Annual Groundwater Monitoring and Corrective Action Report

Appalachian Power Company

Clinch River Plant

Pond 1 CCR Management Unit

Cleveland, Virginia

January 2020

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I. Overview

This *Annual Groundwater Monitoring and Corrective Action Report* (Report) has been prepared to report the status of activities for the preceding year for an inactive surface impoundment CCR unit at Appalachian Power Company's, a wholly-owned subsidiary of American Electric Power Company (AEP) Clinch River Power Plant. The USEPA's CCR rules require that the Annual Groundwater Monitoring and Corrective Action Report be posted to the operating record by August 1, 2019 and annually thereafter. This report is being prepared for January 31, 2020 and future reports will be submitted annually on January 31st.

In general, the following activities were completed in 2019:

- Groundwater samples were collected and analyzed for Appendix III and Appendix IV constituents, as specified in 40 CFR 257.94 *et seq.* and AEP's *Groundwater Sampling and Analysis Plan (2016)*;
- Groundwater data underwent various validation tests, including tests for completeness, valid values, transcription errors, and consistent units;
- Background values for each Appendix III and Appendix IV constituent were established
- Detection Monitoring sampling was initiated
- A statistical process in accordance with 40 CFR 257.93 to evaluate groundwater data was prepared, certified, and posted to AEP's CCR website in April 2019. AEP's *Statistical Analysis Plan (*Geosyntec 2019). The statistical process was guided by USEPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* ("Unified Guidance", USEPA, 2009).
- Statistical analysis of the first detection monitoring sample taken in February 2019 was completed in July 2019. The statistical analysis indicated statistical significant increases in several Appendix III parameters. A second semi-annual assessment monitoring event was completed in October 2019.
- A State issued landfill permit for closing Pond 1 lead to a statistical evaluation of Appendix IV parameters during the first detection monitoring event. The evaluation of Appendix IV parameters indicated statistical significant increases above respective groundwater protection standards. Section V of this report provides the details of events.
- A notice of establishing an assessment monitoring program has been placed in the Operating Record and can be found in Appendix 4 of this report.
- A Nature and Extent Study, which included the installation of 13 wells, and an Assessment of Corrective Measures was initiated on October 13, 2019 and completed on December 11, 2019.

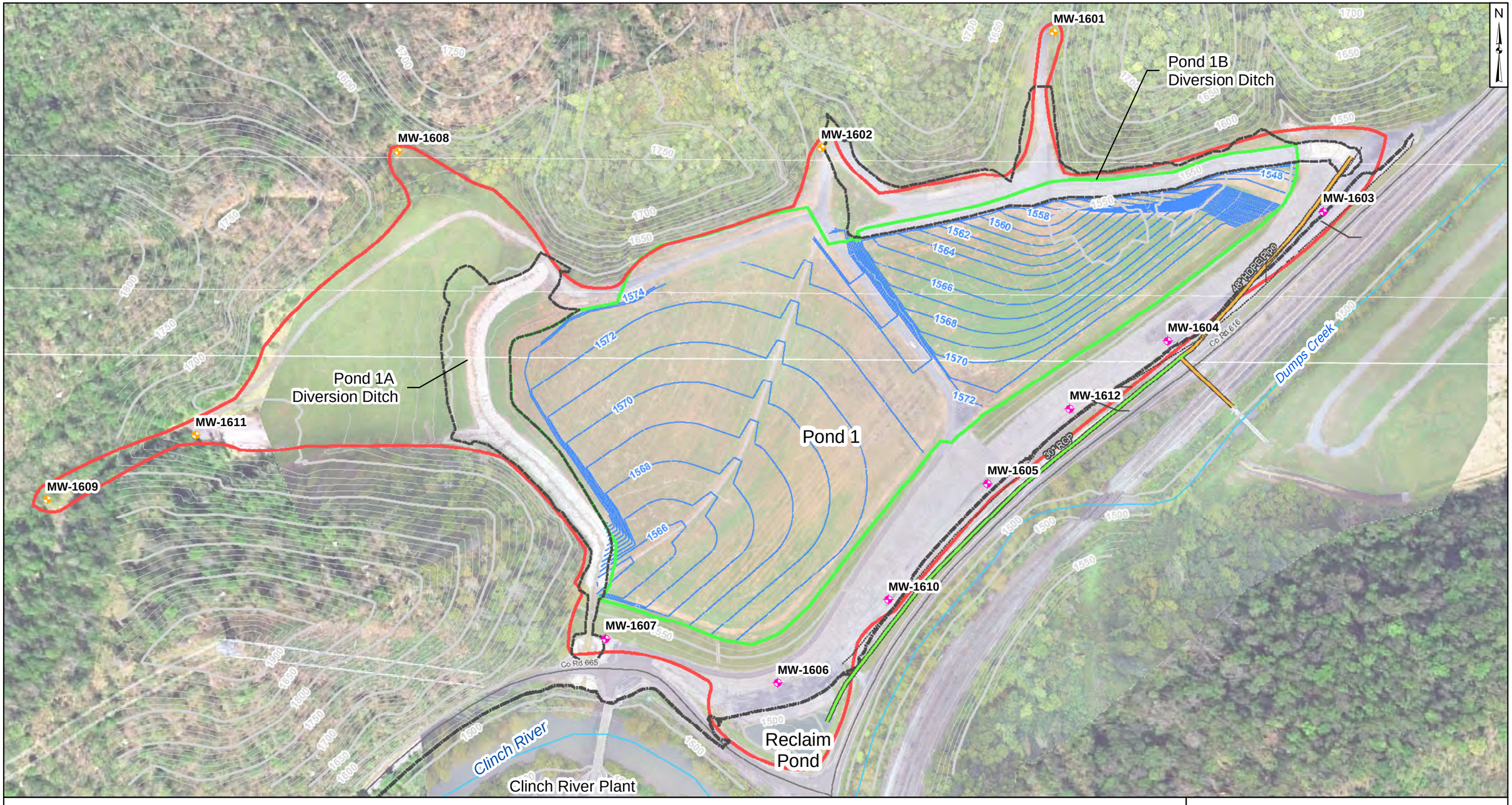
The major components of this annual report, to the extent applicable at this time, are presented in sections that follow:

- A map, aerial photograph or a drawing showing the CCR management unit(s), all groundwater monitoring wells and monitoring well identification numbers;
- All of the monitoring data collected, including the rate and direction of groundwater flow, plus a summary showing the number of samples collected per monitoring well, the dates the samples were collected and whether the sample was collected as part of detection monitoring or assessment monitoring programs (Attached as **Appendix 1**);
- Statistical comparison of monitoring data to determine if there have been significant increase over background concentrations (Attached as **Appendix 2**, where applicable);
- A discussion of whether any alternate source demonstrations were performed, and the conclusions (Attached as **Appendix 3**, where applicable);
- A summary of any transition between monitoring programs, for example the date and circumstances for transitioning from detection monitoring to assessment monitoring, in addition to identifying the constituents detected at a statistically significant increase over background concentrations (Notices Attached as **Appendix 4**, where applicable);
- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a statement as to why that happened (Attached as **Appendix 5**, where applicable); and
- Other information required to be included in the annual report such as alternate source demonstration or assessment of corrective measures, if applicable.

In addition, this report summarizes key actions completed, and where applicable, describes any problems encountered and actions taken to resolve those problems. The report includes a projection of key activities for the upcoming year.

II. Groundwater Monitoring Well Locations and Identification Numbers

The figure that follows depicts the PE-certified groundwater monitoring network, the monitoring well locations and their corresponding identification numbers.



Legend

- Upgradient Monitoring Location
- Downgradient Monitoring Location
- Post-Closure Topographic Elevation
- 100 yr Flood Elevation Approx. 1505 ft amsl
- Diversion Ditch
- Facility Boundary
- Pond 1 CCR Unit Boundary

Notes

- Aerial basemap and monitoring well coordinates provided by AEP.
- Site features based on information available in Groundwater Monitoring Network Evaluation (Amec, 2015) provided by AEP.
- Post-Closure Pond Topographic units are feet above mean sea level (ft amsl).

300 150 0 300 Feet

Site Layout
Pond 1

AEP Clinch River Plant - Bottom Ash Pond
Carbo, Virginia

Geosyntec consultants

Ann Arbor, Michigan | 2019/07/31

Figure 1

P:\Projects\AEP\Groundwater Statistical Evaluation - CHA8423\Groundwater Mapping\GIS Files\MXD\Clinch River\State Program\AEP-ClinchRiver_Pond1_SiteLayout.mxd. ARevezzo. 7/31/2019. CHA8423.

III. Monitoring Wells Installed or Decommissioned

There were no monitoring wells installed or decommissioned in 2019. The network design, as summarized in the *Groundwater Monitoring Network Design Report* (2019) and as posted at the CCR web site for Clinch River Plant, did not change. That design report, viewable on the AEP CCR web site, discusses the facility location, the hydrogeological setting, the hydrostratigraphic units, the uppermost aquifer, downgradient monitoring well locations and the upgradient monitoring well locations.

Since the facility entered assessment monitoring and no alternative source was identified, we installed an additional 13 monitoring wells to define the horizontal and vertical extent of constituents exceeding the groundwater protections standards at statistically significant levels. Six clusters of shallow and deep wells, and one shallow only well were installed near Dumps Creek and the Clinch River downgradient of the ash pond. The monitoring well installation reports are included in Appendix 5.

IV. Groundwater Quality Data and Static Water Elevation Data, With Flow Rate and Direction Calculations and Discussion

Appendix 1 contains tables showing the groundwater quality data collected during the establishment of background quality, detection and assessment monitoring. Static water elevation data from each monitoring event also are shown in Appendix 1, along with the groundwater velocity calculations, groundwater flow direction and potentiometric maps developed after each sampling event.

V. Groundwater Quality Data Statistical Analysis

Statistical analysis of the first detection monitoring samples taken in February of 2019 was completed in July 2019. Statistically significant increases (SSIs) in the Appendix III parameters of boron, chloride, fluoride, and pH were documented in the statistical analysis summary report and is included in Appendix 2.

The State issued a solid waste permit to close Pond 1 that included a groundwater monitoring program which required the groundwater to be sampled and analyzed for Appendix III, Appendix IV and State parameters. Immediately following the collection of background, all parameters were statistically analyzed in accordance with the State approved statistical methods. The first compliance sampling event indicated statistical significant increases above groundwater protection standards for cobalt, lithium, molybdenum, nickel, lead and barium. Nickel is a State-only parameter.

Based on the results of the State statistical analysis, Appalachian Power Company made the decision to statistically evaluate Appendix IV parameters during the first Federal CCR detection monitoring event. This evaluation following Federal statistical analysis methods, indicated

statistical significant increases above groundwater protection standards for barium, cobalt, lithium and molybdenum.

The second semi-annual assessment monitoring event was completed in October 2019 and statistical significant increases above groundwater protection standards for barium, cobalt, copper, lithium, molybdenum, nickel, lead and silver and zinc. Nickel, copper, silver and zinc are a State-only parameters.

The results of the statistical evaluation of Appendix IV parameters is included in Appendix 2.

VI. Discussion about Transition between Monitoring Requirements or Alternate Monitoring Frequency

By the certification of the Statistical Analysis Summary (Appendix 2), no alternate source demonstration (ASD) for Appendix III parameters will be completed in accordance with §257.94(e)(2), prompting the initiation of an assessment monitoring program, which was established on July 15, 2019. A notification that the Pond 1 has established an assessment monitoring program was placed in the Operating Record on August 1, 2019 in accordance with the requirement of 257.94(e)(3).

Since completion of the initial Annual Groundwater Monitoring and Corrective Action Report on August 1, 2019 Pond 1 has initiated and completed an Assessment of Corrective Measures. A public meeting was held on December 19, 2019.

VII. Other Information Required

Pond 1 has progressed from detection monitoring to its current status in assessment and corrective action monitoring. All required information has been included in this annual groundwater monitoring report.

VIII. Description of Any Problems Encountered and Actions Taken

No significant problems were encountered. The low flow sampling effort went smoothly and the schedule was met to support this first annual groundwater report preparation.

IX. A Projection of Key Activities for the Upcoming Year

Key activities for 2020 include:

- Assessment monitoring on a twice per year schedule
- Semi-annual progress report on selecting and designing remedial alternatives.
- Responding to any new data received in light of what the CCR rule requires
- Preparation of the annual groundwater report

APPENDIX 1 – Groundwater Data Tables and Figures

Tables follow, showing the groundwater monitoring data collected and the rate and direction of groundwater flow. The dates that the samples were collected also is shown.

Groundwater Data Tables

Table 1 - Groundwater Data Summary: MW-1601
Clinch River - Pond 1
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
10/19/2017	Background	0.447	5.58	23.8	1.86	7.8	1180	166
12/12/2017	Background	0.473	5.88	31.9	1.82	8.3	1340	250
2/13/2018	Background	0.496	5.99	30.8	2.13	8.4	1380	248
4/11/2018	Background	0.514	7.49	41.0	2.10	8.3	1620	319
6/7/2018	Background	0.576	6.34	31.4	2.22	8.4	1440	245
8/20/2018	Background	0.517	8.42	45.8	2.10	8.3	1730	358
10/17/2018	Background	0.542	6.84	34.3	2.20	8.5	1500	258
12/6/2018	Background	0.593	5.65	28.1	2.22	8.5	1410	210
2/7/2019	Detection	0.526	5.50	24.0	2.32	8.4	1370	184
4/8/2019	Assessment	0.577	5.90	25.2	2.18	8.4	1390	173
5/28/2019	Assessment	0.541	5.21	24.3	1.89	8.7	1390	181
10/1/2019	Assessment	0.609	6.90	33.2	2.09	8.3	1480	250

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-1601
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
10/19/2017	Background	0.18	9.18	238	<0.004 U	<0.005 U	0.221	0.112	1.204	1.86	0.070	0.095	<0.05 U	25.7	0.04 J	0.02 J
12/12/2017	Background	0.19	8.39	306	0.007 J	0.009 J	0.281	0.149	2.077	1.82	0.153	0.092	0.08 J	21.9	0.06 J	<0.01 U
2/13/2018	Background	0.11	7.06	280	0.007 J	<0.005 U	0.155	0.091	1.01	2.13	0.125	0.098	<0.05 U	12.0	0.05 J	0.04 J
4/11/2018	Background	0.12	14.9	293	0.007 J	<0.005 U	0.544	0.092	0.862	2.10	0.096	0.110	0.05 J	6.60	0.07 J	0.01 J
6/7/2018	Background	0.16	17.0	262	0.005 J	0.006 J	0.279	0.062	1.146	2.22	0.072	0.118	<0.05 U	3.77	<0.03 U	0.01 J
8/20/2018	Background	0.25	25.8	296	0.005 J	<0.005 U	0.402	0.099	0.711	2.10	0.047	0.108	<0.05 U	3.79	0.06 J	0.01 J
10/17/2018	Background	0.20	24.7	222	<0.02 U	<0.01 U	0.217	0.074	3.229	2.20	0.03 J	0.098	<0.05 U	3.00	0.04 J	<0.1 U
12/6/2018	Background	0.15	17.8	191	<0.02 U	<0.01 U	0.235	0.061	0.871	2.22	0.06 J	0.092	<0.05 U	3.34	<0.03 U	<0.1 U
2/7/2019	Detection	0.17	17.8	176	<0.02 U	0.01 J	0.292	0.072	0.157	2.32	0.08 J	0.099	<0.05 U	2.85	<0.03 U	<0.1 U
4/8/2019	Assessment	0.15	21.7	184	<0.02 U	0.02 J	0.258	0.072	0.337	2.18	0.07 J	0.111	0.05 J	1 J	0.04 J	<0.1 U
5/28/2019	Assessment	0.11	18.4	179	<0.02 U	<0.01 U	0.288	0.064	0.939	1.89	0.02 J	0.090	0.1 J	1 J	<0.03 U	<0.1 U
10/1/2019	Assessment	0.11	21.1	239	<0.02 U	<0.01 U	0.291	0.088	0.481	2.09	<0.05 U	0.108	<0.2 U	1 J	0.05 J	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-1602
Clinch River - Pond 1
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
10/19/2017	Background	0.654	3.09	4.2	1.45	8.0	525	32.8
12/12/2017	Background	0.584	2.64	4.2	1.57	8.7	516	29.2
2/13/2018	Background	0.621	2.93	4.9	1.61	8.5	528	32.2
4/11/2018	Background	0.614	2.78	5.6	1.63	8.7	500	32.4
6/7/2018	Background	0.672	2.74	5.2	1.64	8.6	525	29.1
8/20/2018	Background	0.547	2.84	6.5	1.57	8.5	567	37.5
10/15/2018	Background	0.664	2.94	5.6	1.61	8.6	544	29.0
12/6/2018	Background	0.637	2.78	3.8	1.64	8.7	500	16.7
2/7/2019	Detection	0.59	3.72	4.4	1.69	8.7	521	20.5
4/8/2019	Assessment	0.62	4.00	5.5	1.56	8.6	571	25.0
5/28/2019	Assessment	0.579	3.39	4.4	1.66	8.8	517	20.4
10/1/2019	Assessment	0.640	4.62	5.7	1.54	8.6	530	29.5

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-1602
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
10/19/2017	Background	0.22	2.69	104	0.01 J	<0.005 U	0.472	0.151	0.600	1.45	0.185	0.051	<0.05 U	9.8	0.04 J	0.02 J
12/12/2017	Background	0.12	2.15	111	0.01 J	<0.005 U	0.291	0.100	0.6097	1.57	0.114	0.043	<0.05 U	7.77	<0.03 U	<0.01 U
2/13/2018	Background	0.07	3.54	111	0.008 J	<0.005 U	0.153	0.060	0.748	1.61	0.093	0.043	<0.05 U	8.70	<0.03 U	0.03 J
4/11/2018	Background	0.07	2.90	109	0.006 J	<0.005 U	0.268	0.047	0.18727	1.63	0.140	0.040	<0.05 U	6.41	<0.03 U	<0.01 U
6/7/2018	Background	0.07	2.16	109	0.007 J	<0.005 U	0.262	0.041	0.8588	1.64	0.062	0.045	<0.05 U	3.99	<0.03 U	<0.01 U
8/20/2018	Background	0.13	3.69	114	<0.004 U	0.03	0.245	0.042	0.4565	1.57	0.126	0.034	<0.05 U	4.84	<0.03 U	0.01 J
10/15/2018	Background	0.06 J	2.95	101	<0.02 U	<0.01 U	0.251	0.03 J	0.2328	1.61	0.06 J	0.032	<0.05 U	3.27	<0.03 U	<0.1 U
12/6/2018	Background	0.05 J	1.49	106	<0.02 U	<0.01 U	0.246	0.04 J	1.247	1.64	0.05 J	0.048	<0.05 U	2.87	<0.03 U	<0.1 U
2/7/2019	Detection	0.08 J	1.88	106	<0.02 U	<0.01 U	0.231	0.04 J	0.2875	1.69	0.04 J	0.045	<0.05 U	4.66	0.04 J	<0.1 U
4/8/2019	Assessment	0.09 J	2.02	103	<0.02 U	<0.01 U	0.2 J	0.03 J	0.135	1.56	0.05 J	0.043	<0.05 U	4.76	<0.03 U	<0.1 U
5/28/2019	Assessment	0.07 J	1.67	106	<0.02 U	<0.01 U	0.2 J	0.02 J	0.0613	1.66	0.03 J	0.036	0.1 J	3.70	<0.03 U	<0.1 U
10/1/2019	Assessment	0.09 J	1.92	109	<0.02 U	<0.01 U	0.2 J	0.02 J	0.701	1.54	<0.05 U	0.0419	<0.2 U	4.21	<0.03 U	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-1603
Clinch River - Pond 1
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
10/17/2017	Background	0.202	23.3	182	0.17	7.3	678	45.1
12/11/2017	Background	0.193	22.1	121	0.1 J	7.0	577	47.3
2/14/2018	Background	0.199	22.8	58.3	0.11	6.7	378	23.0
4/12/2018	Background	0.379	24.8	168	0.19	7.8	599	28.3
6/12/2018	Background	0.285	22.8	59.0	0.13	7.6	408	23.0
8/22/2018	Background	0.525	24.4	72.6	0.14	7.8	448	23.2
10/16/2018	Background	0.339	21.6	94.7	0.14	7.8	472	23.4
12/12/2018	Background	0.219	20.6	47.4	0.11	7.0	339	11.5
2/12/2019	Detection	0.177	19.8	59.5	0.11	6.8	374	8.1
4/10/2019	Assessment	0.211	21.7	69.5	0.1	7.2	434	16.2
5/30/2019	Assessment	0.197	20.0	77.0	0.13	7.7	401	6.2
10/2/2019	Assessment	0.313	26.7	124	0.10	7.7	480	8.7

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-1603
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
10/17/2017	Background	0.04 J	1.82	2160	<0.004 U	<0.005 U	0.214	0.691	3.233	0.17	0.038	0.054	<0.05 U	4.71	0.1	0.02 J
12/11/2017	Background	0.05 J	1.70	1950	0.01 J	<0.005 U	0.19	0.541	0.901	0.1 J	0.021	0.048	0.06 J	2.55	0.07 J	0.01 J
2/14/2018	Background	0.04 J	1.68	2070	0.01 J	<0.005 U	0.157	0.451	0.6982	0.11	0.008 J	0.048	<0.05 U	2.12	0.1	0.01 J
4/12/2018	Background	0.04 J	1.98	2250	<0.004 U	<0.005 U	0.187	0.616	1.091	0.19	0.01 J	0.093	<0.05 U	1.79	0.04 J	<0.01 U
6/12/2018	Background	0.06	2.20	2140	0.008 J	<0.005 U	0.231	0.795	0.888	0.13	0.009 J	0.073	<0.05 U	1.24	0.06 J	0.01 J
8/22/2018	Background	0.07	2.98	2280	<0.004 U	<0.005 U	0.324	0.776	1.103	0.14	0.02 J	0.095	<0.05 U	1.51	0.05 J	0.01 J
10/16/2018	Background	<0.02 U	2.89	1980	<0.02 U	<0.01 U	0.226	0.684	0.383	0.14	<0.02 U	0.064	<0.05 U	1 J	0.08 J	<0.1 U
12/12/2018	Background	<0.02 U	1.75	1780	<0.02 U	<0.01 U	0.237	0.511	0.632	0.11	<0.02 U	0.042	<0.05 U	0.6 J	0.1 J	<0.1 U
2/12/2019	Detection	0.02 J	1.63	1860	<0.02 U	<0.01 U	0.222	0.486	0.3849	0.11	<0.02 U	0.049	<0.05 U	0.6 J	0.08 J	<0.1 U
4/10/2019	Assessment	0.02 J	2.43	2000	<0.02 U	<0.01 U	0.2 J	0.477	1.643	0.1	<0.02 U	0.052	<0.05 U	0.5 J	0.09 J	<0.1 U
5/30/2019	Assessment	<0.02 U	2.44	2100	<0.02 U	<0.01 U	0.233	0.432	1.05	0.13	<0.02 U	0.055	<0.05 U	0.5 J	0.09 J	<0.1 U
10/2/2019	Assessment	<0.02 U	2.84	2380	<0.02 U	<0.01 U	0.208	0.318	1.399	0.10	<0.05 U	0.0767	<0.2 U	0.6 J	0.08 J	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-1604
Clinch River - Pond 1
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
10/17/2017	Background	0.428	27.7	29.9	0.27	6.9	404	8.2
12/11/2017	Background	0.476	29.3	22.5	0.22	6.7	395	6.3
2/14/2018	Background	0.396	26.3	22.6	0.23	7.1	378	6.7
4/12/2018	Background	0.399	27.2	22.5	0.27	7.2	410	5.6
6/12/2018	Background	0.406	26.2	21.0	0.25	7.1	374	4.2
8/22/2018	Background	0.471	27.3	20.3	0.26	7.1	390	4.1
10/16/2018	Background	0.444	27.2	17.8	0.22	7.1	390	3.4
12/12/2018	Background	0.468	28.9	19.4	0.22	7.1	375	2.8
2/12/2019	Detection	0.350	28.0	20.4	0.21	7.2	386	1.7
4/10/2019	Assessment	0.384	28.5	21.1	0.21	7.2	399	1.4
5/30/2019	Assessment	0.348	26.0	19.0	0.26	7.3	384	1.9
10/2/2019	Assessment	0.413	30.9	24.3	0.20	7.1	407	2.4

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-1604
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
10/17/2017	Background	0.05	1.64	3330	<0.004 U	<0.005 U	0.331	0.585	2.503	0.27	0.06	0.078	<0.05 U	1.57	0.04 J	0.01 J
12/11/2017	Background	0.04 J	1.39	3160	<0.004 U	<0.005 U	0.113	0.347	0.46499	0.22	0.02 J	0.090	0.06 J	0.83	<0.03 U	0.01 J
2/14/2018	Background	0.05 J	1.61	3320	<0.004 U	<0.005 U	0.116	0.487	1.265	0.23	0.01 J	0.080	<0.05 U	0.92	0.05 J	<0.01 U
4/12/2018	Background	0.18	3.10	2880	0.007 J	<0.005 U	0.255	0.427	1.117	0.27	0.068	0.078	<0.05 U	0.50	0.07 J	<0.01 U
6/12/2018	Background	0.08	1.58	3210	0.005 J	<0.005 U	0.248	0.687	1.762	0.25	0.047	0.087	<0.05 U	0.47	0.05 J	0.01 J
8/22/2018	Background	0.07	1.71	3260	<0.004 U	<0.005 U	0.244	1.03	1.185	0.26	0.01 J	0.085	<0.05 U	0.54	0.05 J	0.02 J
10/16/2018	Background	<0.02 U	1.89	3040	<0.02 U	<0.01 U	0.207	1.12	0.776	0.22	<0.02 U	0.08	<0.05 U	0.6 J	0.06 J	<0.1 U
12/12/2018	Background	0.04 J	1.36	3150	<0.02 U	<0.01 U	0.2 J	0.634	1.019	0.22	0.02 J	0.077	<0.05 U	0.5 J	0.03 J	<0.1 U
2/12/2019	Detection	<0.02 U	1.50	3010	<0.02 U	<0.01 U	0.2 J	0.590	0.6812	0.21	<0.02 U	0.076	<0.05 U	<0.4 U	<0.03 U	<0.1 U
4/10/2019	Assessment	0.03 J	2.26	3280	<0.02 U	<0.01 U	0.1 J	0.701	1.561	0.21	<0.02 U	0.083	<0.05 U	0.4 J	0.05 J	<0.1 U
5/30/2019	Assessment	0.02 J	2.44	3280	<0.02 U	<0.01 U	0.262	0.766	0.653	0.26	<0.02 U	0.077	<0.05 U	0.4 J	0.05 J	<0.1 U
10/2/2019	Assessment	<0.02 U	2.98	3320	<0.02 U	<0.01 U	0.213	0.672	1.521	0.20	<0.05 U	0.0887	<0.2 U	<0.4 U	0.05 J	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-1605
Clinch River - Pond 1
Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
10/17/2017	Background	0.54	44.2	184	0.34	7.4	808	97.8
12/12/2017	Background	0.522	44.0	342	0.32	7.7	807	91.1
2/15/2018	Background	0.589	50.8	180	0.35	7.8	793	101
4/11/2018	Background	0.543	48.1	184	0.40	7.8	1700	105
6/12/2018	Background	0.569	48.2	184	0.40	7.7	842	109
8/22/2018	Background	0.699	48.9	186	0.41	7.7	857	104
10/16/2018	Background	0.586	47.9	181	0.37	7.8	838	85.2
12/11/2018	Background	0.589	46.9	177	0.37	7.9	798	70.5
2/12/2019	Detection	0.582	45.1	174	0.35	7.9	808	61.8
4/10/2019	Assessment	0.583	42.9	173	0.33	7.9	777	46.5
5/30/2019	Assessment	0.523	39.5	180	0.39	7.9	772	47.4
10/2/2019	Assessment	0.613	47.6	179	0.31	7.8	768	35.1

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-1605
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
10/17/2017	Background	0.28	5.81	1670	<0.004 U	<0.005 U	0.163	0.403	2.122	0.34	0.029	0.191	<0.05 U	8.54	0.05 J	<0.01 U
12/12/2017	Background	0.21	7.25	1570	0.005 J	<0.005 U	0.158	0.354	2.159	0.32	0.026	0.183	<0.05 U	7.42	0.08 J	0.01 J
2/15/2018	Background	0.10	4.59	1560	<0.004 U	<0.005 U	0.136	0.306	1.134	0.35	0.051	0.220	<0.05 U	6.62	0.07 J	0.02 J
4/11/2018	Background	0.07	4.58	1250	<0.004 U	<0.005 U	0.219	0.316	1.24	0.40	0.036	0.196	<0.05 U	4.35	0.05 J	<0.01 U
6/12/2018	Background	0.14	4.50	1290	0.004 J	<0.005 U	0.230	0.357	1.132	0.40	0.085	0.207	<0.05 U	4.19	<0.03 U	0.01 J
8/22/2018	Background	0.11	3.35	1330	0.01 J	<0.005 U	0.291	0.407	0.349	0.41	0.040	0.206	<0.05 U	3.38	0.05 J	0.02 J
10/16/2018	Background	0.04 J	3.11	1130	<0.02 U	<0.01 U	0.215	0.321	0.641	0.37	<0.02 U	0.198	<0.05 U	2.78	<0.03 U	<0.1 U
12/11/2018	Background	0.04 J	3.83	1170	<0.02 U	<0.01 U	0.2 J	0.309	2.717	0.37	<0.02 U	0.199	<0.05 U	2.65	<0.03 U	<0.1 U
2/12/2019	Detection	0.07 J	5.22	1110	<0.02 U	0.02 J	0.246	0.264	0.644	0.35	0.05 J	0.206	<0.05 U	2.10	0.04 J	<0.1 U
4/10/2019	Assessment	0.06 J	4.11	1100	<0.02 U	0.01 J	0.288	0.200	1.137	0.33	0.05 J	0.199	<0.05 U	2.34	0.05 J	<0.1 U
5/30/2019	Assessment	0.04 J	3.81	1050	<0.02 U	<0.01 U	0.221	0.176	1.36	0.39	<0.02 U	0.178	<0.05 U	1 J	<0.03 U	<0.1 U
10/2/2019	Assessment	0.03 J	2.75	1160	<0.02 U	<0.01 U	0.2 J	0.125	0.868	0.31	<0.05 U	0.204	<0.2 U	1 J	0.07 J	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-1606
Clinch River - Pond 1
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
10/18/2017	Background	0.078	50.9	14.3	0.20	6.8	374	57.9
12/12/2017	Background	0.194	55.3	14.4	0.17	7.1	348	66.8
2/14/2018	Background	0.175	56.8	14.9	0.18	7.1	336	68.3
4/10/2018	Background	0.148	44.8	12.9	0.26	7.2	302	42.4
6/11/2018	Background	0.144	55.0	14.0	0.27	7.0	316	45.4
8/21/2018	Background	0.168	64.4	15.7	0.23	7.0	377	54.9
10/15/2018	Background	0.136	60.0	14.3	0.24	7.1	344	47.8
12/11/2018	Background	0.126	58.6	13.9	0.25	7.2	329	42.1
2/12/2019	Detection	0.110	56.8	14.1	0.24	7.2	341	39.7
4/9/2019	Assessment	0.07 J	62.2	13.0	0.16	7.2	352	32.5
5/29/2019	Assessment	0.05 J	55.9	11.5	0.16	7.3	336	27.6
10/1/2019	Assessment	0.084	58.9	13.6	0.19	7.0	350	32.4

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-1606
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
10/18/2017	Background	0.02 J	7.03	117	<0.004 U	0.01 J	0.139	6.00	2.331	0.20	0.628	0.089	<0.05 U	84.2	0.06 J	0.04 J
12/12/2017	Background	0.02 J	6.77	117	0.005 J	0.01 J	0.216	6.33	0.7252	0.17	0.573	0.086	0.06 J	82.4	0.1 J	0.04 J
2/14/2018	Background	0.03 J	6.76	116	0.006 J	<0.005 U	0.140	5.66	1.459	0.18	0.388	0.067	<0.05 U	65.1	0.1 J	0.04 J
4/10/2018	Background	0.02 J	6.72	104	0.007 J	0.01 J	0.225	5.53	1.156	0.26	0.549	0.095	<0.05 U	89.6	0.1	0.04 J
6/11/2018	Background	0.04 J	6.89	114	0.006 J	<0.005 U	0.205	4.98	1.154	0.27	0.451	0.099	<0.05 U	91.5	0.08 J	0.05
8/21/2018	Background	0.04 J	7.19	124	0.006 J	0.006 J	0.218	6.13	1.269	0.23	0.515	0.081	<0.05 U	66.1	0.08 J	0.05
10/15/2018	Background	0.03 J	7.13	116	<0.02 U	<0.01 U	0.211	5.34	1.148	0.24	0.391	0.087	<0.05 U	71.9	0.07 J	<0.1 U
12/11/2018	Background	<0.02 U	7.71	117	<0.02 U	<0.01 U	0.2 J	5.58	2.743	0.25	0.445	0.091	<0.05 U	80.7	0.05 J	<0.1 U
2/12/2019	Detection	<0.02 U	7.90	117	<0.02 U	<0.01 U	0.2 J	5.79	1.189	0.24	0.343	0.100	<0.05 U	87.4	0.04 J	<0.1 U
4/9/2019	Assessment	<0.02 U	11.0	107	<0.02 U	<0.01 U	0.1 J	4.99	1.491	0.16	0.225	0.044	<0.05 U	44.8	0.08 J	<0.1 U
5/29/2019	Assessment	<0.02 U	11.6	106	<0.02 U	<0.01 U	0.2 J	4.86	1.4097	0.16	0.255	0.038	<0.05 U	39.1	<0.03 U	<0.1 U
10/1/2019	Assessment	<0.02 U	8.33	120	<0.02 U	<0.01 U	0.2 J	4.66	0.962	0.19	0.358	0.0717	<0.2 U	57.8	0.05 J	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-1607
Clinch River - Pond 1
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
10/18/2017	Background	0.139	54.9	16.7	0.25	7.6	468	197
12/12/2017	Background	0.212	50.1	16.3	0.22	7.4	417	206
2/14/2018	Background	0.121	48.7	10.7	0.20	7.9	284	149
4/11/2018	Background	0.143	49.1	11.0	0.22	8.0	306	153
6/11/2018	Background	0.143	49.5	11.1	0.23	7.8	278	156
8/21/2018	Background	0.151	46.4	12.0	0.26	8.0	315	162
10/15/2018	Background	0.122	45.8	11.7	0.26	8.1	302	159
12/11/2018	Background	0.111	44.8	10.0	0.25	7.7	280	150
2/12/2019	Detection	0.1 J	46.3	9.5	0.23	7.9	298	151
4/9/2019	Assessment	0.134	47.2	8.2	0.20	8.0	296	130
5/29/2019	Assessment	0.1 J	44.5	8.4	0.23	7.9	293	146
10/2/2019	Assessment	0.112	49.4	8.5	0.18	7.8	290	147

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-1607
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
10/18/2017	Background	0.05	4.38	141	<0.004 U	0.02 J	0.273	4.06	2.733	0.25	0.228	0.110	<0.05 U	89.7	0.09 J	<0.01 U
12/12/2017	Background	0.08	5.28	92.5	0.005 J	0.12	0.194	8.94	1.062	0.22	0.614	0.119	0.08 J	126	0.09 J	0.01 J
2/14/2018	Background	0.05 J	0.96	71.5	<0.004 U	0.18	0.100	11.2	0.743	0.20	0.727	0.110	<0.05 U	160	0.1	0.01 J
4/11/2018	Background	0.04 J	1.05	71.1	<0.004 U	0.17	0.206	11.4	0.436	0.22	0.585	0.125	<0.05 U	144	0.1	0.03 J
6/11/2018	Background	0.05	0.98	74.7	<0.004 U	0.09	0.208	11.3	0.975	0.23	0.524	0.133	<0.05 U	153	0.2	0.05 J
8/21/2018	Background	0.06	1.29	75.7	<0.004 U	0.11	0.216	10.1	0.511	0.26	0.525	0.129	<0.05 U	165	0.2	0.03 J
10/15/2018	Background	0.09 J	1.46	71.9	<0.02 U	0.11	0.224	10.9	0.999	0.26	0.524	0.132	<0.05 U	164	0.04 J	<0.1 U
12/11/2018	Background	0.03 J	1.01	70.4	<0.02 U	0.25	0.2 J	12.1	0.660	0.25	0.701	0.126	<0.05 U	168	0.1 J	<0.1 U
2/12/2019	Detection	0.04 J	0.86	73.1	<0.02 U	0.18	0.2 J	12.7	0.885	0.23	0.586	0.139	<0.05 U	175	0.2 J	<0.1 U
4/9/2019	Assessment	0.03 J	1.59	75.3	<0.02 U	0.11	0.2 J	8.87	0.701	0.20	0.423	0.127	<0.05 U	138	0.2 J	<0.1 U
5/29/2019	Assessment	0.03 J	1.08	74.2	<0.02 U	0.18	0.212	10.2	0.744	0.23	0.366	0.123	<0.05 U	154	0.2 J	<0.1 U
10/2/2019	Assessment	<0.02 U	1.64	72.4	<0.02 U	0.18	0.2 J	6.74	1.028	0.18	0.228	0.132	<0.2 U	148	0.1 J	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-1608
Clinch River - Pond 1
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
10/19/2017	Background	0.359	1.92	7.6	0.45	8.1	484	179
12/11/2017	Background	0.375	1.31	7.3	0.4	8.0	468	176
2/13/2018	Background	0.349	1.09	8.7	0.45	8.7	466	182
4/10/2018	Background	0.334	0.779	8.0	0.48	8.8	466	178
6/7/2018	Background	0.389	0.708	7.2	0.44	8.7	437	171
8/20/2018	Background	0.315	1.31	7.4	0.43	8.7	441	173
10/17/2018	Background	0.344	1.37	6.8	0.43	8.7	439	167
12/6/2018	Background	0.365	1.24	6.1	0.42	8.7	423	166
2/7/2019	Detection	0.332	1.35	6.2	0.42	8.6	445	171
4/8/2019	Assessment	0.352	1.32	6.7	0.39	8.7	454	162
5/28/2019	Assessment	0.310	1.11	5.4	0.44	8.7	443	174
10/1/2019	Assessment	0.351	1.19	6.6	0.39	8.7	457	176

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-1608
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
10/19/2017	Background	0.06	1.69	42.7	0.042	<0.005 U	0.956	0.442	0.661	0.45	0.405	0.027	<0.05 U	9.04	0.1	0.02 J
12/11/2017	Background	0.06	1.96	42.9	0.066	<0.005 U	1.26	0.425	0.498	0.4	0.526	0.032	0.07 J	7.35	0.1	0.02 J
2/13/2018	Background	0.05 J	2.00	43.8	0.062	<0.005 U	1.08	0.401	0.939	0.45	0.656	0.024	<0.05 U	6.43	0.09 J	0.03 J
4/10/2018	Background	0.05 J	1.86	41.9	0.056	<0.005 U	1.11	0.372	0.484	0.48	0.675	0.023	<0.05 U	3.52	0.1	0.02 J
6/7/2018	Background	0.06	2.99	44.3	0.041	0.006 J	0.912	0.330	0.894	0.44	0.721	0.028	<0.05 U	2.49	0.09 J	0.02 J
8/20/2018	Background	0.06	1.88	38.4	0.031	0.02 J	0.938	0.284	2.988	0.43	0.438	0.018	<0.05 U	3.20	0.07 J	0.02 J
10/17/2018	Background	0.03 J	1.70	34.2	0.03 J	<0.01 U	0.647	0.217	3.565	0.43	0.273	0.02 J	<0.05 U	2.89	0.06 J	<0.1 U
12/6/2018	Background	0.04 J	1.36	33.1	0.03 J	<0.01 U	0.639	0.229	0.518	0.42	0.284	0.01 J	<0.05 U	2.67	0.04 J	<0.1 U
2/7/2019	Detection	0.04 J	1.64	35.3	0.02 J	<0.01 U	0.633	0.233	0.1256	0.42	0.256	0.03 J	<0.05 U	2.66	0.07 J	<0.1 U
4/8/2019	Assessment	0.03 J	1.46	32.9	<0.02 U	<0.01 U	0.696	0.227	0.4948	0.39	0.255	0.02 J	<0.05 U	2.32	0.06 J	<0.1 U
5/28/2019	Assessment	0.08 J	1.35	34.4	0.03 J	0.02 J	0.722	0.262	0.163	0.44	0.418	<0.009 U	0.1 J	2.11	<0.03 U	<0.1 U
10/1/2019	Assessment	0.03 J	1.46	35.0	<0.02 U	<0.01 U	0.359	0.159	0.462	0.39	0.214	0.0211	<0.2 U	2 J	0.04 J	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-1609
Clinch River - Pond 1
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
10/18/2017	Background	0.017	66.6	4.1	0.32	6.7	358	13.6
12/11/2017	Background	0.084	67.9	3.1	0.32	6.6	326	12.6
2/13/2018	Background	0.084	60.7	3.2	0.31	7.6	262	21.8
4/10/2018	Background	0.041	59.9	1.7	0.27	7.4	292	15.8
6/11/2018	Background	0.077	75.5	1.9	0.28	7.3	312	21.0
8/21/2018	Background	0.117	72.6	1.5	0.29	7.3	311	13.7
10/15/2018	Background	0.05 J	70.0	1.6	0.27	7.5	276	16.8
12/6/2018	Background	0.04 J	66.1	1.5	0.26	7.5	281	14.9
2/7/2019	Detection	<0.02 U	72.3	1.3	0.21	7.4	305	13.7
4/8/2019	Assessment	<0.02 U	82.5	1.2	0.20	7.5	323	13.6
5/28/2019	Assessment	<0.02 U	74.8	1.3	0.25	7.6	322	17.4
10/1/2019	Assessment	<0.02 U	69.0	1.3	0.25	7.4	282	13.2

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-1609
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
10/18/2017	Background	0.06	0.97	476	<0.004 U	<0.005 U	0.126	0.338	3.258	0.32	0.142	<0.0002 U	<0.05 U	2.22	0.03 J	<0.01 U
12/11/2017	Background	0.05	0.95	507	0.004 J	<0.005 U	0.112	0.258	1.423	0.32	0.033	0.010	<0.05 U	1.78	<0.03 U	0.03 J
2/13/2018	Background	0.05 J	0.43	333	<0.004 U	<0.005 U	0.151	0.522	1.661	0.31	0.326	<0.0002 U	<0.05 U	1.55	0.1 J	0.03 J
4/10/2018	Background	0.03 J	0.18	359	<0.004 U	0.02 J	0.164	0.168	1.544	0.27	0.426	0.0009 J	<0.05 U	1.34	0.2	0.01 J
6/11/2018	Background	0.07	0.19	397	<0.004 U	0.04	0.154	0.082	1.893	0.28	0.524	0.005	<0.05 U	0.79	0.1	0.01 J
8/21/2018	Background	0.13	0.28	435	<0.004 U	0.03	0.232	1.38	1.161	0.29	0.548	0.004	<0.05 U	0.46	0.03 J	0.09
10/15/2018	Background	0.05 J	0.19	345	<0.02 U	<0.01 U	0.319	0.558	0.8423	0.27	0.506	<0.009 U	<0.05 U	0.6 J	<0.03 U	<0.1 U
12/6/2018	Background	0.02 J	0.14	356	<0.02 U	0.01 J	0.2 J	0.114	1.794	0.26	0.350	0.01 J	<0.05 U	0.6 J	0.1 J	<0.1 U
2/7/2019	Detection	0.03 J	0.10	365	<0.02 U	0.02 J	0.239	<0.02 U	1.569	0.21	0.362	<0.009 U	<0.05 U	0.4 J	0.2 J	<0.1 U
4/8/2019	Assessment	0.03 J	0.10	443	<0.02 U	0.01 J	0.1 J	0.206	1.519	0.20	0.528	<0.009 U	<0.05 U	<0.4 U	0.06 J	<0.1 U
5/28/2019	Assessment	0.02 J	0.10	466	<0.02 U	0.01 J	0.234	<0.02 U	1.387	0.25	0.337	<0.009 U	0.1 J	<0.4 U	0.7	<0.1 U
10/1/2019	Assessment	0.02 J	0.19	412	<0.02 U	0.02 J	0.1 J	0.634	2.24	0.25	0.935	0.00107	<0.2 U	<0.4 U	<0.03 U	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-1610
Clinch River - Pond 1
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
10/17/2017	Background	0.097	35.5	11.9	0.18	7.3	260	47.7
12/12/2017	Background	0.092	35.0	11.1	0.17	7.1	241	46.2
2/15/2018	Background	0.105	37.3	11.8	0.20	7.5	247	49.1
4/11/2018	Background	0.060	36.1	11.7	0.21	7.6	254	46.4
6/12/2018	Background	0.053	35.8	13.4	0.21	7.5	258	53.2
8/21/2018	Background	0.139	35.2	11.7	0.22	7.6	258	48.7
10/16/2018	Background	0.07 J	35.0	10.4	0.21	7.7	245	41.1
12/11/2018	Background	0.05 J	33.6	10.5	0.22	7.7	233	43.3
2/12/2019	Detection	0.03 J	35.4	10.8	0.21	7.7	257	41.2
4/9/2019	Assessment	0.05 J	38.5	10.9	0.17	7.7	263	41.6
5/29/2019	Assessment	0.04 J	35.6	10.5	0.18	7.8	263	44.1
10/1/2019	Assessment	0.04 J	37.8	10.7	0.18	7.5	258	40.8

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-1610
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
10/17/2017	Background	0.22	1.67	212	<0.004 U	0.03	0.167	9.90	0.839	0.18	12.6	0.141	<0.05 U	139	0.4	0.03 J
12/12/2017	Background	0.07	1.18	227	0.004 J	0.01 J	0.174	12.1	1.132	0.17	15.2	0.146	0.06 J	152	0.3	0.01 J
2/15/2018	Background	0.05 J	1.56	203	0.007 J	<0.005 U	0.159	11.7	0.688	0.20	11.1	0.18	<0.05 U	161	0.2	0.02 J
4/11/2018	Background	0.09	1.37	193	0.004 J	0.03	0.192	10.2	0.192	0.21	15.0	0.171	<0.05 U	135	0.4	0.02 J
6/12/2018	Background	0.08	1.24	202	0.004 J	<0.005 U	0.210	10.6	1.788	0.21	8.48	0.188	<0.05 U	132	0.3	0.02 J
8/21/2018	Background	0.06	1.08	200	<0.004 U	<0.005 U	0.248	10.1	1.039	0.22	3.61	0.206	<0.05 U	172	0.1	0.02 J
10/16/2018	Background	<0.02 U	1.28	203	<0.02 U	<0.01 U	0.262	8.25	0.938	0.21	4.33	0.207	<0.05 U	160	0.1 J	<0.1 U
12/11/2018	Background	0.03 J	1.69	200	<0.02 U	<0.01 U	0.208	8.97	1.759	0.22	7.18	0.219	<0.05 U	182	0.2	<0.1 U
2/12/2019	Detection	0.08 J	1.59	253	<0.02 U	0.02 J	0.2 J	7.43	0.517	0.21	6.94	0.183	<0.05 U	159	0.5	<0.1 U
4/9/2019	Assessment	0.12	1.61	247	<0.02 U	0.03 J	0.267	6.28	1.338	0.17	9.60	0.197	<0.05 U	156	0.5	<0.1 U
5/29/2019	Assessment	0.07 J	1.29	241	<0.02 U	0.04 J	0.243	7.92	0.331	0.18	6.54	0.191	<0.05 U	167	0.3	<0.1 U
10/1/2019	Assessment	0.02 J	1.28	235	<0.02 U	<0.01 U	0.2 J	6.35	0.883	0.18	3.28	0.192	<0.2 U	135	0.3	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-1611
Clinch River - Pond 1
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
10/19/2017	Background	0.423	115	131	0.48	7.4	2940	1600
12/11/2017	Background	0.551	124	138	0.68	7.5	3420	1690
2/13/2018	Background	0.663	143	101	0.66	7.7	2720	1330
4/10/2018	Background	0.669	96.2	91.3	0.85	7.8	2520	1400
6/11/2018	Background	0.701	68.6	61.5	0.90	7.7	1750	777
8/21/2018	Background	0.65	46.7	48.9	0.98	7.7	1450	552
10/15/2018	Background	0.634	42.5	38.5	0.92	7.8	1200	389
12/6/2018	Background	0.681	36.3	36.2	0.96	7.9	1060	318
2/12/2019	Detection	0.559	31.9	31.3	0.98	7.8	989	259
4/9/2019	Assessment	0.622	32.8	26.9	0.92	7.9	939	222
5/29/2019	Assessment	0.536	27.7	24.2	0.99	8.0	852	201
10/1/2019	Assessment	0.617	28.2	21.7	1.06	7.8	771	166

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

Table 1 - Groundwater Data Summary: MW-1611
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
10/19/2017	Background	0.33	7.16	91.8	<0.004 U	0.01 J	0.656	0.311	1.295	0.48	1.05	0.109	<0.05 U	38.0	0.09 J	<0.01 U
12/11/2017	Background	0.18	11.5	63.7	0.01 J	<0.01 U	0.555	0.080	0.278	0.68	0.04 J	0.130	0.08 J	6.76	0.1 J	0.04 J
2/13/2018	Background	0.54	36.5	53.3	0.01 J	<0.005 U	0.836	0.131	0.748	0.66	0.146	0.161	<0.05 U	2.19	0.1	0.11
4/10/2018	Background	0.50	39.5	51.0	0.009 J	<0.005 U	0.864	0.122	0.257	0.85	0.142	0.130	<0.05 U	2.54	0.1	<0.01 U
6/11/2018	Background	0.23	27.5	57.2	0.008 J	<0.005 U	0.640	0.092	0.766	0.90	0.169	0.110	<0.05 U	2.10	0.09 J	<0.01 U
8/21/2018	Background	0.15	20.1	60.6	0.007 J	<0.005 U	0.572	0.076	0.360	0.98	0.144	0.090	<0.05 U	1.85	0.08 J	0.04 J
10/15/2018	Background	0.10	19.2	63.3	<0.02 U	<0.01 U	0.454	0.062	0.467	0.92	0.133	0.079	<0.05 U	2 J	0.05 J	<0.1 U
12/6/2018	Background	0.06 J	16.4	68.8	<0.02 U	<0.01 U	0.355	0.055	0.384	0.96	0.120	0.080	<0.05 U	2.41	0.04 J	<0.1 U
2/12/2019	Detection	0.05 J	13.2	75.7	<0.02 U	<0.01 U	0.326	0.056	0.3448	0.98	0.109	0.071	<0.05 U	2.52	0.04 J	<0.1 U
4/9/2019	Assessment	0.05 J	11.9	80.8	<0.02 U	<0.01 U	0.415	0.062	0.512	0.92	0.09 J	0.087	<0.05 U	2.36	0.05 J	<0.1 U
5/29/2019	Assessment	0.05 J	9.20	85.3	<0.02 U	<0.01 U	0.343	0.03 J	0.457	0.99	<0.02 U	0.073	<0.05 U	2.12	0.05 J	<0.1 U
10/1/2019	Assessment	0.03 J	9.46	100	<0.02 U	<0.01 U	0.295	0.055	0.524	1.06	0.08 J	0.0699	<0.2 U	2.84	0.08 J	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Table 1 - Groundwater Data Summary: MW-1612
Clinch River - Pond 1
Appendix III Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pH	Total Dissolved Solids	Sulfate
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
12/13/2017	Background	0.453	38.7	13.3	0.12	7.1	384	6.0
2/14/2018	Background	0.532	43.0	14.5	0.12	6.9	506	9.3
4/12/2018	Background	0.476	44.9	21.6	0.17	7.1	546	13.9
6/12/2018	Background	0.452	42.4	22.7	0.17	7.0	524	16.9
8/22/2018	Background	0.543	42.0	20.9	0.19	7.1	550	15.6
10/16/2018	Background	0.5 J	38.1	37.1	0.21	7.3	528	10.8
12/11/2018	Background	0.439	37.9	35.3	0.20	7.4	522	7.8
2/12/2019	Detection	0.393	36.4	32.8	0.19	7.3	537	5.4
4/10/2019	Assessement	0.527	41.0	27.5	0.18	7.4	551	4.6
5/30/2019	Assessement	0.355	34.9	32.8	0.22	7.4	537	3.3
10/2/2019	Assessement	0.423	45.9	30.7	0.14	7.1	533	1.9

Notes:
mg/L: milligrams per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed

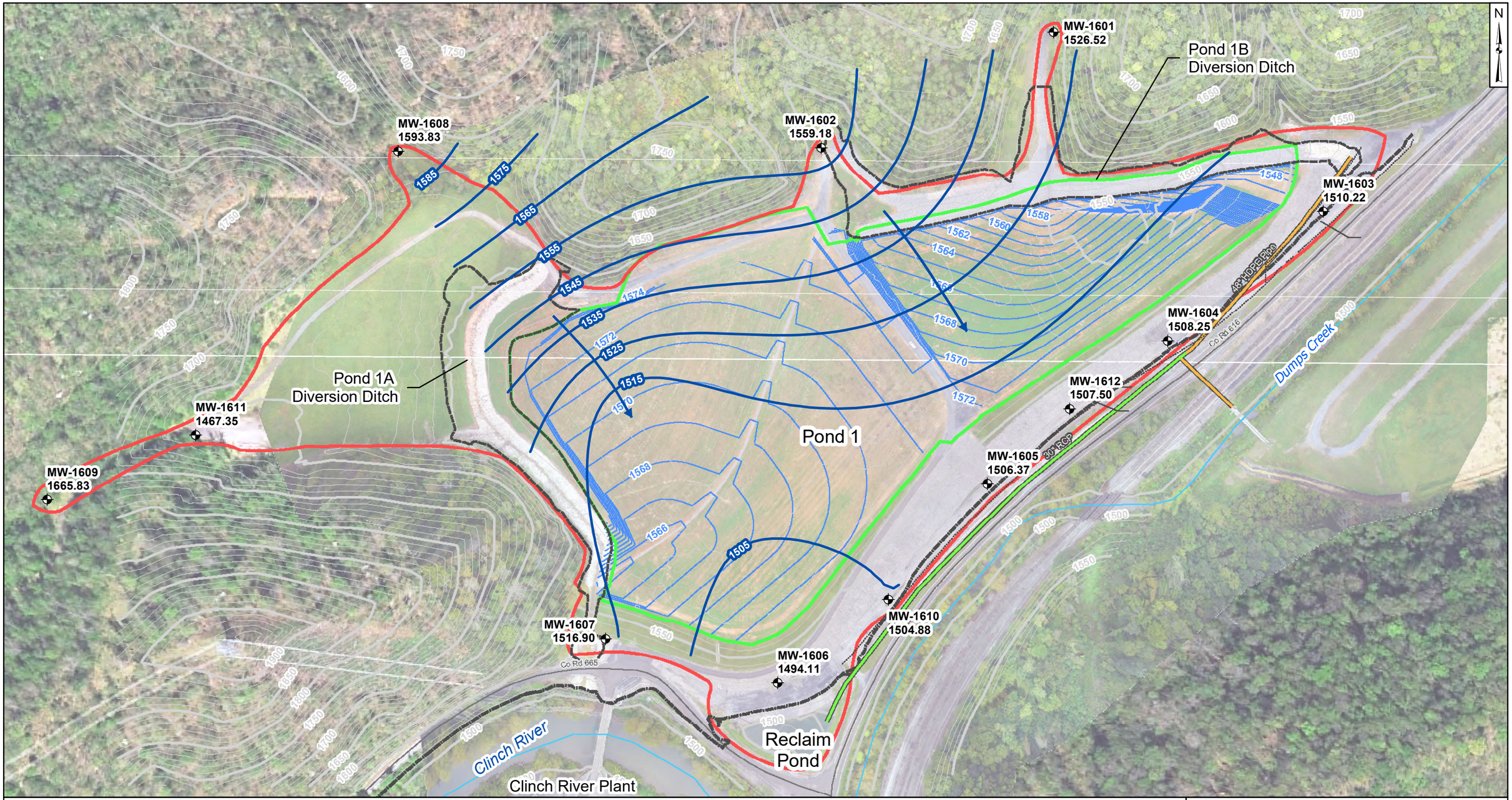
Table 1 - Groundwater Data Summary: MW-1612
Clinch River - Pond 1
Appendix IV Constituents

Geosyntec Consultants, Inc.

Collection Date	Monitoring Program	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pCi/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
12/13/2017	Background	0.30	3.86	2020	0.045	<0.005 U	0.437	0.274	2.942	0.12	0.331	0.109	0.06 J	3.60	0.1	0.01 J
2/14/2018	Background	0.08	2.61	2560	0.01 J	<0.005 U	0.190	0.149	1.358	0.12	0.083	0.121	<0.05 U	1.59	0.06 J	0.03 J
4/12/2018	Background	0.11	2.26	2170	0.005 J	<0.005 U	0.196	0.115	2.209	0.17	0.040	0.128	<0.05 U	1.13	0.03 J	<0.01 U
6/12/2018	Background	0.07	1.82	2170	0.006 J	<0.005 U	0.206	0.094	1.58	0.17	0.038	0.132	<0.05 U	0.83	0.04 J	0.01 J
8/22/2018	Background	0.05	1.56	2090	<0.004 U	<0.005 U	0.251	0.124	2.76	0.19	0.025	0.136	<0.05 U	0.67	0.03 J	0.01 J
10/16/2018	Background	0.02 J	1.17	1640	<0.02 U	<0.01 U	0.2 J	0.242	1.051	0.21	0.02 J	<0.09 U	<0.05 U	0.8 J	0.04 J	<0.1 U
12/11/2018	Background	0.03 J	0.92	1880	<0.02 U	<0.01 U	0.2 J	0.304	3.009	0.20	<0.02 U	0.134	<0.05 U	0.7 J	<0.03 U	<0.1 U
2/12/2019	Detection	0.02 J	0.71	1880	<0.02 U	<0.01 U	0.204	0.320	0.574	0.19	<0.02 U	0.123	<0.05 U	0.5 J	<0.03 U	<0.1 U
4/10/2019	Assessement	0.03 J	0.74	2060	<0.02 U	<0.01 U	0.1 J	0.339	1.25	0.18	<0.02 U	0.133	<0.05 U	0.7 J	<0.03 U	<0.1 U
5/30/2019	Assessement	0.02 J	0.76	1930	<0.02 U	<0.01 U	0.257	0.228	0.621	0.22	<0.02 U	0.113	<0.05 U	0.7 J	<0.03 U	<0.1 U
10/2/2019	Assessement	<0.02 U	0.56	2150	<0.02 U	<0.01 U	0.218	0.182	1.137	0.14	<0.05 U	0.128	<0.2 U	2.01	0.05 J	<0.1 U

Notes:
µg/L: micrograms per liter
SU: standard unit
<: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL) followed by a 'U' flag.
J: Estimated value. Parameter was detected at concentration below the reporting limit
- -: Not analyzed
pCi/L: picocuries per liter

Groundwater Flow Direction Maps



Legend

- Groundwater Monitoring Well
- Groundwater Elevation Contour
- Groundwater Flow Direction
- Post-Closure Topographic Elevation
- 100 yr Flood Elevation Approx. 1505 ft amsl
- Diversion Ditch
- Facility Boundary
- Pond 1 CCR Unit Boundary

Notes

- Monitoring well coordinates and water level data (collected on February 6-12, 2019) provided by AEP.
- Site features based on information available in Groundwater Monitoring Network Evaluation (Amec, 2015) provided by AEP.
- Aerial basemap provided by AEP.
- Groundwater elevation units and Post-Closure Pond Topographic units are feet above mean sea level (ft amsl).
- MW-1609 is not included in the contouring. It is a background cross-gradient monitoring well screened in the Rome Formation.
- MW-1611 is not included in the contouring. It is a special condition background monitoring well screened across the Dumps Fault to monitor potential lateral migration of groundwater.

300 150 0 300 Feet

Potentiometric Surface Map - Uppermost Aquifer
February 2019

AEP Clinch River Plant - Bottom Ash Pond
Carbo, Virginia

Geosyntec consultants

Ann Arbor, Michigan | 2019/07/31

Figure **2**

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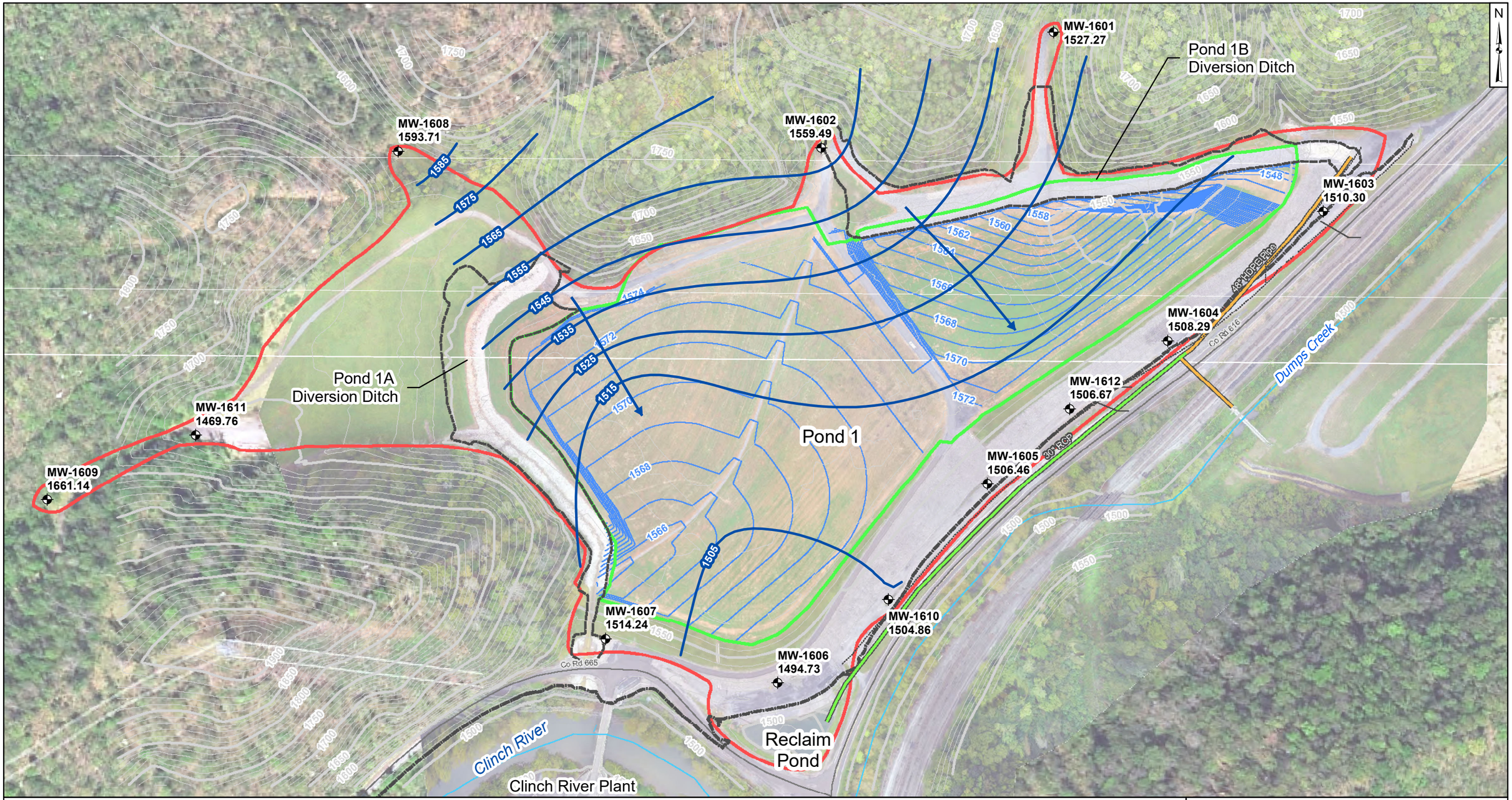

Legend

- Groundwater Monitoring Well
- Groundwater Elevation Contour
- Groundwater Flow Direction
- Post-Closure Topographic Elevation
- 100 yr Flood Elevation Approx. 1505 ft amsl
- Diversion Ditch
- Facility Boundary
- Pond 1 CCR Unit Boundary

Notes

- Monitoring well coordinates and water level data (collected on April 8-10, 2019) provided by AEP.
- Site features based on information available in Groundwater Monitoring Network Evaluation (Amec, 2015) provided by AEP.
- Aerial basemap provided by AEP.
- Groundwater elevation units and Post-Closure Pond Topographic units are feet above mean sea level (ft amsl).
- MW-1609 is not included in the contouring. It is a background cross-gradient monitoring well screened in the Rome Formation.
- MW-1611 is not included in the contouring. It is a special condition background monitoring well screened across the Dumps Fault to monitor potential lateral migration of groundwater.

300 150 0 300
Feet

Potentiometric Surface Map - Uppermost Aquifer
April 2019

AEP Clinch River Plant - Bottom Ash Pond
Carbo, Virginia

Geosyntec consultants

Ann Arbor, Michigan | 2019/07/31

Figure **2**

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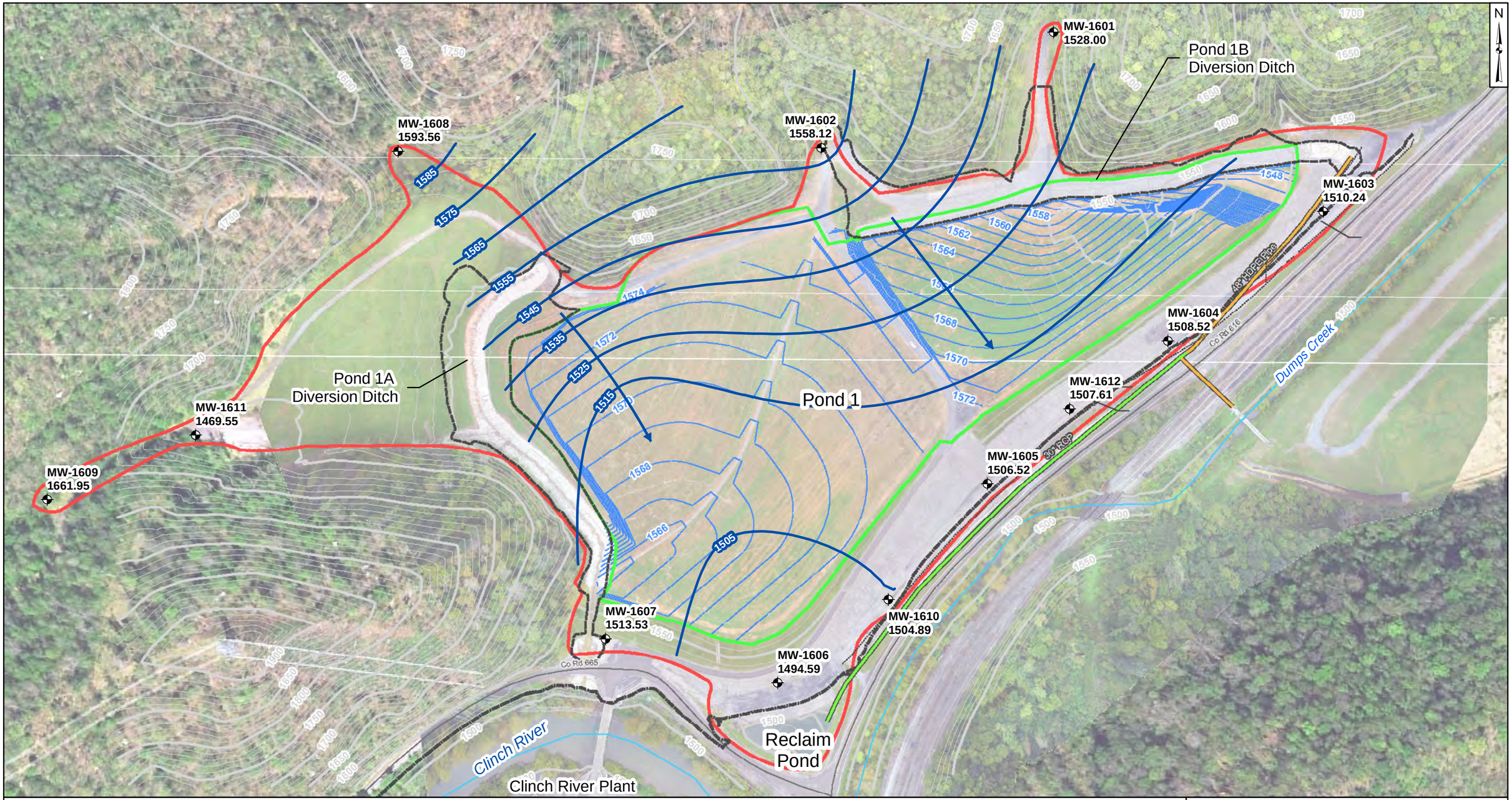

Legend

- Groundwater Monitoring Well
- Groundwater Elevation Contour
- Groundwater Flow Direction
- Post-Closure Topographic Elevation
- 100 yr Flood Elevation Approx. 1505 ft amsl
- Diversion Ditch
- Facility Boundary
- Pond 1 CCR Unit Boundary

Notes

- Monitoring well coordinates and water level data (collected on May 28, 2019) provided by AEP.
- Site features based on information available in Groundwater Monitoring Network Evaluation (Amec, 2015) provided by AEP.
- Aerial basemap provided by AEP.
- Groundwater elevation units and Post-Closure Pond Topographic units are feet above mean sea level (ft amsl).
- MW-1609 is not included in the contouring. It is a background cross-gradient monitoring well screened in the Rome Formation.
- MW-1611 is not included in the contouring. It is a special condition background monitoring well screened across the Dumps Fault to monitor potential lateral migration of groundwater.

300 150 0 300 Feet

Potentiometric Surface Map - Uppermost Aquifer May 2019

AEP Clinch River Plant - Bottom Ash Pond
Carbo, Virginia

Geosyntec consultants

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Figure 2

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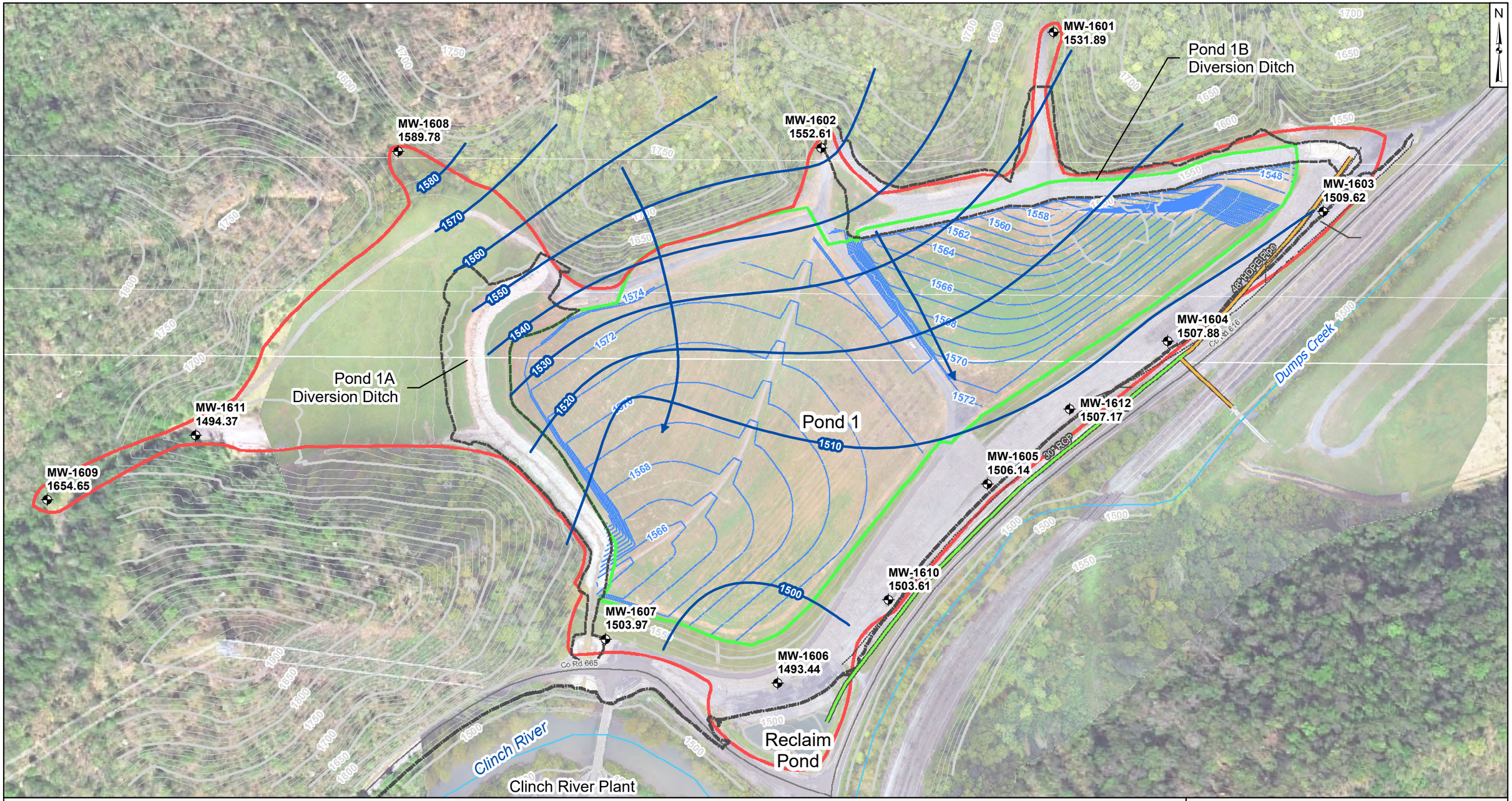

Legend

- Groundwater Monitoring Well
- Groundwater Elevation Contour
- Groundwater Flow Direction
- Post-Closure Topographic Elevation
- 100 yr Flood Elevation Approx. 1505 ft amsl
- Diversion Ditch
- Facility Boundary
- Pond 1 CCR Unit Boundary

Notes

- Monitoring well coordinates and water level data (collected on October 1 - 2, 2019) provided by AEP.
- Site features based on information available in Groundwater Monitoring Network Evaluation (Amec, 2015) provided by AEP.
- Aerial basemap provided by AEP.
- Groundwater elevation units and Post-Closure Pond Topographic units are feet above mean sea level (ft amsl).
- MW-1609 is not included in the contouring. It is a background cross-gradient monitoring well screened in the Rome Formation.
- MW-1611 is not included in the contouring. It is a special condition background monitoring well screened across the Dumps Fault to monitor potential lateral migration of groundwater.

300 150 0 300 Feet

Potentiometric Surface Map - Uppermost Aquifer October 2019

AEP Clinch River Plant - Bottom Ash Pond
Carbo, Virginia

Geosyntec consultants

Ann Arbor, Michigan | 2019/12/26

Figure 2

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Groundwater Flow Velocity Calculations

Table 1: Residence Time Calculation Summary
Clinch River Pond 1A/1B

Geosyntec Consultants, Inc.

CCR Management Unit	Monitoring Well	Well Diameter (inches)	2019-02		2019-04		2019-10	
			Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)
Pond 1A/1B	MW-1601[1]	2.0	38	1.6	374	0.16	632	0.1
	MW-1602[1]	2.0	121	0.50	3.1	19.7	190	0.32
	MW-1603[2]	2.0	26	2.4	30	2.1	20	3.0
	MW-1604[2]	2.0	41	1.5	47	1.3	50	1.2
	MW-1605[2]	2.0	44	1.4	25	2.4	33	1.8
	MW-1606[2]	2.0	46	1.3	49	1.2	33	1.8
	MW-1607[2]	2.0	25	2.4	1.3	46	33	1.8
	MW-1608[1]	2.0	118	0.52	75	0.81	130	0.47
	MW-1609[1]	2.0	NC	NC	NC	NC	NC	NC
	MW-1610[2]	2.0	4.9	12.5	41	1.5	48	1.3
	MW-1611[1]	2.0	NC	NC	NC	NC	NC	NC
	MW-1612[2]	2.0	53	1.2	60	1.0	66	0.9

Notes:
[1] - Background Well
[2] - Downgradient Well
NC - Not Calculated

APPENDIX 2 – Statistical Analyses

The memorandum summarizing the statistical evaluation follows.

STATISTICAL ANALYSIS SUMMARY
ASH POND 1
Clinch River Plant
Carbo, Virginia

Submitted to

1 Riverside Plaza
Columbus, Ohio 43215-2372

Submitted by

Geosyntec consultants
engineers | scientists | innovators

941 Chatham Lane
Suite 103
Columbus, Ohio 43221

January 22, 2020

CHA8474

TABLE OF CONTENTS

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LIST OF ATTACHMENTS

LIST OF ACRONYMS AND ABBREVIATIONS

AEP	American Electric Power
ASD	Alternative Source Demonstration
CCR	Coal Combustion Residuals
CCV	Continuing Calibration Verification
CFR	Code of Federal Regulations
GWPS	Groundwater Protection Standard
LCL	Lower Confidence Limit
LFB	Laboratory Fortified Blanks
LRB	Laboratory Reagent Blanks
MCL	Maximum Contaminant Level
NELAP	National Environmental Laboratory Accreditation Program
QA	Quality Assurance
QC	Quality Control
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
SU	Standard Units
TDS	Total Dissolved Solids
UPL	Upper Prediction Limit
USEPA	United States Environmental Protection Agency
UTL	Upper Tolerance Limit

SECTION 1

EXECUTIVE SUMMARY

In accordance with the United States Environmental Protection Agency's (USEPA's) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (40 CFR 257.90-257.98, "CCR rule"), groundwater monitoring has been conducted at Ash Pond 1, an existing CCR unit at the Clinch River Plant located in Carbo, Virginia.

Eight monitoring events were completed from December 2017 to December 2018 to establish background concentrations for Appendix III and Appendix IV parameters under the CCR rule. Data collected in February and April 2019 were compared to the background concentrations to evaluate whether statistically significant increases (SSIs) or statistically significantly levels (SSLs) of Appendix III or Appendix IV constituents, respectively, were identified. SSIs were identified for calcium, chloride, pH, and sulfate, whereas SSLs were identified for barium, cobalt, lithium, and molybdenum at Ash Pond 1 (Geosyntec, 2019). An alternative source was not identified, so Ash Pond 1 initiated an assessment of corrective measures in accordance with 40 CFR 257.96. A semi-annual assessment monitoring event was completed in October 2019 as required by 40 CFR 257.96(b), with the results of the October 2019 event documented in this report.

Monitoring data from the October 2019 event underwent several validation tests, including those for completeness, sample tracking accuracy, transcription errors, and consistent use of measurement units. No data quality issues were identified which would impact the usability of the data.

Groundwater data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. The statistics were completed in three separate groups which correspond to differences in the underlying geology at the monitoring locations. Groundwater protection standards (GWPSs) were re-established for the Appendix IV parameters to assess whether Appendix IV parameters were present at an SSL above the GWPS. SSLs were identified for barium, cobalt, lithium, and molybdenum. Thus, the unit will continue to complete the corrective action process and will monitor the groundwater monitoring network in accordance with the assessment monitoring program as required by 40 CFR 275.96(b). Certification of the selected statistical methods by a qualified professional engineer is documented in Attachment A.

SECTION 2

BOTTOM ASH POND EVALUATION

2.1 Data Validation & QA/QC

During the assessment monitoring program, one set of samples was collected in October 2019 for analysis from each background and compliance well throughout three geologically distinct monitoring well networks to meet the requirements of 40 CFR 257.95(d)(1). The geological units consist of the Chattanooga Shale, the Rome Limestone, and the Dumps Fault water-bearing unit. Samples from the October 2019 event were analyzed for all Appendix III and Appendix IV parameters. A summary of data collected during these assessment monitoring events may be found in Table 1.

Chemical analysis was completed by an analytical laboratory certified by the National Environmental Laboratory Accreditation Program (NELAP). Quality assurance and quality control (QA/QC) samples completed by the analytical laboratory included the use of laboratory reagent blanks (LRBs), continuing calibration verification (CCV) samples, and laboratory fortified blanks (LFBs).

The analytical data were imported into a Microsoft Access database, where checks were completed to assess the accuracy of sample location information and analyte identification. Where necessary, unit conversions were applied to standardize reported units across all sampling events. Exported data files were created for use with the Sanitas™ v.9.6.23 statistics software. The export file was checked against the analytical data for transcription errors and completeness. No QA/QC issues were noted which would impact data usability.

2.2 Statistical Analysis

Statistical analyses for Ash Pond 1 were conducted in accordance with the April 2019 *Statistical Analysis Plan* (AEP, 2019b), except where noted below. Time series plots and results for all completed statistical tests are provided in Attachment B. Based on a visual inspection of the October 2019 data, no outliers were suspected, therefore, statistical testing for outliers of the October 2019 data was not performed. Outliers identified for the background monitoring period were previously reported (Geosyntec, 2019).

2.2.1 Establishment of GWPSs

A GWPS was established for each Appendix IV parameter in accordance with 40 CFR 257.95(h) and the *Statistical Analysis Plan* (AEP, 2019). The established GWPS was determined to be the greater value of the background concentration and the maximum contaminant level (MCL) or the CCR Rule level specified in 40 CFR 257.95(h)(2) for each Appendix IV parameter. To determine background concentrations, an upper tolerance limit (UTL) was calculated using pooled data from the background wells collected during the background monitoring and assessment monitoring

events. Generally, tolerance limits were calculated parametrically with 95% coverage and 95% confidence. Non-parametric tolerance limits were calculated in instances where data have either non-normal distributions or a high non-detect frequency. Non-parametric tolerance limits for Chattanooga Shale wells were calculated for arsenic, barium, beryllium, cadmium, chromium, fluoride, mercury, selenium, and thallium. Non-parametric tolerance limits for Rome Limestone wells were calculated for beryllium, lithium, mercury, and thallium. Non-parametric tolerance limits for Dumps Fault wells were calculated for beryllium, cadmium, mercury, molybdenum, and thallium. Tolerance limits and the final GWPSs are summarized in Tables 2A-2C.

2.2.2 Evaluation of Potential Appendix IV SSLs

A confidence interval was constructed for each Appendix IV parameter at each compliance well. Confidence limits were generally calculated parametrically ($\alpha = 0.01$); however, non-parametric confidence limits were calculated in some cases (e.g., when the data did not appear to be normally distributed or when the non-detect frequency was too high). An SSL was concluded if the lower confidence limit (LCL) exceeded the GWPS (i.e., if the entire confidence interval exceeded the GWPS). Calculated confidence limits are shown in Attachment B.

The following SSLs were identified at Clinch River Ash Pond 1:

- The LCL for barium at MW-1604 (3.06 mg/L) exceeded the GWPS of 2.00 mg/L in the Chattanooga formation.

- The LCL for cobalt at MW-1607 (0.00771 mg/L) exceeded the GWPS of 0.006 mg/L, the LCLs for lithium at MW-1606 (0.0690 mg/L) and MW-1607 (0.118 mg/L) exceeded the GWPS of 0.040 mg/L, and the LCL for molybdenum at MW-1607 (0.128 mg/L) exceeded the GWPS of 0.100 mg/L in the Rome Formation.

- The LCL for cobalt at MW-1610 (0.00760 mg/L) exceeded the GWPS of 0.006 mg/L and the LCL for molybdenum at MW-1610 (0.139 mg/L) exceeded the GWPS of 0.100 mg/L in the Dumps Fault water bearing unit.

As a result, Clinch River Ash Pond 1 will continue the assessment of corrective measures and continue to monitor the groundwater monitoring network in accordance with the assessment monitoring program per 40 CFR 257.95.

2.2.3 Evaluation of Potential Appendix III SSIs

While SSLs were identified, a review of the Appendix III results were also completed to assess whether concentrations of Appendix III parameters at the compliance wells exceeded background concentrations. Prediction limits were calculated for the Appendix III parameters to represent background values. As described in the July 2019 *Statistical Analysis Summary* report (Geosyntec, 2019):

- Intrawell tests were used to evaluate potential SSIs for boron, sulfate, and total dissolved solids (TDS), whereas interwell tests were used for calcium, chloride, fluoride, and pH in the Chattanooga formation.

- Intrawell tests were used to evaluate potential SSIs for boron, calcium, fluoride, pH, and TDS, whereas interwell tests were used for chloride and sulfate in the Rome formation.

- Intrawell tests were used to evaluate potential SSIs for all Appendix III parameters in the Dumps Fault formation.

Prediction limits for the interwell tests were recalculated using data collected during the April 2019 assessment monitoring event. New data were tested for outliers prior to being added to the background dataset. The updated prediction limits were calculated for a one-of-two retesting procedure. The values of the updated prediction limits were similar to the values of the prediction limits calculated during detection monitoring.

For the intrawell tests, limited data made it possible to add only one data point (i.e., one sample from each compliance well) to each background dataset. Because one sample result is insufficient to compare against the existing background dataset, the prediction limits were not updated for the intrawell tests at this time. The intrawell prediction limits calculated previously were used to evaluate potential SSIs for the October 2019 event.

Data collected during the October 2019 assessment monitoring event from downgradient compliance wells were compared to the updated interwell prediction limits to evaluate results above background values. The results from this event and the prediction limits are summarized in Table 3. The following exceedances of the upper prediction limits (UPLs) were noted:

- Calcium concentrations exceeded the Chattanooga Shale interwell UPL of 7.77 at MW-1603 (26.7 mg/L), MW-1604 (30.9 mg/L), MW-1605 (47.6 mg/L), and MW-1612 (45.9 mg/L).

- Calcium concentrations exceeded the Dumps Fault intrawell UPL of 37.4 mg/L at MW-1610 (37.8 mg/L).

- Chloride concentrations exceeded the Chattanooga Shale interwell UPL of 45.8 mg/L at MW-1603 (124 mg/L) and MW-1605 (179 mg/L).

- Chloride concentrations exceeded the Rome Limestone interwell UPL of 4.13 mg/L at MW-1606 (13.6 mg/L) and MW-1607 (8.50 mg/L).

- Sulfate concentrations exceeded the Rome Limestone interwell UPL of 22.3 mg/L at MW-1606 (32.4 mg/L) and MW-1607 (147 mg/L).

Additionally, the following values below the lower prediction limits (LPLs) for pH were noted:

- pH values were below the Chattanooga Shale interwell LPL of 7.8 SU for MW-1603 (7.7), MW-1604 (7.1), and MW-1612 (7.1).

While the prediction limits were calculated for a one-of-two retesting procedure, SSIs were conservatively assumed if the initial (October 2019) sample was above the UPL or below the LPL. Thus, concentrations of Appendix III parameters exceeded background levels at compliance wells at the Clinch River Ash Pond 1 unit during assessment monitoring.

2.3 Conclusions

A semi-annual assessment monitoring event was conducted in accordance with the CCR Rule. The laboratory and field data were reviewed prior to statistical analysis, with no QA/QC issues identified that impacted data usability. GWPSs were re-established for the Appendix IV parameters. A confidence interval was constructed at each compliance well for each Appendix IV parameter; SSLs were concluded if the entire confidence interval exceeded the GWPS. SSLs were identified for barium, cobalt, lithium, and molybdenum. The Appendix III results were evaluated to assess whether concentrations of Appendix III parameters exceeded background levels. The prediction limits for the interwell tests were updated with additional data collected from the background wells. Prediction limits were recalculated using a one-of-two retesting procedure. The previously calculated prediction limits were used for the intrawell tests. Calcium, chloride, pH, and sulfate results exceeded background levels.

Based on this evaluation, the Clinch River Ash Pond 1 CCR unit will continue with the assessment of corrective measures and continue to monitor the groundwater monitoring network in accordance with the assessment monitoring program per 40 CFR 257.95

SECTION 3

REFERENCES

American Electric Power (AEP). 2019. Statistical Analysis Plan – Clinch River Plant. April.

Geosyntec Consultants (Geosyntec). 2019. Statistical Analysis Summary – Ash Pond 1, Clinch River Plant, Carbo, Virginia. July 15, 2019.

TABLES

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1601	MW-1602	MW-1603	MW-1604	MW-1605	MW-1606	MW-1607	MW-1608	MW-1609	MW-1610	MW-1611	MW-1612
		10/1/2019	10/1/2019	10/2/2019	10/2/2019	10/2/2019	10/1/2019	10/2/2019	10/1/2019	10/1/2019	10/1/2019	10/1/2019	10/2/2019
Antimony	µg/L	0.11	0.09 J	0.1 U	0.1 U	0.03 J	0.1 U	0.1 U	0.03 J	0.02 J	0.02 J	0.03 J	0.1 U
Arsenic	µg/L	21.1	1.92	2.84	2.98	2.75	8.33	1.64	1.46	0.19	1.28	9.46	0.56
Barium	µg/L	239	109	2380	3320	1160	120	72.4	35	412	235	100	2150
Beryllium	µg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Boron	mg/L	0.609	0.64	0.313	0.413	0.613	0.084	0.112	0.351	0.05 U	0.04 J	0.617	0.423
Cadmium	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.18	0.05 U	0.02 J	0.05 U	0.05 U	0.05 U
Calcium	mg/L	6.9	4.62	26.7	30.9	47.6	58.9	49.4	1.19	69	37.8	28.2	45.9
Chloride	mg/L	33.2	5.7	124	24.3	179	13.6	8.5	6.6	1.3	10.7	21.7	30.7
Chromium	µg/L	0.291	0.2 J	0.208	0.213	0.2 J	0.2 J	0.2 J	0.359	0.1 J	0.2 J	0.295	0.218
Cobalt	µg/L	0.088	0.02 J	0.318	0.672	0.125	4.66	6.74	0.159	0.634	6.35	0.055	0.182
Combined Radium	pCi/L	0.481	0.701	1.399	1.521	0.868	0.962	1.028	0.462	2.24	0.883	0.524	1.137
Fluoride	mg/L	2.09	1.54	0.1	0.2	0.31	0.19	0.18	0.39	0.25	0.18	1.06	0.14
Lead	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.358	0.228	0.214	0.935	3.28	0.08 J	0.2 U
Lithium	mg/L	0.108	0.0419	0.0767	0.0887	0.204	0.0717	0.132	0.0211	0.00107	0.192	0.0699	0.128
Mercury	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Molybdenum	µg/L	1 J	4.21	0.6 J	2 U	1 J	57.8	148	2 J	2 U	135	2.84	2.01
Selenium	µg/L	0.05 J	0.2 U	0.08 J	0.05 J	0.07 J	0.05 J	0.1 J	0.04 J	0.2 U	0.3	0.08 J	0.05 J
Total Dissolved Solids	mg/L	1480	530	480	407	768	350	290	457	282	258	771	533
Sulfate	mg/L	250	29.5	8.7	2.4	35.1	32.4	147	176	13.2	40.8	166	1.9
Thallium	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
pH	SU	8.27	8.55	7.65	7.06	7.77	7	7.84	8.65	7.44	7.46	7.82	7.07

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. For statistical analysis, parameters which were not detected were replaced with the reporting limit.
J: Estimated value. Parameter was detected in concentrations below the reporting limit.

Table 2A: Groundwater Protection Standards
Clinch River Plant - Ash Pond 1

Chattanooga Shale Monitoring Well Network			
Constituent Name	MCL	CCR Rule-Specified	Calculated UTL
Antimony, Total (mg/L)	0.006		0.00026
Arsenic, Total (mg/L)	0.01		0.026
Barium, Total (mg/L)	2		0.31
Beryllium, Total (mg/L)	0.004		0.0001
Cadmium, Total (mg/L)	0.005		0.00005
Chromium, Total (mg/L)	0.1		0.0013
Cobalt, Total (mg/L)	n/a	0.006	0.0005
Combined Radium, Total (pCi/L)	5		3.09
Fluoride, Total (mg/L)	4		2.32
Lead, Total (mg/L)	0.015		0.00094
Lithium, Total (mg/L)	n/a	0.04	0.2
Mercury, Total (mg/L)	0.002		0.001
Molybdenum, Total (mg/L)	n/a	0.1	0.021
Selenium, Total (mg/L)	0.05		0.0002
Thallium, Total (mg/L)	0.002		0.0005

Notes:
Grey cell indicates calculated UTL is higher than MCL or CCR Rule-specified value
MCL = Maximum Contaminant Level
Calculated UTL (Upper Tolerance Limit) represents site-specific background values
The higher of the calculated UTL or MCL/Rule-Specified Level is used as the GWPS.

Table 2B: Groundwater Protection Standards
Clinch River Plant - Ash Pond 1

Geosyntec Consultants, Inc.

Rome Limestone Monitoring Well Network			
Constituent Name	MCL	CCR Rule-Specified	Calculated UTL
Antimony, Total (mg/L)	0.006		0.00014
Arsenic, Total (mg/L)	0.01		0.0016
Barium, Total (mg/L)	2		0.56
Beryllium, Total (mg/L)	0.004		0.0001
Cadmium, Total (mg/L)	0.005		0.0001
Chromium, Total (mg/L)	0.1		0.0004
Cobalt, Total (mg/L)	n/a	0.006	0.0015
Combined Radium, Total (pCi/L)	5		3.49
Fluoride, Total (mg/L)	4		0.38
Lead, Total (mg/L)	0.015		0.0011
Lithium, Total (mg/L)	n/a	0.04	0.03
Mercury, Total (mg/L)	0.002		0.001
Molybdenum, Total (mg/L)	n/a	0.1	0.0036
Selenium, Total (mg/L)	0.05		0.00041
Thallium, Total (mg/L)	0.002		0.0005

Notes:
Grey cell indicates calculated UTL is higher than MCL or CCR Rule-specified value
MCL = Maximum Contaminant Level
Calculated UTL (Upper Tolerance Limit) represents site-specific background values
The higher of the calculated UTL or MCL/Rule-Specified Level is used as the GWPS.

Table 2C: Groundwater Protection Standards
Clinch River Plant - Ash Pond 1

Dumps Fault Monitoring Well Network			
Constituent Name	MCL	CCR Rule-Specified	Calculated UTL
Antimony, Total (mg/L)	0.006		0.00071
Arsenic, Total (mg/L)	0.01		0.05
Barium, Total (mg/L)	2		0.11
Beryllium, Total (mg/L)	0.004		0.0001
Cadmium, Total (mg/L)	0.005		0.00005
Chromium, Total (mg/L)	0.1		0.0011
Cobalt, Total (mg/L)	n/a	0.006	0.0002
Combined Radium, Total (pCi/L)	5		1.4
Fluoride, Total (mg/L)	4		1.34
Lead, Total (mg/L)	0.015		0.00023
Lithium, Total (mg/L)	n/a	0.04	0.18
Mercury, Total (mg/L)	0.002		0.001
Molybdenum, Total (mg/L)	n/a	0.1	0.0068
Selenium, Total (mg/L)	0.05		0.00014
Thallium, Total (mg/L)	0.002		0.0005

Notes:
Grey cell indicates calculated UTL is higher than MCL or CCR Rule-specified value
MCL = Maximum Contaminant Level
Calculated UTL (Upper Tolerance Limit) represents site-specific background values
The higher of the calculated UTL or MCL/Rule-Specified Level is used as the GWPS.

Table 3: Appendix III Data Summary
Clinch River Plant - Pond 1 Unit

Geosyntec Consultants, Inc.

Parameter	Unit	Description	Chattanooga Shale			
			MW-1603	MW-1604	MW-1605	MW-1612
		Date	10/2/2019	10/2/2019	10/2/2019	10/2/2019
Boron	mg/L	Intrawell Background Value (UPL)	0.599	0.524	0.722	0.603
		Detection Monitoring Result	0.313	0.413	0.613	0.423
Calcium	mg/L	Interwell Background Value (UPL)	7.77			
		Detection Monitoring Result	**26.7**	**30.9**	**47.6**	**45.9**
Chloride	mg/L	Interwell Background Value (UPL)	45.8			
		Detection Monitoring Result	**124**	24.3	**179**	30.7
Fluoride	mg/L	Interwell Background Value (UPL)	0.218	0.301	0.454	0.273
		Detection Monitoring Result	0.10	0.20	0.31	0.14
pH	SU	Interwell Background Value (UPL)	8.8			
		Interwell Background Value (LPL)	7.8			
		Detection Monitoring Result	**7.7**	**7.1**	7.8	**7.1**
Sulfate	mg/L	Intrawell Background Value (UPL)	59.9	9.99	129	23.3
		Detection Monitoring Result	8.70	2.40	35.1	1.90
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	798	424	892	643
		Detection Monitoring Result	480	407	768	533

Parameter	Unit	Description	Rome Limestone	
			MW-1606	MW-1607
		Date	10/1/2019	10/2/2019
Boron	mg/L	Intrawell Background Value (UPL)	0.225	0.212
		Detection Monitoring Result	0.084	0.112
Calcium	mg/L	Intrawell Background Value (UPL)	69.0	55.7
		Detection Monitoring Result	58.9	49.4
Chloride	mg/L	Intrawell Background Value (UPL)	4.13	
		Detection Monitoring Result	**13.6**	**8.50**
Fluoride	mg/L	Intrawell Background Value (UPL)	0.309	0.286
		Detection Monitoring Result	0.16	0.18
pH	SU	Intrawell Background Value (UPL)	7.4	8.3
		Intrawell Background Value (LPL)	6.7	7.3
		Detection Monitoring Result	7.0	7.8
Sulfate	mg/L	Interwell Background Value (UPL)	22.3	
		Detection Monitoring Result	**32.4**	**147**
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	399	491
		Detection Monitoring Result	350	290

Parameter	Unit	Description	Dumps Fault
			MW-1610
		Date	10/1/2019
Boron	mg/L	Intrawell Background Value (UPL)	0.141
		Detection Monitoring Result	0.04
Calcium	mg/L	Intrawell Background Value (UPL)	37.4
		Detection Monitoring Result	**37.8**
Chloride	mg/L	Intrawell Background Value (UPL)	13.3
		Detection Monitoring Result	10.7
Fluoride	mg/L	Intrawell Background Value (UPL)	0.237
		Detection Monitoring Result	0.18
pH	SU	Intrawell Background Value (UPL)	7.9
		Intrawell Background Value (LPL)	7.1
		Detection Monitoring Result	7.5
Sulfate	mg/L	Intrawell Background Value (UPL)	53.9
		Detection Monitoring Result	40.8
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	268
		Detection Monitoring Result	258

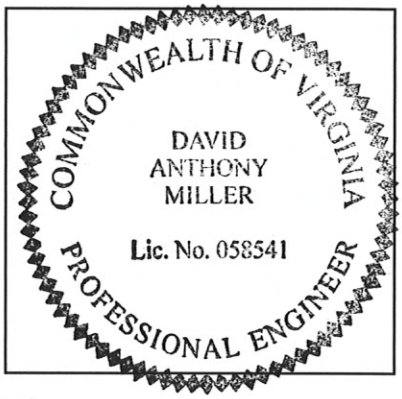
Notes:
UPL: Upper prediction limit
LPL: Lower prediction limit
Intrawell Background Values generated using data through February 2019
Interwell Background Values generated using data through April 2019
Bold values exceed the background value.
Background values are shaded gray.

ATTACHMENT A

Certification by Qualified Professional Engineer

Certification by Qualified Professional Engineer

I certify that the selected and above described statistical method is appropriate for evaluating the groundwater monitoring data for the Clinch River Ash Pond 1 CCR management area and that the requirements of 40 CFR 257.93(f) have been met.



DAVID ANTHONY MILLER
Printed Name of Licensed Professional Engineer

David Anthony Miller
Signature

058541	VIRGINIA	01.23.2020
License Number	Licensing State	Date

ATTACHMENT B

Statistical Analysis Output

GROUNDWATER STATS CONSULTING

January 22, 2020

Geosyntec Consultants
Attn: Ms. Allison Kreinberg
941 Chatham Lane, #103
Columbus, OH 43221

RE: Clinch River Pond 1 – Confidence Intervals

Dear Ms. Kreinberg,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the updated interwell prediction limits and the statistical evaluation of Appendix IV data for American Electric Power Company's Clinch River Pond 1. The analysis complies with the federal rule for the Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule, 2015) as well as with the USEPA Unified Guidance (2009).

Sampling began at the Clinch River Pond 1 for the CCR program in 2017 at each of the groundwater monitoring wells. The monitoring well network, as provided by Geosyntec Consultants, consists of the following three formations:

Chattanooga Shale:
Upgradient Wells: MW-1601, MW-1602, MW-1608
Downgradient Wells: MW-1603, MW-1604, MW-1605, MW-1612

Rome Limestone:
Cross-gradient (background) Well: MW-1609
Downgradient Wells: MW-1606, MW-1607

Dumps Fault:
Upgradient Well: MW-1611
Downgradient Well: MW-1610

Data were sent electronically, and the statistical analysis was conducted according to the Statistical Analysis Plan and screening evaluation prepared by GSC and approved by Dr. Kirk Cameron, PhD Statistician with MacStat Consulting, primary author of the USEPA Unified Guidance, and Senior Advisor to GSC.

The following Appendix IV constituents were evaluated: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 & 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium. Additionally, updated interwell prediction limits were constructed for the Chattanooga and Rome formations as described below.

Time series plots for Appendix IV parameters are provided for all wells and constituents; and are used to evaluate concentrations over the entire record (Figure A). Values flagged as outliers may be seen in a lighter font and disconnected symbol on the time series graphs. During this analysis the time series graphs were reviewed for any newly suspected outliers and none were identified; therefore, no formal testing with Tukey's outlier test was required. A summary of the previously flagged values follows this letter.

Interwell Prediction Limit Update

Interwell prediction limits are utilized at the Chattanooga formation for calcium, chloride and pH; and at the Rome formation for chloride and sulfate. Time series plots were reviewed using data through April 2019 at all upgradient wells for these constituents prior to construction of prediction limits to determine whether there were any suspected outliers (Figure B). All data were stable for each of these parameters in the upgradient wells.

