Number of Q values = 28

Ordered Q Values

n	Q
1	-6000
2	-2700
3	-1300
4	-1200
5	-1025
6	-966.667
7	-750

8	-700
9	-466.667
10	-300
11	-100
12	57.1429
13	100
14	266.667
15	360
16	380
17	450
18	750
19	1066.67
20	1100
21	1500
22	1520
23	1600
24	1975
25	2600
26	4600
27	5250
28	5900

Sen's Estimator (Median Q) is 313.333

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -750 = Q(7)
Upper limit is 1520 = Q(22)
-750 < 0 < 1520 indicating no trend in data.

Sen's Slope Analysis

Parameter: Sulfate

Location: MW-1A

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
26900 (11/16/2017)	36200 (5/25/2017)	(26900 - 36200)/(2 - 1)	-9300
28200 (5/22/2018)	36200 (5/25/2017)	(28200 - 36200)/(3 - 1)	-4000
30500 (11/13/2018)	36200 (5/25/2017)	(30500 - 36200)/(4 - 1)	-1900
27000 (5/29/2019)	36200 (5/25/2017)	(27000 - 36200)/(5 - 1)	-2300
33000 (11/26/2019)	36200 (5/25/2017)	(33000 - 36200)/(6 - 1)	-640
31800 (4/15/2020)	36200 (5/25/2017)	(31800 - 36200)/(7 - 1)	-733.333
31900 (10/26/2020)	36200 (5/25/2017)	(31900 - 36200)/(8 - 1)	-614.286
28200 (5/22/2018)	26900 (11/16/2017)	(28200 - 26900)/(3 - 2)	1300
30500 (11/13/2018)	26900 (11/16/2017)	(30500 - 26900)/(4 - 2)	1800
27000 (5/29/2019)	26900 (11/16/2017)	(27000 - 26900)/(5 - 2)	33.3333
33000 (11/26/2019)	26900 (11/16/2017)	(33000 - 26900)/(6 - 2)	1525
31800 (4/15/2020)	26900 (11/16/2017)	(31800 - 26900)/(7 - 2)	980
31900 (10/26/2020)	26900 (11/16/2017)	(31900 - 26900)/(8 - 2)	833.333
30500 (11/13/2018)	28200 (5/22/2018)	(30500 - 28200)/(4 - 3)	2300
27000 (5/29/2019)	28200 (5/22/2018)	(27000 - 28200)/(5 - 3)	-600
33000 (11/26/2019)	28200 (5/22/2018)	(33000 - 28200)/(6 - 3)	1600
31800 (4/15/2020)	28200 (5/22/2018)	(31800 - 28200)/(7 - 3)	900
31900 (10/26/2020)	28200 (5/22/2018)	(31900 - 28200)/(8 - 3)	740
27000 (5/29/2019)	30500 (11/13/2018)	(27000 - 30500)/(5 - 4)	-3500
33000 (11/26/2019)	30500 (11/13/2018)	(33000 - 30500)/(6 - 4)	1250
31800 (4/15/2020)	30500 (11/13/2018)	(31800 - 30500)/(7 - 4)	433.333
31900 (10/26/2020)	30500 (11/13/2018)	(31900 - 30500)/(8 - 4)	350
33000 (11/26/2019)	27000 (5/29/2019)	(33000 - 27000)/(6 - 5)	6000
31800 (4/15/2020)	27000 (5/29/2019)	(31800 - 27000)/(7 - 5)	2400
31900 (10/26/2020)	27000 (5/29/2019)	(31900 - 27000)/(8 - 5)	1633.33
31800 (4/15/2020)	33000 (11/26/2019)	(31800 - 33000)/(7 - 6)	-1200
31900 (10/26/2020)	33000 (11/26/2019)	(31900 - 33000)/(8 - 6)	-550
31900 (10/26/2020)	31800 (4/15/2020)	(31900 - 31800)/(8 - 7)	100

Number of Q values = 28

Ordered Q Values

n	Q
1	-9300
2	-4000
3	-3500
4	-2300
5	-1900
6	-1200
7	-733.333

8	-640
9	-614.286
10	-600
11	-550
12	33.3333
13	100
14	350
15	433.333
16	740
17	833.333
18	900
19	980
20	1250
21	1300
22	1525
23	1600
24	1633.33
25	1800
26	2300
27	2400
28	6000

Sen's Estimator (Median Q) is 391.667

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 65.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.2952
M1 = (28 - 13.2952)/2.0 = 7.35241
M2 = (28 + 13.2952)/2.0 + 1 = 21.6476
Lower limit is -733.333 = Q(7)
Upper limit is 1525 = Q(22)
-733.333 < 0 < 1525 indicating no trend in data.

Sen's Slope Analysis

Parameter: Sulfate

Location: MW-01

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
4670 (11/16/2017)	3440 (5/25/2017)	(4670 - 3440)/(2 - 1)	1230
3440 (5/22/2018)	3440 (5/25/2017)	(3440 - 3440)/(3 - 1)	0
4230 (11/13/2018)	3440 (5/25/2017)	(4230 - 3440)/(4 - 1)	263.333
4360 (5/29/2019)	3440 (5/25/2017)	(4360 - 3440)/(5 - 1)	230
6160 (11/26/2019)	3440 (5/25/2017)	(6160 - 3440)/(6 - 1)	544
7540 (4/15/2020)	3440 (5/25/2017)	(7540 - 3440)/(7 - 1)	683.333
3290 (10/26/2020)	3440 (5/25/2017)	(3290 - 3440)/(8 - 1)	-21.4286
3440 (5/22/2018)	4670 (11/16/2017)	(3440 - 4670)/(3 - 2)	-1230
4230 (11/13/2018)	4670 (11/16/2017)	(4230 - 4670)/(4 - 2)	-220
4360 (5/29/2019)	4670 (11/16/2017)	(4360 - 4670)/(5 - 2)	-103.333
6160 (11/26/2019)	4670 (11/16/2017)	(6160 - 4670)/(6 - 2)	372.5
7540 (4/15/2020)	4670 (11/16/2017)	(7540 - 4670)/(7 - 2)	574
3290 (10/26/2020)	4670 (11/16/2017)	(3290 - 4670)/(8 - 2)	-230
4230 (11/13/2018)	3440 (5/22/2018)	(4230 - 3440)/(4 - 3)	790
4360 (5/29/2019)	3440 (5/22/2018)	(4360 - 3440)/(5 - 3)	460
6160 (11/26/2019)	3440 (5/22/2018)	(6160 - 3440)/(6 - 3)	906.667
7540 (4/15/2020)	3440 (5/22/2018)	(7540 - 3440)/(7 - 3)	1025
3290 (10/26/2020)	3440 (5/22/2018)	(3290 - 3440)/(8 - 3)	-30
4360 (5/29/2019)	4230 (11/13/2018)	(4360 - 4230)/(5 - 4)	130
6160 (11/26/2019)	4230 (11/13/2018)	(6160 - 4230)/(6 - 4)	965
7540 (4/15/2020)	4230 (11/13/2018)	(7540 - 4230)/(7 - 4)	1103.33
3290 (10/26/2020)	4230 (11/13/2018)	(3290 - 4230)/(8 - 4)	-235
6160 (11/26/2019)	4360 (5/29/2019)	(6160 - 4360)/(6 - 5)	1800
7540 (4/15/2020)	4360 (5/29/2019)	(7540 - 4360)/(7 - 5)	1590
3290 (10/26/2020)	4360 (5/29/2019)	(3290 - 4360)/(8 - 5)	-356.667
7540 (4/15/2020)	6160 (11/26/2019)	(7540 - 6160)/(7 - 6)	1380
3290 (10/26/2020)	6160 (11/26/2019)	(3290 - 6160)/(8 - 6)	-1435
3290 (10/26/2020)	7540 (4/15/2020)	(3290 - 7540)/(8 - 7)	-4250