Parametric prediction limits are utilized when the screened historical data follow a normal or transformed-normal distribution. When data cannot be normalized or the majority of data are nondetects, a nonparametric test is utilized. The distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. After testing for normality and performing any adjustments as discussed below (US EPA, 2009), data are analyzed using either parametric or non-parametric prediction limits.

- No statistical analyses are required on wells and analytes containing 100% nondetects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% nondetects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for nondetects is the practical quantification limit (PQL) as reported by the laboratory.

- When data contain between 15-50% nondetects, the Kaplan-Meier nondetect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit.
- Nonparametric prediction limits are used on data containing greater than 50% nondetects.

Interwell prediction limits combined with a 1-of-2 resample plan were constructed for the constituents listed above at each of the formations using all available upgradient well data through April 2019 (Figure C). These statistical limits will be used for future downgradient well comparisons.

In the event of an initial exceedance of compliance well data, the 1-of-2 resample plan allows for collection of an additional sample to determine whether the initial exceedance is confirmed. When the resample confirms the initial exceedance, a statistically significant increase (SSI) is identified and further research would be required to identify the cause of the exceedance (i.e. impact from the site, natural variation, or an off-site source). If the resample falls within the statistical limit, the initial exceedance is considered to be a false positive result and, therefore, no further action is necessary.

Evaluation of Appendix IV Parameters – December 2019

Interwell Tolerance limits were used to calculate background limits from all available pooled upgradient well data for Appendix IV parameters for comparison to established standards as described below (Figure D).

Parametric limits use a target of 95% confidence and 95% coverage. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. These limits were compared to the Maximum Contaminant Levels (MCLs) and CCR-Rule specified levels in the Groundwater Protection Standard (GWPS) table following this letter to determine the highest limit for use as the GWPS in the Confidence Interval comparisons (Figure E).

Confidence intervals were then constructed on downgradient wells for each of the Appendix IV parameters and compared to the highest limit of the MCL, CCR-Rule specified level, or background as discussed above (Figure F). Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard. No confidence interval exceedances were found except for the following:
Chattanooga – Barium in well MW-1604
Dumps Fault – Cobalt and Molybdenum in well MW-1610

Rome – Lithium in well MW-1606; Cobalt, Lithium, Molybdenum in well MW-1607

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Clinch River Pond 1. If you have any questions or comments, please feel free to contact me.

For Groundwater Stats Consulting,

Kristina L. Rayner
Groundwater Statistician

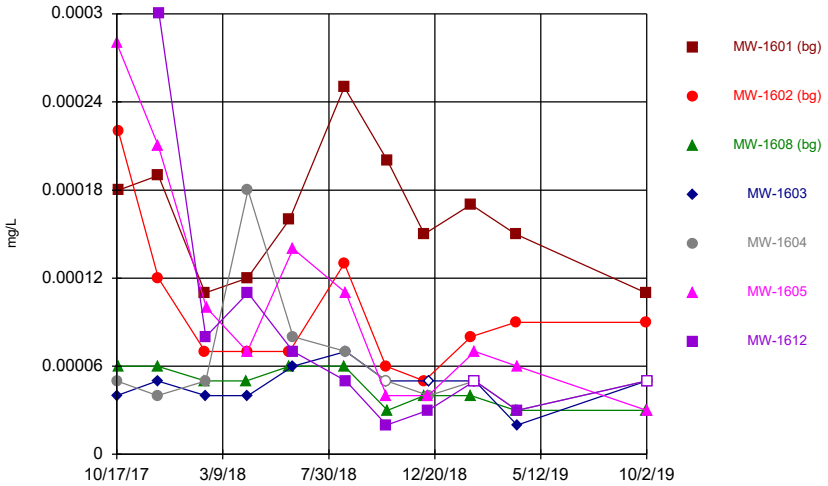
Outlier Summary

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 12:16 PM

	MW-1610 Antimony (mg/L)	MW-1611 Cobalt (mg/L)	MW-1603 Combined Radium 226 + 228 (pCi/L)	MW-1611 Lead (mg/L)	MW-1611 Molybdenum (mg/L)
10/17/2017	0.00022 (o)		3.23 (o)		
10/19/2017		0.000311 (o)		0.00105 (o)	0.038 (o)

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

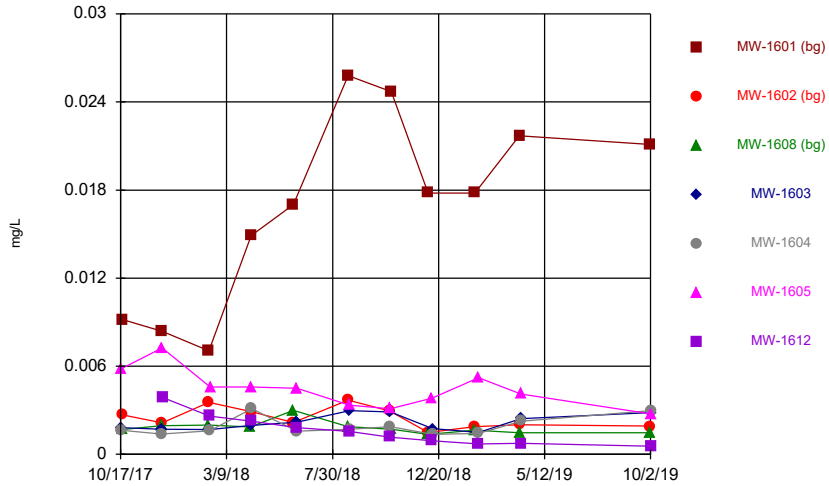
Time Series



Constituent: Antimony Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

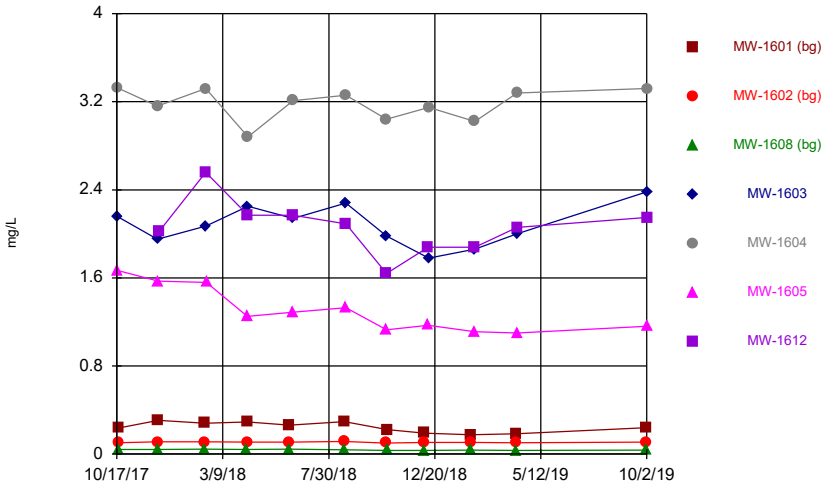
Time Series



Constituent: Arsenic Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

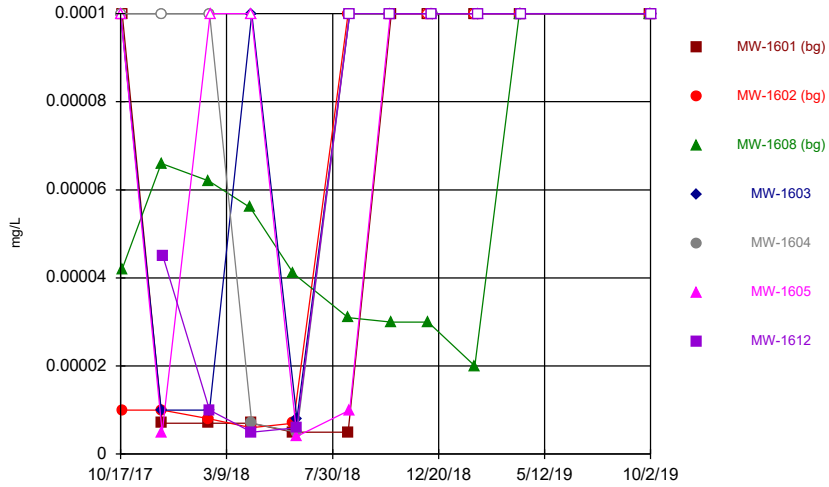
Time Series



Constituent: Barium Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

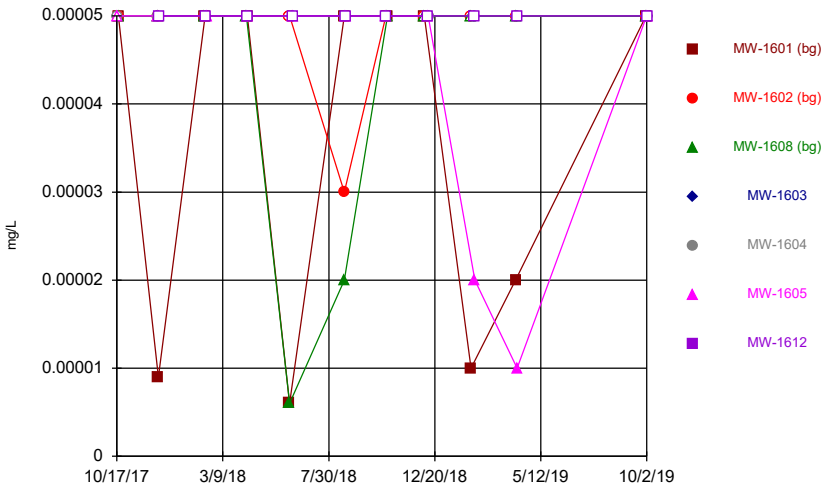
Time Series



Constituent: Beryllium Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

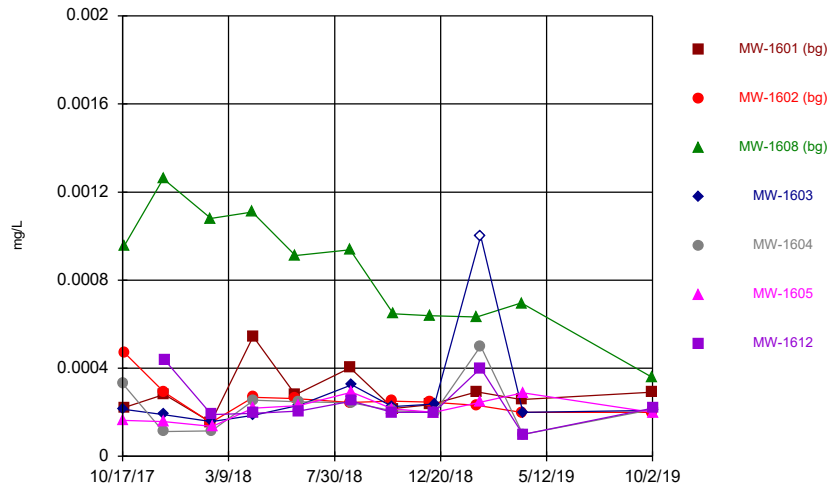
Time Series



Constituent: Cadmium Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

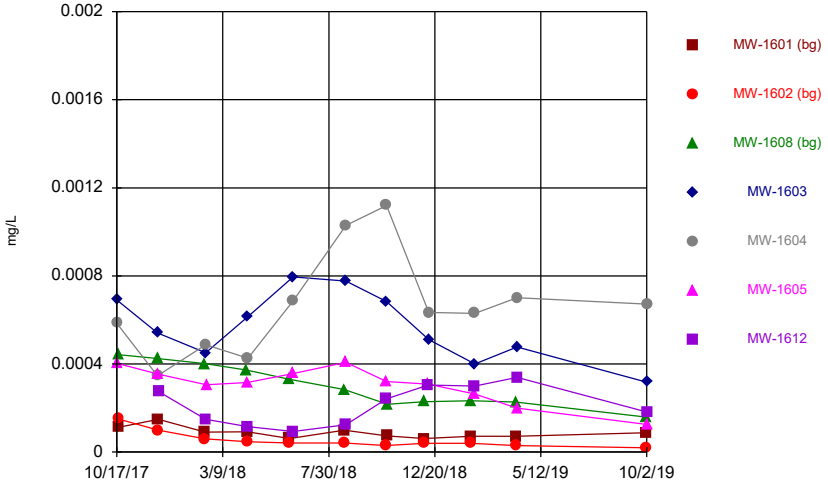
Time Series



Constituent: Chromium Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

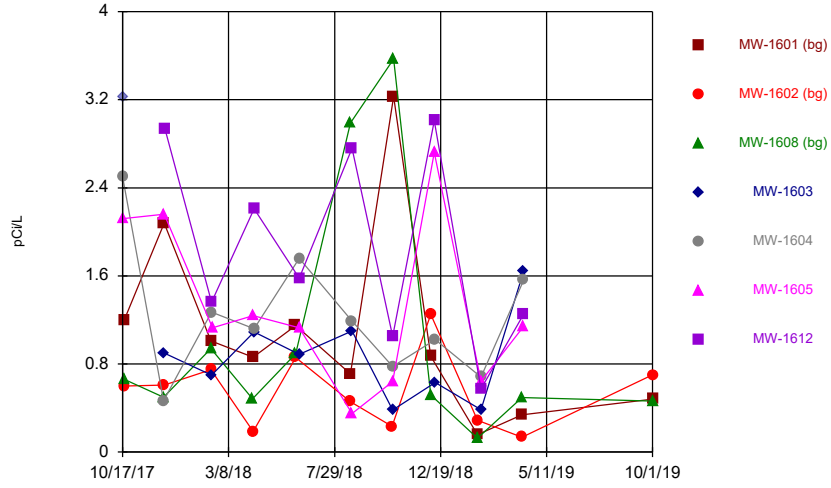
Time Series



Constituent: Cobalt Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

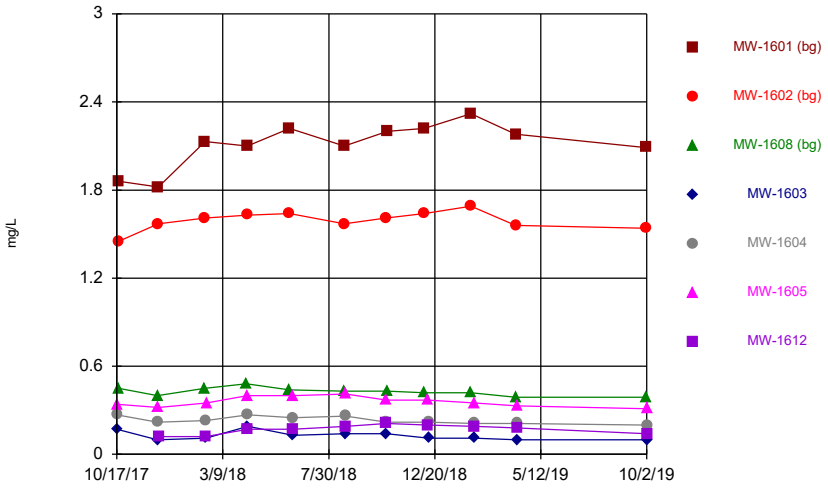
Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR D
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series



Constituent: Fluoride Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR Descriptive
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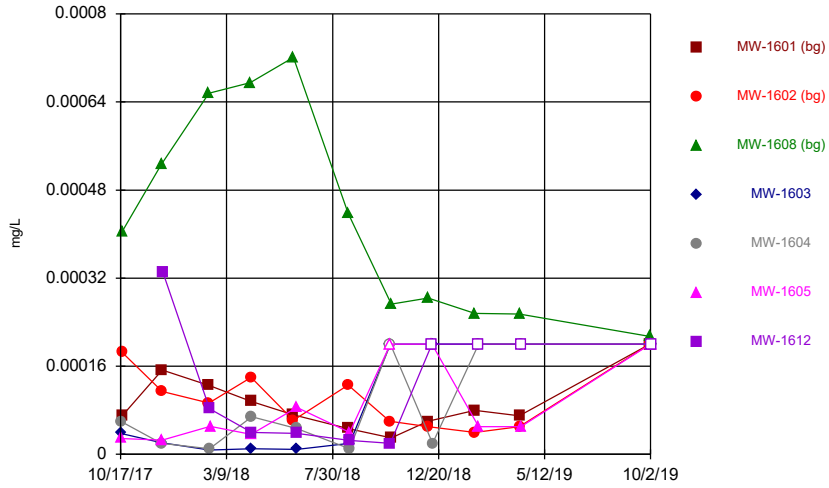
Hollow symbols indicate censored values.

Time Series



Constituent: Lead Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR Descriptive
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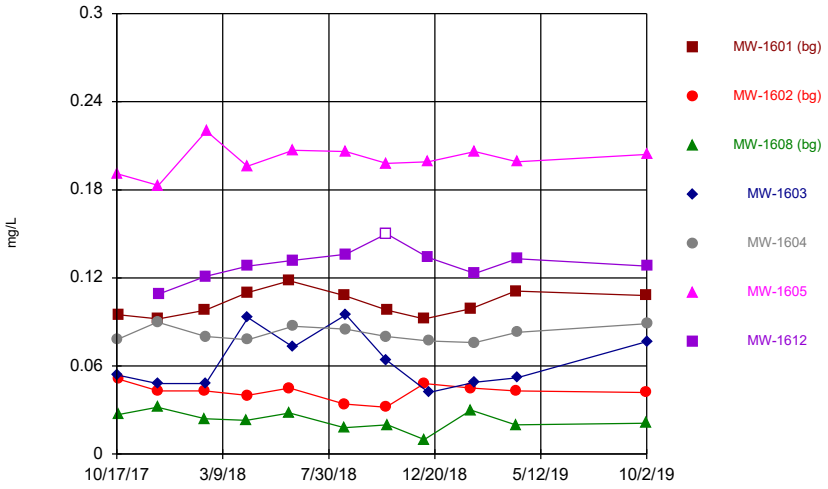
Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

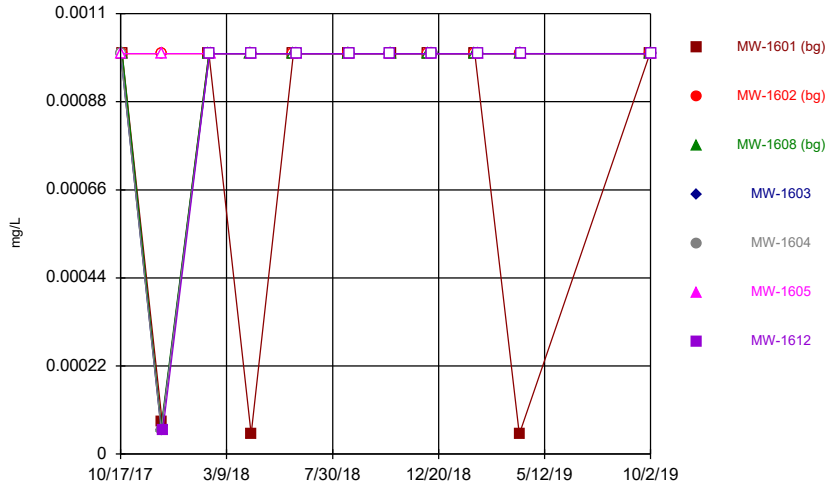
Time Series



Constituent: Lithium Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

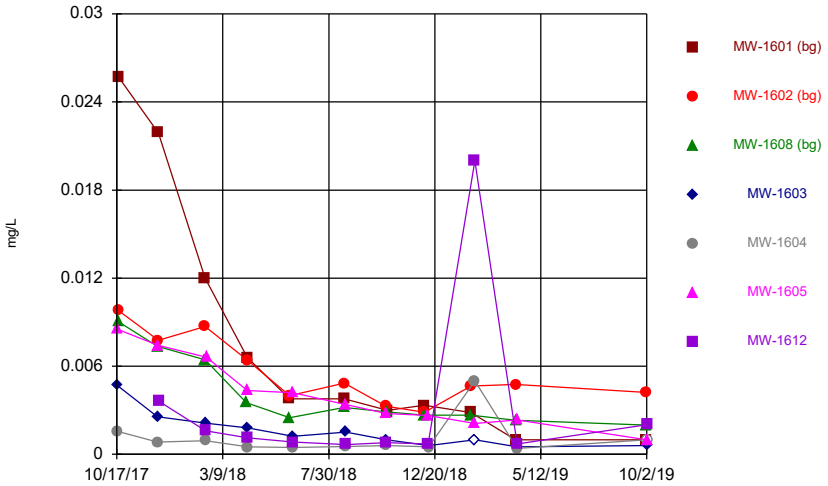
Time Series



Constituent: Mercury Analysis Run 12/22/2019 12:30 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Molybdenum Analysis Run 12/22/2019 12:31 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
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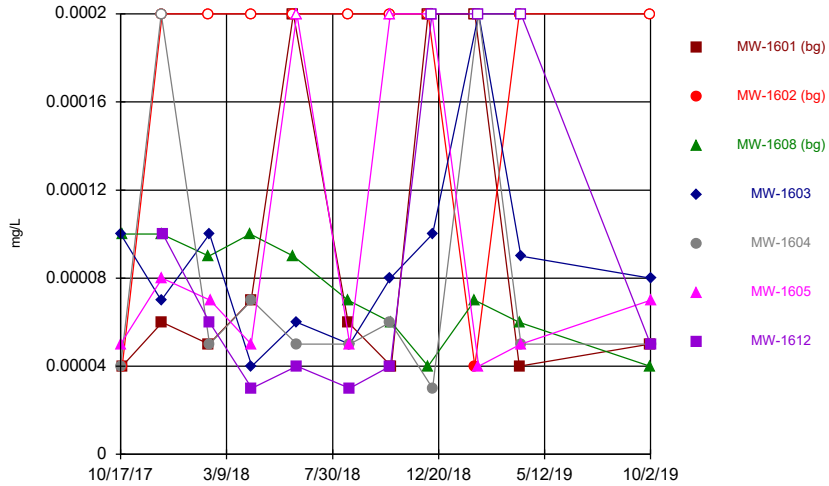
Time Series



Constituent: Selenium Analysis Run 12/22/2019 12:31 PM View: Chattanooga CCR Descriptive
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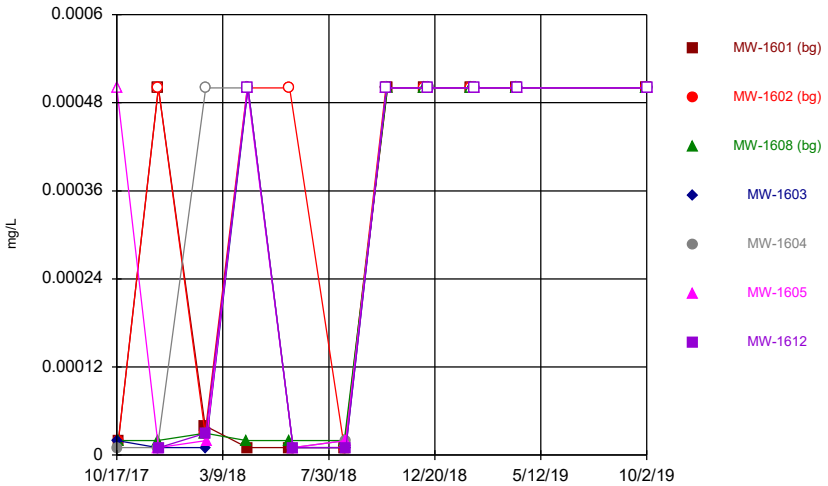

Constituent: Thallium Analysis Run 12/22/2019 12:31 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

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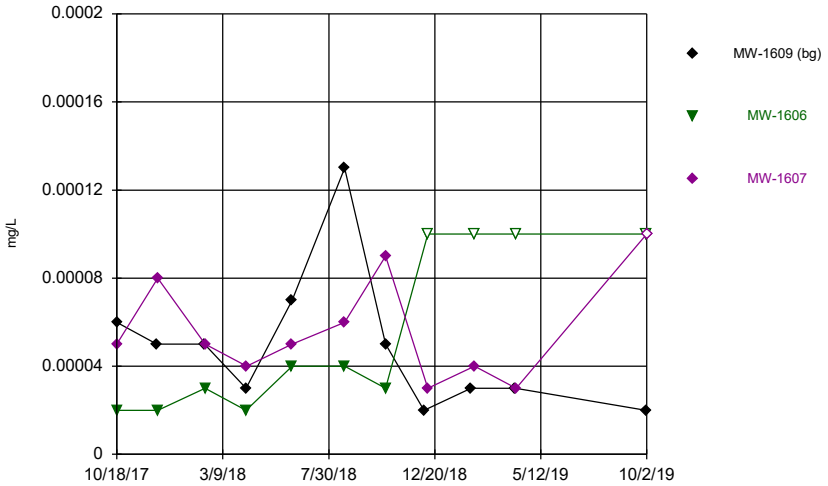
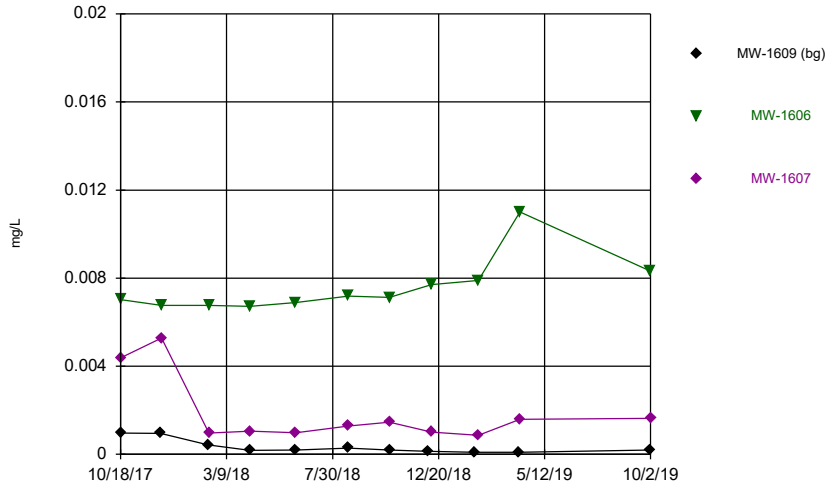


Constituent: Antimony Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

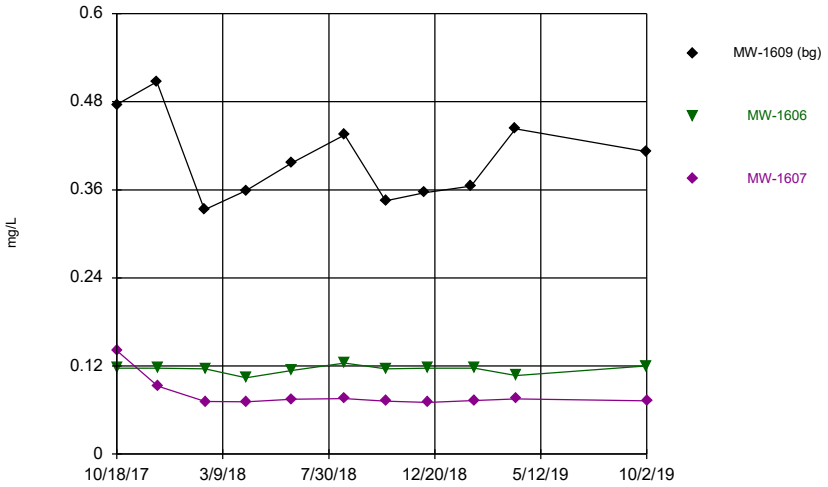
Time Series



Constituent: Arsenic Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series



Constituent: Barium Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

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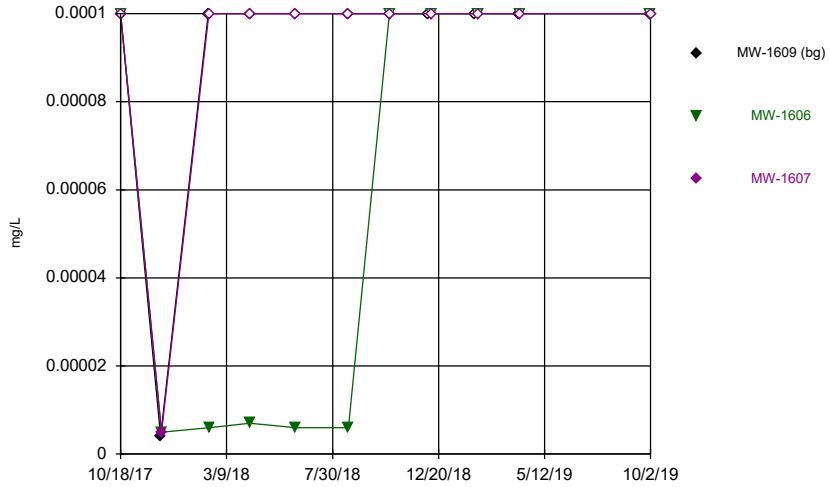
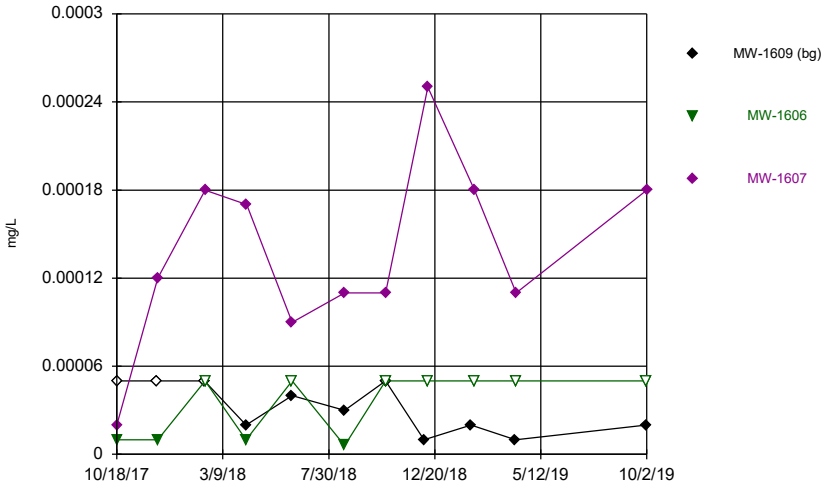


Constituent: Beryllium Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

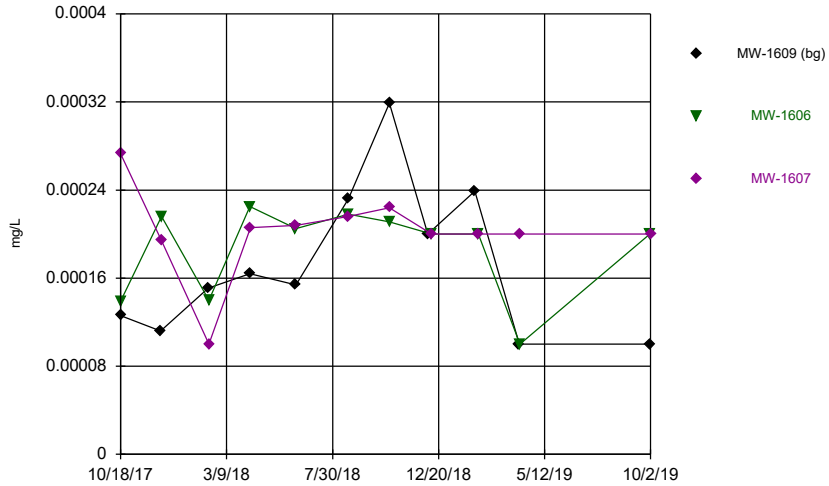
Time Series



Constituent: Cadmium Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

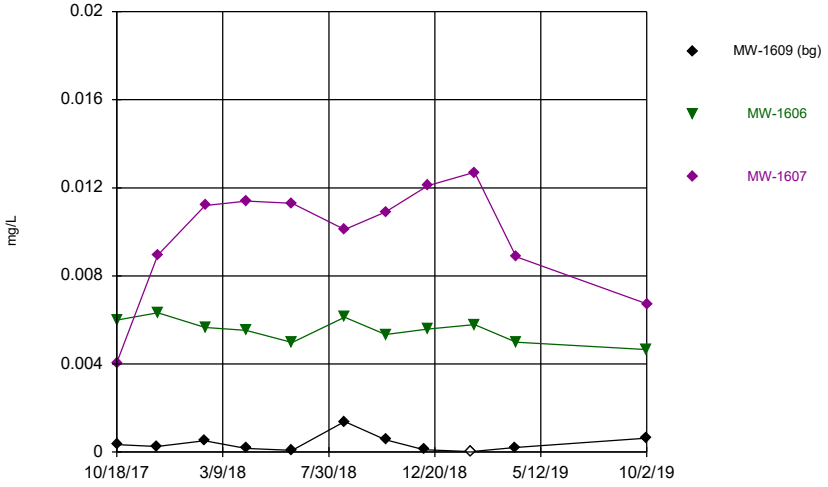
Time Series



Constituent: Chromium Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

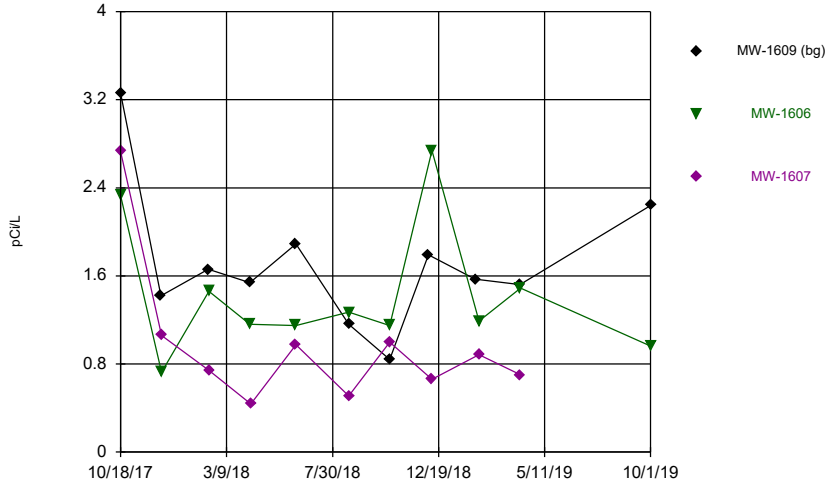
Time Series



Constituent: Cobalt Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

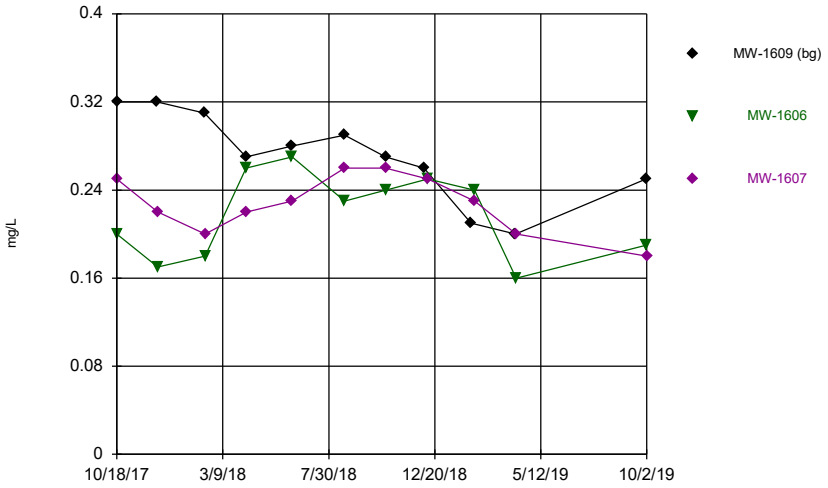
Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

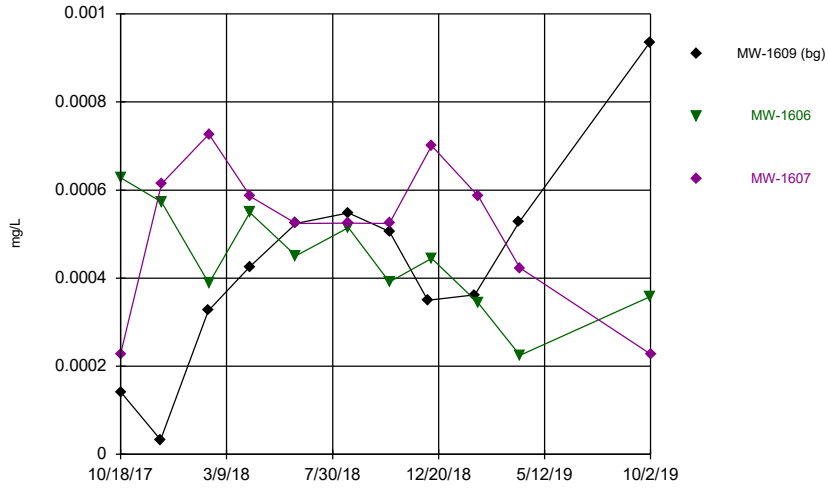
Time Series



Constituent: Fluoride Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

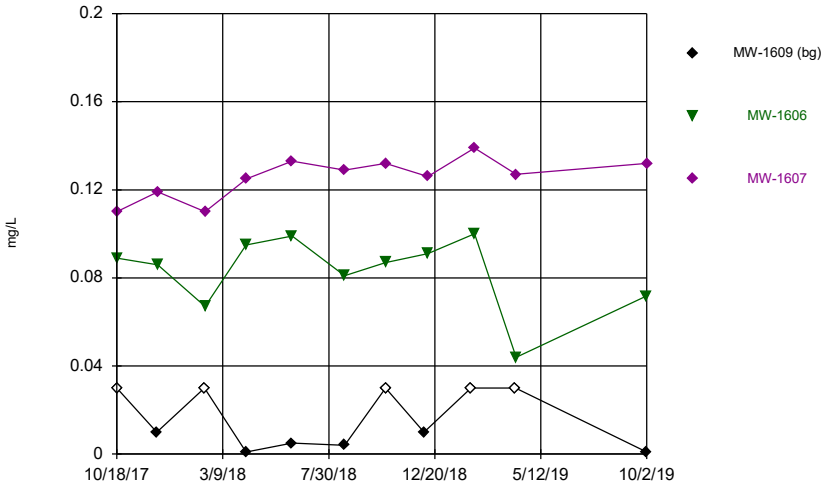
Time Series



Constituent: Lead Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

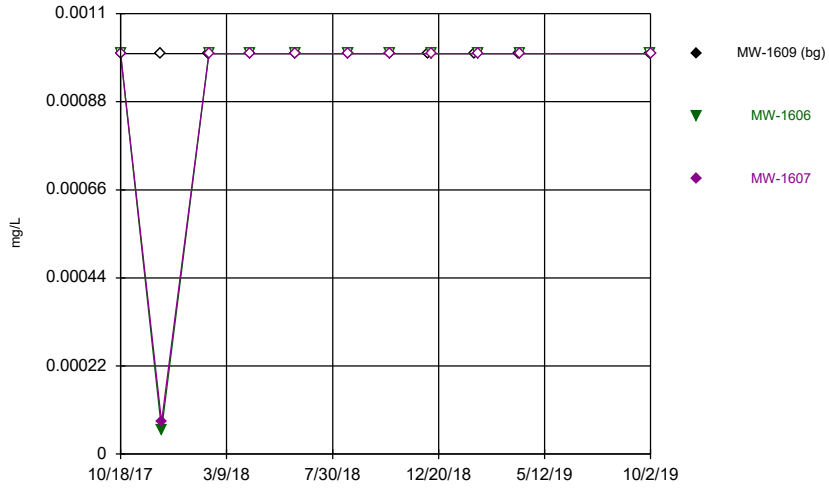
Time Series



Constituent: Lithium Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

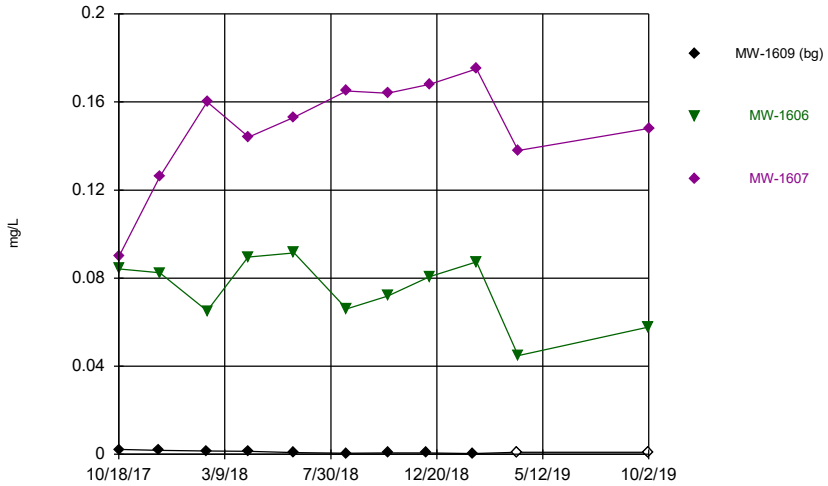
Time Series



Constituent: Mercury Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

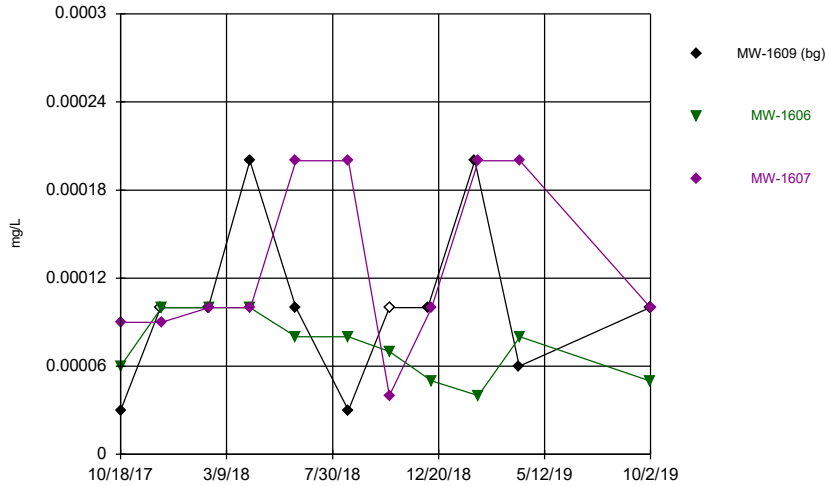
Time Series



Constituent: Molybdenum Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

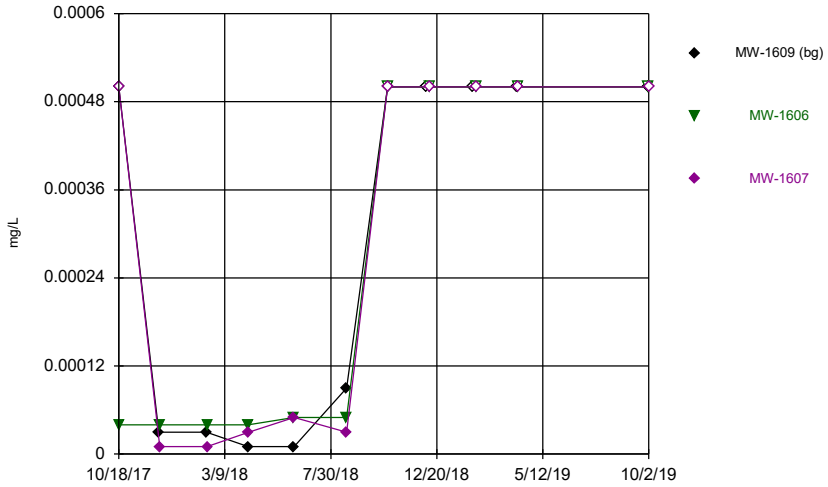
Time Series



Constituent: Selenium Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

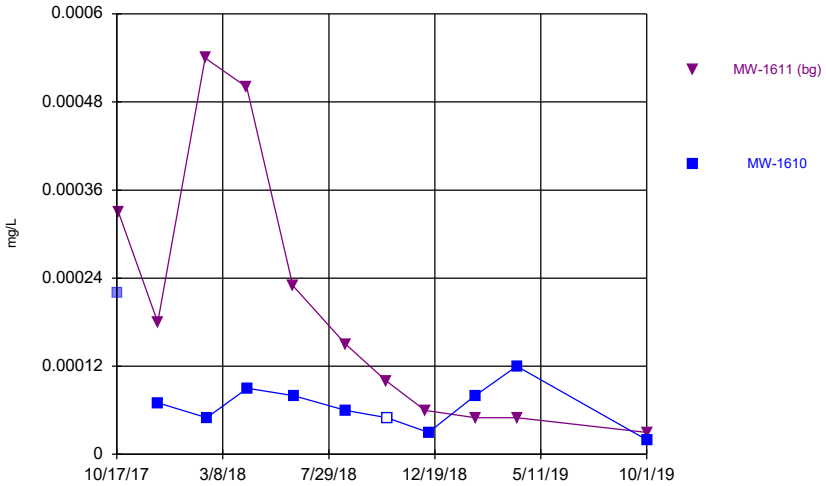
Time Series



Constituent: Thallium Analysis Run 12/22/2019 12:29 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

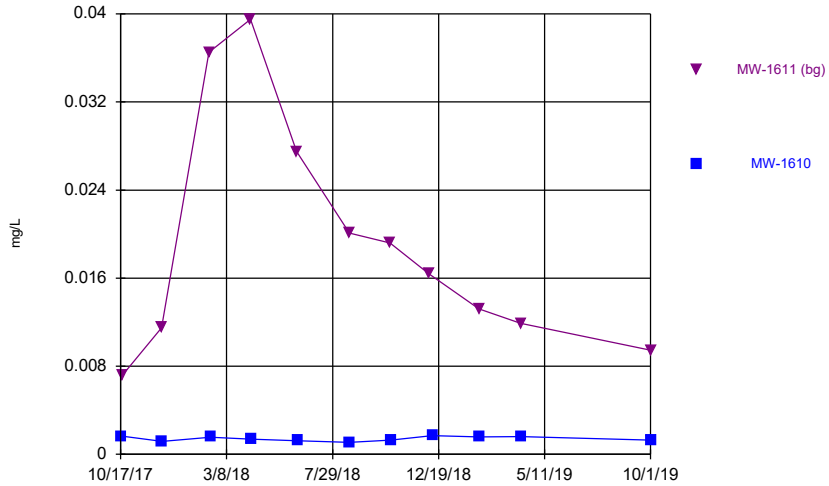
Time Series



Constituent: Antimony Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

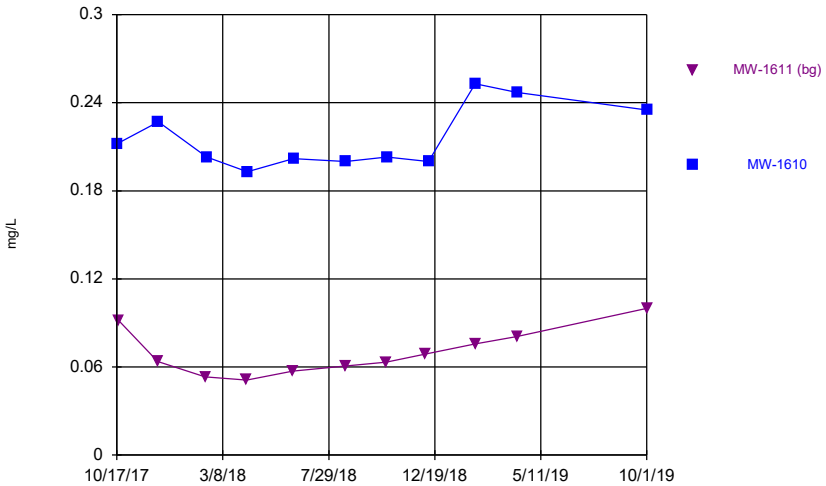
Time Series



Constituent: Arsenic Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

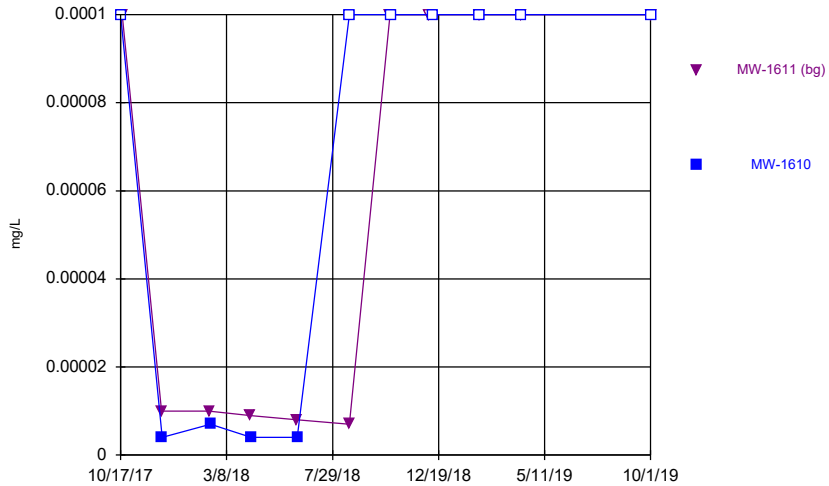
Time Series



Constituent: Barium Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

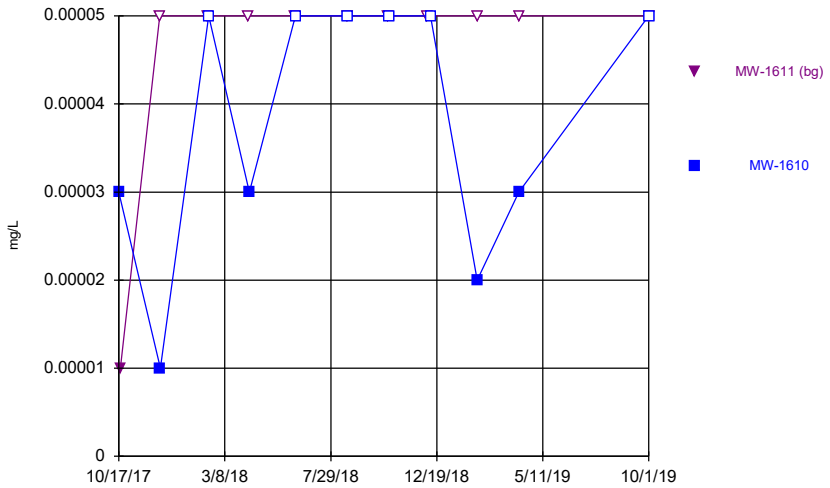
Time Series



Constituent: Beryllium Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

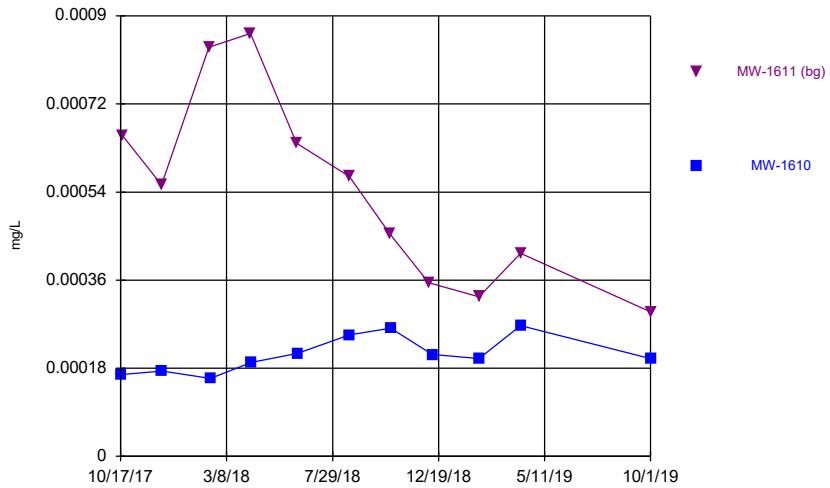
Time Series



Constituent: Cadmium Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

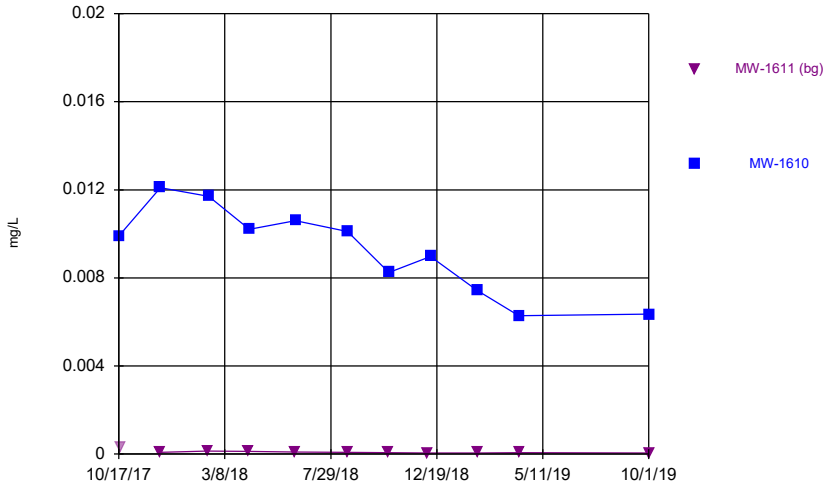
Time Series



Constituent: Chromium Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

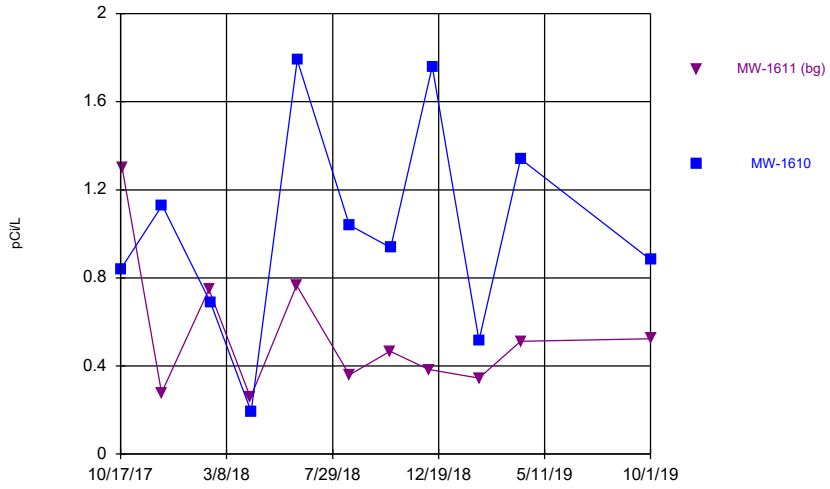
Time Series



Constituent: Cobalt Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

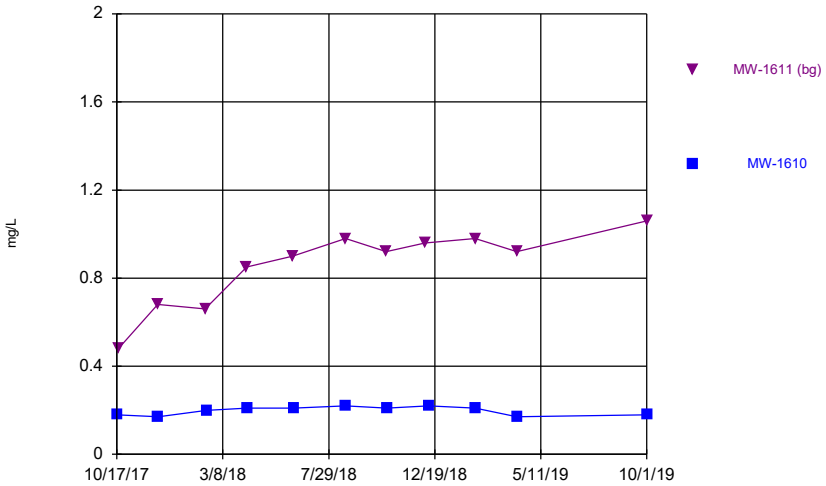
Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

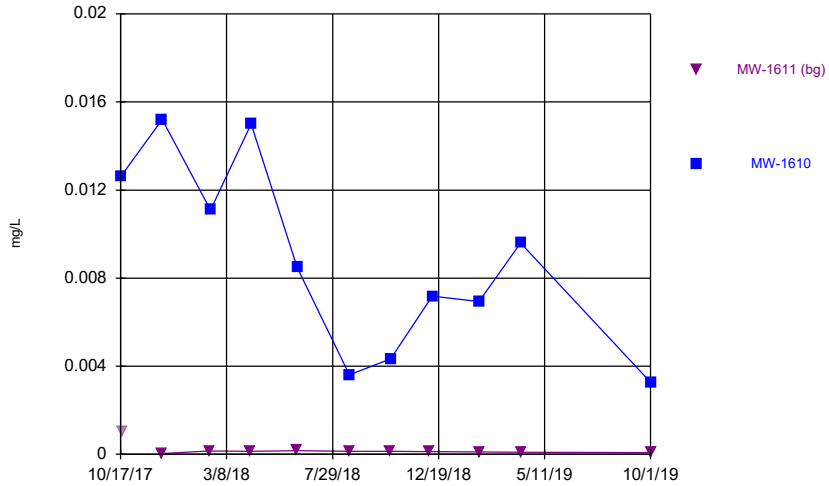
Time Series



Constituent: Fluoride Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

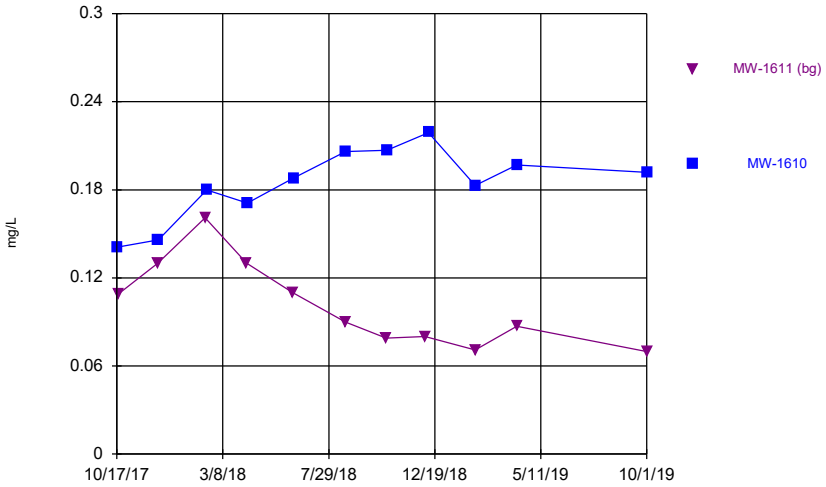
Time Series



Constituent: Lead Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

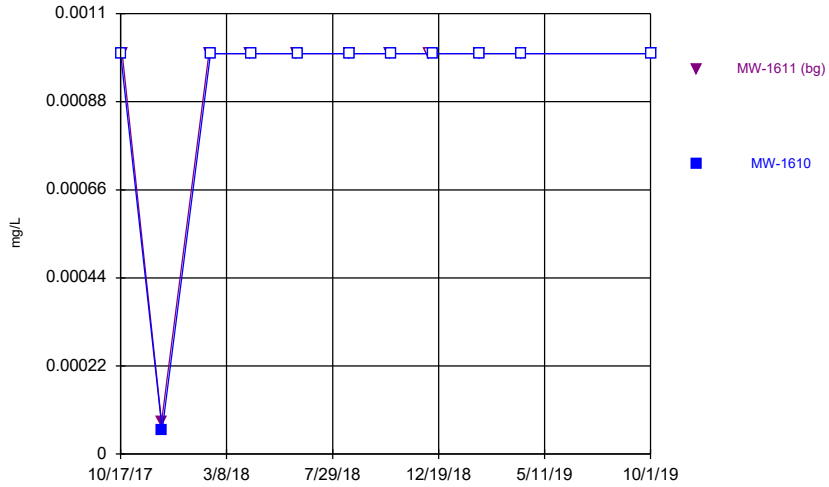
Time Series



Constituent: Lithium Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

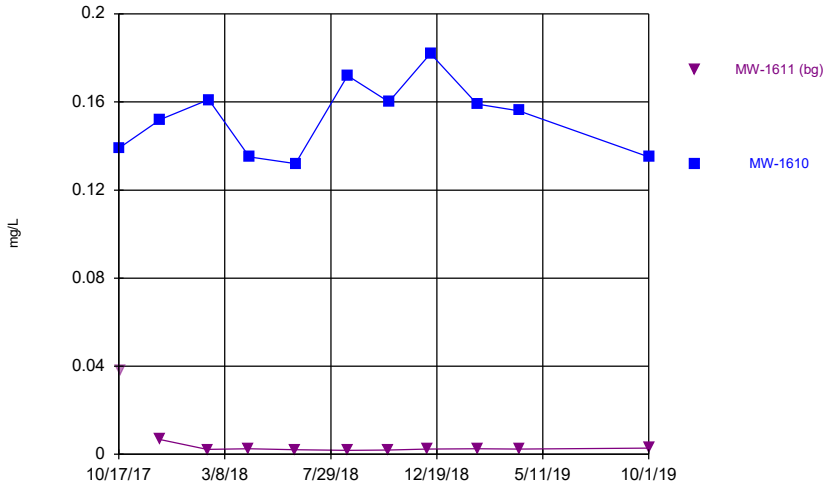
Time Series



Constituent: Mercury Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

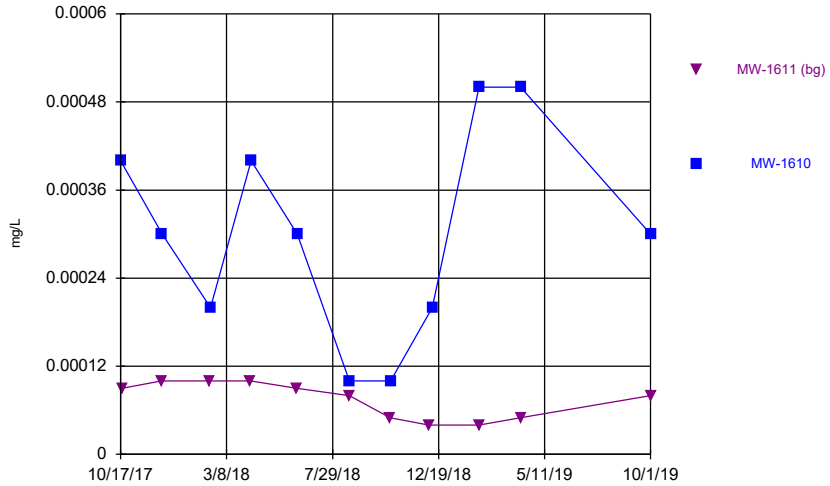
Time Series



Constituent: Molybdenum Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

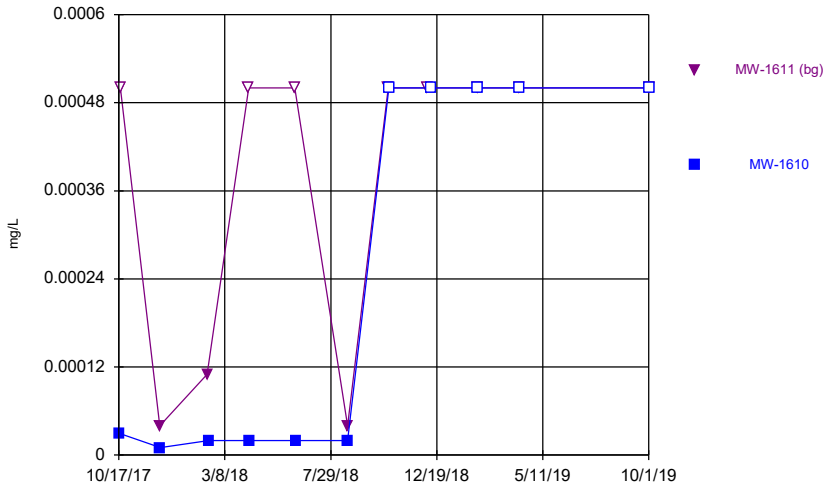
Time Series



Constituent: Selenium Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

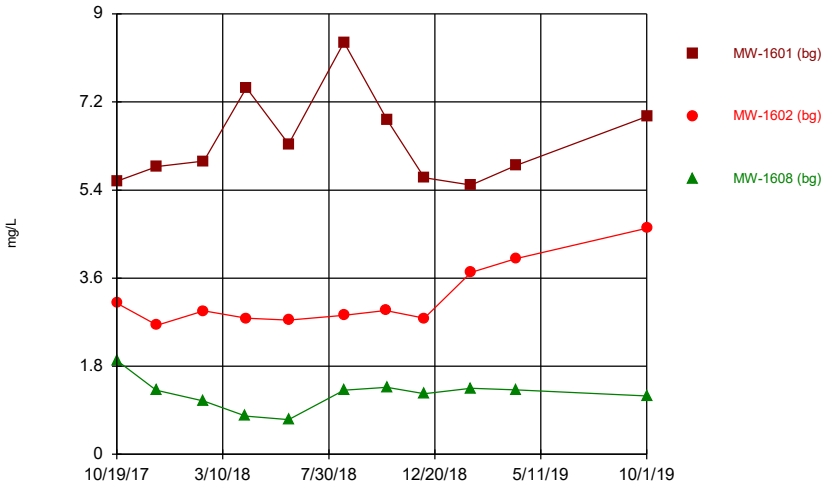
Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Thallium Analysis Run 12/22/2019 12:32 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

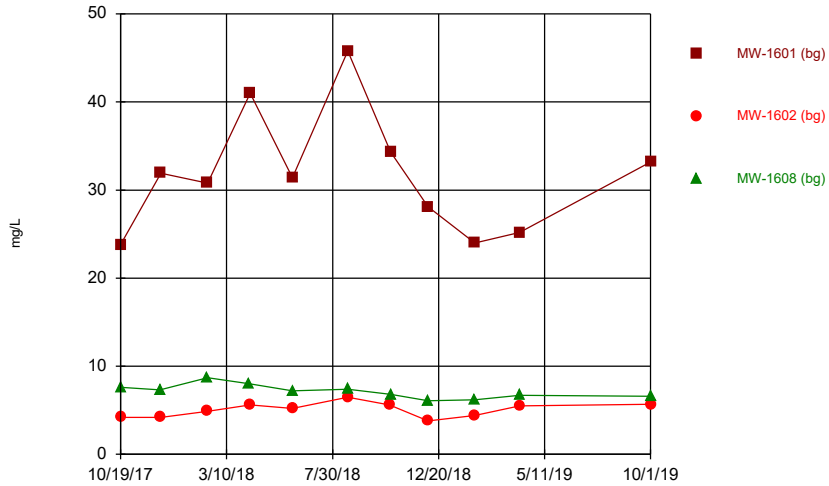
Time Series



Constituent: Calcium Analysis Run 12/22/2019 1:09 PM View: PL's - Interwell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

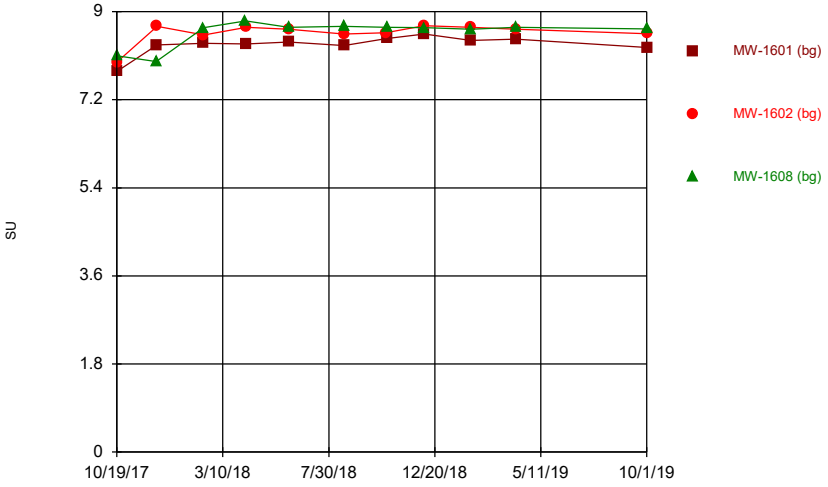
Time Series



Constituent: Chloride Analysis Run 12/22/2019 1:09 PM View: PL's - Interwell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

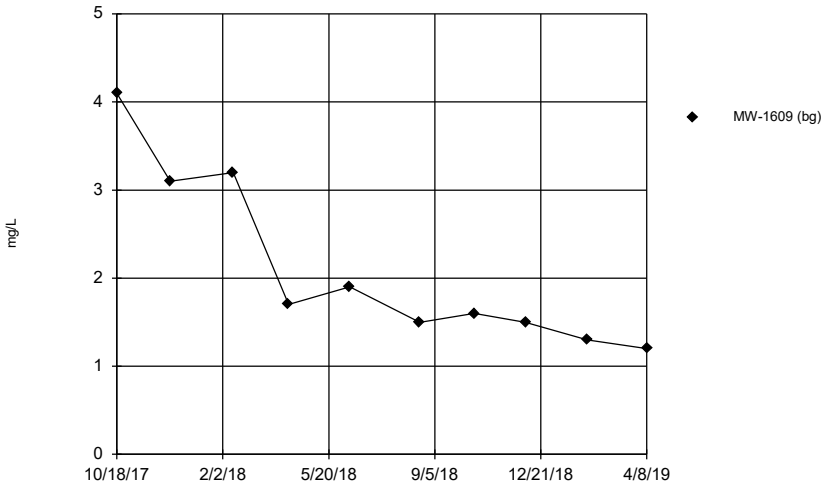
Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series



Constituent: pH Analysis Run 12/22/2019 1:09 PM View: PL's - Interwell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

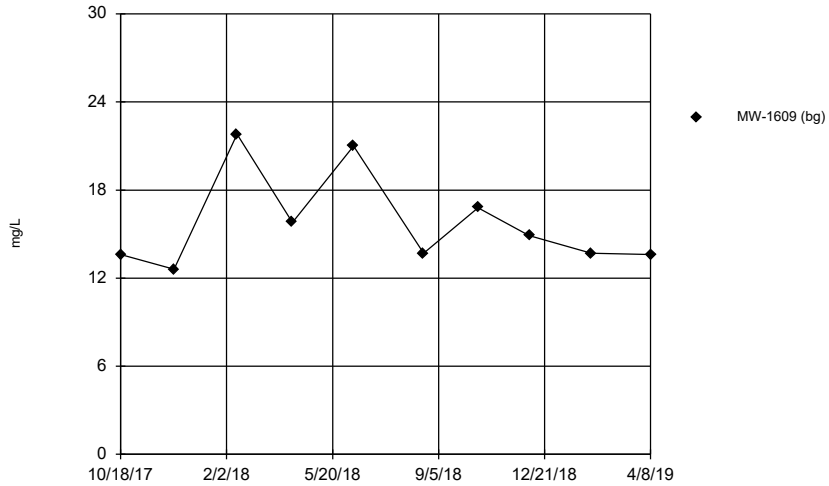
Time Series



Constituent: Chloride Analysis Run 12/22/2019 1:23 PM View: PL's - Interwell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series



Constituent: Sulfate Analysis Run 12/22/2019 1:23 PM View: PL's - Interwell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Interwell Prediction Limit Summary - Chattanooga

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 1/20/2020, 3:58 PM

Constituent	Well	Upper Lim.	Lower Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Calcium (mg/L)	n/a	7.765	n/a	30	3.548	2.243	0	None	No	0.00188	Param Inter 1 of 2
Chloride (mg/L)	n/a	45.8	n/a	30	n/a	n/a	0	n/a	n/a	0.001957	NP Inter (normality) 1 of 2
pH (SU)	n/a	8.81	7.78	30	n/a	n/a	0	n/a	n/a	0.003914	NP Inter (normality) 1 of 2

Interwell Prediction Limit Summary - Rome

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 12:55 PM

Constituent	Well	Upper Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Chloride (mg/L)	n/a	4.134	10	2.11	0.9905	0	None	No	0.003756	Param Inter 1 of 2
Sulfate (mg/L)	n/a	22.34	10	15.75	3.224	0	None	No	0.003756	Param Inter 1 of 2

Tolerance Limit Summary Table - Chattanooga

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 11:24 AM

Constituent	Well	Upper Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	n/a	0.0002585	33	0.009651	0.002937	0	None	sqrt(x)	0.05	Inter
Arsenic (mg/L)	n/a	0.0258	33	n/a	n/a	0	n/a	n/a	0.184	NP Inter(normality)
Barium (mg/L)	n/a	0.306	33	n/a	n/a	0	n/a	n/a	0.184	NP Inter(normality)
Beryllium (mg/L)	n/a	0.0001	33	n/a	n/a	42.42	n/a	n/a	0.184	NP Inter(normality)
Cadmium (mg/L)	n/a	0.00005	33	n/a	n/a	78.79	n/a	n/a	0.184	NP Inter(NDs)
Chromium (mg/L)	n/a	0.00126	33	n/a	n/a	0	n/a	n/a	0.184	NP Inter(normality)
Cobalt (mg/L)	n/a	0.0004782	33	0.01119	0.004883	0	None	sqrt(x)	0.05	Inter
Combined Radium 226 + 228 (pCi/L)	n/a	3.086	33	0.8958	0.256	0	None	x^(1/3)	0.05	Inter
Fluoride (mg/L)	n/a	2.32	33	n/a	n/a	0	n/a	n/a	0.184	NP Inter(normality)
Lead (mg/L)	n/a	0.000941	33	-8.913	0.8889	6.061	None	ln(x)	0.05	Inter
Lithium (mg/L)	n/a	0.1971	33	-3.088	0.6691	0	None	ln(x)	0.05	Inter
Mercury (mg/L)	n/a	0.001	33	n/a	n/a	87.88	n/a	n/a	0.184	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.02127	33	-5.43	0.7222	0	None	ln(x)	0.05	Inter
Selenium (mg/L)	n/a	0.0002	33	n/a	n/a	36.36	n/a	n/a	0.184	NP Inter(normality)
Thallium (mg/L)	n/a	0.0005	33	n/a	n/a	57.58	n/a	n/a	0.184	NP Inter(normality)

Tolerance Limit Summary Table - Dumps Fault

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 11:55 AM

Constituent	Well	Upper Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	n/a	0.000713	11	0.0002018	0.0001816	0	None	No	0.05	Inter
Arsenic (mg/L)	n/a	0.04985	11	0.01931	0.01085	0	None	No	0.05	Inter
Barium (mg/L)	n/a	0.1142	11	0.06965	0.01582	0	None	No	0.05	Inter
Beryllium (mg/L)	n/a	0.0001	11	n/a	n/a	54.55	n/a	n/a	0.5688	NP Inter(normality)
Cadmium (mg/L)	n/a	0.00005	11	n/a	n/a	90.91	n/a	n/a	0.5688	NP Inter(NDs)
Chromium (mg/L)	n/a	0.001092	11	0.0005425	0.000195	0	None	No	0.05	Inter
Cobalt (mg/L)	n/a	0.0001602	10	0.0000791	0.00002787	0	None	No	0.05	Inter
Combined Radium 226 + 228 (pCi/L)	n/a	1.395	11	0.5401	0.3036	0	None	No	0.05	Inter
Fluoride (mg/L)	n/a	1.344	11	0.8536	0.1744	0	None	No	0.05	Inter
Lead (mg/L)	n/a	0.000229	10	0.0001173	0.00003838	0	None	No	0.05	Inter
Lithium (mg/L)	n/a	0.1838	11	0.1015	0.02921	0	None	No	0.05	Inter
Mercury (mg/L)	n/a	0.001	11	n/a	n/a	90.91	n/a	n/a	0.5688	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.00676	10	n/a	n/a	0	n/a	n/a	0.5987	NP Inter(normality)
Selenium (mg/L)	n/a	0.0001439	11	0.00007455	0.00002464	0	None	No	0.05	Inter
Thallium (mg/L)	n/a	0.0005	11	n/a	n/a	72.73	n/a	n/a	0.5688	NP Inter(normality)

Tolerance Limit Summary Table - Rome

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 12:09 PM

Constituent	Well	Upper Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	n/a	0.0001376	11	0.00004909	0.00003145	0	None	No	0.05	Inter
Arsenic (mg/L)	n/a	0.00161	11	0.06472	0.01865	0	None	x^(1/3)	0.05	Inter
Barium (mg/L)	n/a	0.5636	11	0.4025	0.05722	0	None	No	0.05	Inter
Beryllium (mg/L)	n/a	0.0001	11	n/a	n/a	90.91	n/a	n/a	0.5688	NP Inter(NDs)
Cadmium (mg/L)	n/a	0.0001044	11	0.00003732	0.00002384	36.36	Cohen`s	No	0.05	Inter
Chromium (mg/L)	n/a	0.0003662	11	0.0001725	0.00006884	0	None	No	0.05	Inter
Cobalt (mg/L)	n/a	0.001477	11	0.0003895	0.0003864	9.091	None	No	0.05	Inter
Combined Radium 226 + 228 (pCi/L)	n/a	3.486	11	1.717	0.6284	0	None	No	0.05	Inter
Fluoride (mg/L)	n/a	0.3838	11	0.2709	0.04011	0	None	No	0.05	Inter
Lead (mg/L)	n/a	0.001089	11	0.0004255	0.0002357	0	None	No	0.05	Inter
Lithium (mg/L)	n/a	0.03	11	n/a	n/a	45.45	n/a	n/a	0.5688	NP Inter(Cohens/xform)
Mercury (mg/L)	n/a	0.001	11	n/a	n/a	100	n/a	n/a	0.5688	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.003627	11	0.001333	0.0008148	18.18	Cohen`s	No	0.05	Inter
Selenium (mg/L)	n/a	0.0004058	11	0.0001447	0.00009272	27.27	Cohen`s	No	0.05	Inter
Thallium (mg/L)	n/a	0.0005	11	n/a	n/a	54.55	n/a	n/a	0.5688	NP Inter(normality)

Confidence Interval Summary Table - Dumps Fault Significant Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 11:55 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Cobalt (mg/L)	**MW-1610**	**0.01092**	**0.007603**	**0.006**	**Yes**	**11**	**0.009262**	**0.00199**	**0**	**None**	**No**	**0.01**	**Param.**
Molybdenum (mg/L)	**MW-1610**	**0.1666**	**0.1394**	**0.1**	**Yes**	**11**	**0.153**	**0.01627**	**0**	**None**	**No**	**0.01**	**Param.**

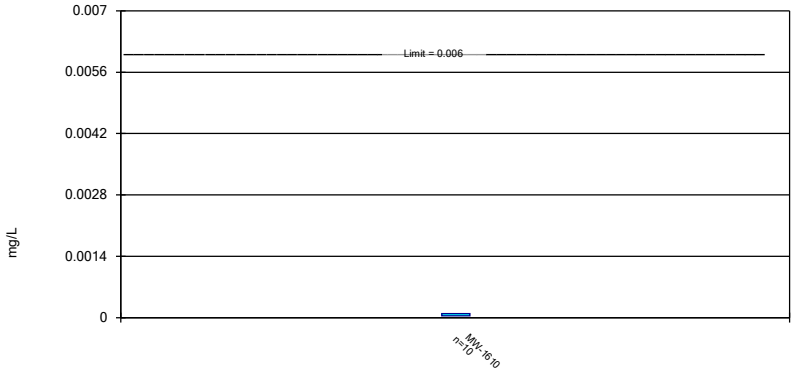
Confidence Interval Summary Table - Dumps Fault All Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 11:55 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	MW-1610	0.000091350	0.000038650	0.006	No	10	0.000065	0.00002953	10	None	No	0.01	Param.
Arsenic (mg/L)	MW-1610	0.001594	0.001234	0.05	No	11	0.001414	0.0002161	0	None	No	0.01	Param.
Barium (mg/L)	MW-1610	0.2334	0.1984	2	No	11	0.2159	0.02098	0	None	No	0.01	Param.
Beryllium (mg/L)	MW-1610	0.0001	0.000004	0.004	No	11	0.00006536	0.00004806	63.64	None	No	0.006	NP (normality)
Cadmium (mg/L)	MW-1610	0.00005	0.00002	0.005	No	11	0.00003818	0.00001471	54.55	None	No	0.006	NP (normality)
Chromium (mg/L)	MW-1610	0.0002387	0.0001772	0.1	No	11	0.0002079	0.00003691	0	None	No	0.01	Param.
Cobalt (mg/L)	**MW-1610**	**0.01092**	**0.007603**	**0.006**	**Yes**	**11**	**0.009262**	**0.00199**	**0**	**None**	**No**	**0.01**	**Param.**
Combined Radium 226 + 228 (pCi/L)	MW-1610	1.416	0.6057	5	No	11	1.011	0.486	0	None	No	0.01	Param.
Fluoride (mg/L)	MW-1610	0.2142	0.1826	4	No	11	0.1982	0.0194	0	None	x^2	0.01	Param.
Lead (mg/L)	MW-1610	0.01242	0.005279	0.015	No	11	0.008847	0.004282	0	None	No	0.01	Param.
Lithium (mg/L)	MW-1610	0.2049	0.1642	0.18	No	11	0.1845	0.02442	0	None	No	0.01	Param.
Mercury (mg/L)	MW-1610	0.001	0.001	0.002	No	11	0.0009145	0.0002834	90.91	None	No	0.006	NP (NDs)
Molybdenum (mg/L)	**MW-1610**	**0.1666**	**0.1394**	**0.1**	**Yes**	**11**	**0.153**	**0.01627**	**0**	**None**	**No**	**0.01**	**Param.**
Selenium (mg/L)	MW-1610	0.0004178	0.0001822	0.05	No	11	0.0003	0.0001414	0	None	No	0.01	Param.
Thallium (mg/L)	MW-1610	0.0005	0.00002	0.002	No	11	0.0002382	0.0002507	45.45	None	No	0.006	NP (normality)

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

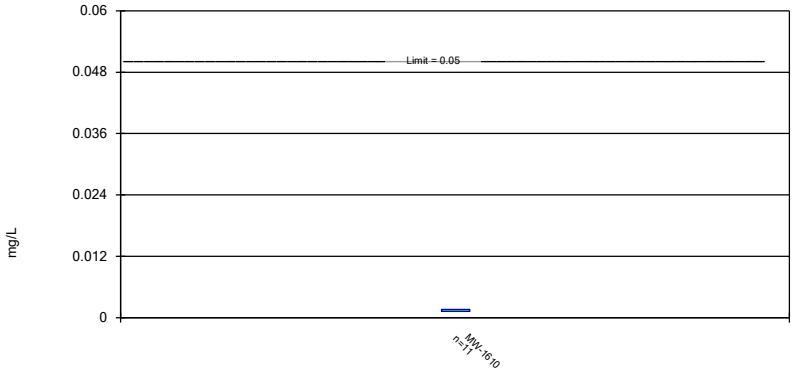


Constituent: Antimony Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

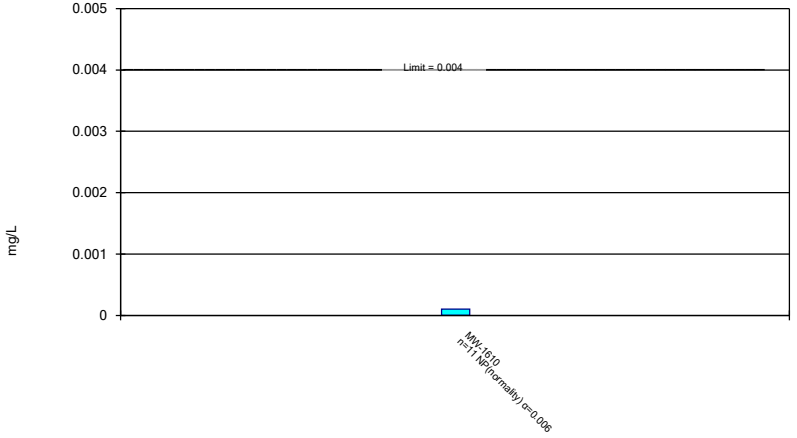
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

Constituent: Barium Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

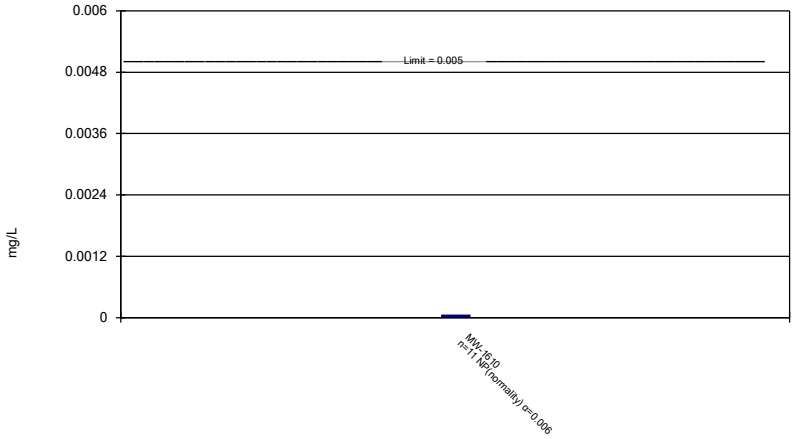
Compliance Limit is not exceeded.



Constituent: Beryllium Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

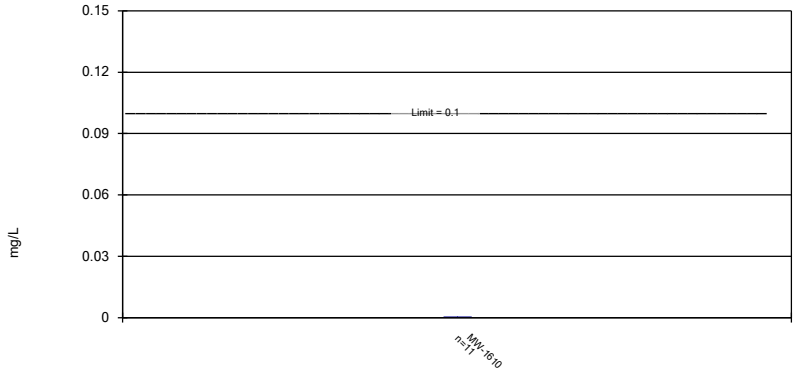


Constituent: Cadmium Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

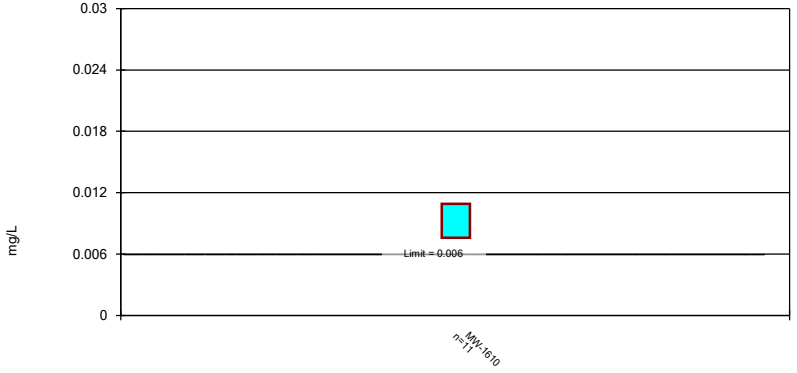


Constituent: Chromium Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance limit is exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

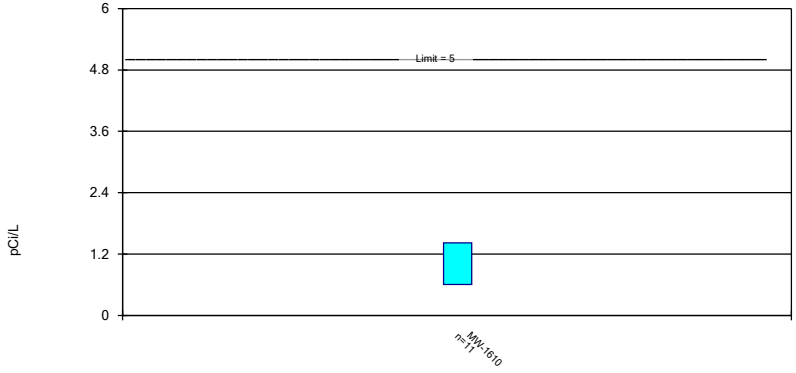


Constituent: Cobalt Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

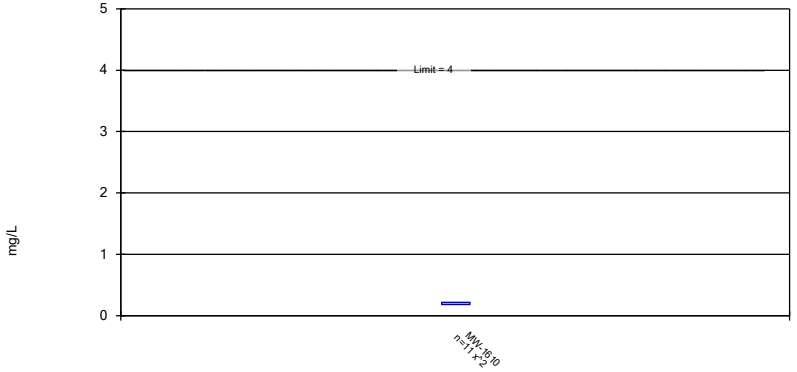
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

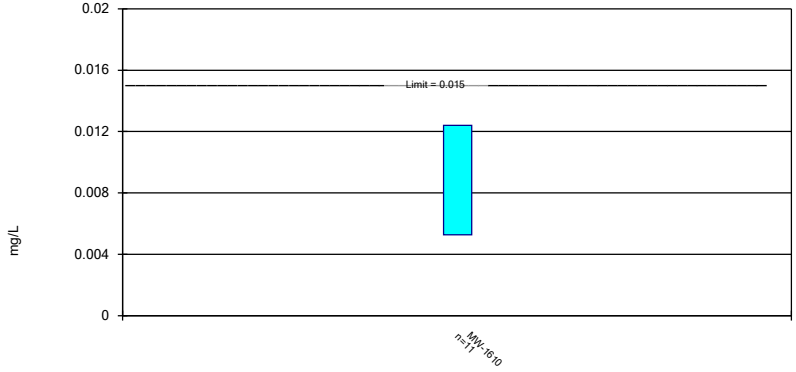
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

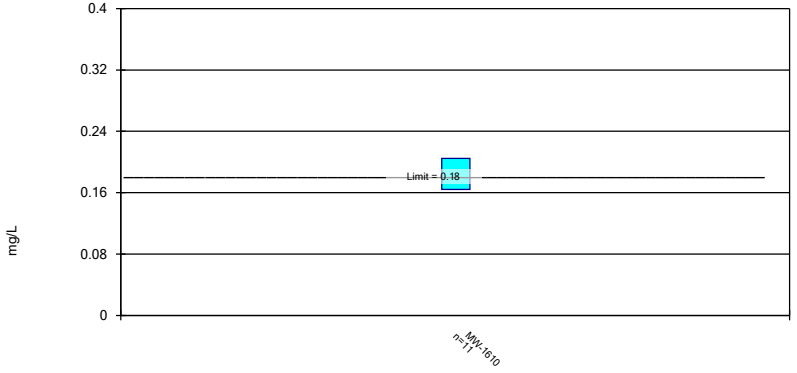
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

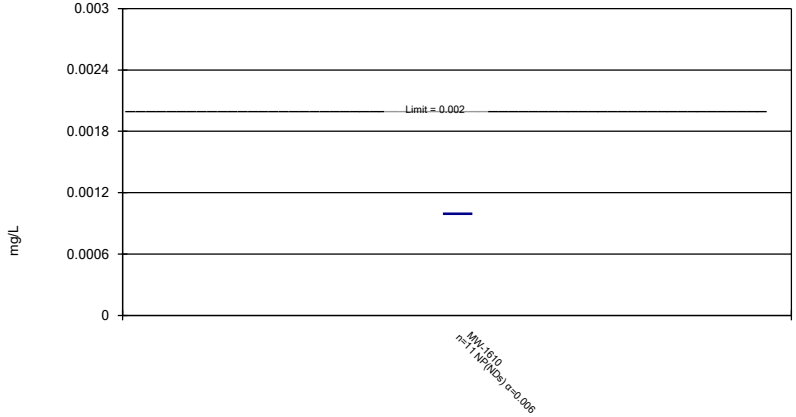
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Non-Parametric Confidence Interval

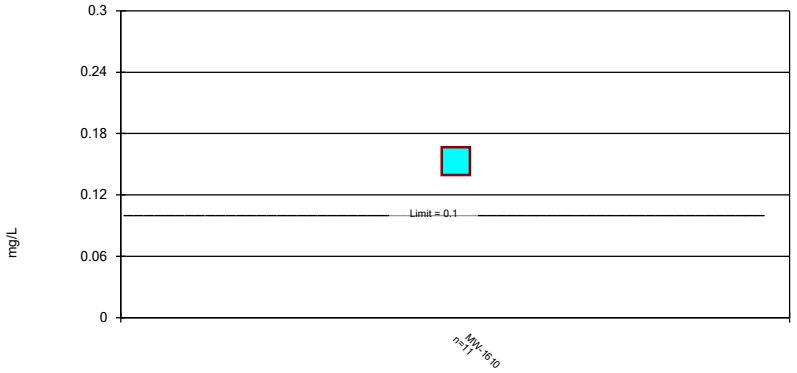
Compliance Limit is not exceeded.



Constituent: Mercury Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

Compliance limit is exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

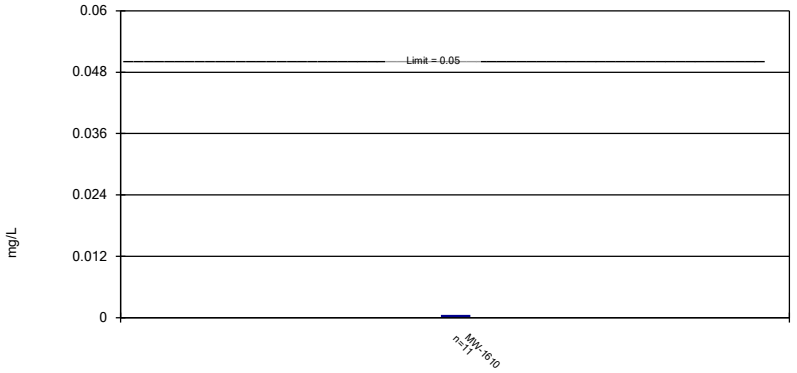


Constituent: Molybdenum Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

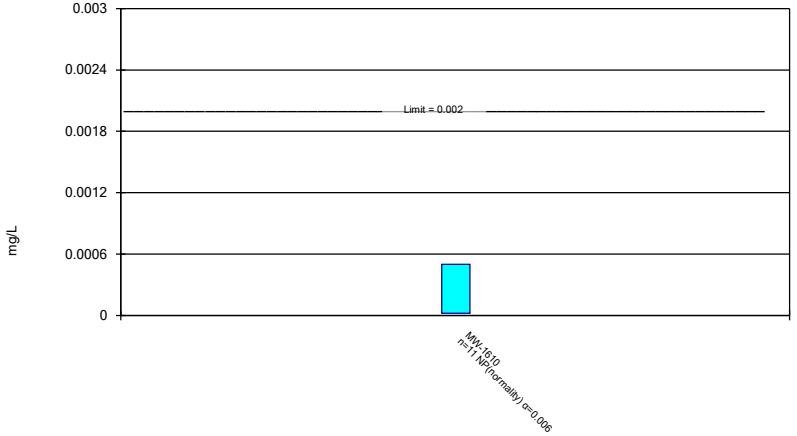


Constituent: Selenium Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Thallium Analysis Run 12/22/2019 11:52 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Confidence Interval Summary Table - Chattanooga Significant Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 11:58 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Barium (mg/L)	**MW-1604**	**3.301**	**3.057**	**2**	**Yes**	**11**	**3.179**	**0.1468**	**0**	**None**	**No**	**0.01**	**Param.**

Confidence Interval Summary Table - Chattanooga All Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 11:58 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	MW-1603	0.0001113	0.000039270	0.006	No	11	0.00006545	0.00003012	36.36	Cohen`s	No	0.01	Param.
Antimony (mg/L)	MW-1604	0.0001325	0.000041640	0.006	No	11	0.00007636	0.00004319	27.27	Cohen`s	No	0.01	Param.
Antimony (mg/L)	MW-1605	0.0001589	0.000044840	0.006	No	11	0.0001045	0.0000784	0	None	sqrt(x)	0.01	Param.
Antimony (mg/L)	MW-1612	0.00011	0.00003	0.006	No	10	0.000089	0.00008089	20	None	No	0.011	NP (Cohens/xfrm)
Arsenic (mg/L)	MW-1603	0.002612	0.001709	0.026	No	11	0.002161	0.0005418	0	None	No	0.01	Param.
Arsenic (mg/L)	MW-1604	0.002327	0.001436	0.026	No	11	0.001905	0.0006163	0	None	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-1605	0.005541	0.003386	0.026	No	11	0.004464	0.001293	0	None	No	0.01	Param.
Arsenic (mg/L)	MW-1612	0.002555	0.0006848	0.026	No	10	0.00162	0.001048	0	None	No	0.01	Param.
Barium (mg/L)	MW-1603	2.231	1.923	2	No	11	2.077	0.1846	0	None	No	0.01	Param.
Barium (mg/L)	**MW-1604**	**3.301**	**3.057**	**2**	**Yes**	**11**	**3.179**	**0.1468**	**0**	**None**	**No**	**0.01**	**Param.**
Barium (mg/L)	MW-1605	1.475	1.132	2	No	11	1.304	0.2055	0	None	No	0.01	Param.
Barium (mg/L)	MW-1612	2.278	1.846	2	No	10	2.062	0.2417	0	None	No	0.01	Param.
Beryllium (mg/L)	MW-1603	0.0001	0.00001	0.004	No	11	0.00007527	0.00004235	72.73	None	No	0.006	NP (normality)
Beryllium (mg/L)	MW-1604	0.0001	0.000007	0.004	No	11	0.00008291	0.00003803	81.82	None	No	0.006	NP (NDs)
Beryllium (mg/L)	MW-1605	0.0001	0.000005	0.004	No	11	0.00007445	0.00004378	72.73	None	No	0.006	NP (normality)
Beryllium (mg/L)	MW-1612	0.0001	0.000006	0.004	No	10	0.0000666	0.00004451	60	None	No	0.011	NP (normality)
Cadmium (mg/L)	MW-1603	0.00005	0.00005	0.005	No	11	0.00005	0	100	None	No	0.006	NP (NDs)
Cadmium (mg/L)	MW-1604	0.00005	0.00005	0.005	No	11	0.00005	0	100	None	No	0.006	NP (NDs)
Cadmium (mg/L)	MW-1605	0.00005	0.00002	0.005	No	11	0.00004364	0.00001433	81.82	None	No	0.006	NP (NDs)
Cadmium (mg/L)	MW-1612	0.00005	0.00005	0.005	No	10	0.00005	0	100	None	No	0.011	NP (NDs)
Chromium (mg/L)	MW-1603	0.000324	0.000187	0.1	No	11	0.0002885	0.0002397	9.091	None	No	0.006	NP (normality)
Chromium (mg/L)	MW-1604	0.0003246	0.0001349	0.1	No	11	0.0002297	0.0001138	0	None	No	0.01	Param.
Chromium (mg/L)	MW-1605	0.0002549	0.0001717	0.1	No	11	0.0002133	0.00004992	0	None	No	0.01	Param.
Chromium (mg/L)	MW-1612	0.0003243	0.0001532	0.1	No	10	0.0002398	0.0001019	0	None	sqrt(x)	0.01	Param.
Cobalt (mg/L)	MW-1603	0.0006988	0.0004394	0.006	No	11	0.0005691	0.0001557	0	None	No	0.01	Param.
Cobalt (mg/L)	MW-1604	0.0008591	0.0004718	0.006	No	11	0.0006655	0.0002324	0	None	No	0.01	Param.
Cobalt (mg/L)	MW-1605	0.0003757	0.0002356	0.006	No	11	0.0003056	0.00008403	0	None	No	0.01	Param.
Cobalt (mg/L)	MW-1612	0.0002927	0.0001319	0.006	No	10	0.0002123	0.00009008	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1603	1.239	0.4754	5	No	9	0.8574	0.3957	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1604	1.762	0.706	5	No	10	1.234	0.592	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1605	2.011	0.6442	5	No	10	1.327	0.7657	0	None	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1612	2.725	0.9936	5	No	9	1.859	0.8966	0	None	No	0.01	Param.
Fluoride (mg/L)	MW-1603	0.1511	0.1027	4	No	11	0.1273	0.03036	0	None	sqrt(x)	0.01	Param.
Fluoride (mg/L)	MW-1604	0.2538	0.2116	4	No	11	0.2327	0.02533	0	None	No	0.01	Param.
Fluoride (mg/L)	MW-1605	0.3873	0.3308	4	No	11	0.3591	0.0339	0	None	No	0.01	Param.
Fluoride (mg/L)	MW-1612	0.1977	0.1403	4	No	10	0.169	0.03213	0	None	No	0.01	Param.
Lead (mg/L)	MW-1603	0.0002	0.000009	0.015	No	11	0.0001005	0.00009557	45.45	None	No	0.006	NP (normality)
Lead (mg/L)	MW-1604	0.0002	0.00001	0.015	No	11	0.00009409	0.00008605	36.36	None	No	0.006	NP (Cohens/xfrm)
Lead (mg/L)	MW-1605	0.0002	0.000029	0.015	No	11	0.00008791	0.00007364	27.27	None	No	0.006	NP (normality)
Lead (mg/L)	MW-1612	0.0003211	0.000041140	0.015	No	10	0.0001337	0.0001063	40	Cohen`s	No	0.01	Param.
Lithium (mg/L)	MW-1603	0.07875	0.04756	0.2	No	11	0.06315	0.01871	0	None	No	0.01	Param.
Lithium (mg/L)	MW-1604	0.08619	0.07794	0.2	No	11	0.08206	0.004948	0	None	No	0.01	Param.
Lithium (mg/L)	MW-1605	0.2088	0.1928	0.2	No	11	0.2008	0.0096	0	None	No	0.01	Param.
Lithium (mg/L)	MW-1612	0.139	0.1198	0.2	No	10	0.1294	0.01075	10	None	No	0.01	Param.
Mercury (mg/L)	MW-1603	0.001	0.001	0.002	No	11	0.0009145	0.0002834	90.91	None	No	0.006	NP (NDs)
Mercury (mg/L)	MW-1604	0.001	0.001	0.002	No	11	0.0009145	0.0002834	90.91	None	No	0.006	NP (NDs)
Mercury (mg/L)	MW-1605	0.001	0.001	0.002	No	11	0.001	0	100	None	No	0.006	NP (NDs)
Mercury (mg/L)	MW-1612	0.001	0.001	0.002	No	10	0.000906	0.0002973	90	None	No	0.011	NP (NDs)
Molybdenum (mg/L)	MW-1603	0.002425	0.0006978	0.1	No	11	0.001602	0.001223	9.091	None	sqrt(x)	0.01	Param.
Molybdenum (mg/L)	MW-1604	0.00157	0.00047	0.1	No	11	0.001121	0.001331	9.091	None	No	0.006	NP (normality)
Molybdenum (mg/L)	MW-1605	0.006135	0.002114	0.1	No	11	0.004125	0.002413	0	None	No	0.01	Param.
Molybdenum (mg/L)	MW-1612	0.0036	0.0007	0.1	No	10	0.003203	0.005972	0	None	No	0.011	NP (normality)
Selenium (mg/L)	MW-1603	0.0001187	0.0000558	0.05	No	11	0.00008818	0.00004238	9.091	None	sqrt(x)	0.01	Param.
Selenium (mg/L)	MW-1604	0.0002	0.00004	0.05	No	11	0.00007727	0.0000615	18.18	None	No	0.006	NP (normality)
Selenium (mg/L)	MW-1605	0.0002	0.00005	0.05	No	11	0.00009636	0.00006757	27.27	None	No	0.006	NP (normality)

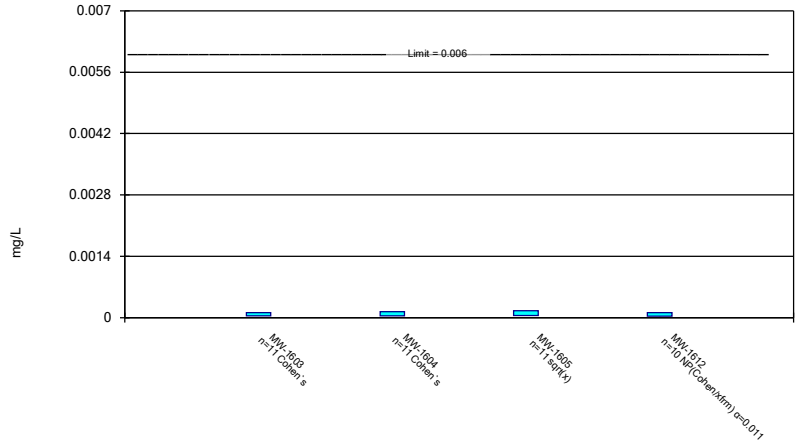
Confidence Interval Summary Table - Chattanooga All Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 11:58 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Selenium (mg/L)	MW-1612	0.0002	0.00003	0.05	No	10	0.000095	0.00007517	30	None	No	0.011	NP (Cohens/xfrm)
Thallium (mg/L)	MW-1603	0.0005	0.00001	0.002	No	11	0.0002782	0.0002549	54.55	None	No	0.006	NP (normality)
Thallium (mg/L)	MW-1604	0.0005	0.00001	0.002	No	11	0.0003227	0.000246	63.64	None	No	0.006	NP (normality)
Thallium (mg/L)	MW-1605	0.0005	0.00001	0.002	No	11	0.0003236	0.0002447	63.64	None	No	0.006	NP (normality)
Thallium (mg/L)	MW-1612	0.0005	0.00001	0.002	No	10	0.000306	0.0002505	60	None	No	0.011	NP (normality)

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

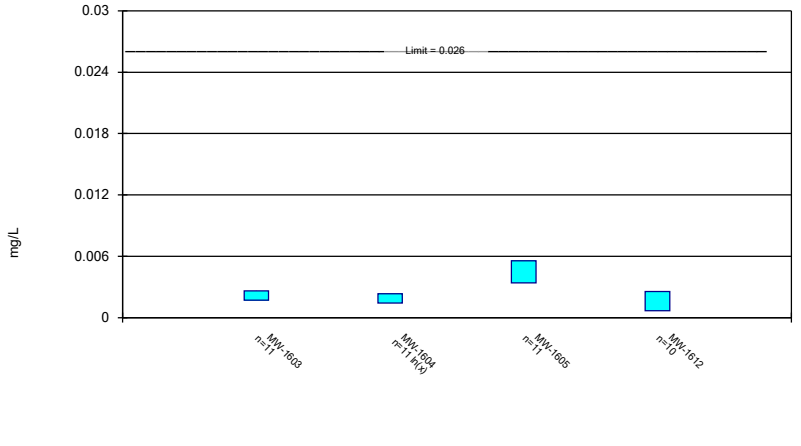


Constituent: Antimony Analysis Run 12/22/2019 11:56 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

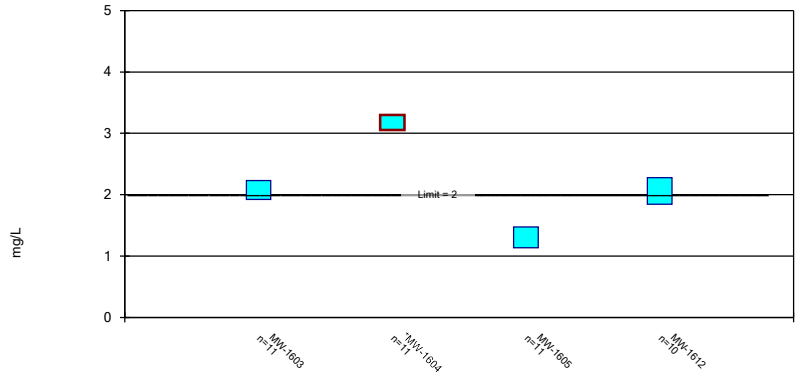


Constituent: Arsenic Analysis Run 12/22/2019 11:56 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

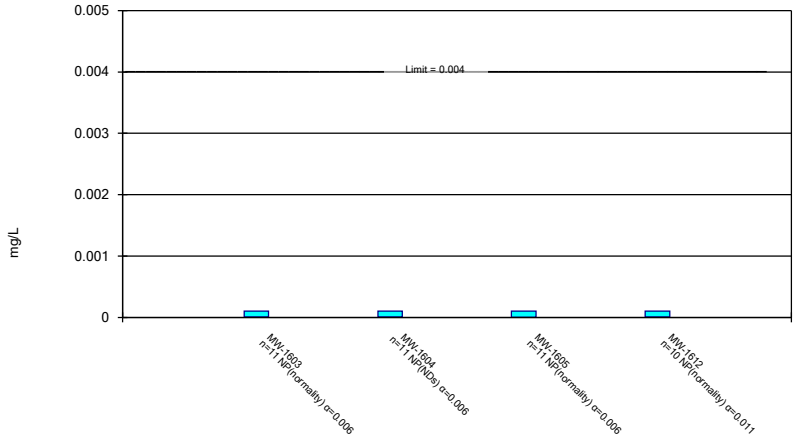


Constituent: Barium Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

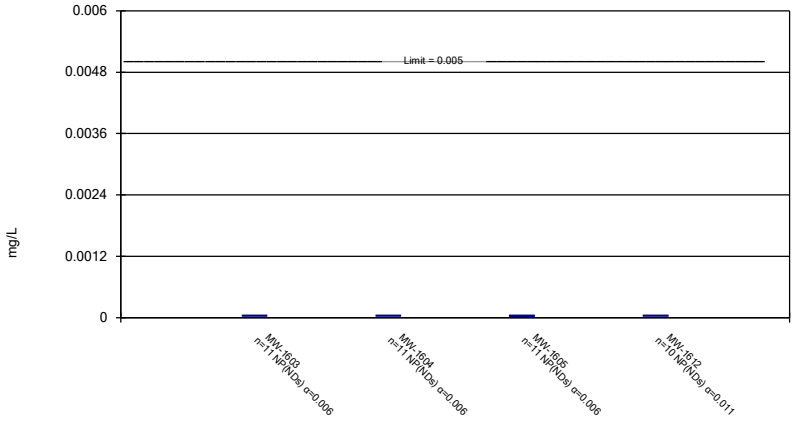
Compliance Limit is not exceeded.



Constituent: Beryllium Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

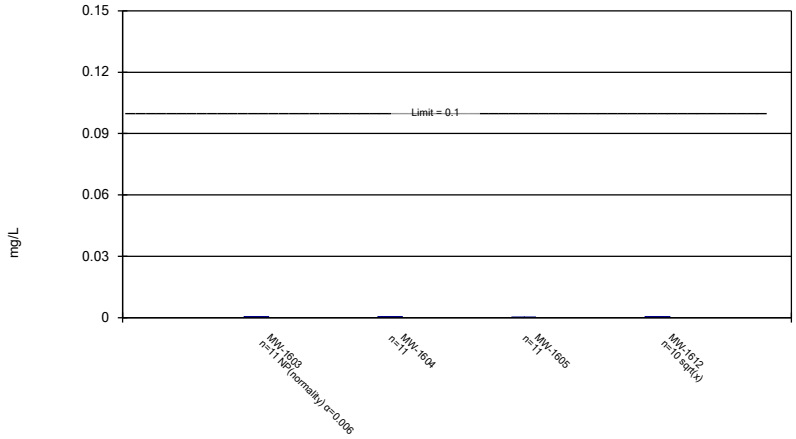


Constituent: Cadmium Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

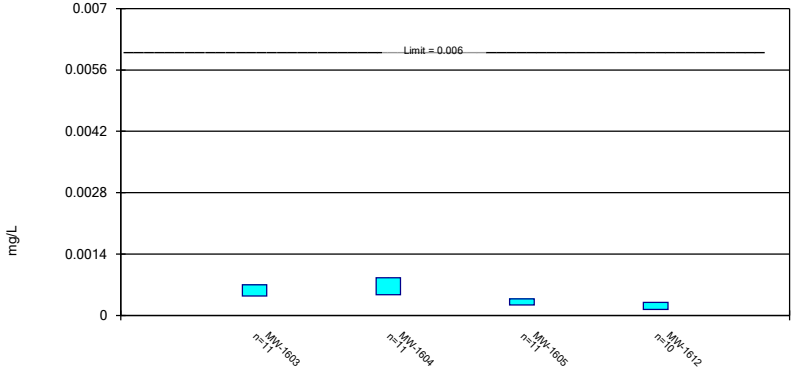


Constituent: Chromium Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

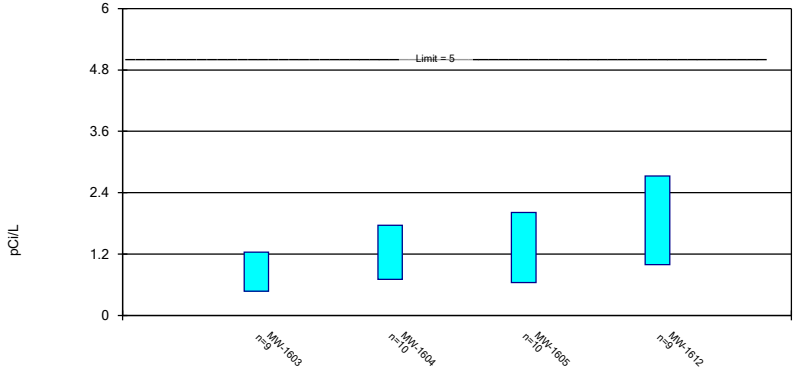


Constituent: Cobalt Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

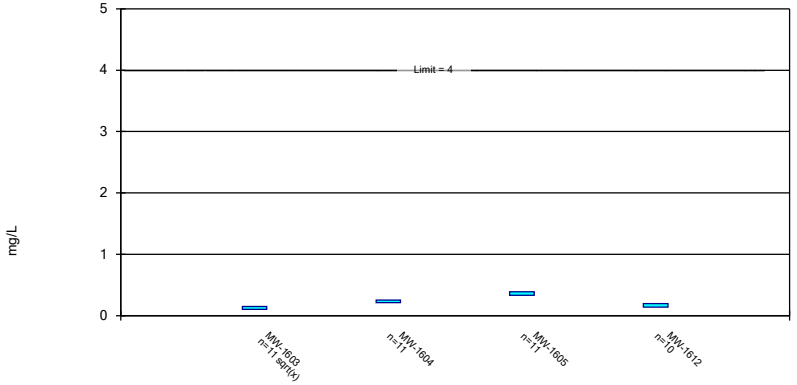
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

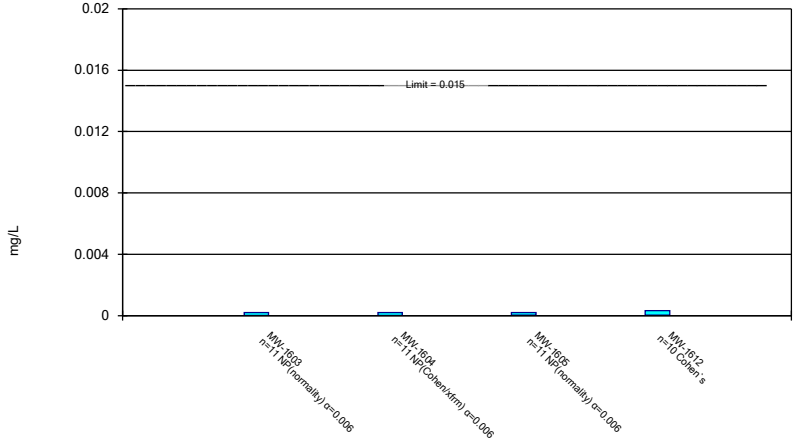
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric and Non-Parametric (NP) Confidence Interval

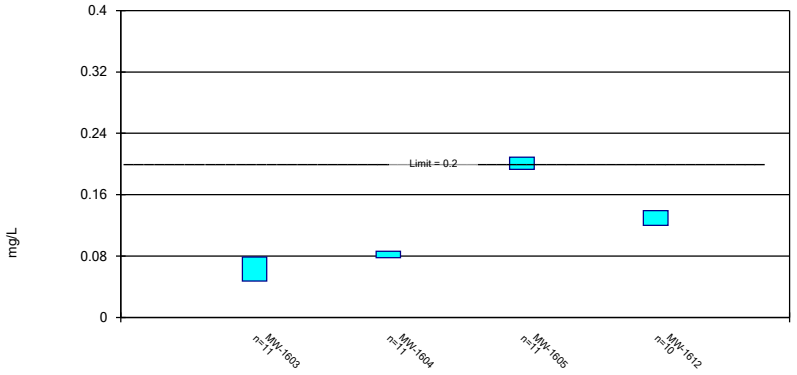
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

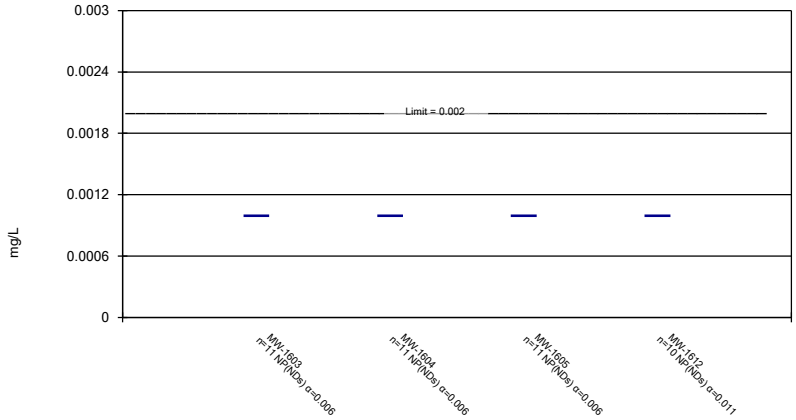
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Non-Parametric Confidence Interval

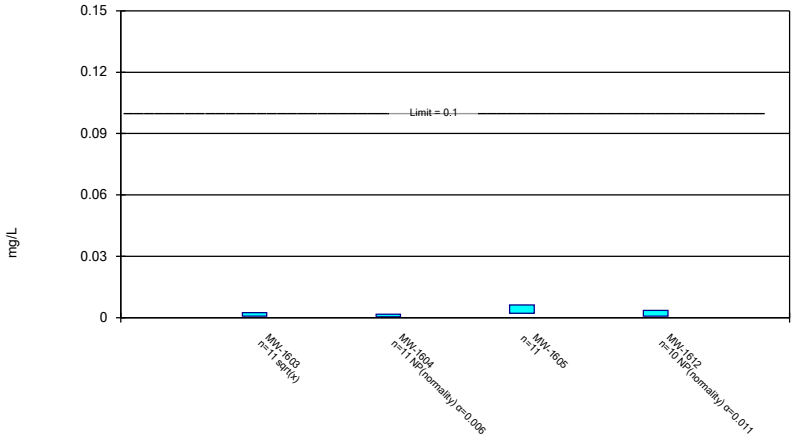
Compliance Limit is not exceeded.



Constituent: Mercury Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

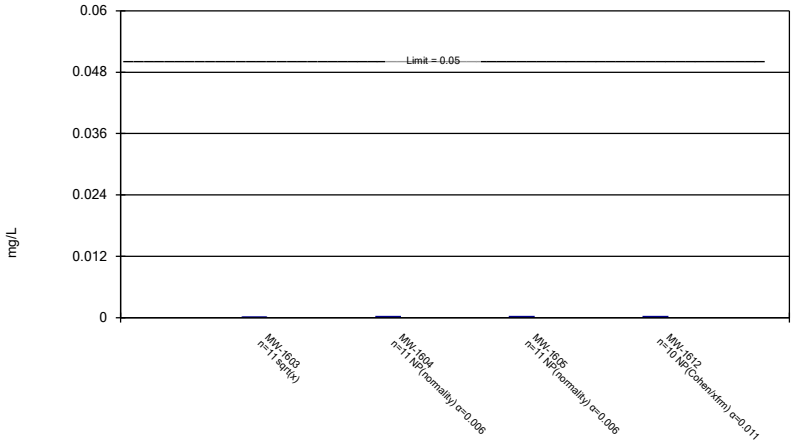


Constituent: Molybdenum Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

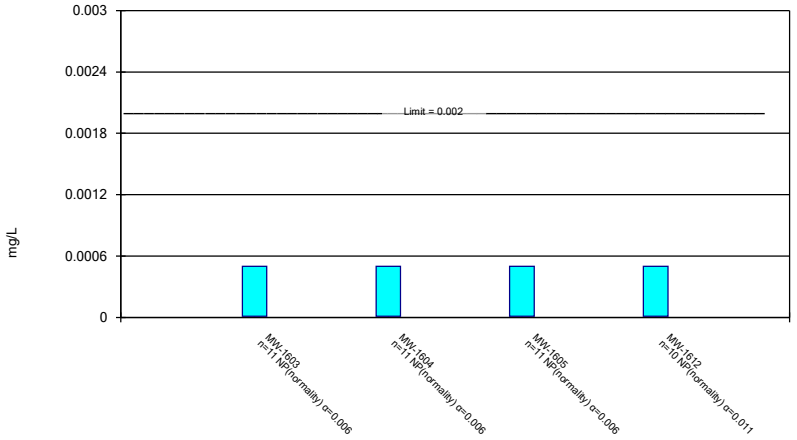


Constituent: Selenium Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Thallium Analysis Run 12/22/2019 11:57 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Confidence Interval Summary Table - Rome Significant Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 12:12 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Cobalt (mg/L)	**MW-1607**	**0.01198**	**0.007711**	**0.006**	**Yes**	**11**	**0.009846**	**0.002562**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium (mg/L)	**MW-1606**	**0.09654**	**0.06904**	**0.04**	**Yes**	**11**	**0.08279**	**0.0165**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium (mg/L)	**MW-1607**	**0.1334**	**0.1179**	**0.04**	**Yes**	**11**	**0.1256**	**0.009277**	**0**	**None**	**No**	**0.01**	**Param.**
Molybdenum (mg/L)	**MW-1607**	**0.1684**	**0.1281**	**0.1**	**Yes**	**11**	**0.1482**	**0.02417**	**0**	**None**	**No**	**0.01**	**Param.**

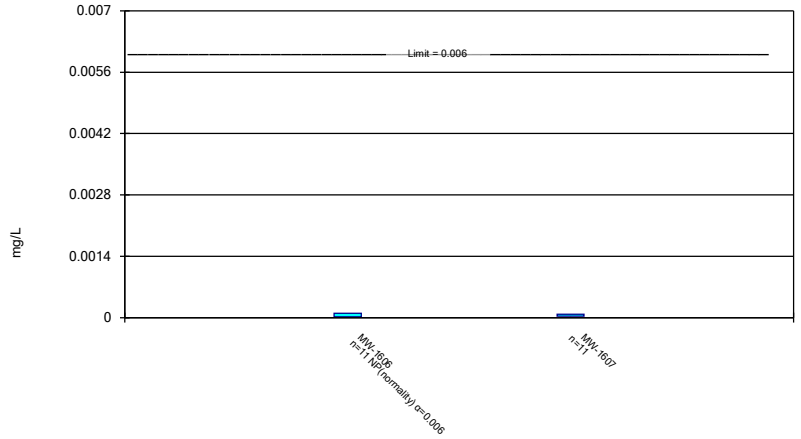
Confidence Interval Summary Table - Rome All Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 12/22/2019, 12:12 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	MW-1606	0.0001	0.00002	0.006	No	11	0.00005455	0.00003671	36.36	None	No	0.006	NP (normality)
Antimony (mg/L)	MW-1607	0.000076180	0.000036550	0.006	No	11	0.00005636	0.00002378	9.091	None	No	0.01	Param.
Arsenic (mg/L)	MW-1606	0.00833	0.00676	0.01	No	11	0.007585	0.001248	0	None	No	0.006	NP (normality)
Arsenic (mg/L)	MW-1607	0.00438	0.00096	0.01	No	11	0.001864	0.001504	0	None	No	0.006	NP (normality)
Barium (mg/L)	MW-1606	0.12	0.1107	2	No	11	0.1154	0.005555	0	None	No	0.01	Param.
Barium (mg/L)	MW-1607	0.0925	0.0711	2	No	11	0.08087	0.02086	0	None	No	0.006	NP (normality)
Beryllium (mg/L)	MW-1606	0.0001	0.000006	0.004	No	11	0.00005727	0.00004909	54.55	None	No	0.006	NP (normality)
Beryllium (mg/L)	MW-1607	0.0001	0.0001	0.004	No	11	0.00009136	0.00002864	90.91	None	No	0.006	NP (NDs)
Cadmium (mg/L)	MW-1606	0.00005	0.00001	0.005	No	11	0.00003509	0.00002071	63.64	None	No	0.006	NP (normality)
Cadmium (mg/L)	MW-1607	0.0001894	0.000086970	0.005	No	11	0.0001382	0.00006145	0	None	No	0.01	Param.
Chromium (mg/L)	MW-1606	0.000217	0.0001635	0.1	No	11	0.0001867	0.00004091	0	None	x^3	0.01	Param.
Chromium (mg/L)	MW-1607	0.000224	0.000194	0.1	No	11	0.0002019	0.00004032	0	None	No	0.006	NP (normality)
Cobalt (mg/L)	MW-1606	0.005977	0.005112	0.006	No	11	0.005545	0.0005189	0	None	No	0.01	Param.
Cobalt (mg/L)	**MW-1607**	**0.01198**	**0.007711**	**0.006**	**Yes**	**11**	**0.009846**	**0.002562**	**0**	**None**	**No**	**0.01**	**Param.**
Combined Radium 226 + 228 (pCi/L)	MW-1606	1.862	0.9556	5	No	11	1.421	0.5965	0	None	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1607	1.328	0.5408	5	No	10	0.97	0.6523	0	None	ln(x)	0.01	Param.
Fluoride (mg/L)	MW-1606	0.2494	0.1852	4	No	11	0.2173	0.03849	0	None	No	0.01	Param.
Fluoride (mg/L)	MW-1607	0.2493	0.2052	4	No	11	0.2273	0.02649	0	None	No	0.01	Param.
Lead (mg/L)	MW-1606	0.0005403	0.0003444	0.015	No	11	0.0004424	0.0001175	0	None	No	0.01	Param.
Lead (mg/L)	MW-1607	0.0006526	0.0003774	0.015	No	11	0.000515	0.0001652	0	None	No	0.01	Param.
Lithium (mg/L)	**MW-1606**	**0.09654**	**0.06904**	**0.04**	**Yes**	**11**	**0.08279**	**0.0165**	**0**	**None**	**No**	**0.01**	**Param.**
Lithium (mg/L)	**MW-1607**	**0.1334**	**0.1179**	**0.04**	**Yes**	**11**	**0.1256**	**0.009277**	**0**	**None**	**No**	**0.01**	**Param.**
Mercury (mg/L)	MW-1606	0.001	0.001	0.002	No	11	0.0009145	0.0002834	90.91	None	No	0.006	NP (NDs)
Mercury (mg/L)	MW-1607	0.001	0.001	0.002	No	11	0.0009164	0.0002774	90.91	None	No	0.006	NP (NDs)
Molybdenum (mg/L)	MW-1606	0.08705	0.06231	0.1	No	11	0.07468	0.01485	0	None	No	0.01	Param.
Molybdenum (mg/L)	**MW-1607**	**0.1684**	**0.1281**	**0.1**	**Yes**	**11**	**0.1482**	**0.02417**	**0**	**None**	**No**	**0.01**	**Param.**
Selenium (mg/L)	MW-1606	0.000091610	0.000055660	0.05	No	11	0.00007364	0.00002157	0	None	No	0.01	Param.
Selenium (mg/L)	MW-1607	0.0002	0.00009	0.05	No	11	0.0001291	0.00005873	0	None	No	0.006	NP (normality)
Thallium (mg/L)	MW-1606	0.0005	0.00004	0.002	No	11	0.0002509	0.0002385	45.45	None	No	0.006	NP (normality)
Thallium (mg/L)	MW-1607	0.0005	0.00001	0.002	No	11	0.0002845	0.0002478	54.55	None	No	0.006	NP (normality)

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

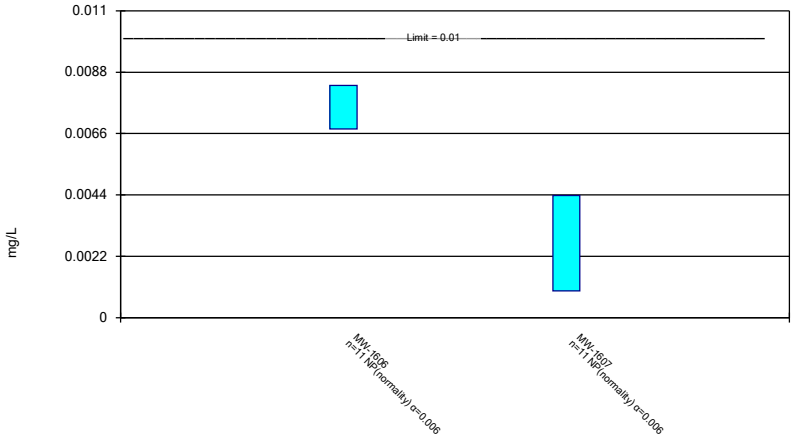


Constituent: Antimony Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

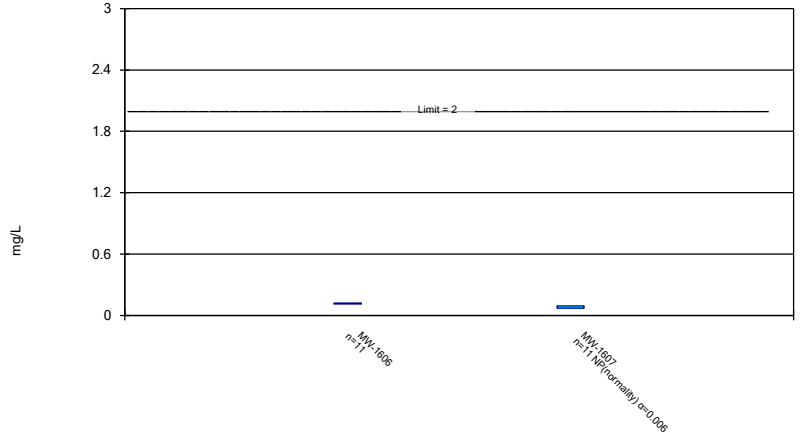


Constituent: Arsenic Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

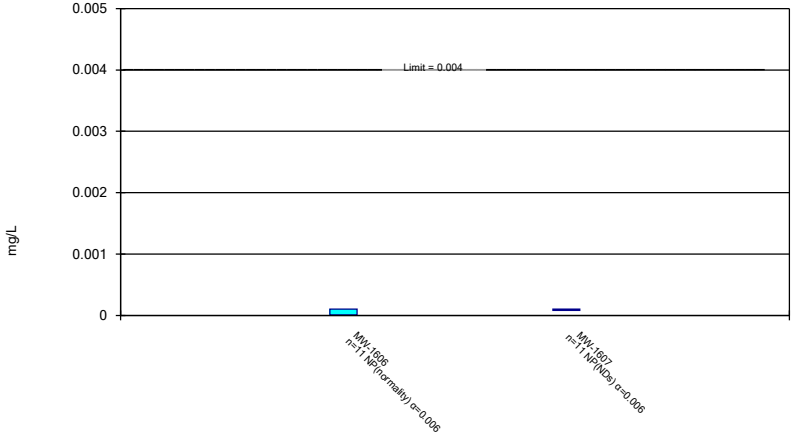


Constituent: Barium Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

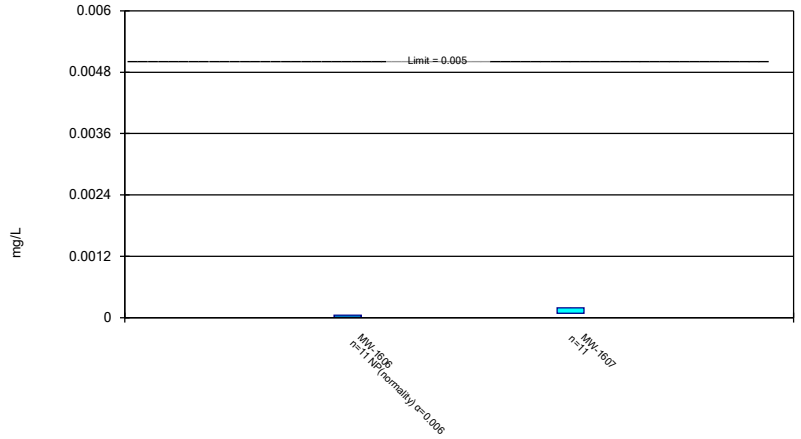
Compliance Limit is not exceeded.



Constituent: Beryllium Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

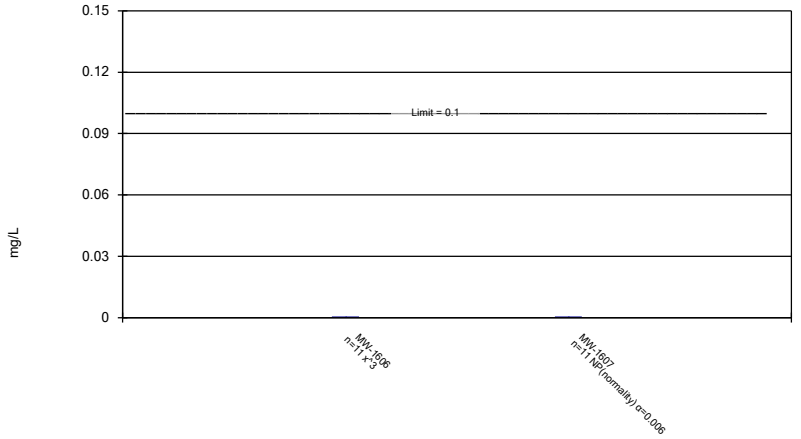


Constituent: Cadmium Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

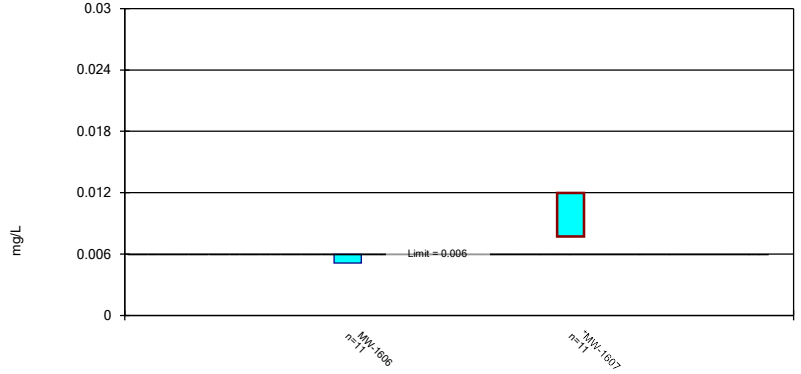


Constituent: Chromium Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

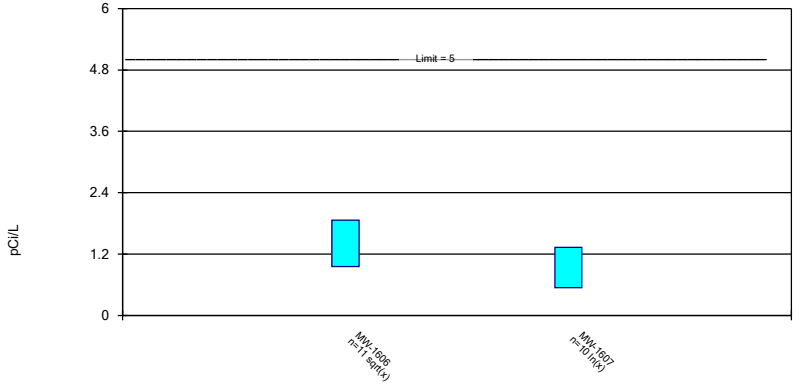


Constituent: Cobalt Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

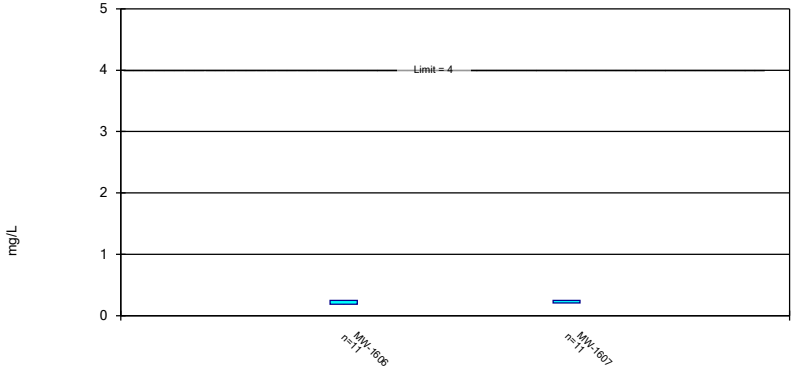
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

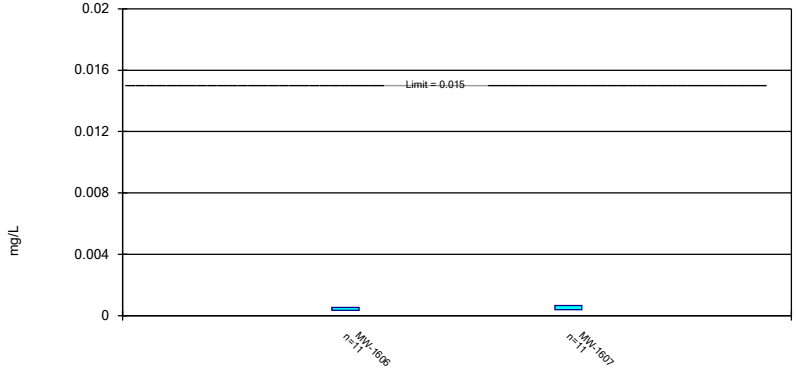


Constituent: Fluoride Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

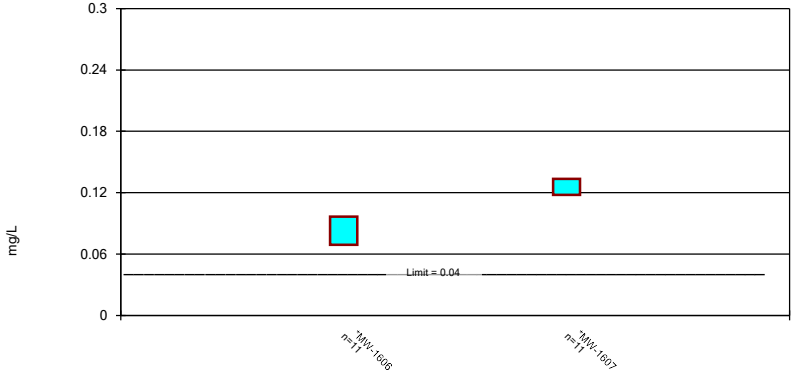


Constituent: Lead Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

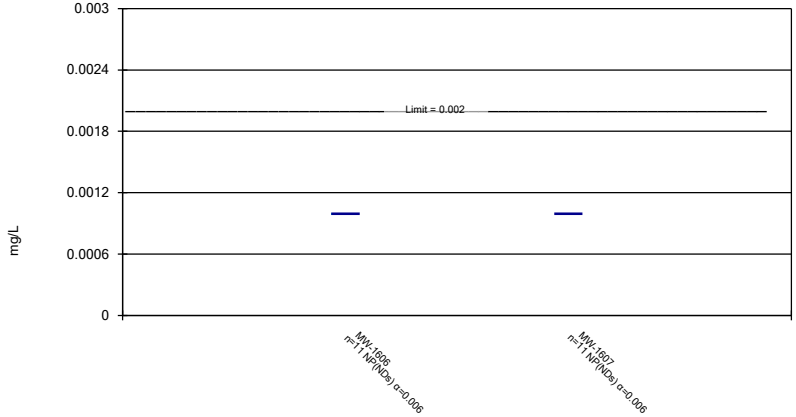


Constituent: Lithium Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

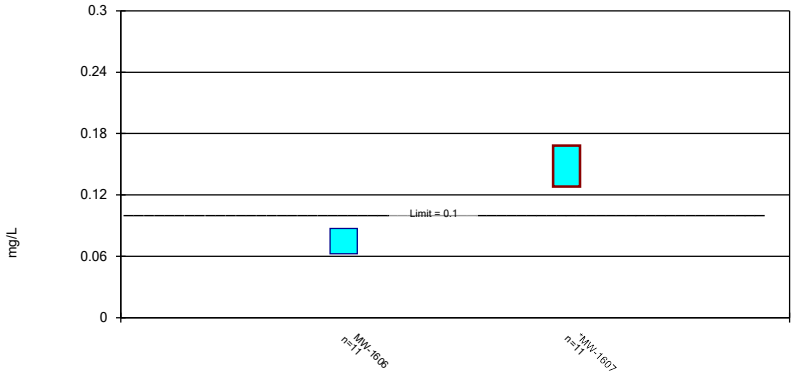
Compliance Limit is not exceeded.



Constituent: Mercury Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

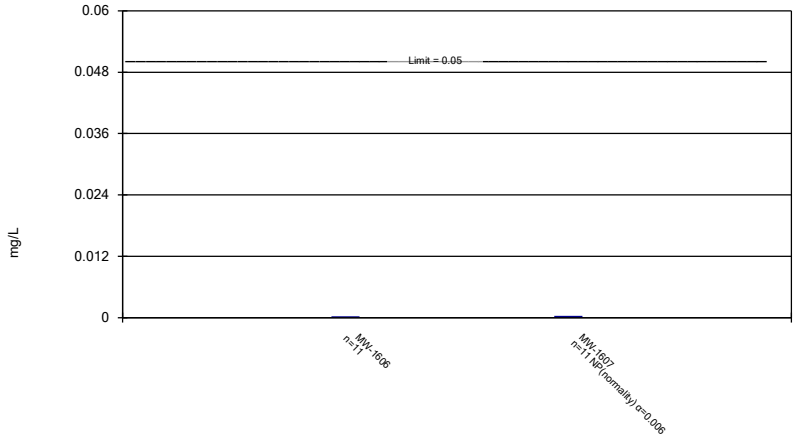


Constituent: Molybdenum Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

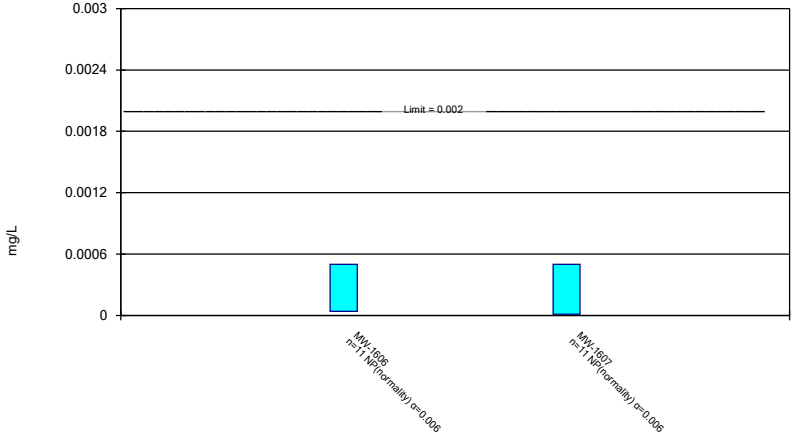


Constituent: Selenium Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.23e Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Thallium Analysis Run 12/22/2019 12:10 PM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Purpose of Statistical Analysis Summary Report

During the initial phase of ground water monitoring, the CCR rule requires AEP to collect at least eight independent samples from at least one up-gradient and three downgradient wells for 21 substances listed in the CCR rule. The CCR rule also requires us to select a statistical method that will be used to evaluate the samples in the later phases of the ground water monitoring program. The Statistical Plan, which has been posted to AEP's CCR website, describes the methods selected by AEP. *See* AEP's Statistical Analysis Plans.

Each **Statistical Analysis Summary Report** is based on the results of the 8 independent samples that were collected by April 17, 2019, and reported in the Annual Groundwater Monitoring Report. Using the statistical methods chosen by AEP, the samples were evaluated to eliminate outliers, determine variability and general trends in the data, and establish background values for: boron, calcium chloride, fluoride, pH, sulfate, and total dissolved solids. Appendix IV substances were evaluated for purposes of identifying outliers and understanding data trends.

A subsequent sample taken during the first detection monitoring sampling event was also compared using the proper statistical methods to the background values that were established for these seven substances from the eight independent samples. A second or third re-sampling event occurred, and the results compared using the same methods. This work is reported in the memorandum included in attachment A. If confirmed, AEP will be required to enter the next phase of monitoring. The results of future sampling will be further analyzed to target any specific substances for which ongoing monitoring or potential corrective action is required.

STATISTICAL ANALYSIS SUMMARY
ASH POND 1
Clinch River Plant
Carbo, Virginia

Submitted to

1 Riverside Plaza
Columbus, Ohio 43215-2372

Submitted by

Geosyntec consultants

engineers | scientists | innovators

941 Chatham Lane
Suite 103
Columbus, Ohio 43221

July 15, 2019
CHA8423

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LIST OF ACRONYMS AND ABBREVIATIONS

AEP	American Electric Power
ANOVA	Analysis of Variance
CCR	Coal Combustion Residuals
CCV	Continuing Calibration Value
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
GWPS	Groundwater Protection Standard
LFB	Laboratory Fortified Blanks
LPL	Lower Prediction Limit
LRB	Laboratory Reagent Blanks
MCL	Maximum Contaminant Level
NELAP	National Environmental Laboratory Accreditation Program
PQL	Practical Quantitation Limit
QA	Quality Assurance
QC	Quality Control
RSL	Regional Screening Level
SSI	Statistically Significant Increase
SWFPR	Site-Wide False-Positive Rate
TDS	Total Dissolved Solids
UPL	Upper Prediction Limit
USEPA	United States Environmental Protection Agency
UTL	Upper Tolerance Limit
VAC	Virginia Administrative Code

SECTION 1

EXECUTIVE SUMMARY

In accordance with the United States Environmental Protection Agency's (USEPA's) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (40 CFR 257 Subpart D, "CCR rule"), groundwater monitoring has been conducted at Pond 1, an inactive CCR unit at the Clinch River Plant located in Carbo, Virginia.

Eight monitoring events were completed to establish background concentrations for Appendix III and Appendix IV parameters under the CCR rule. Additional sampling was completed for detection and assessment monitoring. Groundwater data underwent several validation tests, including those for completeness, sample tracking accuracy, transcription errors, and consistent use of measurement units. No data quality issues were identified which would impact the usability of the data.

The monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. The statistics were completed in three separate groups based on differences in the underlying geology at the monitoring locations. The background data were reviewed for outliers, which were removed when appropriate. Upper prediction limits (UPLs) were calculated for each Appendix III parameter to represent background values. Concentrations of calcium, chloride and sulfate were detected above the calculated UPLs; pH was detected below the calculated lower prediction limit (LPL).

Groundwater protection standards (GWPSs) were established for the Appendix IV parameters. Confidence intervals were calculated for Appendix IV parameters at the compliance wells to assess whether Appendix IV parameters were present at a statistically significant level (SSL) above the GWPS. SSLs were identified for barium, cobalt, lithium, and molybdenum. Therefore, the unit has progressed into assessment monitoring and will either move to an assessment of corrective measures or an alternate source demonstration (ASD) will be conducted to evaluate if the unit can remain in assessment monitoring..

Certification of the selected statistical methods by a qualified professional engineer is documented in Attachment A.

SECTION 2

POND 1 EVALUATION

2.1 State Program

The Pond 1 unit is also regulated under Virginia administrative Code (VAC), Title 9: Environment, Agency 20: Virginia Waste Management Board, Chapter 81: Solid waste Management Regulations, Section 250: Groundwater Monitoring Program (9VAC20-81-250) and VAC, Title 9, Agency 20, Chapter 81, Section 800: Part VIII Requirements for the Management of Coal Combustion Residuals (9-VAC-20-81-800). In accordance with these programs, sampling and statistical analysis for Appendix IV parameters is required at an earlier date than by the Federal CCR Rule. Exceedances for cobalt, lead, lithium, molybdenum, and nickel were identified under the state program (AEP, 2019a). To align the state and Federal groundwater monitoring programs for Pond 1, the appendix IV parameters were statistically analyzed under the Federal program in conjunction with Appendix III parameters..

2.2 Data Validation & QA/QC

During the background monitoring program, eight sets of samples were collected for analysis from each background and compliance well. Following background monitoring, a detection monitoring and assessment monitoring event were completed concurrently in February 2019. A second assessment monitoring event was completed in April 2019. Samples from each event were analyzed for the Appendix III and Appendix IV parameters. A summary of data collected during background monitoring sampling may be found in Table 1.

Chemical analysis was completed by an analytical laboratory certified by the National Environmental Laboratory Accreditation Program (NELAP). Quality assurance and quality control (QA/QC) samples completed by the analytical laboratory included the use of laboratory reagent blanks (LRBs), continuing calibration verification (CCV) samples, and laboratory fortified blanks (LFBs).

The analytical data were imported into a Microsoft Access database, where checks were completed to assess the accuracy of sample location identification and analyte identification. Where necessary, unit conversions were applied to standardize reported units across all sampling events. Exported data files were created for use with the Sanitas™ v.9.6.12 statistics software. The export was checked against the analytical data for transcription errors and completeness. No QA/QC issues were noted which would impact data usability.

2.3 Statistical Analysis

The data used to conduct the statistical analyses are summarized in Table 1. Statistical analyses for Pond 1 were conducted in accordance with the April 2019 *Statistical Analysis Plan* (AEP, 2019b), except where noted below. The monitoring well network at the Pond 1 unit consists of

three water bearing units: the Chattanooga Shale, the Rome Limestone, and the Dumps Fault. These water bearing units were statistically analyzed separately. Results for all completed statistical tests are provided in Attachment B.

Time series plots of Appendix III and IV parameters are included in Attachment B. Mann-Kendall analyses ($\alpha = 0.01$) were conducted to evaluate trends in the background data. The following statistically significant trends were observed within the Chattanooga Formation:

- Arsenic was found to be significantly decreasing at compliance wells MW-1605 and MW-1612.
- Boron was found to be significantly increasing at background well MW-1601.
- Chloride was found to be significantly decreasing at compliance well MW-1604.
- Cobalt was found to be significantly decreasing at background wells MW-1602 and MW-1608 and at compliance well MW-1605.
- Molybdenum was found to be significantly decreasing at background wells MW-1601, MW-1602, MW-1608, and MW-1609 and at compliance wells MW-1603 and MW-1605.
- Selenium was found to be significantly decreasing at background well MW-1608.
- Sulfate was found to be significantly decreasing at compliance well MW-1604.
- Total dissolved solids (TDS) were found to be significantly decreasing at background well MW-1608.

The following statistically significant trends were observed within the Rome Formation:

- Calcium was found to be significantly decreasing at compliance well MW-1607.
- Molybdenum was found to be significantly increasing at compliance well MW-1607.
- Molybdenum was found to be significantly decreasing at background well MW-1609.

The following statistically significant trends were observed within the Dumps Fault water bearing unit:

- Calcium was found to be significantly decreasing at background well MW-1611.
- Chloride was found to be significantly decreasing at background well MW-1611.
- Cobalt was found to be significantly decreasing at background well MW-1611.
- Fluoride was found to be significantly increasing at background well MW-1611.

- Lithium was found to be significantly increasing at compliance well MW-1610.
- Sulfate was found to be significantly decreasing at background well MW-1611.
- TDS were found to be significantly decreasing at background well MW-1611.

No other significant increasing or decreasing trends were observed for other parameters or at other monitoring wells.

2.3.1 Background Outlier Evaluation

Potential outliers were identified using Tukey's outlier test; i.e., data points were considered potential outliers if they met one of the following criteria:

$$x_i < \tilde{x}_{0.25} - 3 \times IQR \quad (1)$$

or

$$x_i > \tilde{x}_{0.75} + 3 \times IQR \quad (2)$$

where:

$x_i =$ individual data point
$\tilde{x}_{0.25} =$ first quartile
$\tilde{x}_{0.75} =$ third quartile
$IQR =$ the interquartile range $= \tilde{x}_{0.75} - \tilde{x}_{0.25}$

Background well data were first pooled in accordance with their associated water bearing unit, and Tukey's outlier test was performed on each pooled dataset. For the compliance wells, Tukey's outlier test was applied individually to each compliance well.

Data that were evaluated as potential outliers are summarized in Attachment B. Tukey's outlier test indicated twenty-two potential outliers, which are summarized in Table 2. Next, the data were reviewed to identify possible sources of errors or discrepancies, including data recording errors, unusual sampling conditions, laboratory quality, or inconsistent sample turbidity. The findings of this data review are summarized below.

The following values were identified as outliers, and were removed from their respective datasets:

- The antimony concentration of 0.00022 mg/L from the October 17, 2017 at Dumps Fault compliance well MW-1610;
- The chloride concentration of 342 mg/L from the December 12, 2017 sample at Chattanooga Formation compliance well MW-1605;

- The cobalt concentration of 0.000311 mg/L from the October 19, 2017 sample at Dumps Fault background well MW-1611;

- The combined radium concentration of 3.23 pCi/L from the October 17, 2017 sample at Chattanooga Formation compliance well MW-1603;

- The lead concentration of 0.00105 mg/L from the October 19, 2017 sample at Dumps Fault background well MW-1611;

- The molybdenum concentration of 0.038 mg/L from the October 19, 2017 sample at Dumps Fault background well MW-1611; and,

- The TDS concentration of 1700 mg/L from the April 11, 2018 sample at Chattanooga Formation background well MW-1605.

The cobalt, lead, and molybdenum outliers identified at MW-1611 were removed from the dataset, as the turbidity during this sampling event was higher than during subsequent background monitoring events. Because these outliers were anomalously high, their removal would result in the generation of more conservative (i.e., lower) background values, and removing these outliers is recommended by USEPA's *Unified Guidance* (USEPA, 2009). The removal of outliers from compliance wells did not affect the calculated background values.

The following values were identified as potential outliers but were not removed from their respective datasets:

- The antimony concentration of 0.00018 mg/L from the April 12, 2018 sample at Chattanooga Formation compliance well MW-1604;

- The arsenic concentrations of 0.00299 mg/L and from the June 7, 2018 sample at Chattanooga Formation background well MW-1608 and 0.0031 mg/L from the April 12, 2018 sample at Chattanooga Formation compliance well MW-1604;

- The barium concentrations of 0.104 mg/L and 0.124 mg/L from the April 10, 2018 and August 21, 2018 samples at Rome Formation compliance well MW-1606 and 0.141 mg/L from the October 18, 2017 sample at Rome Formation compliance well MW-1607;

- The chromium concentrations of 0.000472 mg/L from the October 19, 2017 sample at Chattanooga Formation background well MW-1602, 0.0001 mg/L from the February 14, 2018 sample at Rome Formation compliance well MW-1607, and 0.000437 mg/L from the December 13, 2017 sample at Chattanooga Formation compliance well MW-1612;

- The lead concentration of 0.000331 mg/L from the December 13, 2017 sample at Chattanooga Formation compliance well MW-1612;

- The pH values of 7.78 from the October 19, 2017 sample at Chattanooga Formation background well MW-1601, 7.97 from the October 19, 2017 sample at Chattanooga Formation background well MW-1602, and 7.4 from the October 17, 2017 sample at Chattanooga Formation compliance well MW-1605;

- The sulfate concentration of 16.7 mg/L from the December 6, 2018 sample at Chattanooga Formation background well MW-1602; and,

- The TDS concentration of 384 mg/L from the December 13, 2017 sample at Chattanooga Formation compliance well MW-1612.

These values were similar to other observed concentrations within the wells or in neighboring wells, and they were not removed from the dataset.

2.3.2 Establishment of Appendix III Background Levels

Analysis of variance (ANOVA) was conducted to determine whether spatial variation was present among the three background wells in the Chattanooga Formation (Attachment B). Significant variation was observed for all Appendix III parameters (boron, calcium, chloride, fluoride, pH, sulfate, and TDS). The well networks in the Rome and Dumps Fault water bearing units each include only one background well, and therefore could not be assessed using ANOVA. Therefore, the appropriateness of using intrawell tests was evaluated for all Appendix III parameters at each water bearing unit.

Intrawell tests presume that the groundwater quality in the compliance wells was not initially impacted by the CCR unit. To test this presumption, the data from the background wells within each water bearing unit were pooled, and the data from each compliance well were compared to a pooled background value. Tolerance limits were calculated using the pooled background data for all Appendix III parameters. For the Chattanooga Formation, parametric tolerance limits with 99% confidence and 95% coverage were calculated for boron, calcium, pH, and sulfate; non-parametric tolerance limits were calculated for chloride, fluoride, and TDS, given the apparent non-normal distribution of data observed for these three parameters. Parametric tolerance limits with 99% confidence and 95% coverage were calculated for all Appendix III parameters at the Rome Formation and Dumps Fault water bearing unit. Confidence intervals were calculated for each of these seven parameters at each compliance monitoring well.

If the lower confidence limit from a compliance well exceeded the upper tolerance limit for the water bearing unit's pooled background data, it was concluded that groundwater concentrations at compliance wells were above background concentrations. In these instances, intrawell tests would not be appropriate. In the Chattanooga Formation, these analyses indicated no significant exceedances for boron, fluoride, sulfate, and TDS; elevated concentrations of calcium, chloride, and pH were observed. Therefore, intrawell tests were selected to evaluate potential statistically significant increases (SSIs) for boron, fluoride, sulfate, and TDS at the Chattanooga Formation. Interwell tests were selected to evaluate potential SSIs for calcium, chloride, and pH at the

Chattanooga Formation. In the Rome Formation, these analyses indicated no significant exceedances for boron, calcium, fluoride, pH, and TDS; elevated concentrations of chloride and sulfate were observed. Therefore, intrawell tests were selected to evaluate potential SSIs for boron, calcium, fluoride, pH, and TDS at the Rome Formation. Interwell tests were selected to evaluate potential SSIs for chloride and sulfate at the Rome Formation. In the Dumps Fault water bearing unit, these analyses indicated no significant exceedances for all Appendix III parameters. Additionally, the pooled background data from this water bearing unit exhibited variation for several parameters which can produce limits that are less conservative for regulatory purposes. Therefore, intrawell tests were selected to evaluate potential SSIs for all Appendix III parameters at the Dumps Fault water bearing unit.

After equality of variance was tested and identified outliers were removed (where appropriate), a parametric or non-parametric analysis was selected based on the distribution of the data and the frequency of non-detect data. Estimated results less than the practical quantitation limit (PQL) – i.e., "J-flagged" data – were considered detections and the estimated results were used in the statistical analyses. Non-parametric analyses were selected for datasets with at least 50% non-detect data or datasets that could not be normalized. Parametric analyses were selected for datasets (either transformed or untransformed) that passed the Shapiro-Wilk / Shapiro-Francía test for normality. The Kaplan-Meier non-detect adjustment was applied to datasets with between 15% and 50% non-detect data. For datasets with fewer than 15% non-detect data, non-detect data were replaced with one half of the PQL. The selected analysis (i.e., parametric or non-parametric) and transformation (where applicable) for each background dataset are shown in Attachment B.

Upper prediction limits (UPLs) were calculated for each Appendix III parameter to represent background values. A lower prediction limit (LPL) was also calculated for pH. For each parameter for which intrawell tests were selected, a separate UPL was calculated for each compliance well in the respective well network. To conduct the interwell tests, a single prediction interval was calculated for each of these parameters using pooled data from the respective background wells in the Chattanooga and Rome Formations. The background data used for the UPL calculations are summarized in Table 1; the calculated UPLs are summarized in Table 3.

While some trends in background well data were observed, no adjustments were made to the datasets when calculating UPLs. Observed trends were low in magnitude, and the data for background wells is limited. As new data becomes available, prediction limits will be recalculated, and may be calculated with the removal of historical data to produce prediction limits that are sensitive to changes in groundwater quality.

UPLs were calculated for either a one-of-two or one-of-three retesting procedure; i.e., if at least one sample in a series of two (in a one-of-two procedure) or three (in a one-of-three procedure) does not exceed the UPL, then it can be concluded that an SSI has not occurred. All UPLs were calculated for a one-of-two resampling procedure except interwell non-parametric prediction limits for chloride within the Chattanooga Formation, which was calculated for a one-of-three retesting procedure. In practice, where initial or secondary results did not exceed the UPL, a subsequent sample was not collected.

The one-of-two and one-of-three retesting procedures allowed achieving an acceptably high statistical power while maintaining a site-wide false-positive rate (SWFPR) of 10% per year or less. Power curves were constructed for the interwell and intrawell parametric tests and are compared with the EPA Reference Power Curve in Attachment B. The power curves associated with all interwell and intrawell tests for the Pond 1 unit exceed the EPA Reference Power Curve at three and four standard deviations; this is considered a "good" level of statistical power according to USEPA's *Unified Guidance* (USEPA, 2009).

2.3.3 Evaluation of Potential Appendix III SSIs

Detection monitoring events were completed on February 12; April 10; and May 30, 2019. The detection monitoring results were compared to the calculated background values, as shown in Table 3. No exceedances for the Dumps Fault were identified.

For the Chattanooga Formation, the following exceedances were identified:

- Calcium concentrations exceeded the interwell UPL of 8.05 mg/L in both the initial (19.8 mg/L) and second (21.7 mg/L) samples collected at MW-1603, in both the initial (28.0 mg/L) and second (28.5 mg/L) samples collected at MW-1604, in both the initial (45.1 mg/L) and second (42.9 mg/L) samples collected at MW-1605, and in both the initial (36.4 mg/L) and second (41.0 mg/L) samples collected at MW-1612.

- Chloride concentrations exceeded the interwell UPL of 45.8 mg/L in the initial (59.5 mg/L), second (69.5 mg/L) and third (77.0 mg/L) samples collected at MW-1603 and in the initial (174 mg/L), second (173 mg/L), and third (180 mg/L) samples collected at MW-1605.

- The reported pH values were below the interwell LPL of 7.9 SU in both the initial (6.8 SU) and second (7.2 SU) samples at MW-1603, in both the initial (7.2 SU) and second (7.2 SU) samples collected at MW-1604, in both the initial (7.9 SU) and second (7.9 SU) samples collected at MW-1605, and in both the initial (7.3 SU) and second (7.4 SU) samples collected at MW-1612.

For the Rome Formation, the following exceedances were identified:

- Chloride concentrations exceeded the interwell UPL of 4.54 mg/L in both the initial (14.1 mg/L) and second (13.0 mg/L) samples collected at MW-1606 and in both the initial (9.50 mg/L and second (8.20 mg/L) samples collected at MW-1607.

- Sulfate concentrations exceeded the interwell UPL of 23.9 mg/L in both the initial (39.7 mg/L) and second (32.5 mg/L) samples collected at MW-1606 and in both the initial (151 mg/L) and second (130 mg/L) samples collected at MW-1607.

2.3.4 Establishment of Appendix IV Background Levels

A GWPS was established for each Appendix IV parameter in accordance with 40 CFR 257.95(h) and the *Statistical Analysis Plan* (AEP, 2019b). The established GWPS was determined to be the greater value of the background concentration and the maximum contaminant level (MCL) or risk-based level (RSL) for each Appendix IV parameter. To determine background concentrations, an upper tolerance limit (UTL) was calculated using pooled data from the background wells collected during the background monitoring and assessment monitoring events. Generally, tolerance limits were calculated parametrically with 95% coverage and 95% confidence.

For the Chattanooga Formation, non-parametric tolerance limits were calculated for arsenic, barium, beryllium, fluoride, selenium, and thallium due to apparent non-normal distributions and for cadmium and mercury due to high non-detect frequencies. For the Rome Formation, non-parametric tolerance limits were calculated for beryllium and mercury due to high non-detect frequencies and for thallium due to both an apparent non-normal distribution and a high non-detect frequency. For the Dumps Fault water bearing unit, non-parametric tolerance limits were calculated for beryllium, molybdenum, and thallium due to apparent non-normal distributions and for cadmium and mercury due to high non-detect frequencies. Tolerance limits and the final GWPSs are summarized in Table 4.

2.3.5 Evaluation of Potential Appendix IV SSLs

A confidence interval was constructed for each Appendix IV parameter at each compliance well. Confidence limits were generally calculated parametrically ($\alpha = 0.01$); however, non-parametric confidence limits were calculated in some cases (e.g., when the data did not appear to be normally distributed or when the non-detect frequency was too high). An SSL was concluded if the lower confidence limit (LCL) exceeded the GWPS (i.e., if the entire confidence interval exceeded the GWPS). Calculated confidence limits are shown in Attachment B.

The following SSLs were identified at the Clinch River Pond 1 unit:

- The LCL for barium at MW-1604 (3.03 mg/L) exceeded the GWPS of 2.00 mg/L and the LCL for lithium at MW-1605 (0.192 mg/L) exceeded the GWPS of 0.160 mg/L in the Chattanooga Formation.

- The LCL for cobalt at MW-1607 (0.00845 mg/L) exceeded the GWPS of 0.00600 mg/L, the LCLs for lithium at MW-1606 (0.0713 mg/L) and MW-1607 (0.117 mg/L) exceeded the GWPS of 0.040 mg/L, and the LCL for molybdenum at MW-1607 (0.126 mg/L) exceeded the GWPS of 0.100 mg/L in the Rome Formation.

- The LCL for cobalt at MW-1610 (0.00792 mg/L) exceeded the GWPS of 0.00600 mg/L and the LCL for molybdenum at MW-1610 (0.141 mg/L) exceeded the GWPS of 0.100 mg/L in the Dumps Fault water bearing unit.

As a result, the Pond 1 unit has progressed into assessment monitoring and will either move to an assessment of corrective measures or an alternate source demonstration will be completed.

2.4 Conclusions

Background, detection, and a statistical evaluation of Appendix IV parameters were completed in accordance with the CCR Rule. The laboratory and field data were reviewed prior to statistical analysis, with no QA/QC issues identified that impacted data usability. A review of outliers identified twenty-two potential outliers, with seven values removed from the dataset without replacement.

Prediction intervals were constructed for Appendix III parameters based on the remaining background data and a one-of-two or one-of-three retesting procedure. Interwell tests were selected for calcium, chloride, and pH at the Chattanooga Formation and for chloride and sulfate at the Rome Formation. Intrawell tests were selected for boron, fluoride, sulfate, and TDS at the Chattanooga Formation; for boron, calcium, fluoride, pH, and TDS at the Rome Formation, and for all Appendix III parameters at the Dumps Fault water bearing unit. Exceedances were noted for calcium, chloride, and sulfate; pH was detected below its LPL.

GWPSs were established for the Appendix IV parameters following the background monitoring period using data from eight sampling events and reestablished using data from two additional sampling events. A confidence interval was constructed at each compliance well for each Appendix IV parameter; SSLs were concluded if the entire confidence interval exceeded the GWPS. SSLs were identified for barium, cobalt, lithium, and molybdenum.

Based on this evaluation, the Pond 1 CCR unit has officially progressed into assessment monitoring with the certification of this report. Pond 1 will either move to an assessment of corrective measures or an ASD will be conducted to evaluate if the unit can remain in assessment monitoring.

SECTION 3

REFERENCES

American Electric Power (AEP). 2019a. Notification of Groundwater Protection Standard Exceedances – Clinch River Pond 1, Permit No. 620. May 31, 2019.

AEP. 2019b. Statistical Analysis Plan – Clinch River Plant. April 2019.

United States Environmental Protection Agency (USEPA). 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance. EPA 530/R-09-007. March 2009.

TABLES

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Geosyntec Consultants

Parameter	Unit	MW-1601									
		10/19/2017	12/12/2017	2/13/2018	4/11/2018	6/7/2018	8/20/2018	10/17/2018	12/6/2018	2/7/2019	4/8/2019
Antimony	µg/L	0.180	0.190	0.110	0.120	0.160	0.250	0.200	0.150	0.170	0.150
Arsenic	µg/L	9.18	8.39	7.06	14.9	17.0	25.8	24.7	17.8	17.8	21.7
Barium	µg/L	238	306	280	293	262	296	222	191	176	184
Beryllium	µg/L	0.004 U	0.00700 J	0.00700 J	0.00700 J	0.00500 J	0.00500 J	0.002 U	0.002 U	0.002 U	0.002 U
Boron	mg/L	0.447	0.473	0.496	0.514	0.576	0.517	0.542	0.593	0.526	0.577
Cadmium	µg/L	0.005 U	0.00900 J	0.005 U	0.005 U	0.00600 J	0.005 U	0.01 U	0.01 U	0.0100 J	0.0200 J
Calcium	mg/L	5.58	5.88	5.99	7.49	6.34	8.42	6.84	5.65	5.50	5.90
Chloride	mg/L	23.8	31.9	30.8	41.0	31.4	45.8	34.3	28.1	24.0	25.2
Chromium	µg/L	0.221	0.281	0.155	0.544	0.279	0.402	0.217	0.235	0.292	0.258
Cobalt	µg/L	0.112	0.149	0.0910	0.0920	0.0620	0.0990	0.0740	0.0610	0.0720	0.0720
Combined Radium	pCi/L	1.20	2.08	1.01	0.862	1.15	0.711	3.23	0.871	0.157	0.337
Fluoride	mg/L	1.86	1.82	2.13	2.10	2.22	2.10	2.20	2.22	2.32	2.18
Lead	ug/L	0.0700	0.153	0.125	0.0960	0.0720	0.0470	0.0300 J	0.0600 J	0.0800 J	0.0700 J
Lithium	mg/L	0.0950	0.0920	0.0980	0.110	0.118	0.108	0.0980	0.0920	0.0990	0.111
Mercury	µg/L	0.05 U	0.0800 J	0.05 U	0.0500 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0500 J
Molybdenum	µg/L	25.7	21.9	12.0	6.60	3.77	3.79	3.00	3.34	2.85	1.00 J
Selenium	µg/L	0.0400 J	0.0600 J	0.0500 J	0.0700 J	0.03 U00	0.0600 J	0.0400 J	0.03 U00	0.03 U00	0.0400 J
Total Dissolved Solids	mg/L	1180	1340	1380	1620	1440	1730	1500	1410	1370	1390
Sulfate	mg/L	166	250	248	319	245	358	258	210	184	173
Thallium	µg/L	0.0200 J	0.01 U	0.0400 J	0.0100 J	0.0100 J	0.0100 J	0.1 U	0.1 U	0.1 U	0.1 U
pH	SU	7.78	8.32	8.35	8.34	8.38	8.31	8.45	8.54	8.41	8.44

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1602									
		10/19/2017	12/12/2017	2/13/2018	4/11/2018	6/7/2018	8/20/2018	10/15/2018	12/6/2018	2/7/2019	4/8/2019
Antimony	µg/L	0.220	0.120	0.0700	0.0700	0.0700	0.130	0.0600 J	0.0500 J	0.0800 J	0.0900 J
Arsenic	µg/L	2.69	2.15	3.54	2.90	2.16	3.69	2.95	1.49	1.88	2.02
Barium	µg/L	104	111	111	109	109	114	101	106	106	103
Beryllium	µg/L	0.0100 J	0.0100 J	0.00800 J	0.00600 J	0.00700 J	0.004 U	0.02 U	0.02 U	0.02 U	0.02 U
Boron	mg/L	0.654	0.584	0.621	0.614	0.672	0.547	0.664	0.637	0.590	0.620
Cadmium	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0300	0.01 U	0.01 U	0.01 U	0.01 U
Calcium	mg/L	3.09	2.64	2.93	2.78	2.74	2.84	2.94	2.78	3.72	4.00
Chloride	mg/L	4.20	4.20	4.90	5.60	5.20	6.50	5.60	3.80	4.40	5.50
Chromium	µg/L	0.472	0.291	0.153	0.268	0.262	0.245	0.251	0.246	0.231	0.200 J
Cobalt	µg/L	0.151	0.100	0.0600	0.0470	0.0410	0.0420	0.0300 J	0.0400 J	0.0400 J	0.0300 J
Combined Radium	pCi/L	0.600	0.610	0.748	0.187	0.859	0.457	0.233	1.25	0.288	0.135
Fluoride	mg/L	1.45	1.57	1.61	1.63	1.64	1.57	1.61	1.64	1.69	1.56
Lead	ug/L	0.185	0.114	0.0930	0.140	0.0620	0.126	0.0600 J	0.0500 J	0.0400 J	0.0500 J
Lithium	mg/L	0.0510	0.0430	0.0430	0.0400	0.0450	0.0340	0.0320	0.0480	0.0450	0.0430
Mercury	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Molybdenum	µg/L	9.80	7.77	8.70	6.41	3.99	4.84	3.27	2.87	4.66	4.76
Selenium	µg/L	0.0400 J	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.0400 J	0.03 U00
Total Dissolved Solids	mg/L	525	516	528	500	525	567	544	500	521	571
Sulfate	mg/L	32.8	29.2	32.2	32.4	29.1	37.5	29.0	16.7	20.5	25.0
Thallium	µg/L	0.0200 J	0.01 U	0.0300 J	0.01 U	0.01 U	0.0100 J	0.1 U	0.1 U	0.1 U	0.1 U
pH	SU	7.97	8.70	8.52	8.68	8.64	8.54	8.57	8.71	8.68	8.64

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1603									
		10/17/2017	12/11/2017	2/14/2018	4/12/2018	6/12/2018	8/22/2018	10/16/2018	12/12/2018	2/12/2019	4/10/2019
Antimony	µg/L	0.0400 J	0.0500 J	0.0400 J	0.0400 J	0.0600	0.0700	0.02 U	0.02 U	0.2 U	0.0200 J
Arsenic	µg/L	1.82	1.70	1.68	1.98	2.20	2.98	2.89	1.75	1.50	2.43
Barium	µg/L	2160	1950	2070	2250	2140	2280	1980	1780	1860	2000
Beryllium	µg/L	0.004 U	0.0100 J	0.0100 J	0.004 U	0.00800 J	0.004 U	0.02 U	0.02 U	0.2 U	0.02 U
Boron	mg/L	0.202	0.193	0.199	0.379	0.285	0.525	0.339	0.219	0.177	0.211
Cadmium	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.1 U	0.01 U
Calcium	mg/L	23.3	22.1	22.8	24.8	22.8	24.4	21.6	20.6	19.8	21.7
Chloride	mg/L	182	121	58.3	168	59.0	72.6	94.7	47.4	59.5	69.5
Chromium	µg/L	0.214	0.190	0.157	0.187	0.231	0.324	0.226	0.237	0.4 U	0.200 J
Cobalt	µg/L	0.691	0.541	0.451	0.616	0.795	0.776	0.684	0.511	0.400 J	0.477
Combined Radium	pCi/L	3.23	0.901	0.698	1.09	0.888	1.10	0.383	0.632	0.385	1.64
Fluoride	mg/L	0.170	0.100 J	0.110	0.190	0.130	0.140	0.140	0.110	0.110	0.100
Lead	ug/L	0.0380	0.0210	0.00800 J	0.0100 J	0.00900 J	0.0200 J	0.02 U	0.02 U	0.2 U	0.02 U
Lithium	mg/L	0.0540	0.0480	0.0480	0.0930	0.0730	0.0950	0.0640	0.0420	0.0490	0.0520
Mercury	µg/L	0.05 U	0.0600 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Molybdenum	µg/L	4.71	2.55	2.12	1.79	1.24	1.51	1.00 J	0.600 J	4 U	0.500 J
Selenium	µg/L	0.100	0.0700 J	0.100	0.0400 J	0.0600 J	0.0500 J	0.0800 J	0.100 J	0.3 U	0.0900 J
Total Dissolved Solids	mg/L	678	577	378	599	408	448	472	339	374	434
Sulfate	mg/L	45.1	47.3	23.0	28.3	23.0	23.2	23.4	11.5	8.10	16.2
Thallium	µg/L	0.0200 J	0.0100 J	0.0100 J	0.01 U	0.0100 J	0.0100 J	0.1 U	0.1 U	1 U	0.1 U
pH	SU	7.32	6.95	6.68	7.75	7.64	7.80	7.83	6.98	6.80	7.15

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1604									
		10/17/2017	12/11/2017	2/14/2018	4/12/2018	6/12/2018	8/22/2018	10/16/2018	12/12/2018	2/12/2019	4/10/2019
Antimony	µg/L	0.0500	0.0400 J	0.0500 J	0.180	0.0800	0.0700	0.02 U	0.0400 J	0.2 U	0.0300 J
Arsenic	µg/L	1.64	1.39	1.61	3.10	1.58	1.71	1.89	1.36	1.43	2.26
Barium	µg/L	3330	3160	3320	2880	3210	3260	3040	3150	3020	3280
Beryllium	µg/L	0.004 U	0.004 U	0.004 U	0.00700 J	0.00500 J	0.004 U	0.02 U	0.02 U	0.2 U	0.02 U
Boron	mg/L	0.428	0.476	0.396	0.399	0.406	0.471	0.444	0.468	0.350	0.384
Cadmium	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.1 U	0.01 U
Calcium	mg/L	27.7	29.3	26.3	27.2	26.2	27.3	27.2	28.9	28.0	28.5
Chloride	mg/L	29.9	22.5	22.6	22.5	21.0	20.3	17.8	19.4	20.4	21.1
Chromium	µg/L	0.331	0.113	0.116	0.255	0.248	0.244	0.207	0.200 J	0.500 J	0.100 J
Cobalt	µg/L	0.585	0.347	0.487	0.427	0.687	1.03	1.12	0.634	0.630	0.701
Combined Radium	pCi/L	2.50	0.465	1.27	1.12	1.76	1.19	0.776	1.02	0.681	1.56
Fluoride	mg/L	0.270	0.220	0.230	0.270	0.250	0.260	0.220	0.220	0.210	0.210
Lead	ug/L	0.0600	0.0200 J	0.0100 J	0.0680	0.0470	0.0100 J	0.02 U	0.0200 J	0.2 U	0.02 U
Lithium	mg/L	0.0780	0.0900	0.0800	0.0780	0.0870	0.0850	0.0800	0.0770	0.0760	0.0830
Mercury	µg/L	0.05 U	0.0600 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Molybdenum	µg/L	1.57	0.830	0.920	0.500	0.470	0.540	0.600 J	0.500 J	5.00 J	0.400 J
Selenium	µg/L	0.0400 J	0.03 U	0.0500 J	0.0700 J	0.0500 J	0.0500 J	0.0600 J	0.0300 J	0.3 U	0.0500 J
Total Dissolved Solids	mg/L	404	395	378	410	374	390	390	375	386	399
Sulfate	mg/L	8.20	6.30	6.70	5.60	4.20	4.10	3.40	2.80	1.70	1.40
Thallium	µg/L	0.0100 J	0.0100 J	0.01 U	0.01 U	0.0100 J	0.0200 J	0.1 U	0.1 U	1 U	0.1 U
pH	SU	6.94	6.70	7.10	7.16	7.08	7.08	7.08	7.14	7.16	7.23

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1605									
		10/17/2017	12/12/2017	2/15/2018	4/11/2018	6/12/2018	8/22/2018	10/16/2018	12/11/2018	2/12/2019	4/10/2019
Antimony	µg/L	0.280	0.210	0.100	0.0700	0.140	0.110	0.0400 J	0.0400 J	0.0700 J	0.0600 J
Arsenic	µg/L	5.81	7.25	4.59	4.58	4.50	3.35	3.11	3.83	5.22	4.11
Barium	µg/L	1670	1570	1560	1250	1290	1330	1130	1170	1110	1100
Beryllium	µg/L	0.004 U	0.00500 J	0.004 U	0.004 U	0.00400 J	0.0100 J	0.02 U	0.02 U	0.02 U	0.02 U
Boron	mg/L	0.540	0.522	0.589	0.543	0.569	0.699	0.586	0.589	0.582	0.583
Cadmium	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0200 J	0.0100 J
Calcium	mg/L	44.2	44.0	50.8	48.1	48.2	48.9	47.9	46.9	45.1	42.9
Chloride	mg/L	184	342	180	184	184	186	181	177	174	173
Chromium	µg/L	0.163	0.158	0.136	0.219	0.230	0.291	0.215	0.200 J	0.246	0.288
Cobalt	µg/L	0.403	0.354	0.306	0.316	0.357	0.407	0.321	0.309	0.264	0.200
Combined Radium	pCi/L	2.12	2.16	1.13	1.24	1.13	0.349	0.641	2.72	0.644	1.14
Fluoride	mg/L	0.340	0.320	0.350	0.400	0.400	0.410	0.370	0.370	0.350	0.330
Lead	ug/L	0.0290	0.0260	0.0510	0.0360	0.0850	0.0400	0.02 U	0.02 U	0.0500 J	0.0500 J
Lithium	mg/L	0.191	0.183	0.220	0.196	0.207	0.206	0.198	0.199	0.206	0.199
Mercury	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Molybdenum	µg/L	8.54	7.42	6.62	4.35	4.19	3.38	2.78	2.65	2.10	2.34
Selenium	µg/L	0.0500 J	0.0800 J	0.0700 J	0.0500 J	0.03 U	0.0500 J	0.03 U	0.03 U	0.0400 J	0.0500 J
Total Dissolved Solids	mg/L	808	807	793	1700	842	857	838	798	808	777
Sulfate	mg/L	97.8	91.1	101	105	109	104	85.2	70.5	61.8	46.5
Thallium	µg/L	0.01 U	0.0100 J	0.0200 J	0.01 U	0.0100 J	0.0200 J	0.1 U	0.1 U	0.1 U	0.1 U
pH	SU	7.40	7.72	7.75	7.80	7.73	7.70	7.81	7.85	7.88	7.88

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1606									
		10/18/2017	12/12/2017	2/14/2018	4/10/2018	6/11/2018	8/21/2018	10/15/2018	12/11/2018	2/12/2019	4/9/2019
Antimony	µg/L	0.0200 J	0.0200 J	0.0300 J	0.0200 J	0.0400 J	0.0400 J	0.0300 J	0.02 U	0.02 U	0.02 U
Arsenic	µg/L	7.03	6.77	6.76	6.72	6.89	7.19	7.13	7.71	7.90	11.0
Barium	µg/L	117	117	116	104	114	124	116	117	117	107
Beryllium	µg/L	0.004 U	0.00500 J	0.00600 J	0.00700 J	0.00600 J	0.00600 J	0.02 U	0.02 U	0.02 U	0.02 U
Boron	mg/L	0.0780	0.194	0.175	0.148	0.144	0.168	0.136	0.126	0.110	0.0700 J
Cadmium	µg/L	0.0100 J	0.0100 J	0.005 U	0.0100 J	0.005 U	0.00600 J	0.01 U	0.01 U	0.01 U	0.01 U
Calcium	mg/L	50.9	55.3	56.8	44.8	55.0	64.4	60.0	58.6	56.8	62.2
Chloride	mg/L	14.3	14.4	14.9	12.9	14.0	15.7	14.3	13.9	14.1	13.0
Chromium	µg/L	0.139	0.216	0.140	0.225	0.205	0.218	0.211	0.200 J	0.200 J	0.100 J
Cobalt	µg/L	6.00	6.33	5.66	5.53	4.98	6.13	5.34	5.58	5.79	4.99
Combined Radium	pCi/L	2.33	0.725	1.46	1.16	1.15	1.27	1.15	2.74	1.19	1.49
Fluoride	mg/L	0.200	0.170	0.180	0.260	0.270	0.230	0.240	0.250	0.240	0.160
Lead	ug/L	0.628	0.573	0.388	0.549	0.451	0.515	0.391	0.445	0.343	0.225
Lithium	mg/L	0.0890	0.0860	0.0670	0.0950	0.0990	0.0810	0.0870	0.0910	0.100	0.0440
Mercury	µg/L	0.05 U	0.0600 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Molybdenum	µg/L	84.2	82.4	65.1	89.6	91.5	66.1	71.9	80.7	87.4	44.8
Selenium	µg/L	0.0600 J	0.100 J	0.100 J	0.100	0.0800 J	0.0800 J	0.0700 J	0.0500 J	0.0400 J	0.0800 J
Total Dissolved Solids	mg/L	374	348	336	302	316	377	344	329	341	352
Sulfate	mg/L	57.9	66.8	68.3	42.4	45.4	54.9	47.8	42.1	39.7	32.5
Thallium	µg/L	0.0400 J	0.0400 J	0.0400 J	0.0400 J	0.0500	0.0500	0.1 U	0.1 U	0.1 U	0.1 U
pH	SU	6.75	7.13	7.06	7.23	7.00	6.98	7.10	7.16	7.23	7.18

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1607									
		10/18/2017	12/12/2017	2/14/2018	4/11/2018	6/11/2018	8/21/2018	10/15/2018	12/11/2018	2/12/2019	4/9/2019
Antimony	µg/L	0.0500	0.0800	0.0500 J	0.0400 J	0.0500	0.0600	0.0900 J	0.0300 J	0.0400 J	0.0300 J
Arsenic	µg/L	4.38	5.28	0.960	1.05	0.980	1.29	1.46	1.01	0.860	1.59
Barium	µg/L	141	92.5	71.5	71.1	74.7	75.7	71.9	70.4	73.1	75.3
Beryllium	µg/L	0.004 U	0.00500 J	0.004 U	0.004 U	0.004 U	0.004 U	0.02 U	0.02 U	0.02 U	0.02 U
Boron	mg/L	0.139	0.212	0.121	0.143	0.143	0.151	0.122	0.111	0.100 J	0.134
Cadmium	µg/L	0.0200 J	0.120	0.180	0.170	0.0900	0.110	0.110	0.250	0.180	0.110
Calcium	mg/L	54.9	50.1	48.7	49.1	49.5	46.4	45.8	44.8	46.3	47.2
Chloride	mg/L	16.7	16.3	10.7	11.0	11.1	12.0	11.7	10.0	9.50	8.20
Chromium	µg/L	0.273	0.194	0.100	0.206	0.208	0.216	0.224	0.200 J	0.200 J	0.200 J
Cobalt	µg/L	4.06	8.94	11.2	11.4	11.3	10.1	10.9	12.1	12.7	8.87
Combined Radium	pCi/L	2.73	1.06	0.743	0.436	0.975	0.511	0.999	0.660	0.885	0.701
Fluoride	mg/L	0.250	0.220	0.200	0.220	0.230	0.260	0.260	0.250	0.230	0.200
Lead	ug/L	0.228	0.614	0.727	0.585	0.524	0.525	0.524	0.701	0.586	0.423
Lithium	mg/L	0.110	0.119	0.110	0.125	0.133	0.129	0.132	0.126	0.139	0.127
Mercury	µg/L	0.05 U	0.0800 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Molybdenum	µg/L	89.7	126	160	144	153	165	164	168	175	138
Selenium	µg/L	0.0900 J	0.0900 J	0.100	0.100	0.200	0.200	0.0400 J	0.100 J	0.200 J	0.200 J
Total Dissolved Solids	mg/L	468	417	284	306	278	315	302	280	298	296
Sulfate	mg/L	197	206	149	153	156	162	159	150	151	130
Thallium	µg/L	0.01 U	0.0100 J	0.0100 J	0.0300 J	0.0500 J	0.0300 J	0.1 U	0.1 U	0.1 U	0.1 U
pH	SU	7.63	7.42	7.88	7.98	7.79	8.00	8.08	7.70	7.92	7.96

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1608									
		10/19/2017	12/11/2017	2/13/2018	4/10/2018	6/7/2018	8/20/2018	10/17/2018	12/6/2018	2/7/2019	4/8/2019
Antimony	µg/L	0.0600	0.0600	0.0500 J	0.0500 J	0.0600	0.0600	0.0300 J	0.0400 J	0.0400 J	0.0300 J
Arsenic	µg/L	1.69	1.96	2.00	1.86	2.99	1.88	1.70	1.36	1.64	1.46
Barium	µg/L	42.7	42.9	43.8	41.9	44.3	38.4	34.2	33.1	35.3	32.9
Beryllium	µg/L	0.0420	0.0660	0.0620	0.0560	0.0410	0.0310	0.0300 J	0.0300 J	0.0200 J	0.02 U
Boron	mg/L	0.359	0.375	0.349	0.334	0.389	0.315	0.344	0.365	0.332	0.352
Cadmium	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.00600 J	0.0200 J	0.01 U	0.01 U	0.01 U	0.01 U
Calcium	mg/L	1.92	1.31	1.09	0.779	0.708	1.31	1.37	1.24	1.35	1.32
Chloride	mg/L	7.60	7.30	8.70	8.00	7.20	7.40	6.80	6.10	6.20	6.70
Chromium	µg/L	0.956	1.26	1.08	1.11	0.912	0.938	0.647	0.639	0.633	0.696
Cobalt	µg/L	0.442	0.425	0.401	0.372	0.330	0.284	0.217	0.229	0.233	0.227
Combined Radium	pCi/L	0.661	0.498	0.939	0.484	0.894	2.99	3.57	0.518	0.126	0.495
Fluoride	mg/L	0.450	0.400	0.450	0.480	0.440	0.430	0.430	0.420	0.420	0.390
Lead	ug/L	0.405	0.526	0.656	0.675	0.721	0.438	0.273	0.284	0.256	0.255
Lithium	mg/L	0.0270	0.0320	0.0240	0.0230	0.0280	0.0180	0.0200 J	0.0100 J	0.0300 J	0.0200 J
Mercury	µg/L	0.05 U	0.0700 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Molybdenum	µg/L	9.04	7.35	6.43	3.52	2.49	3.20	2.89	2.67	2.66	2.32
Selenium	µg/L	0.100	0.100	0.0900 J	0.100	0.0900 J	0.0700 J	0.0600 J	0.0400 J	0.0700 J	0.0600 J
Total Dissolved Solids	mg/L	484	468	466	466	437	441	439	423	445	454
Sulfate	mg/L	179	176	182	178	171	173	167	166	171	162
Thallium	µg/L	0.0200 J	0.0200 J	0.0300 J	0.0200 J	0.0200 J	0.0200 J	0.1 U	0.1 U	0.1 U	0.1 U
pH	SU	8.10	7.98	8.67	8.81	8.68	8.70	0.0900	8.67	8.64	8.68

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1609									
		10/18/2017	12/11/2017	2/13/2018	4/10/2018	6/11/2018	8/21/2018	10/15/2018	12/6/2018	2/7/2019	4/8/2019
Antimony	µg/L	0.0600	0.0500	0.0500 J	0.0300 J	0.0700	0.130	0.0500 J	0.0200 J	0.0300 J	0.0300 J
Arsenic	µg/L	0.970	0.950	0.430	0.180	0.190	0.280	0.190	0.140	0.100	0.100
Barium	µg/L	476	507	333	359	397	435	345	356	365	443
Beryllium	µg/L	0.004 U	0.00400 J	0.004 U	0.004 U	0.004 U	0.004 U	0.02 U	0.02 U	0.02 U	0.02 U
Boron	mg/L	0.0170	0.0840	0.0840	0.0410	0.0770	0.117	0.0500 J	0.0400 J	0.02 U	0.02 U
Cadmium	µg/L	0.005 U	0.005 U	0.005 U	0.0200 J	0.0400	0.0300	0.01 U	0.0100 J	0.0200 J	0.0100 J
Calcium	mg/L	66.6	67.9	60.7	59.9	75.5	72.6	70.0	66.1	72.3	82.5
Chloride	mg/L	4.10	3.10	3.20	1.70	1.90	1.50	1.60	1.50	1.30	1.20
Chromium	µg/L	0.126	0.112	0.151	0.164	0.154	0.232	0.319	0.200 J	0.239	0.100 J
Cobalt	µg/L	0.338	0.258	0.522	0.168	0.0820	1.38	0.558	0.114	0.02 U	0.206
Combined Radium	pCi/L	3.26	1.42	1.66	1.54	1.89	1.16	0.842	1.79	1.57	1.52
Fluoride	mg/L	0.320	0.320	0.310	0.270	0.280	0.290	0.270	0.260	0.210	0.200
Lead	ug/L	0.142	0.0330	0.326	0.426	0.524	0.548	0.506	0.350	0.362	0.528
Lithium	mg/L	0.0002 U	0.0100	0.0002 U	0.000900 J	0.00500	0.00400	0.009 U	0.0100 J	0.009 U	0.009 U
Mercury	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Molybdenum	µg/L	2.22	1.78	1.55	1.34	0.790	0.460	0.600 J	0.600 J	0.400 J	0.4 U
Selenium	µg/L	0.0300 J	0.03 U	0.100 J	0.200	0.100	0.0300 J	0.03 U	0.100 J	0.200 J	0.0600 J
Total Dissolved Solids	mg/L	358	326	262	292	312	311	276	281	305	323
Sulfate	mg/L	13.6	12.6	21.8	15.8	21.0	13.7	16.8	14.9	13.7	13.6
Thallium	µg/L	0.01 U	0.0300 J	0.0300 J	0.0100 J	0.0100 J	0.0900	0.1 U	0.1 U	0.1 U	0.1 U
pH	SU	6.72	6.61	7.58	7.40	7.26	7.29	7.49	7.49	7.41	7.50

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1610									
		10/17/2017	12/12/2017	2/15/2018	4/11/2018	6/12/2018	8/21/2018	10/16/2018	12/11/2018	2/12/2019	4/9/2019
Antimony	µg/L	0.220	0.0700	0.0500 J	0.0900	0.0800	0.0600	0.02 U	0.0300 J	0.0800 J	0.120
Arsenic	µg/L	1.67	1.18	1.56	1.37	1.24	1.08	1.28	1.69	1.59	1.61
Barium	µg/L	212	227	203	193	202	200	203	200	253	247
Beryllium	µg/L	0.004 U	0.00400 J	0.00700 J	0.00400 J	0.00400 J	0.004 U	0.02 U	0.02 U	0.02 U	0.02 U
Boron	mg/L	0.0970	0.0920	0.105	0.0600	0.0530	0.139	0.0700 J	0.0500 J	0.0300 J	0.0500 J
Cadmium	µg/L	0.0300	0.0100 J	0.005 U	0.0300	0.005 U	0.005 U	0.01 U	0.01 U	0.0200 J	0.0300 J
Calcium	mg/L	35.5	35.0	37.3	36.1	35.8	35.2	35.0	33.6	35.4	38.5
Chloride	mg/L	11.9	11.1	11.8	11.7	13.4	11.7	10.4	10.5	10.8	10.9
Chromium	µg/L	0.167	0.174	0.159	0.192	0.210	0.248	0.262	0.208	0.200 J	0.267
Cobalt	µg/L	9.90	12.1	11.7	10.2	10.6	10.1	8.25	8.97	7.43	6.28
Combined Radium	pCi/L	0.839	1.13	0.688	0.192	1.79	1.04	0.938	1.76	0.517	1.34
Fluoride	mg/L	0.180	0.170	0.200	0.210	0.210	0.220	0.210	0.220	0.210	0.170
Lead	ug/L	12.6	15.2	11.1	15.0	8.48	3.61	4.33	7.18	6.94	9.60
Lithium	mg/L	0.141	0.146	0.180	0.171	0.188	0.206	0.207	0.219	0.183	0.197
Mercury	µg/L	0.05 U	0.0600 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Molybdenum	µg/L	139	152	161	135	132	172	160	182	159	156
Selenium	µg/L	0.400	0.300	0.200	0.400	0.300	0.100	0.100 J	0.200	0.500	0.500
Total Dissolved Solids	mg/L	260	241	247	254	258	258	245	233	257	263
Sulfate	mg/L	47.7	46.2	49.1	46.4	53.2	48.7	41.1	43.3	41.2	41.6
Thallium	µg/L	0.0300 J	0.0100 J	0.0200 J	0.0200 J	0.0200 J	0.0200 J	0.1 U	0.1 U	0.1 U	0.1 U
pH	SU	7.30	7.10	7.54	7.64	7.48	7.57	7.72	7.74	7.68	7.71

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1611									
		10/19/2017	12/11/2017	2/13/2018	4/10/2018	6/11/2018	8/21/2018	10/15/2018	12/6/2018	2/12/2019	4/9/2019
Antimony	µg/L	0.330	0.180	0.540	0.500	0.230	0.150	0.100	0.0600 J	0.0500 J	0.0500 J
Arsenic	µg/L	7.16	11.5	36.5	39.5	27.5	20.1	19.2	16.4	13.2	11.9
Barium	µg/L	91.8	63.7	53.3	51.0	57.2	60.6	63.3	68.8	75.7	80.8
Beryllium	µg/L	0.004 U	0.0100 J	0.0100 J	0.00900 J	0.00800 J	0.00700 J	0.02 U	0.02 U	0.02 U	0.02 U
Boron	mg/L	0.423	0.551	0.663	0.669	0.701	0.650	0.634	0.681	0.559	0.622
Cadmium	µg/L	0.0100 J	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U
Calcium	mg/L	115	124	143	96.2	68.6	46.7	42.5	36.3	31.9	32.8
Chloride	mg/L	131	138	101	91.3	61.5	48.9	38.5	36.2	31.3	26.9
Chromium	µg/L	0.656	0.555	0.836	0.864	0.640	0.572	0.454	0.355	0.326	0.415
Cobalt	µg/L	0.311	0.0800	0.131	0.122	0.0920	0.0760	0.0620	0.0550	0.0560	0.0620
Combined Radium	pCi/L	1.30	0.278	0.748	0.257	0.766	0.360	0.467	0.384	0.345	0.512
Fluoride	mg/L	0.480	0.680	0.660	0.850	0.900	0.980	0.920	0.960	0.980	0.920
Lead	ug/L	1.05	0.0400 J	0.146	0.142	0.169	0.144	0.133	0.120	0.109	0.0900 J
Lithium	mg/L	0.109	0.130	0.161	0.130	0.110	0.0900	0.0790	0.0800	0.0710	0.0870
Mercury	µg/L	0.05 U	0.0800 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Molybdenum	µg/L	38.0	6.76	2.19	2.54	2.10	1.85	2.00 J	2.41	2.52	2.36
Selenium	µg/L	0.0900 J	0.100 J	0.100	0.100	0.0900 J	0.0800 J	0.0500 J	0.0400 J	0.0400 J	0.0500 J
Total Dissolved Solids	mg/L	2940	3420	2720	2520	1750	1450	1200	1060	989	939
Sulfate	mg/L	1600	1690	1330	1400	777	552	389	318	259	222
Thallium	µg/L	0.01 U	0.0400 J	0.110	0.01 U	0.01 U	0.0400 J	0.1 U	0.1 U	0.1 U	0.1 U
pH	SU	7.40	7.48	7.74	7.84	7.72	7.68	7.79	7.85	7.79	7.90

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 1 - Groundwater Data Summary
Clinch River - Pond 1

Parameter	Unit	MW-1612								
		12/13/2017	2/14/2018	4/12/2018	6/12/2018	8/22/2018	10/16/2018	12/11/2018	2/12/2019	4/10/2019
Antimony	µg/L	0.300	0.0800	0.110	0.0700	0.0500	0.0200 J	0.0300 J	0.2 U	0.0300 J
Arsenic	µg/L	3.86	2.61	2.26	1.82	1.56	1.17	0.920	0.700 J	0.740
Barium	µg/L	2020	2560	2170	2170	2090	1640	1880	1880	2060
Beryllium	µg/L	0.0450	0.0100 J	0.00500 J	0.00600 J	0.004 U	0.02 U	0.02 U	0.2 U	0.02 U
Boron	mg/L	0.453	0.532	0.476	0.452	0.543	0.500 J	0.439	0.393	0.527
Cadmium	µg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.1 U	0.01 U
Calcium	mg/L	38.7	43.0	44.9	42.4	42.0	38.1	37.9	36.4	41.0
Chloride	mg/L	13.3	14.5	21.6	22.7	20.9	37.1	35.3	32.8	27.5
Chromium	µg/L	0.437	0.190	0.196	0.206	0.251	0.200 J	0.200 J	0.400 J	0.100 J
Cobalt	µg/L	0.274	0.149	0.115	0.0940	0.124	0.242	0.304	0.300 J	0.339
Combined Radium	pCi/L	2.94	1.36	2.21	1.58	2.76	1.05	3.01	0.574	1.25
Fluoride	mg/L	0.120	0.120	0.170	0.170	0.190	0.210	0.200	0.190	0.180
Lead	ug/L	0.331	0.0830	0.0400	0.0380	0.0250	0.0200 J	0.02 U	0.2 U	0.02 U
Lithium	mg/L	0.109	0.121	0.128	0.132	0.136	0.09 U	0.134	0.123	0.133
Mercury	µg/L	0.0600 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Molybdenum	µg/L	3.60	1.59	1.13	0.830	0.670	0.800 J	0.700 J	20.0 J	0.700 J
Selenium	µg/L	0.100	0.0600 J	0.0300 J	0.0400 J	0.0300 J	0.0400 J	0.03 U	0.3 U	0.03 U00
Total Dissolved Solids	mg/L	384	506	546	524	550	528	522	537	551
Sulfate	mg/L	6.00	9.30	13.9	16.9	15.6	10.8	7.80	5.40	4.60
Thallium	µg/L	0.0100 J	0.0300 J	0.01 U	0.0100 J	0.0100 J	0.1 U	0.1 U	1 U	0.1 U
pH	SU	7.08	6.92	7.07	7.02	7.08	7.33	7.35	7.29	7.36

Notes:
µg/L: micrograms per liter
mg/L: milligrams per liter
pCi/L: picocuries per liter
SU: standard unit
U: Non-detect value. Parameters which were not detected are shown as less than the method detection limit (MDL).
J: Estimated value. Parameter was detected in concentrations below the reporting limit.
-: Not sampled
For statistical analysis, parameters which were not detected were replaced with the reporting limit.

Table 2: Outlier Analysis Summary
Clinch River Plant - Pond 1

Geosyntec Consultants, Inc.

Formation	Location	Well ID	Sample Date	Parameter	Reported Value	Units	Conclusions
Chattanooga Shale	Compliance	MW-1604	4/12/2018	Antimony	0.00018	mg/L	This value was similar to those reported in nearby wells and was not removed from the dataset.
	Background	MW-1608	6/7/2019	Arsenic	0.00299	mg/L	This value was similar to those reported in nearby wells and was not removed from the dataset.
	Compliance	MW-1604	4/12/2018	Arsenic	0.0031	mg/L	This value was similar to those reported in nearby wells and was not removed from the dataset.
	Compliance	MW-1605	12/12/2017	Chloride	342	mg/L	This value was removed from the dataset as an outlier. Its removal did not affect the calculation of background values.
	Background	MW-1602	10/19/2017	Chromium	0.000472	mg/L	This value was similar to those reported in nearby wells and was not removed from the dataset.
	Compliance	MW-1612	12/13/2017	Chromium	0.000437	mg/L	This value was similar to those reported in nearby wells and was not removed from the dataset.
	Compliance	MW-1603	10/17/2017	Combined Radium	3.23	pCi/L	This value was removed from the dataset as an outlier. Its removal did not affect the calculation of background values.
	Compliance	MW-1612	12/13/2017	Lead	0.000331	mg/L	This value was similar to those reported in nearby wells and was not removed from the dataset.
	Background	MW-1601	10/19/2017	pH	7.78	SU	This value was similar to those reported in nearby wells and was not removed from the dataset.
	Background	MW-1602	10/19/2017	pH	7.97	SU	This value was similar to those reported in nearby wells and was not removed from the dataset.
	Compliance	MW-1605	10/17/2017	pH	7.4	SU	This value was similar to those reported in nearby wells and was not removed from the dataset.
	Background	MW-1602	12/6/2018	Sulfate	16.7	mg/L	This value was the reported for the final background sampling event. Because it may be indicative of a trend, it was not removed from the dataset. It will be reevaluated as an outlier once additional data is added to the dataset.
	Compliance	MW-1605	4/11/2018	TDS	1700	mg/L	This value was removed from the dataset as an outlier. Its removal did not affect the calculation of background values.
	Compliance	MW-1612	12/13/2017	TDS	384	mg/L	This value was similar to those reported in nearby wells and was not removed from the dataset.
Rome Limestone	Compliance	MW-1606	4/10/2018	Barium	0.104	mg/L	This value was reported as anomalously low. However, its concentration was similar to those reported at other locations and it was left in the database. Its inclusion did not affect the calculation of background values.
	Compliance	MW-1606	8/21/2018	Barium	0.124	mg/L	This value was similar to those reported in nearby wells and was not removed from the dataset.
	Compliance	MW-1607	10/18/2017	Barium	0.141	mg/L	This value was similar to those reported in nearby wells and was not removed from the dataset.
	Compliance	MW-1607	2/14/2018	Chromium	0.0001	mg/L	This value was reported as anomalously low. However, its concentration was similar to those reported at other locations and it was left in the database. Its inclusion did not affect the calculation of background values.
Dumps Fault	Compliance	MW-1610	10/17/2017	Antimony	0.00022	mg/L	This value was removed from the dataset as an outlier. Its removal did not affect the calculation of background values.
	Background	MW-1611	10/19/2017	Cobalt	0.000311	mg/L	The turbidity at well MW-1611 during this sampling event was higher than all other events. This value was conservatively removed from the dataset as recommended by the *Unified Guidance* .
	Background	MW-1611	10/19/2017	Lead	0.00105	mg/L	The turbidity at well MW-1611 during this sampling event was higher than all other events. This value was conservatively removed from the dataset as recommended by the *Unified Guidance* .
	Background	MW-1611	10/19/2017	Molybdenum	0.038	mg/L	The turbidity at well MW-1611 during this sampling event was higher than all other events. This value was conservatively removed from the dataset as recommended by the *Unified Guidance* .