Number of Q values = 28

Ordered Q Values

n	Q
1	-4250
2	-1435
3	-1230
4	-356.667
5	-235
6	-230
7	-220

8	-103.333
9	-30
10	-21.4286
11	0
12	130
13	230
14	263.333
15	372.5
16	460
17	544
18	574
19	683.333
20	790
21	906.667
22	965
23	1025
24	1103.33
25	1230
26	1380
27	1590
28	1800

Sen's Estimator (Median Q) is 317.917

Tied Group	Value	Members
1	3440	2

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
10/26/2020	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 64.3333
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 13.193
M1 = (28 - 13.193)/2.0 = 7.40348
M2 = (28 + 13.193)/2.0 + 1 = 21.5965
Lower limit is -220 = Q(7)
Upper limit is 965 = Q(22)
-220 < 0 < 965 indicating no trend in data.

Sen's Slope Analysis

Parameter: Sulfate

Location: MW-02

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

90% Confidence Level

Xj	Xk	(Xj - Xk)/(j-k)	Q
8100 (11/16/2017)	1000 (5/25/2017)	(8100 - 1000)/(2 - 1)	7100
1000 (5/22/2018)	1000 (5/25/2017)	(1000 - 1000)/(3 - 1)	0
1000 (11/13/2018)	1000 (5/25/2017)	(1000 - 1000)/(4 - 1)	0
1000 (5/29/2019)	1000 (5/25/2017)	(1000 - 1000)/(5 - 1)	0
1000 (11/26/2019)	1000 (5/25/2017)	(1000 - 1000)/(6 - 1)	0
ND<1000 (4/15/2020)	1000 (5/25/2017)	(1000 - 1000)/(7 - 1)	0
1270 (10/27/2020)	1000 (5/25/2017)	(1270 - 1000)/(8 - 1)	38.5714
1000 (5/22/2018)	8100 (11/16/2017)	(1000 - 8100)/(3 - 2)	-7100
1000 (11/13/2018)	8100 (11/16/2017)	(1000 - 8100)/(4 - 2)	-3550
1000 (5/29/2019)	8100 (11/16/2017)	(1000 - 8100)/(5 - 2)	-2366.67
1000 (11/26/2019)	8100 (11/16/2017)	(1000 - 8100)/(6 - 2)	-1775
ND<1000 (4/15/2020)	8100 (11/16/2017)	(1000 - 8100)/(7 - 2)	-1420
1270 (10/27/2020)	8100 (11/16/2017)	(1270 - 8100)/(8 - 2)	-1138.33
1000 (11/13/2018)	1000 (5/22/2018)	(1000 - 1000)/(4 - 3)	0
1000 (5/29/2019)	1000 (5/22/2018)	(1000 - 1000)/(5 - 3)	0
1000 (11/26/2019)	1000 (5/22/2018)	(1000 - 1000)/(6 - 3)	0
ND<1000 (4/15/2020)	1000 (5/22/2018)	(1000 - 1000)/(7 - 3)	0
1270 (10/27/2020)	1000 (5/22/2018)	(1270 - 1000)/(8 - 3)	54
1000 (5/29/2019)	1000 (11/13/2018)	(1000 - 1000)/(5 - 4)	0
1000 (11/26/2019)	1000 (11/13/2018)	(1000 - 1000)/(6 - 4)	0
ND<1000 (4/15/2020)	1000 (11/13/2018)	(1000 - 1000)/(7 - 4)	0
1270 (10/27/2020)	1000 (11/13/2018)	(1270 - 1000)/(8 - 4)	67.5
1000 (11/26/2019)	1000 (5/29/2019)	(1000 - 1000)/(6 - 5)	0
ND<1000 (4/15/2020)	1000 (5/29/2019)	(1000 - 1000)/(7 - 5)	0
1270 (10/27/2020)	1000 (5/29/2019)	(1270 - 1000)/(8 - 5)	90
ND<1000 (4/15/2020)	1000 (11/26/2019)	(1000 - 1000)/(7 - 6)	0
1270 (10/27/2020)	1000 (11/26/2019)	(1270 - 1000)/(8 - 6)	135
1270 (10/27/2020)	ND<1000 (4/15/2020)	(1270 - 1000)/(8 - 7)	270