Table 3: Detection Monitoring Results Summary
Clinch River Plant - Pond 1 Unit

Parameter	Units	Description	Chattanooga Shale											
			MW-1603			MW-1604			MW-1605			MW-1612		
		Date	2/12/2019	4/10/2019	5/30/2019	2/12/2019	4/10/2019	5/30/2019	2/12/2019	4/10/2019	5/30/2019	2/12/2019	4/10/2019	5/30/2019
Boron	mg/L	Intrawell Background Value (UPL)		0.599			0.524			0.722			0.603	
		Analytical Data	0.177	--	--	0.35	--	--	0.582	--	--	0.393	--	--
Calcium	mg/L	Interwell Background Value (UPL)	8.05											
		Analytical Data	**19.8**	**21.7**	**--**	**28.0**	**28.5**	**--**	**45.1**	**42.9**	**--**	**36.4**	**41.0**	**--**
Chloride	mg/L	Interwell Background Value (UPL)	45.8											
		Analytical Data	**59.5**	**69.5**	**77.0**	20.4	--	--	**174**	**173**	**180**	32.8	--	--
Fluoride	mg/L	Interwell Background Value (UPL)		0.218			0.301			0.454			0.273	
		Analytical Data	0.11	--	--	0.21	--	--	0.35	--	--	0.19	--	--
pH	SU	Interwell Background Value (UPL)	9.0											
		Interwell Background Value (LPL)	7.9											
		Analytical Data	**6.8**	**7.2**	**--**	**7.2**	**7.2**	**--**	**7.9**	**7.9**	**--**	**7.3**	**7.4**	**--**
Sulfate	mg/L	Intrawell Background Value (UPL)		59.9			9.99			129			23.3	
		Analytical Data	8.1	--	--	1.7	--	--	61.8	--	--	5.4	--	--
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)		798			424			892			643	
		Analytical Data	374	--	--	386	--	--	808	--	--	537	--	--

Parameter	Units	Description	Rome Limestone			
			MW-1606		MW-1607	
		Date	2/12/2019	4/9/2019	2/12/2019	4/9/2019
Boron	mg/L	Intrawell Background Value (UPL)	0.225		0.212	
		Analytical Data	0.11	--	0.1	--
Calcium	mg/L	Intrawell Background Value (UPL)	69		55.74	
		Analytical Data	56.8	--	46.3	--
Chloride	mg/L	Interwell Background Value (UPL)	4.54			
		Analytical Data	**14.1**	**13.0**	**9.50**	**8.20**
Fluoride	mg/L	Intrawell Background Value (UPL)	0.309		0.286	
		Analytical Data	0.24	--	0.23	--
pH	SU	Intrawell Background Value (UPL)	7.4		8.3	
		Intrawell Background Value (LPL)	6.7		7.3	
		Analytical Data	7.2	7.2	7.9	8.0
Sulfate	mg/L	Interwell Background Value (UPL)	23.9			
		Analytical Data	**39.7**	**32.5**	**151**	**130**
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	399		491	
		Analytical Data	341	--	298	--

Parameter	Units	Description	Dumps Fault
			MW-1610
		Date	2/12/2019
Boron	mg/L	Intrawell Background Value (UPL)	0.141
		Analytical Data	0.03
Calcium	mg/L	Intrawell Background Value (UPL)	37.4
		Analytical Data	35.4
Chloride	mg/L	Intrawell Background Value (UPL)	13.3
		Analytical Data	10.8
Fluoride	mg/L	Intrawell Background Value (UPL)	0.237
		Analytical Data	0.21
pH	SU	Intrawell Background Value (UPL)	7.9
		Intrawell Background Value (LPL)	7.1
		Analytical Data	7.7
Sulfate	mg/L	Intrawell Background Value (UPL)	53.9
		Analytical Data	41.2
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	268
		Analytical Data	257

Notes:
UPL: Upper prediction limit
LPL: Lower prediction limit
Bold, orange shaded values exceed the background value.
Background values are shaded gray.

Table 4: Groundwater Protection Standards
Clinch River - Pond 1

Geosyntec Consultants, Inc.

Constituent Name	MCL	CCR Rule-Specified	Chattanooga Background Limit	Rome Background Limit	Dumps Fault Background Limit
Antimony, Total (mg/L)	0.006		0.00027	0.00014	0.00075
Arsenic, Total (mg/L)	0.01		0.026	0.0016	0.052
Barium, Total (mg/L)	2		0.31	0.58	0.1
Beryllium, Total (mg/L)	0.004		0.0001	0.0001	0.0001
Cadmium, Total (mg/L)	0.005		0.00005	0.00011	0.00005
Chromium, Total (mg/L)	0.1		0.0013	0.00038	0.0011
Cobalt, Total (mg/L)	n/a	0.006	0.00054	0.0019	0.00017
Combined Radium, Total (pCi/L)	5		3.35	3.52	1.5
Fluoride, Total (mg/L)	4		2.32	0.39	1.33
Lead, Total (mg/L)	n/a	0.015	0.0011	0.00088	0.00024
Lithium, Total (mg/L)	n/a	0.04	0.16	0.03	0.19
Mercury, Total (mg/L)	0.002		0.0002	0.0002	0.0002
Molybdenum, Total (mg/L)	n/a	0.1	0.022	0.0032	0.0068
Selenium, Total (mg/L)	0.05		0.0002	0.00038	0.00015
Thallium, Total (mg/L)	0.002		0.0005	0.0005	0.0005

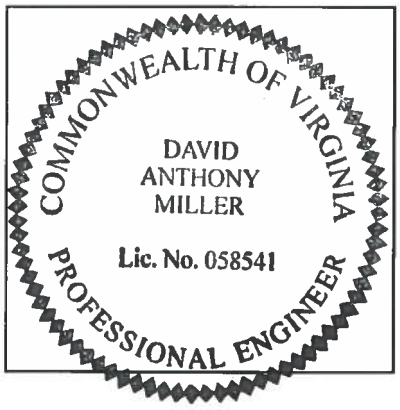
Notes:
Grey cell indicates calculated UTL is higher than MCL.
MCL = Maximum Contaminant Level
Calculated UTL (Upper Tolerance Limit) represents site-specific background values.
The higher of the calculated UTL or MCL/Rule-Specified Level is used as the GWPS.

ATTACHMENT A

Certification by Qualified Professional Engineer

Certification by Qualified Professional Engineer

I certify that the selected and above described statistical method is appropriate for evaluating the groundwater monitoring data for the Clinch River Pond 1 CCR management area and that the requirements of 40 CFR 257.93(f) have been met.



DAVID ANTHONY MILLER

Printed Name of Licensed Professional Engineer

David Anthony Miller

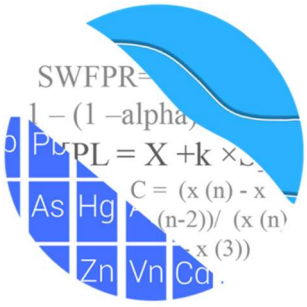
Signature

058541	VIRGINIA	07.15.19
License Number	Licensing State	Date

ATTACHMENT B

Statistical Analysis Output

GROUNDWATER STATS CONSULTING



June 10, 2019

Geosyntec Consultants
Attn: Ms. Allison Kreinberg
941 Chatham Lane, #103
Worthington, OH 43221

Dear Ms. Kreinberg,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the statistical evaluation of data for American Electric Power Company's Clinch River Landfill. The analysis complies with the federal rule for the Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule, 2015) as well as with the USEPA Unified Guidance (2009).

Sampling began at the Clinch River Landfill for the CCR program in 2017 at each of the groundwater monitoring wells. The monitoring well network, as provided by Geosyntec Consultants, consists of the following three formations:

Chattanooga Shale:
Upgradient Wells: MW-1601, MW-1602, MW-1608
Downgradient Wells: MW-1603, MW-1604, MW-1605, MW-1612

Rome Limestone:
Cross-gradient (background) Well: MW-1609
Downgradient Wells: MW-1606, MW-1607

Dumps Fault:
Upgradient Well: MW-1611
Downgradient Well: MW-1610

The following constituents were evaluated: Appendix III parameters – boron, calcium, chloride, fluoride, pH, sulfate, and TDS; and Appendix IV parameters - antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 & 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium.

Intrawell prediction limits were constructed for discussion purposes as a possible alternative to the current recommended statistical analyses which include interwell and intrawell prediction limits. Upper tolerance limits, Groundwater Protection Standards tables, and confidence intervals are provided for the Appendix IV parameters.

Evaluation of Appendix III Parameters

Parametric prediction limits are utilized when the screened historical data follow a normal or transformed-normal distribution. When data cannot be normalized or the majority of data are nondetects, a nonparametric test is utilized. The distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. After testing for normality and performing any adjustments as discussed below (US EPA, 2009), data are analyzed using either parametric or non-parametric prediction limits.

- No statistical analyses are required on wells and analytes containing 100% nondetects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% nondetects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for nondetects is the practical quantification limit (PQL) as reported by the laboratory.
- When data contain between 15-50% nondetects, the Kaplan-Meier nondetect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit.
- Nonparametric prediction limits are used on data containing greater than 50% nondetects.

Appendix III Parameters - Statistical Limits

Per your request, intrawell limits were constructed from carefully screened background data from within each well which serve to provide statistical limits that are conservative (i.e. lower) from a regulatory perspective, and that will rapidly identify a change in more recent compliance data from within a given well. This statistical method removes the element of variation from across wells and eliminates the chance of mistaking natural spatial variation for a release from the facility. All data were screened during the

background screening conducted in April 2019. While a mixture of intrawell and interwell methods were initially recommended, this report includes intrawell prediction limits for all wells and Appendix III constituents for discussion purposes, due to spatial variation at this site as well as complex hydrogeology.

All available data through December 2018, for parameters mentioned above, at each formation and for each well were used to establish intrawell background limits, combined with a 1-of-2 resample plan that will be used for future comparisons.

Natural systems continuously evolve due to physical changes made to the environment. Examples include capping a landfill, paving areas near a well, or lining a drainage channel to prevent erosion. Periodic updating of background statistical limits will be necessary to accommodate these types of changes In the interwell case, newer data will be included in background during each sample event provided upgradient well data are screened for additional outliers and trending data. In the intrawell case, data for all wells and constituents are re-evaluated when a minimum of 4 new data points are available to determine whether earlier concentrations are representative of present-day groundwater quality. In some cases, the earlier portion of data are deselected prior to construction of limits in order to provide sensitive limits that will rapidly detect changes in groundwater quality. Even though the data are excluded from the calculation, the values will continue to be reported and shown in tables and graphs.

In the event of an initial exceedance of compliance well data, the 1-of-2 resample plan allows for collection of an additional sample to determine whether the initial exceedance is confirmed. When the resample confirms the initial exceedance, a statistically significant increase (SSI) is identified and further research would be required to identify the cause of the exceedance (i.e. impact from the site, natural variation, or an off-site source). If the resample falls within the statistical limit, the initial exceedance is considered to be a false positive result and, therefore, no further action is necessary. A summary table of the prediction limits follows this letter. All downgradient well/constituent pairs were within their respective prediction limits. One exceedance of calcium was noted in upgradient well MW-1602. When exceedances are identified in wells located upgradient of the facility, it is generally a reflection of natural variation in groundwater, rather than a result of the facility, since those wells are not expected to be impacted by the site due to the direction of groundwater flow.

Appendix IV – Assessment Monitoring Program

During an Assessment Monitoring program confidence intervals are constructed at all wells for detected Appendix IV parameters. A minimum of 4 samples is required to

construct confidence intervals; however, 8 samples are generally recommended for better representation of the true average population. Established Maximum Contaminant Levels (MCLs) are used as the GWPS comparisons and Rule-Specified limits are used for cobalt, lead, lithium, and molybdenum which have no MCLs. Background limits will be constructed for all Appendix IV parameters using upgradient well data and used as the GWPS if the limits are higher than either the MCLs or Rule-Specified limits.

Background limits are established for the Appendix IV parameters using upper tolerance limits constructed with 95% confidence/95% coverage using pooled upgradient well data, for comparison against established MCLs. When background limits, or Alternate Contaminant Levels (ACLs), are higher than established MCLs or RSLs, the CCR Rule recommends using these ACLs as the GWPS for the confidence interval comparisons.

Parametric confidence intervals are constructed with 99% confidence when data follow a normal or transformed-normal distribution. For all other cases, nonparametric confidence intervals are constructed, with the confidence level based on the number of samples available. The GWPS is exceeded only when the entire confidence interval exceeds its respective GWPS. When confidence intervals were constructed for each of the downgradient wells for the Appendix IV parameters, all confidence intervals were within their respective limits except for:

Chattanooga Formation: barium in well MW-1604 and lithium in well MW-1605

Dumps Fault Formation: cobalt and molybdenum in well MW-1610

Rome Formation: cobalt, lithium and molybdenum in well MW-1607; and lithium in well MW-1606.

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Clinch River Landfill. If you have any questions or comments, please feel free to contact me.

For Groundwater Stats Consulting,

Kristina L. Rayner
Groundwater Statistician

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

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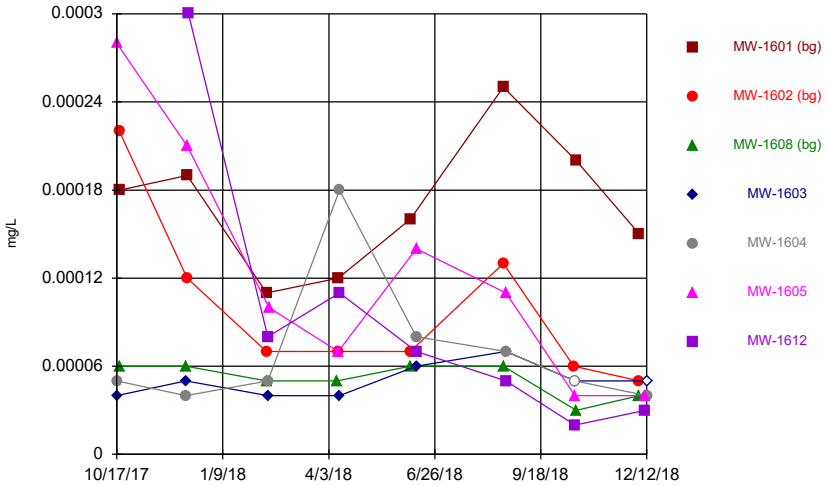

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Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

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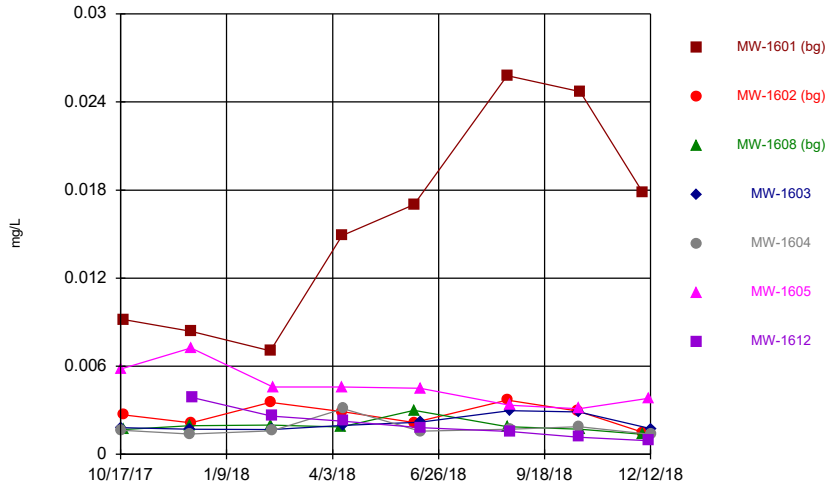

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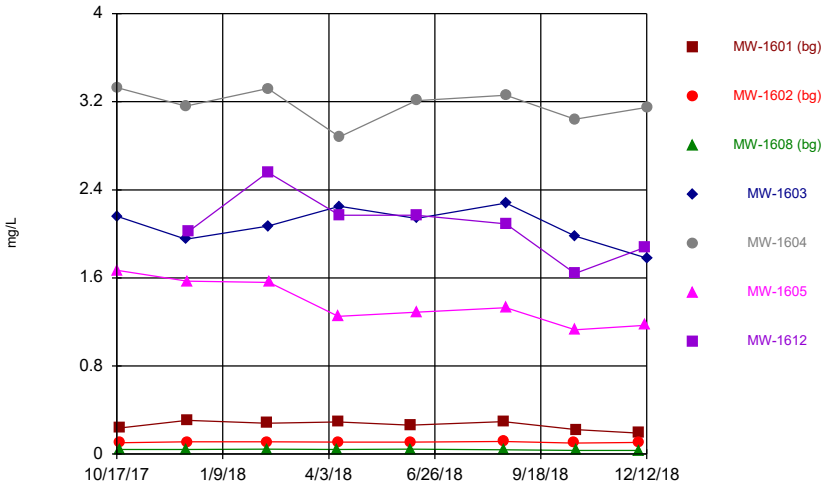

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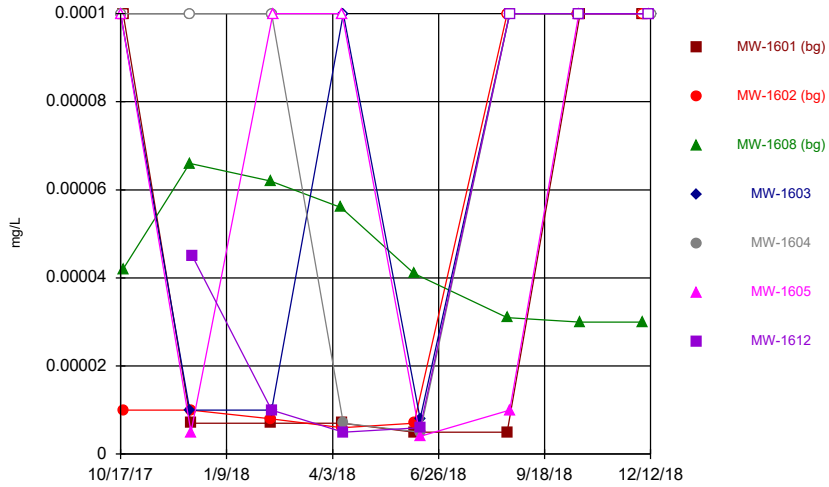

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Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

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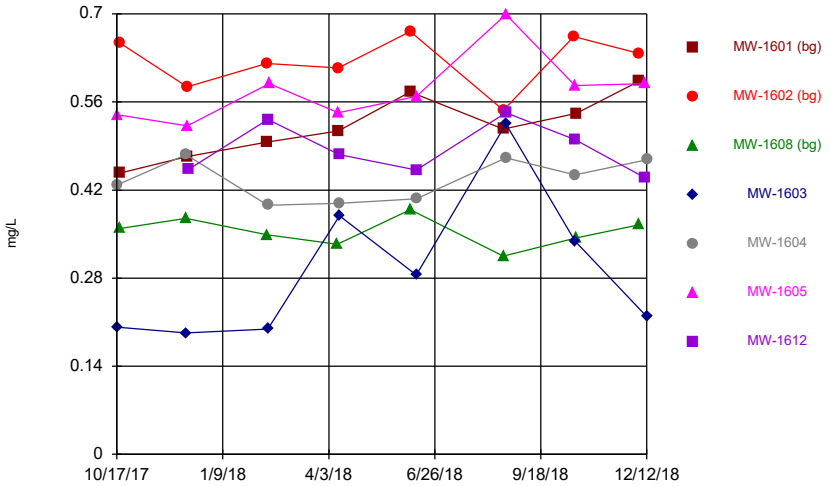

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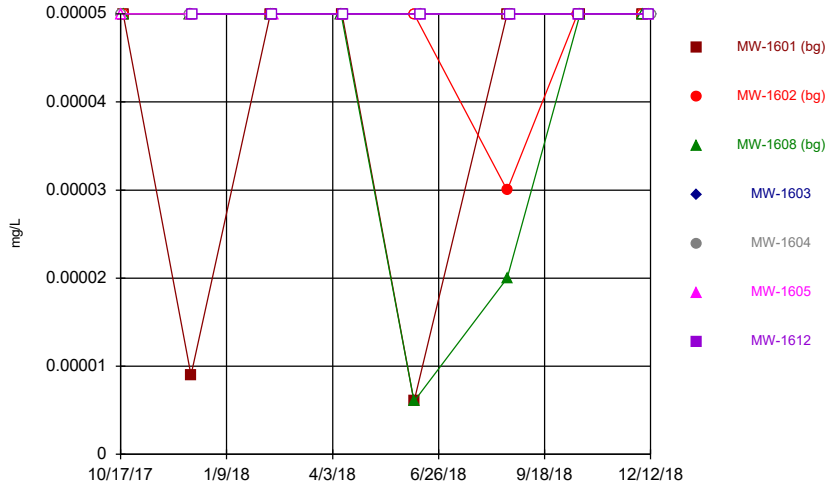

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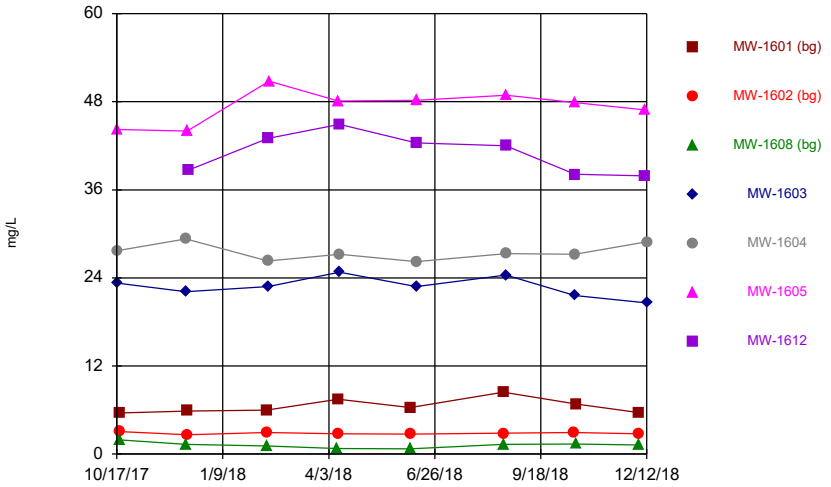

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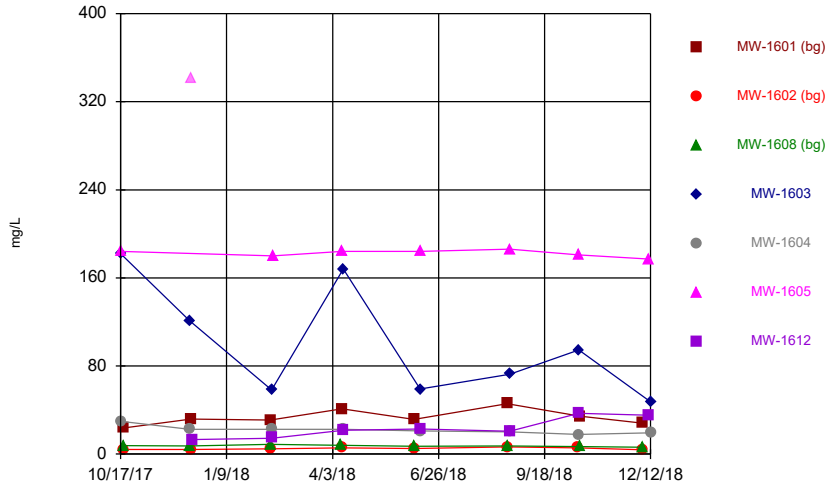

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Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

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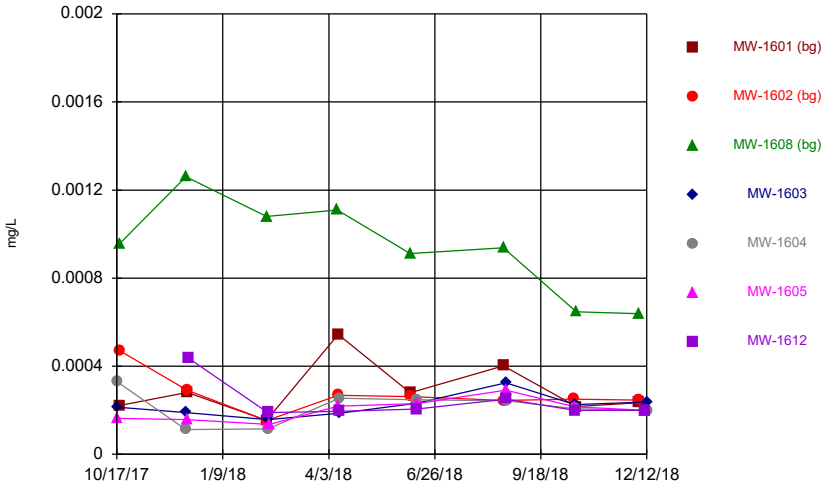

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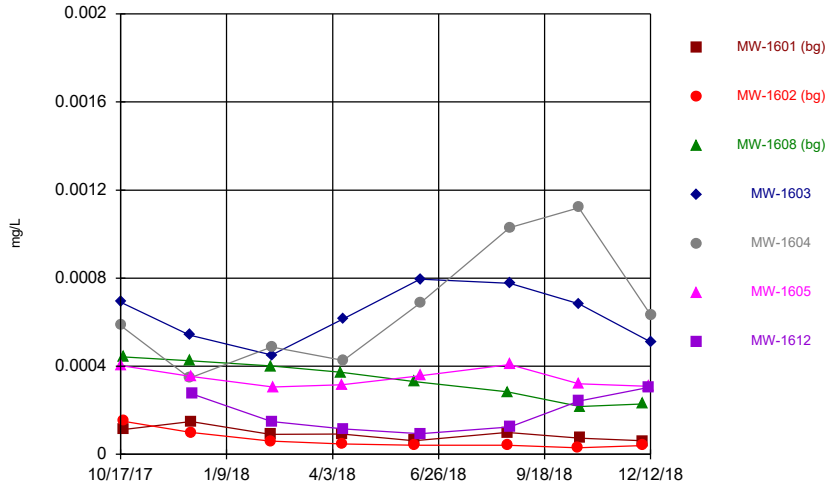

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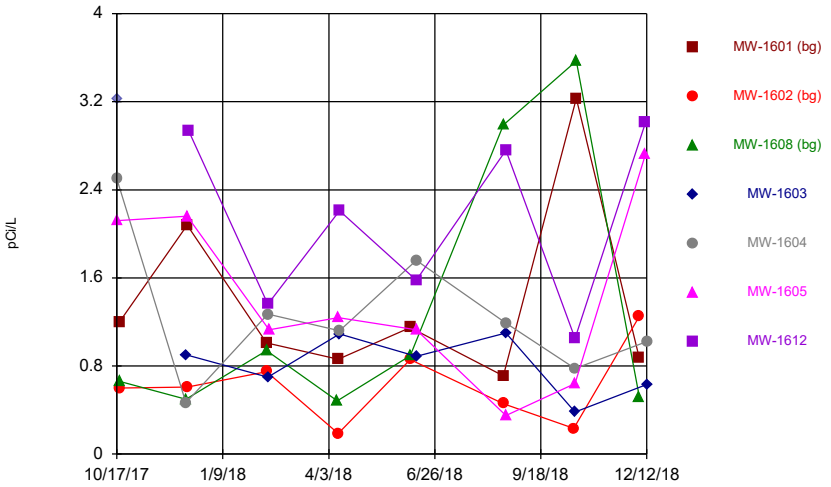

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:48 PM View: Chattanooga CCR Des
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Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

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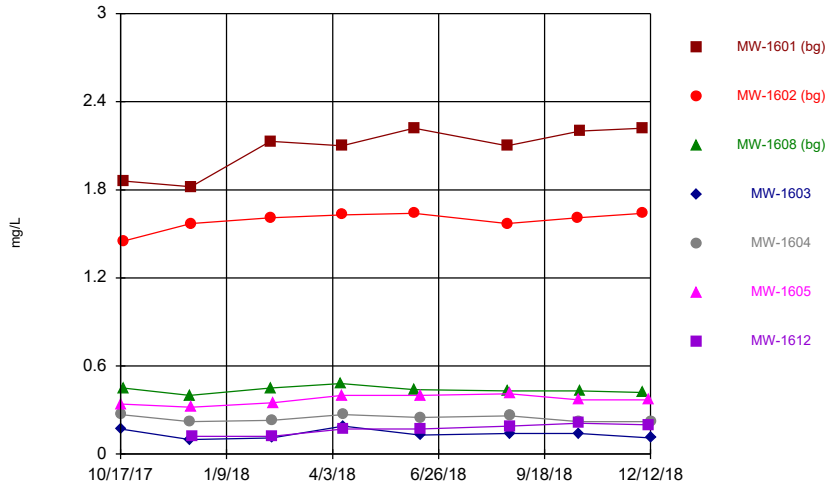

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Clinch River Pond 1

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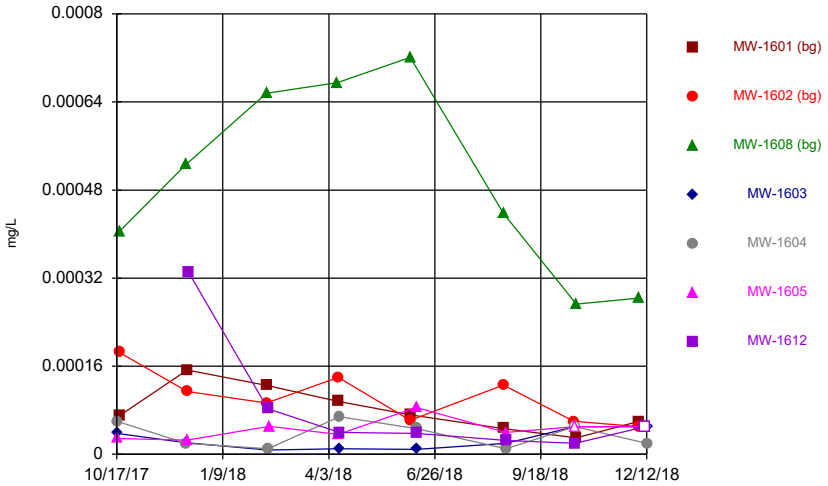

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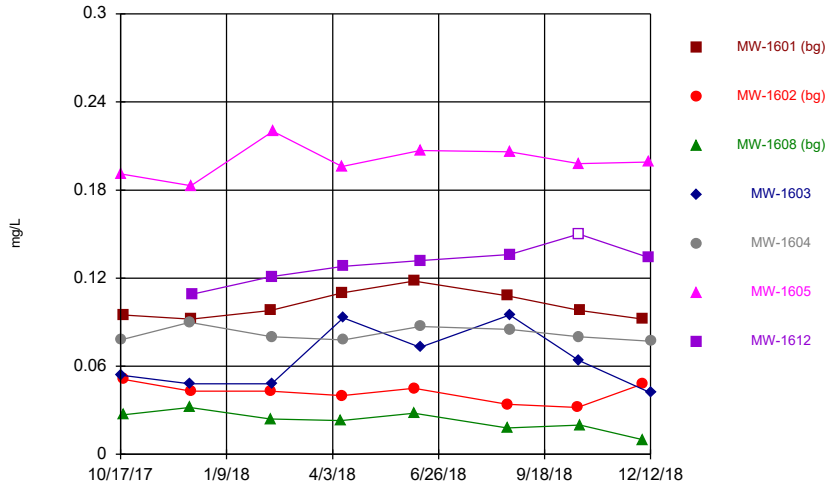

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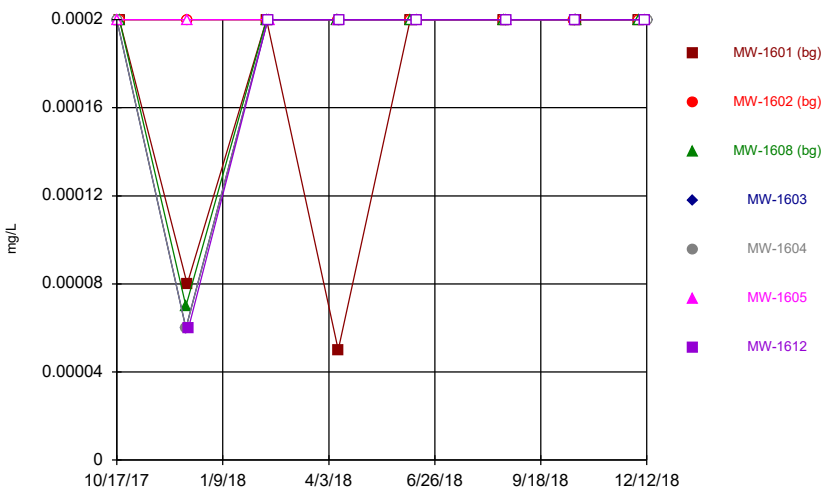

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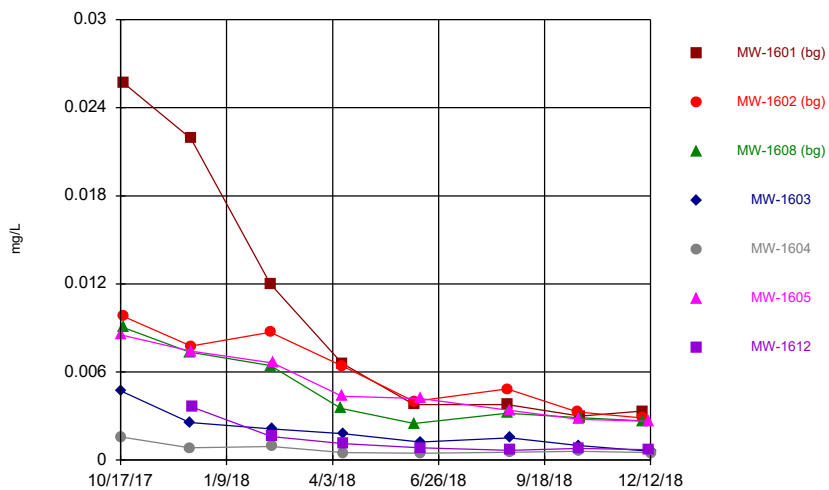
Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series

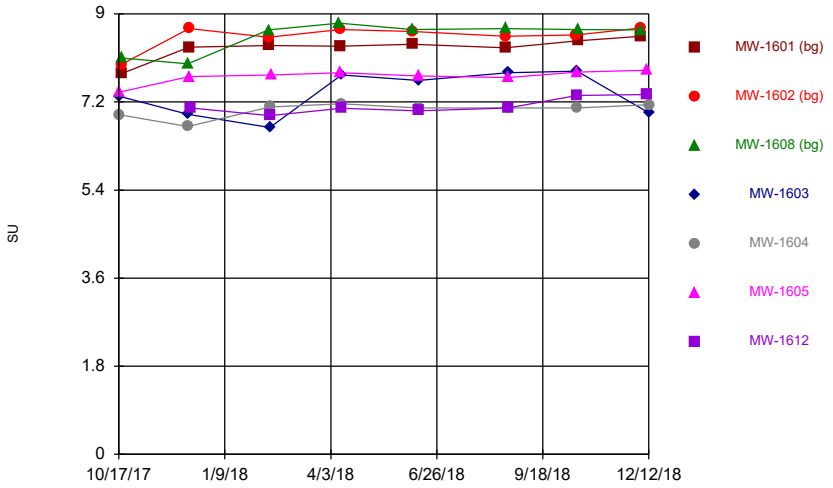


Constituent: Molybdenum Analysis Run 4/17/2019 3:48 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

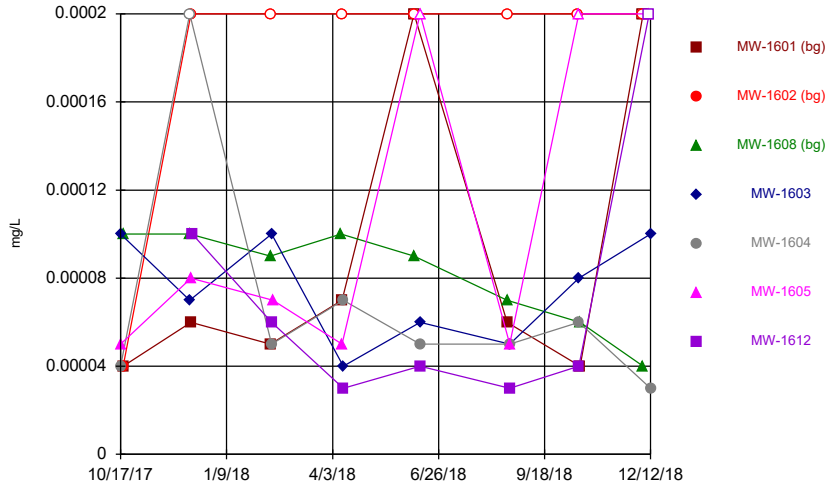
Time Series



Constituent: pH Analysis Run 4/17/2019 3:48 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

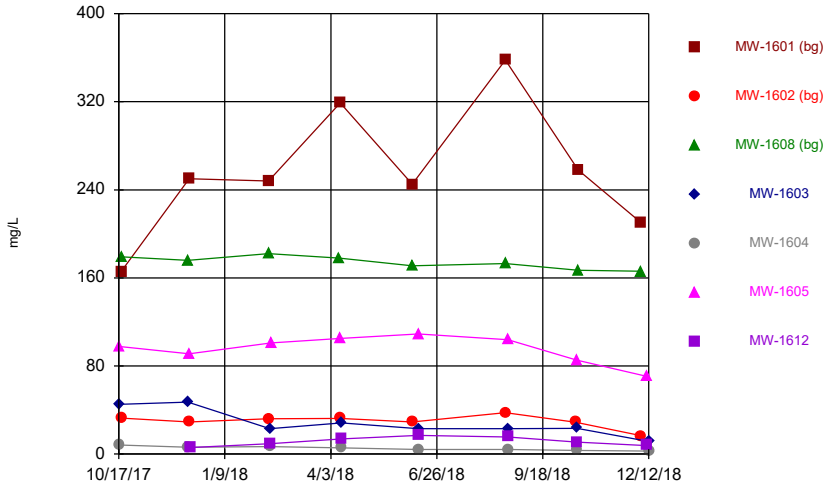
Time Series



Constituent: Selenium Analysis Run 4/17/2019 3:48 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

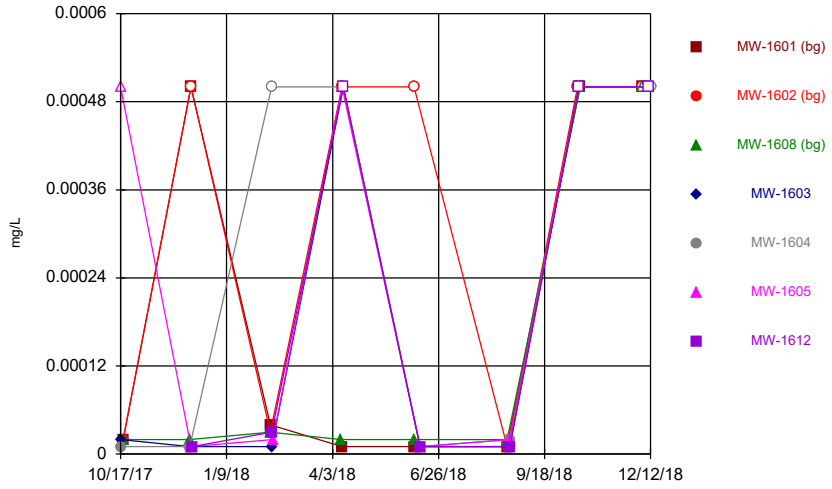
Time Series



Constituent: Sulfate Analysis Run 4/17/2019 3:48 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

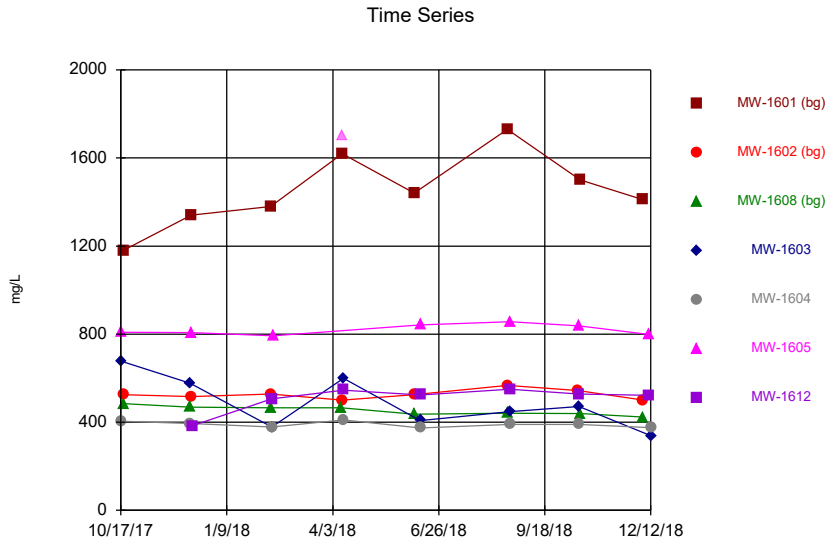
Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Thallium Analysis Run 4/17/2019 3:48 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

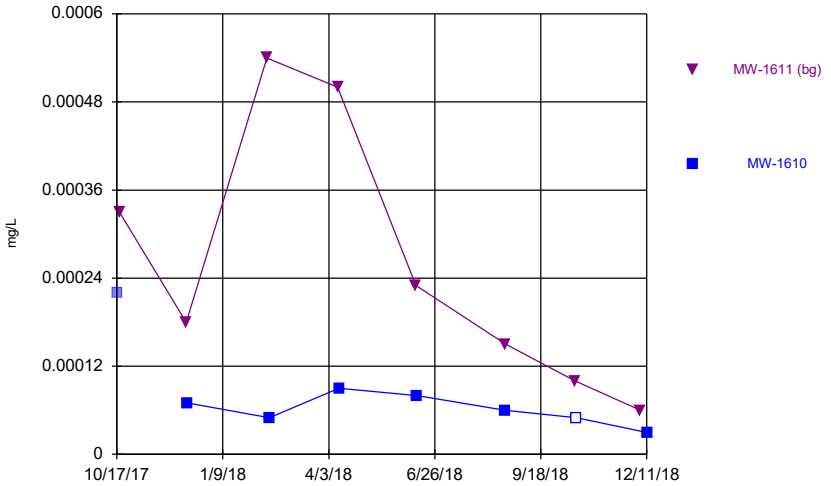


Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:48 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

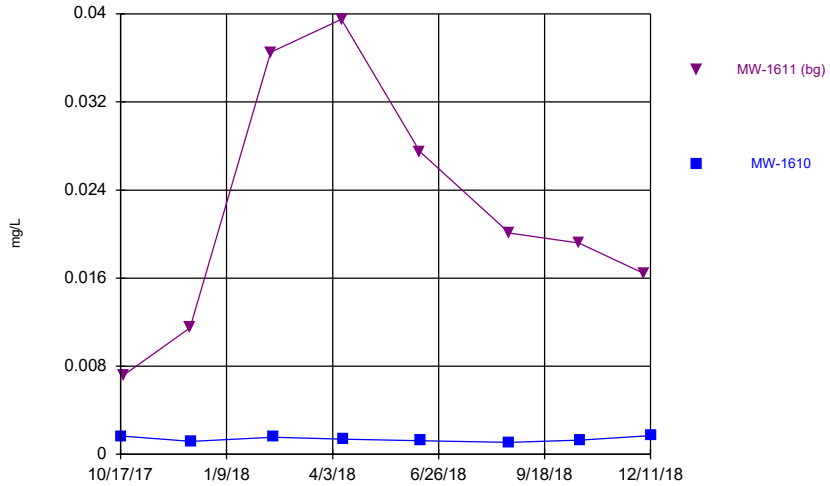
Time Series



Constituent: Antimony Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

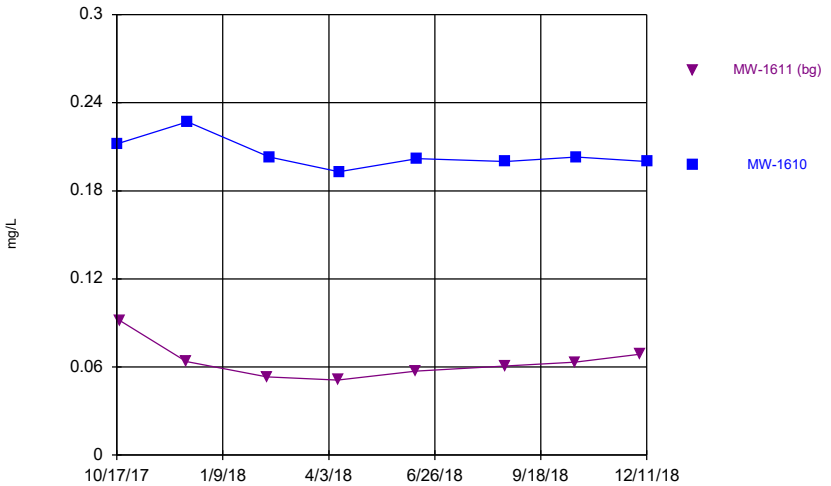
Time Series



Constituent: Arsenic Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

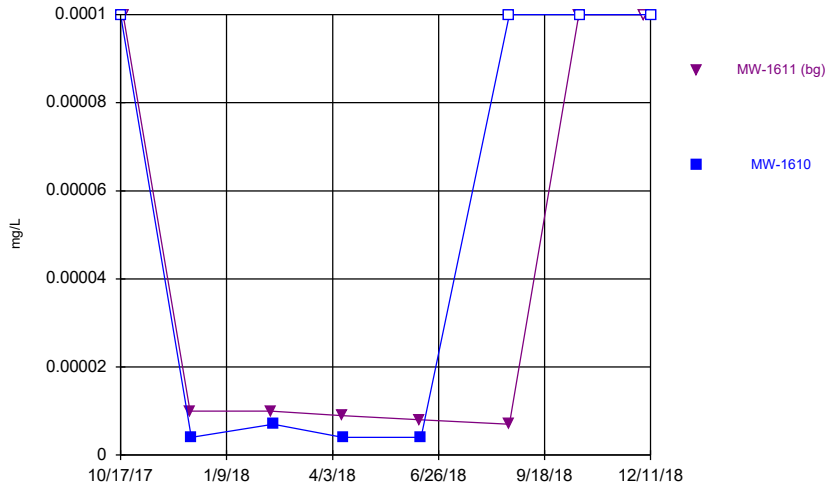
Time Series



Constituent: Barium Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

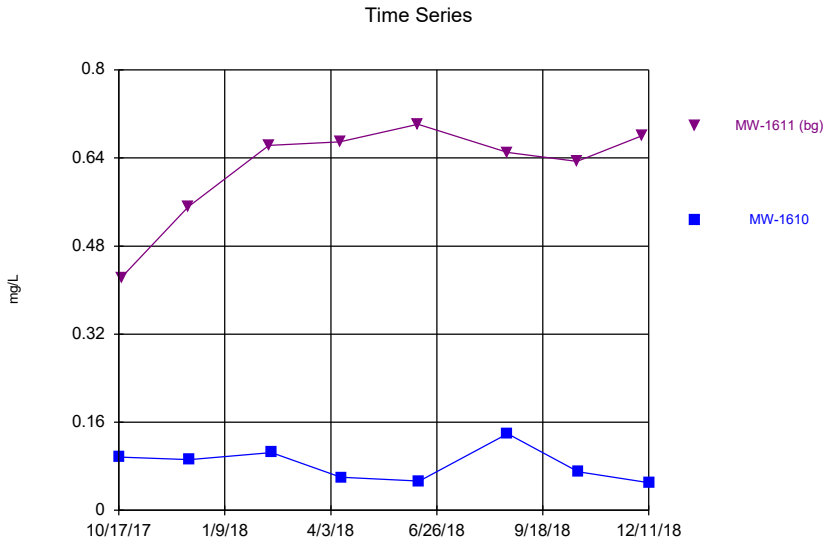
Time Series



Constituent: Beryllium Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

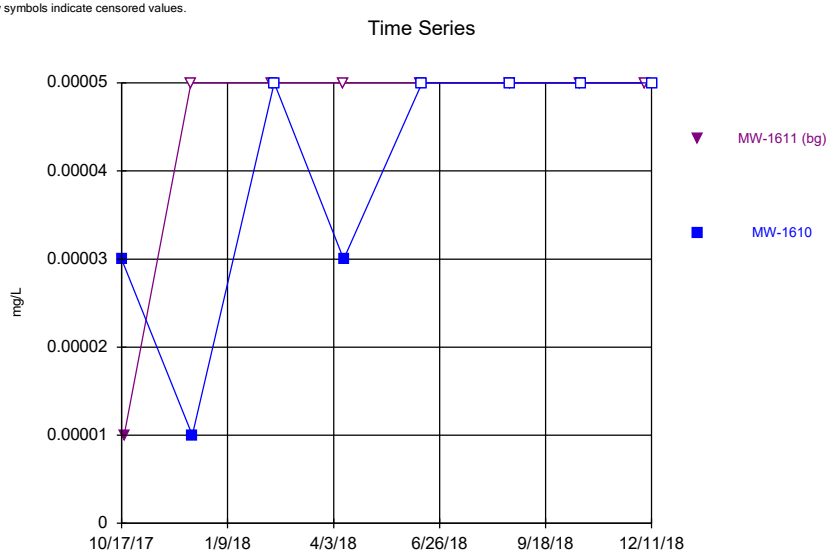
Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG



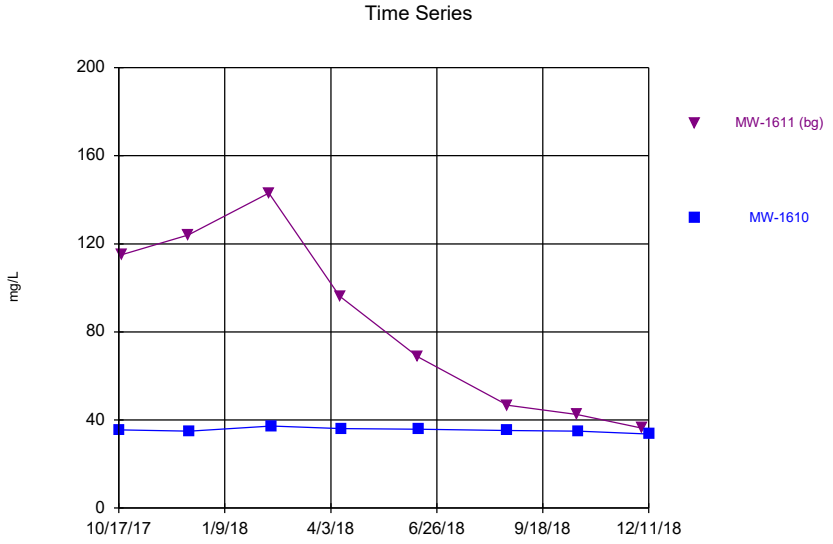
Constituent: Boron Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.



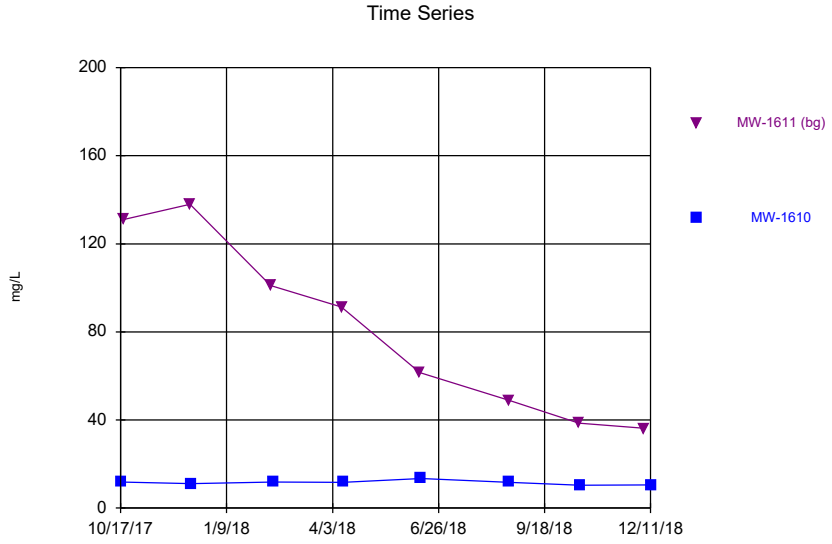
Constituent: Cadmium Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG



Constituent: Calcium Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

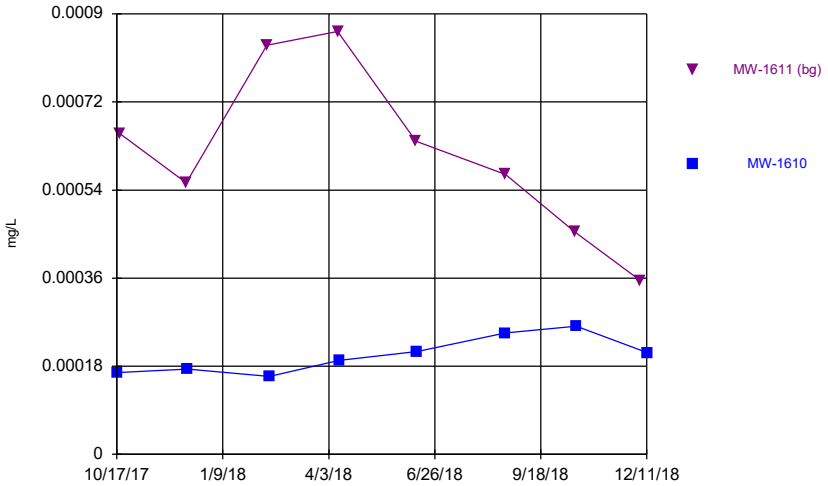


Constituent: Chloride Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

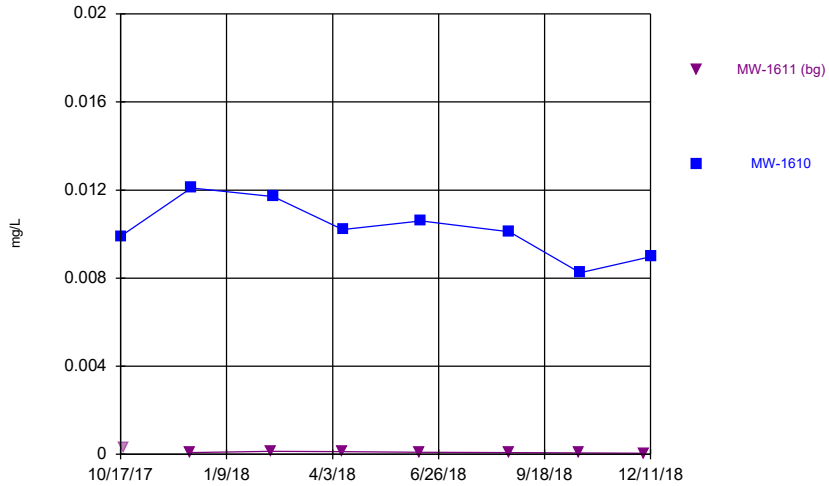
Time Series



Constituent: Chromium Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

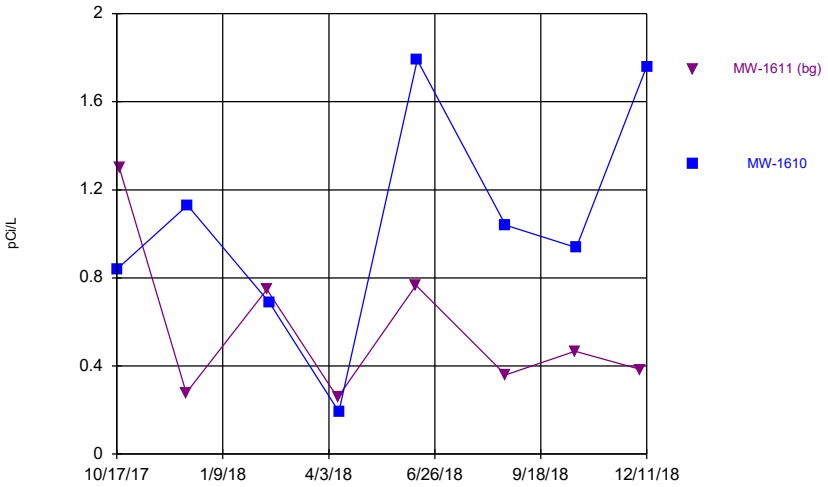
Time Series



Constituent: Cobalt Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

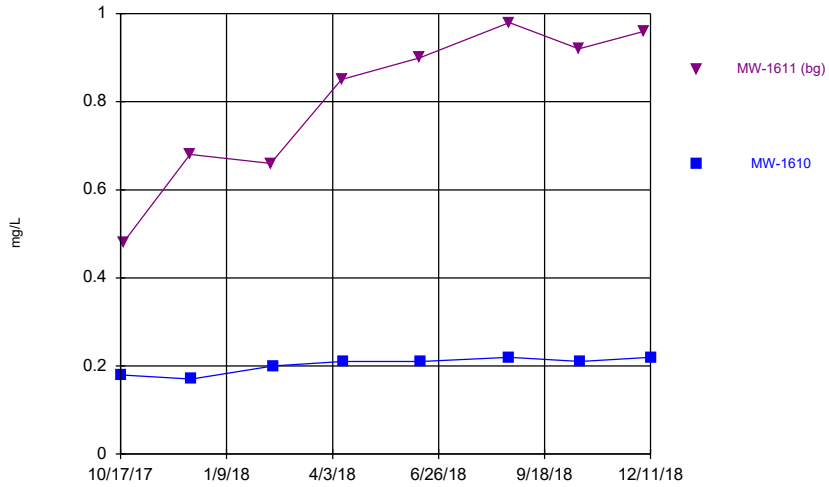
Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fa
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series

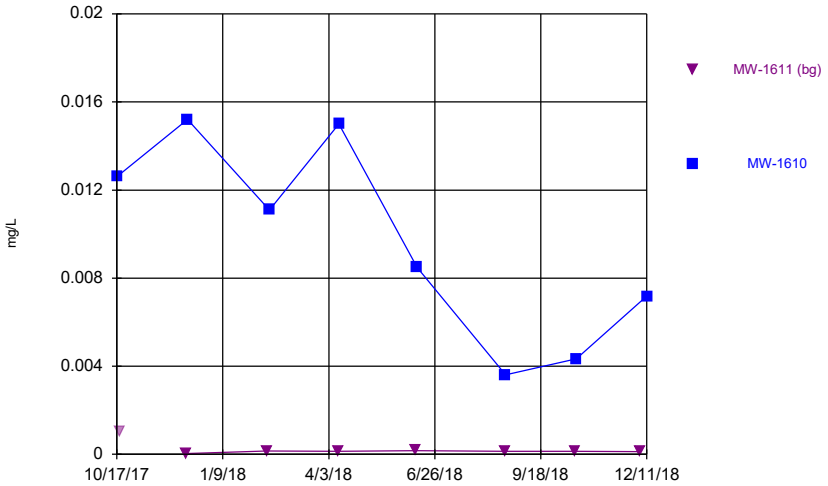


Constituent: Fluoride Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

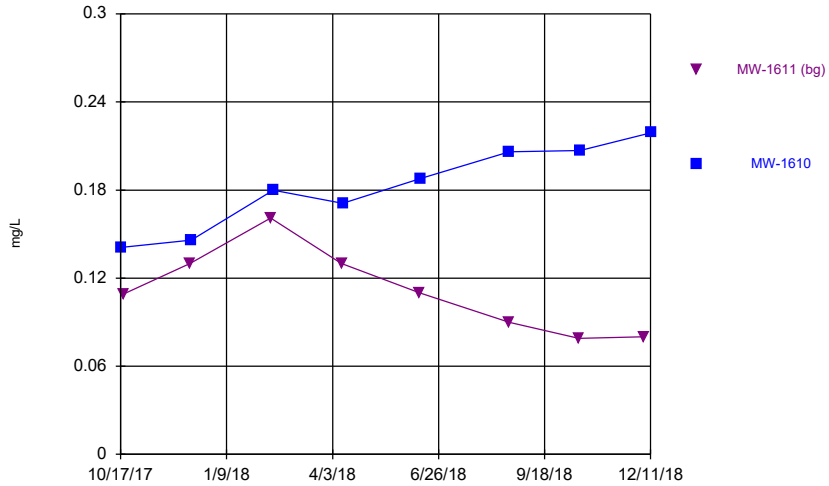
Time Series



Constituent: Lead Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

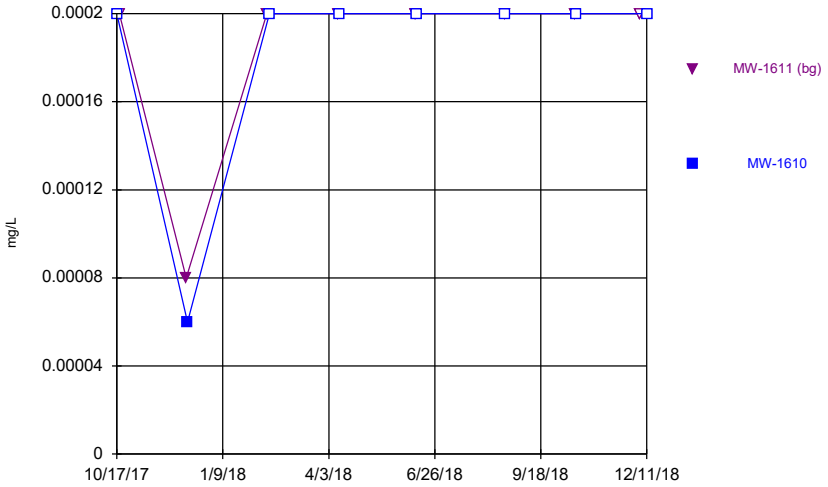
Time Series



Constituent: Lithium Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

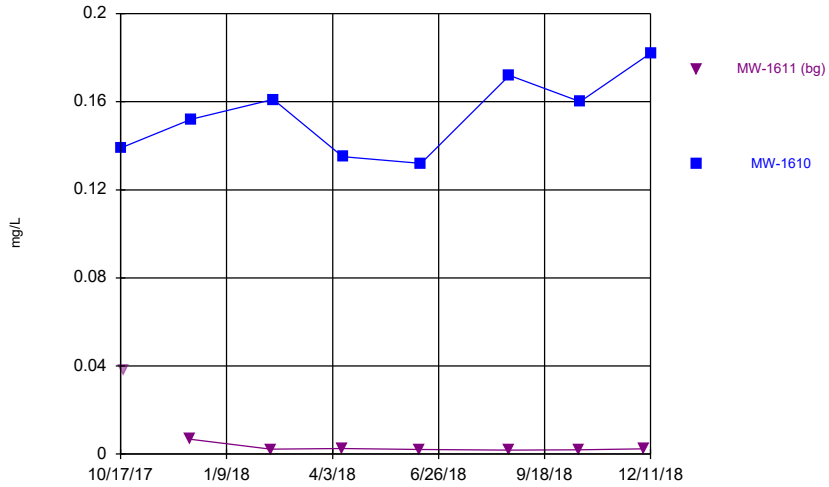
Time Series



Constituent: Mercury Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series

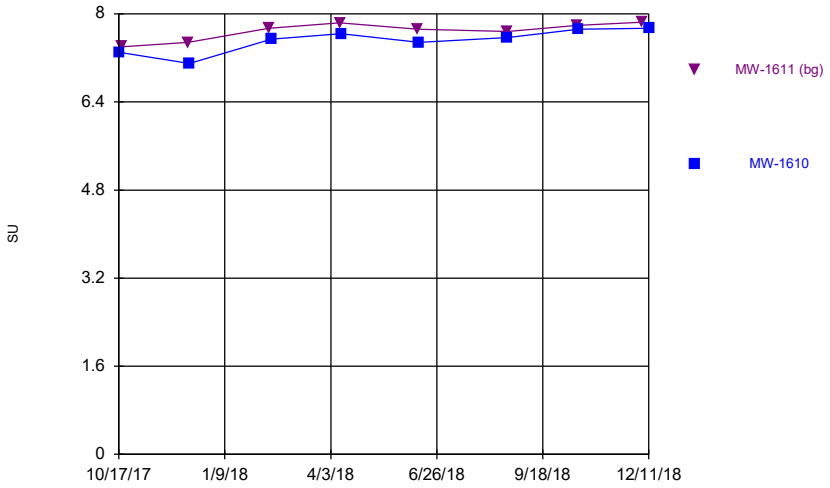


Constituent: Molybdenum Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

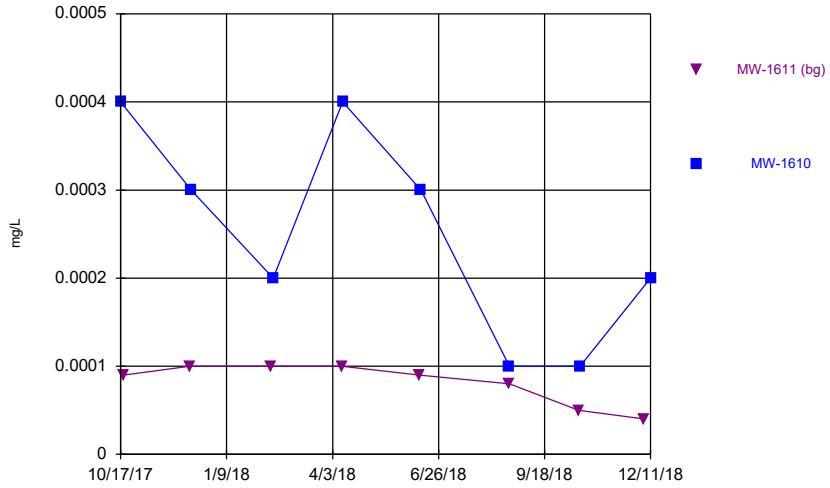
Time Series



Constituent: pH Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

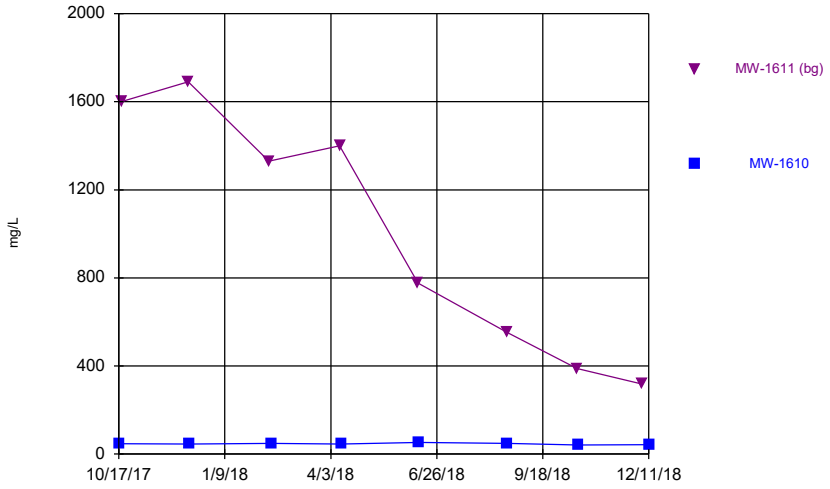
Time Series



Constituent: Selenium Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

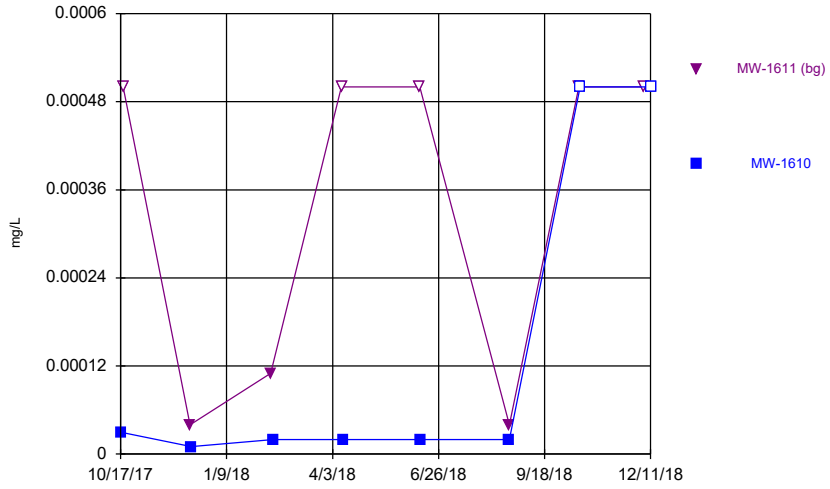
Time Series



Constituent: Sulfate Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

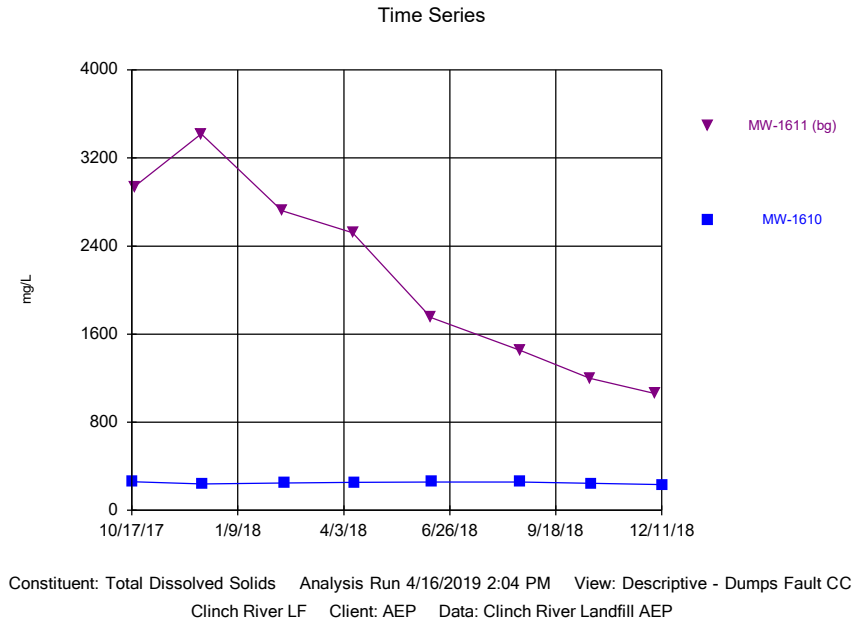
Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Thallium Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

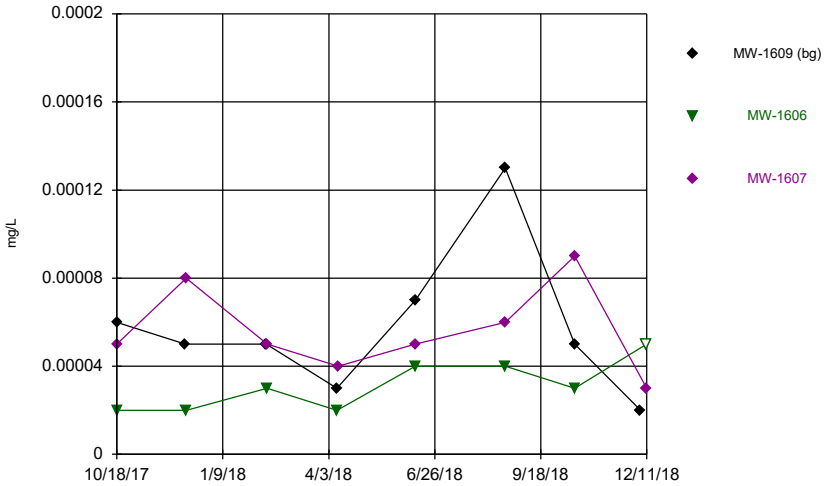


Constituent: Total Dissolved Solids Analysis Run 4/16/2019 2:04 PM View: Descriptive - Dumps Fault CC
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

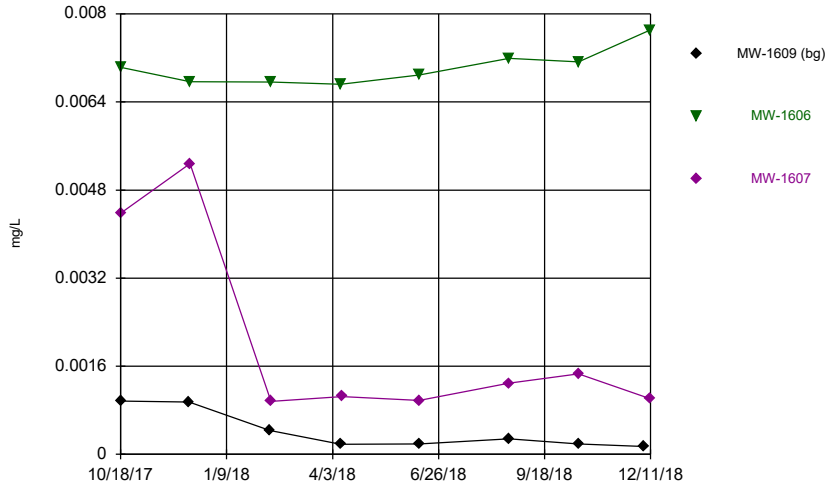
Time Series



Constituent: Antimony Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

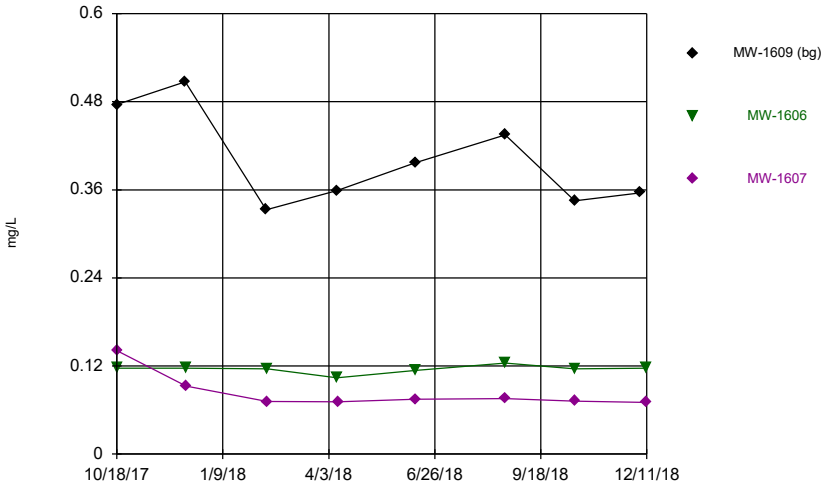
Time Series



Constituent: Arsenic Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

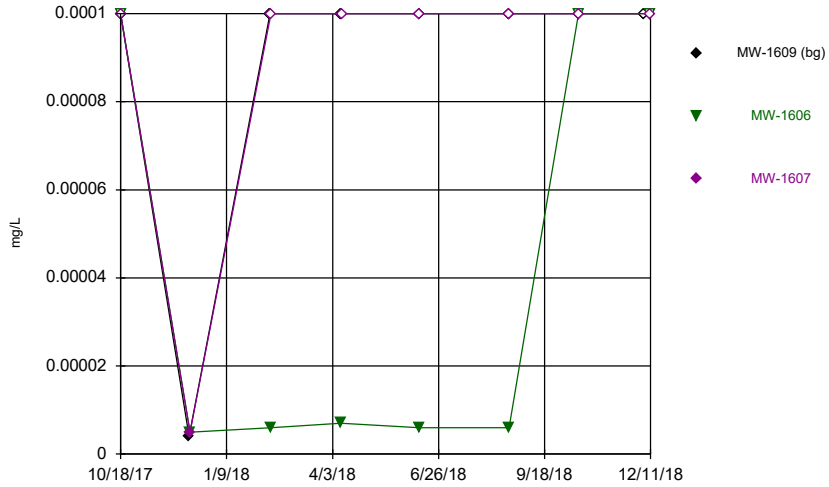
Time Series



Constituent: Barium Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series

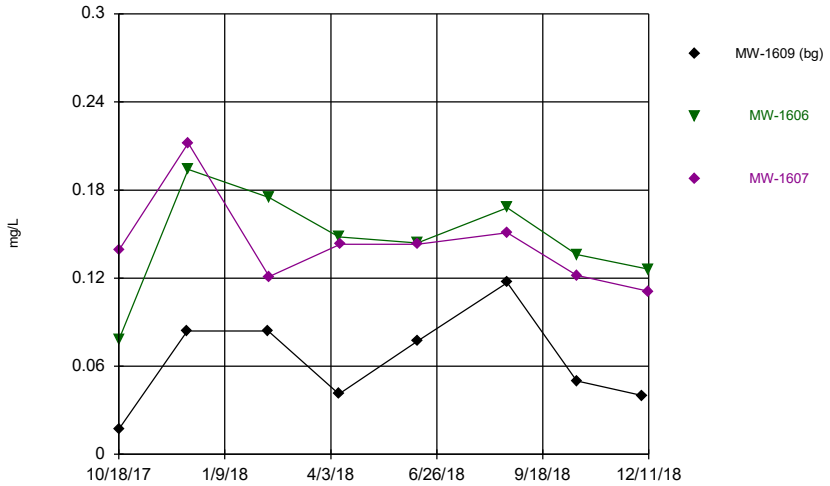


Constituent: Beryllium Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

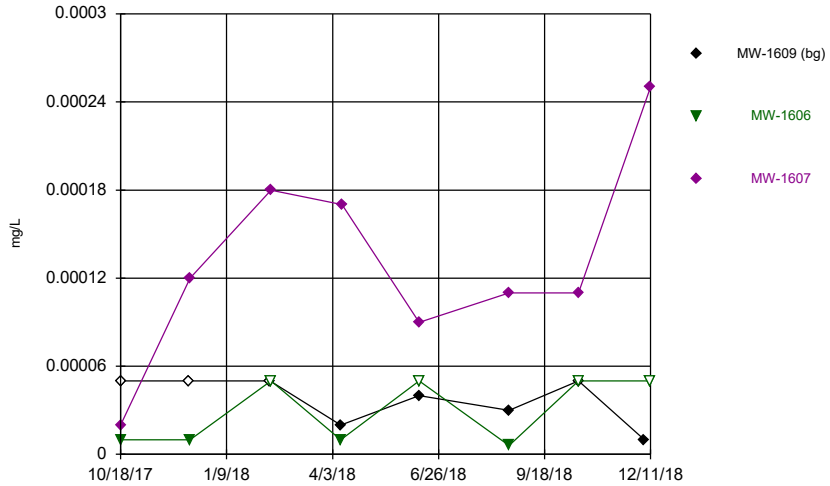
Time Series



Constituent: Boron Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

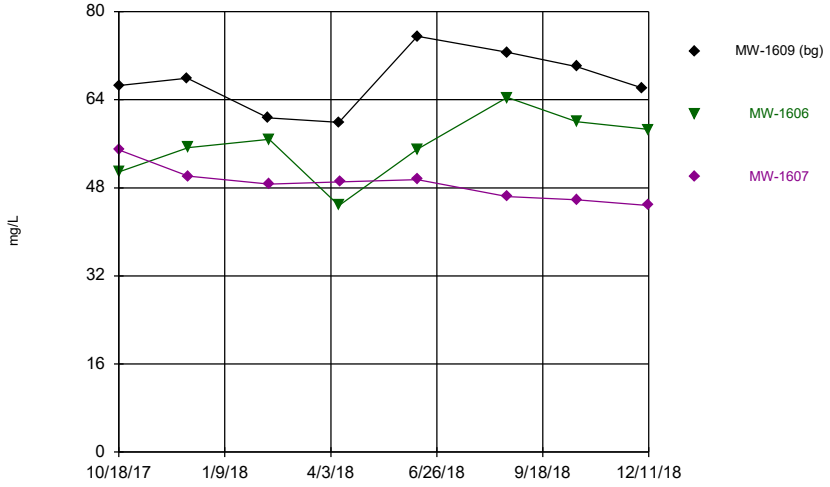
Time Series



Constituent: Cadmium Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

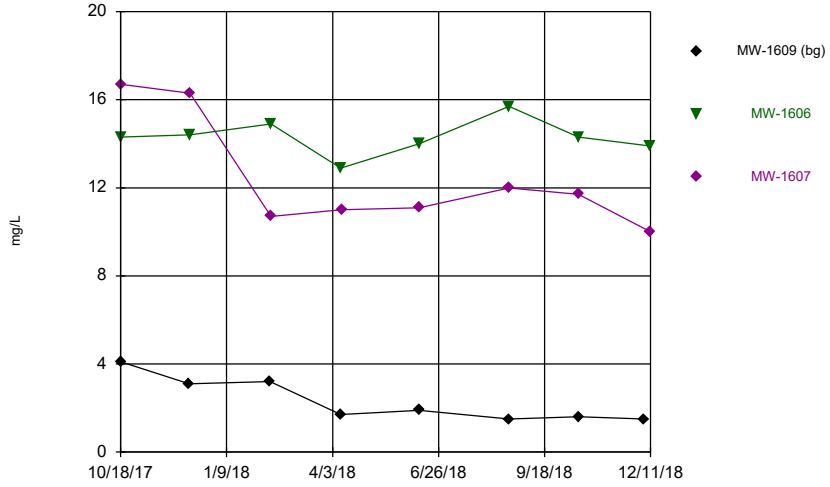
Time Series



Constituent: Calcium Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series

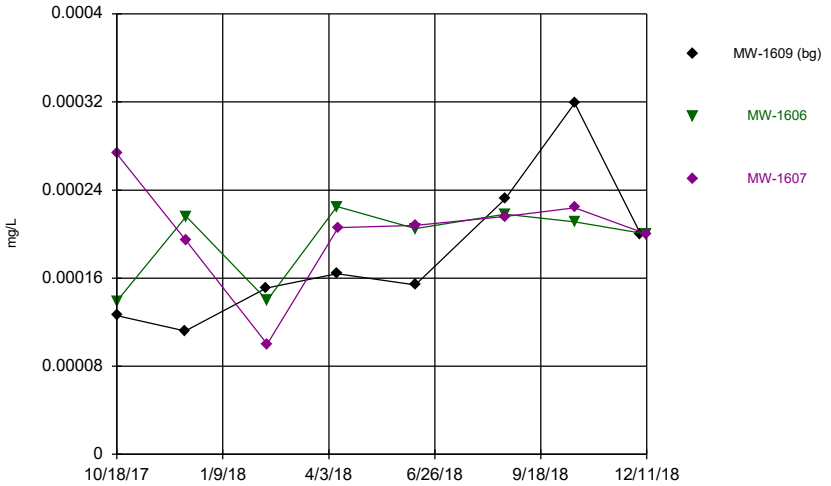


Constituent: Chloride Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

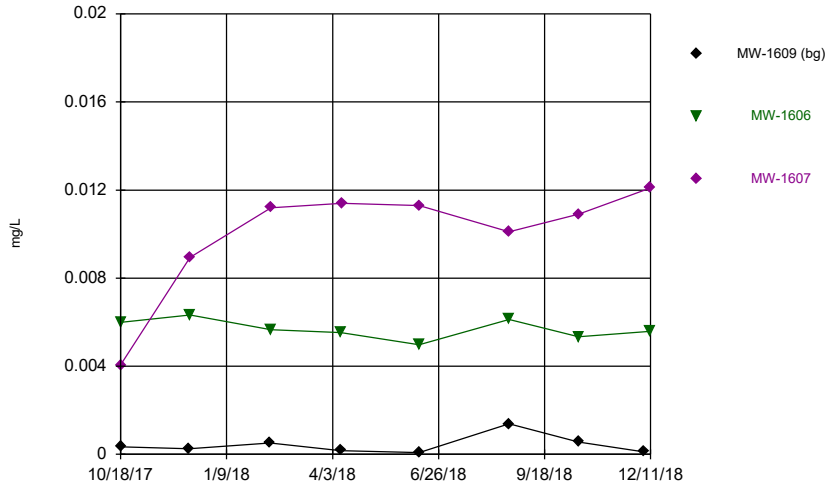
Time Series



Constituent: Chromium Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

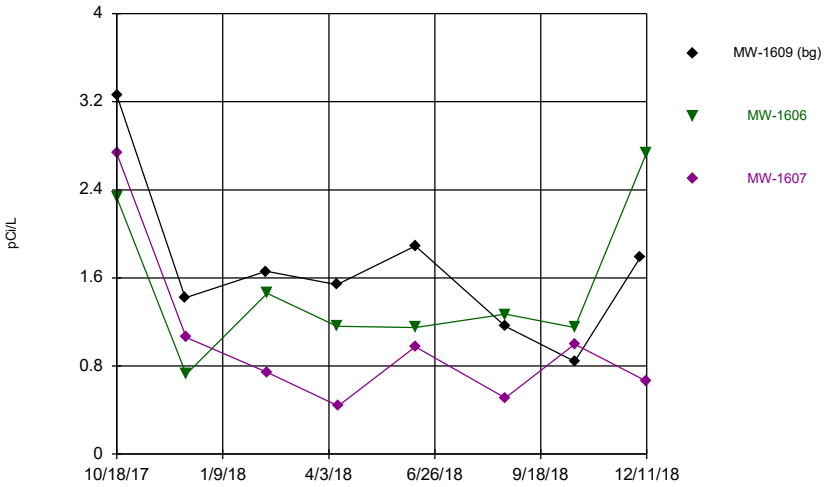
Time Series



Constituent: Cobalt Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

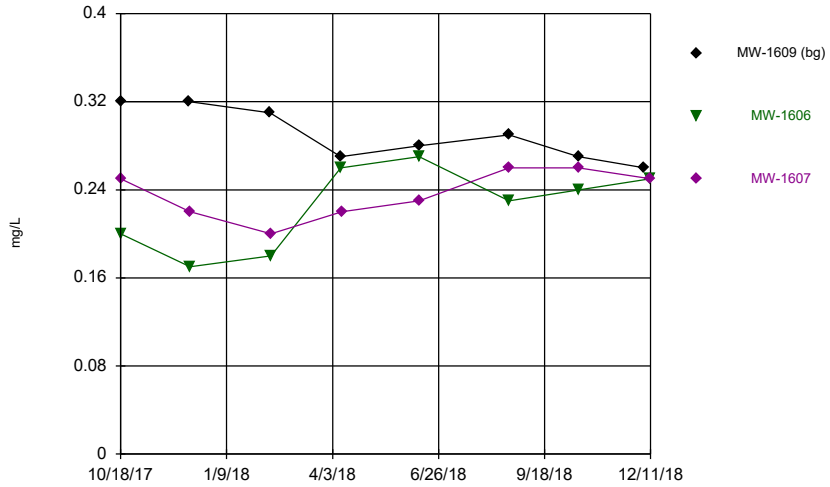
Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CC
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series

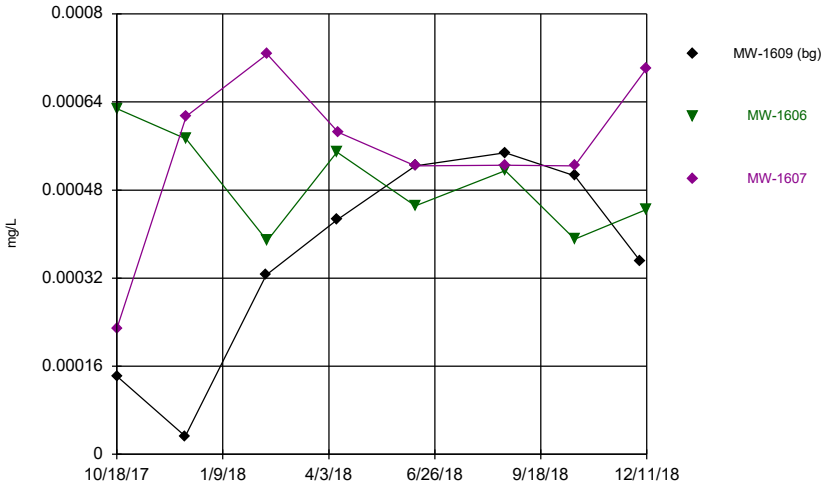


Constituent: Fluoride Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

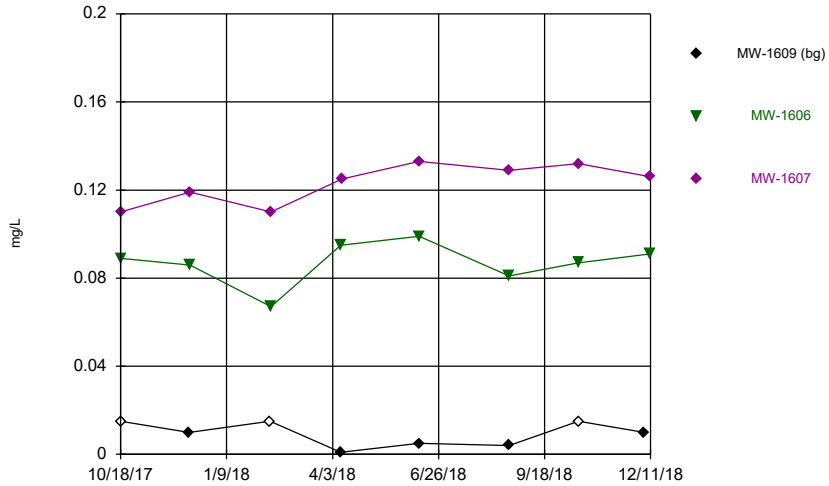
Time Series



Constituent: Lead Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

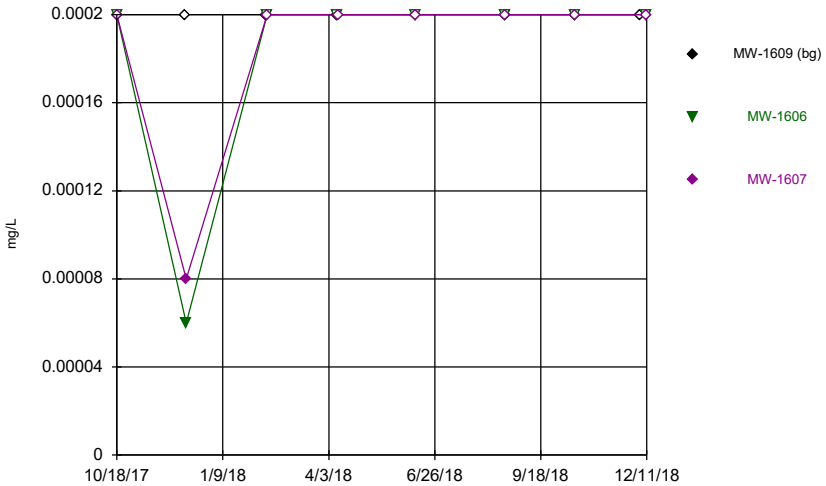
Time Series



Constituent: Lithium Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

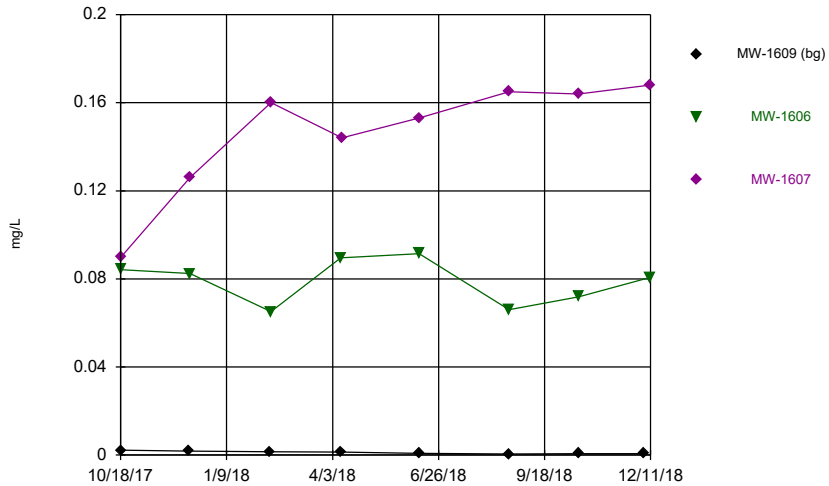
Time Series



Constituent: Mercury Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series

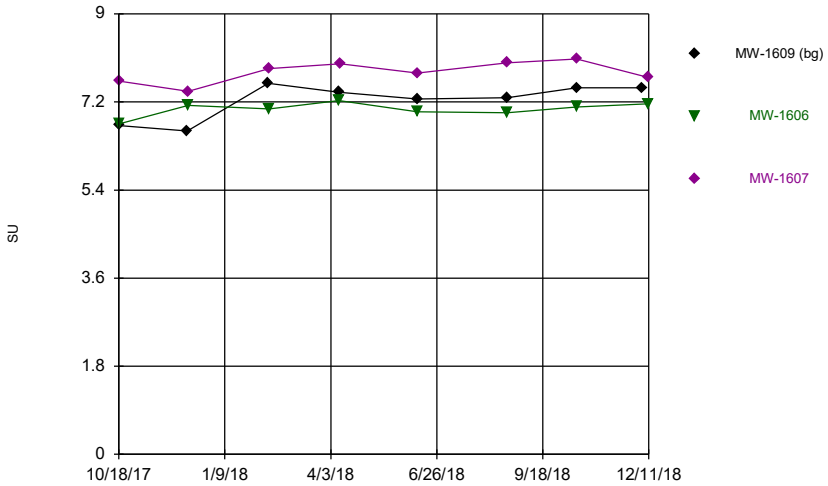


Constituent: Molybdenum Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

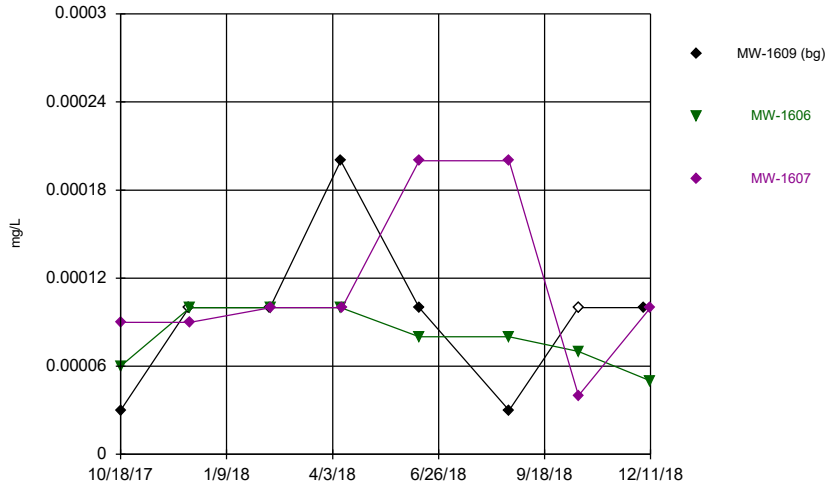
Time Series



Constituent: pH Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

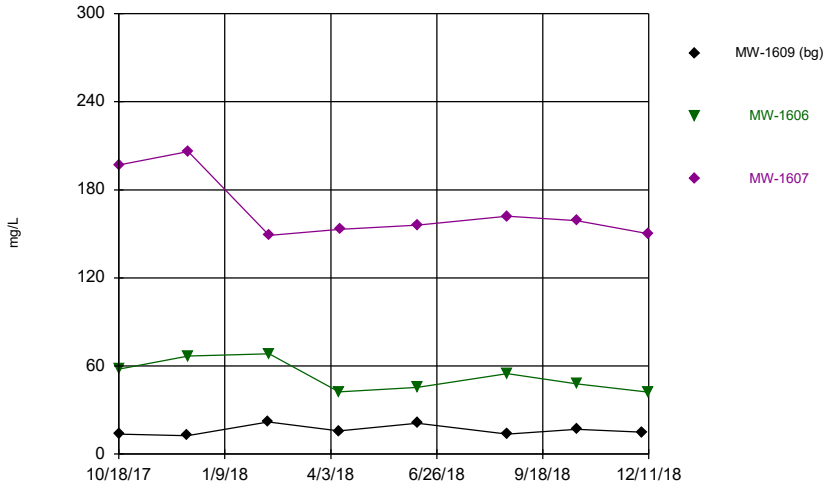
Time Series



Constituent: Selenium Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

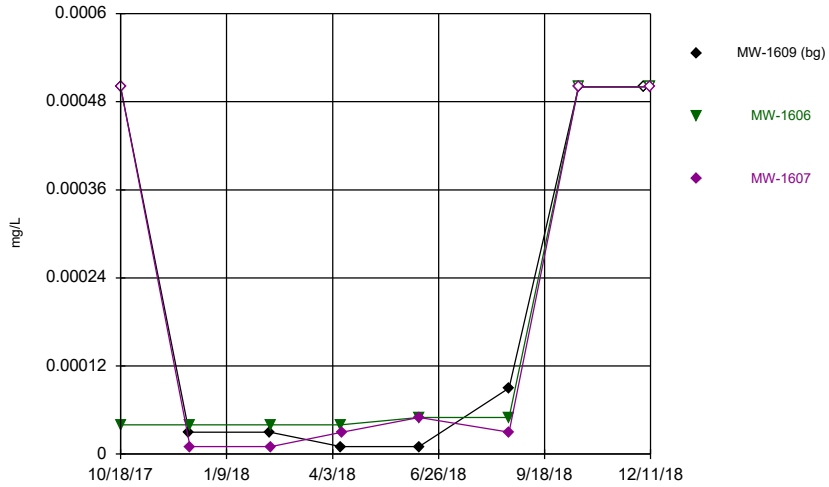
Time Series



Constituent: Sulfate Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

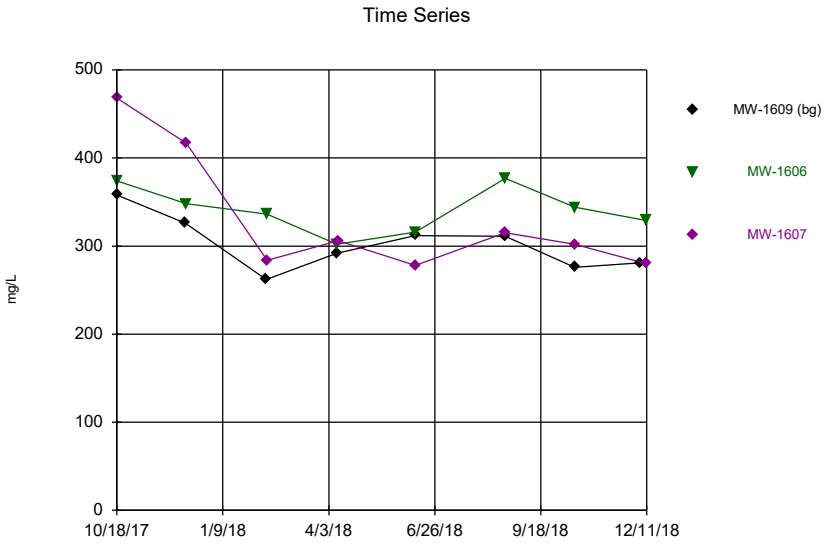
Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Thallium Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

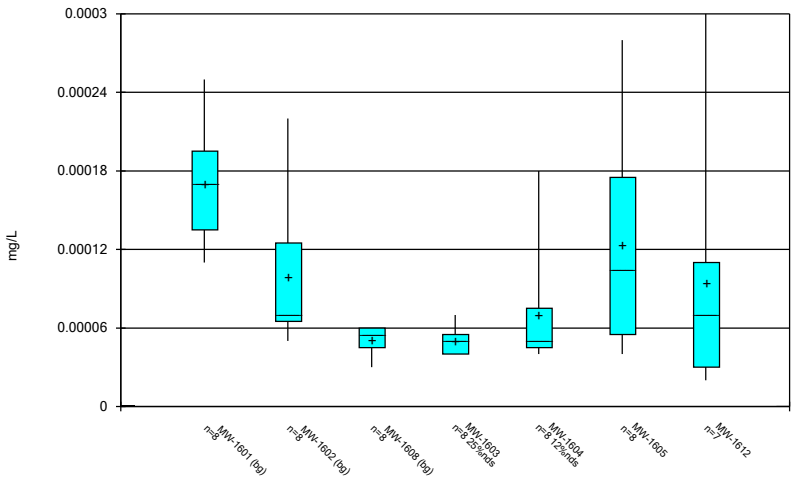


Constituent: Total Dissolved Solids Analysis Run 4/16/2019 3:32 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