Number of Q values = 28

Ordered Q Values

n	Q
1	-7100
2	-3550
3	-2366.67
4	-1775
5	-1420
6	-1138.33
7	0

8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	38.5714
23	54
24	67.5
25	90
26	135
27	270
28	7100

Sen's Estimator (Median Q) is 0

Tied Group	Value	Members
1	1000	6

Time Period	Observations
5/25/2017	1
11/16/2017	1
5/22/2018	1
11/13/2018	1
5/29/2019	1
11/26/2019	1
4/15/2020	1
10/27/2020	1

There are 0 time periods with multiple data

A = 510
B = 0
C = 120
D = 0
E = 30
F = 0
a = 1176
b = 3024
c = 112
Group Variance = 37
For 90% confidence interval (two-tailed), Z at (1-0.9)/2 = 1.64485
C = 10.0053
M1 = (28 - 10.0053)/2.0 = 8.99737
M2 = (28 + 10.0053)/2.0 + 1 = 20.0026
Lower limit is 0 = Q(9)
Upper limit is 0 = Q(20)
0 < 0 < 0 indicating no trend in data.

APPENDIX D

GROUNDWATER DATA
Matlock Bend Landfill
October 26, 2020

Well No.	Elev. Of TOC	Depth to GW (ft below TOC)	Water Elevation	Contour Elevation	Distance	Hydraulic Conductivity	Effective Porosity (n)	Hydraulic Gradient	Average Linear Velocity		Directions
									ft/min	ft/day	
MW-01	830.87	8.70	822.17	820	35	4.70E-06	0.18	6.20E-02	1.62E-06	2.33E-03	SW
MW-1A*	805.13	11.11	794.02	800	105	3.93E-06	0.18	5.70E-02	1.24E-06	1.79E-03	S
MW-02	825.20	20.48	804.72	805	5	5.90E-06	0.18	5.60E-02	1.84E-06	2.64E-03	SW
MW-03	867.86	13.79	854.07	855	35	1.20E-05	0.18	2.66E-02	1.77E-06	2.55E-03	SW
MW-4R**	992.32	99.25	893.07	890	70	1.90E-05	0.18	4.39E-02	4.63E-06	6.67E-03	NW
MW-05	936.84	94.90	841.94	845	75	2.20E-05	0.18	4.08E-02	4.99E-06	7.18E-03	NW

*-The hydraulic conductivity for MW-1A is an average from monitoring wells MW-01, MW-02 and MW-03.
**-The hydraulic conductivity for MW-4R is from MW-04.

APPENDIX E

LEGEND:

- PROPERTY BOUNDARY
- 880 WATER TABLE CONTOURS (INFERRED)
- AERIAL INDEX CONTOUR
- AERIAL CONTOUR
- ROAD
- GROUNDWATER MONITORING WELL
- GROUNDWATER FLOW DIRECTION
- PERMITTED LIMITS OF WASTE

NOTES:

1. POTENTIOMETRIC CONTOURS DEVELOPED FROM WATER ELEVATIONS TAKEN OCTOBER 26, 2020.
2. TOPOGRAPHIC CONTOURS SHOWN WERE PROVIDED BY SOUTHERN RESOURCES MAPPING CORP., NORTHPORT, ALABAMA, PHOTOS DATED AUGUST 25, 2015, MAY 7, 2018, MAY 7, 2019 & MAY 25, 2020.

G.W. WELL NO.	WATER ELEV.
MW-01	822.17
MW-1A	794.02
MW-02	804.72
MW-03	854.07
MW-4R	893.07
MW-05	841.94

0' 150 300 450

REV.	DATE	DRWN	CHKD	REVISION

PHASE I/II/IV 2ND SEMI-ANNUAL 2020
POTENTIOMETRIC CONTOUR MAP

MATLOCK BEND LANDFILL
LOUDON COUNTY, TENNESSEE

SANTEK Waste Services
650 25TH STREET NW
SUITE 100
CLEVELAND,
TENNESSEE
(423) 303-7101