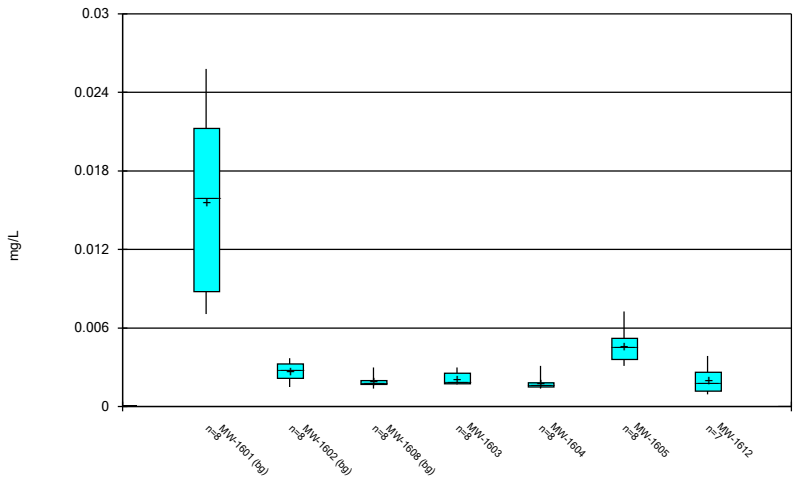
Box & Whiskers Plot



Constituent: Antimony Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

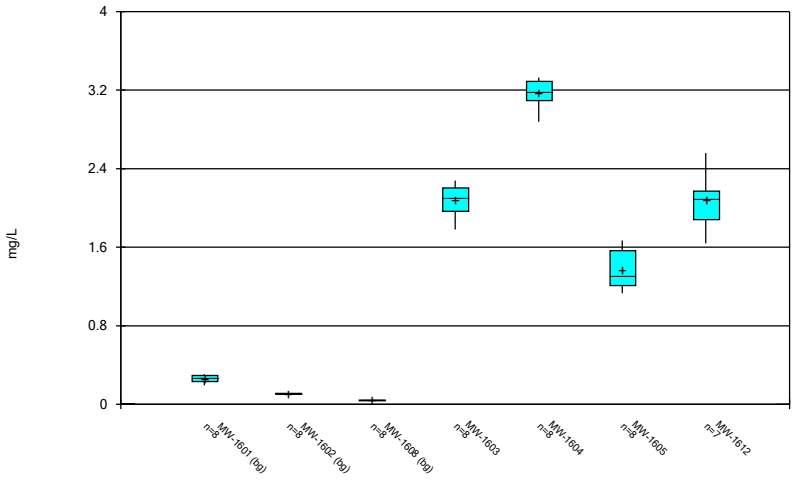
Box & Whiskers Plot



Constituent: Arsenic Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

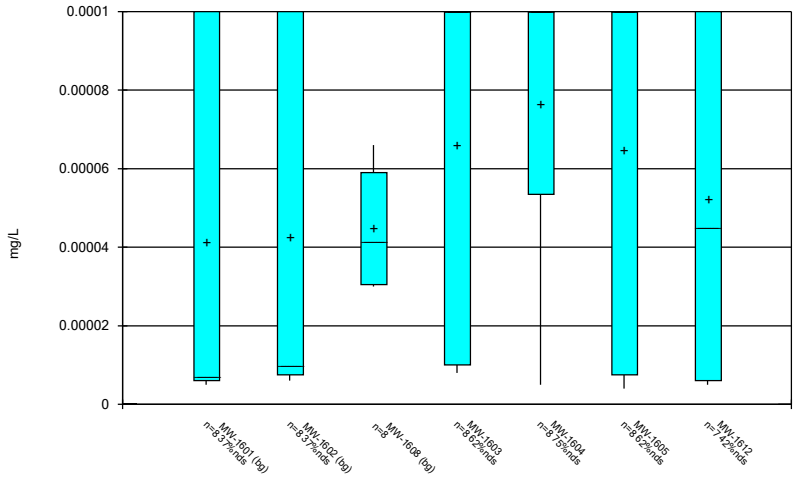
Box & Whiskers Plot



Constituent: Barium Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

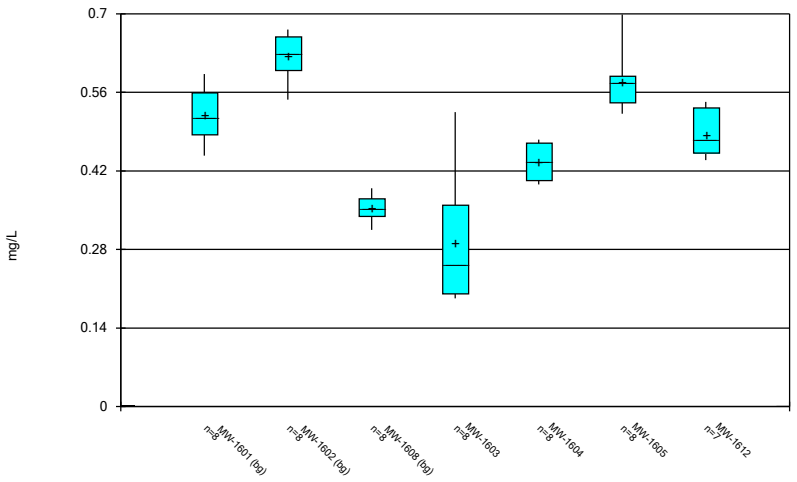


Constituent: Beryllium Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

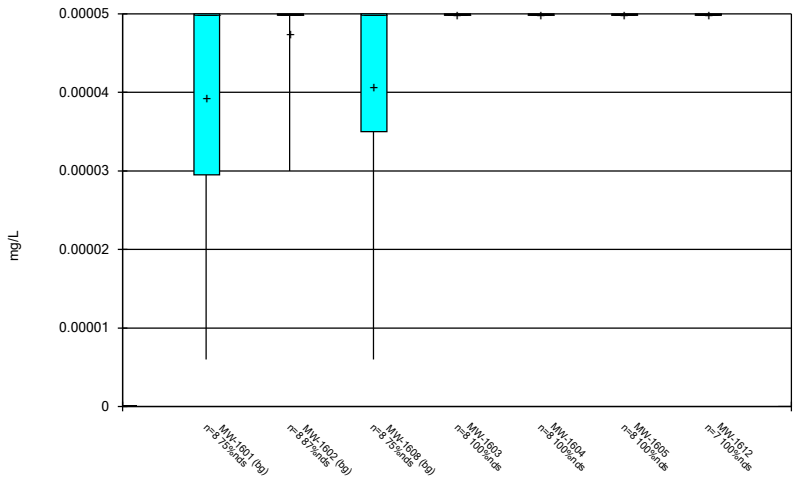
Box & Whiskers Plot



Constituent: Boron Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

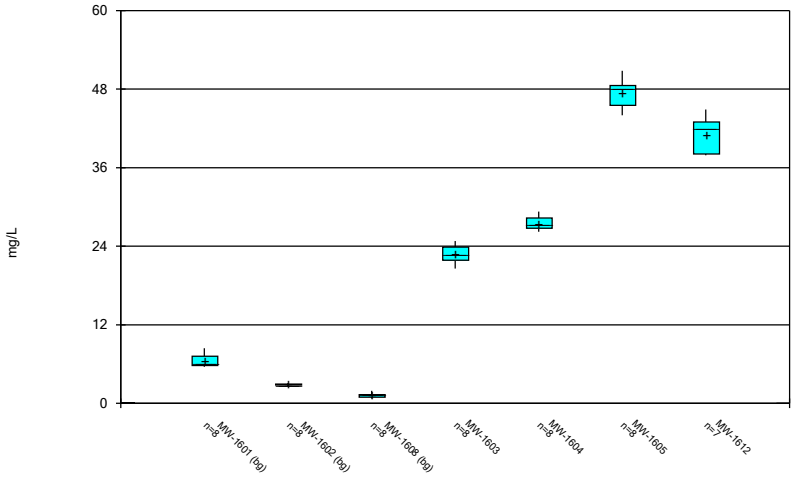
Box & Whiskers Plot



Constituent: Cadmium Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

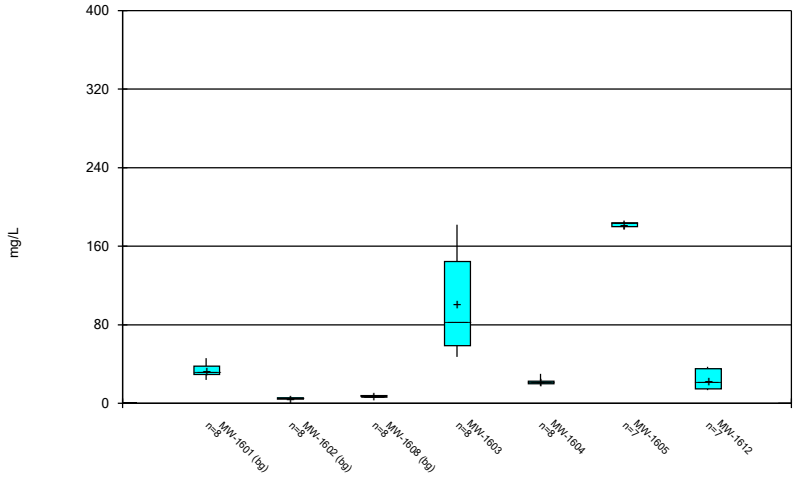
Box & Whiskers Plot



Constituent: Calcium Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

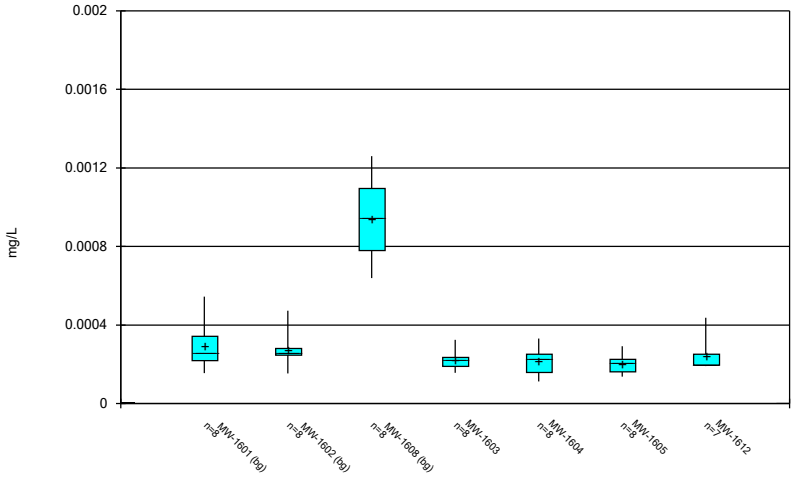


Constituent: Chloride Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

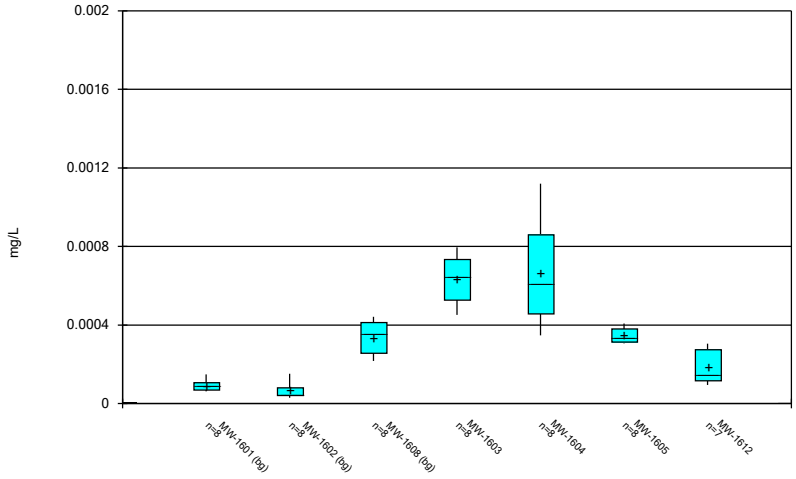
Box & Whiskers Plot



Constituent: Chromium Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

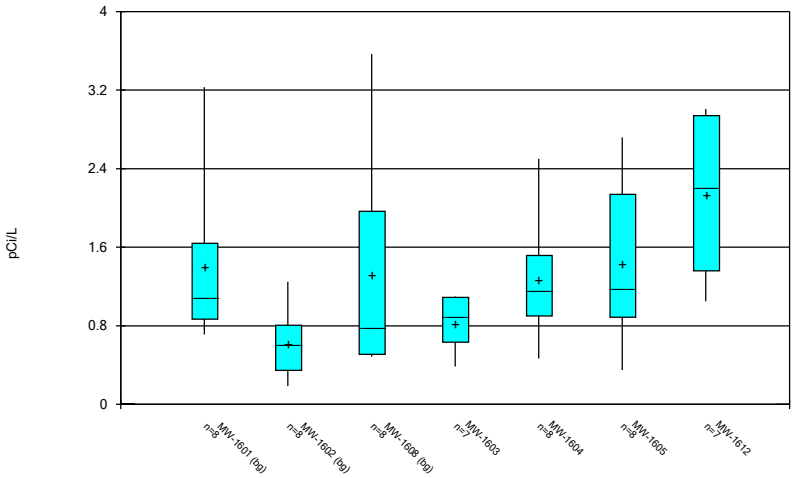
Box & Whiskers Plot



Constituent: Cobalt Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

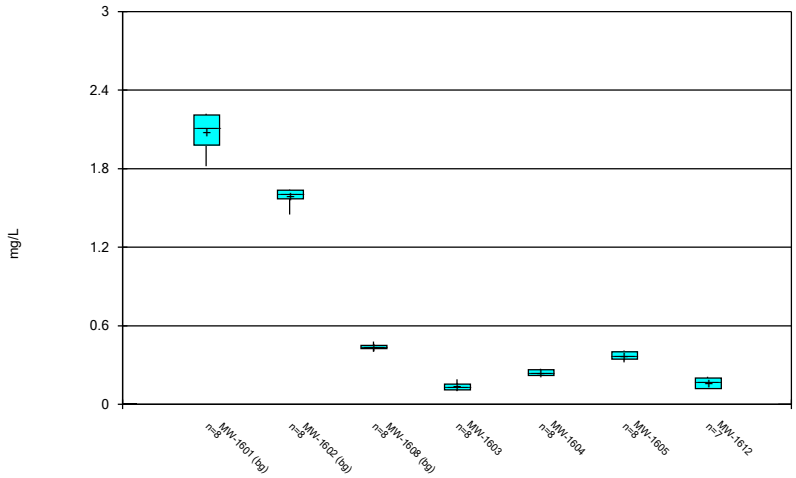
Box & Whiskers Plot



Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

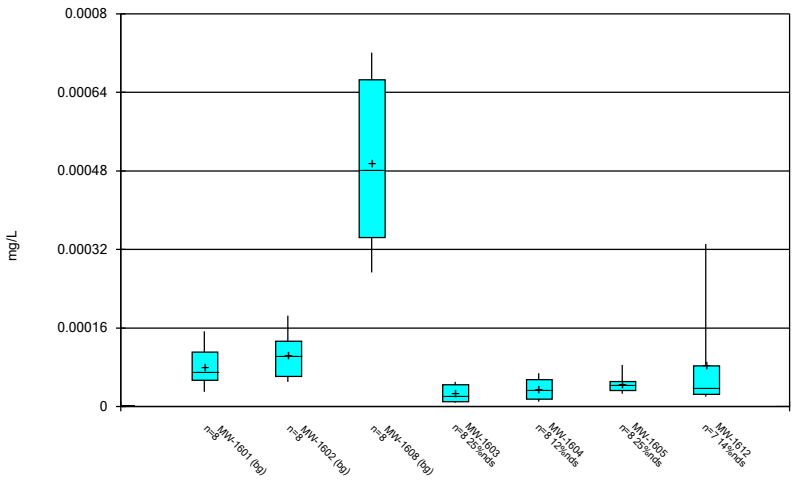


Constituent: Fluoride Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

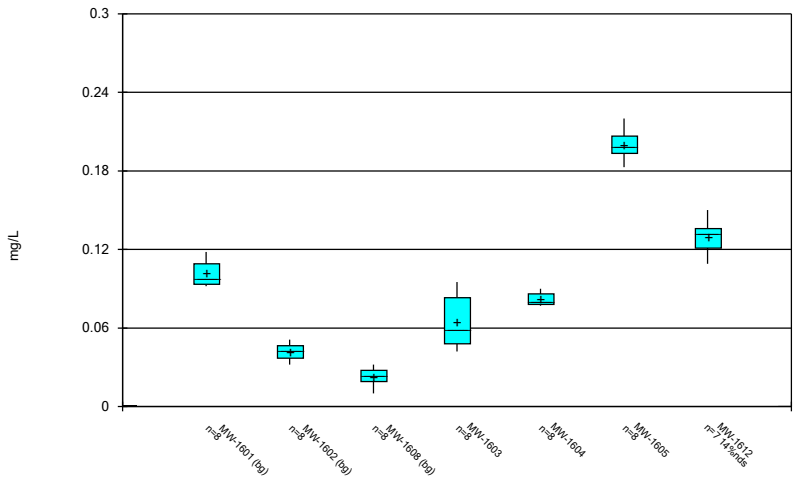
Box & Whiskers Plot



Constituent: Lead Analysis Run 4/17/2019 3:50 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

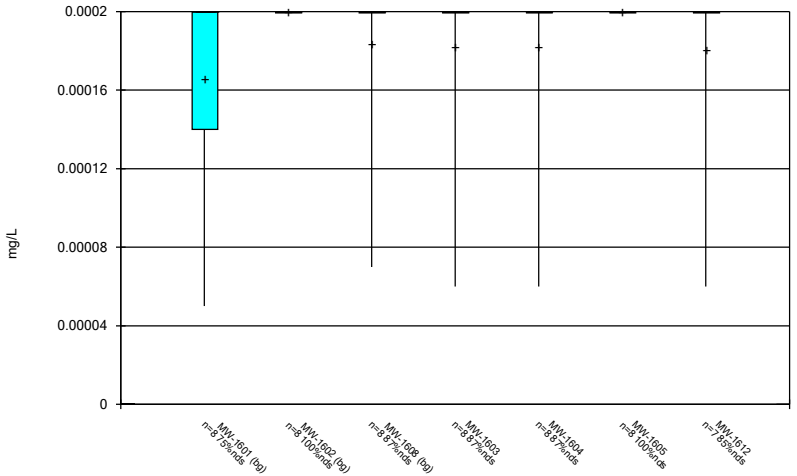
Box & Whiskers Plot



Constituent: Lithium Analysis Run 4/17/2019 3:51 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

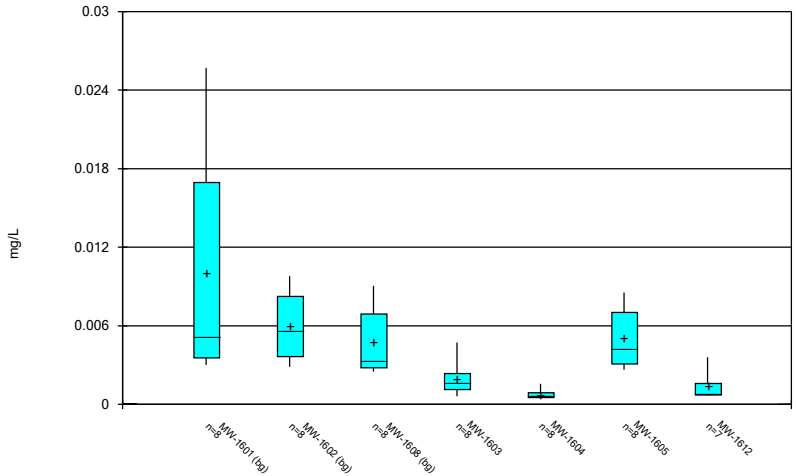
Box & Whiskers Plot



Constituent: Mercury Analysis Run 4/17/2019 3:51 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

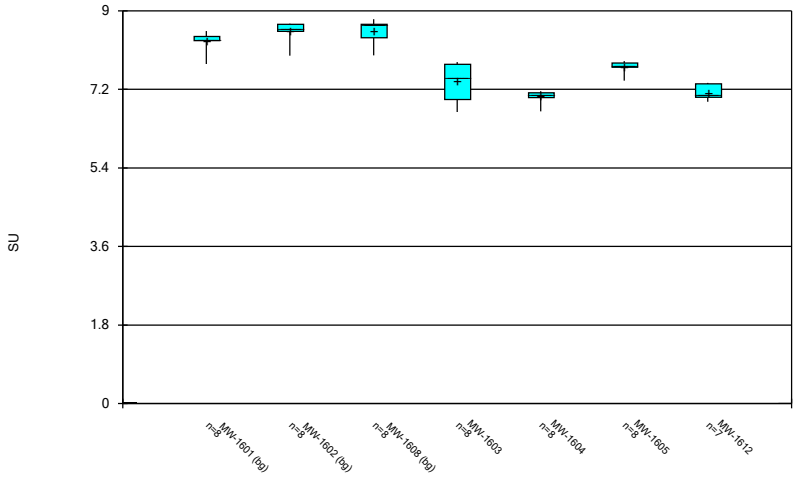


Constituent: Molybdenum Analysis Run 4/17/2019 3:51 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

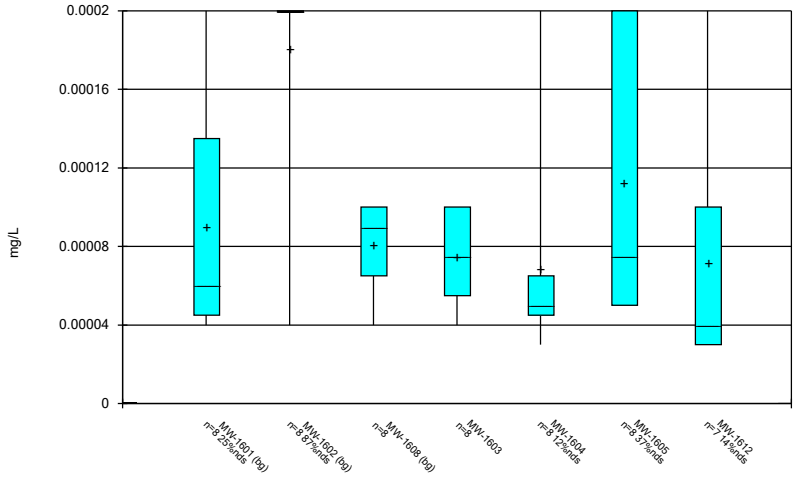
Box & Whiskers Plot



Constituent: pH Analysis Run 4/17/2019 3:51 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

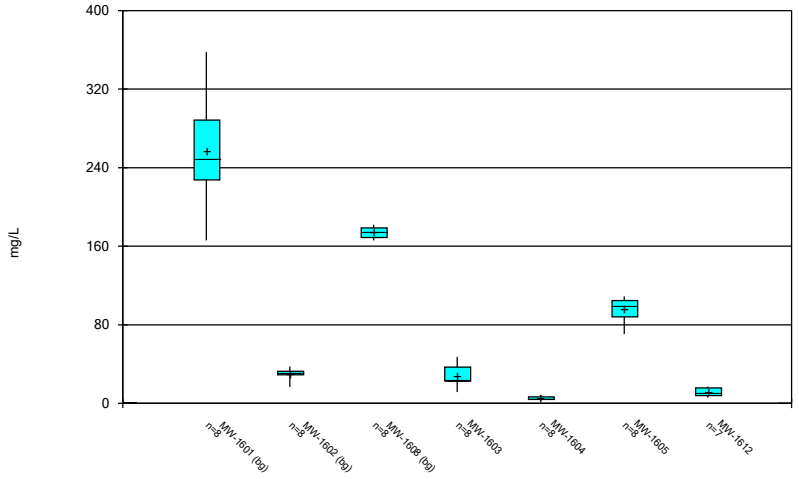
Box & Whiskers Plot



Constituent: Selenium Analysis Run 4/17/2019 3:51 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

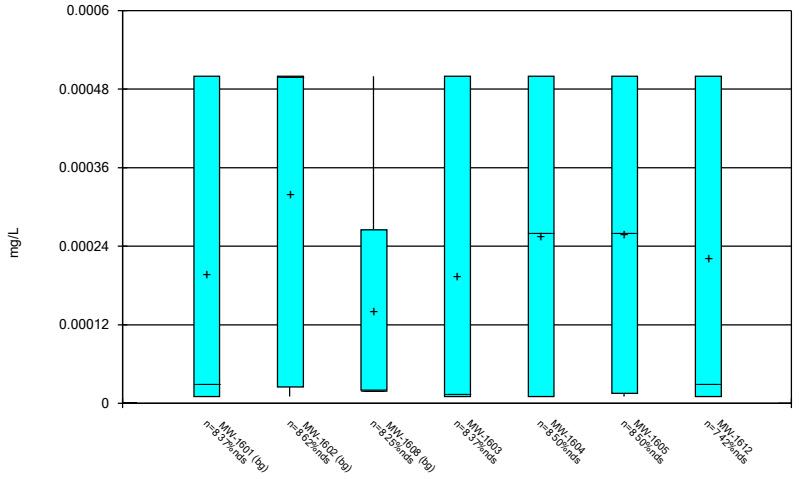
Box & Whiskers Plot



Constituent: Sulfate Analysis Run 4/17/2019 3:51 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

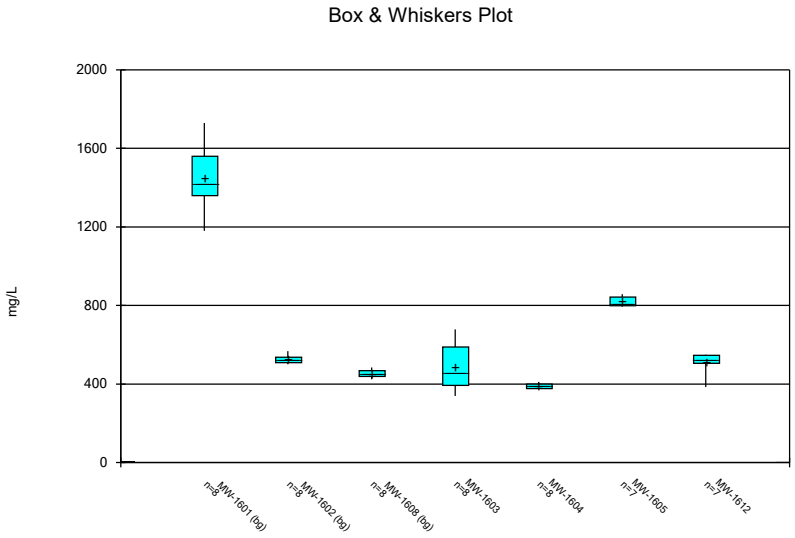
Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Thallium Analysis Run 4/17/2019 3:51 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

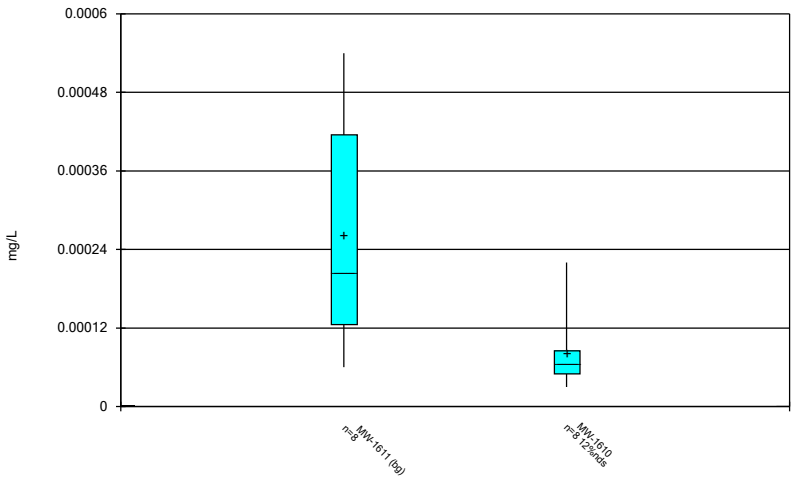


Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:51 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

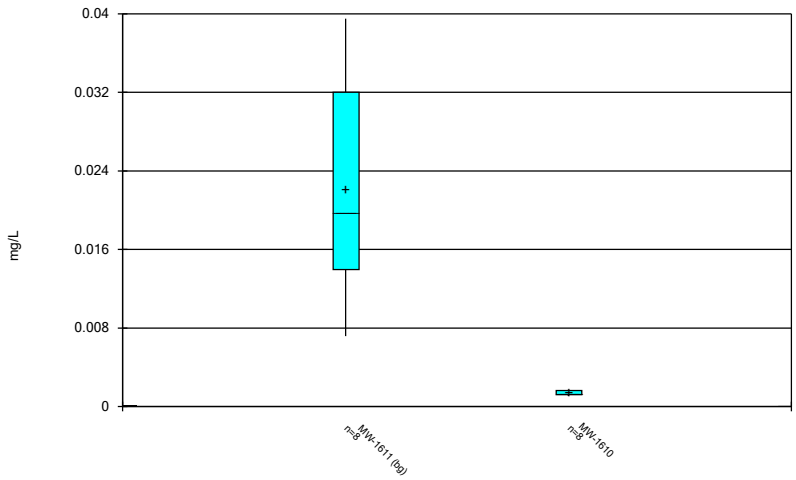
Box & Whiskers Plot



Constituent: Antimony Analysis Run 3/14/2019 12:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

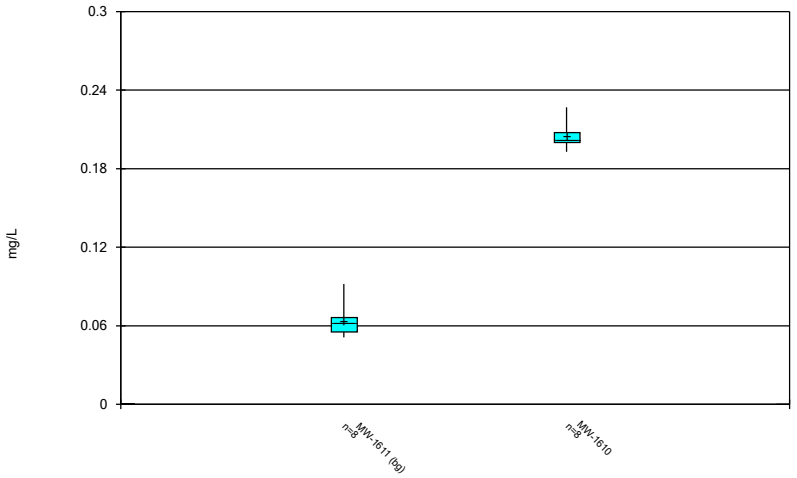
Box & Whiskers Plot



Constituent: Arsenic Analysis Run 3/14/2019 12:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

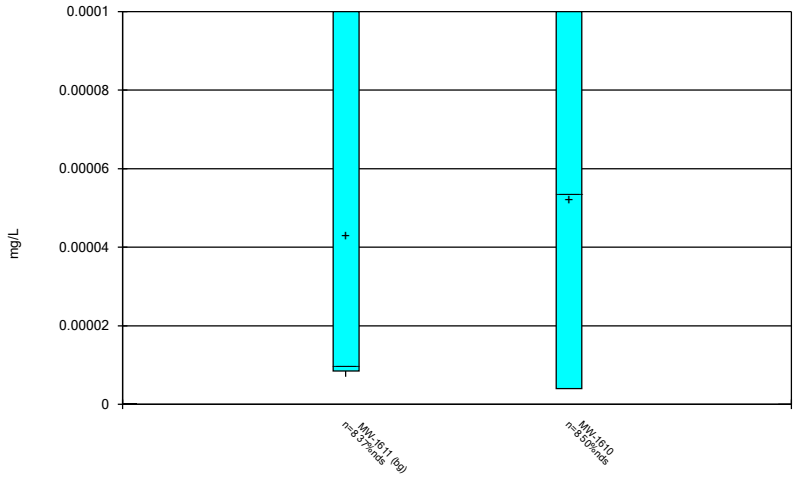
Box & Whiskers Plot



Constituent: Barium Analysis Run 3/14/2019 12:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

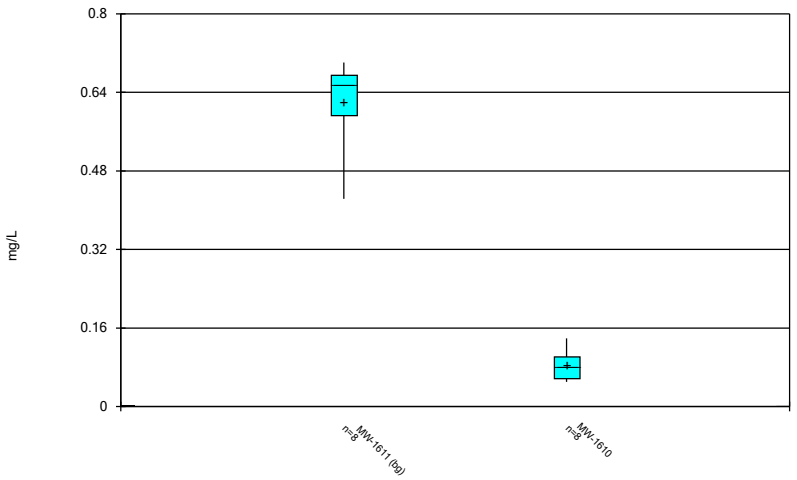


Constituent: Beryllium Analysis Run 3/14/2019 12:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

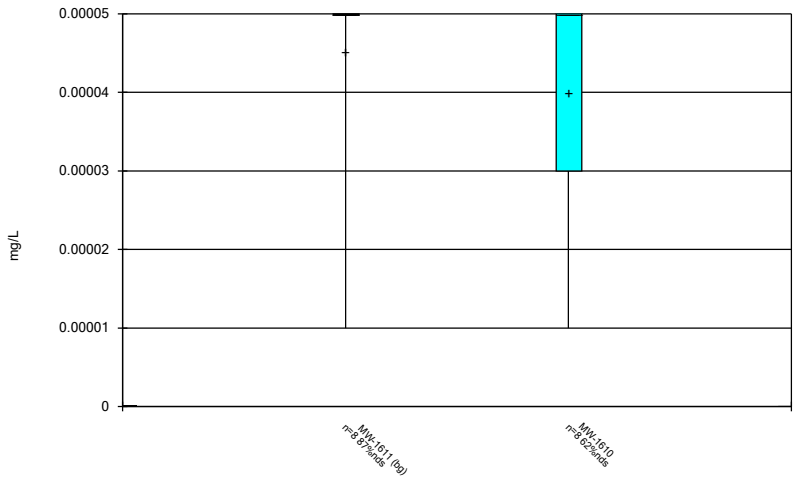
Box & Whiskers Plot



Constituent: Boron Analysis Run 3/14/2019 12:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

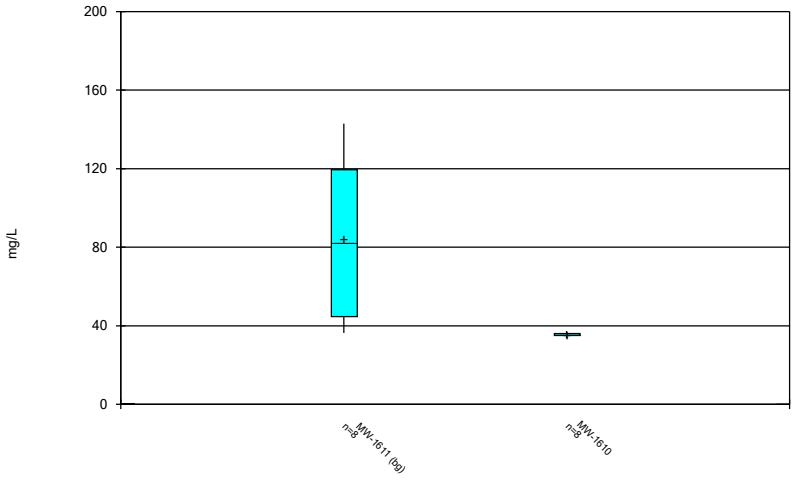
Box & Whiskers Plot



Constituent: Cadmium Analysis Run 3/14/2019 12:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

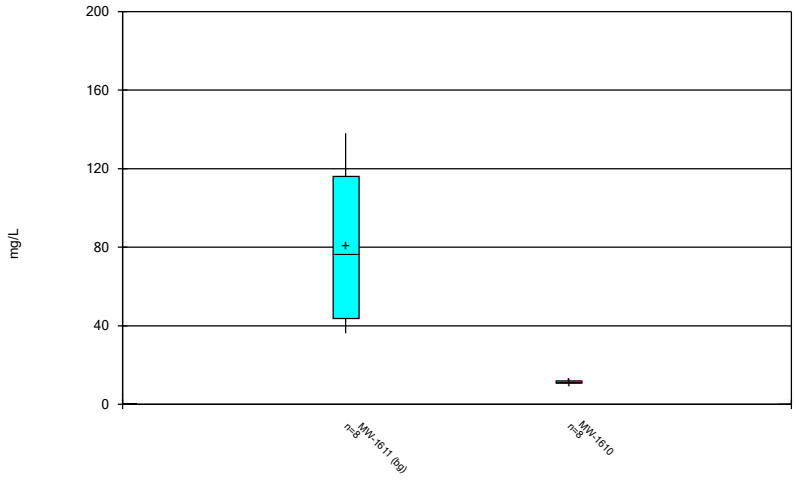
Box & Whiskers Plot



Constituent: Calcium Analysis Run 3/14/2019 12:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

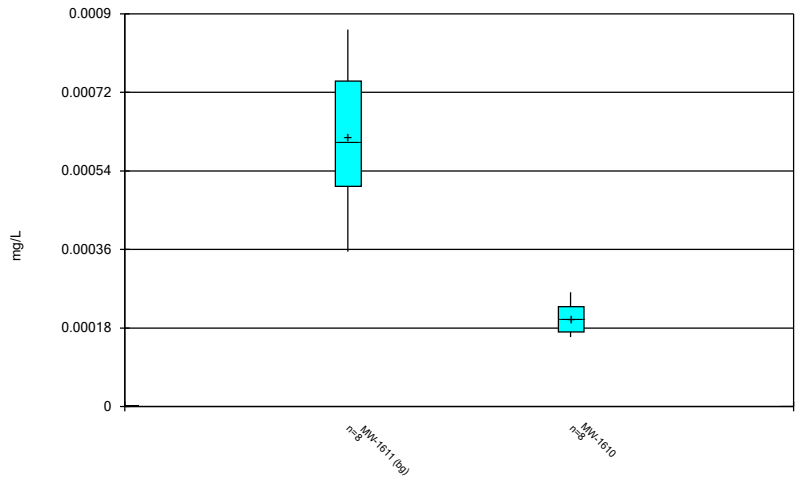


Constituent: Chloride Analysis Run 3/14/2019 12:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

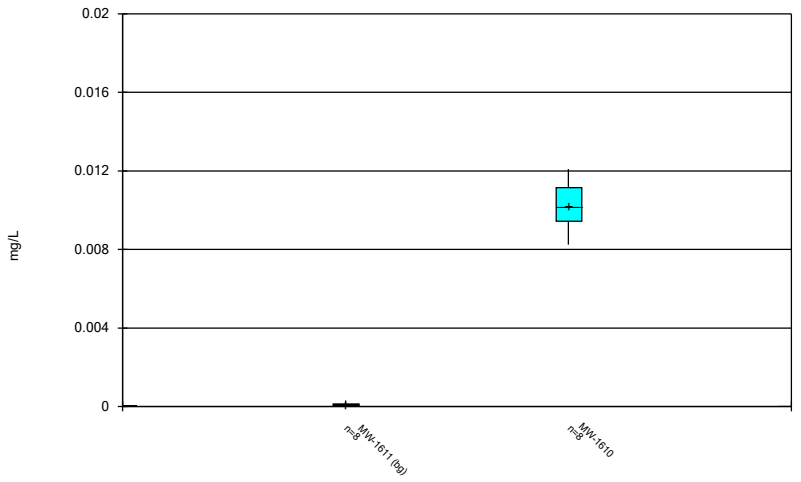
Box & Whiskers Plot



Constituent: Chromium Analysis Run 3/14/2019 12:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

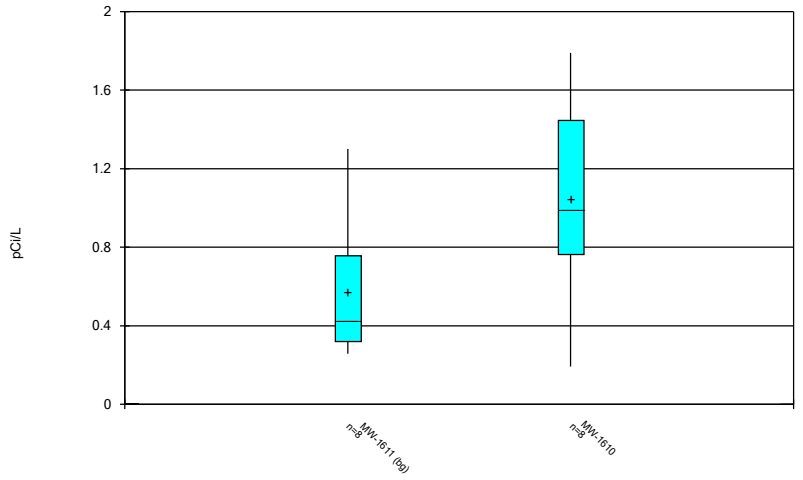
Box & Whiskers Plot



Constituent: Cobalt Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

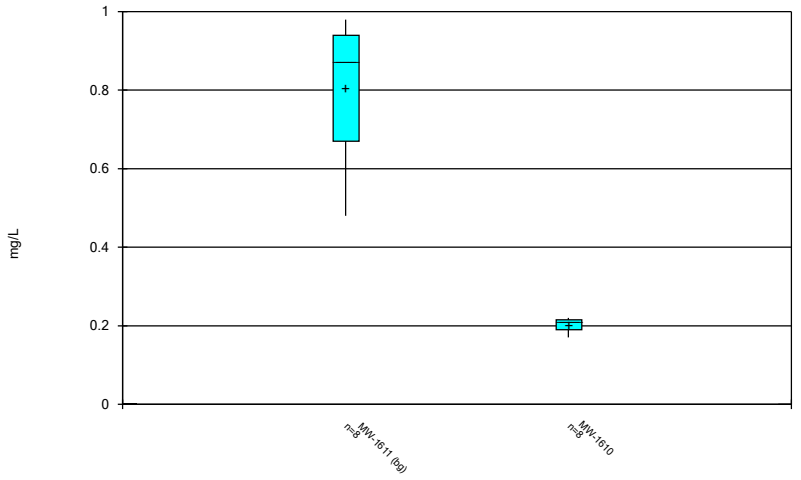
Box & Whiskers Plot



Constituent: Combined Radium 226 + 228 Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps F
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

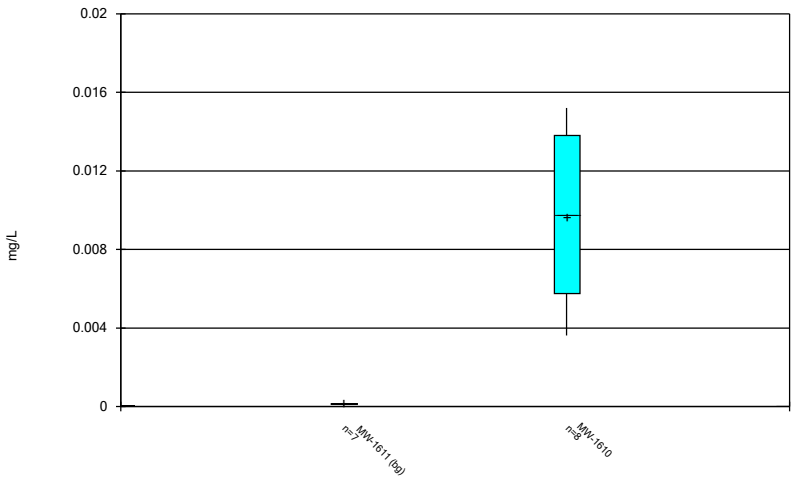


Constituent: Fluoride Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

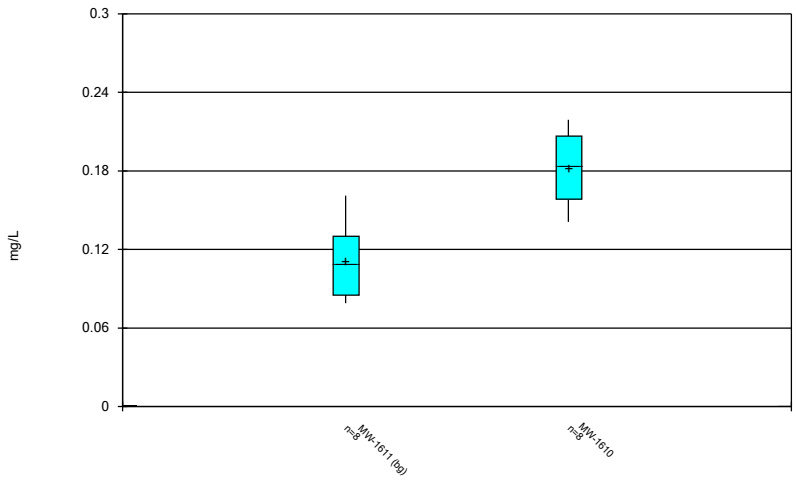
Box & Whiskers Plot



Constituent: Lead Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

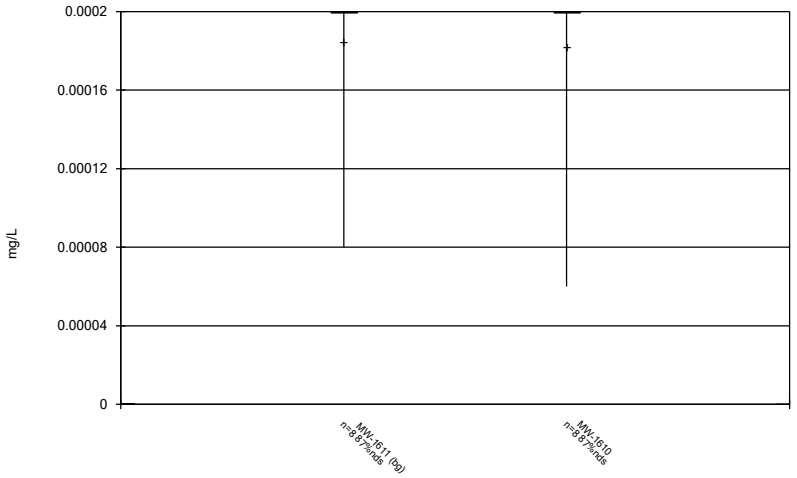
Box & Whiskers Plot



Constituent: Lithium Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

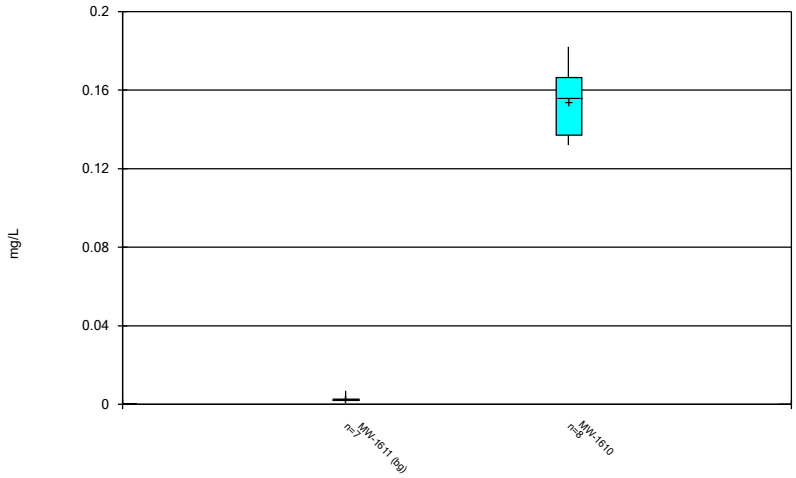
Box & Whiskers Plot



Constituent: Mercury Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

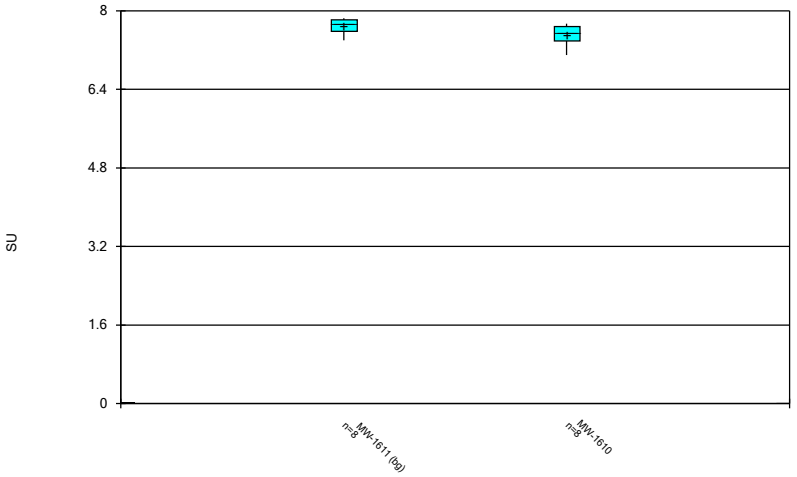
Box & Whiskers Plot



Constituent: Molybdenum Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

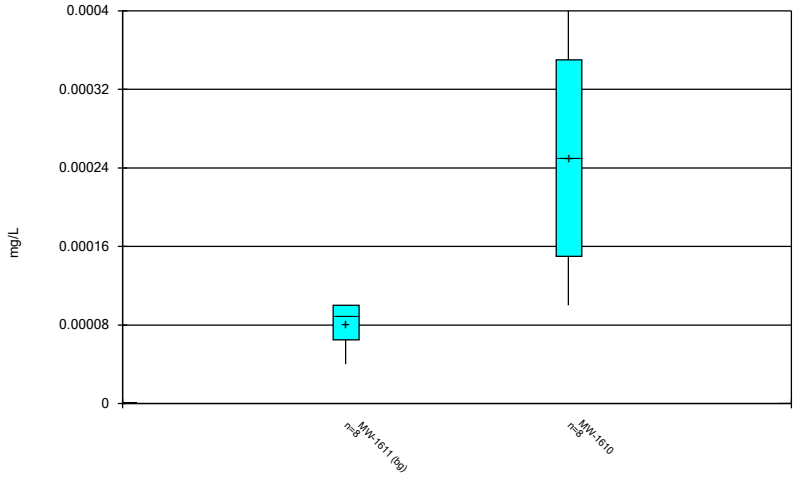
Clinch River Pond 1

Box & Whiskers Plot



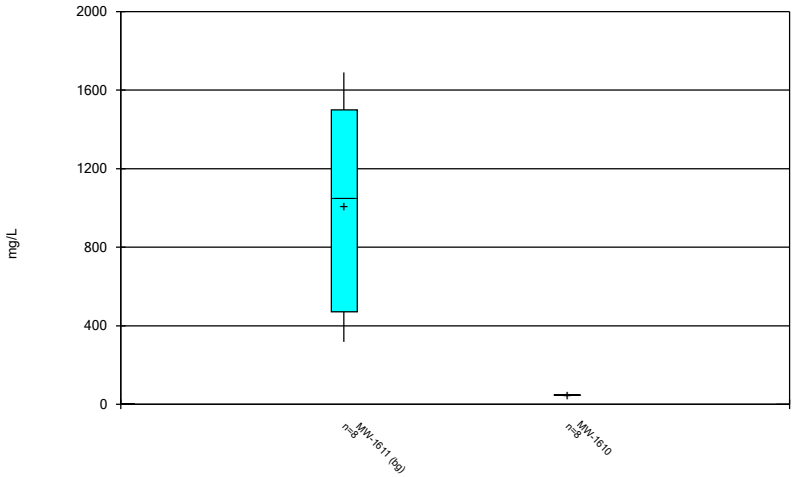
Constituent: pH Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Box & Whiskers Plot



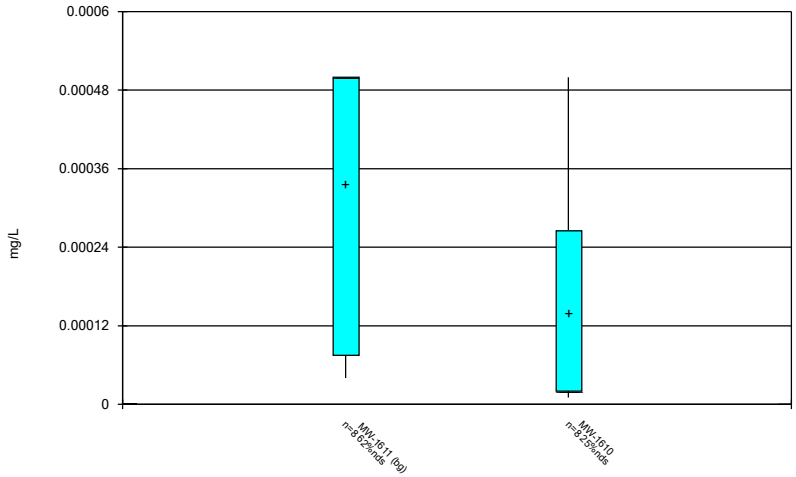
Constituent: Selenium Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Box & Whiskers Plot



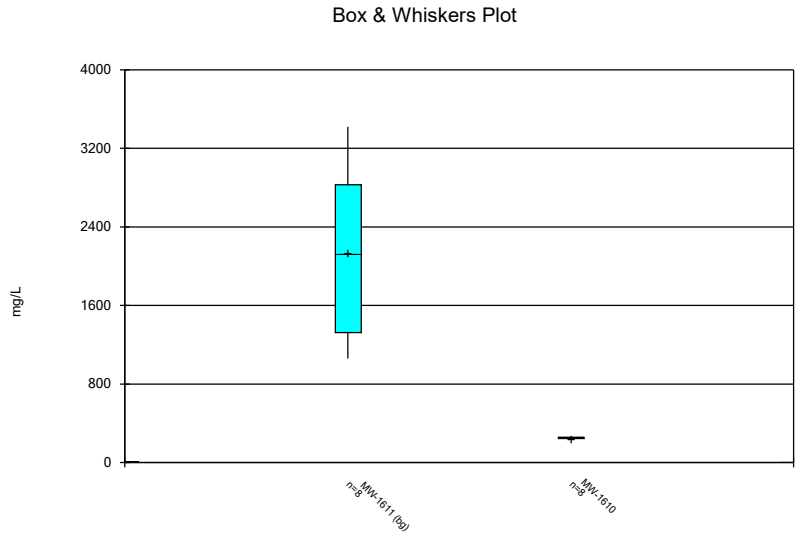
Constituent: Sulfate Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Box & Whiskers Plot



Constituent: Thallium Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

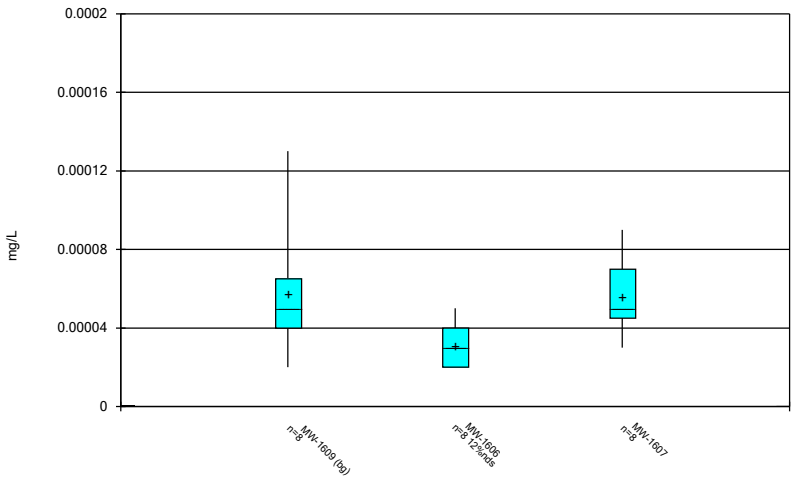


Constituent: Total Dissolved Solids Analysis Run 3/14/2019 12:57 PM View: Descriptive - Dumps Fault C
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

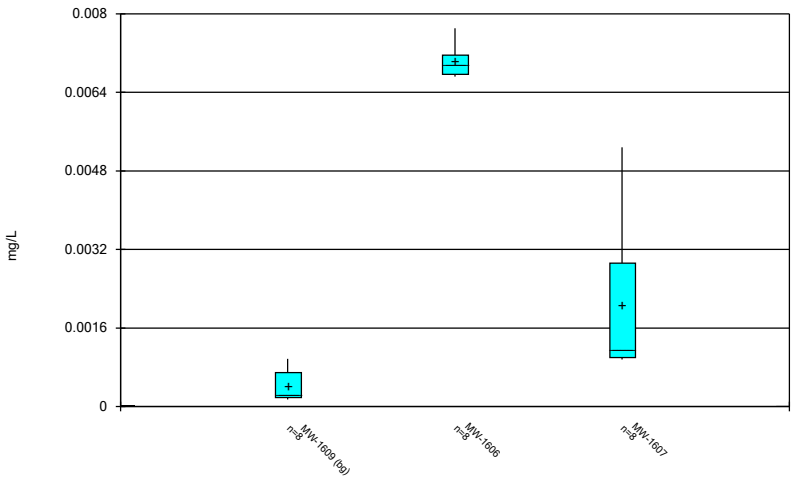
Box & Whiskers Plot



Constituent: Antimony Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

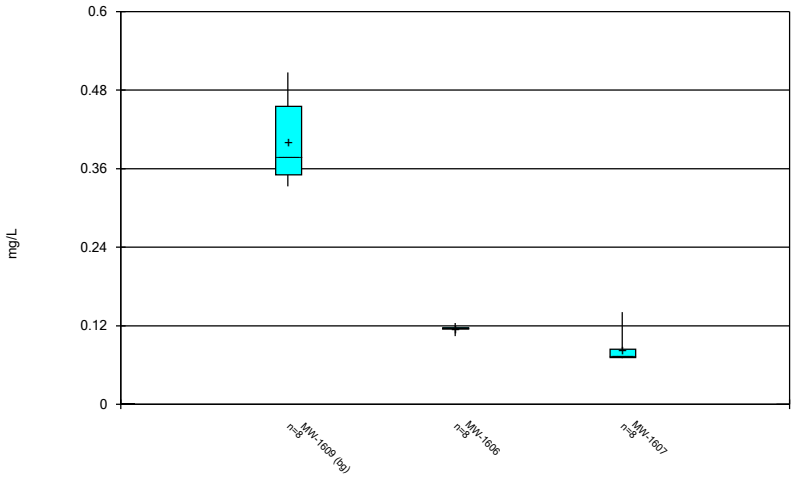
Box & Whiskers Plot



Constituent: Arsenic Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

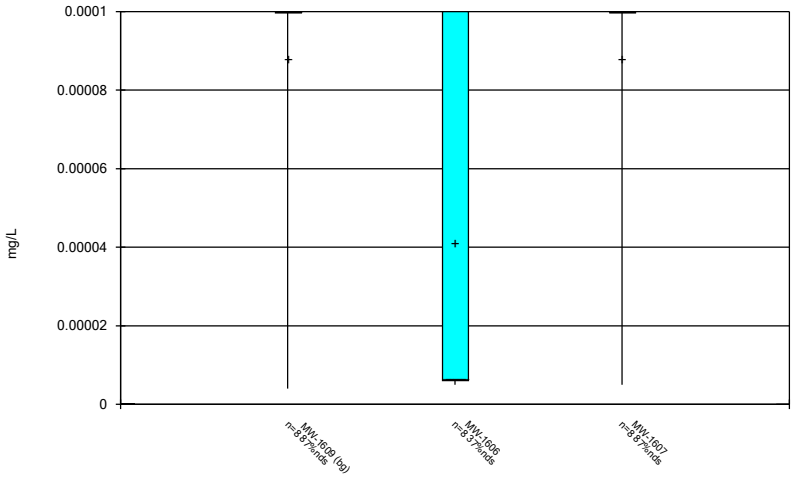
Box & Whiskers Plot



Constituent: Barium Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

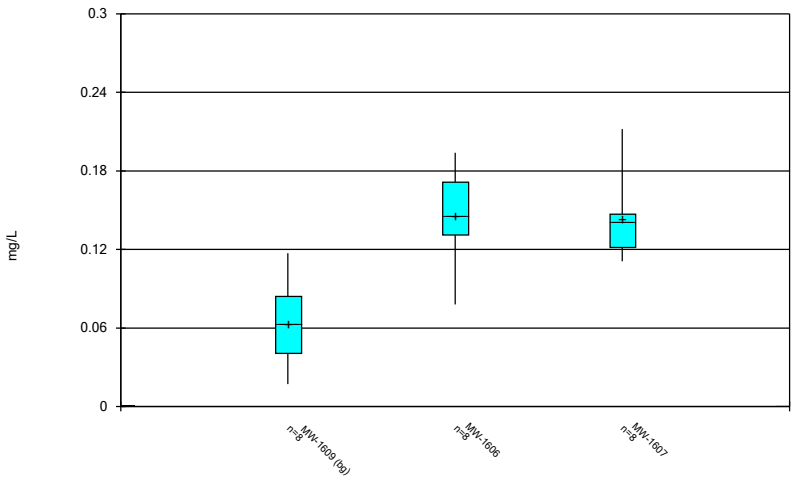


Constituent: Beryllium Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

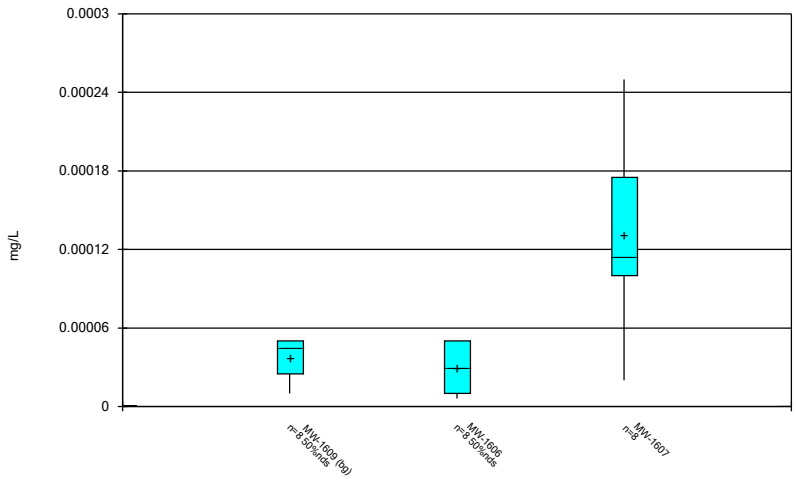
Box & Whiskers Plot



Constituent: Boron Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

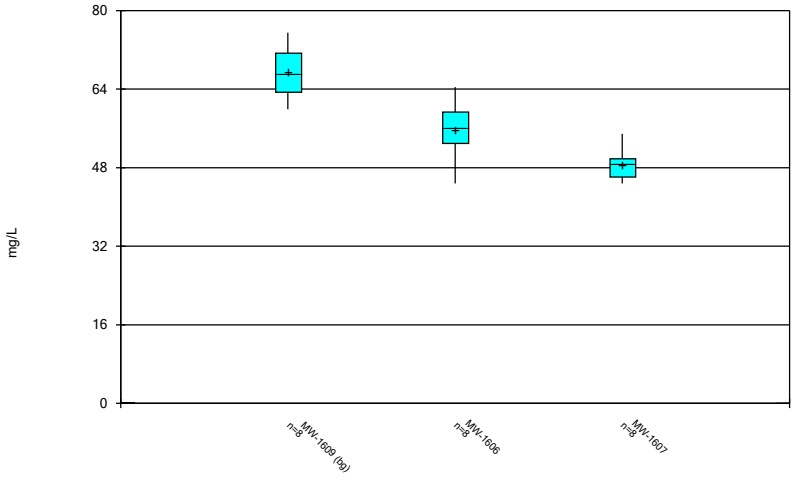
Box & Whiskers Plot



Constituent: Cadmium Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

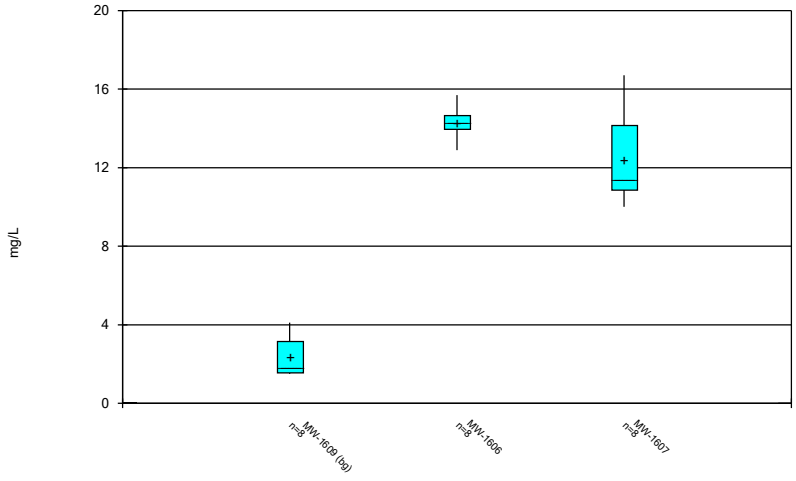
Box & Whiskers Plot



Constituent: Calcium Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

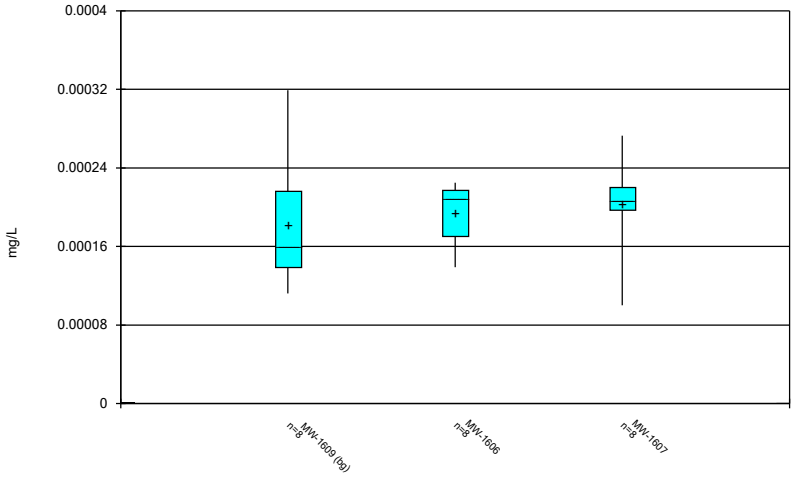


Constituent: Chloride Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

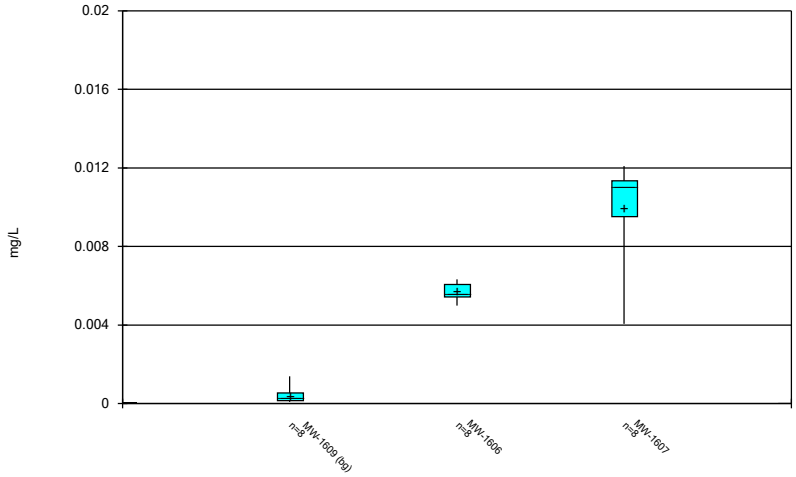
Box & Whiskers Plot



Constituent: Chromium Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

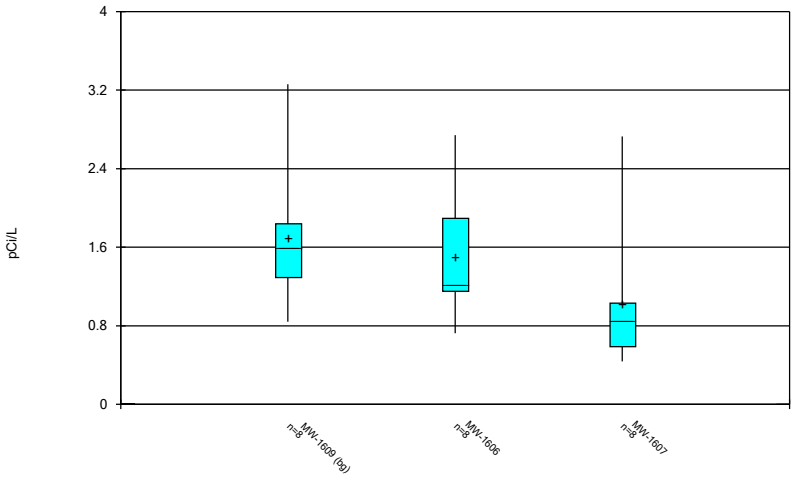
Box & Whiskers Plot



Constituent: Cobalt Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

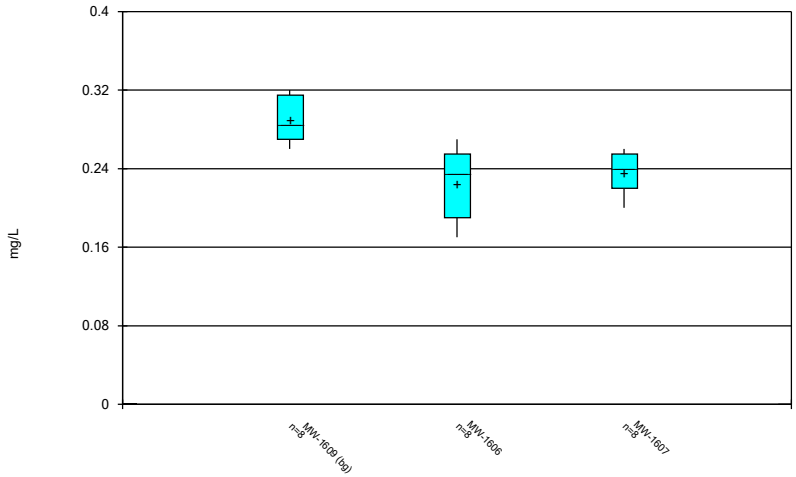
Box & Whiskers Plot



Constituent: Combined Radium 226 + 228 Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CC
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

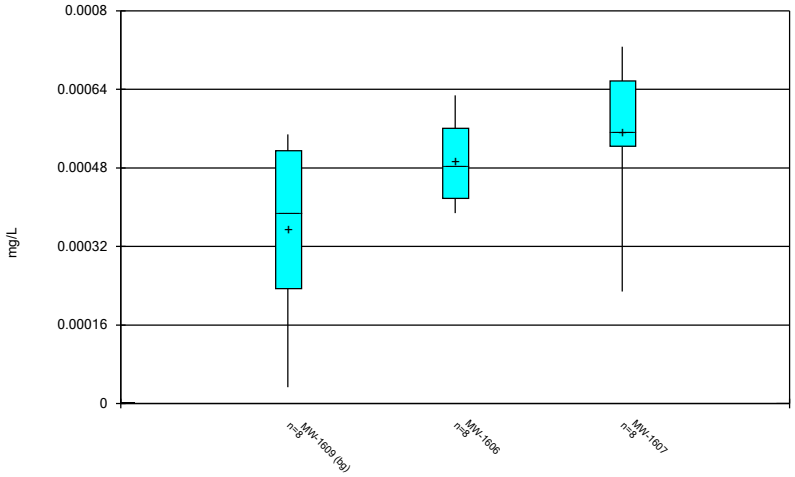
Box & Whiskers Plot



Constituent: Fluoride Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

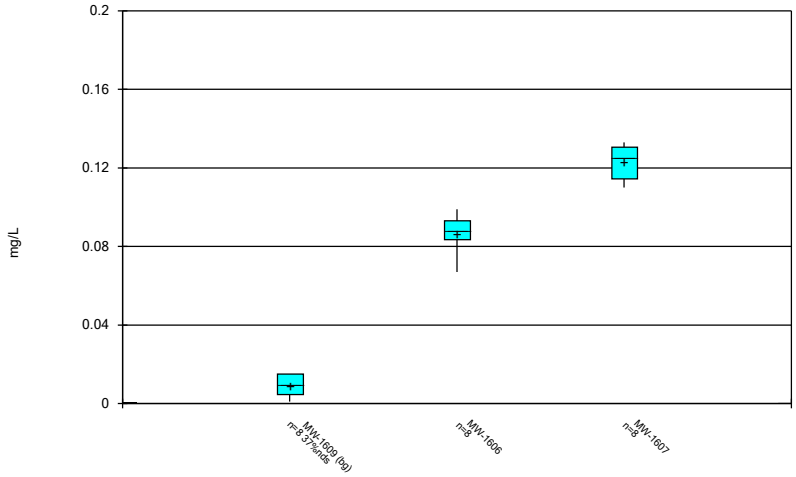
Clinch River Pond 1

Box & Whiskers Plot



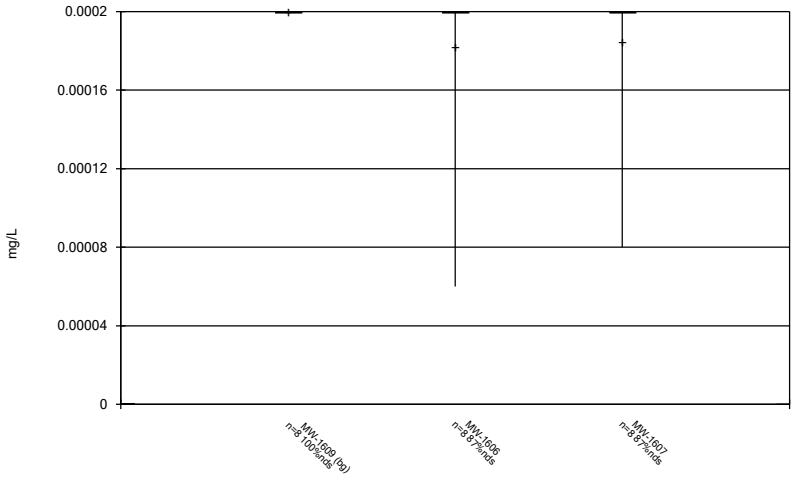
Constituent: Lead Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Box & Whiskers Plot



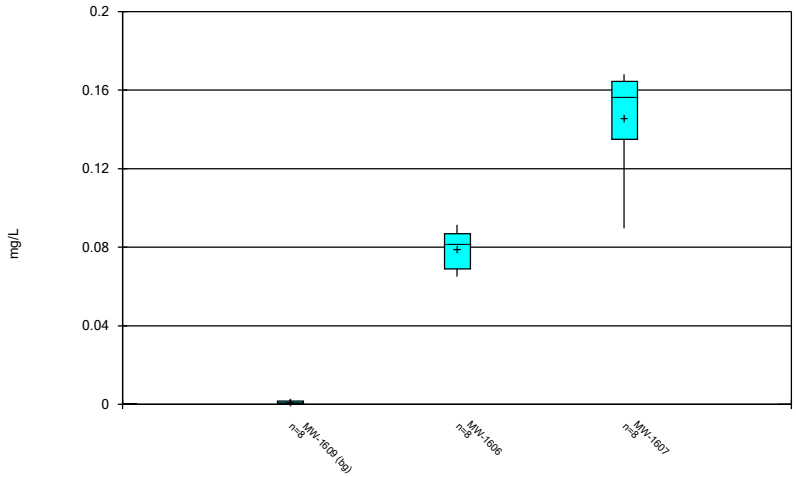
Constituent: Lithium Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Box & Whiskers Plot



Constituent: Mercury Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Box & Whiskers Plot

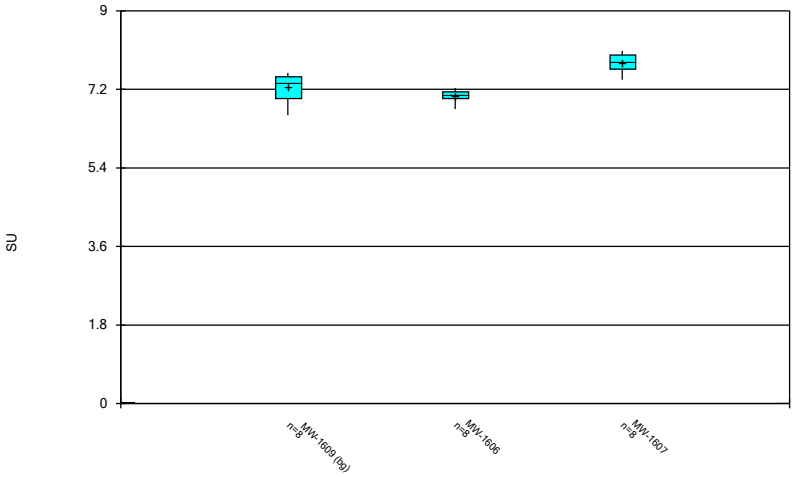


Constituent: Molybdenum Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

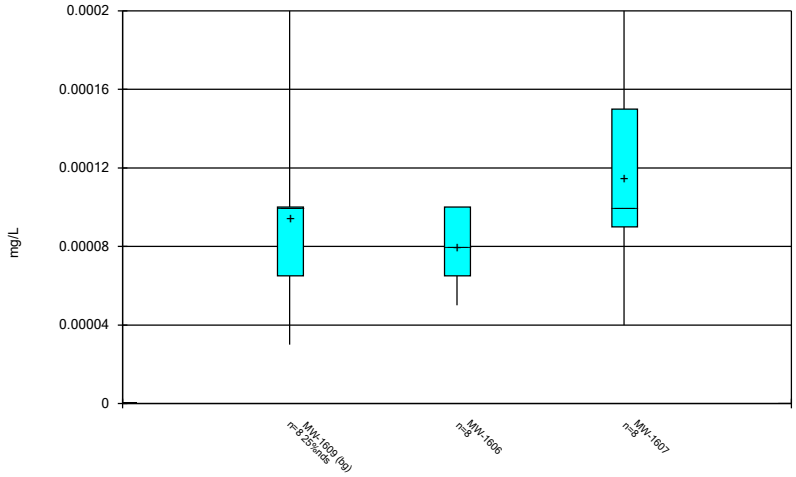
Box & Whiskers Plot



Constituent: pH Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

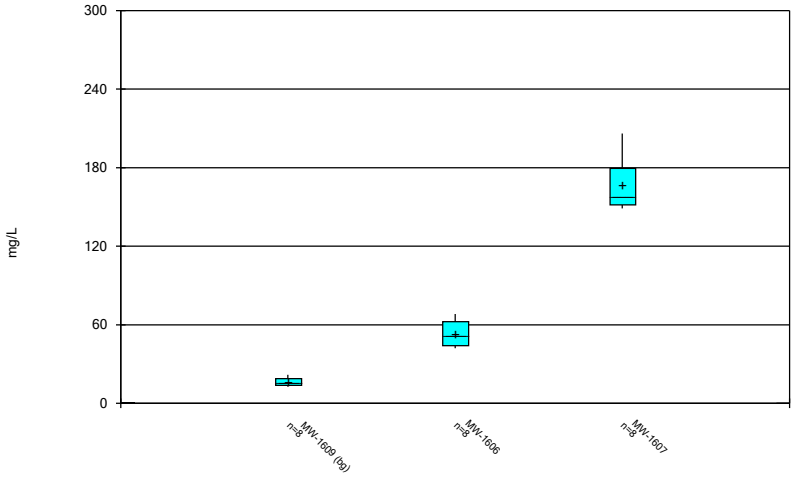
Box & Whiskers Plot



Constituent: Selenium Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

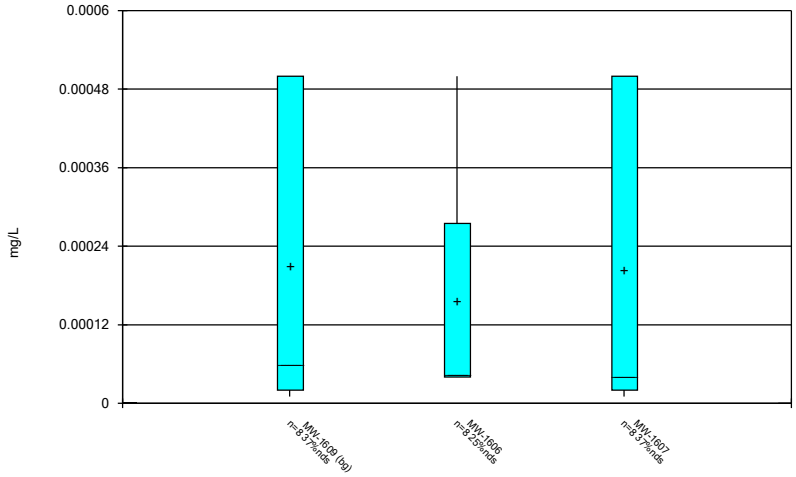
Box & Whiskers Plot



Constituent: Sulfate Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

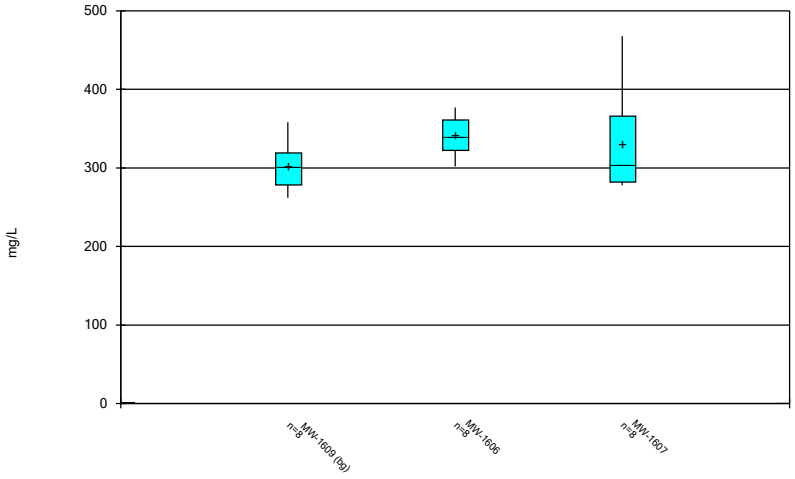
Box & Whiskers Plot



Constituent: Thallium Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Clinch River Pond 1

Box & Whiskers Plot



Constituent: Total Dissolved Solids Analysis Run 4/16/2019 3:35 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Outlier Summary - Dumps Fault

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/16/2019, 2:03 PM

	MW-1610 Antimony (mg/L)	MW-1611 Cobalt (mg/L)	MW-1611 Lead (mg/L)	MW-1611 Molybdenum (mg/L)
10/17/2017	0.00022 (o)			
10/19/2017		0.000311 (o)	0.00105 (o)	0.038 (o)

Outlier Analysis - Significant Results Dumps Fault

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/16/2019, 2:01 PM

Constituent	Well	Outlier	Value(s)	Method	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony (mg/L)	**MW-1610**	**Yes**	**0.00022**	**NP**	**8**	**0.00008125**	**0.00005915**	**normal**	**ShapiroWilk**
Cobalt (mg/L)	**MW-1611 (bg)**	**Yes**	**0.000311**	**NP**	**8**	**0.0001161**	**0.00008315**	**normal**	**ShapiroWilk**
Lead (mg/L)	**MW-1611 (bg)**	**Yes**	**0.00105**	**NP**	**8**	**0.000243**	**0.0003283**	**normal**	**ShapiroWilk**
Molybdenum (mg/L)	**MW-1611 (bg)**	**Yes**	**0.038**	**NP**	**8**	**0.007231**	**0.01254**	**normal**	**ShapiroWilk**

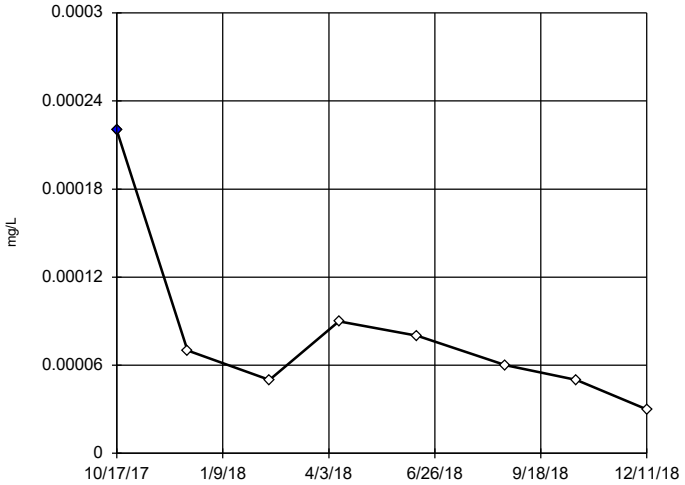
Outlier Analysis - All Results Dumps Fault

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/16/2019, 2:01 PM

Constituent	Well	Outlier	Value(s)	Method	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony (mg/L)	MW-1611 (bg)	No	n/a	NP	8	0.0002613	0.0001796	normal	ShapiroWilk
Antimony (mg/L)	**MW-1610**	**Yes**	**0.00022**	**NP**	**8**	**0.00008125**	**0.00005915**	**normal**	**ShapiroWilk**
Arsenic (mg/L)	MW-1611 (bg)	No	n/a	NP	8	0.02223	0.01146	normal	ShapiroWilk
Arsenic (mg/L)	MW-1610	No	n/a	NP	8	0.001384	0.0002306	normal	ShapiroWilk
Barium (mg/L)	MW-1611 (bg)	No	n/a	NP	8	0.06371	0.01275	normal	ShapiroWilk
Barium (mg/L)	MW-1610	No	n/a	NP	8	0.205	0.01031	normal	ShapiroWilk
Beryllium (mg/L)	MW-1611 (bg)	No	n/a	NP	8	0.000043	0.00004721	normal	ShapiroWilk
Beryllium (mg/L)	MW-1610	No	n/a	NP	8	0.00005237	0.00005092	normal	ShapiroWilk
Boron (mg/L)	MW-1611 (bg)	No	n/a	NP	8	0.6215	0.09195	normal	ShapiroWilk
Boron (mg/L)	MW-1610	No	n/a	NP	8	0.08325	0.03067	normal	ShapiroWilk
Cadmium (mg/L)	MW-1611 (bg)	n/a	n/a	NP	8	0.000045	0.00001414	unknown	ShapiroWilk
Cadmium (mg/L)	MW-1610	No	n/a	NP	8	0.00004	0.00001512	normal	ShapiroWilk
Calcium (mg/L)	MW-1611 (bg)	No	n/a	NP	8	84.04	41.09	normal	ShapiroWilk
Calcium (mg/L)	MW-1610	No	n/a	NP	8	35.44	1.06	normal	ShapiroWilk
Chloride (mg/L)	MW-1611 (bg)	No	n/a	NP	8	80.8	40.49	normal	ShapiroWilk
Chloride (mg/L)	MW-1610	No	n/a	NP	8	11.56	0.9471	normal	ShapiroWilk
Chromium (mg/L)	MW-1611 (bg)	No	n/a	NP	8	0.0006165	0.0001741	normal	ShapiroWilk
Chromium (mg/L)	MW-1610	No	n/a	NP	8	0.0002025	0.00003736	normal	ShapiroWilk
Cobalt (mg/L)	**MW-1611 (bg)**	**Yes**	**0.000311**	**NP**	**8**	**0.0001161**	**0.00008315**	**normal**	**ShapiroWilk**
Cobalt (mg/L)	MW-1610	No	n/a	NP	8	0.01023	0.001278	normal	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1611 (bg)	No	n/a	NP	8	0.57	0.3537	normal	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1610	No	n/a	NP	8	1.047	0.5322	normal	ShapiroWilk
Fluoride (mg/L)	MW-1611 (bg)	No	n/a	NP	8	0.8038	0.1778	normal	ShapiroWilk
Fluoride (mg/L)	MW-1610	No	n/a	NP	8	0.2025	0.01832	normal	ShapiroWilk
Lead (mg/L)	**MW-1611 (bg)**	**Yes**	**0.00105**	**NP**	**8**	**0.000243**	**0.0003283**	**normal**	**ShapiroWilk**
Lead (mg/L)	MW-1610	No	n/a	NP	8	0.009688	0.004511	normal	ShapiroWilk
Lithium (mg/L)	MW-1611 (bg)	No	n/a	NP	8	0.1111	0.02842	normal	ShapiroWilk
Lithium (mg/L)	MW-1610	No	n/a	NP	8	0.1823	0.02855	normal	ShapiroWilk
Mercury (mg/L)	MW-1611 (bg)	n/a	n/a	NP	8	0.000185	0.00004243	unknown	ShapiroWilk
Mercury (mg/L)	MW-1610	n/a	n/a	NP	8	0.0001825	0.0000495	unknown	ShapiroWilk
Molybdenum (mg/L)	**MW-1611 (bg)**	**Yes**	**0.038**	**NP**	**8**	**0.007231**	**0.01254**	**normal**	**ShapiroWilk**
Molybdenum (mg/L)	MW-1610	No	n/a	NP	8	0.1541	0.018	normal	ShapiroWilk
pH (SU)	MW-1611 (bg)	No	n/a	NP	8	7.688	0.1646	normal	ShapiroWilk
pH (SU)	MW-1610	No	n/a	NP	8	7.511	0.2176	normal	ShapiroWilk
Selenium (mg/L)	MW-1611 (bg)	No	n/a	NP	8	0.00008125	0.00002357	normal	ShapiroWilk
Selenium (mg/L)	MW-1610	No	n/a	NP	8	0.00025	0.0001195	normal	ShapiroWilk
Sulfate (mg/L)	MW-1611 (bg)	No	n/a	NP	8	1007	559.8	normal	ShapiroWilk
Sulfate (mg/L)	MW-1610	No	n/a	NP	8	46.96	3.698	normal	ShapiroWilk
Thallium (mg/L)	MW-1611 (bg)	No	n/a	NP	8	0.0003363	0.000227	normal	ShapiroWilk
Thallium (mg/L)	MW-1610	No	n/a	NP	8	0.00014	0.0002223	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-1611 (bg)	No	n/a	NP	8	2133	881.3	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-1610	No	n/a	NP	8	249.5	9.607	normal	ShapiroWilk

Tukey's Outlier Screening

MW-1610



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

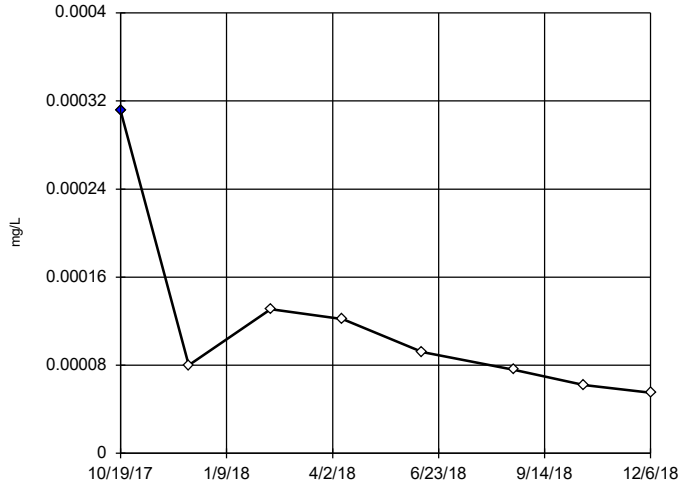
High cutoff = 0.00019, low cutoff = -0.000055, based on IQR multiplier of 3.

Constituent: Antimony Analysis Run 4/16/2019 1:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1611 (bg)



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

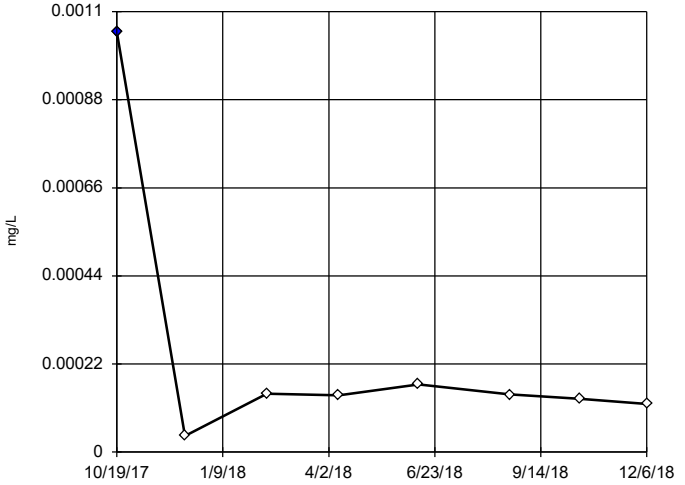
High cutoff = 0.000299, low cutoff = -0.0001035, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 4/16/2019 1:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1611 (bg)



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

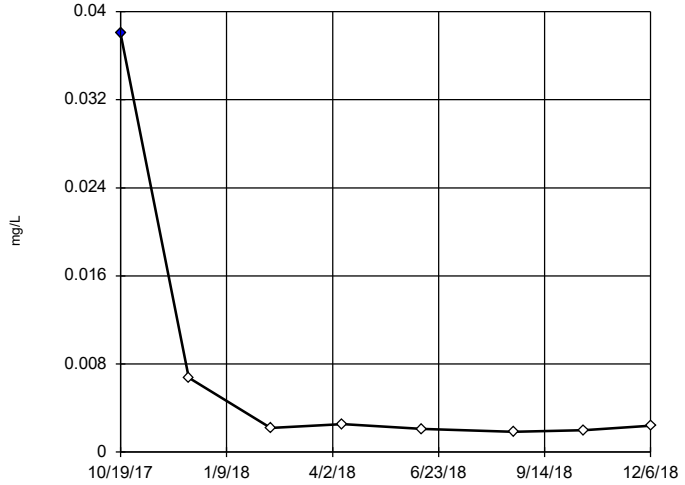
High cutoff = 0.0002505, low cutoff = 0.0000335, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 4/16/2019 1:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1611 (bg)



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

High cutoff = 0.01245, low cutoff = -0.00575, based on IQR multiplier of 3.