SCALE: 1"=300'
DATE: 11/30/20
DRAWN BY: WM
CHECKED BY: RH
APPROVED BY:
FILE: 2010-F1
JOB NO: 200-2010

F-1
sheet number

APPENDIX F

ALTERNATE SOURCE DEMONSTRATION

TABLE 1

Cobalt Alternate Source Demonstration

Presented in Table 1 below are the cobalt levels for MW-02, MW-03, and the soil samples from Borrow Areas at the Landfill collected on 11/29/16. The results indicate cobalt is naturally occurring in the soils approximately 74 and 106 times higher than the groundwater, respectively. Furthermore, confirmation samples collected from MW-02 and MW-03 produced results below the report limit for MW-02 and similar to the initial set of results for MW-03. Santek believes this report adequately identifies the source of cobalt being the site's natural soil. Therefore, no additional sampling and analysis is recommended for cobalt in MW-02 and MW-03.

Table 1 – Cobalt Alternate Source Demonstration

Location	Cobalt (ppm)
MW-02 (10/29/20)	0.0635
MW-03 (10/29/20)	0.0442
MW-02 (12/1/20)	BRL
MW-03 (12/1/20)	0.0491
Borrow Area A Sample	6.61
Borrow Area B Sample	1.98
Borrow Area C Sample	5.42
Borrow Area Average	**4.67**

TABLE 2

Zinc Alternate Source Demonstration

Presented in Table 1 below are the zinc levels for MW-01 and MW-02 on 10/27/20, and the soil samples from Borrow Areas at the Landfill collected on 11/29/16. The results indicate zinc is naturally occurring in the soils approximately 110 and 1,197 times higher than the groundwater, respectively. Furthermore, confirmation samples collected from MW-02 and MW-03 produced results below the report limit for MW-01 and similar to the initial set of results for MW-02. Santek believes this report adequately identifies the source of zinc being the site's natural soil. Therefore, no additional sampling and analysis is recommended for zinc in MW-02 and MW-03.

Table 2 – Zinc Alternate Source Demonstration

Location	Zinc (ppm)
MW-01 (10/29/20)	0.312
MW-02 (10/29/20	0.0286
MW-01 (12/1/20	BRL
MW-02 (12/1/20)	0.276
Borrow Area A Sample	33.10
Borrow Area B Sample	24.90
Borrow Area C Sample	44.70
Borrow Area Average	**34.23**

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

December 21, 2016

Robert Hudson
Santek Environmental Inc.
650 25th Street NW
Cleveland TN 37311

TEL: (423) 303-7101
FAX: (423) 479-1952

RE: Loudon (Matlock Bend) LF Borrow Pit

Dear Robert Hudson: Order No: 1612642

Analytical Environmental Services, Inc. received 3 samples on 12/7/2016 10:30:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES's accreditations are as follows:
-NELAC/Florida State Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, and Drinking Water Microbiology, effective 07/01/16-06/30/17.
-NELAC/Louisiana Agency Interest No. 100818 for or analysis of Non-Potable Water and Solid & Chemical Materials, effective 07/01/16-06/30/17.
-NELAC/Texas Certificate No. T104704509-16-6 for or analysis of Non-Potable Water and Solid & Chemical Materials, effective 03/01/16-02/28/17.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Metals, PCM Asbestos, Gravimetric), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/17.

Chris Pafford
Project Manager

3080 Presidential Drive • Atlanta, Georgia 30340 • Tel: 770.457.8177 • Fax: 770.457.8188 • Toll Free: 800.972.4889
www.aesatlanta.com

ANALYTICAL ENVIRONMENTAL SERVICES, INC

3080 Presidential Drive, Atlanta GA 30340-3704

TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1612642

Date: 12/6/16 Page 1 of 1

COMPANY: Santek Waste Services, Inc.	ADDRESS: 650 25th Street NW, Suite 100, Cleveland, TN 37311
PHONE: (423) 303-7101	FAX: (423) 479-1952
SAMPLED BY: R. Hudson	SIGNATURE: Robert Hudson