Constituent: Molybdenum Analysis Run 4/16/2019 1:56 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Outlier Analysis - Significant Results Rome

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/16/2019, 3:48 PM

Constituent	Well	Outlier	Value(s)	Method	N	Mean	Std. Dev.	Distribution	Normality Test
Barium (mg/L)	**MW-1606**	**Yes**	**0.104,0.124**	**NP**	**8**	**0.1156**	**0.005528**	**x^6**	**ShapiroWilk**
Barium (mg/L)	**MW-1607**	**Yes**	**0.141**	**NP**	**8**	**0.0836**	**0.02429**	**ln(x)**	**ShapiroWilk**
Chromium (mg/L)	**MW-1607**	**Yes**	**0.0001**	**NP**	**8**	**0.0002026**	**0.00004817**	**x^2**	**ShapiroWilk**

Outlier Analysis - All Results Rome

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/16/2019, 3:48 PM

Constituent	Well	Outlier	Value(s)	Method	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.0000575	0.00003327	ln(x)	ShapiroWilk
Antimony (mg/L)	MW-1606	No	n/a	NP	8	0.00003125	0.00001126	normal	ShapiroWilk
Antimony (mg/L)	MW-1607	No	n/a	NP	8	0.00005625	0.00001996	ln(x)	ShapiroWilk
Arsenic (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.0004163	0.0003474	ln(x)	ShapiroWilk
Arsenic (mg/L)	MW-1606	No	n/a	NP	8	0.007025	0.0003282	ln(x)	ShapiroWilk
Arsenic (mg/L)	MW-1607	No	n/a	NP	8	0.002051	0.00174	ln(x)	ShapiroWilk
Barium (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.401	0.06501	ln(x)	ShapiroWilk
Barium (mg/L)	**MW-1606**	**Yes**	**0.104,0.124**	**NP**	**8**	**0.1156**	**0.005528**	**x^6**	**ShapiroWilk**
Barium (mg/L)	**MW-1607**	**Yes**	**0.141**	**NP**	**8**	**0.0836**	**0.02429**	**ln(x)**	**ShapiroWilk**
Beryllium (mg/L)	MW-1609 (bg)	n/a	n/a	NP	8	0.000088	0.00003394	unknown	ShapiroWilk
Beryllium (mg/L)	MW-1606	No	n/a	NP	8	0.00004125	0.00004865	ln(x)	ShapiroWilk
Beryllium (mg/L)	MW-1607	n/a	n/a	NP	8	0.00008812	0.00003359	unknown	ShapiroWilk
Boron (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.06375	0.03227	sqrt(x)	ShapiroWilk
Boron (mg/L)	MW-1606	No	n/a	NP	8	0.1461	0.03538	x^2	ShapiroWilk
Boron (mg/L)	MW-1607	No	n/a	NP	8	0.1428	0.03114	ln(x)	ShapiroWilk
Cadmium (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.0000375	0.00001581	normal	ShapiroWilk
Cadmium (mg/L)	MW-1606	No	n/a	NP	8	0.0000295	0.00002195	ln(x)	ShapiroWilk
Cadmium (mg/L)	MW-1607	No	n/a	NP	8	0.0001313	0.00006875	normal	ShapiroWilk
Calcium (mg/L)	MW-1609 (bg)	No	n/a	NP	8	67.41	5.387	x^2	ShapiroWilk
Calcium (mg/L)	MW-1606	No	n/a	NP	8	55.73	5.932	x^3	ShapiroWilk
Calcium (mg/L)	MW-1607	No	n/a	NP	8	48.66	3.165	ln(x)	ShapiroWilk
Chloride (mg/L)	MW-1609 (bg)	No	n/a	NP	8	2.325	0.9982	ln(x)	ShapiroWilk
Chloride (mg/L)	MW-1606	No	n/a	NP	8	14.3	0.8053	normal	ShapiroWilk
Chloride (mg/L)	MW-1607	No	n/a	NP	8	12.44	2.581	ln(x)	ShapiroWilk
Chromium (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.0001823	0.00006729	ln(x)	ShapiroWilk
Chromium (mg/L)	MW-1606	No	n/a	NP	8	0.0001943	0.00003466	x^5	ShapiroWilk
Chromium (mg/L)	**MW-1607**	**Yes**	**0.0001**	**NP**	**8**	**0.0002026**	**0.00004817**	**x^2**	**ShapiroWilk**
Cobalt (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.0004275	0.0004234	ln(x)	ShapiroWilk
Cobalt (mg/L)	MW-1606	No	n/a	NP	8	0.005694	0.0004415	normal	ShapiroWilk
Cobalt (mg/L)	MW-1607	No	n/a	NP	8	0.01	0.002584	x^6	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1609 (bg)	No	n/a	NP	8	1.695	0.7182	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1606	No	n/a	NP	8	1.498	0.6806	ln(x)	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1607	No	n/a	NP	8	1.014	0.7304	ln(x)	ShapiroWilk
Fluoride (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.29	0.0239	ln(x)	ShapiroWilk
Fluoride (mg/L)	MW-1606	No	n/a	NP	8	0.225	0.03742	x^4	ShapiroWilk
Fluoride (mg/L)	MW-1607	No	n/a	NP	8	0.2363	0.022	x^2	ShapiroWilk
Lead (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.0003569	0.0001865	x^2	ShapiroWilk
Lead (mg/L)	MW-1606	No	n/a	NP	8	0.0004925	0.00008762	normal	ShapiroWilk
Lead (mg/L)	MW-1607	No	n/a	NP	8	0.0005535	0.0001535	x^3	ShapiroWilk
Lithium (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.009362	0.005549	normal	ShapiroWilk
Lithium (mg/L)	MW-1606	No	n/a	NP	8	0.08688	0.009746	x^5	ShapiroWilk
Lithium (mg/L)	MW-1607	No	n/a	NP	8	0.123	0.009134	x^6	ShapiroWilk
Mercury (mg/L)	MW-1609 (bg)	n/a	n/a	NP	8	0.0002	0	unknown	ShapiroWilk
Mercury (mg/L)	MW-1606	n/a	n/a	NP	8	0.0001825	0.0000495	unknown	ShapiroWilk
Mercury (mg/L)	MW-1607	n/a	n/a	NP	8	0.000185	0.00004243	unknown	ShapiroWilk
Molybdenum (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.001168	0.0006488	x^(1/3)	ShapiroWilk
Molybdenum (mg/L)	MW-1606	No	n/a	NP	8	0.07894	0.01014	x^4	ShapiroWilk
Molybdenum (mg/L)	MW-1607	No	n/a	NP	8	0.1462	0.02669	x^6	ShapiroWilk
pH (SU)	MW-1609 (bg)	No	n/a	NP	8	7.23	0.3656	x^6	ShapiroWilk
pH (SU)	MW-1606	No	n/a	NP	8	7.051	0.1468	x^6	ShapiroWilk
pH (SU)	MW-1607	No	n/a	NP	8	7.81	0.2203	x^6	ShapiroWilk
Selenium (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.000095	0.00005292	sqrt(x)	ShapiroWilk
Selenium (mg/L)	MW-1606	No	n/a	NP	8	0.00008	0.00001927	sqrt(x)	ShapiroWilk
Selenium (mg/L)	MW-1607	No	n/a	NP	8	0.000115	0.00005606	ln(x)	ShapiroWilk
Sulfate (mg/L)	MW-1609 (bg)	No	n/a	NP	8	16.28	3.434	ln(x)	ShapiroWilk

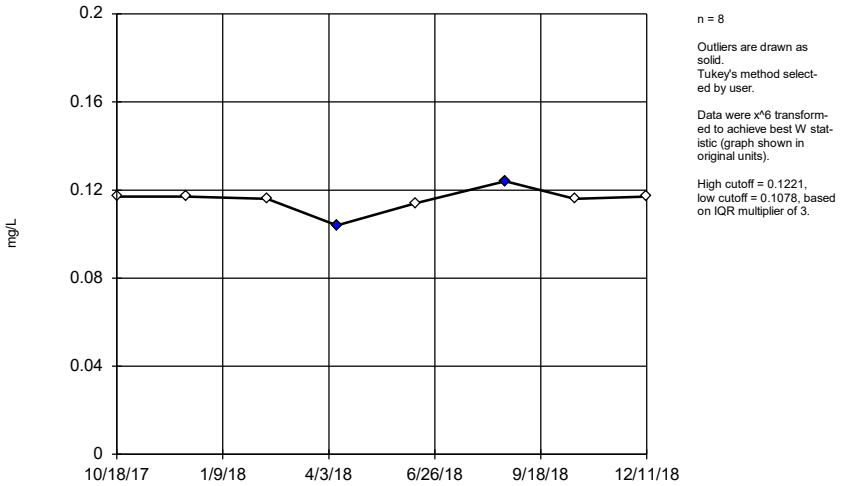
Outlier Analysis - All Results Rome

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/16/2019, 3:48 PM

Constituent	Well	Outlier	Value(s)	Method	N	Mean	Std. Dev.	Distribution	Normality Test
Sulfate (mg/L)	MW-1606	No	n/a	NP	8	53.2	10.47	ln(x)	ShapiroWilk
Sulfate (mg/L)	MW-1607	No	n/a	NP	8	166.5	22.16	ln(x)	ShapiroWilk
Thallium (mg/L)	MW-1609 (bg)	No	n/a	NP	8	0.0002088	0.0002425	ln(x)	ShapiroWilk
Thallium (mg/L)	MW-1606	No	n/a	NP	8	0.0001575	0.0002114	ln(x)	ShapiroWilk
Thallium (mg/L)	MW-1607	No	n/a	NP	8	0.0002038	0.0002456	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-1609 (bg)	No	n/a	NP	8	302.3	30.96	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-1606	No	n/a	NP	8	340.8	26.07	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-1607	No	n/a	NP	8	331.3	71.22	ln(x)	ShapiroWilk

Tukey's Outlier Screening

MW-1606



n = 8

Outliers are drawn as solid.
Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

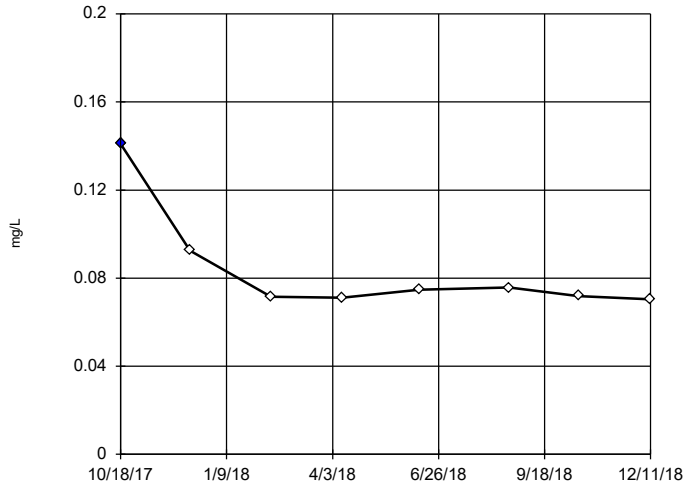
High cutoff = 0.1221, low cutoff = 0.1078, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 4/16/2019 3:46 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607



n = 8

Outlier is drawn as solid.
Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

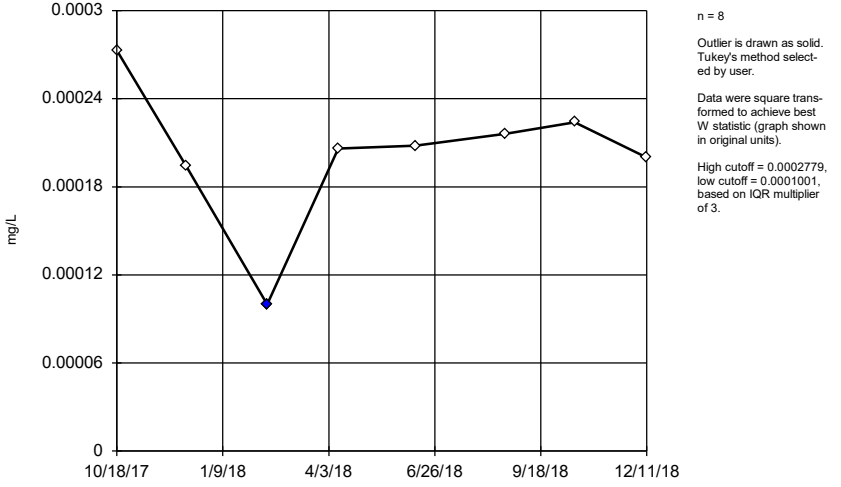
High cutoff = 0.1353, low cutoff = 0.04411, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 4/16/2019 3:46 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1607



n = 8

Outlier is drawn as solid.
Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.0002779, low cutoff = 0.0001001, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 4/16/2019 3:47 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Outlier Summary

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/17/2019, 3:47 PM

	MW-1605 Chloride (mg/L)	MW-1603 Combined Radium 226 + 228 (pCi/L)	MW-1605 Total Dissolved Solids (mg/L)
10/17/2017		3.23 (o)	
12/12/2017	342 (o)		
4/11/2018			1700 (o)

Outlier Analysis - Significant Results Chattanooga

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/17/2019, 3:44 PM

Constituent	Well	Outlier	Value(s)	Method	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony (mg/L)	**MW-1604**	**Yes**	**0.00018**	**NP**	**8**	**0.00007**	**0.0000466**	**normal**	**ShapiroWilk**
Arsenic (mg/L)	**MW-1608 (bg)**	**Yes**	**0.00299**	**NP**	**8**	**0.00193**	**0.0004739**	**normal**	**ShapiroWilk**
Arsenic (mg/L)	**MW-1604**	**Yes**	**0.0031**	**NP**	**8**	**0.001785**	**0.0005576**	**normal**	**ShapiroWilk**
Chloride (mg/L)	**MW-1605**	**Yes**	**342**	**NP**	**8**	**202.3**	**56.54**	**normal**	**ShapiroWilk**
Chromium (mg/L)	**MW-1602 (bg)**	**Yes**	**0.000472**	**NP**	**8**	**0.0002735**	**0.00008981**	**normal**	**ShapiroWilk**
Chromium (mg/L)	**MW-1612**	**Yes**	**0.000437**	**NP**	**7**	**0.00024**	**0.00008918**	**normal**	**ShapiroWilk**
Combined Radium 226 + 228 (pCi/L)	**MW-1603**	**Yes**	**3.23**	**NP**	**8**	**1.115**	**0.8876**	**normal**	**ShapiroWilk**
Lead (mg/L)	**MW-1612**	**Yes**	**0.000331**	**NP**	**7**	**0.00008386**	**0.0001109**	**normal**	**ShapiroWilk**
pH (SU)	**MW-1601 (bg)**	**Yes**	**7.78**	**NP**	**8**	**8.309**	**0.2271**	**normal**	**ShapiroWilk**
pH (SU)	**MW-1602 (bg)**	**Yes**	**7.97**	**NP**	**8**	**8.541**	**0.2421**	**normal**	**ShapiroWilk**
pH (SU)	**MW-1605**	**Yes**	**7.4**	**NP**	**8**	**7.72**	**0.139**	**normal**	**ShapiroWilk**
Sulfate (mg/L)	**MW-1602 (bg)**	**Yes**	**16.7**	**NP**	**8**	**29.86**	**6.022**	**normal**	**ShapiroWilk**
Total Dissolved Solids (mg/L)	**MW-1605**	**Yes**	**1700**	**NP**	**8**	**930.4**	**311.8**	**normal**	**ShapiroWilk**
Total Dissolved Solids (mg/L)	**MW-1612**	**Yes**	**384**	**NP**	**7**	**508.6**	**56.92**	**normal**	**ShapiroWilk**

Outlier Analysis - All Results Chattanooga

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/17/2019, 3:44 PM

Constituent	Well	Outlier	Value(s)	Method	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.00017	0.00004536	normal	ShapiroWilk
Antimony (mg/L)	MW-1602 (bg)	No	n/a	NP	8	0.00009875	0.00005668	normal	ShapiroWilk
Antimony (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.00005125	0.00001126	normal	ShapiroWilk
Antimony (mg/L)	MW-1603	No	n/a	NP	8	0.00005	0.00001069	normal	ShapiroWilk
Antimony (mg/L)	**MW-1604**	**Yes**	**0.00018**	**NP**	**8**	**0.00007**	**0.0000466**	**normal**	**ShapiroWilk**
Antimony (mg/L)	MW-1605	No	n/a	NP	8	0.0001238	0.00008434	normal	ShapiroWilk
Antimony (mg/L)	MW-1612	No	n/a	NP	7	0.00009429	0.00009572	normal	ShapiroWilk
Arsenic (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.0156	0.007174	normal	ShapiroWilk
Arsenic (mg/L)	MW-1602 (bg)	No	n/a	NP	8	0.002696	0.0007413	normal	ShapiroWilk
Arsenic (mg/L)	**MW-1608 (bg)**	**Yes**	**0.00299**	**NP**	**8**	**0.00193**	**0.0004739**	**normal**	**ShapiroWilk**
Arsenic (mg/L)	MW-1603	No	n/a	NP	8	0.002125	0.0005285	normal	ShapiroWilk
Arsenic (mg/L)	**MW-1604**	**Yes**	**0.0031**	**NP**	**8**	**0.001785**	**0.0005576**	**normal**	**ShapiroWilk**
Arsenic (mg/L)	MW-1605	No	n/a	NP	8	0.004628	0.001356	normal	ShapiroWilk
Arsenic (mg/L)	MW-1612	No	n/a	NP	7	0.002029	0.0009979	normal	ShapiroWilk
Barium (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.261	0.04068	normal	ShapiroWilk
Barium (mg/L)	MW-1602 (bg)	No	n/a	NP	8	0.1081	0.004224	normal	ShapiroWilk
Barium (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.04016	0.004405	normal	ShapiroWilk
Barium (mg/L)	MW-1603	No	n/a	NP	8	2.076	0.1672	normal	ShapiroWilk
Barium (mg/L)	MW-1604	No	n/a	NP	8	3.169	0.1508	normal	ShapiroWilk
Barium (mg/L)	MW-1605	No	n/a	NP	8	1.371	0.2022	normal	ShapiroWilk
Barium (mg/L)	MW-1612	No	n/a	NP	7	2.076	0.284	normal	ShapiroWilk
Beryllium (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.00004137	0.00004855	normal	ShapiroWilk
Beryllium (mg/L)	MW-1602 (bg)	No	n/a	NP	8	0.00004262	0.00004753	normal	ShapiroWilk
Beryllium (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.00004475	0.00001474	normal	ShapiroWilk
Beryllium (mg/L)	MW-1603	No	n/a	NP	8	0.000066	0.00004693	normal	ShapiroWilk
Beryllium (mg/L)	MW-1604	No	n/a	NP	8	0.0000765	0.00004352	normal	ShapiroWilk
Beryllium (mg/L)	MW-1605	No	n/a	NP	8	0.00006487	0.00004851	normal	ShapiroWilk
Beryllium (mg/L)	MW-1612	No	n/a	NP	7	0.00005229	0.00004664	normal	ShapiroWilk
Boron (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.5198	0.04944	normal	ShapiroWilk
Boron (mg/L)	MW-1602 (bg)	No	n/a	NP	8	0.6241	0.04244	normal	ShapiroWilk
Boron (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.3538	0.02347	normal	ShapiroWilk
Boron (mg/L)	MW-1603	No	n/a	NP	8	0.2926	0.1171	normal	ShapiroWilk
Boron (mg/L)	MW-1604	No	n/a	NP	8	0.436	0.03348	normal	ShapiroWilk
Boron (mg/L)	MW-1605	No	n/a	NP	8	0.5796	0.05453	normal	ShapiroWilk
Boron (mg/L)	MW-1612	No	n/a	NP	7	0.485	0.04104	normal	ShapiroWilk
Cadmium (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.00003937	0.00001969	normal	ShapiroWilk
Cadmium (mg/L)	MW-1602 (bg)	n/a	n/a	NP	8	0.0000475	0.000007071	unknown	ShapiroWilk
Cadmium (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.00004075	0.00001753	normal	ShapiroWilk
Cadmium (mg/L)	MW-1603	n/a	n/a	NP	8	0.00005	0	unknown	ShapiroWilk
Cadmium (mg/L)	MW-1604	n/a	n/a	NP	8	0.00005	0	unknown	ShapiroWilk
Cadmium (mg/L)	MW-1605	n/a	n/a	NP	8	0.00005	0	unknown	ShapiroWilk
Cadmium (mg/L)	MW-1612	n/a	n/a	NP	7	0.00005	0	unknown	ShapiroWilk
Calcium (mg/L)	MW-1601 (bg)	No	n/a	NP	8	6.524	1.001	normal	ShapiroWilk
Calcium (mg/L)	MW-1602 (bg)	No	n/a	NP	8	2.843	0.1403	normal	ShapiroWilk
Calcium (mg/L)	MW-1608 (bg)	No	n/a	NP	8	1.216	0.3784	normal	ShapiroWilk
Calcium (mg/L)	MW-1603	No	n/a	NP	8	22.8	1.393	normal	ShapiroWilk
Calcium (mg/L)	MW-1604	No	n/a	NP	8	27.51	1.108	normal	ShapiroWilk
Calcium (mg/L)	MW-1605	No	n/a	NP	8	47.38	2.306	normal	ShapiroWilk
Calcium (mg/L)	MW-1612	No	n/a	NP	7	41	2.753	normal	ShapiroWilk
Chloride (mg/L)	MW-1601 (bg)	No	n/a	NP	8	33.39	7.026	normal	ShapiroWilk
Chloride (mg/L)	MW-1602 (bg)	No	n/a	NP	8	5	0.9055	normal	ShapiroWilk
Chloride (mg/L)	MW-1608 (bg)	No	n/a	NP	8	7.388	0.7736	normal	ShapiroWilk
Chloride (mg/L)	MW-1603	No	n/a	NP	8	100.4	51.76	normal	ShapiroWilk
Chloride (mg/L)	MW-1604	No	n/a	NP	8	22	3.617	normal	ShapiroWilk
Chloride (mg/L)	**MW-1605**	**Yes**	**342**	**NP**	**8**	**202.3**	**56.54**	**normal**	**ShapiroWilk**

Outlier Analysis - All Results Chattanooga

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/17/2019, 3:44 PM

Constituent	Well	Outlier	Value(s)	Method	N	Mean	Std. Dev.	Distribution	Normality Test
Chloride (mg/L)	MW-1612	No	n/a	NP	7	23.63	9.311	normal	ShapiroWilk
Chromium (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.0002918	0.0001245	normal	ShapiroWilk
Chromium (mg/L)	**MW-1602 (bg)**	**Yes**	**0.000472**	**NP**	**8**	**0.0002735**	**0.00008981**	**normal**	**ShapiroWilk**
Chromium (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.0009428	0.0002166	normal	ShapiroWilk
Chromium (mg/L)	MW-1603	No	n/a	NP	8	0.0002208	0.00004964	normal	ShapiroWilk
Chromium (mg/L)	MW-1604	No	n/a	NP	8	0.0002143	0.00007317	normal	ShapiroWilk
Chromium (mg/L)	MW-1605	No	n/a	NP	8	0.0002015	0.00004925	normal	ShapiroWilk
Chromium (mg/L)	**MW-1612**	**Yes**	**0.000437**	**NP**	**7**	**0.00024**	**0.00008918**	**normal**	**ShapiroWilk**
Cobalt (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.0000925	0.00002899	normal	ShapiroWilk
Cobalt (mg/L)	MW-1602 (bg)	No	n/a	NP	8	0.00006388	0.00004126	normal	ShapiroWilk
Cobalt (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.0003375	0.00008702	normal	ShapiroWilk
Cobalt (mg/L)	MW-1603	No	n/a	NP	8	0.0006331	0.000125	normal	ShapiroWilk
Cobalt (mg/L)	MW-1604	No	n/a	NP	8	0.0006646	0.0002771	normal	ShapiroWilk
Cobalt (mg/L)	MW-1605	No	n/a	NP	8	0.0003466	0.00004079	normal	ShapiroWilk
Cobalt (mg/L)	MW-1612	No	n/a	NP	7	0.000186	0.00008517	normal	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1601 (bg)	No	n/a	NP	8	1.389	0.8543	normal	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1602 (bg)	No	n/a	NP	8	0.618	0.3453	normal	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1608 (bg)	No	n/a	NP	8	1.319	1.232	normal	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	**MW-1603**	**Yes**	**3.23**	**NP**	**8**	**1.115**	**0.8876**	**normal**	**ShapiroWilk**
Combined Radium 226 + 228 (pCi/L)	MW-1604	No	n/a	NP	8	1.263	0.6252	normal	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1605	No	n/a	NP	8	1.436	0.8177	normal	ShapiroWilk
Combined Radium 226 + 228 (pCi/L)	MW-1612	No	n/a	NP	7	2.13	0.8058	normal	ShapiroWilk
Fluoride (mg/L)	MW-1601 (bg)	No	n/a	NP	8	2.081	0.1572	normal	ShapiroWilk
Fluoride (mg/L)	MW-1602 (bg)	No	n/a	NP	8	1.59	0.06302	normal	ShapiroWilk
Fluoride (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.4375	0.02375	normal	ShapiroWilk
Fluoride (mg/L)	MW-1603	No	n/a	NP	8	0.1363	0.03114	normal	ShapiroWilk
Fluoride (mg/L)	MW-1604	No	n/a	NP	8	0.2425	0.02252	normal	ShapiroWilk
Fluoride (mg/L)	MW-1605	No	n/a	NP	8	0.37	0.03207	normal	ShapiroWilk
Fluoride (mg/L)	MW-1612	No	n/a	NP	7	0.1686	0.03625	normal	ShapiroWilk
Lead (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.00008163	0.00004096	normal	ShapiroWilk
Lead (mg/L)	MW-1602 (bg)	No	n/a	NP	8	0.0001038	0.00004656	normal	ShapiroWilk
Lead (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.0004973	0.0001754	normal	ShapiroWilk
Lead (mg/L)	MW-1603	No	n/a	NP	8	0.00002575	0.00001783	normal	ShapiroWilk
Lead (mg/L)	MW-1604	No	n/a	NP	8	0.00003562	0.00002324	normal	ShapiroWilk
Lead (mg/L)	MW-1605	No	n/a	NP	8	0.00004587	0.00001853	normal	ShapiroWilk
Lead (mg/L)	**MW-1612**	**Yes**	**0.000331**	**NP**	**7**	**0.00008386**	**0.0001109**	**normal**	**ShapiroWilk**
Lithium (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.1014	0.009516	normal	ShapiroWilk
Lithium (mg/L)	MW-1602 (bg)	No	n/a	NP	8	0.042	0.006503	normal	ShapiroWilk
Lithium (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.02275	0.006819	normal	ShapiroWilk
Lithium (mg/L)	MW-1603	No	n/a	NP	8	0.06463	0.02062	normal	ShapiroWilk
Lithium (mg/L)	MW-1604	No	n/a	NP	8	0.08188	0.004824	normal	ShapiroWilk
Lithium (mg/L)	MW-1605	No	n/a	NP	8	0.2	0.01119	normal	ShapiroWilk
Lithium (mg/L)	MW-1612	No	n/a	NP	7	0.13	0.01279	normal	ShapiroWilk
Mercury (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.0001662	0.00006301	normal	ShapiroWilk
Mercury (mg/L)	MW-1602 (bg)	n/a	n/a	NP	8	0.0002	0	unknown	ShapiroWilk
Mercury (mg/L)	MW-1608 (bg)	n/a	n/a	NP	8	0.0001837	0.00004596	unknown	ShapiroWilk
Mercury (mg/L)	MW-1603	n/a	n/a	NP	8	0.0001825	0.0000495	unknown	ShapiroWilk
Mercury (mg/L)	MW-1604	n/a	n/a	NP	8	0.0001825	0.0000495	unknown	ShapiroWilk
Mercury (mg/L)	MW-1605	n/a	n/a	NP	8	0.0002	0	unknown	ShapiroWilk
Mercury (mg/L)	MW-1612	n/a	n/a	NP	7	0.00018	0.00005292	unknown	ShapiroWilk
Molybdenum (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.01001	0.009058	normal	ShapiroWilk
Molybdenum (mg/L)	MW-1602 (bg)	No	n/a	NP	8	0.005956	0.002609	normal	ShapiroWilk
Molybdenum (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.004699	0.002529	normal	ShapiroWilk
Molybdenum (mg/L)	MW-1603	No	n/a	NP	8	0.00194	0.001279	normal	ShapiroWilk
Molybdenum (mg/L)	MW-1604	No	n/a	NP	8	0.0007413	0.0003736	normal	ShapiroWilk

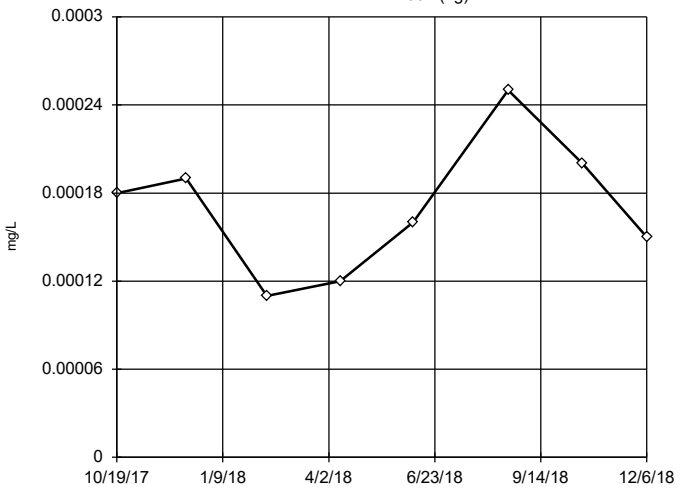
Outlier Analysis - All Results Chattanooga

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/17/2019, 3:44 PM

Constituent	Well	Outlier	Value(s)	Method	N	Mean	Std. Dev.	Distribution	Normality Test
Molybdenum (mg/L)	MW-1605	No	n/a	NP	8	0.004991	0.002241	normal	ShapiroWilk
Molybdenum (mg/L)	MW-1612	No	n/a	NP	7	0.001331	0.001051	normal	ShapiroWilk
pH (SU)	**MW-1601 (bg)**	**Yes**	**7.78**	**NP**	**8**	**8.309**	**0.2271**	**normal**	**ShapiroWilk**
pH (SU)	**MW-1602 (bg)**	**Yes**	**7.97**	**NP**	**8**	**8.541**	**0.2421**	**normal**	**ShapiroWilk**
pH (SU)	MW-1608 (bg)	No	n/a	NP	8	8.536	0.3114	normal	ShapiroWilk
pH (SU)	MW-1603	No	n/a	NP	8	7.369	0.4505	normal	ShapiroWilk
pH (SU)	MW-1604	No	n/a	NP	8	7.035	0.1503	normal	ShapiroWilk
pH (SU)	**MW-1605**	**Yes**	**7.4**	**NP**	**8**	**7.72**	**0.139**	**normal**	**ShapiroWilk**
pH (SU)	MW-1612	No	n/a	NP	7	7.121	0.1595	normal	ShapiroWilk
Selenium (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.00009	0.00006866	normal	ShapiroWilk
Selenium (mg/L)	MW-1602 (bg)	n/a	n/a	NP	8	0.00018	0.00005657	unknown	ShapiroWilk
Selenium (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.00008125	0.00002232	normal	ShapiroWilk
Selenium (mg/L)	MW-1603	No	n/a	NP	8	0.000075	0.0000239	normal	ShapiroWilk
Selenium (mg/L)	MW-1604	No	n/a	NP	8	0.00005625	0.00002134	normal	ShapiroWilk
Selenium (mg/L)	MW-1605	No	n/a	NP	8	0.0001125	0.00007324	normal	ShapiroWilk
Selenium (mg/L)	MW-1612	No	n/a	NP	7	0.00007143	0.00006176	normal	ShapiroWilk
Sulfate (mg/L)	MW-1601 (bg)	No	n/a	NP	8	256.8	59.53	normal	ShapiroWilk
Sulfate (mg/L)	**MW-1602 (bg)**	**Yes**	**16.7**	**NP**	**8**	**29.86**	**6.022**	**normal**	**ShapiroWilk**
Sulfate (mg/L)	MW-1608 (bg)	No	n/a	NP	8	174	5.757	normal	ShapiroWilk
Sulfate (mg/L)	MW-1603	No	n/a	NP	8	28.1	12.14	normal	ShapiroWilk
Sulfate (mg/L)	MW-1604	No	n/a	NP	8	5.163	1.845	normal	ShapiroWilk
Sulfate (mg/L)	MW-1605	No	n/a	NP	8	95.45	12.71	normal	ShapiroWilk
Sulfate (mg/L)	MW-1612	No	n/a	NP	7	11.47	4.103	normal	ShapiroWilk
Thallium (mg/L)	MW-1601 (bg)	No	n/a	NP	8	0.0001988	0.0002497	normal	ShapiroWilk
Thallium (mg/L)	MW-1602 (bg)	No	n/a	NP	8	0.00032	0.0002485	normal	ShapiroWilk
Thallium (mg/L)	MW-1608 (bg)	No	n/a	NP	8	0.0001413	0.0002215	normal	ShapiroWilk
Thallium (mg/L)	MW-1603	No	n/a	NP	8	0.000195	0.0002526	normal	ShapiroWilk
Thallium (mg/L)	MW-1604	No	n/a	NP	8	0.0002563	0.0002606	normal	ShapiroWilk
Thallium (mg/L)	MW-1605	No	n/a	NP	8	0.0002575	0.0002593	normal	ShapiroWilk
Thallium (mg/L)	MW-1612	No	n/a	NP	7	0.0002229	0.0002593	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-1601 (bg)	No	n/a	NP	8	1450	169.6	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-1602 (bg)	No	n/a	NP	8	525.6	22.24	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-1608 (bg)	No	n/a	NP	8	453	20.77	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-1603	No	n/a	NP	8	487.4	118.9	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-1604	No	n/a	NP	8	389.5	13.33	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	**MW-1605**	**Yes**	**1700**	**NP**	**8**	**930.4**	**311.8**	**normal**	**ShapiroWilk**
Total Dissolved Solids (mg/L)	**MW-1612**	**Yes**	**384**	**NP**	**7**	**508.6**	**56.92**	**normal**	**ShapiroWilk**

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

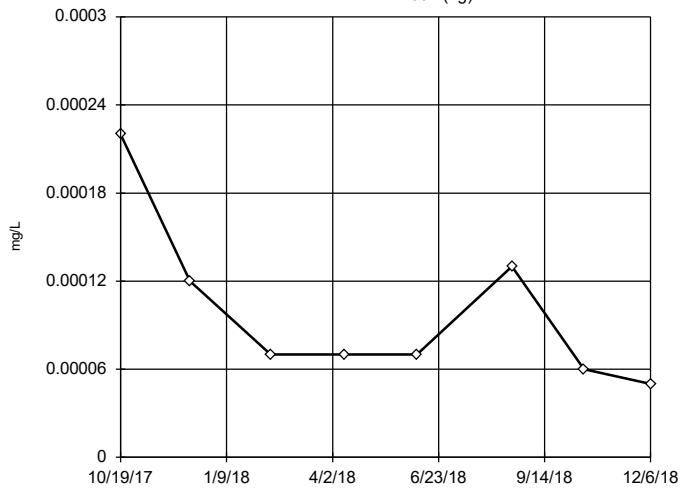
High cutoff = 0.000375, low cutoff = -0.000045, based on IQR multiplier of 3.

Constituent: Antimony Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method selected by user.

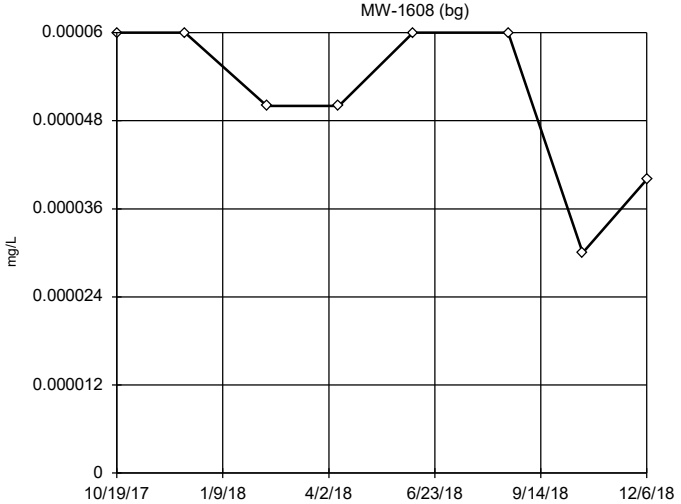
High cutoff = 0.000305, low cutoff = -0.000115, based on IQR multiplier of 3.

Constituent: Antimony Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

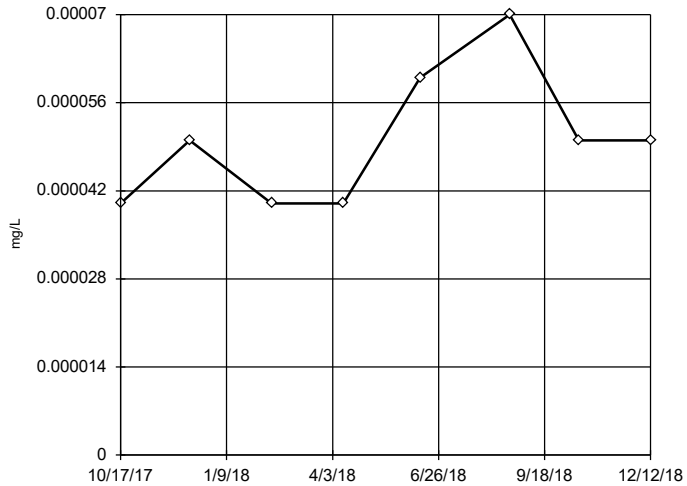
High cutoff = 0.000105, low cutoff = 6.8e-21, based on IQR multiplier of 3.

Constituent: Antimony Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

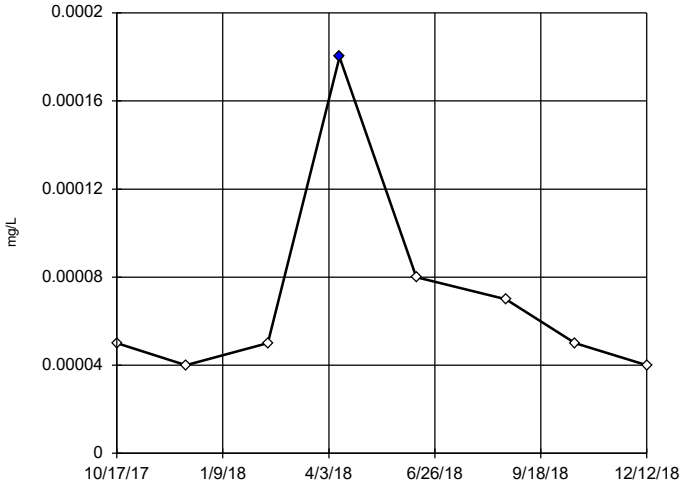
No outliers found. Tukey's method selected by user.

High cutoff = 0.0001, low cutoff = -0.000005, based on IQR multiplier of 3.

Constituent: Antimony Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1604



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

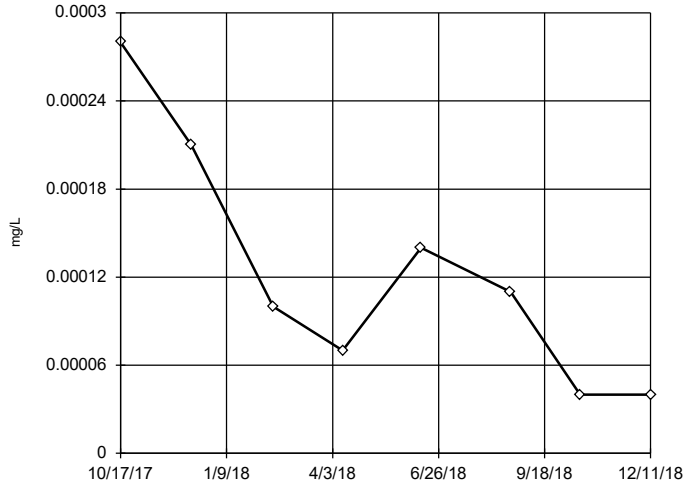
High cutoff = 0.000165, low cutoff = -0.000045, based on IQR multiplier of 3.

Constituent: Antimony Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

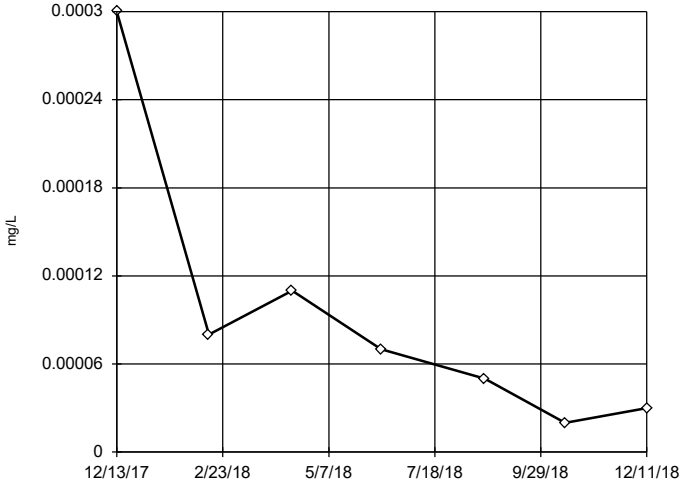
High cutoff = 0.000535, low cutoff = -0.000305, based on IQR multiplier of 3.

Constituent: Antimony Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

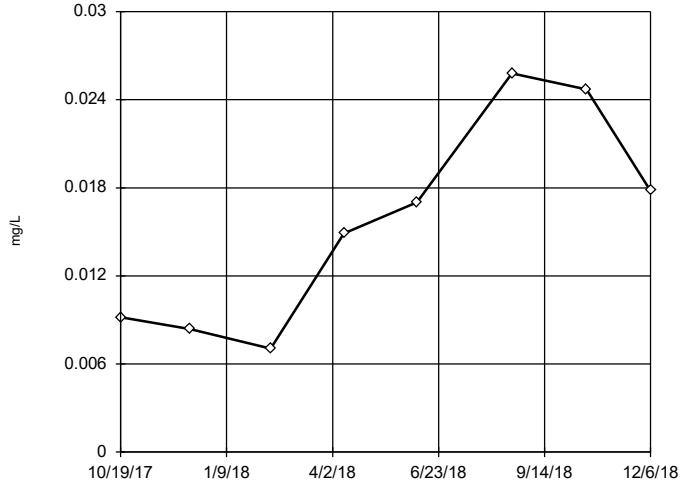
High cutoff = 0.00035, low cutoff = -0.00021, based on IQR multiplier of 3.

Constituent: Antimony Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

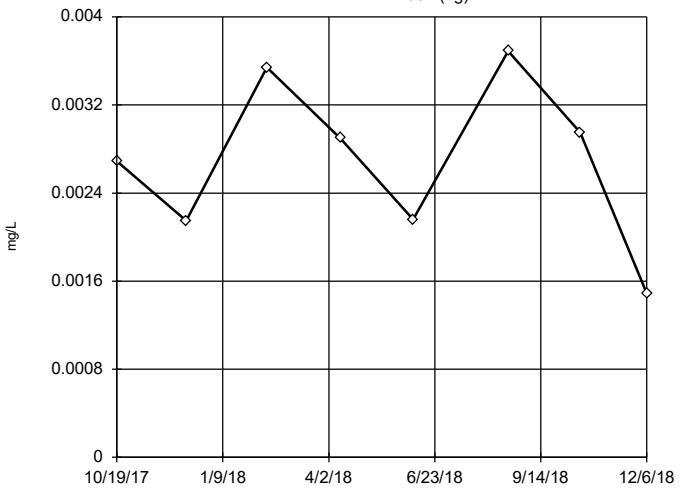
No outliers found. Tukey's method selected by user.

High cutoff = 0.05865, low cutoff = -0.02861, based on IQR multiplier of 3.

Constituent: Arsenic Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method selected by user.

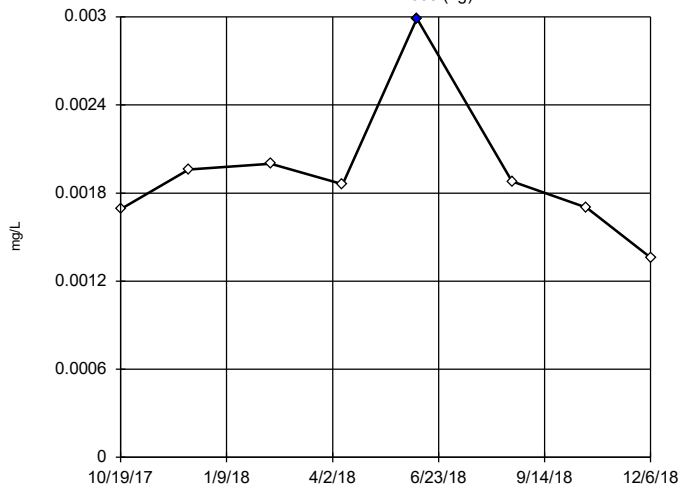
High cutoff = 0.006515, low cutoff = -0.001115, based on IQR multiplier of 3.

Constituent: Arsenic Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

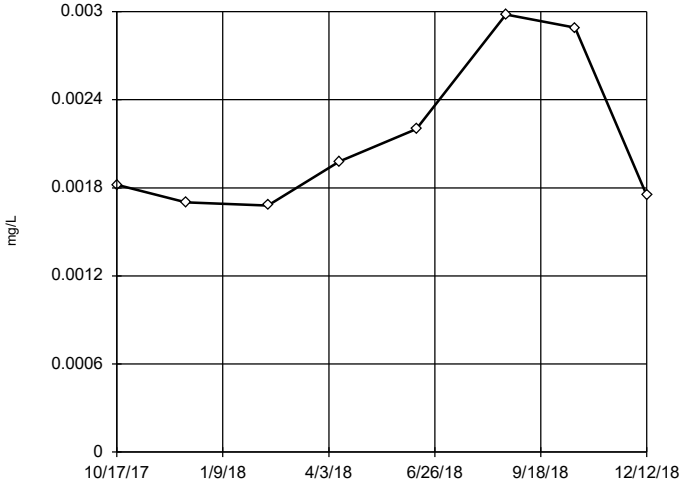
High cutoff = 0.002835, low cutoff = 0.00084, based on IQR multiplier of 3.

Constituent: Arsenic Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

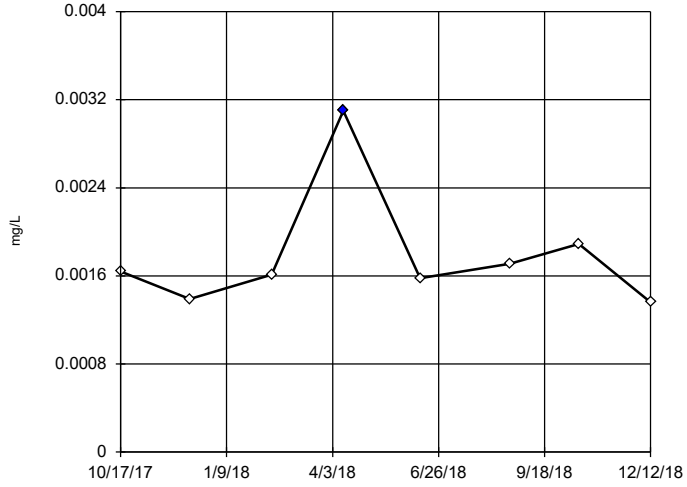
High cutoff = 0.005005, low cutoff = -0.000735, based on IQR multiplier of 3.

Constituent: Arsenic Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

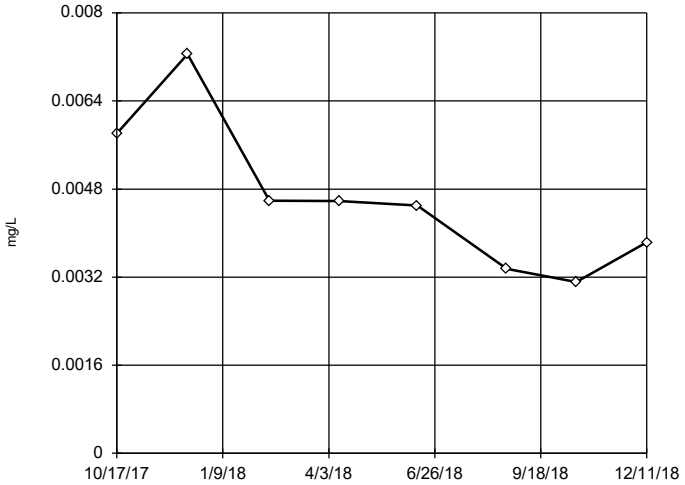
Outlier is drawn as solid. Tukey's method selected by user.

High cutoff = 0.002745, low cutoff = 0.00054, based on IQR multiplier of 3.

Constituent: Arsenic Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

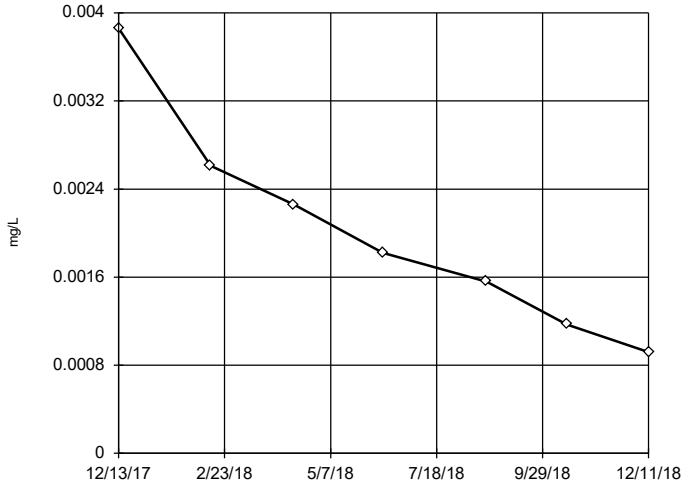
High cutoff = 0.01003, low cutoff = -0.00124, based on IQR multiplier of 3.

Constituent: Arsenic Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

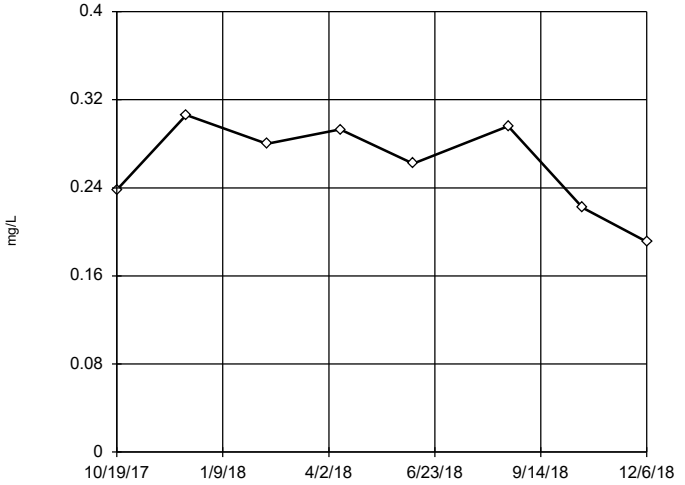
High cutoff = 0.00693, low cutoff = -0.00315, based on IQR multiplier of 3.

Constituent: Arsenic Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

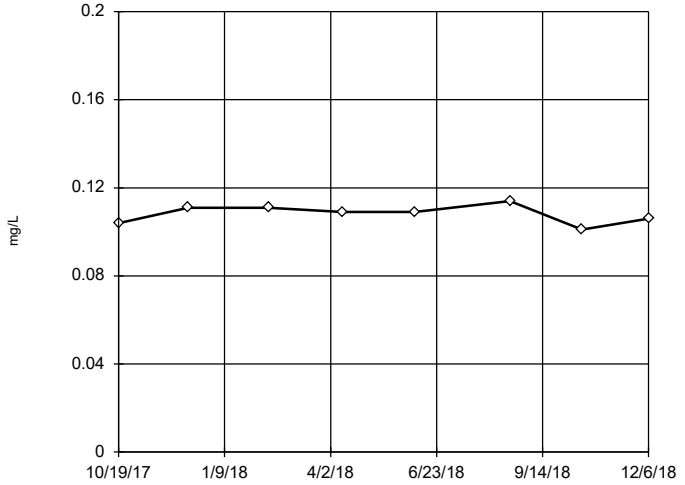
High cutoff = 0.488, low cutoff = 0.0365, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

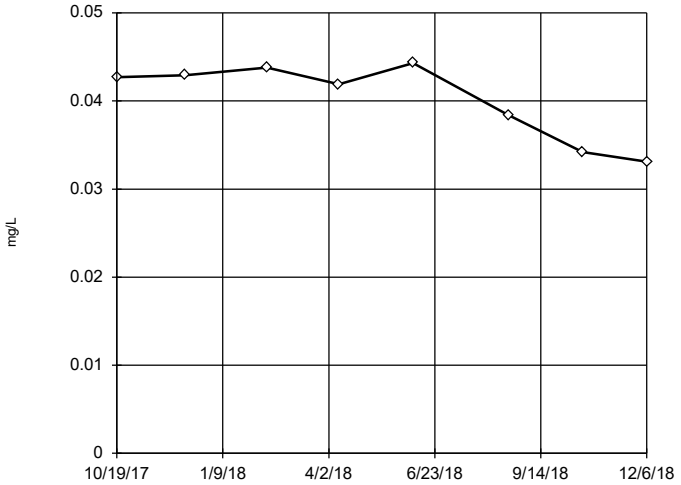
No outliers found. Tukey's method selected by user.

High cutoff = 0.129, low cutoff = 0.087, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

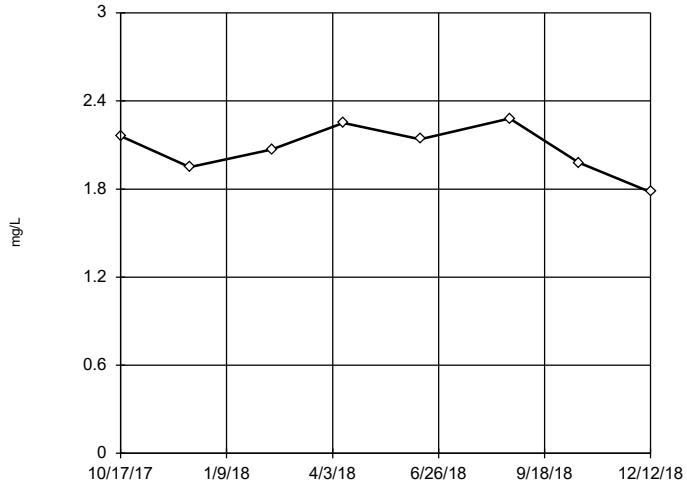
High cutoff = 0.0645, low cutoff = 0.01515, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

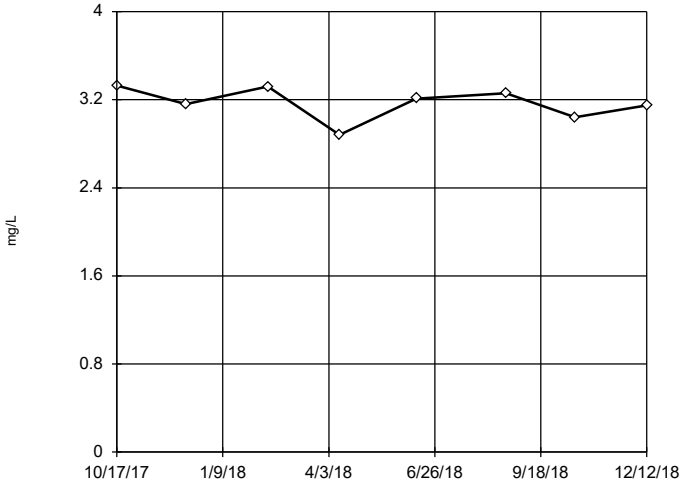
High cutoff = 2.925, low cutoff = 1.245, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

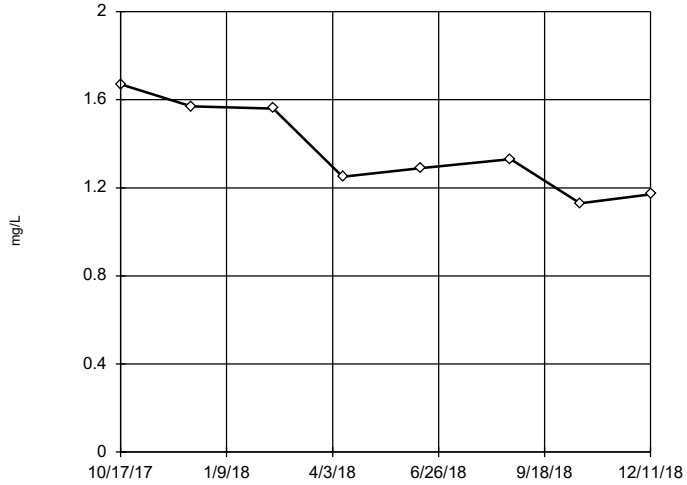
High cutoff = 3.875, low cutoff = 2.51, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

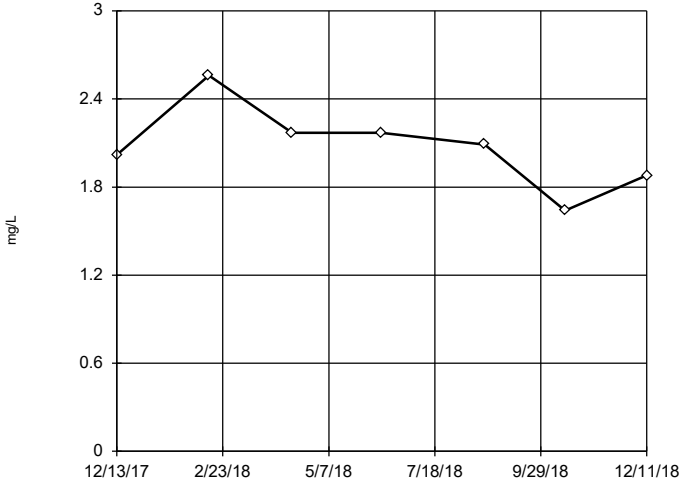
No outliers found. Tukey's method selected by user.

High cutoff = 2.63, low cutoff = 0.145, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

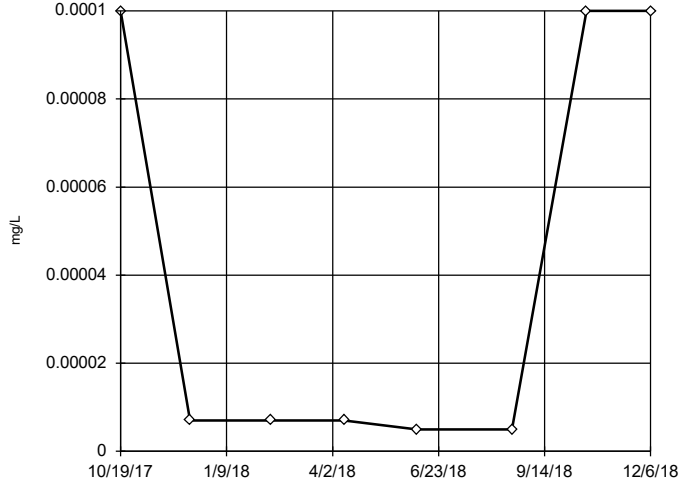
High cutoff = 3.04, low cutoff = 1.01, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

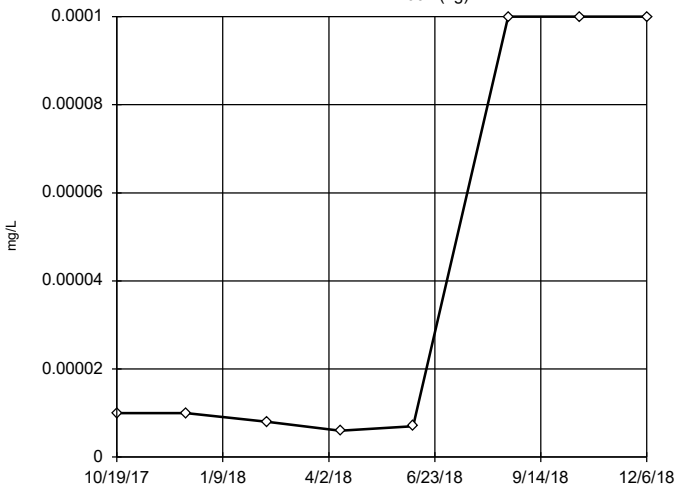
High cutoff = 0.000382, low cutoff = -0.000276, based on IQR multiplier of 3.

Constituent: Beryllium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method selected by user.

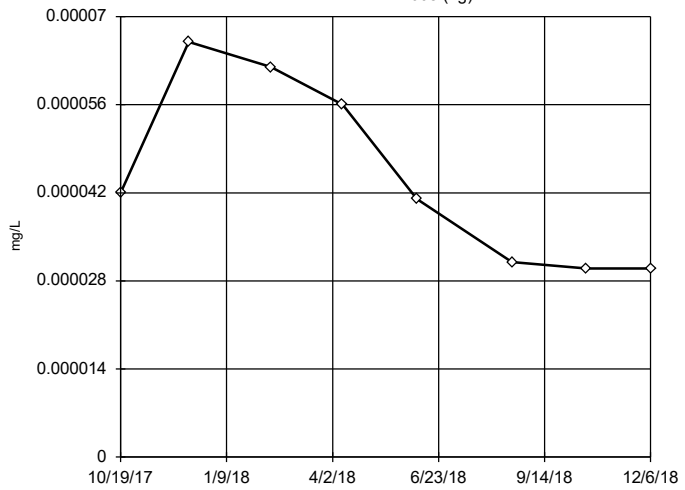
High cutoff = 0.0003775, low cutoff = -0.00027, based on IQR multiplier of 3.

Constituent: Beryllium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

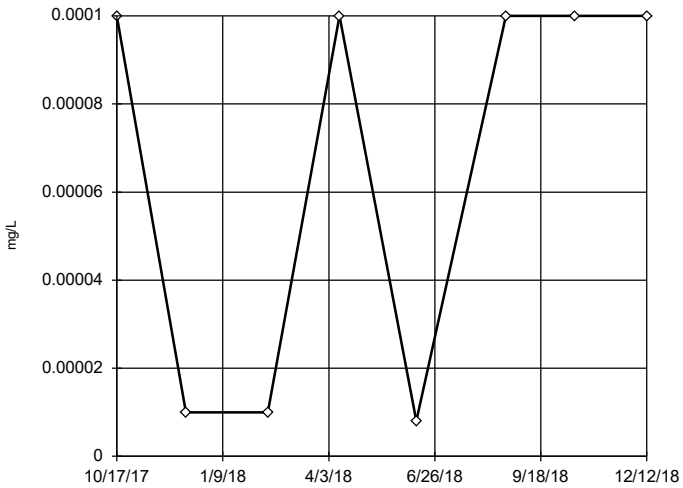
No outliers found. Tukey's method selected by user.

High cutoff = 0.0001445, low cutoff = -0.000055, based on IQR multiplier of 3.

Constituent: Beryllium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

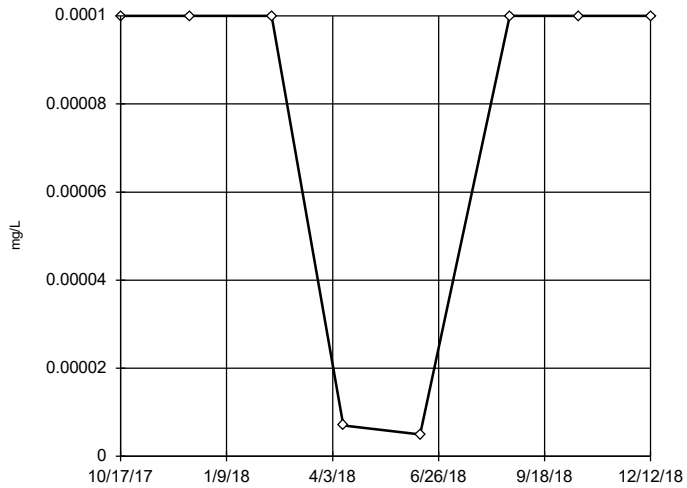
High cutoff = 0.00037, low cutoff = -0.00026, based on IQR multiplier of 3.

Constituent: Beryllium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

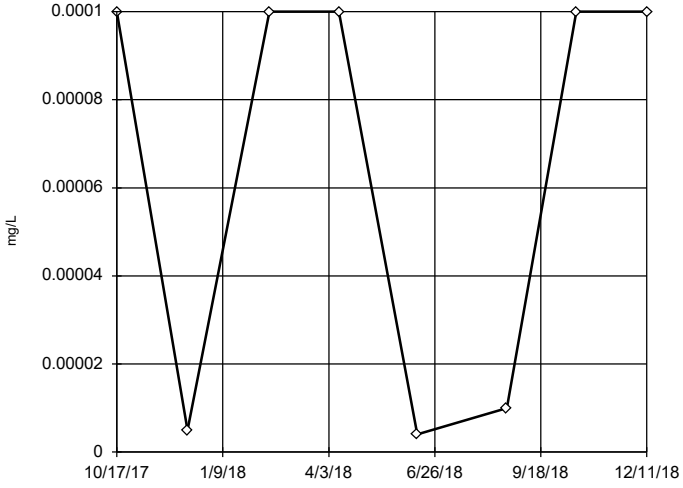
High cutoff = 0.0002395, low cutoff = -0.000086, based on IQR multiplier of 3.

Constituent: Beryllium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

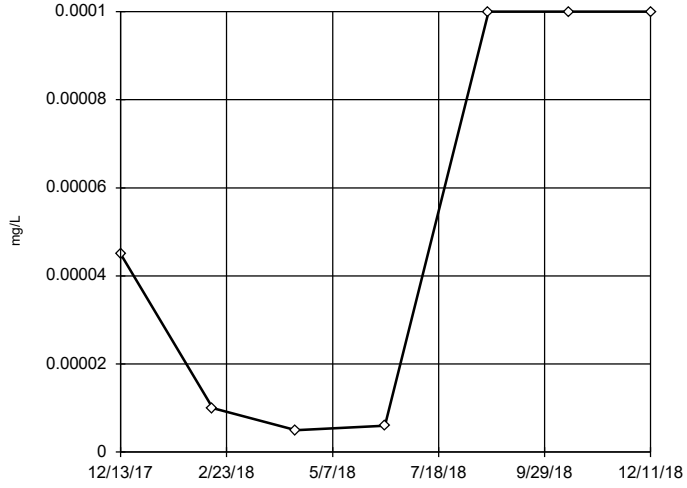
High cutoff = 0.0003775, low cutoff = -0.00027, based on IQR multiplier of 3.

Constituent: Beryllium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

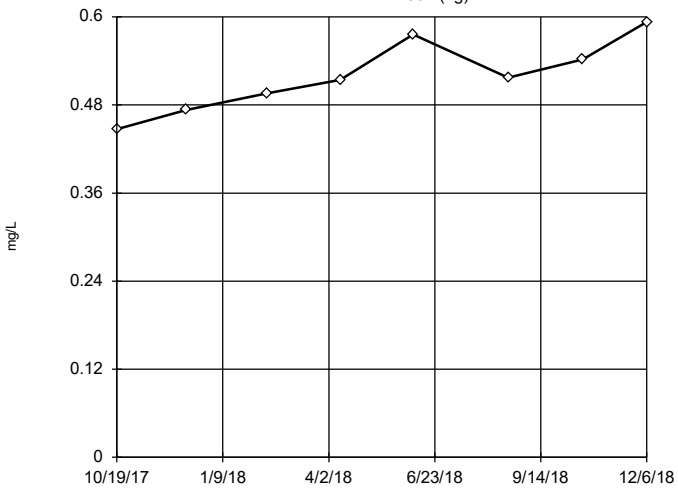
No outliers found. Tukey's method selected by user.

High cutoff = 0.000382, low cutoff = -0.000276, based on IQR multiplier of 3.

Constituent: Beryllium Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method select-ed by user.

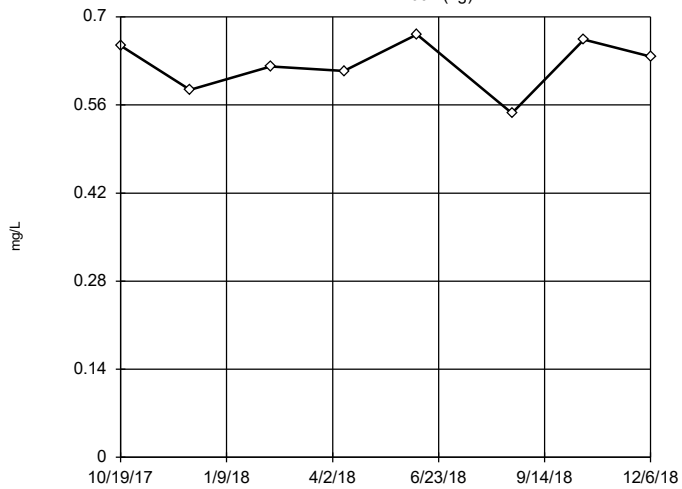
High cutoff = 0.7825, low cutoff = 0.261, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method select-ed by user.

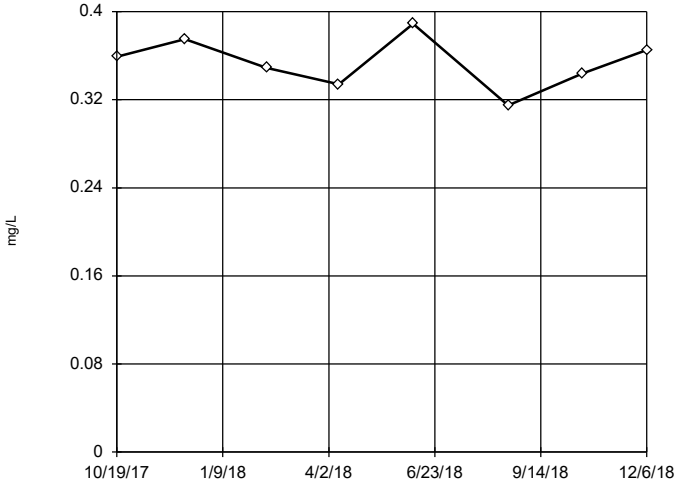
High cutoff = 0.839, low cutoff = 0.419, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method select-ed by user.

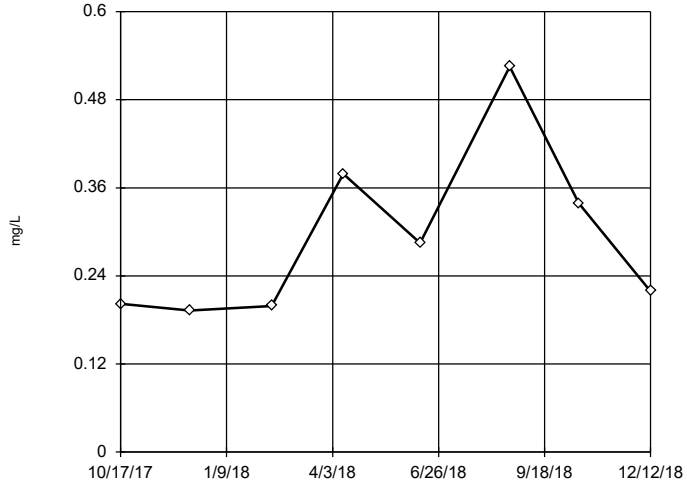
High cutoff = 0.463, low cutoff = 0.246, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

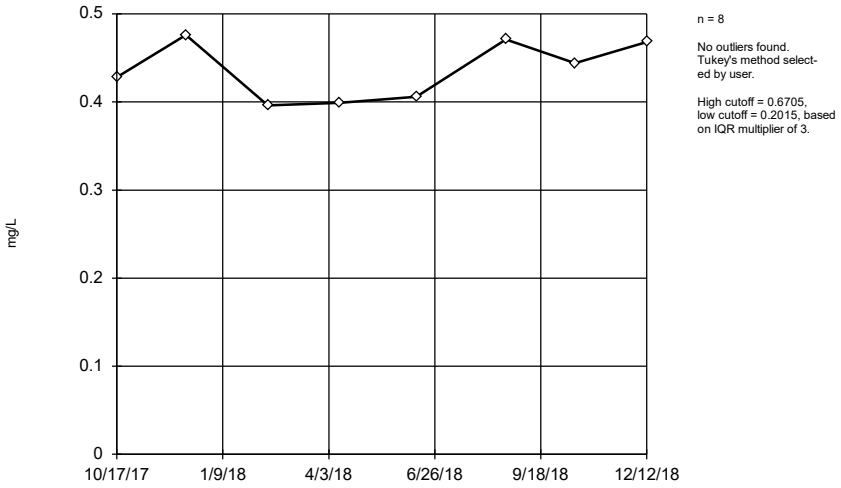
No outliers found. Tukey's method select-ed by user.

High cutoff = 0.8345, low cutoff = -0.275, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 4/17/2019 3:39 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

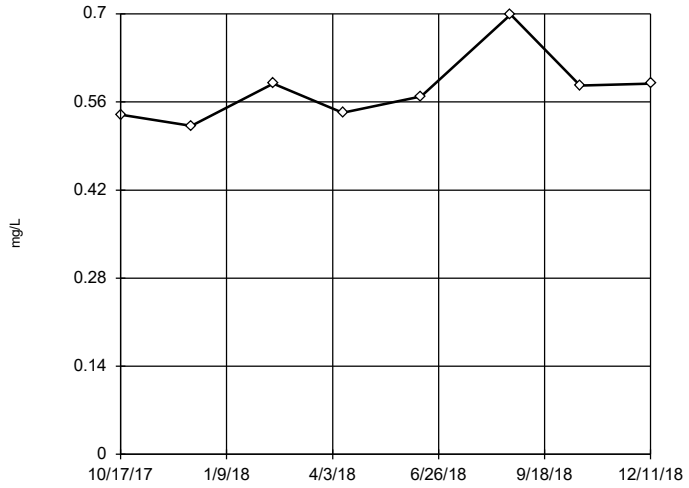
High cutoff = 0.6705, low cutoff = 0.2015, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

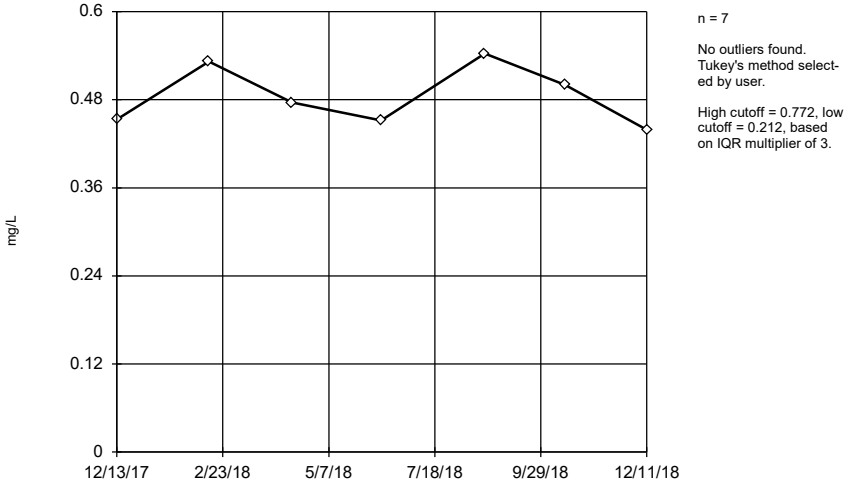
High cutoff = 0.7315, low cutoff = 0.399, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

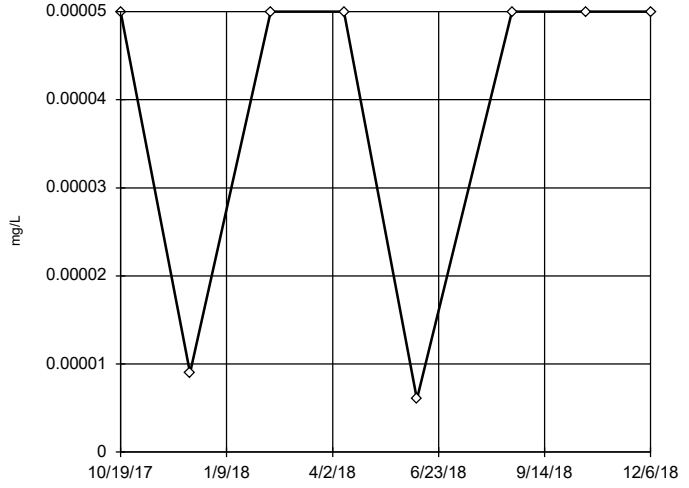
High cutoff = 0.772, low cutoff = 0.212, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

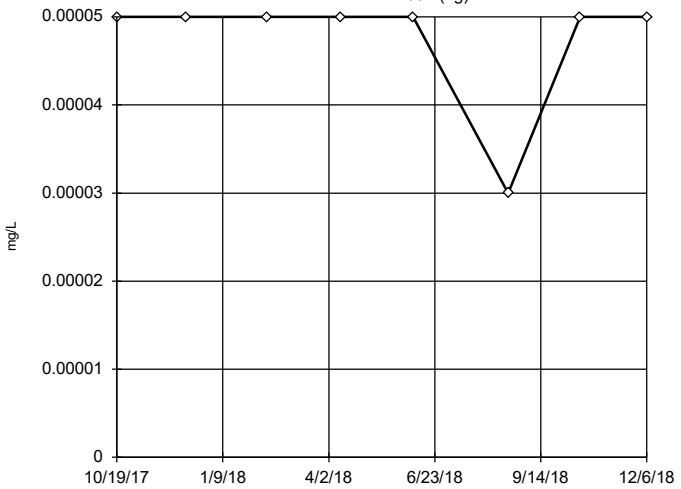
No outliers found. Tukey's method selected by user.

High cutoff = 0.0001115, low cutoff = -0.000032, based on IQR multiplier of 3.

Constituent: Cadmium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method selected by user.

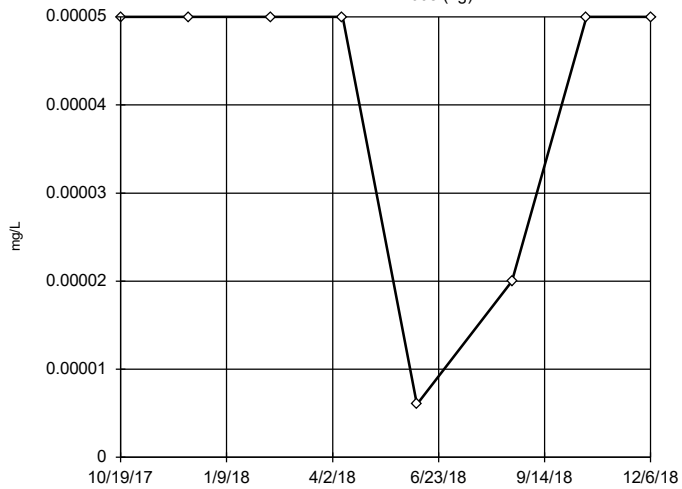
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cadmium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

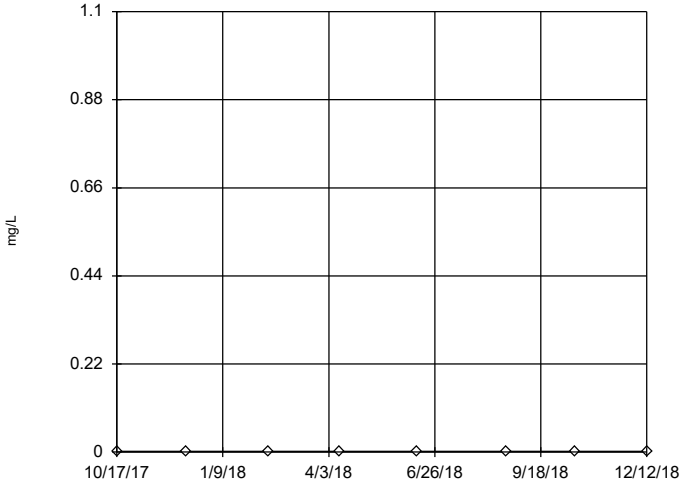
High cutoff = 0.000095, low cutoff = -0.00001, based on IQR multiplier of 3.

Constituent: Cadmium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

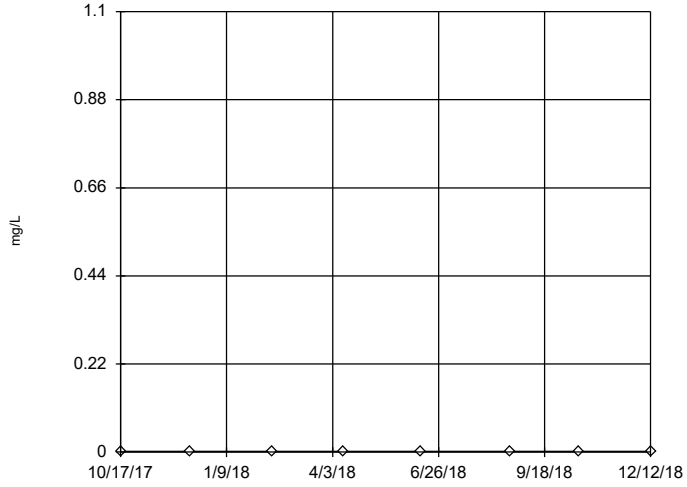
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cadmium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

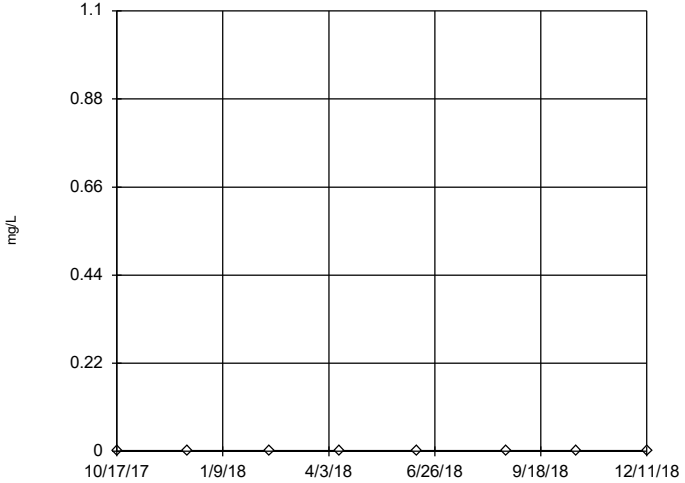
No outliers found. Tukey's method selected by user.

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cadmium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

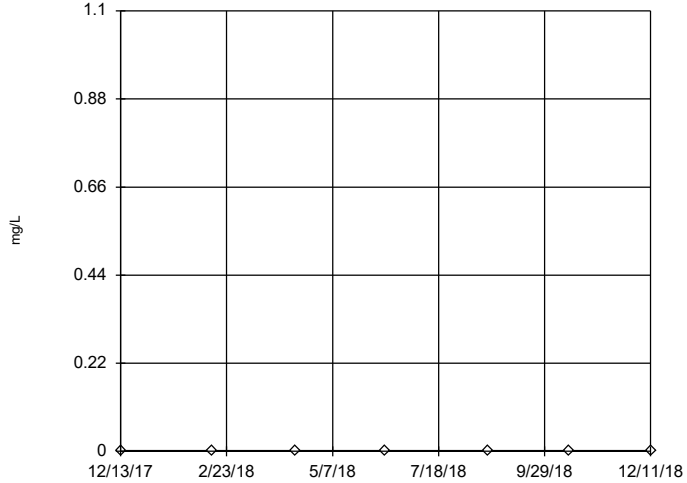
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cadmium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

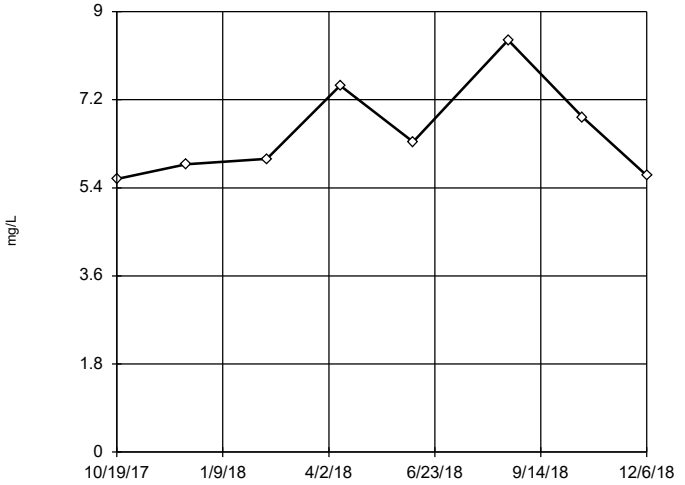
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cadmium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

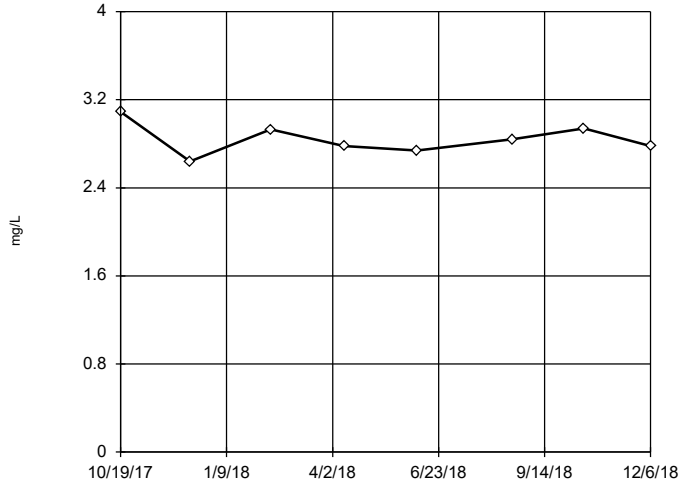
High cutoff = 11.37, low cutoff = 1.565, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

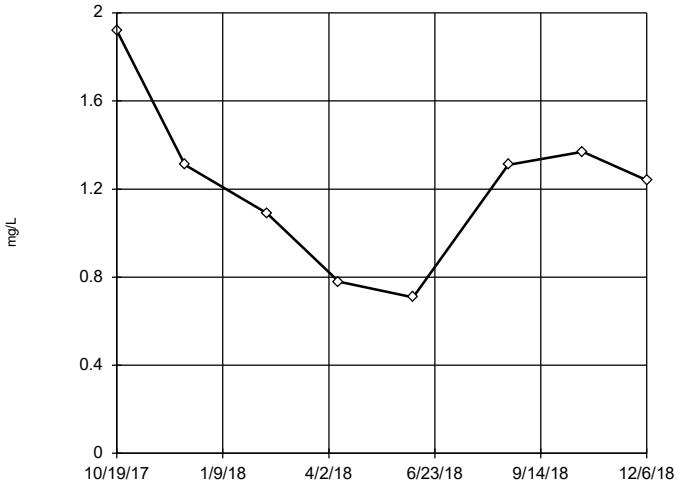
No outliers found. Tukey's method selected by user.

High cutoff = 3.46, low cutoff = 2.235, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

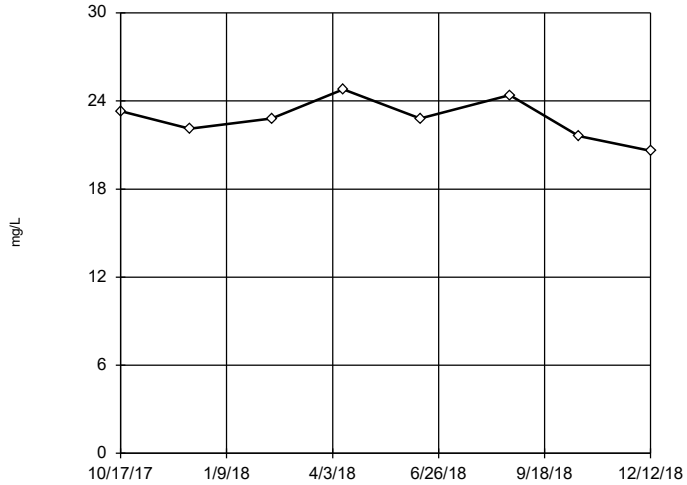
High cutoff = 2.557, low cutoff = -0.282, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

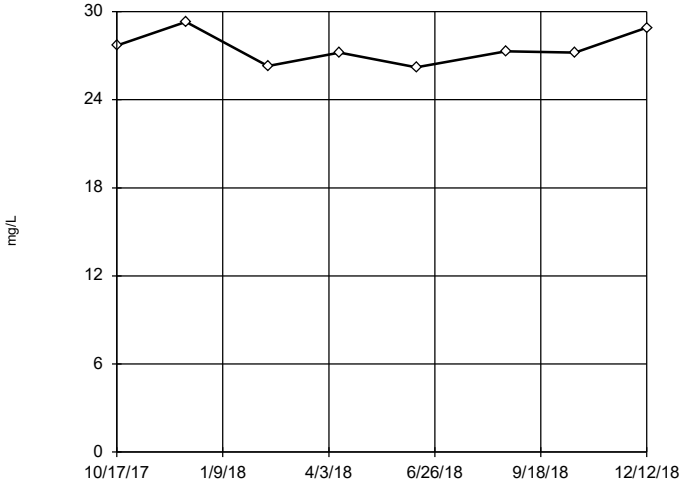
High cutoff = 29.85, low cutoff = 15.85, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

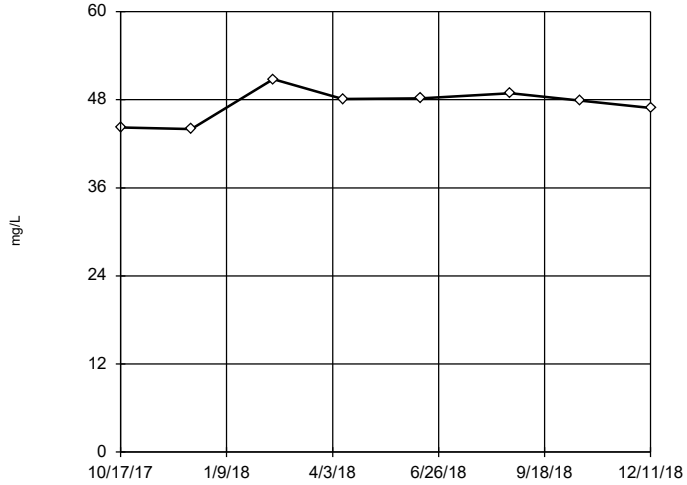
High cutoff = 32.95, low cutoff = 22.1, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

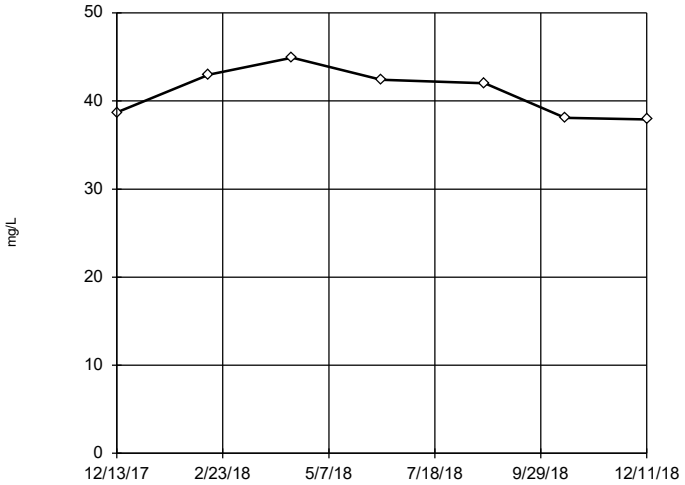
No outliers found. Tukey's method selected by user.

High cutoff = 57.55, low cutoff = 36.55, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

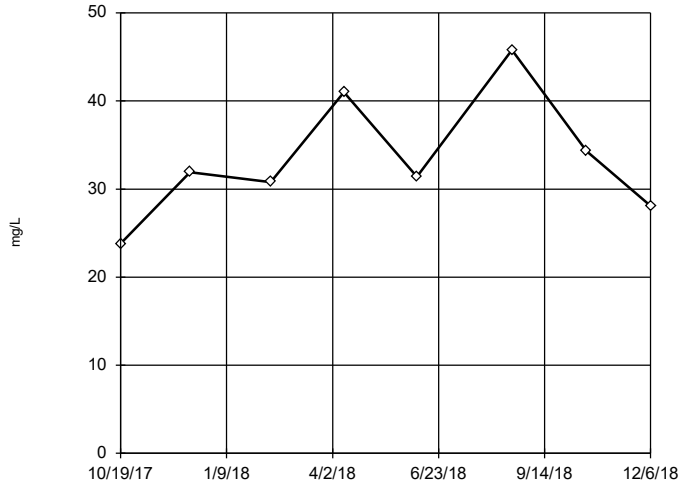
High cutoff = 57.7, low cutoff = 23.4, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

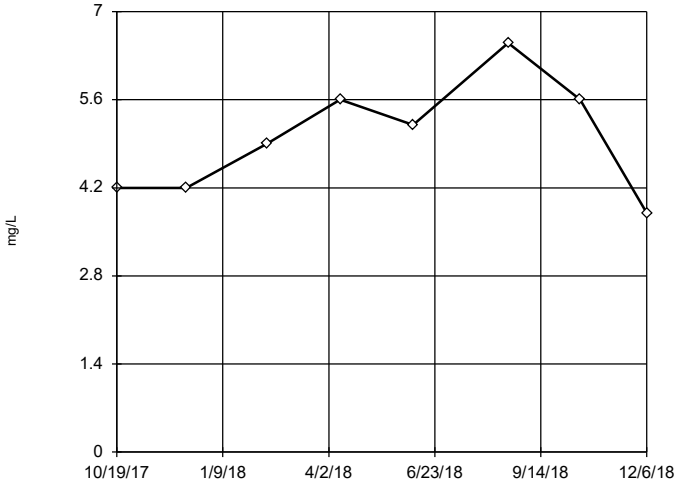
High cutoff = 62.25, low cutoff = 4.85, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method selected by user.

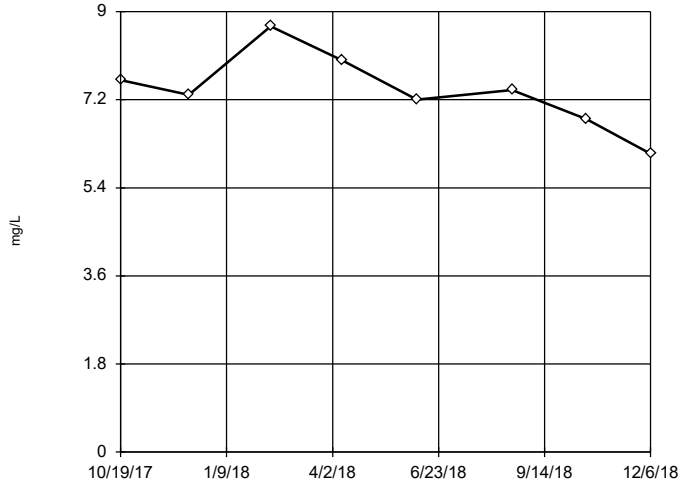
High cutoff = 9.8, low cutoff = 1.8e-15, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

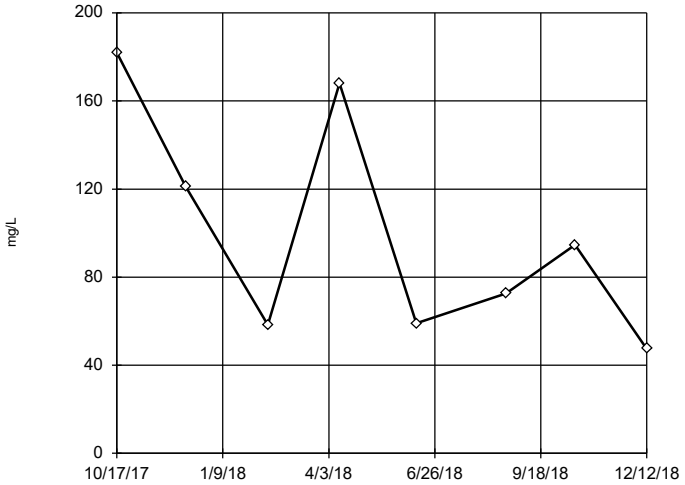
No outliers found. Tukey's method selected by user.

High cutoff = 10.2, low cutoff = 4.6, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

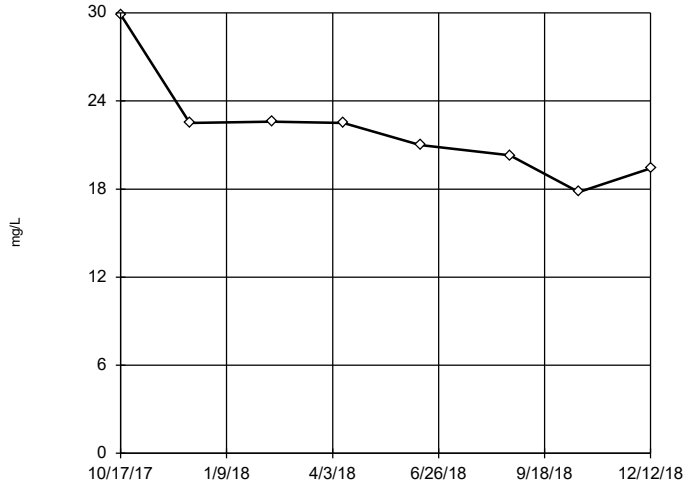
High cutoff = 402.1, low cutoff = -198.9, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

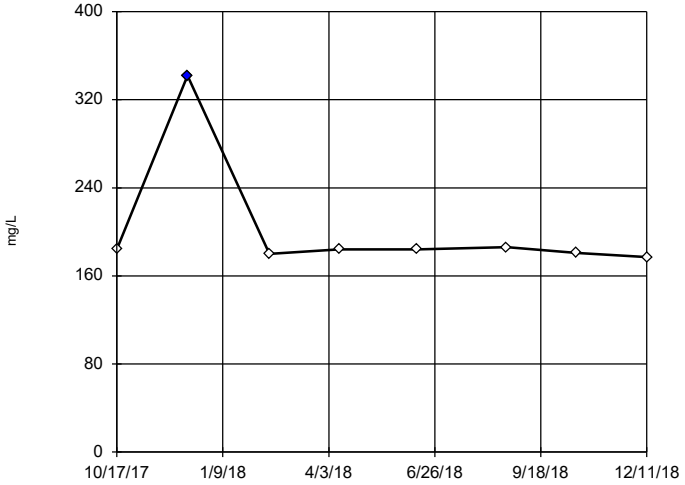
High cutoff = 30.65, low cutoff = 11.75, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

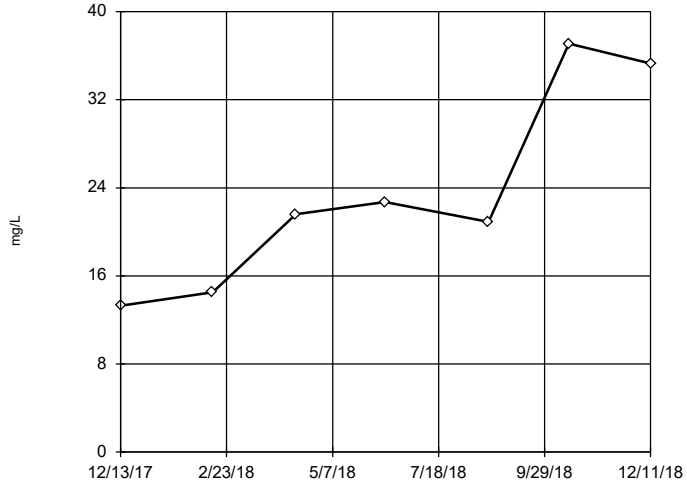
High cutoff = 198.5, low cutoff = 167, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

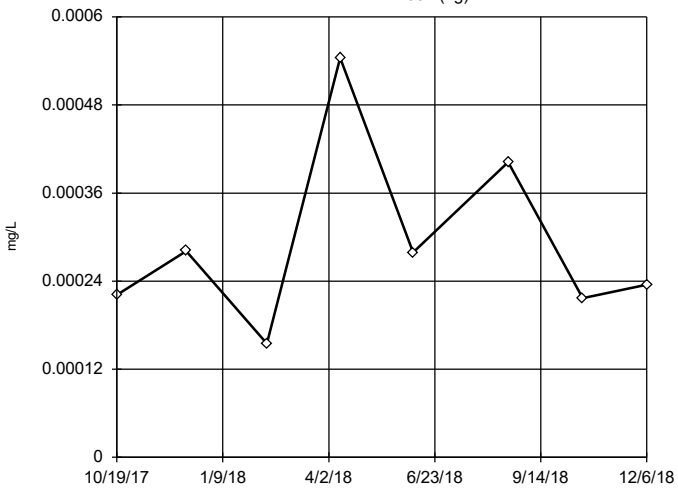
No outliers found. Tukey's method selected by user.

High cutoff = 97.7, low cutoff = -47.9, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

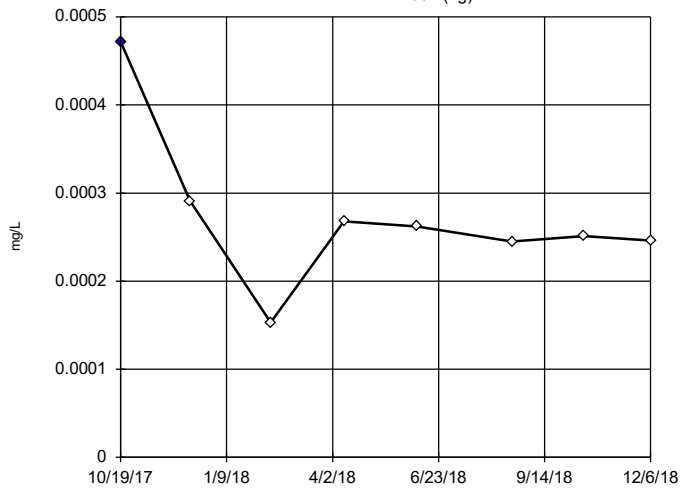
High cutoff = 0.000709, low cutoff = -0.0001485, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

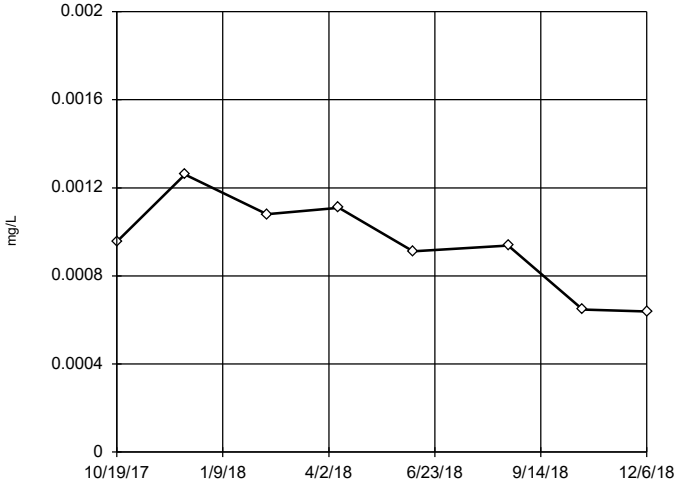
High cutoff = 0.0003815, low cutoff = 0.0001435, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

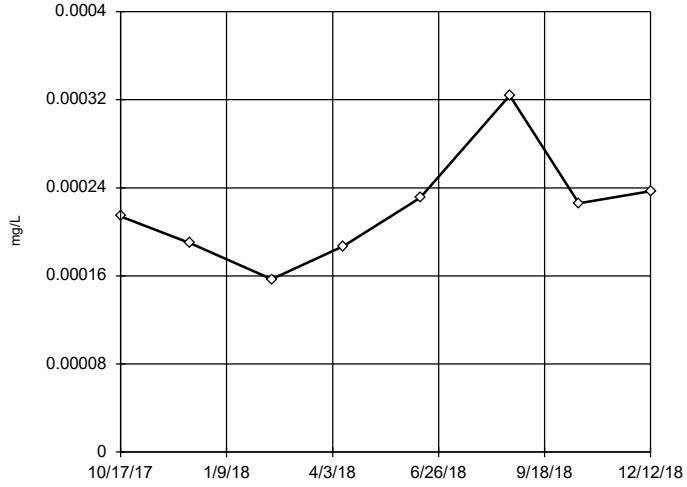
High cutoff = 0.002042, low cutoff = -0.000167, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

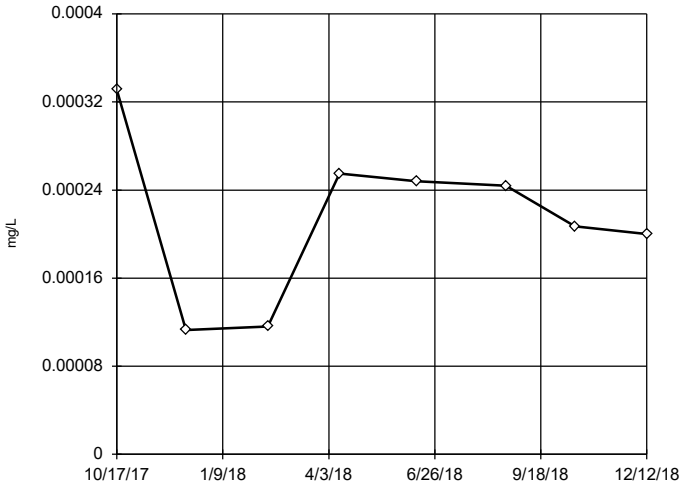
No outliers found. Tukey's method selected by user.

High cutoff = 0.0003705, low cutoff = 0.000052, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

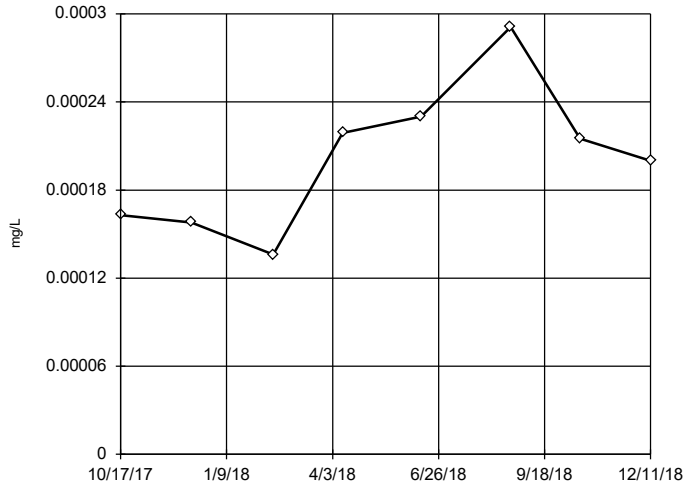
High cutoff = 0.000532, low cutoff = -0.0001225, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

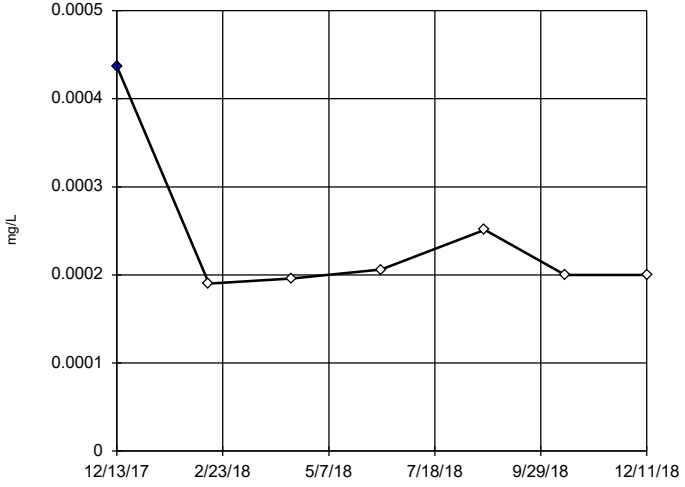
High cutoff = 0.0004165, low cutoff = -0.0000315, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

Outlier is drawn as solid. Tukey's method selected by user.

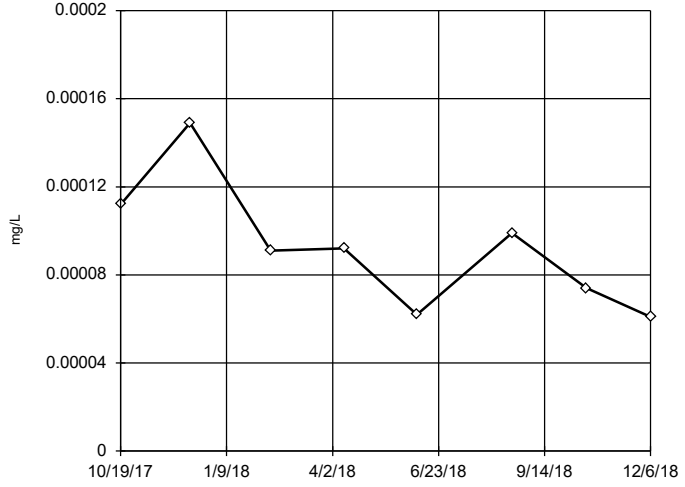
High cutoff = 0.000416, low cutoff = 0.000031, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

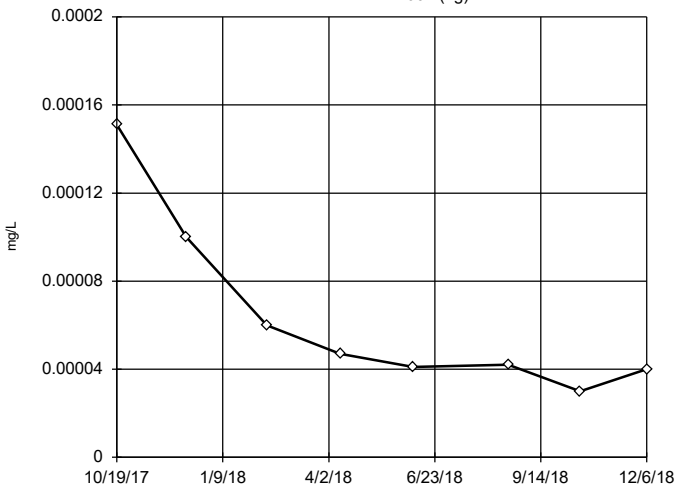
No outliers found. Tukey's method selected by user.

High cutoff = 0.000218, low cutoff = -0.0000445, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method select-ed by user.

High cutoff = 0.0001985, low cutoff = -0.000078, based on IQR multiplier of 3.

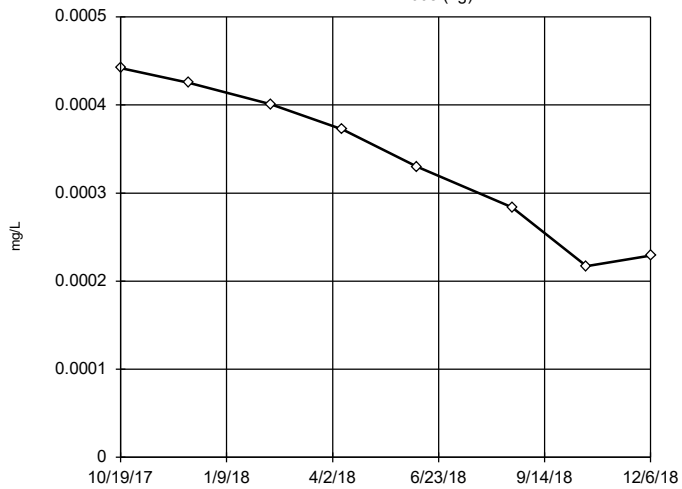
Constituent: Cobalt Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method select-ed by user.

High cutoff = 0.0008825, low cutoff = -0.000213, based on IQR multiplier of 3.

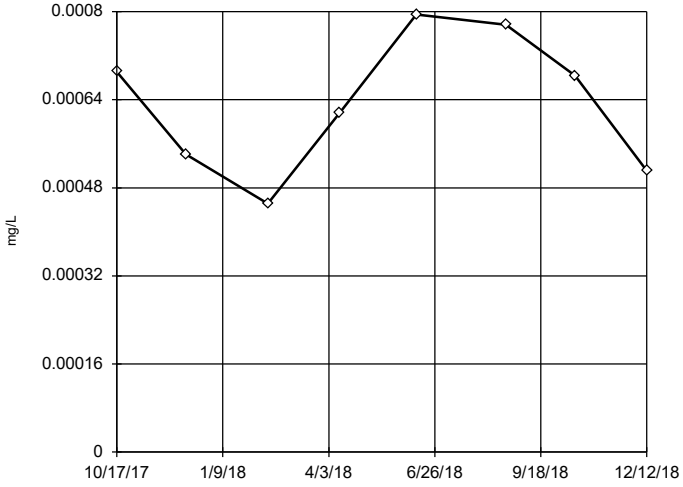
Constituent: Cobalt Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method select-ed by user.

High cutoff = 0.001356, low cutoff = -0.0000965, based on IQR multiplier of 3.

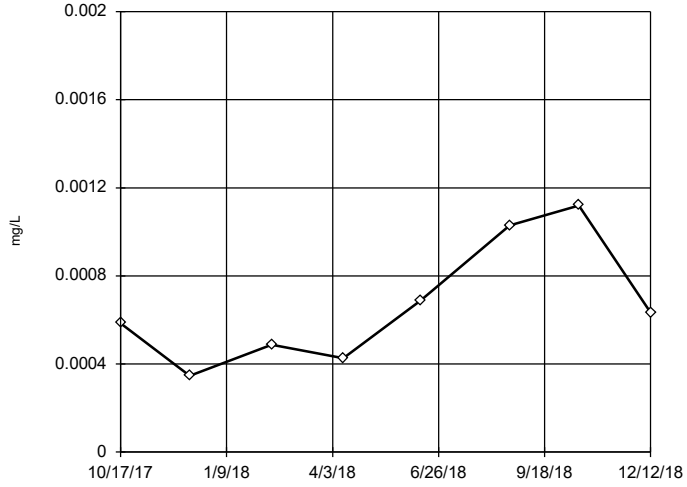
Constituent: Cobalt Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method select-ed by user.

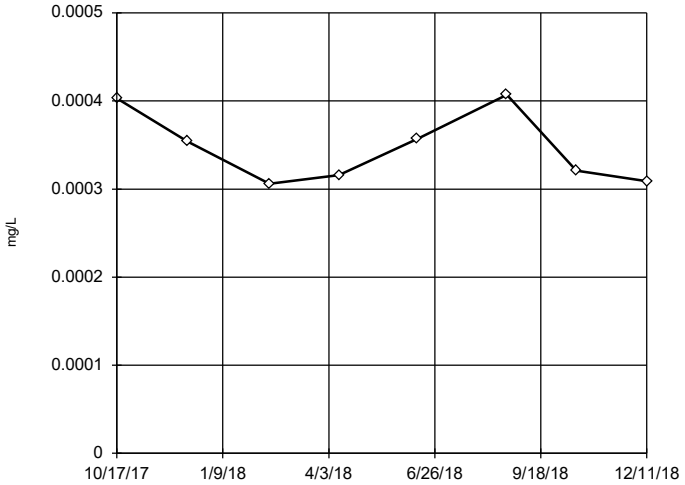
High cutoff = 0.002063, low cutoff = -0.0007475, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

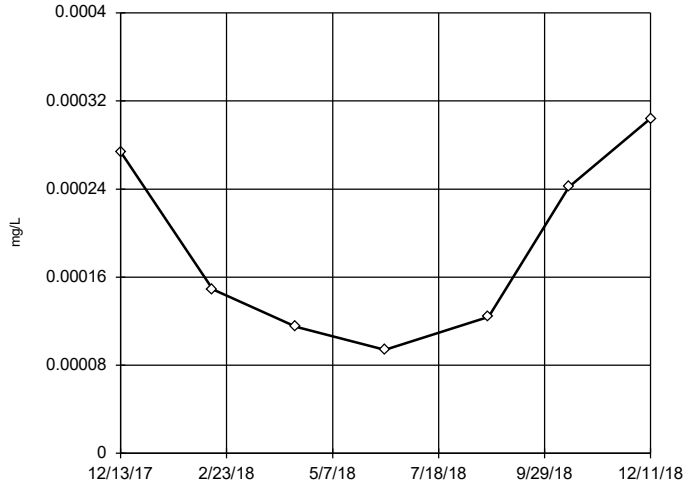
High cutoff = 0.0005825, low cutoff = 0.00011, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

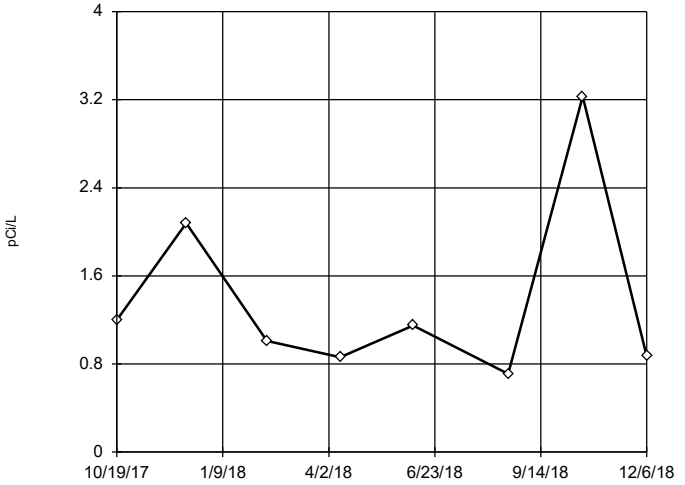
High cutoff = 0.000751, low cutoff = -0.000362, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

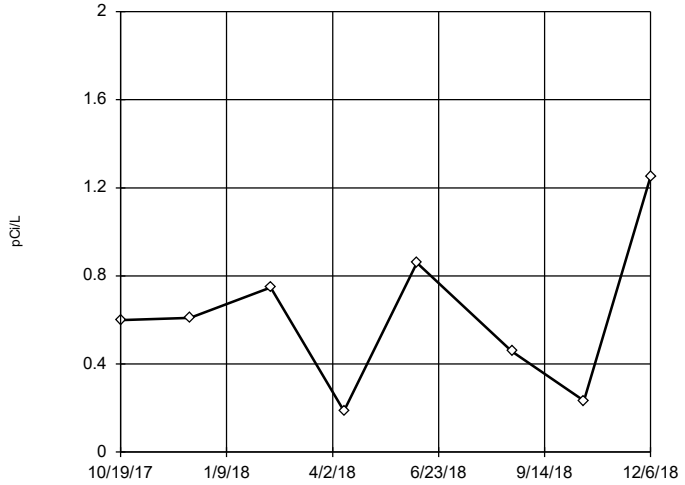
High cutoff = 3.961, low cutoff = -1.454, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

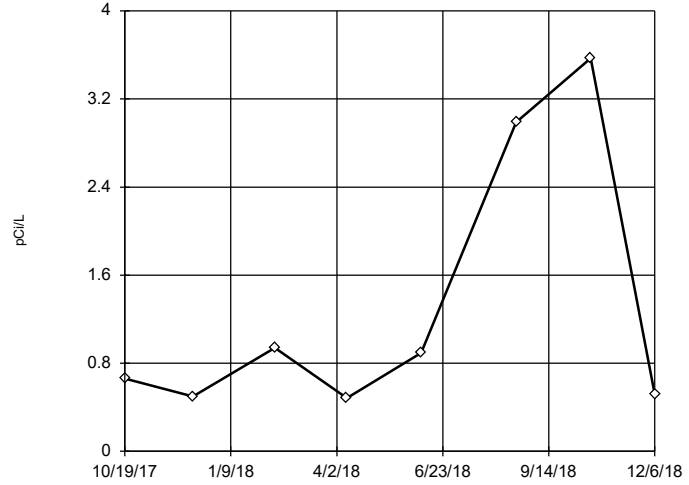
No outliers found. Tukey's method selected by user.

High cutoff = 2.179, low cutoff = -1.031, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

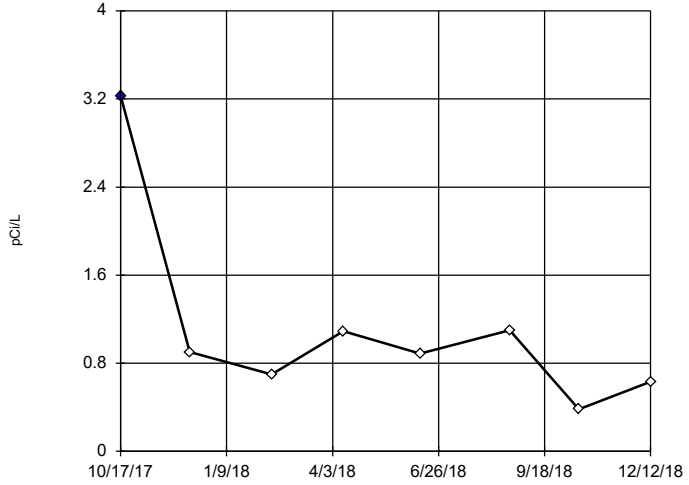
High cutoff = 6.334, low cutoff = -3.862, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

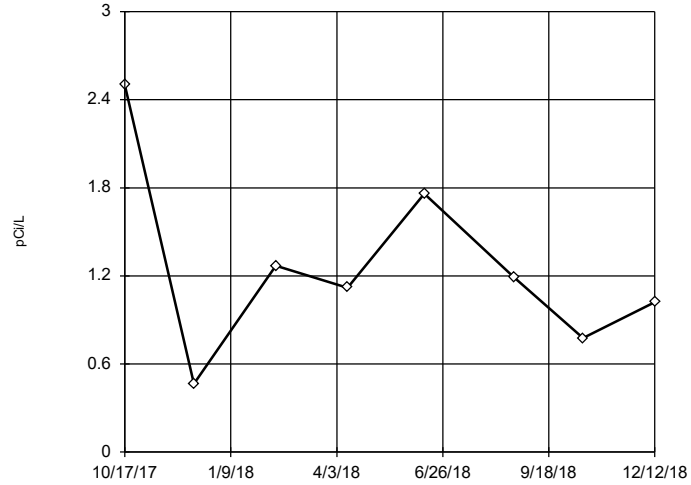
High cutoff = 2.385, low cutoff = -0.625, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

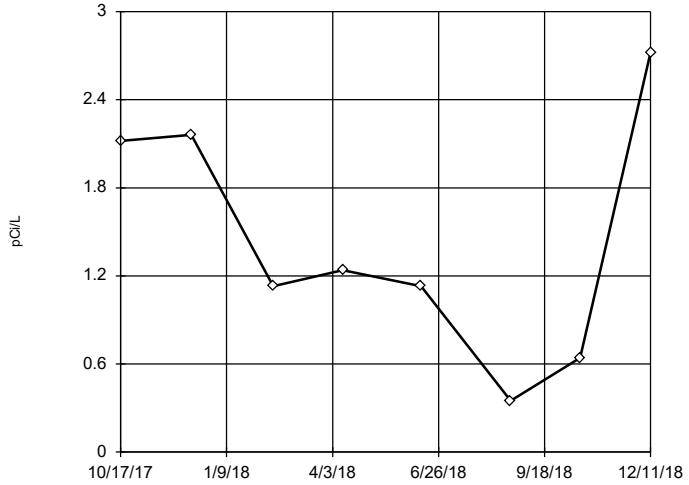
High cutoff = 3.366, low cutoff = -0.953, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

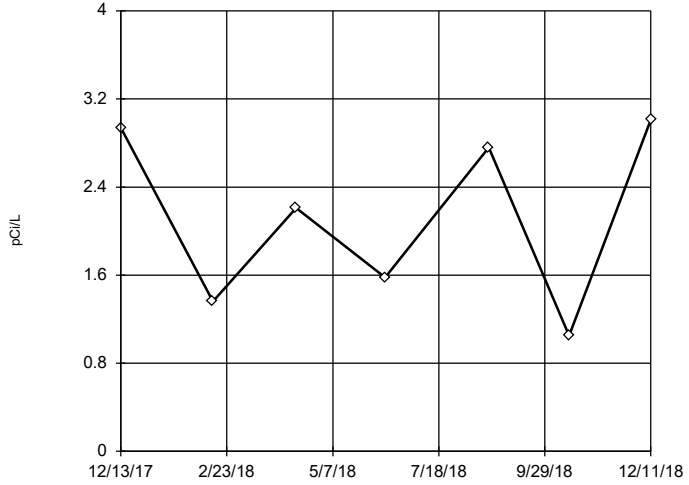
No outliers found. Tukey's method selected by user.

High cutoff = 5.904, low cutoff = -2.878, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

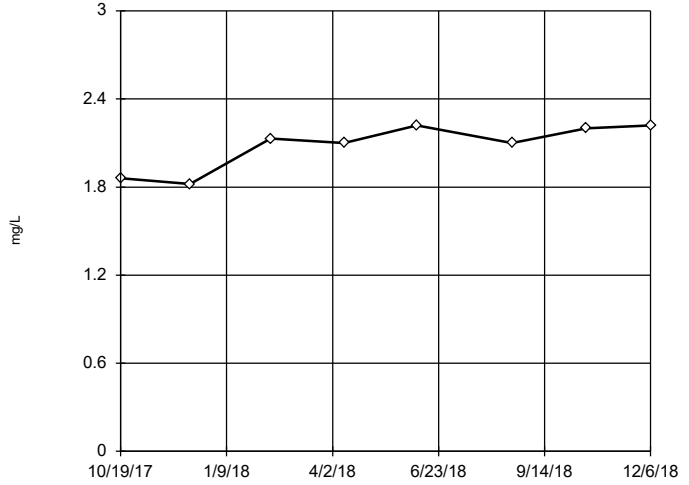
High cutoff = 7.68, low cutoff = -3.38, based on IQR multiplier of 3.

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

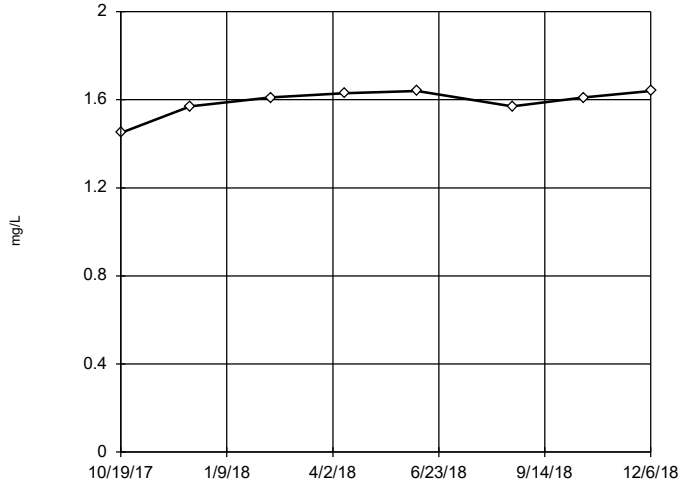
High cutoff = 2.9, low cutoff = 1.29, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method selected by user.

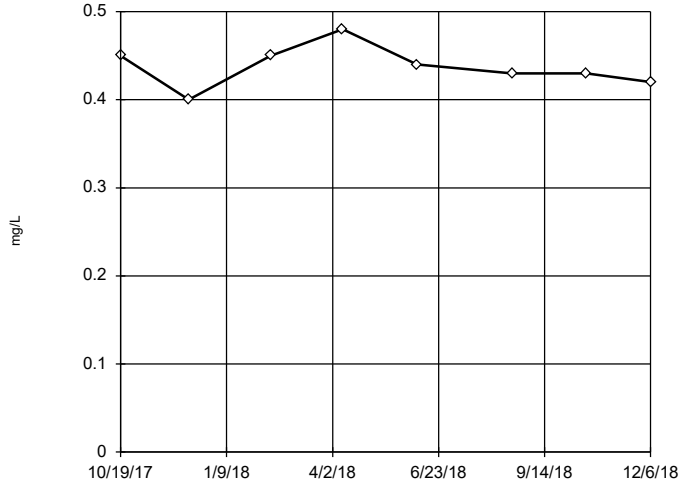
High cutoff = 1.83, low cutoff = 1.375, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

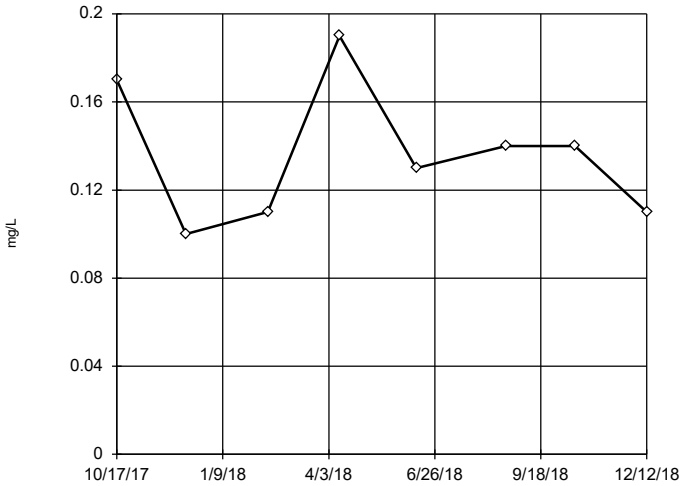
No outliers found. Tukey's method selected by user.

High cutoff = 0.525, low cutoff = 0.35, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 4/17/2019 3:40 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

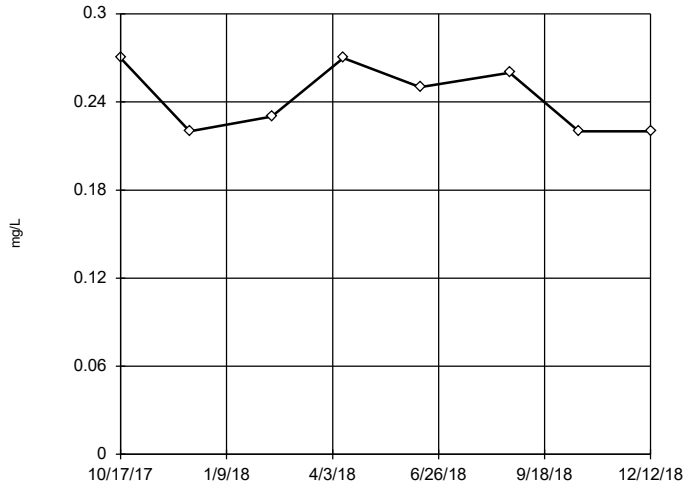
High cutoff = 0.29, low cutoff = -0.025, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

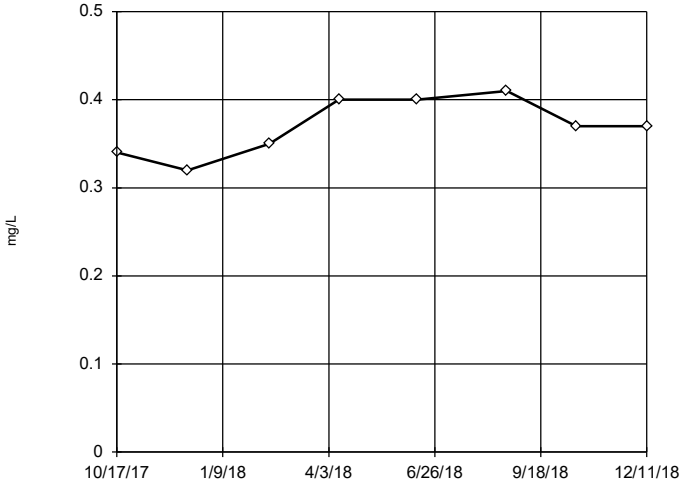
High cutoff = 0.4, low cutoff = 0.085, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

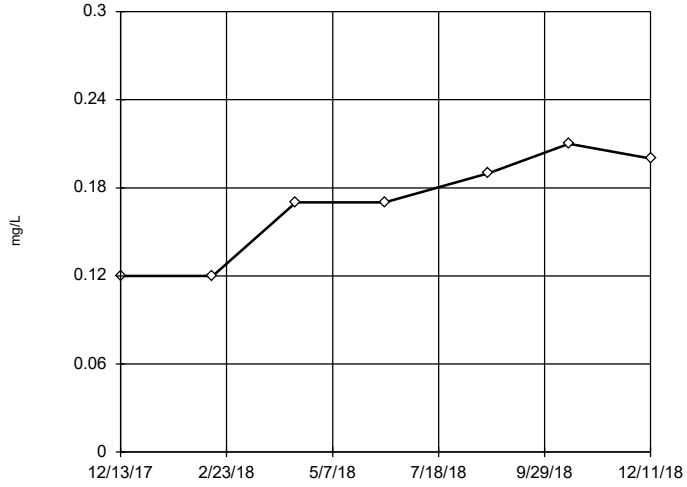
High cutoff = 0.565, low cutoff = 0.18, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

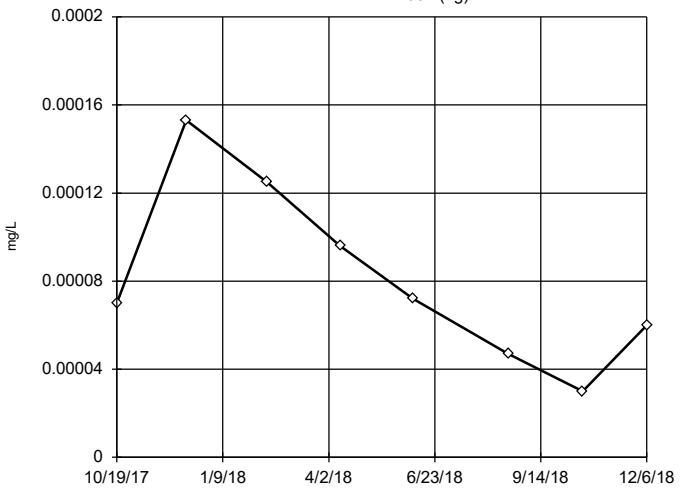
No outliers found. Tukey's method selected by user.

High cutoff = 0.44, low cutoff = -0.12, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method select-ed by user.

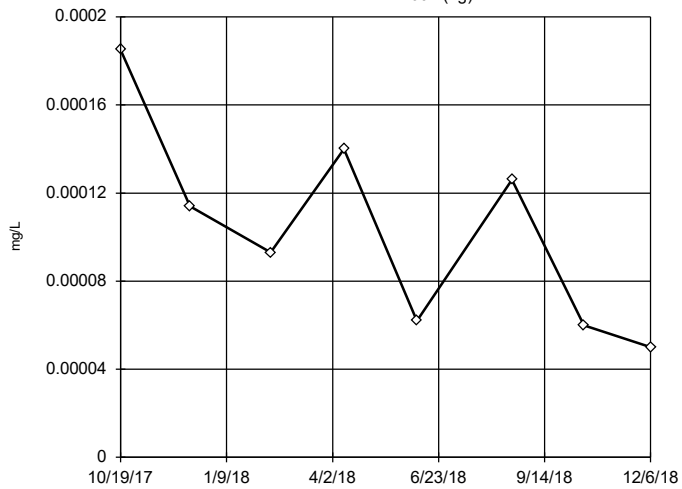
High cutoff = 0.0002815, low cutoff = -0.0001175, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method select-ed by user.

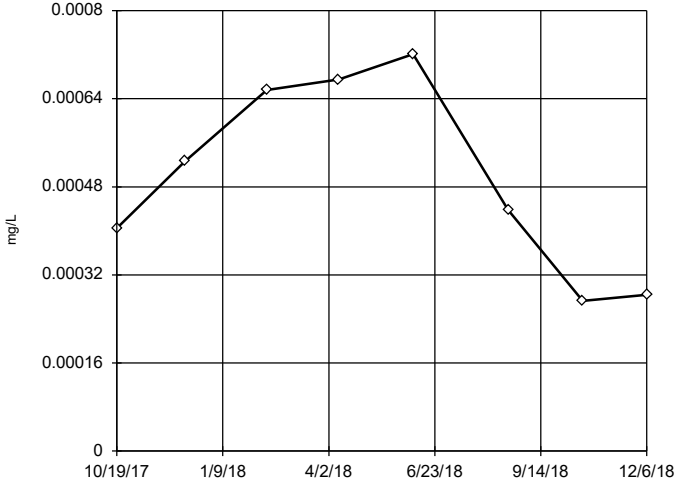
High cutoff = 0.000349, low cutoff = -0.000155, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method select-ed by user.

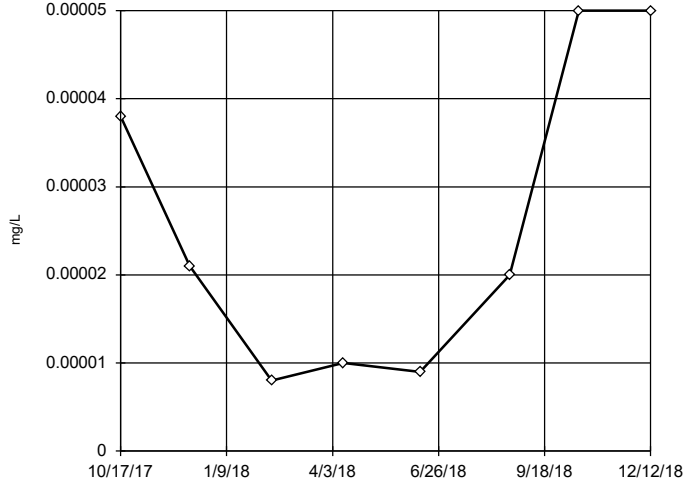
High cutoff = 0.001629, low cutoff = -0.0006185, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

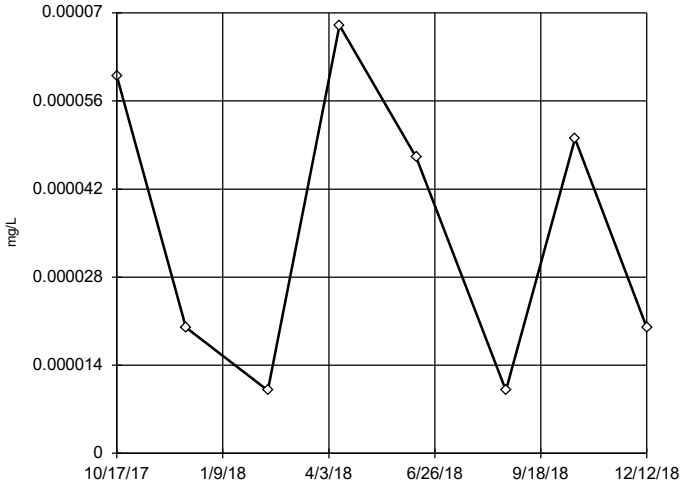
No outliers found. Tukey's method select-ed by user.

High cutoff = 0.0001475, low cutoff = -0.000094, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

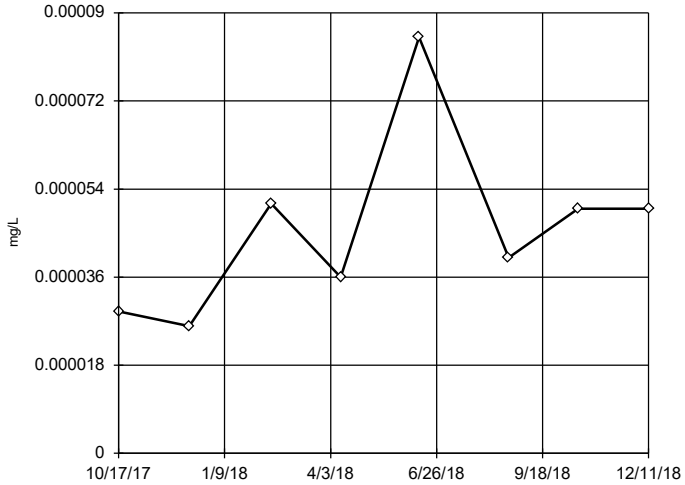
High cutoff = 0.000175, low cutoff = -0.000105, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

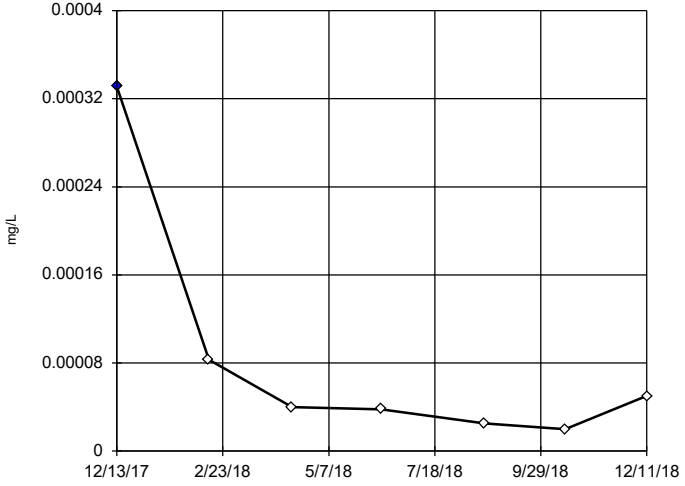
High cutoff = 0.0001045, low cutoff = -0.0000215, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

Outlier is drawn as solid. Tukey's method selected by user.

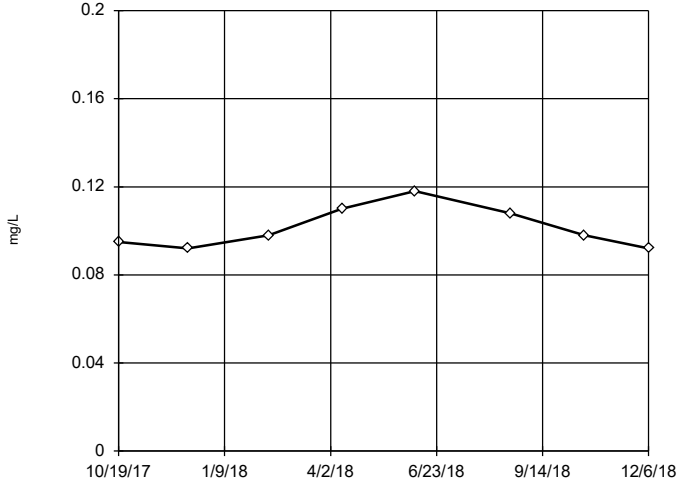
High cutoff = 0.000257, low cutoff = -0.000149, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

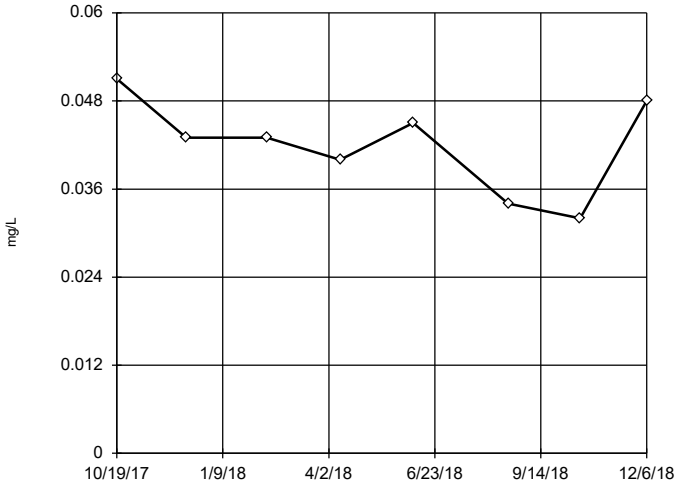
No outliers found. Tukey's method selected by user.

High cutoff = 0.1555, low cutoff = 0.047, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method selected by user.

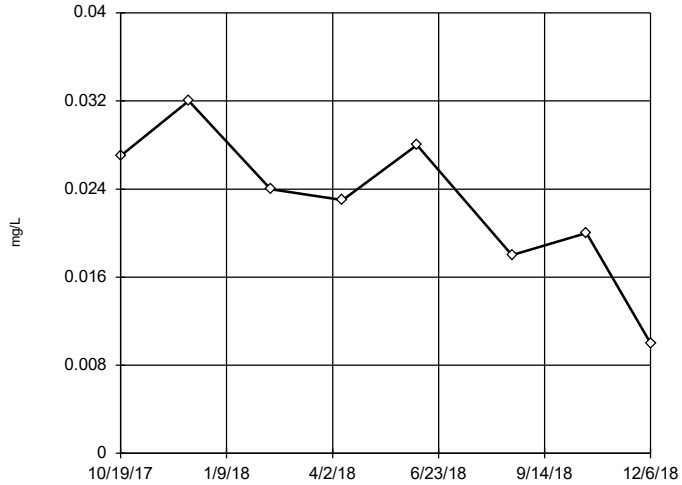
High cutoff = 0.075, low cutoff = 0.0085, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

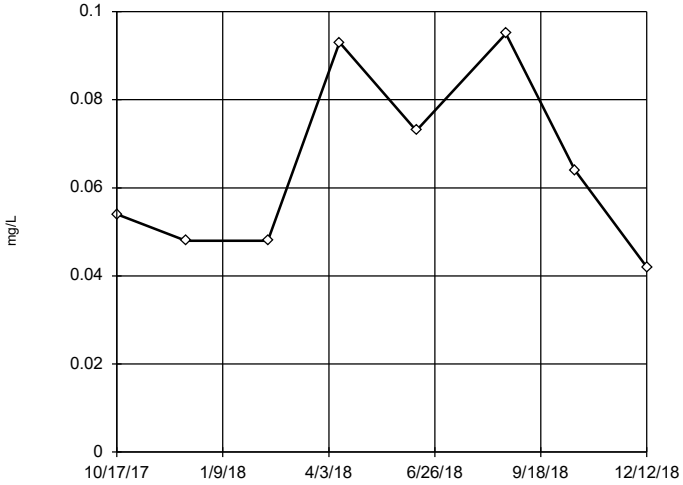
High cutoff = 0.053, low cutoff = -0.0065, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

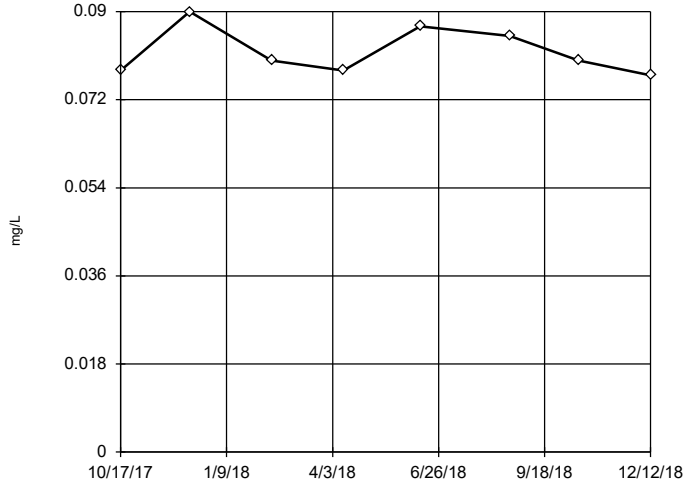
High cutoff = 0.188, low cutoff = -0.057, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

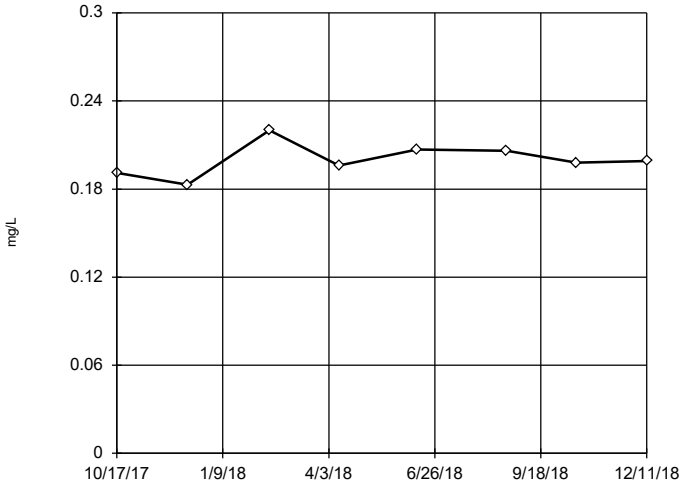
No outliers found. Tukey's method selected by user.

High cutoff = 0.11, low cutoff = 0.054, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

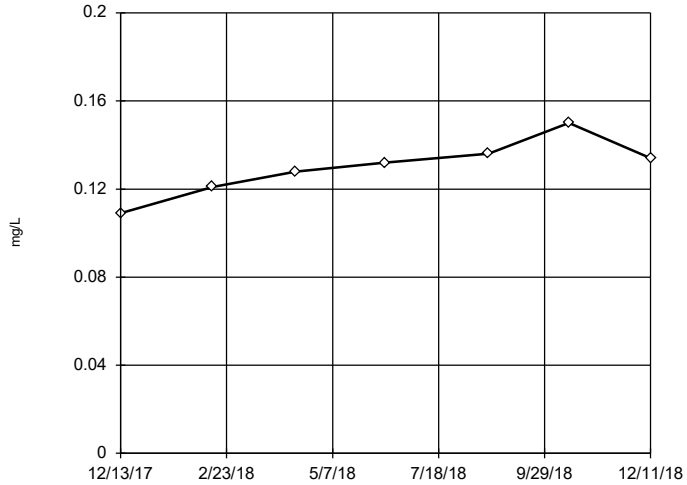
High cutoff = 0.2455, low cutoff = 0.1545, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

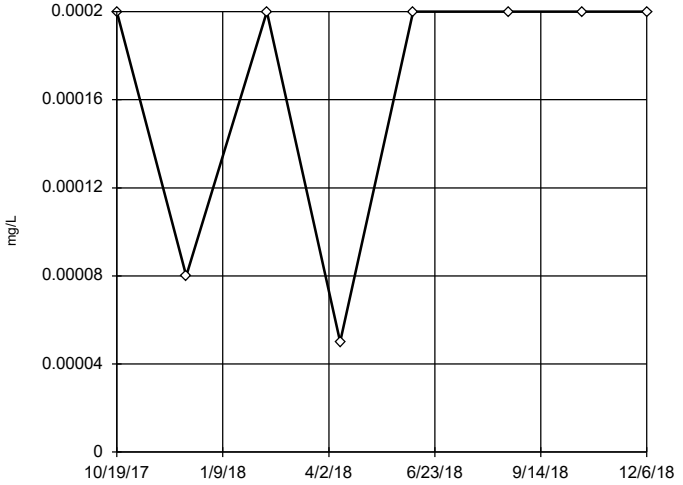
High cutoff = 0.181, low cutoff = 0.076, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

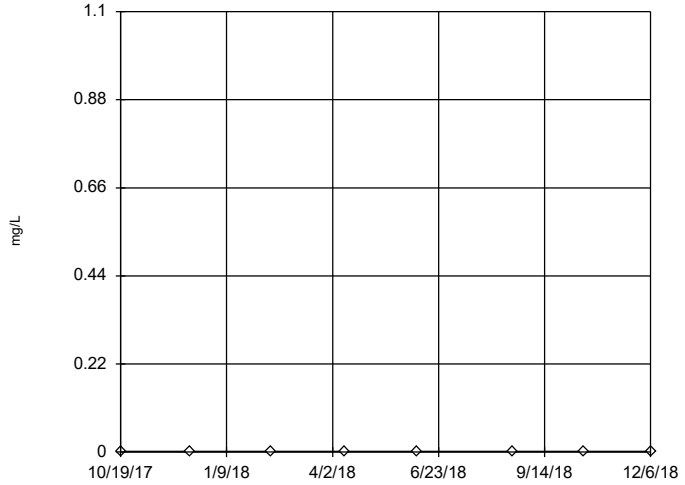
High cutoff = 0.00038, low cutoff = -0.00004, based on IQR multiplier of 3.

Constituent: Mercury Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

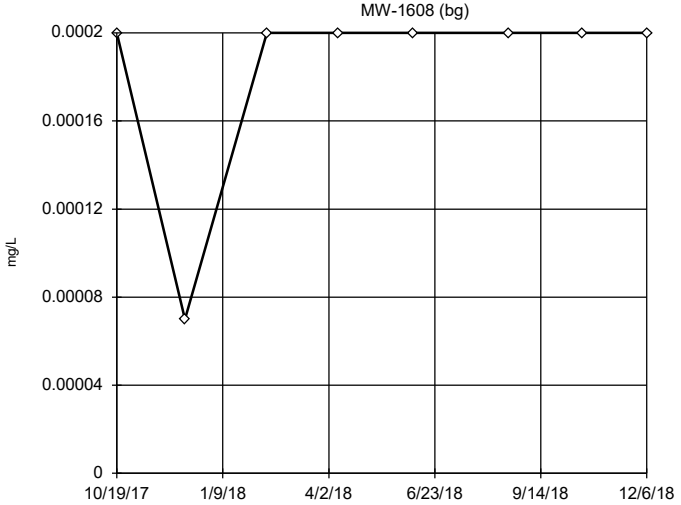
No outliers found. Tukey's method selected by user.

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

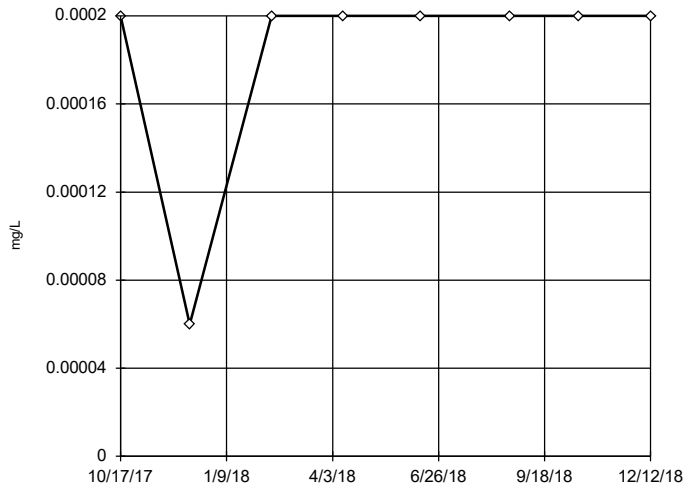
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

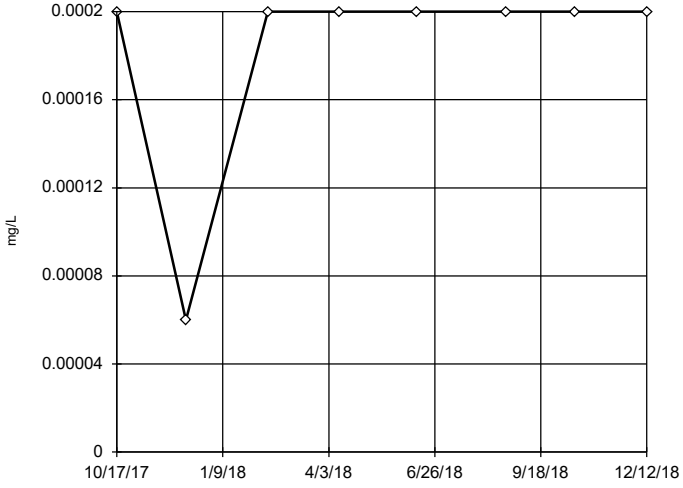
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

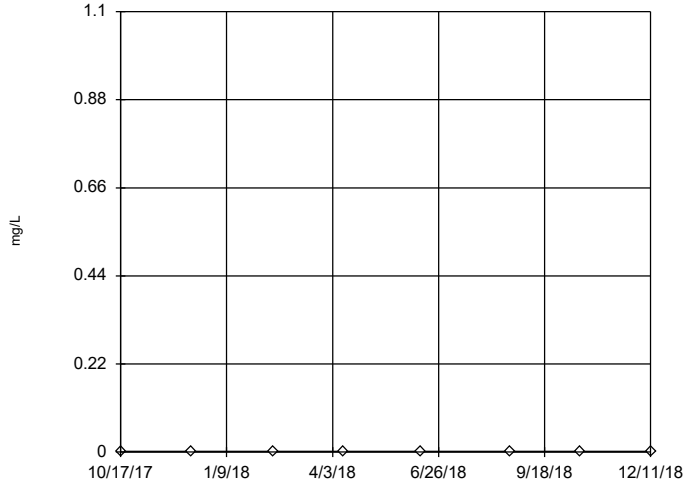
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

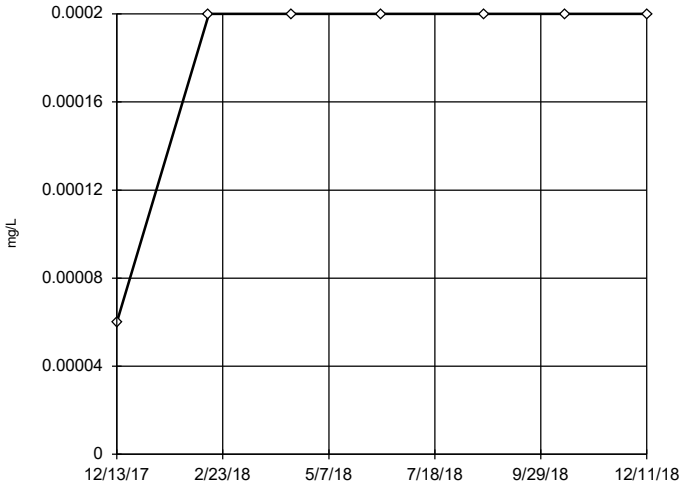
No outliers found. Tukey's method selected by user.

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

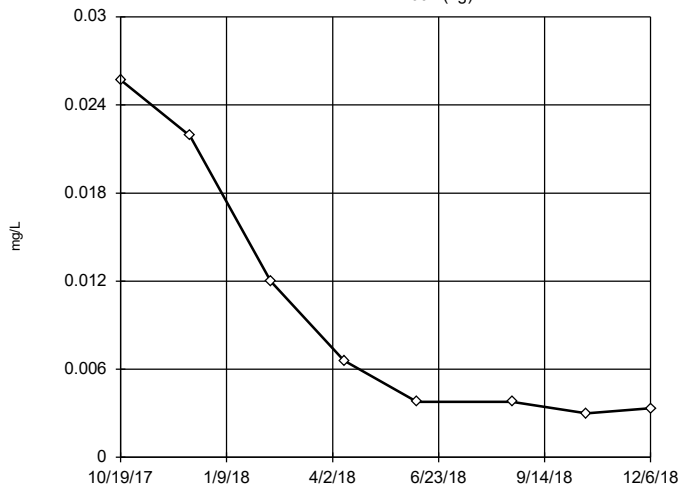
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

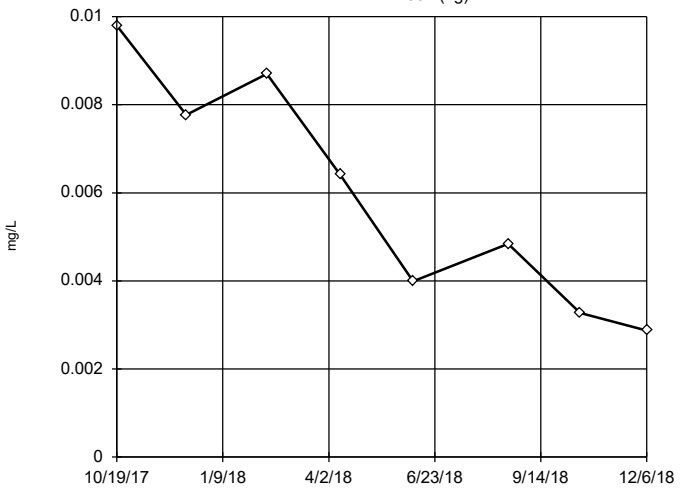
High cutoff = 0.05714, low cutoff = -0.03663, based on IQR multiplier of 3.

Constituent: Molybdenum Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method selected by user.

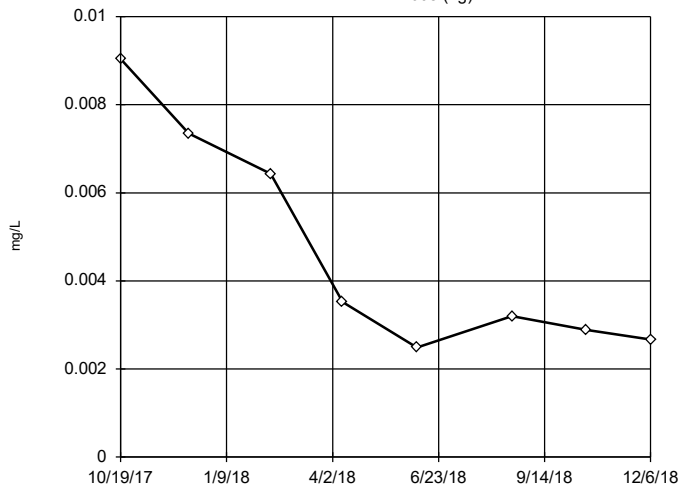
High cutoff = 0.02205, low cutoff = -0.01019, based on IQR multiplier of 3.

Constituent: Molybdenum Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

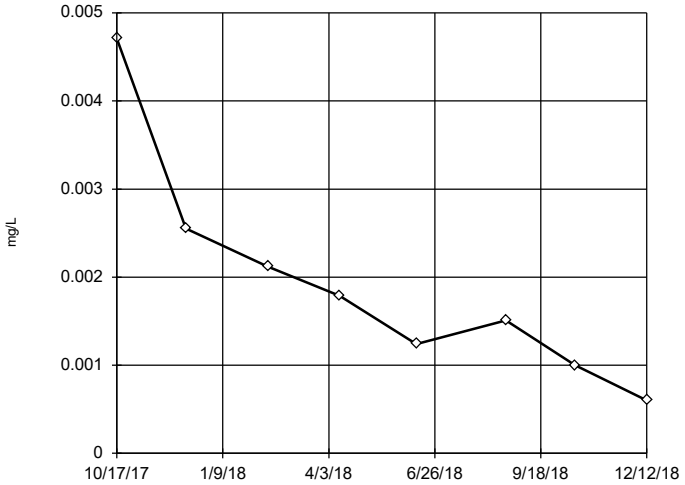
No outliers found. Tukey's method selected by user.

High cutoff = 0.01922, low cutoff = -0.00955, based on IQR multiplier of 3.

Constituent: Molybdenum Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

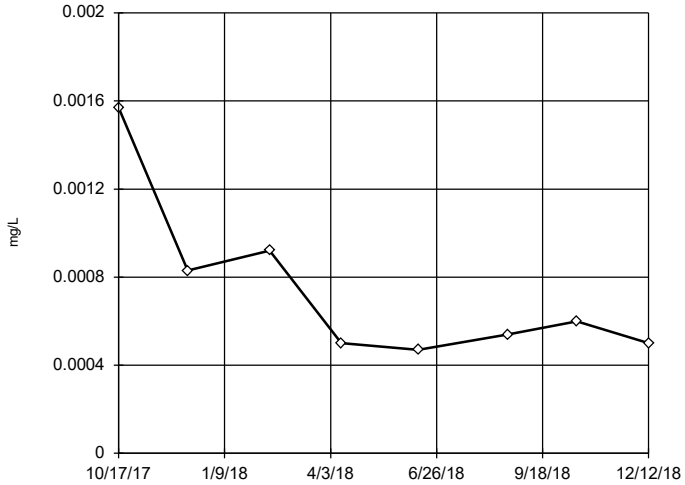
High cutoff = 0.00598, low cutoff = -0.002525, based on IQR multiplier of 3.

Constituent: Molybdenum Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

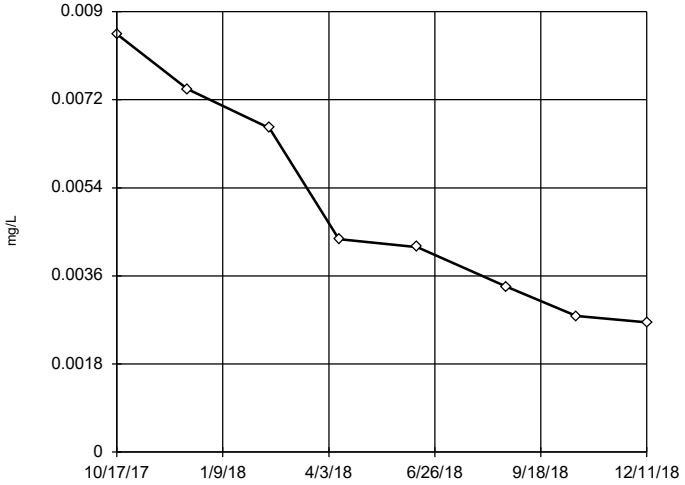
High cutoff = 0.002, low cutoff = -0.000625, based on IQR multiplier of 3.

Constituent: Molybdenum Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

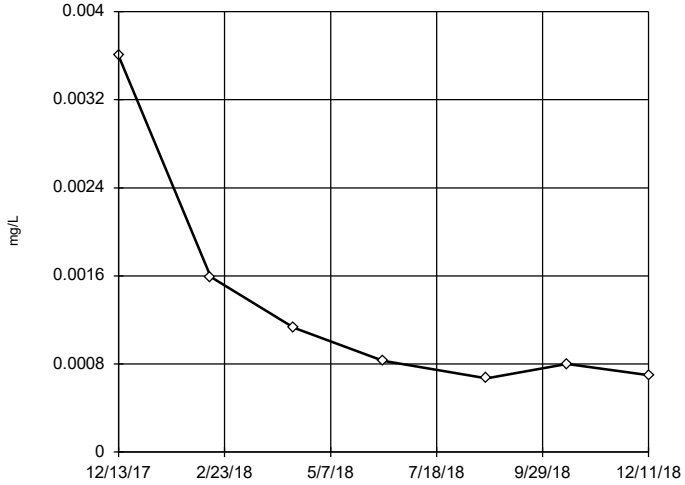
High cutoff = 0.01884, low cutoff = -0.00874, based on IQR multiplier of 3.

Constituent: Molybdenum Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

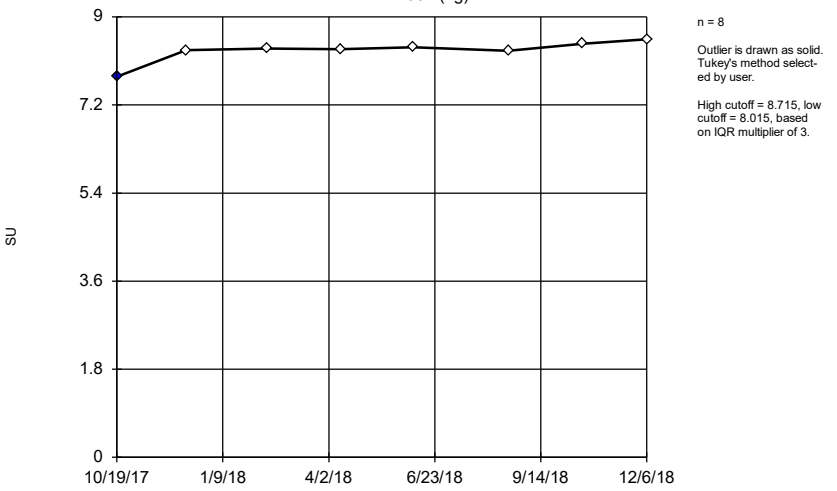
No outliers found. Tukey's method selected by user.

High cutoff = 0.00426, low cutoff = -0.00197, based on IQR multiplier of 3.

Constituent: Molybdenum Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

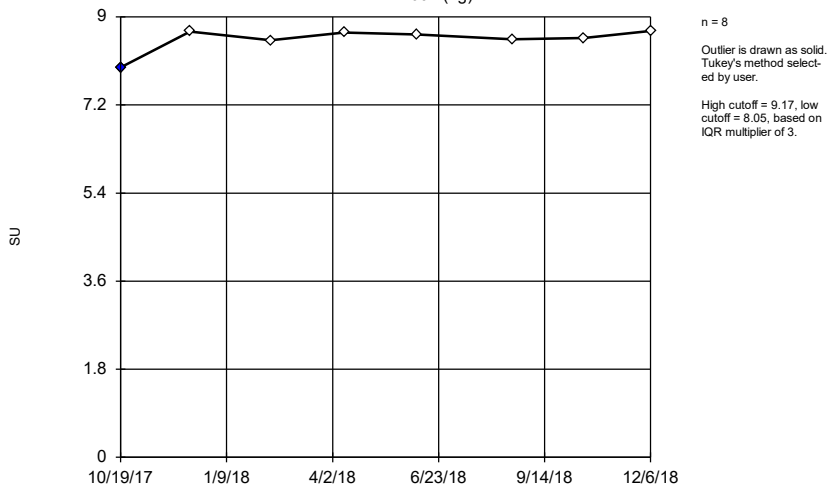
High cutoff = 8.715, low cutoff = 8.015, based on IQR multiplier of 3.

Constituent: pH Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

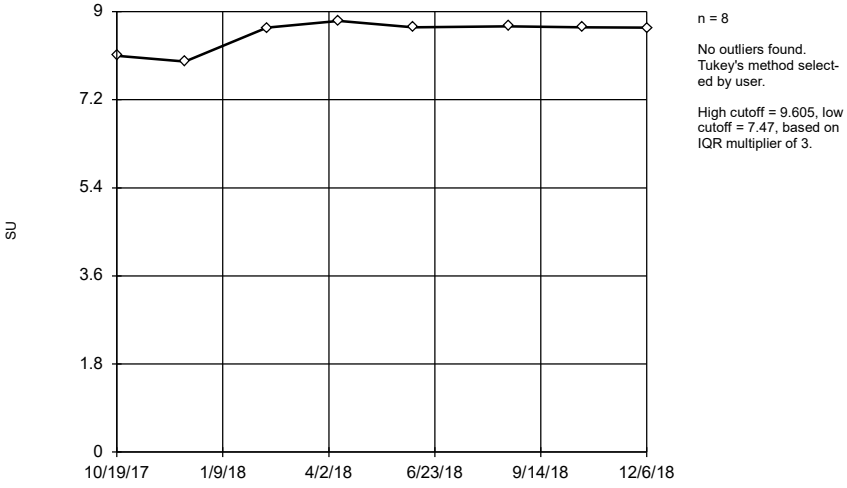
High cutoff = 9.17, low cutoff = 8.05, based on IQR multiplier of 3.

Constituent: pH Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

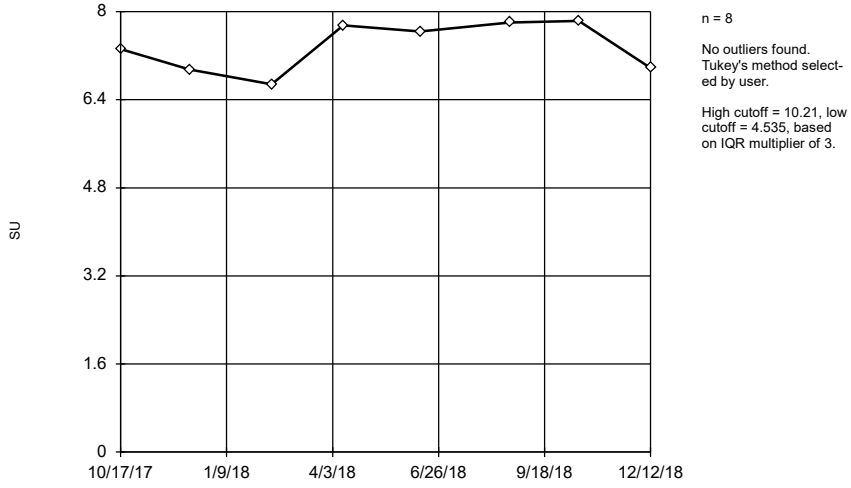
High cutoff = 9.605, low cutoff = 7.47, based on IQR multiplier of 3.

Constituent: pH Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

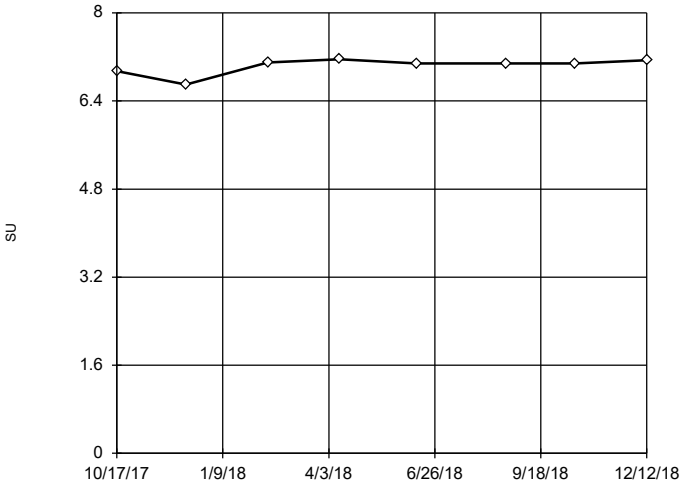
No outliers found. Tukey's method selected by user.

High cutoff = 10.21, low cutoff = 4.535, based on IQR multiplier of 3.

Constituent: pH Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

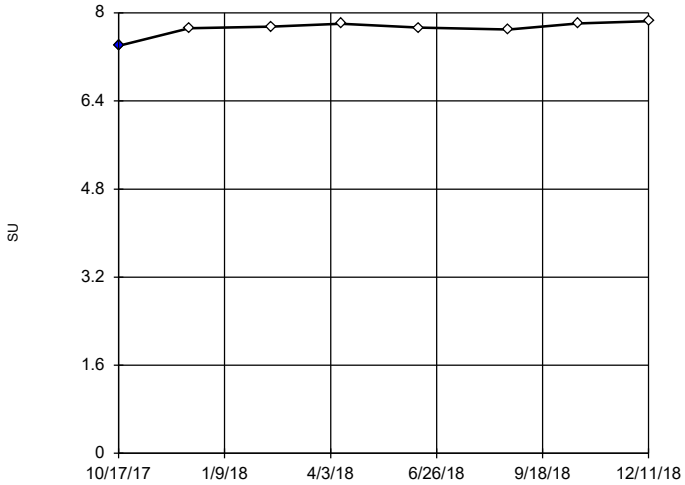
High cutoff = 7.45, low cutoff = 6.68, based on IQR multiplier of 3.

Constituent: pH Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

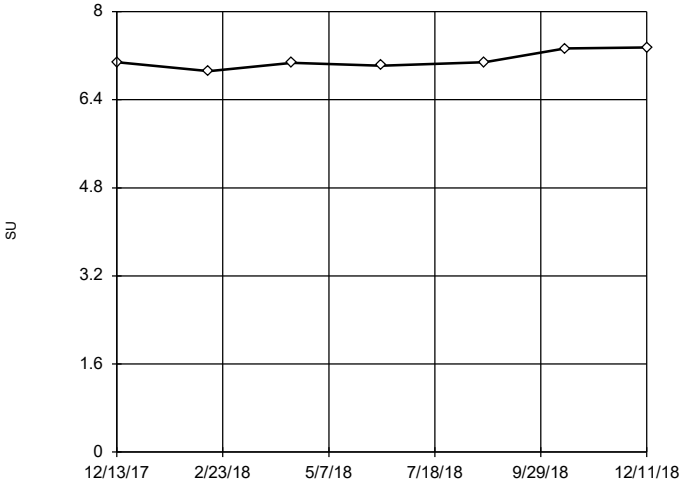
High cutoff = 8.09, low cutoff = 7.425, based on IQR multiplier of 3.

Constituent: pH Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

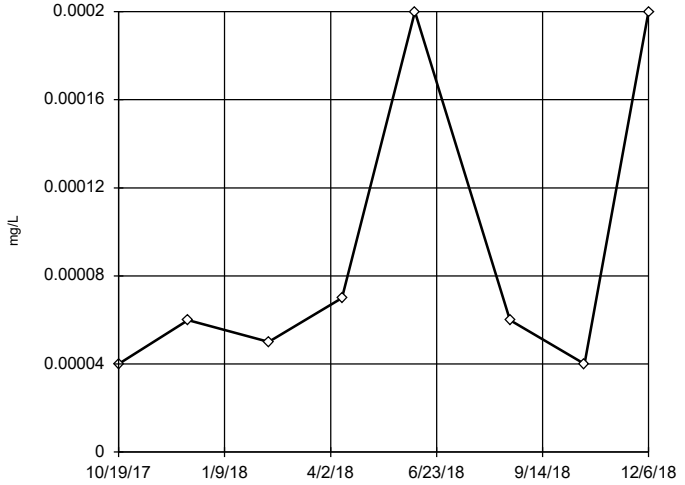
High cutoff = 8.26, low cutoff = 6.09, based on IQR multiplier of 3.

Constituent: pH Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

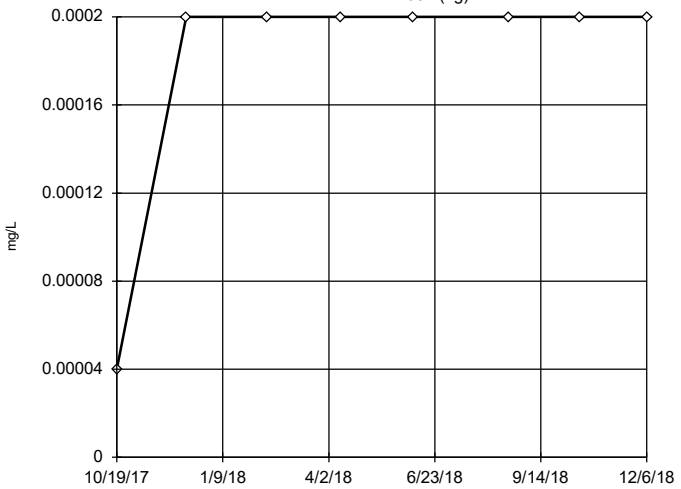
No outliers found. Tukey's method selected by user.

High cutoff = 0.000405, low cutoff = -0.000225, based on IQR multiplier of 3.

Constituent: Selenium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method selected by user.

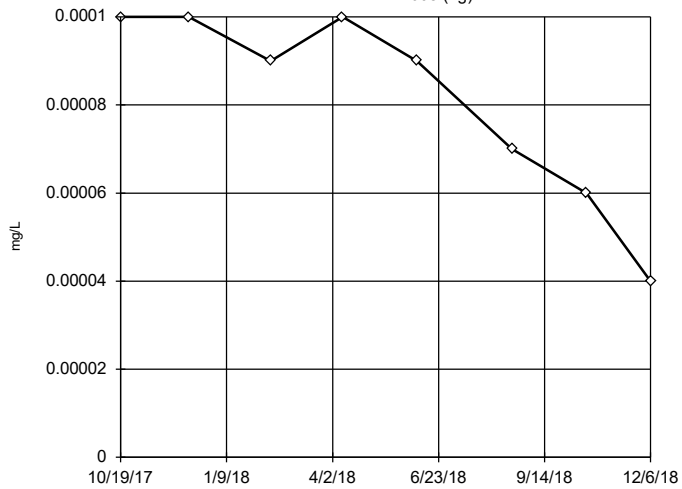
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Selenium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

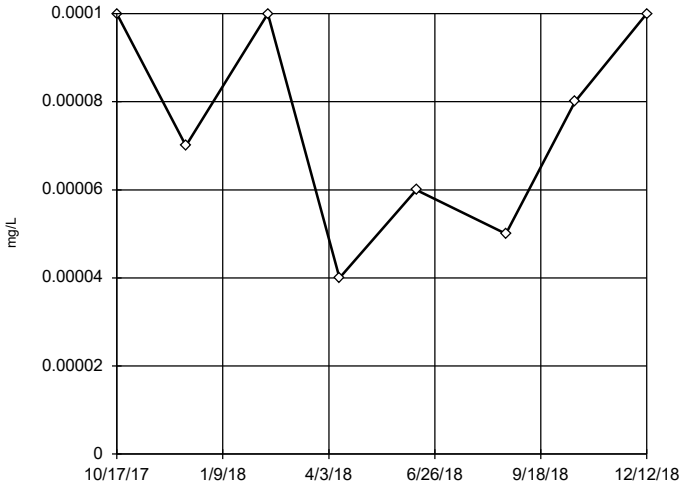
High cutoff = 0.000205, low cutoff = -0.00004, based on IQR multiplier of 3.

Constituent: Selenium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

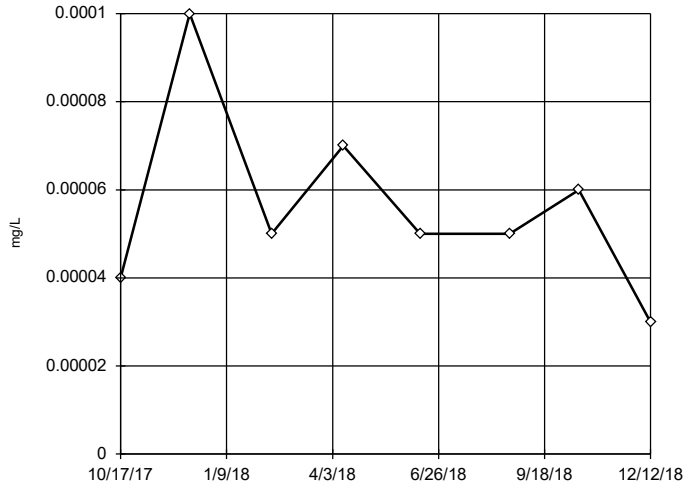
High cutoff = 0.000235, low cutoff = -0.00008, based on IQR multiplier of 3.

Constituent: Selenium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

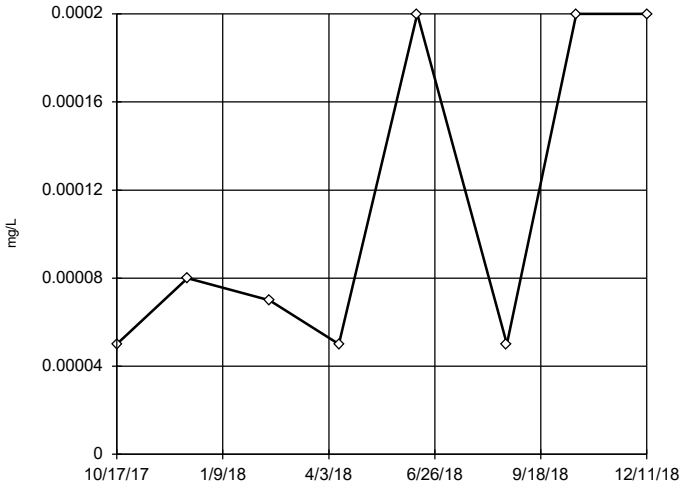
No outliers found. Tukey's method selected by user.

High cutoff = 0.000125, low cutoff = -0.000015, based on IQR multiplier of 3.

Constituent: Selenium Analysis Run 4/17/2019 3:41 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

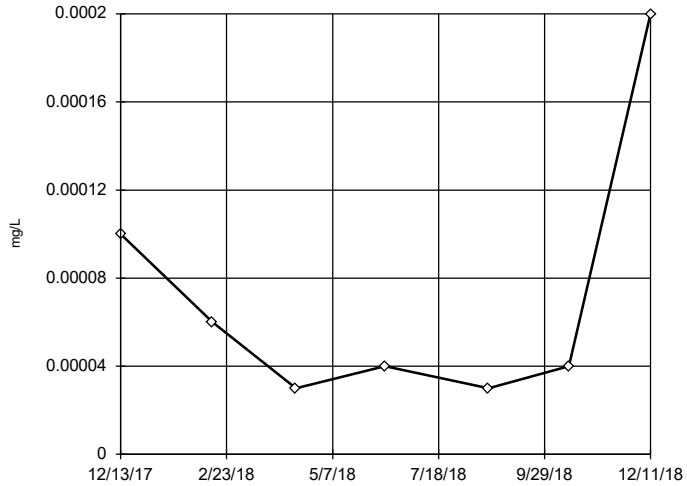
High cutoff = 0.00065, low cutoff = -0.0004, based on IQR multiplier of 3.

Constituent: Selenium Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

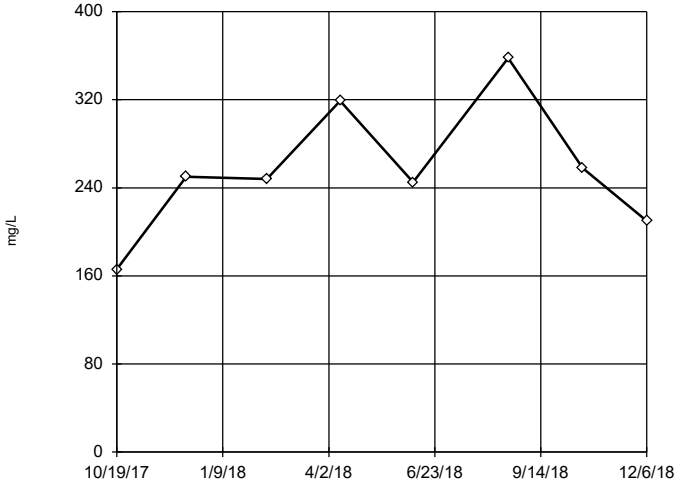
High cutoff = 0.00031, low cutoff = -0.00018, based on IQR multiplier of 3.

Constituent: Selenium Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

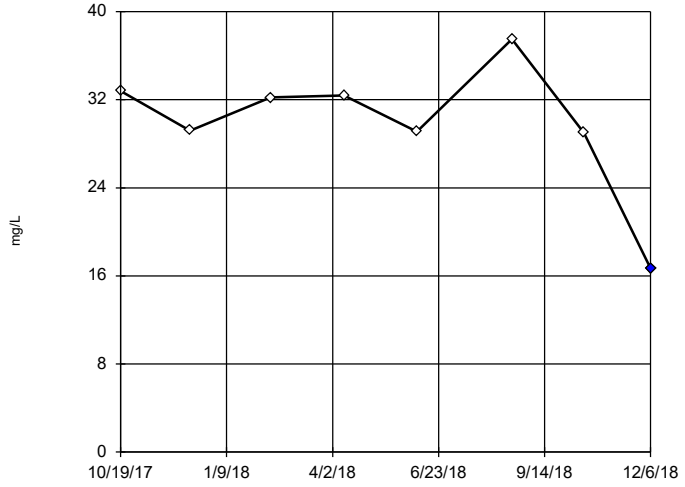
High cutoff = 471.5, low cutoff = 44.5, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

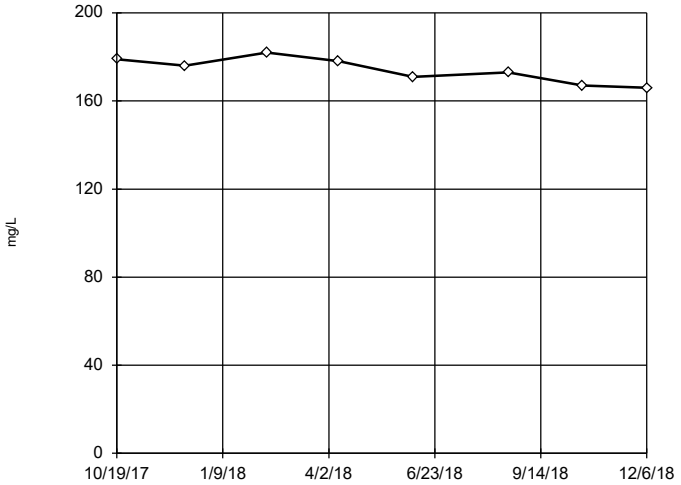
Outlier is drawn as solid. Tukey's method selected by user.

High cutoff = 43.25, low cutoff = 18.4, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

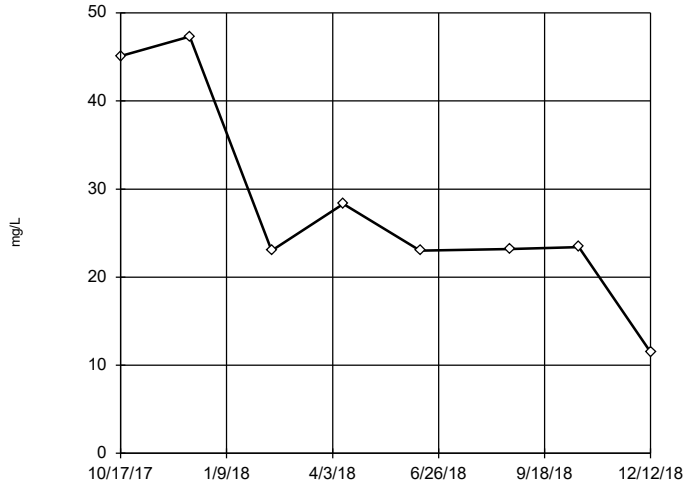
High cutoff = 207, low cutoff = 140.5, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

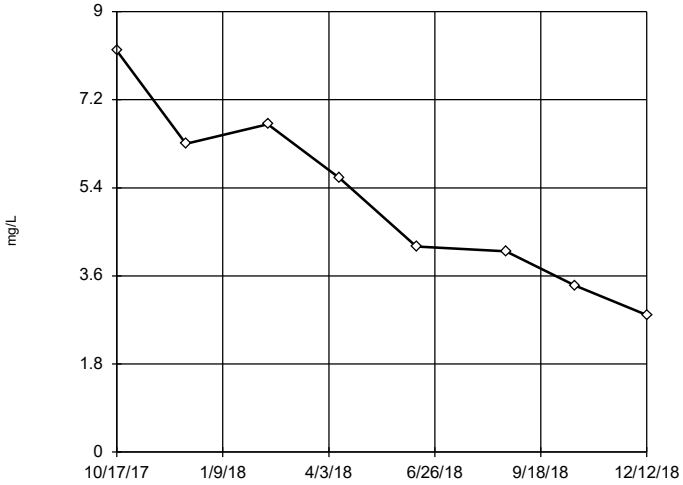
High cutoff = 77.8, low cutoff = -18.1, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

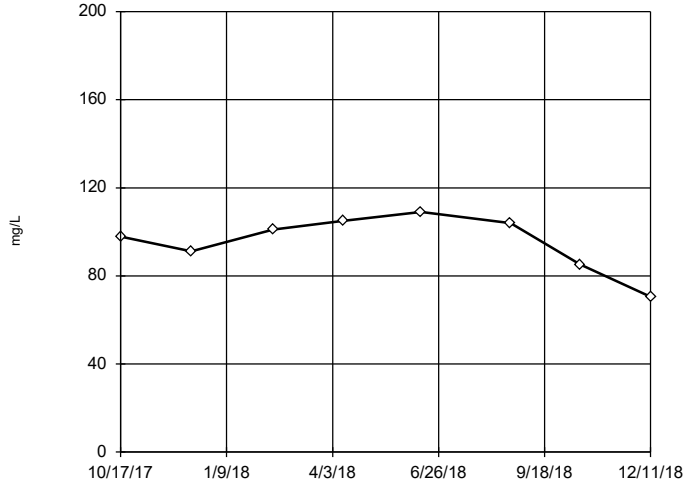
High cutoff = 14.75, low cutoff = -4.5, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

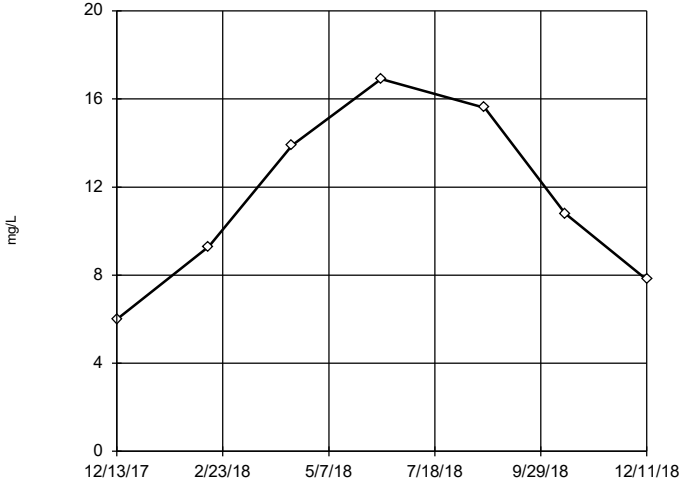
No outliers found. Tukey's method selected by user.

High cutoff = 153.6, low cutoff = 39.1, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1612



n = 7

No outliers found. Tukey's method selected by user.

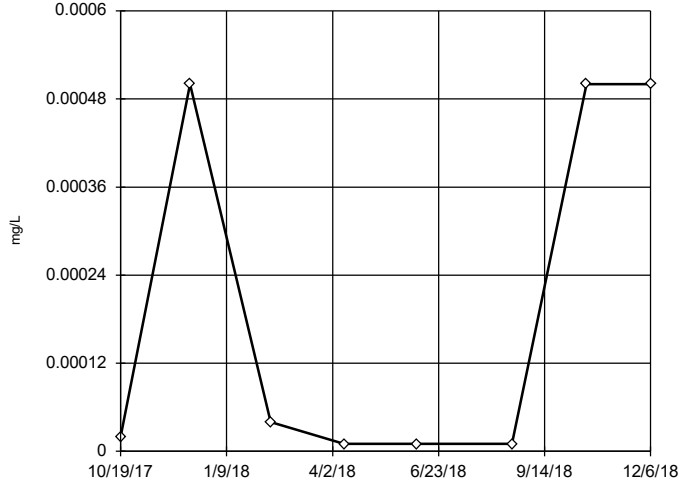
High cutoff = 39, low cutoff = -15.6, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

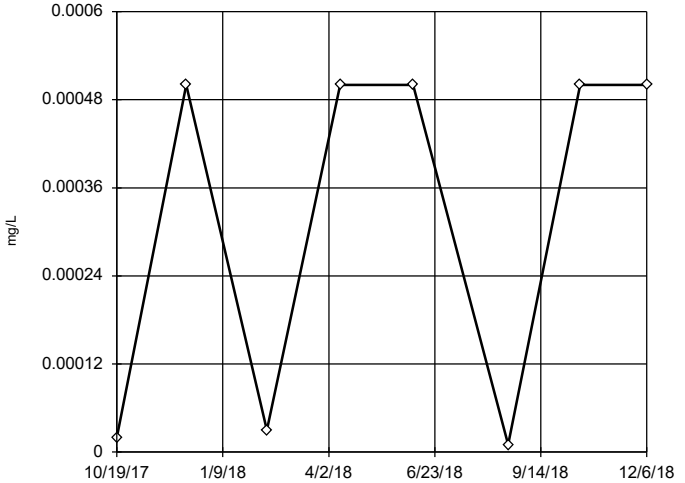
High cutoff = 0.00197, low cutoff = -0.00146, based on IQR multiplier of 3.

Constituent: Thallium Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method selected by user.

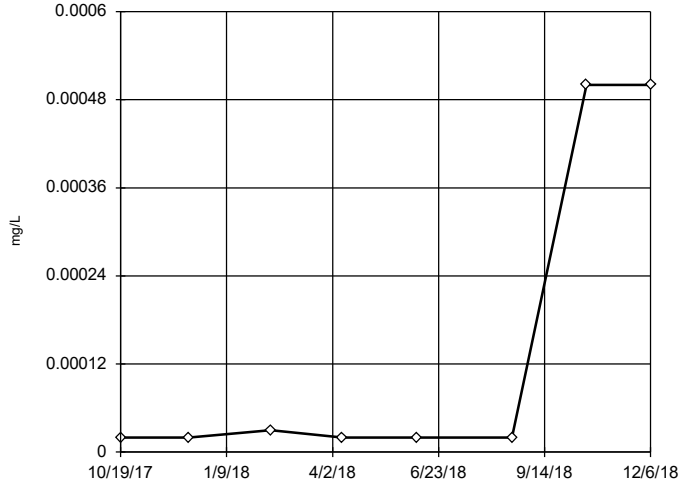
High cutoff = 0.001925, low cutoff = -0.0014, based on IQR multiplier of 3.

Constituent: Thallium Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

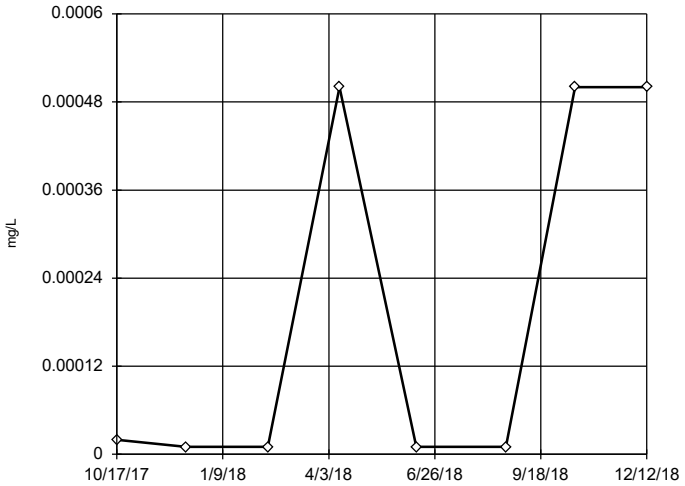
No outliers found. Tukey's method selected by user.

High cutoff = 0.001, low cutoff = -0.000715, based on IQR multiplier of 3.

Constituent: Thallium Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1603



n = 8

No outliers found. Tukey's method selected by user.

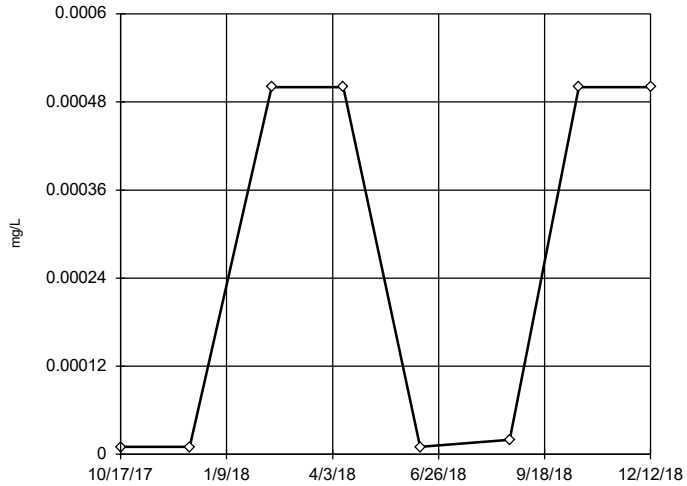
High cutoff = 0.00197, low cutoff = -0.00146, based on IQR multiplier of 3.

Constituent: Thallium Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

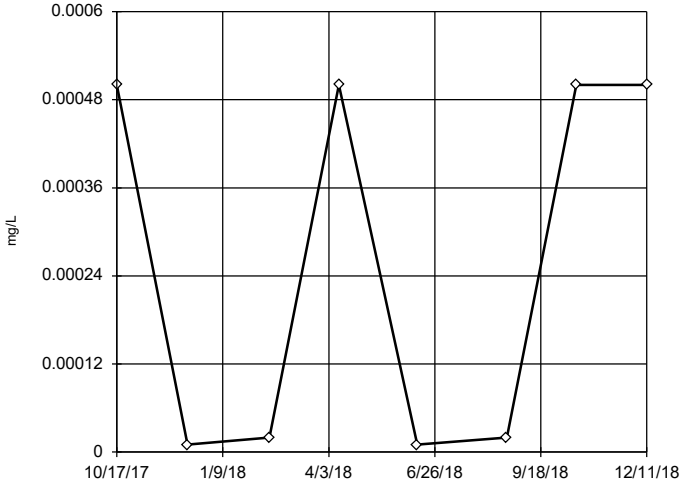
High cutoff = 0.00197, low cutoff = -0.00146, based on IQR multiplier of 3.

Constituent: Thallium Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

No outliers found. Tukey's method selected by user.

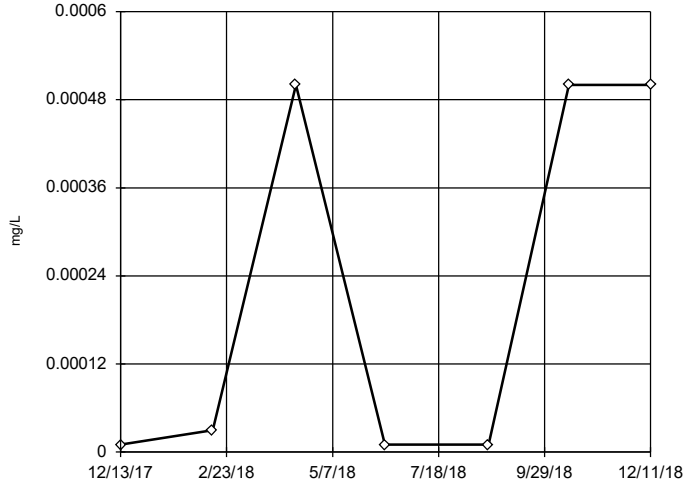
High cutoff = 0.001955, low cutoff = -0.00144, based on IQR multiplier of 3.

Constituent: Thallium Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

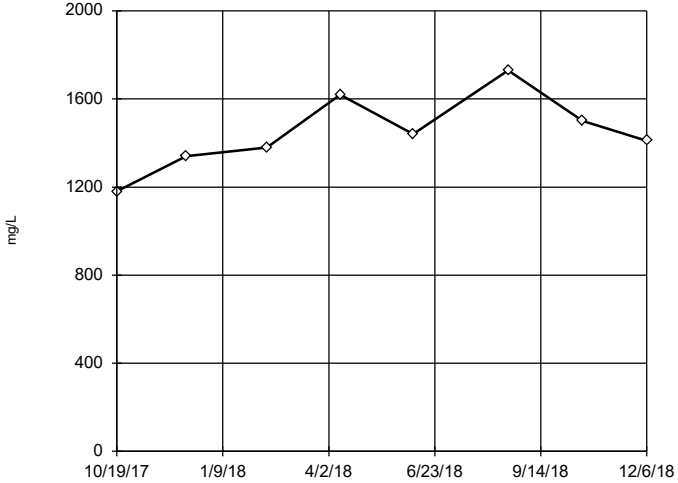
No outliers found. Tukey's method selected by user.

High cutoff = 0.00197, low cutoff = -0.00146, based on IQR multiplier of 3.

Constituent: Thallium Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1601 (bg)



n = 8

No outliers found. Tukey's method selected by user.

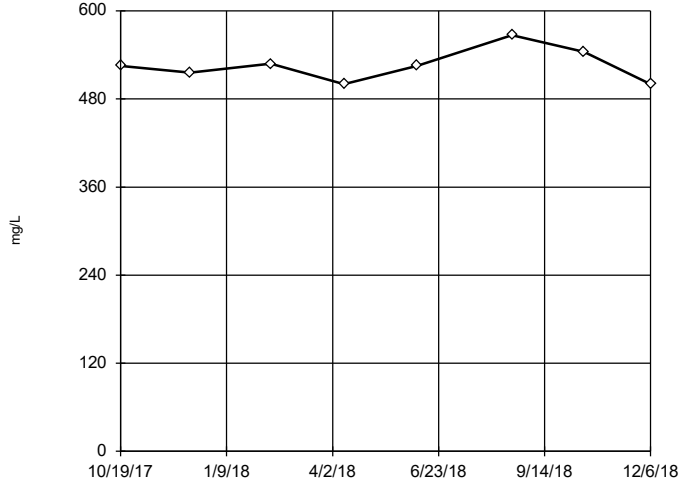
High cutoff = 2160, low cutoff = 760, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1602 (bg)



n = 8

No outliers found. Tukey's method selected by user.

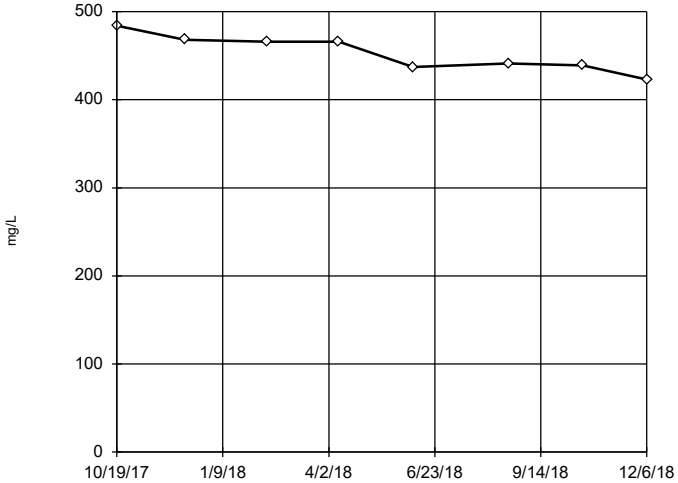
High cutoff = 620, low cutoff = 424, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1608 (bg)



n = 8

No outliers found. Tukey's method selected by user.

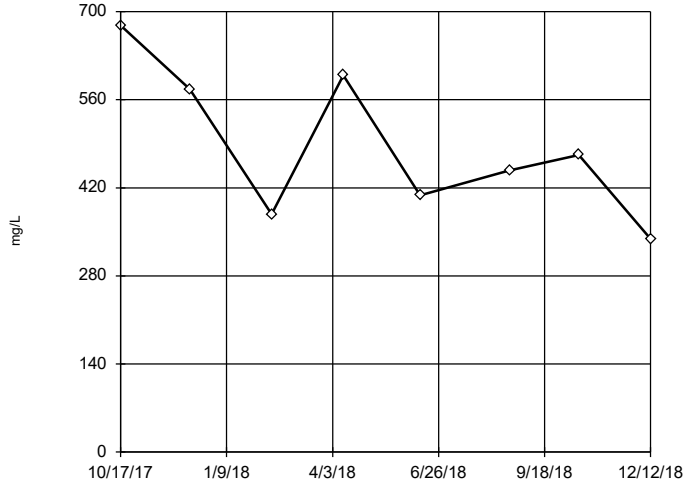
High cutoff = 554, low cutoff = 351, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1603



n = 8

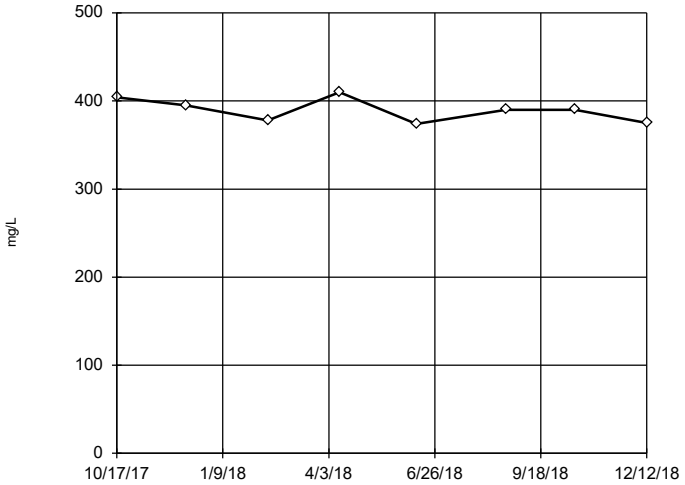
No outliers found. Tukey's method selected by user.

High cutoff = 1173, low cutoff = -192, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Tukey's Outlier Screening

MW-1604



n = 8

No outliers found. Tukey's method selected by user.

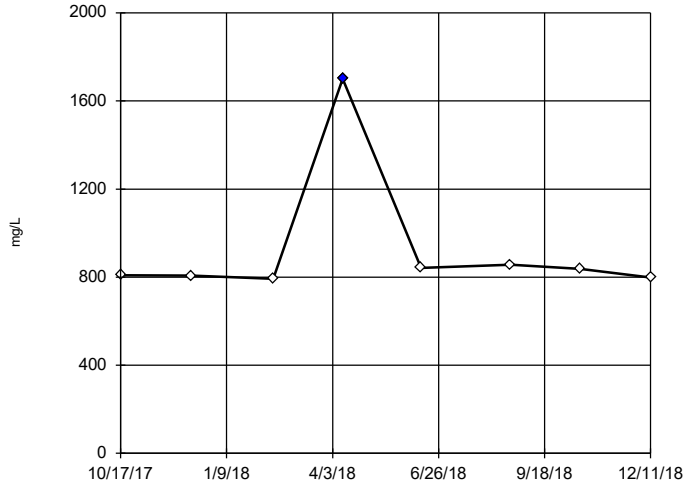
High cutoff = 468.5, low cutoff = 307.5, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1605



n = 8

Outlier is drawn as solid. Tukey's method selected by user.

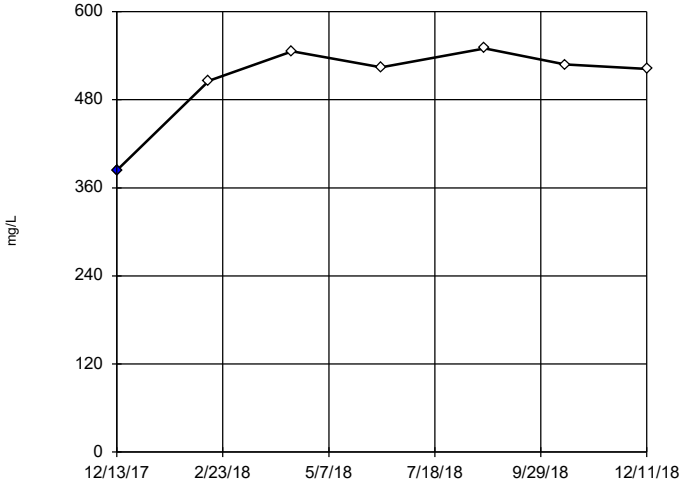
High cutoff = 990.5, low cutoff = 661.5, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Tukey's Outlier Screening

MW-1612



n = 7

Outlier is drawn as solid. Tukey's method selected by user.