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Metals by ICP/MS	PRESERVATION (See codes)	REMARKS	No # of Containers
1	A-Sample	11/29/16	3:31	X		SO	X			1
2	B-Sample	11/29/16	3:29	X		SO	X			1
3	C-Sample	11/29/16	3:27	X		SO	X			1
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Robert Hudson	12/6/16 11am	1: [signature]	12/7/16 10:30
2:		2:	
3:		3:	

PROJECT INFORMATION

PROJECT NAME: Loudon (Matlock Bend) LF Borrow Pit

PROJECT #: Soil Samples

SITE ADDRESS:

SEND REPORT TO: Robert Hudson

INVOICE TO: (IF DIFFERENT FROM ABOVE)

QUOTE #: PO#:

RECEIPT

Total # of Containers: 3

Turnaround Time Request

- [X] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- Other

STATE PROGRAM (if any):

E-mail? [ ] Fax? [ ]

DATA PACKAGE: I [ ] II [ ] III [ ] IV [ ]

SPECIAL INSTRUCTIONS/COMMENTS:

See Chris Pafford

SHIPMENT METHOD

OUT / / VIA:

IN / / VIA:

CLIENT (FedEx) UPS MAIL COURIER

GREYHOUND OTHER

SAMPLES RECEIVED AFTER 3PM OR SATURDAY ARE CONSIDERED AS RECEIVED ON THE NEXT BUSINESS DAY; IF NO TAT IS MARKED ON COC AES WILL PROCEED AS STANDARD TAT.

SAMPLES ARE DISPOSED OF 30 DAYS AFTER COMPLETION OF REPORT UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

PRESERVATIVE CODES: H = Hydrochloric acid + ice I = Ice only N = Nitric acid S = Sulfuric acid + ice SM = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc **Date:** 21-Dec-16

Client:	Santek Environmental Inc.	**Client Sample ID:**	A-SAMPLE
Project Name:	Loudon (Matlock Bend) LF Borrow Pit	**Collection Date:**	11/29/2016 3:31:00 AM
Lab ID:	1612642-001	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B					(SW7471B)			
Mercury	BRL	0.0919		mg/Kg-dry	234606	1	12/12/2016 11:46	JR
Metals by ICP/MS SW6020B					(SW3050B)			
Antimony	241	232		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Arsenic	8490	6970		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Barium	32600	4650		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Beryllium	186	46.5		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Cadmium	BRL	46.5		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Chromium	21700	9300		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Cobalt	6610	2320		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Copper	4760	930		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Lead	14300	465		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Nickel	3260	2320		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Selenium	BRL	2320		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Silver	BRL	46.5		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Thallium	178	46.5		ug/Kg-dry	234549	10	12/15/2016 02:56	JS
Vanadium	599	269		ug/Kg-dry	R332264	10	12/15/2016 02:56	JS
Zinc	33100	4650		ug/Kg-dry	234549	10	12/18/2016 04:38	JS
PERCENT MOISTURE D2216								
Percent Moisture	7.01	0		wt%	R332013	1	12/13/2016 10:00	BD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 21-Dec-16

Client:	Santek Environmental Inc.	**Client Sample ID:**	B-SAMPLE
Project Name:	Loudon (Matlock Bend) LF Borrow Pit	**Collection Date:**	11/29/2016 3:29:00 AM
Lab ID:	1612642-002	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B				(SW7471B)				
Mercury	BRL	0.0997		mg/Kg-dry	234606	1	12/12/2016 11:48	JR
Metals by ICP/MS SW6020B				(SW3050B)				
Antimony	375	199		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Arsenic	16200	5960		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Barium	18300	3970		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Beryllium	143	39.7		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Cadmium	BRL	39.7		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Chromium	19800	7950		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Cobalt	1980	199		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Copper	8930	795		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Lead	14400	397		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Nickel	4740	1990		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Selenium	BRL	1990		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Silver	BRL	39.7		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Thallium	183	39.7		ug/Kg-dry	234549	10	12/15/2016 03:02	JS
Vanadium	1140	266		ug/Kg-dry	R332264	10	12/15/2016 03:02	JS
Zinc	24900	3970		ug/Kg-dry	234549	10	12/18/2016 04:44	JS
PERCENT MOISTURE D2216								
Percent Moisture	6.08	0		wt%	R332013	1	12/13/2016 10:00	BD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 21-Dec-16

Client:	Santek Environmental Inc.	**Client Sample ID:**	C-SAMPLE
Project Name:	Loudon (Matlock Bend) LF Borrow Pit	**Collection Date:**	11/29/2016 3:27:00 AM
Lab ID:	1612642-003	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B					(SW7471B)			
Mercury	BRL	0.110		mg/Kg-dry	234606	1	12/12/2016 11:34	JR
Metals by ICP/MS SW6020B					(SW3050B)			
Antimony	420	241		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Arsenic	24000	7230		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Barium	20200	4820		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Beryllium	251	48.2		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Cadmium	BRL	48.2		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Chromium	24800	9650		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Cobalt	5420	2410		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Copper	11500	965		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Lead	17500	482		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Nickel	4820	241		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Selenium	BRL	2410		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Silver	BRL	48.2		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Thallium	175	48.2		ug/Kg-dry	234549	10	12/15/2016 03:08	JS
Vanadium	1160	6.02		ug/Kg-dry	R332264	10	12/15/2016 03:08	JS
Zinc	44700	4820		ug/Kg-dry	234549	10	12/18/2016 04:51	JS
PERCENT MOISTURE D2216								
Percent Moisture	16.9	0		wt%	R332013	1	12/13/2016 10:00	BD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Santek Work Order Number 16012642

Checklist completed by Jessica Mekinnon 12/17/16
Signature Date

Carrier name: FedEx ✓ UPS __ Courier __ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (0°≤6°C)* Yes __ JM 12/16 No __

Cooler #1 Ambient Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes ✓ No __ Not Applicable __

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes __ No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\\Aes_server\I\Sample Receipt\My Documents\COCs and pH Adjustment Sheet\Sample_Cooler_Recipt_Checklist_Rev1.rtf

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

November 17, 2016

MW-2 dup Soil Sample

John Lane
Santek Environmental Inc.
650 25th Street NW
Cleveland TN 37311

TEL: (423) 476-9160
FAX: (423) 479-1952

RE: Loudon (Matlock Bend) LF Soil Samples

Dear John Lane: Order No: 1611E62

Analytical Environmental Services, Inc. received 1 samples on 11/15/2016 10:15:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES's accreditations are as follows:
-NELAC/Florida State Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, and Drinking Water Microbiology, effective 07/01/16-06/30/17.
-NELAC/Louisiana Agency Interest No. 100818 for or analysis of Non-Potable Water and Solid & Chemical Materials, effective 07/01/16-06/30/17.
-NELAC/Texas Certificate No. T104704509-16-6 for or analysis of Non-Potable Water and Solid & Chemical Materials, effective 03/01/16-02/28/17.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Metals, PCM Asbestos, Gravimetric), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/17.

Chris Pafford
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC

3080 Presidential Drive, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 16.E62

Date: 11/14/16 Page 1 of 1

COMPANY: Santek Waste Services, Inc.	ADDRESS: 650 25th Street NW, Suite 100, Cleveland, TN 37311
PHONE: (423) 303-7101	FAX: (423) 479-1952
SAMPLED BY: R. Hudson	SIGNATURE: Robert Hudson

ANALYSIS REQUESTED: App. I Metals

PRESERVATION (See codes)

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	PRESERVATION	REMARKS	No # of Containers
1	Borrow Area Soil	11/14/16	2:58	X		SO	X		1
2	MW-2 Soil	11/14/16	3:10	X		SO	X		1
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Robert Hudson	11/14/16 5pm	1: Jessica Ahrilly	11/15/16 10:15 am
2:		2:	
3:		3:	

PROJECT INFORMATION

PROJECT NAME: Loudon (Mathack Bend) LF Soil Samples
PROJECT #:
SITE ADDRESS:
SEND REPORT TO: Robert Hudson
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT

Total # of Containers: 2

Turnaround Time Request
- ☐ Standard 5 Business Days
- ☒ 2 Business Day Rush
- ☐ Next Business Day Rush
- ☐ Same Day Rush (auth req.)
- Other

STATE PROGRAM (if any):
E-mail? ☐ Fax? ☐
DATA PACKAGE: I ☐ II ☐ III ☐ IV ☐

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT (FedEx) UPS MAIL COURIER
GREYHOUND OTHER

SAMPLES RECEIVED AFTER 3PM OR SATURDAY ARE CONSIDERED AS RECEIVED ON THE NEXT BUSINESS DAY; IF NO TAT IS MARKED ON COC AES WILL PROCEED AS STANDARD TAT.
SAMPLES ARE DISPOSED OF 30 DAYS AFTER COMPLETION OF REPORT UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc

Date: 17-Nov-16

Client: Santek Environmental Inc.
Project: Loudon (Matlock Bend) LF Soil Samples
Lab ID: 1611E62

Case Narrative

Sample Receiving Nonconformance:

For sample -001A, 1x4 oz jar was received broken.

Analytical Environmental Services, Inc **Date:** 17-Nov-16

Client:	Santek Environmental Inc.	**Client Sample ID:**	MW-2 SOIL
Project Name:	Loudon (Matlock Bend) LF Soil Samples	**Collection Date:**	11/14/2016 3:10:00 PM
Lab ID:	1611E62-002	**Matrix:**	Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
METALS, TOTAL SW6010D					**(SW3050B)**				
Antimony	0.394	J	0.274	4.99	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Arsenic	15.8		0.148	4.99	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Barium	35.1		0.0756	4.99	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Beryllium	0.365	J	0.0129	2.50	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Cadmium	0.279	J	0.0176	2.50	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Chromium	21.8		0.0223	2.50	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Cobalt	23.9		0.0261	2.50	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Copper	13.5		0.0850	2.50	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Lead	34.0		0.0778	4.99	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Nickel	10.3		0.0828	4.99	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Selenium	BRL		0.325	4.99	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Silver	0.0475	J	0.0217	2.50	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Thallium	BRL		0.185	4.99	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Vanadium	29.9		0.0288	4.99	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
Zinc	115		0.157	4.99	mg/Kg-dry	233010	1	11/16/2016 20:10	IO
PERCENT MOISTURE D2216									
Percent Moisture	9.95		0	0	wt%	R330166	1	11/17/2016 08:00	BD

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Not detected at MDL
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- NC Not confirmed
- E Estimated value above quantitation range
- S Spike Recovery outside limits due to matrix
- J Estimated value detected below Reporting Limit
- > Greater than Result value
- < Less than Result value
- Narr See case narrative

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Sanek Work Order Number 16/1E62

Checklist completed by _____ 11/15/16
Signature Date

Carrier name: FedEx ✓ UPS __ Courier __ Client __ US Mail __ Other _____

Shipping container/cooler in good condition?	Yes ✓	No __	Not Present __
Custody seals intact on shipping container/cooler?	Yes __	No __	Not Present ✓
Custody seals intact on sample bottles?	Yes __	No __	Not Present ✓
Container/Temp Blank temperature in compliance? (0°≤6°C)*	TR 11/15/16 Yes ✓	No __	

Cooler #1 AMB Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present?	Yes ✓	No __
Chain of custody signed when relinquished and received?	Yes ✓	No __
Chain of custody agrees with sample labels?	Yes ✓	No __
Samples in proper container/bottle?	Yes ✓	No __
Sample containers intact?	Yes __	No ✓
Sufficient sample volume for indicated test?	Yes ✓	No __
All samples received within holding time?	Yes ✓	No __
Was TAT marked on the COC?	Yes ✓	No __
Proceed with Standard TAT as per project history?	Yes __	No __ Not Applicable ✓
Water - VOA vials have zero headspace?	No VOA vials submitted ✓	Yes __ No __
Water - pH acceptable upon receipt?	Yes __	No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good __ Other(Explain) Received a broken 4OZ jar

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\\Aes_server\I\Sample Receipt\My Documents\COCs and pH Adjustment Sheet\Sample_Cooler_Recipt_Checklist_Rev1.rtf