High cutoff = 666, low cutoff = 386, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:42 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Trend Test Summary Table - Significant Results (Dumps Fault)

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/14/2019, 12:46 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Calcium (mg/L)	**MW-1611 (bg)**	**-86.74**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Chloride (mg/L)	**MW-1611 (bg)**	**-93.56**	**-26**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Cobalt (mg/L)	**MW-1611 (bg)**	**-0.00009781**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride (mg/L)	**MW-1611 (bg)**	**0.4001**	**22**	**21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Lithium (mg/L)	**MW-1610**	**0.07085**	**26**	**21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	**MW-1611 (bg)**	**-1249**	**-24**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids (mg/L)	**MW-1611 (bg)**	**-1948**	**-26**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**

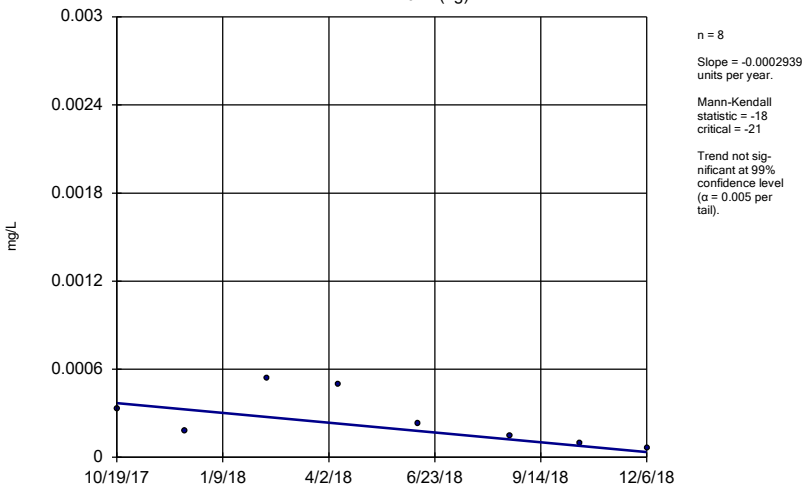
Trend Test Summary Table - All Results (Dumps Fault)

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/14/2019, 12:46 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Antimony (mg/L)	MW-1611 (bg)	-0.0002939	-18	-21	No	8	0	n/a	n/a	0.01	NP
Antimony (mg/L)	MW-1610	-0.00008493	-17	-21	No	8	12.5	n/a	n/a	0.01	NP
Arsenic (mg/L)	MW-1611 (bg)	-0.0005023	0	21	No	8	0	n/a	n/a	0.01	NP
Arsenic (mg/L)	MW-1610	-0.0001598	-2	-21	No	8	0	n/a	n/a	0.01	NP
Barium (mg/L)	MW-1611 (bg)	0.008617	2	21	No	8	0	n/a	n/a	0.01	NP
Barium (mg/L)	MW-1610	-0.009727	-12	-21	No	8	0	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1611 (bg)	-0.000001521	-4	-21	No	8	37.5	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1610	0	7	21	No	8	50	n/a	n/a	0.01	NP
Boron (mg/L)	MW-1611 (bg)	0.1247	12	21	No	8	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-1610	-0.03672	-10	-21	No	8	0	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1611 (bg)	0	7	21	No	8	87.5	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1610	0.00001872	13	21	No	8	62.5	n/a	n/a	0.01	NP
Calcium (mg/L)	**MW-1611 (bg)**	**-86.74**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Calcium (mg/L)	MW-1610	-1.951	-13	-21	No	8	0	n/a	n/a	0.01	NP
Chloride (mg/L)	**MW-1611 (bg)**	**-93.56**	**-26**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Chloride (mg/L)	MW-1610	-0.6326	-11	-21	No	8	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1611 (bg)	-0.0004297	-14	-21	No	8	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1610	0.00008172	18	21	No	8	0	n/a	n/a	0.01	NP
Cobalt (mg/L)	**MW-1611 (bg)**	**-0.00009781**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Cobalt (mg/L)	MW-1610	-0.002953	-14	-21	No	8	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1611 (bg)	-0.4346	-4	-21	No	8	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1610	0.5036	6	21	No	8	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	**MW-1611 (bg)**	**0.4001**	**22**	**21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Fluoride (mg/L)	MW-1610	0.0369	20	21	No	8	0	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1611 (bg)	-0.00003276	-10	-21	No	8	0	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1610	-0.008233	-16	-21	No	8	0	n/a	n/a	0.01	NP
Lithium (mg/L)	MW-1611 (bg)	-0.05907	-15	-21	No	8	0	n/a	n/a	0.01	NP
Lithium (mg/L)	**MW-1610**	**0.07085**	**26**	**21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Mercury (mg/L)	MW-1611 (bg)	0	5	21	No	8	87.5	n/a	n/a	0.01	NP
Mercury (mg/L)	MW-1610	0	5	21	No	8	87.5	n/a	n/a	0.01	NP
Molybdenum (mg/L)	MW-1611 (bg)	-0.002242	-16	-21	No	8	0	n/a	n/a	0.01	NP
Molybdenum (mg/L)	MW-1610	0.02953	10	21	No	8	0	n/a	n/a	0.01	NP
pH (SU)	MW-1611 (bg)	0.3713	16	21	No	8	0	n/a	n/a	0.01	NP
pH (SU)	MW-1610	0.4452	20	21	No	8	0	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-1611 (bg)	-0.0000478	-18	-21	No	8	0	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-1610	-0.0001979	-14	-21	No	8	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	**MW-1611 (bg)**	**-1249**	**-24**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	MW-1610	-3.366	-6	-21	No	8	0	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1611 (bg)	0	5	21	No	8	62.5	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1610	0.00002524	11	21	No	8	25	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	**MW-1611 (bg)**	**-1948**	**-26**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids (mg/L)	MW-1610	-5.545	-7	-21	No	8	0	n/a	n/a	0.01	NP

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -0.0002939 units per year.

Mann-Kendall statistic = -18
critical = -21

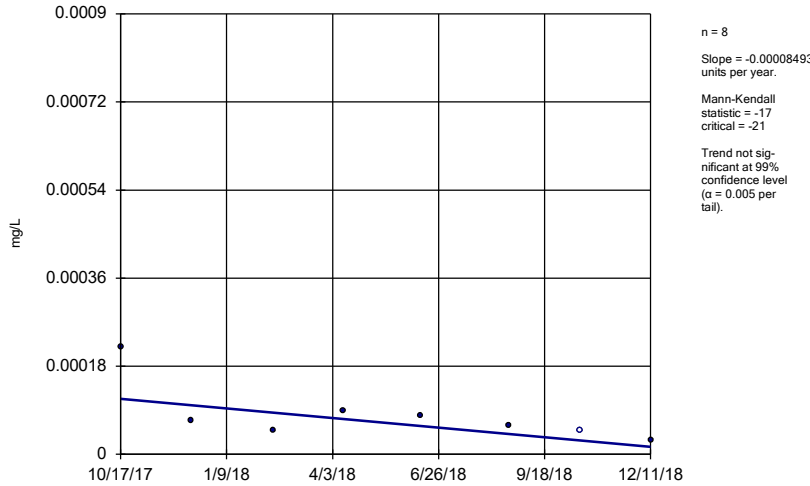
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Antimony Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1610



n = 8

Slope = -0.00008493 units per year.

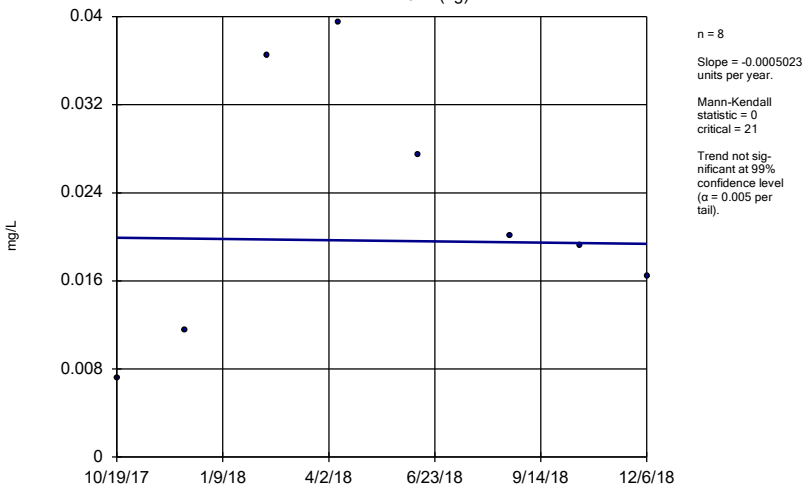
Mann-Kendall statistic = -17
critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Antimony Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -0.0005023 units per year.

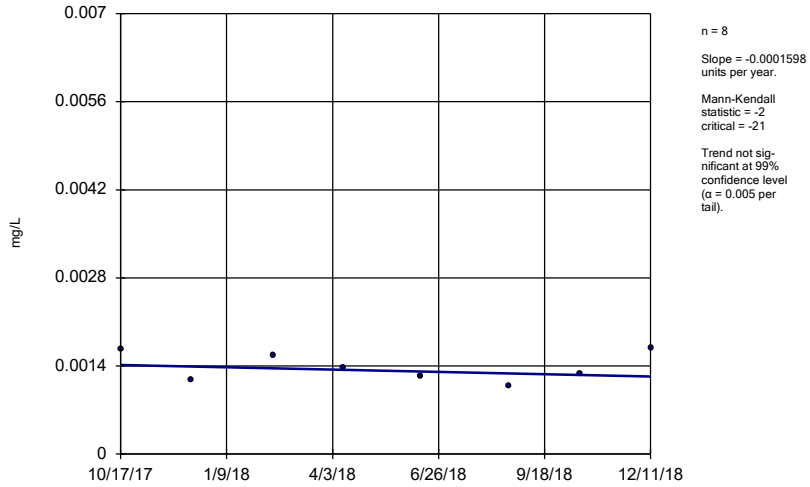
Mann-Kendall statistic = 0
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Arsenic Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1610



n = 8

Slope = -0.0001598 units per year.

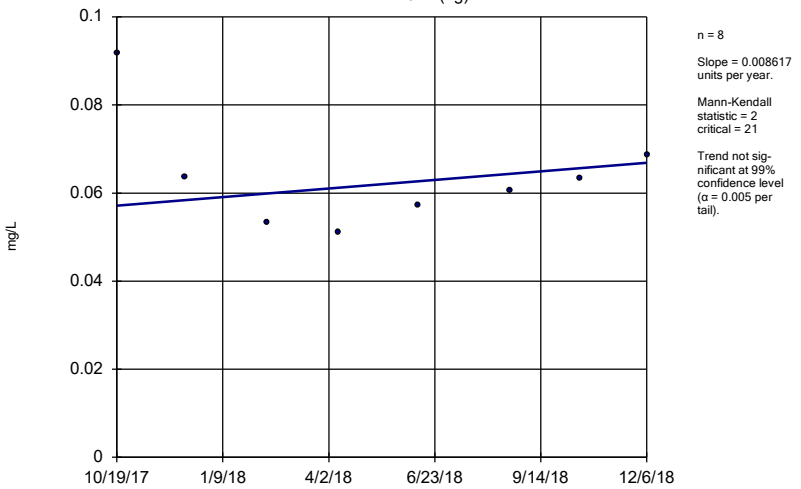
Mann-Kendall statistic = -2
critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Arsenic Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = 0.008617 units per year.

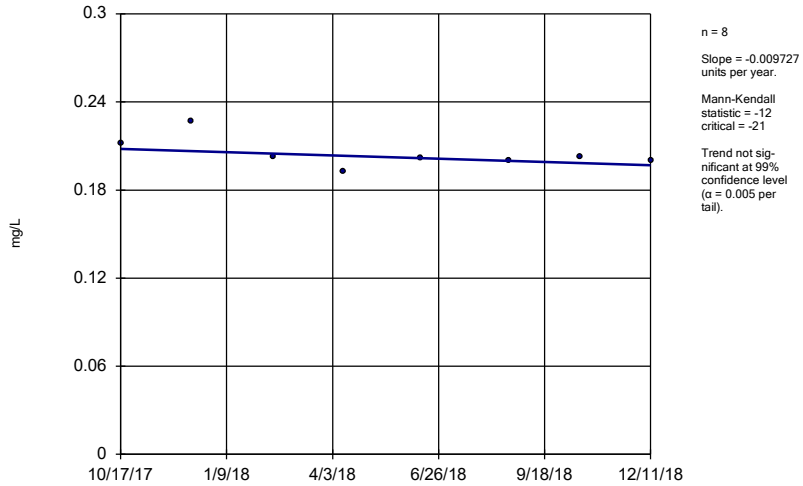
Mann-Kendall statistic = 2
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1610



n = 8

Slope = -0.009727 units per year.

Mann-Kendall statistic = -12
critical = -21

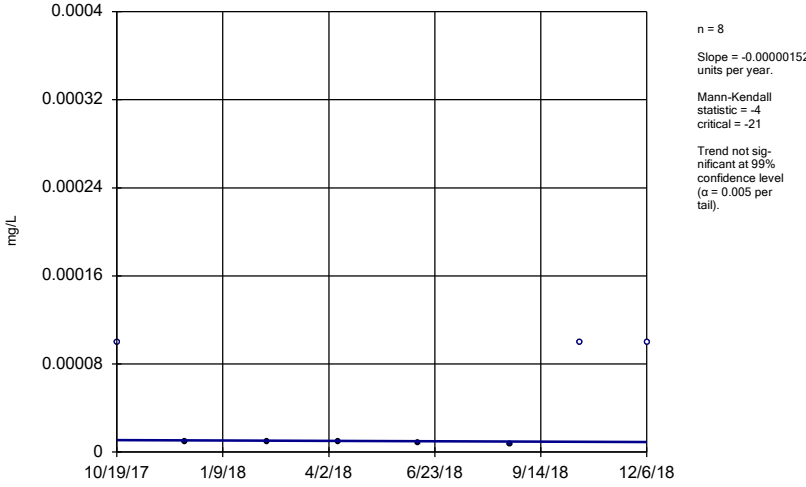
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -0.000001521 units per year.

Mann-Kendall statistic = -4
critical = -21

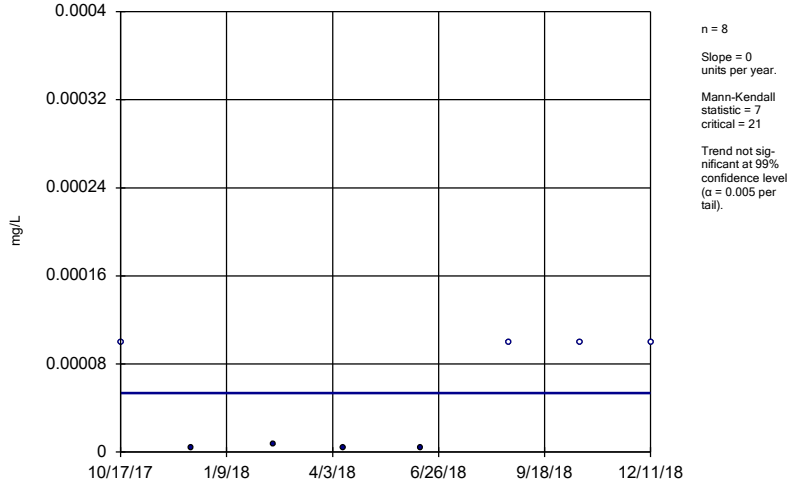
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Beryllium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1610



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 7
critical = 21

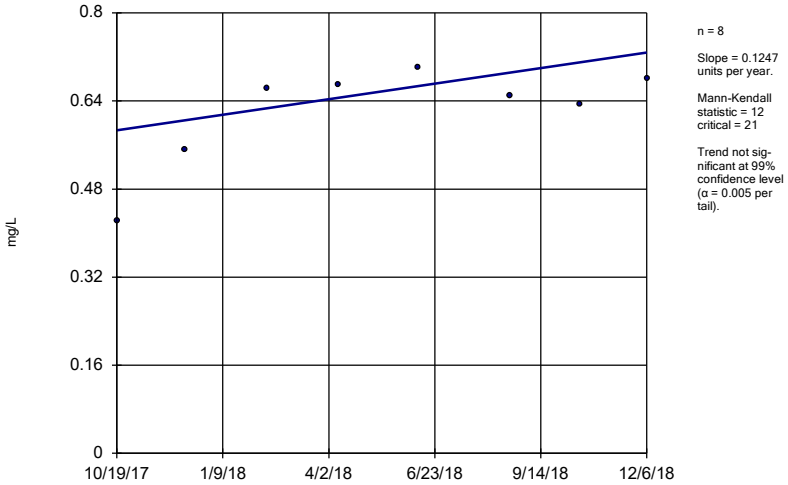
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Beryllium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1611 (bg)



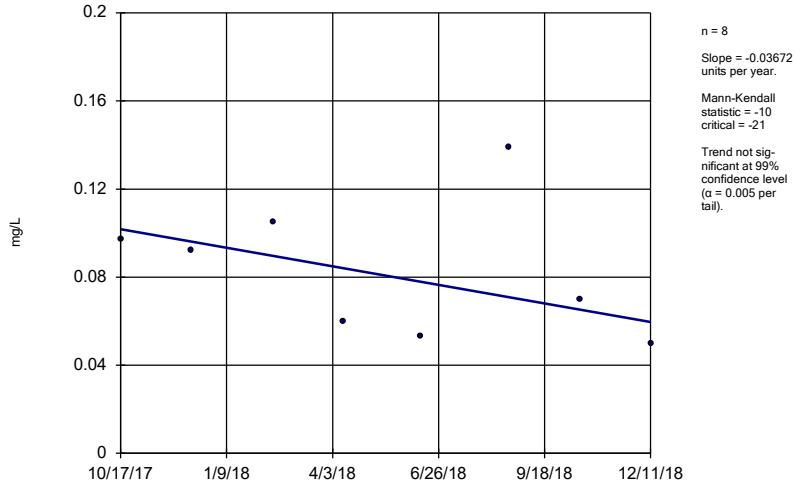
Constituent: Boron Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



Constituent: Boron Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR

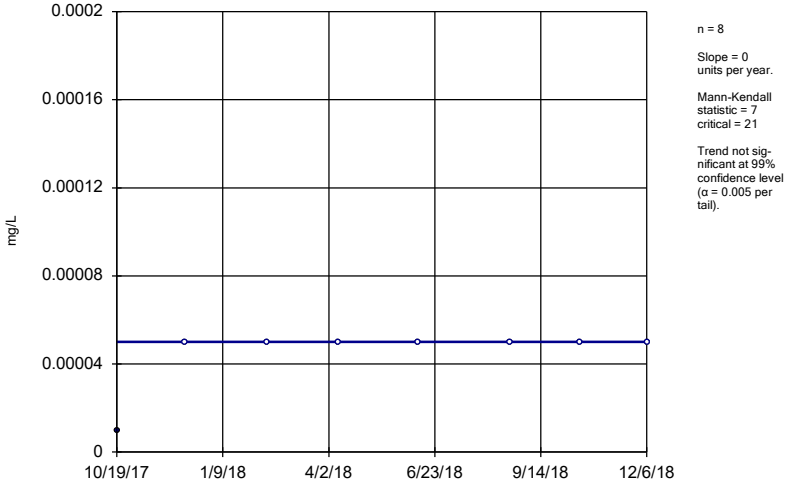
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1611 (bg)



Constituent: Cadmium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR

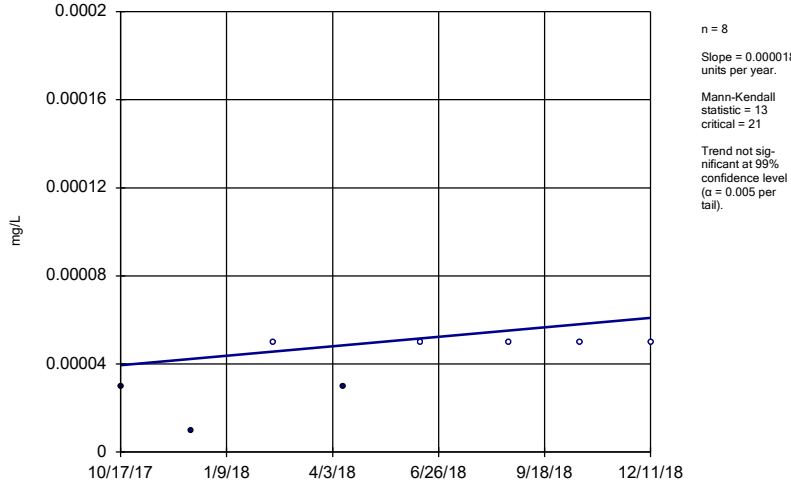
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1610

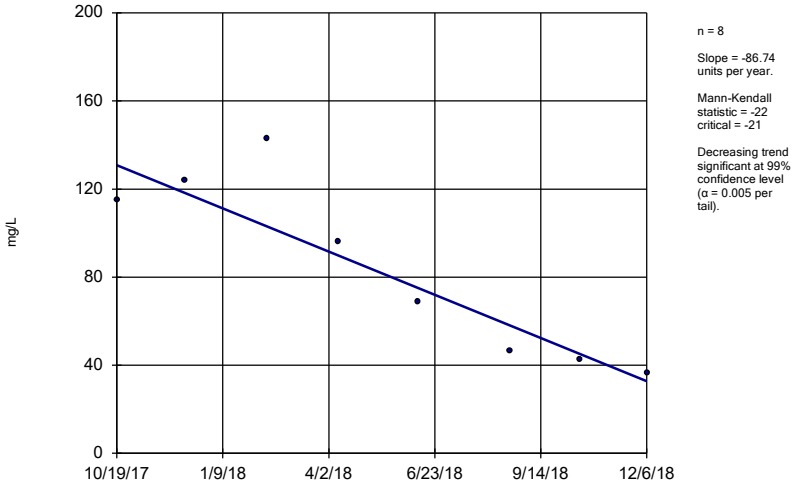


Constituent: Cadmium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -86.74 units per year.

Mann-Kendall statistic = -22
critical = -21

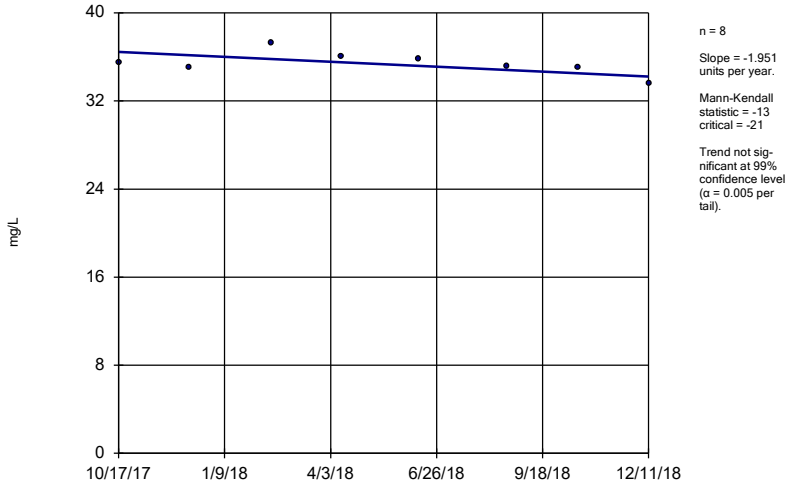
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = -1.951 units per year.

Mann-Kendall statistic = -13
critical = -21

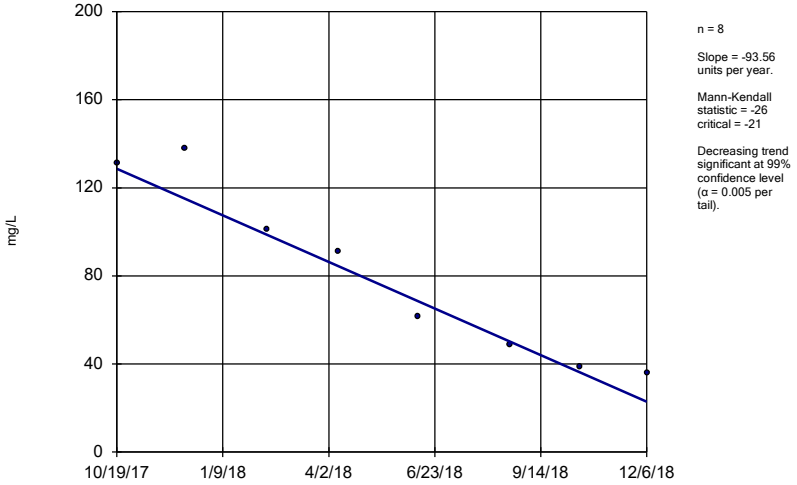
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -93.56 units per year.

Mann-Kendall statistic = -26
critical = -21

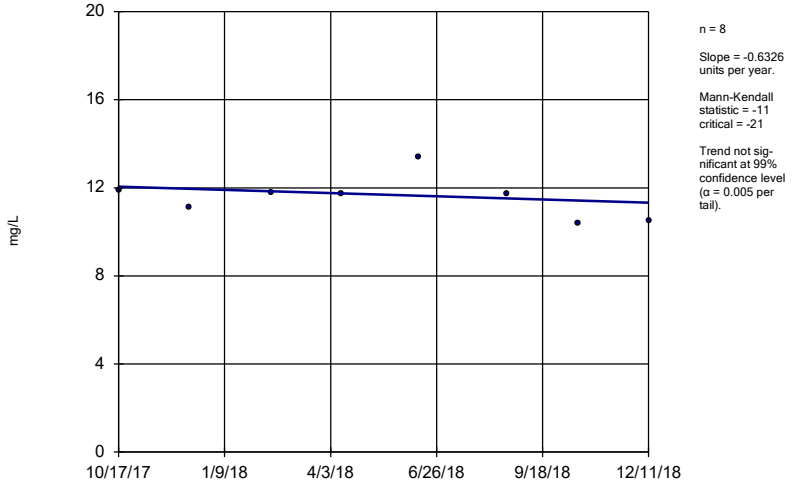
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = -0.6326 units per year.

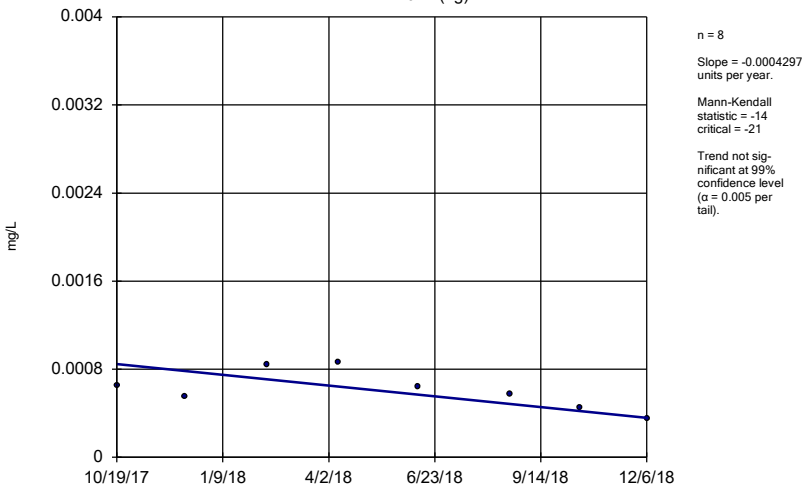
Mann-Kendall statistic = -11
critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -0.0004297 units per year.

Mann-Kendall statistic = -14 critical = -21

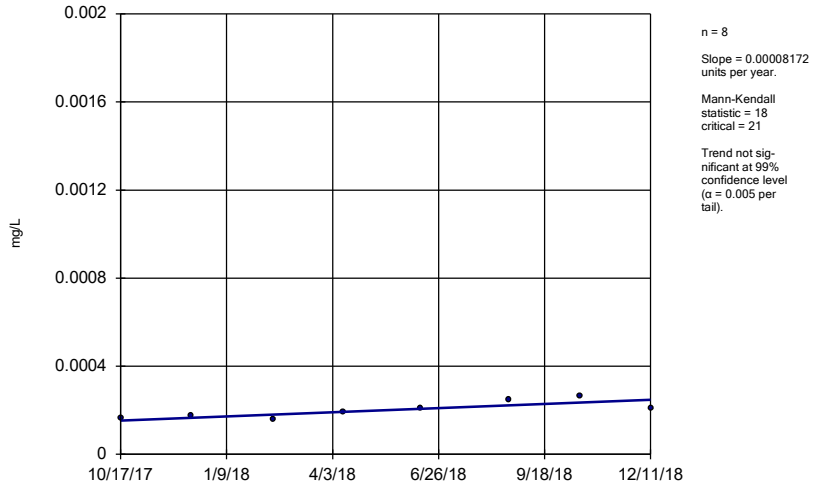
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chromium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = 0.00008172 units per year.

Mann-Kendall statistic = 18 critical = 21

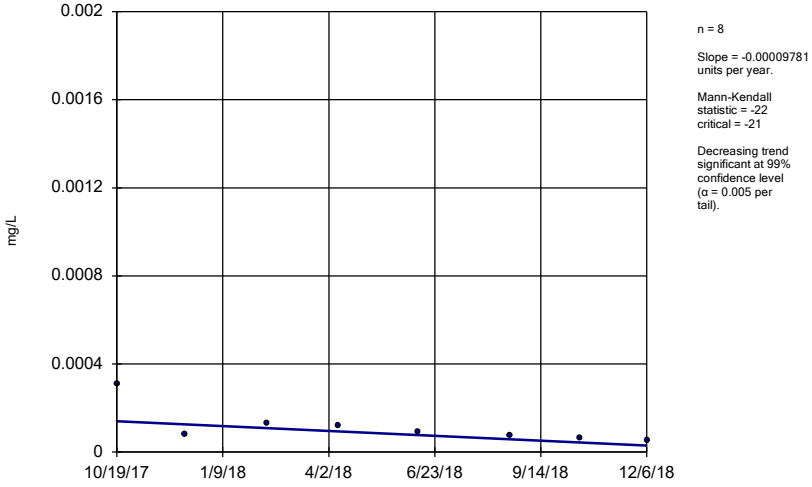
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chromium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -0.00009781 units per year.

Mann-Kendall statistic = -22 critical = -21

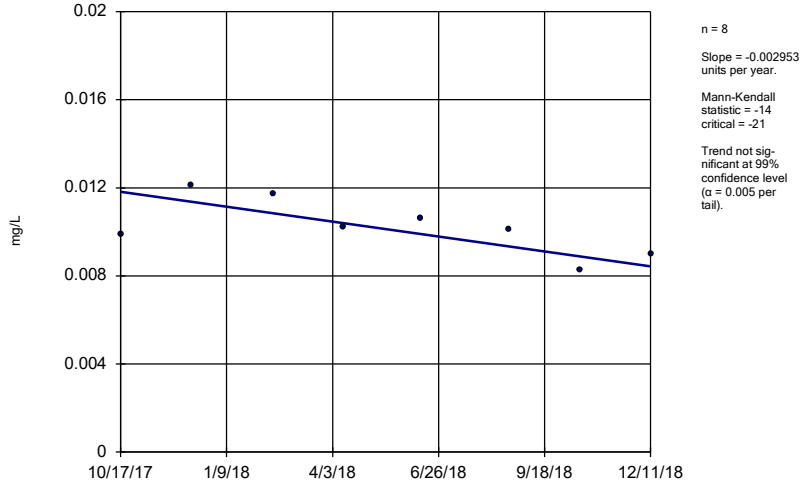
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cobalt Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = -0.002953 units per year.

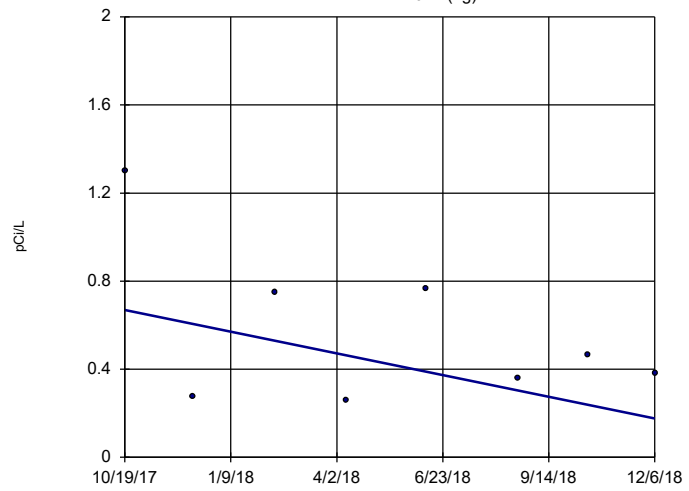
Mann-Kendall statistic = -14 critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cobalt Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -0.4346 units per year.

Mann-Kendall statistic = -4 critical = -21

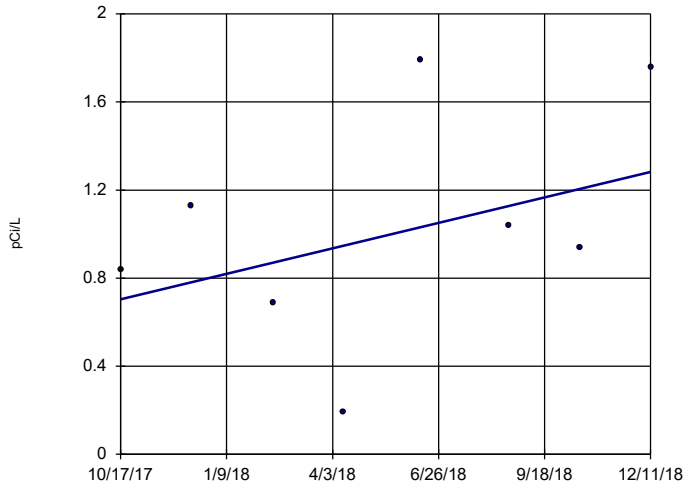
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Combined Radium 226 + 228 Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps F
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = 0.5036 units per year.

Mann-Kendall statistic = 6 critical = 21

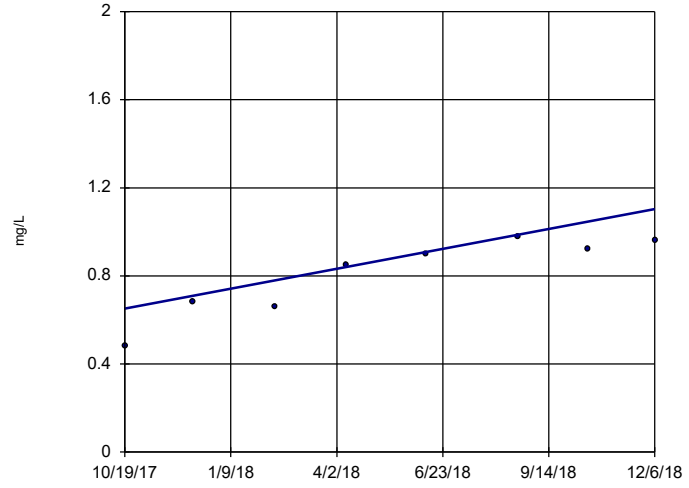
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Combined Radium 226 + 228 Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps F
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = 0.4001 units per year.

Mann-Kendall statistic = 22 critical = 21

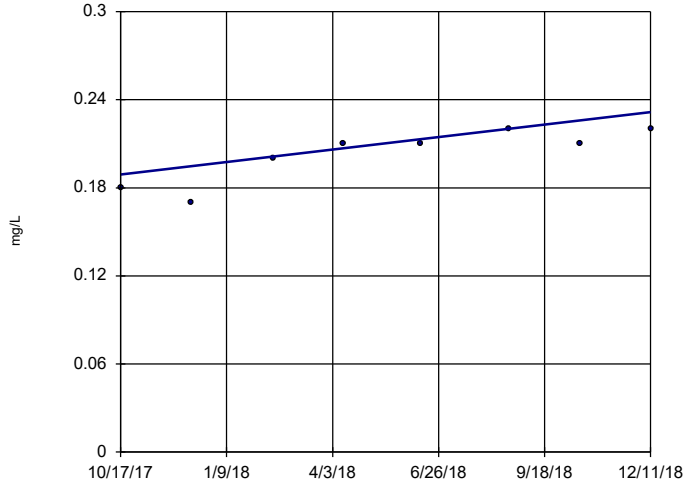
Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = 0.0369 units per year.

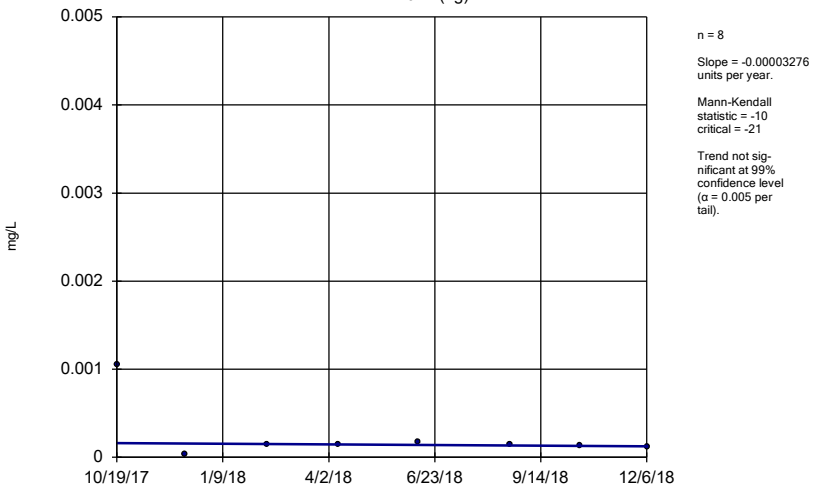
Mann-Kendall statistic = 20 critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -0.00003276 units per year.

Mann-Kendall statistic = -10
critical = -21

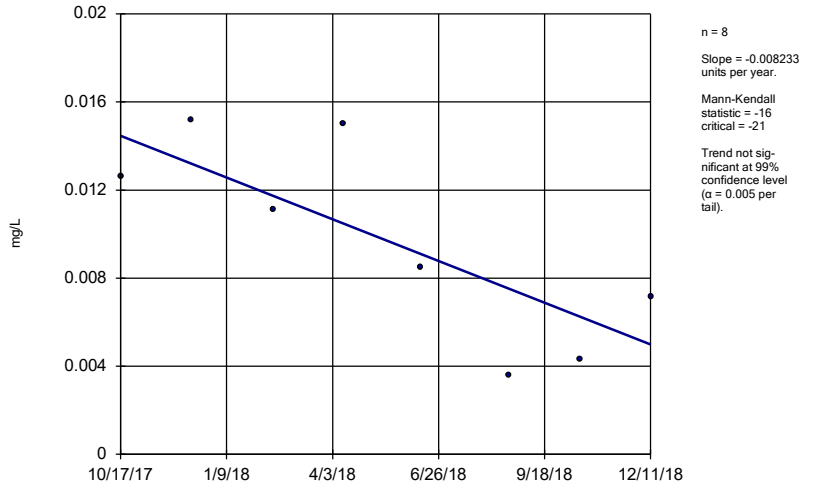
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lead Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = -0.008233 units per year.

Mann-Kendall statistic = -16
critical = -21

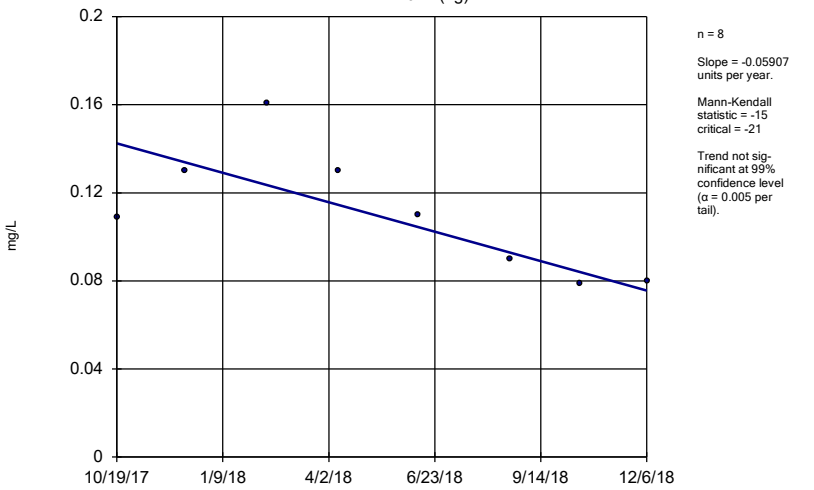
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lead Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -0.05907 units per year.

Mann-Kendall statistic = -15
critical = -21

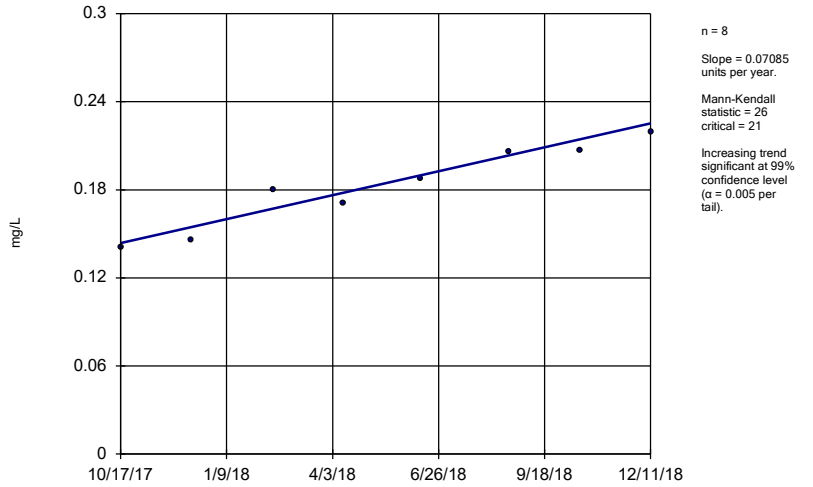
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lithium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = 0.07085 units per year.

Mann-Kendall statistic = 26
critical = 21

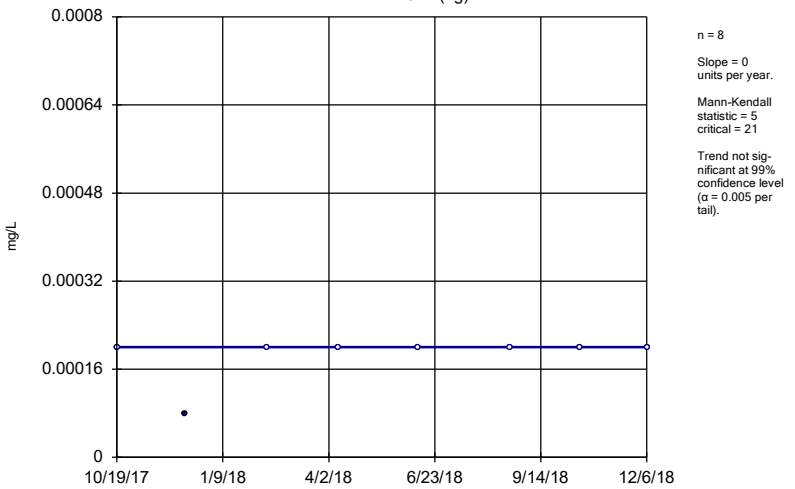
Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lithium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1611 (bg)

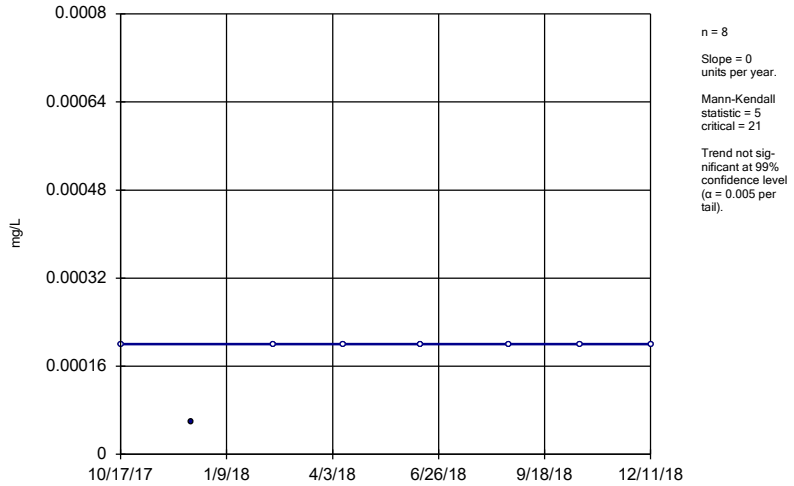


Constituent: Mercury Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1610

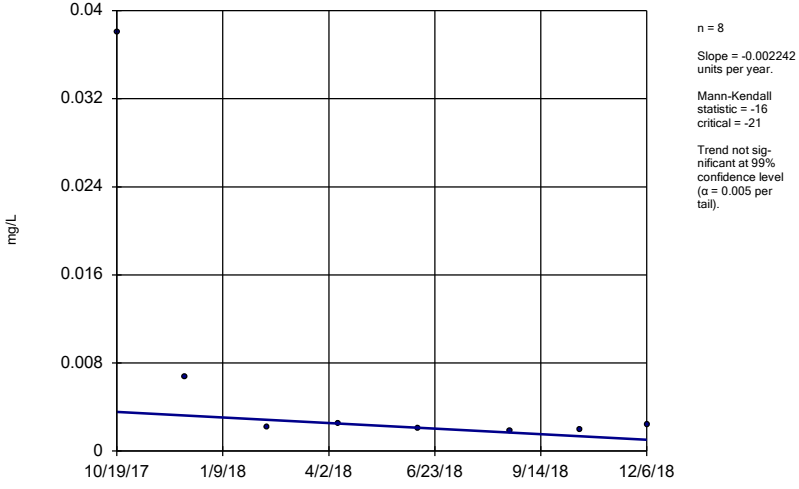


Constituent: Mercury Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1611 (bg)

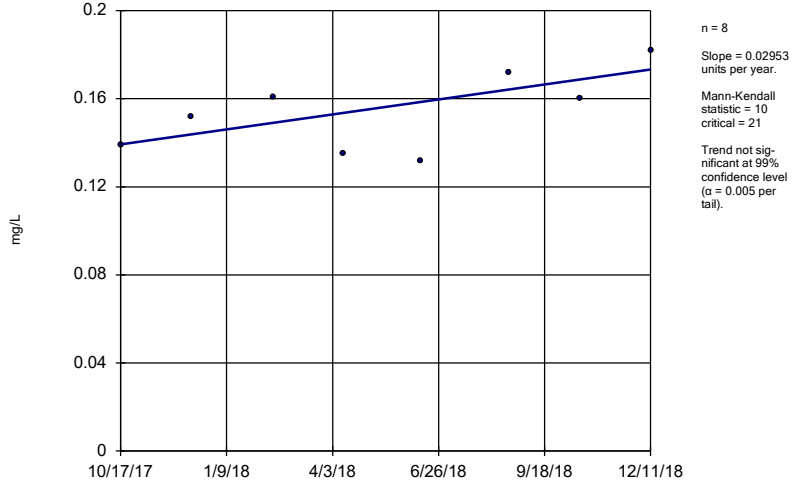


Constituent: Molybdenum Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

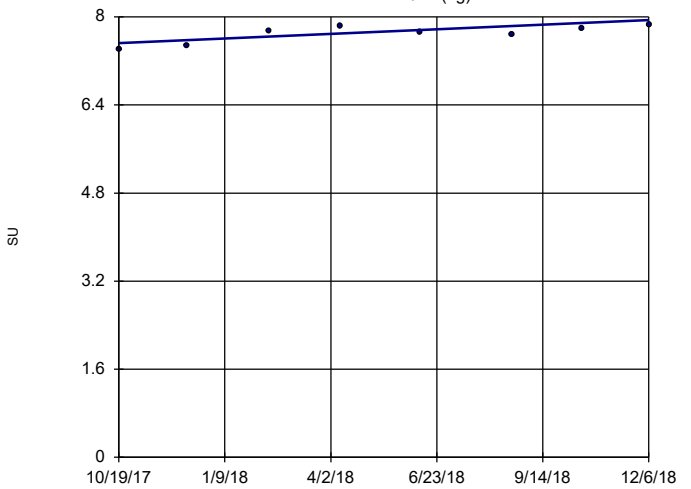
MW-1610



Constituent: Molybdenum Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = 0.3713 units per year.

Mann-Kendall statistic = 16
critical = 21

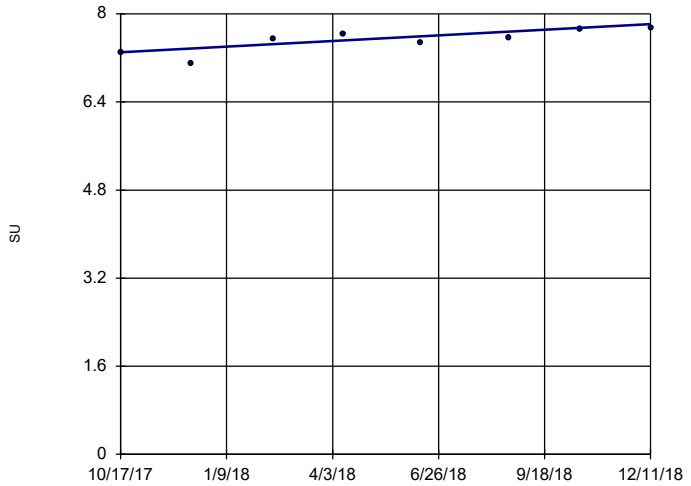
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = 0.4452 units per year.

Mann-Kendall statistic = 20
critical = 21

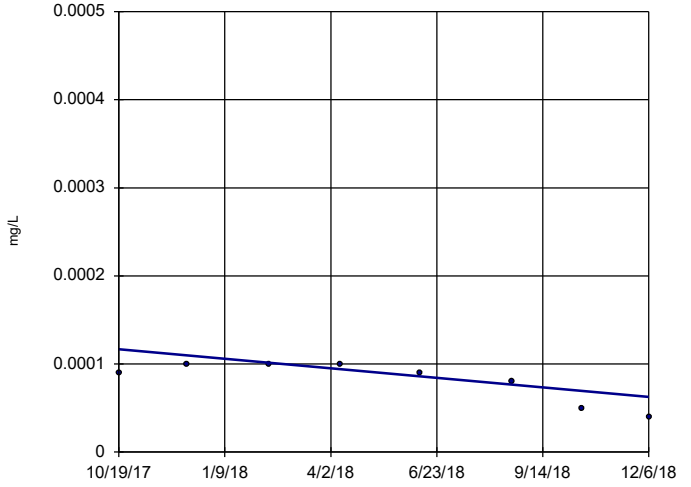
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -0.0000478 units per year.

Mann-Kendall statistic = -18
critical = -21

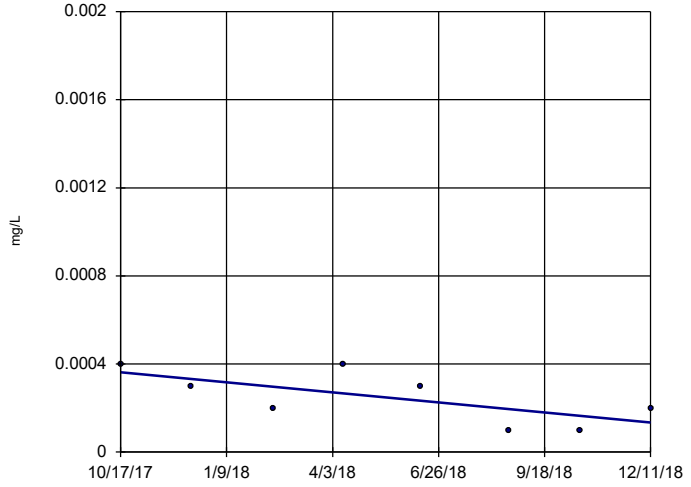
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Selenium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = -0.0001979 units per year.

Mann-Kendall statistic = -14
critical = -21

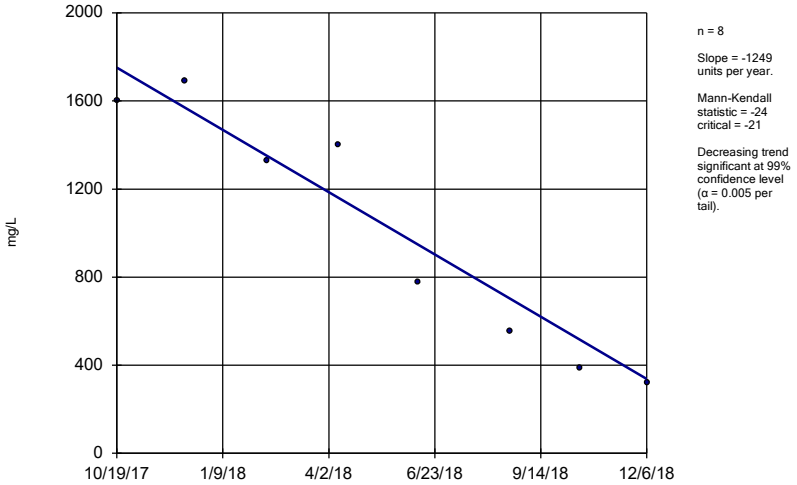
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Selenium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -1249 units per year.

Mann-Kendall statistic = -24 critical = -21

Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

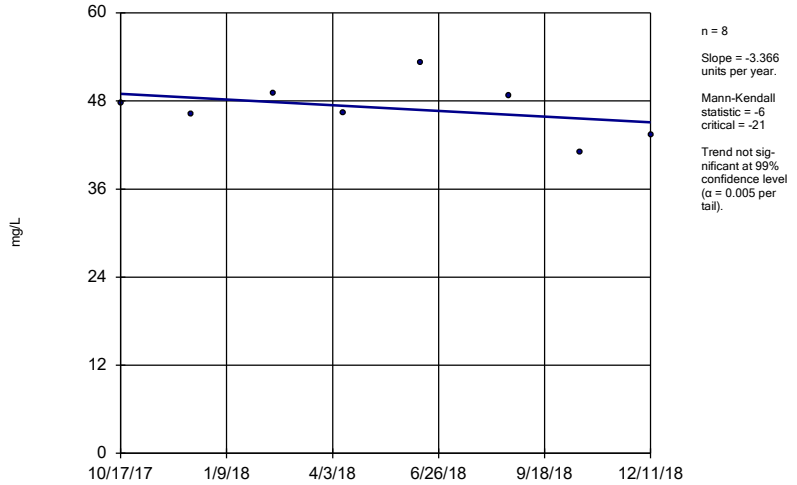
Constituent: Sulfate Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = -3.366 units per year.

Mann-Kendall statistic = -6 critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR

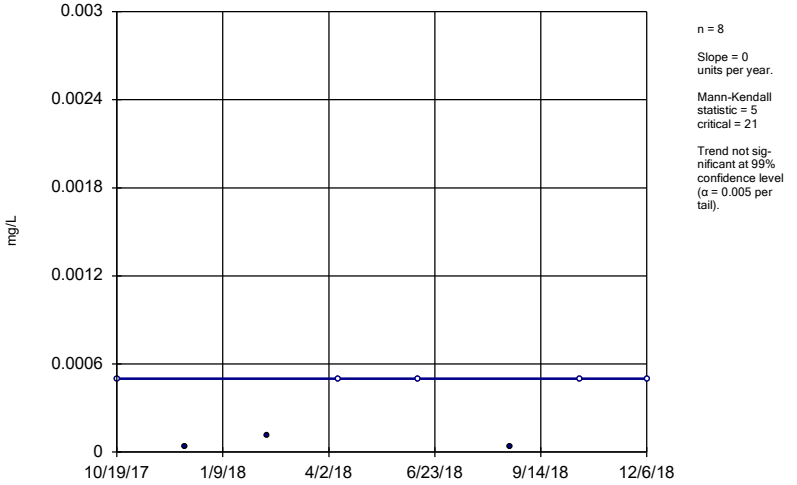
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 5 critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Thallium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR

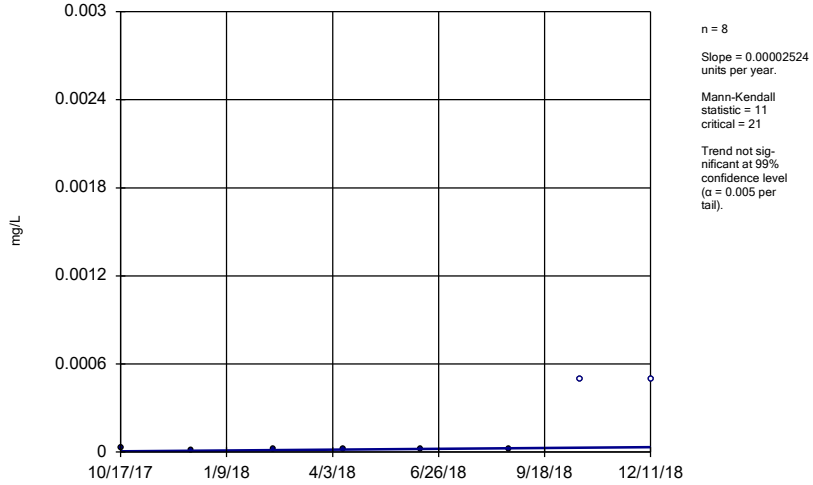
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1610



n = 8

Slope = 0.00002524 units per year.

Mann-Kendall statistic = 11 critical = 21

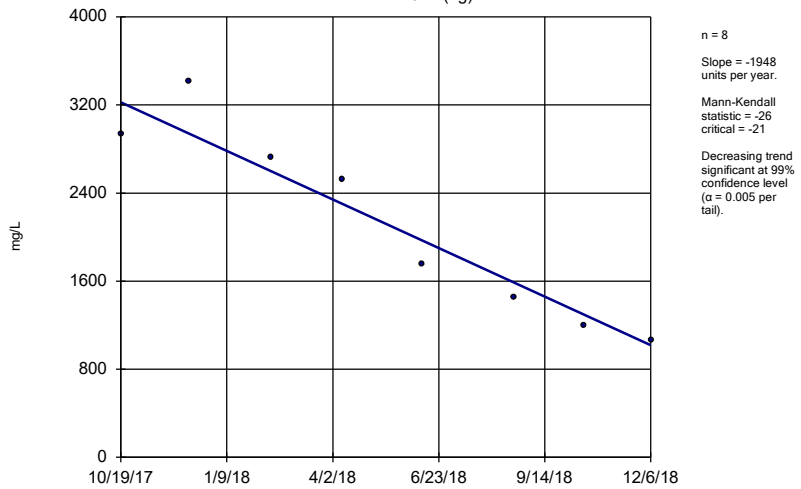
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Thallium Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault CCR

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1611 (bg)



n = 8

Slope = -1948 units per year.

Mann-Kendall statistic = -26 critical = -21

Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

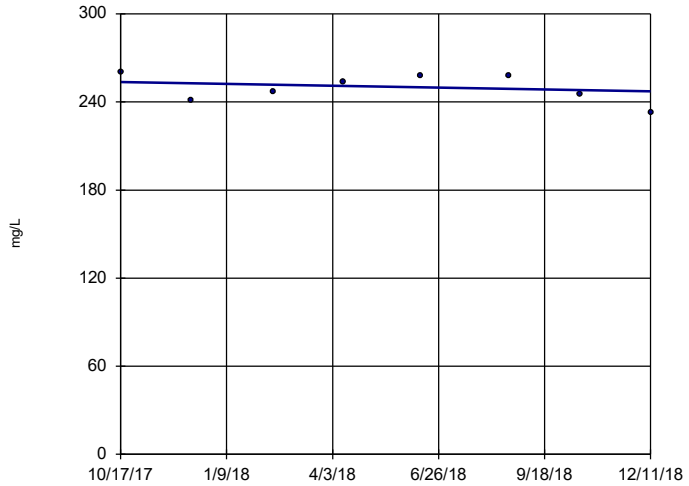
Constituent: Total Dissolved Solids Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault C

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1610



n = 8

Slope = -5.545 units per year.

Mann-Kendall statistic = -7 critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids Analysis Run 3/14/2019 12:44 PM View: Descriptive - Dumps Fault C

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Trend Test Summary Table - Significant Results Chattanooga CCR

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/17/2019, 3:59 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Arsenic (mg/L)	**MW-1605**	**-0.002479**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Arsenic (mg/L)	**MW-1612**	**-0.002154**	**-21**	**-18**	**Yes**	**7**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Boron (mg/L)	**MW-1601 (bg)**	**0.1213**	**24**	**21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Chloride (mg/L)	**MW-1604**	**-5.25**	**-23**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Cobalt (mg/L)	**MW-1602 (bg)**	**-0.00006961**	**-24**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Cobalt (mg/L)	**MW-1608 (bg)**	**-0.0002034**	**-26**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	**MW-1601 (bg)**	**-0.01932**	**-24**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	**MW-1602 (bg)**	**-0.006127**	**-24**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	**MW-1608 (bg)**	**-0.005441**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	**MW-1603**	**-0.002344**	**-26**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	**MW-1605**	**-0.005309**	**-28**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Selenium (mg/L)	**MW-1608 (bg)**	**-0.00005006**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	**MW-1604**	**-4.428**	**-26**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids (mg/L)	**MW-1608 (bg)**	**-50**	**-23**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**

Trend Test Summary Table - All Results Chattanooga CCR

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/17/2019, 3:59 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Antimony (mg/L)	MW-1601 (bg)	0.00003296	4	21	No	8	0	n/a	n/a	0.01	NP
Antimony (mg/L)	MW-1602 (bg)	-0.00007068	-17	-21	No	8	0	n/a	n/a	0.01	NP
Antimony (mg/L)	MW-1608 (bg)	-0.00001644	-11	-21	No	8	0	n/a	n/a	0.01	NP
Antimony (mg/L)	MW-1603	0.00001108	10	21	No	8	25	n/a	n/a	0.01	NP
Antimony (mg/L)	MW-1604	-1.6e-12	-2	-21	No	8	12.5	n/a	n/a	0.01	NP
Antimony (mg/L)	MW-1605	-0.0001998	-19	-21	No	8	0	n/a	n/a	0.01	NP
Antimony (mg/L)	MW-1612	-0.0001448	-17	-18	No	7	0	n/a	n/a	0.01	NP
Arsenic (mg/L)	MW-1601 (bg)	0.01453	16	21	No	8	0	n/a	n/a	0.01	NP
Arsenic (mg/L)	MW-1602 (bg)	-0.0003252	0	21	No	8	0	n/a	n/a	0.01	NP
Arsenic (mg/L)	MW-1608 (bg)	-0.0002979	-6	-21	No	8	0	n/a	n/a	0.01	NP
Arsenic (mg/L)	MW-1603	0.0009175	10	21	No	8	0	n/a	n/a	0.01	NP
Arsenic (mg/L)	MW-1604	0.00002638	0	21	No	8	0	n/a	n/a	0.01	NP
Arsenic (mg/L)	**MW-1605**	**-0.002479**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Arsenic (mg/L)	**MW-1612**	**-0.002154**	**-21**	**-18**	**Yes**	**7**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Barium (mg/L)	MW-1601 (bg)	-0.07184	-10	-21	No	8	0	n/a	n/a	0.01	NP
Barium (mg/L)	MW-1602 (bg)	-0.003579	-4	-21	No	8	0	n/a	n/a	0.01	NP
Barium (mg/L)	MW-1608 (bg)	-0.009112	-14	-21	No	8	0	n/a	n/a	0.01	NP
Barium (mg/L)	MW-1603	-0.1521	-4	-21	No	8	0	n/a	n/a	0.01	NP
Barium (mg/L)	MW-1604	-0.1307	-10	-21	No	8	0	n/a	n/a	0.01	NP
Barium (mg/L)	MW-1605	-0.455	-20	-21	No	8	0	n/a	n/a	0.01	NP
Barium (mg/L)	MW-1612	-0.4518	-10	-18	No	7	0	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1601 (bg)	0	-1	-21	No	8	37.5	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1602 (bg)	0.00008527	8	21	No	8	37.5	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1608 (bg)	-0.00003346	-21	-21	No	8	0	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1603	0	5	21	No	8	62.5	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1604	0	-1	-21	No	8	75	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1605	0	2	21	No	8	62.5	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1612	0.00006539	8	18	No	7	42.86	n/a	n/a	0.01	NP
Boron (mg/L)	**MW-1601 (bg)**	**0.1213**	**24**	**21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Boron (mg/L)	MW-1602 (bg)	0.01492	2	21	No	8	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-1608 (bg)	-0.01261	-4	-21	No	8	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-1603	0.1323	10	21	No	8	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-1604	0.03281	6	21	No	8	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-1605	0.05656	15	21	No	8	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-1612	-0.01408	-3	-18	No	7	0	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1601 (bg)	0	3	21	No	8	75	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1602 (bg)	0	-3	-21	No	8	87.5	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1608 (bg)	0	-3	-21	No	8	75	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1603	0	0	21	No	8	100	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1604	0	0	21	No	8	100	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1605	0	0	21	No	8	100	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1612	0	0	18	No	7	100	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-1601 (bg)	1.167	10	21	No	8	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-1602 (bg)	-0.07583	-1	-21	No	8	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-1608 (bg)	-0.3417	-5	-21	No	8	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-1603	-1.508	-9	-21	No	8	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-1604	-0.1547	-1	-21	No	8	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-1605	1.392	2	21	No	8	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-1612	-2.056	-11	-18	No	7	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-1601 (bg)	4.497	6	21	No	8	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-1602 (bg)	1.269	8	21	No	8	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-1608 (bg)	-1.492	-16	-21	No	8	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-1603	-77.76	-12	-21	No	8	0	n/a	n/a	0.01	NP
Chloride (mg/L)	**MW-1604**	**-5.25**	**-23**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Chloride (mg/L)	MW-1605	-3.008	-4	-18	No	7	0	n/a	n/a	0.01	NP

Trend Test Summary Table - All Results Chattanooga CCR

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/17/2019, 3:59 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Chloride (mg/L)	MW-1612	25.25	15	18	No	7	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1601 (bg)	0.000004175	0	21	No	8	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1602 (bg)	-0.00004665	-14	-21	No	8	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1608 (bg)	-0.0005068	-18	-21	No	8	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1603	0.00005866	12	21	No	8	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1604	-0.00004335	-6	-21	No	8	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1605	0.00006615	8	21	No	8	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1612	0	0	18	No	7	0	n/a	n/a	0.01	NP
Cobalt (mg/L)	MW-1601 (bg)	-0.00004621	-16	-21	No	8	0	n/a	n/a	0.01	NP
Cobalt (mg/L)	**MW-1602 (bg)**	**-0.00006961**	**-24**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Cobalt (mg/L)	**MW-1608 (bg)**	**-0.0002034**	**-26**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Cobalt (mg/L)	MW-1603	0.00003287	0	21	No	8	0	n/a	n/a	0.01	NP
Cobalt (mg/L)	MW-1604	0.0005311	14	21	No	8	0	n/a	n/a	0.01	NP
Cobalt (mg/L)	MW-1605	-0.00004212	-4	-21	No	8	0	n/a	n/a	0.01	NP
Cobalt (mg/L)	MW-1612	0.00003017	3	18	No	7	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1601 (bg)	-0.3557	-6	-21	No	8	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1602 (bg)	0.2226	4	21	No	8	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1608 (bg)	0.8396	8	21	No	8	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1603	-0.2683	-5	-18	No	7	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1604	-0.6127	-8	-21	No	8	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1605	-1.29	-7	-21	No	8	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1612	0.07039	1	18	No	7	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MW-1601 (bg)	0.3032	16	21	No	8	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MW-1602 (bg)	0.1121	15	21	No	8	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MW-1608 (bg)	-0.02708	-10	-21	No	8	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MW-1603	0	0	21	No	8	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MW-1604	-0.01354	-8	-21	No	8	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MW-1605	0.03012	12	21	No	8	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MW-1612	0.1008	17	18	No	7	0	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1601 (bg)	-0.0001116	-16	-21	No	8	0	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1602 (bg)	-0.0000825	-18	-21	No	8	0	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1608 (bg)	-0.0001301	-4	-21	No	8	0	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1603	0.00001242	7	21	No	8	25	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1604	-0.0000122	-4	-21	No	8	12.5	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1605	0.00002057	11	21	No	8	25	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1612	-0.00006683	-13	-18	No	7	14.29	n/a	n/a	0.01	NP
Lithium (mg/L)	MW-1601 (bg)	0.001508	2	21	No	8	0	n/a	n/a	0.01	NP
Lithium (mg/L)	MW-1602 (bg)	-0.01306	-9	-21	No	8	0	n/a	n/a	0.01	NP
Lithium (mg/L)	MW-1608 (bg)	-0.01274	-18	-21	No	8	0	n/a	n/a	0.01	NP
Lithium (mg/L)	MW-1603	0.002765	1	21	No	8	0	n/a	n/a	0.01	NP
Lithium (mg/L)	MW-1604	-0.002567	-6	-21	No	8	0	n/a	n/a	0.01	NP
Lithium (mg/L)	MW-1605	0.006735	6	21	No	8	0	n/a	n/a	0.01	NP
Lithium (mg/L)	MW-1612	0.03403	17	18	No	7	14.29	n/a	n/a	0.01	NP
Mercury (mg/L)	MW-1601 (bg)	0	5	21	No	8	75	n/a	n/a	0.01	NP
Mercury (mg/L)	MW-1602 (bg)	0	0	21	No	8	100	n/a	n/a	0.01	NP
Mercury (mg/L)	MW-1608 (bg)	0	5	21	No	8	87.5	n/a	n/a	0.01	NP
Mercury (mg/L)	MW-1603	0	5	21	No	8	87.5	n/a	n/a	0.01	NP
Mercury (mg/L)	MW-1604	0	5	21	No	8	87.5	n/a	n/a	0.01	NP
Mercury (mg/L)	MW-1605	0	0	21	No	8	100	n/a	n/a	0.01	NP
Mercury (mg/L)	MW-1612	0	6	18	No	7	85.71	n/a	n/a	0.01	NP
Molybdenum (mg/L)	**MW-1601 (bg)**	**-0.01932**	**-24**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	**MW-1602 (bg)**	**-0.006127**	**-24**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	**MW-1608 (bg)**	**-0.005441**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	**MW-1603**	**-0.002344**	**-26**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	MW-1604	-0.000494	-13	-21	No	8	0	n/a	n/a	0.01	NP

Trend Test Summary Table - All Results Chattanooga CCR

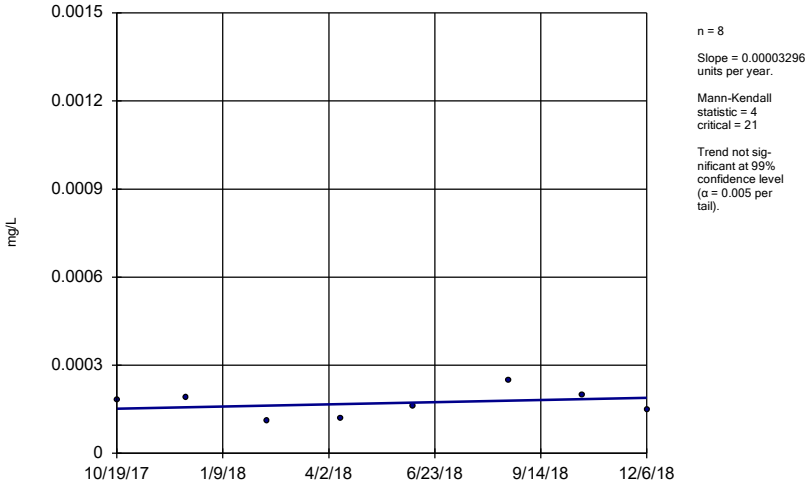
Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/17/2019, 3:59 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Molybdenum (mg/L)	**MW-1605**	**-0.005309**	**-28**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	MW-1612	-0.001272	-17	-18	No	7	0	n/a	n/a	0.01	NP
pH (SU)	MW-1601 (bg)	0.229	18	21	No	8	0	n/a	n/a	0.01	NP
pH (SU)	MW-1602 (bg)	0.1076	8	21	No	8	0	n/a	n/a	0.01	NP
pH (SU)	MW-1608 (bg)	0.07845	8	21	No	8	0	n/a	n/a	0.01	NP
pH (SU)	MW-1603	0.4273	10	21	No	8	0	n/a	n/a	0.01	NP
pH (SU)	MW-1604	0.1529	9	21	No	8	0	n/a	n/a	0.01	NP
pH (SU)	MW-1605	0.2001	16	21	No	8	0	n/a	n/a	0.01	NP
pH (SU)	MW-1612	0.309	12	18	No	7	0	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-1601 (bg)	0.00003081	9	21	No	8	25	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-1602 (bg)	0	7	21	No	8	87.5	n/a	n/a	0.01	NP
Selenium (mg/L)	**MW-1608 (bg)**	**-0.00005006**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Selenium (mg/L)	MW-1603	0	-1	-21	No	8	0	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-1604	-0.00001409	-5	-21	No	8	12.5	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-1605	0.0001253	10	21	No	8	37.5	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-1612	0	-1	-18	No	7	14.29	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-1601 (bg)	25.39	4	21	No	8	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-1602 (bg)	-4.314	-12	-21	No	8	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-1608 (bg)	-11.78	-20	-21	No	8	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-1603	-25.5	-13	-21	No	8	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	**MW-1604**	**-4.428**	**-26**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	MW-1605	-9.813	-4	-21	No	8	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-1612	2.244	3	18	No	7	0	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1601 (bg)	0	2	21	No	8	37.5	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1602 (bg)	0	6	21	No	8	62.5	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1608 (bg)	0.0000156	11	21	No	8	25	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1603	0	7	21	No	8	37.5	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1604	0.00001309	11	21	No	8	50	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1605	0	6	21	No	8	50	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1612	0.0001159	7	18	No	7	42.86	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	MW-1601 (bg)	204.7	14	21	No	8	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	MW-1602 (bg)	4.679	2	21	No	8	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	**MW-1608 (bg)**	**-50**	**-23**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Total Dissolved Solids (mg/L)	MW-1603	-222	-12	-21	No	8	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	MW-1604	-15.29	-11	-21	No	8	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	MW-1605	6.104	1	18	No	7	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	MW-1612	32.91	7	18	No	7	0	n/a	n/a	0.01	NP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = 0.00003296 units per year.

Mann-Kendall statistic = 4
critical = 21

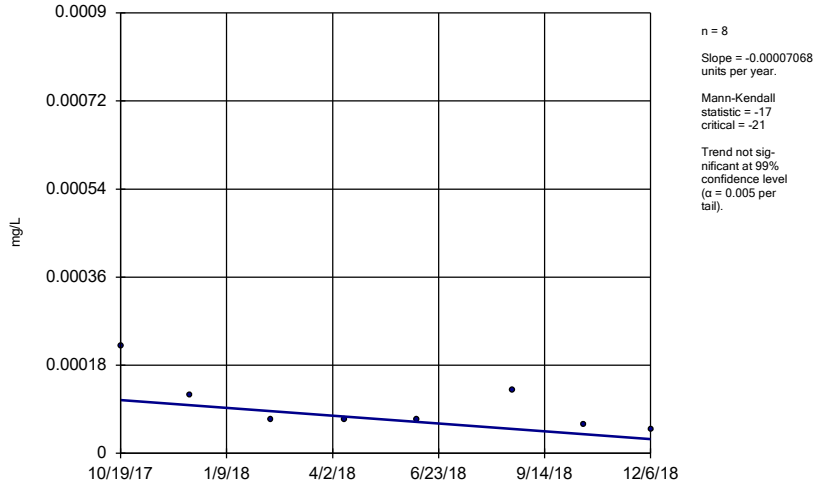
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Antimony Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = -0.00007068 units per year.

Mann-Kendall statistic = -17
critical = -21

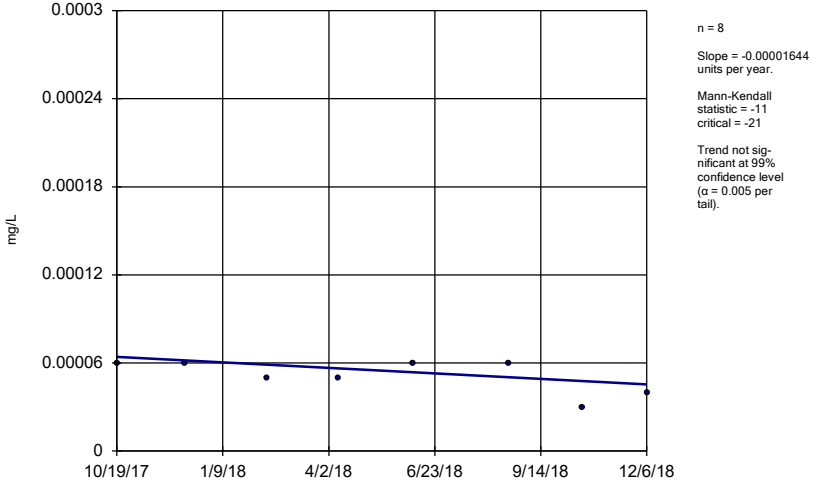
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Antimony Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -0.00001644 units per year.

Mann-Kendall statistic = -11
critical = -21

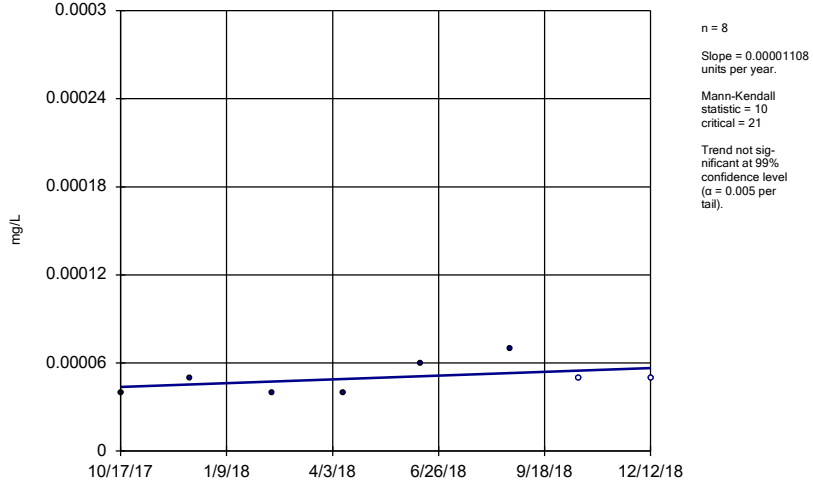
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Antimony Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0.00001108 units per year.

Mann-Kendall statistic = 10
critical = 21

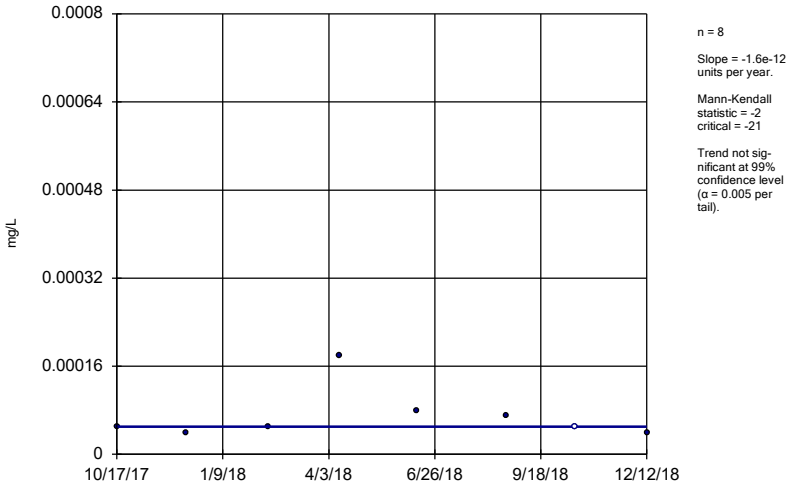
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Antimony Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1604



n = 8

Slope = -1.6e-12 units per year.

Mann-Kendall statistic = -2
critical = -21

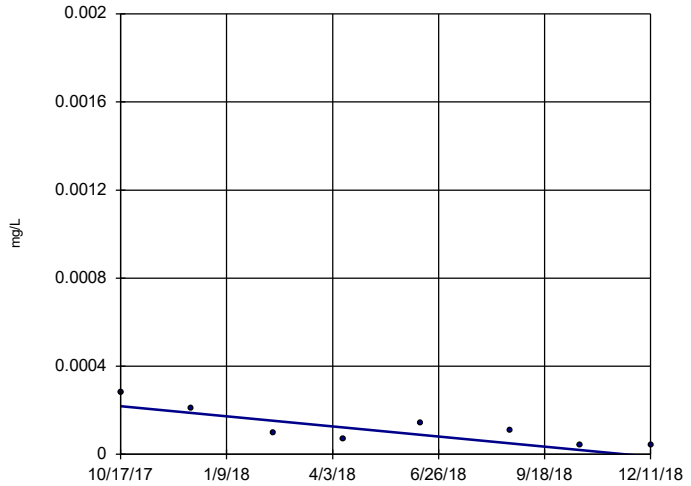
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Antimony Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605



n = 8

Slope = -0.0001998 units per year.

Mann-Kendall statistic = -19
critical = -21

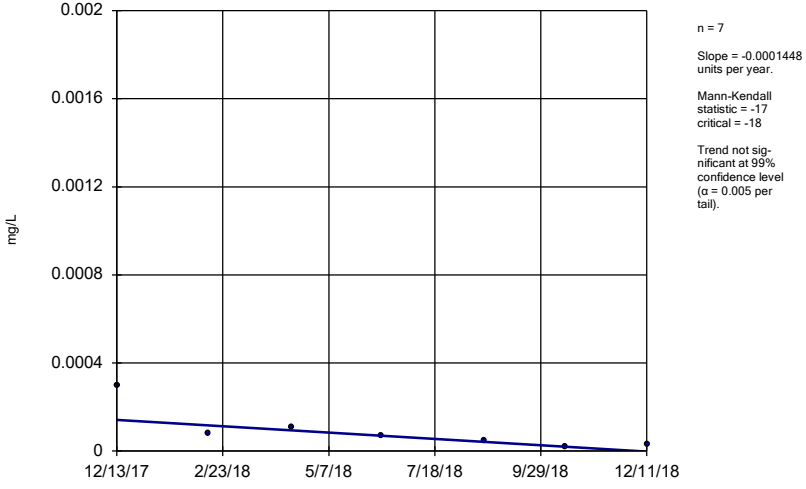
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Antimony Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612



n = 7

Slope = -0.0001448 units per year.

Mann-Kendall statistic = -17
critical = -18

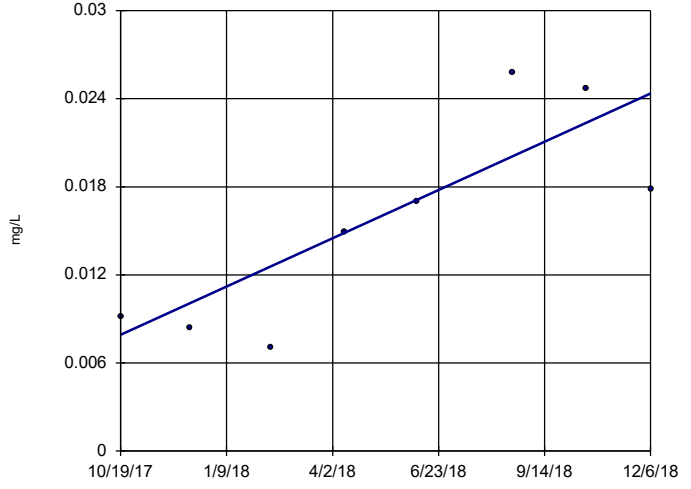
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Antimony Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = 0.01453 units per year.

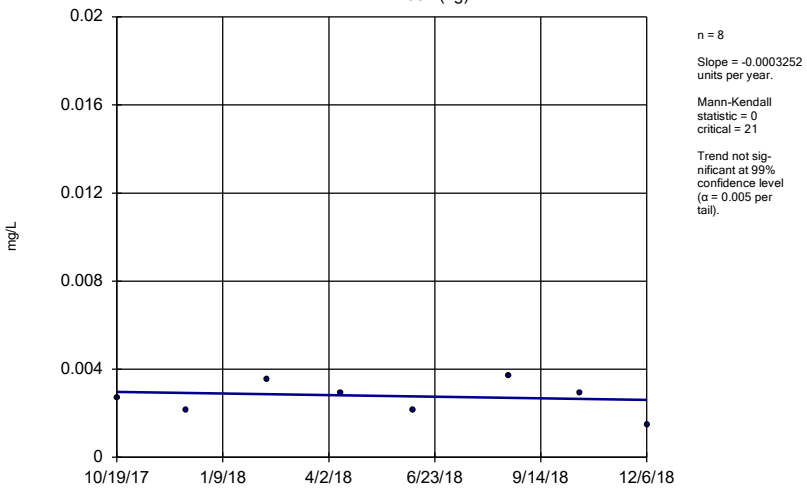
Mann-Kendall statistic = 16
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Arsenic Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = -0.0003252 units per year.

Mann-Kendall statistic = 0 critical = 21

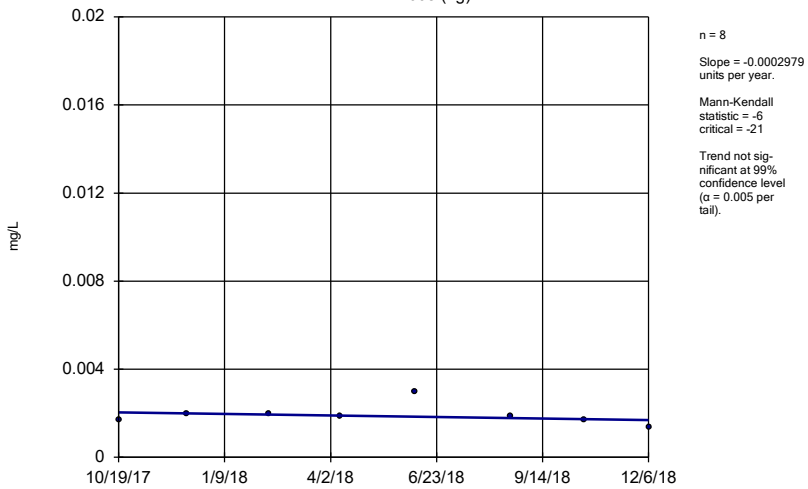
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Arsenic Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -0.0002979 units per year.

Mann-Kendall statistic = -6 critical = -21

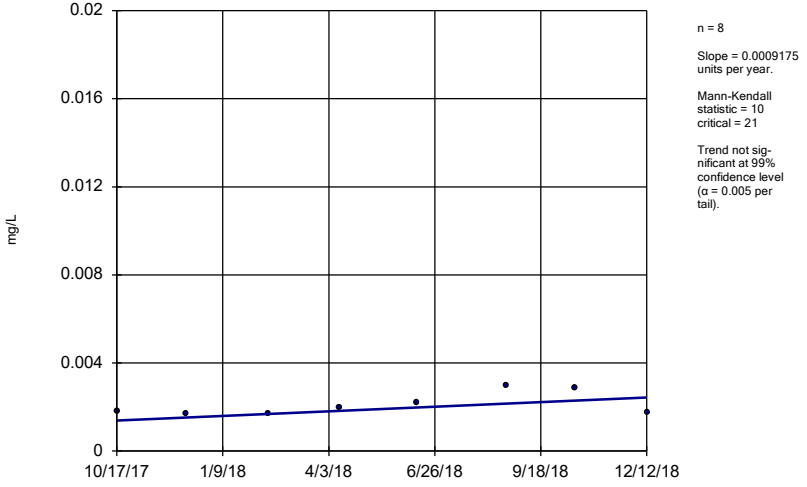
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Arsenic Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0.0009175 units per year.

Mann-Kendall statistic = 10 critical = 21

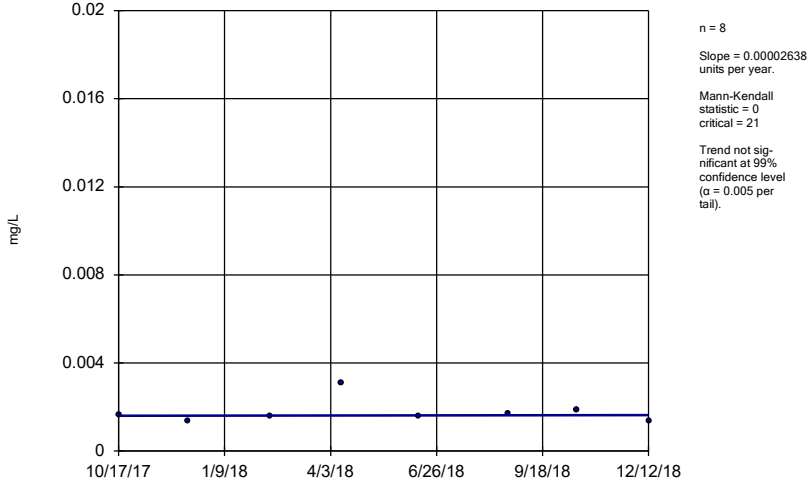
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Arsenic Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1604



n = 8

Slope = 0.00002638 units per year.

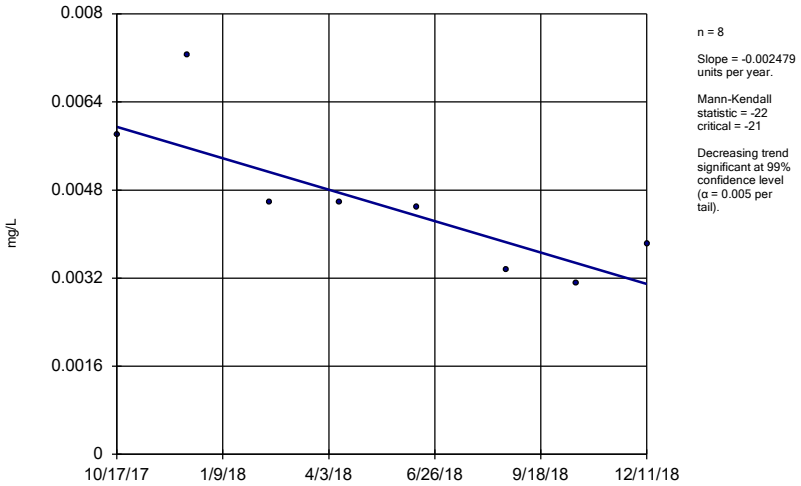
Mann-Kendall statistic = 0 critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Arsenic Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1605



n = 8

Slope = -0.002479 units per year.

Mann-Kendall statistic = -22 critical = -21

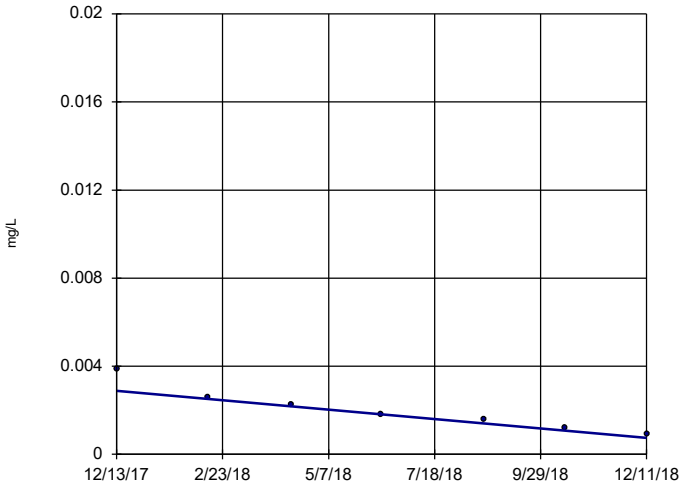
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Arsenic Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612



n = 7

Slope = -0.002154 units per year.

Mann-Kendall statistic = -21 critical = -18

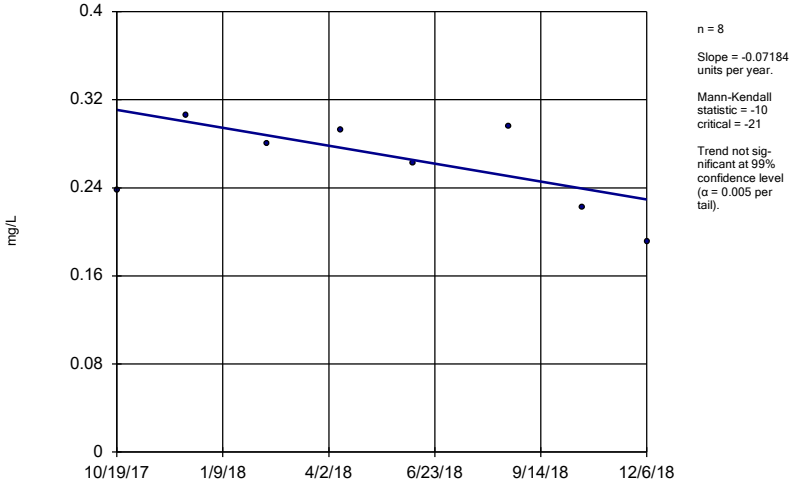
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Arsenic Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = -0.07184 units per year.

Mann-Kendall statistic = -10 critical = -21

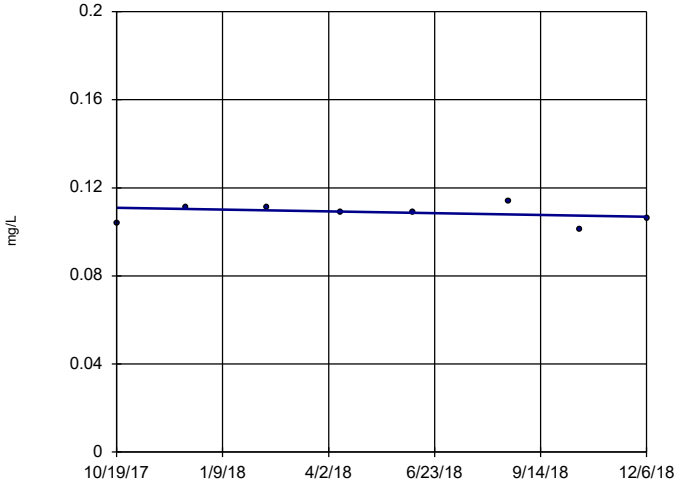
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = -0.003579 units per year.

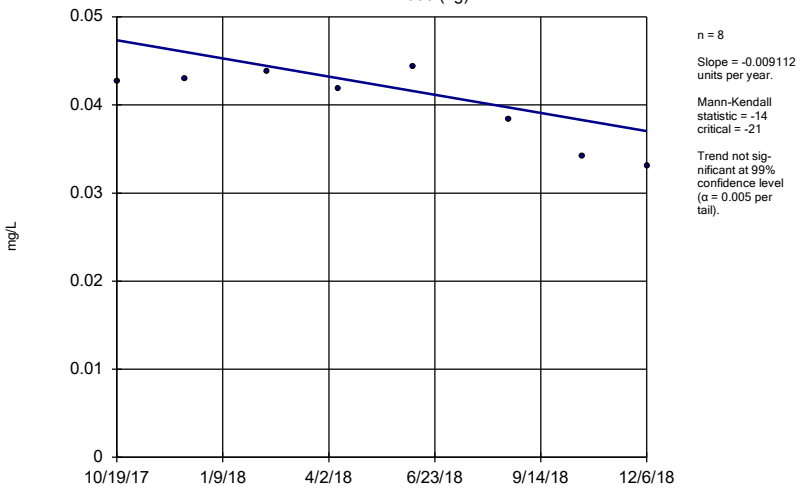
Mann-Kendall statistic = -4 critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -0.009112 units per year.

Mann-Kendall statistic = -14
critical = -21

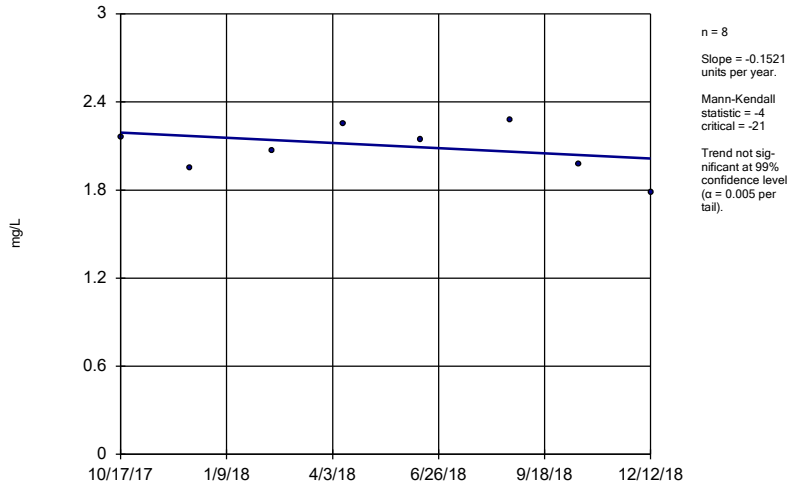
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 8

Slope = -0.1521 units per year.

Mann-Kendall statistic = -4
critical = -21

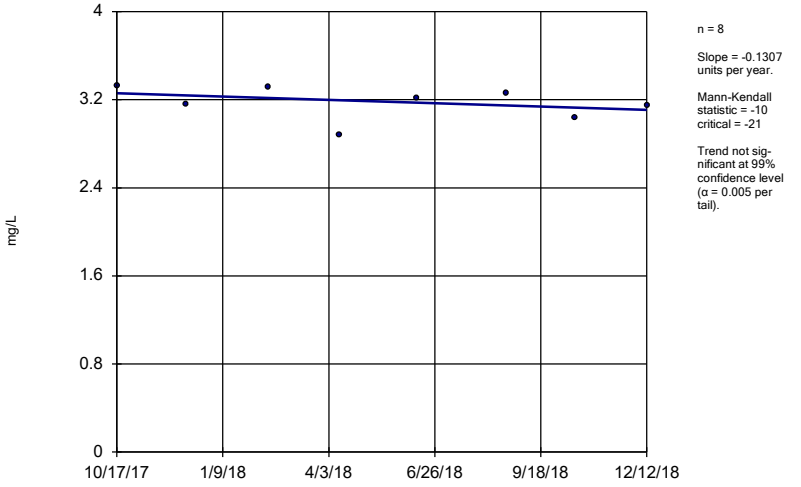
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1604



n = 8

Slope = -0.1307 units per year.

Mann-Kendall statistic = -10
critical = -21

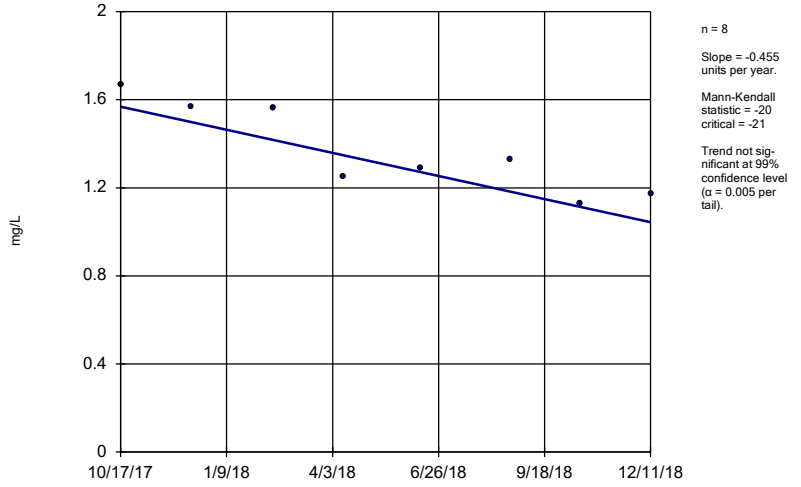
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605



n = 8

Slope = -0.455 units per year.

Mann-Kendall statistic = -20
critical = -21

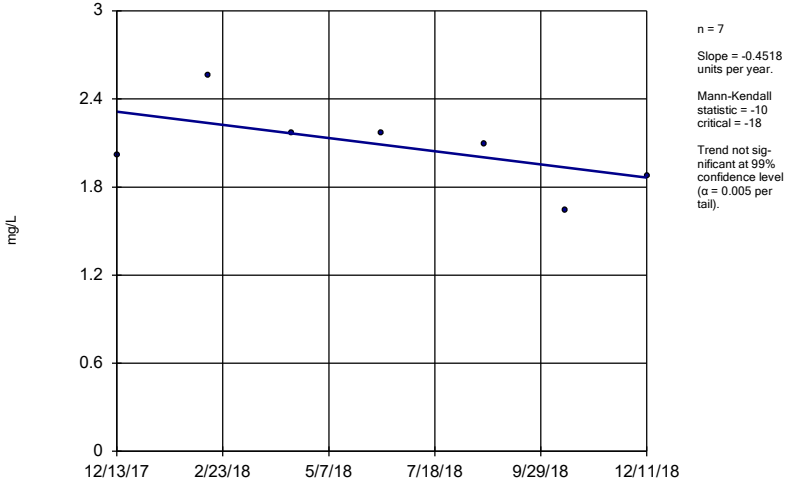
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Barium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612



Constituent: Barium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive

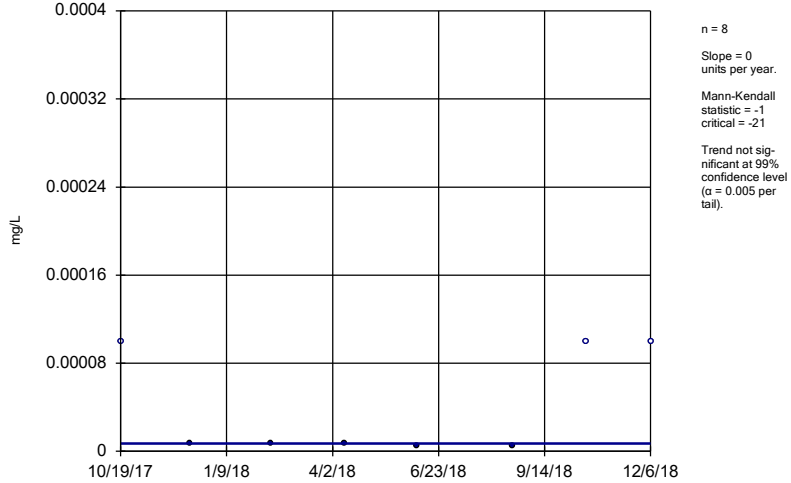
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1601 (bg)



Constituent: Beryllium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive

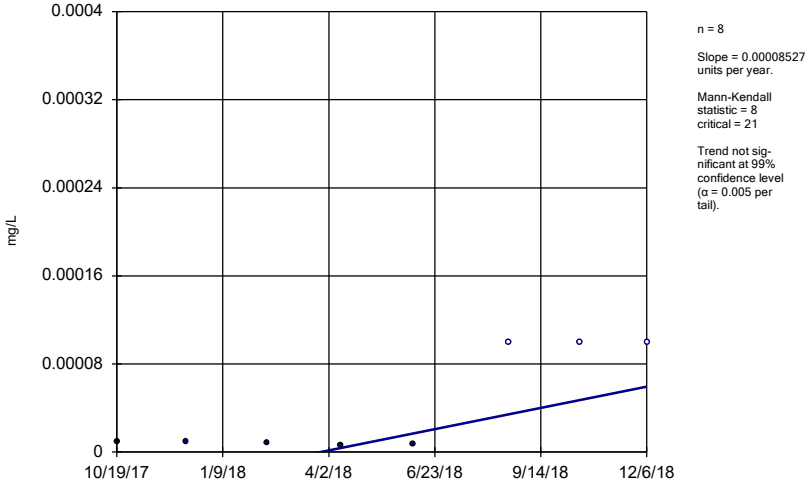
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1602 (bg)



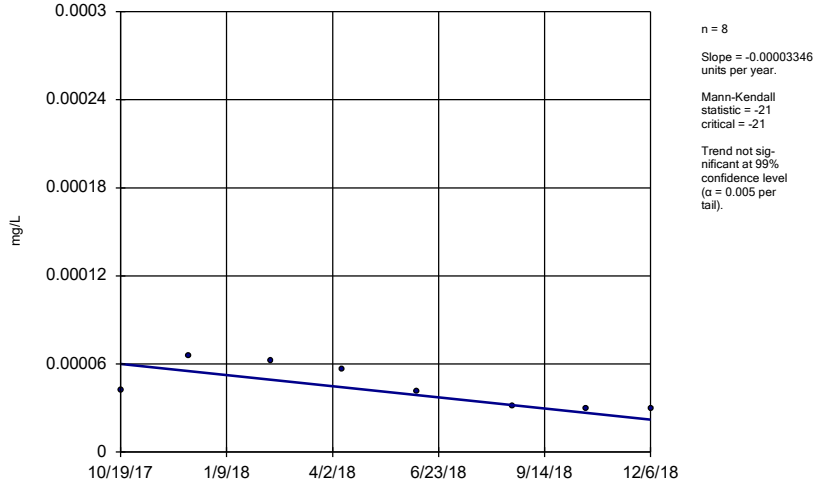
Constituent: Beryllium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



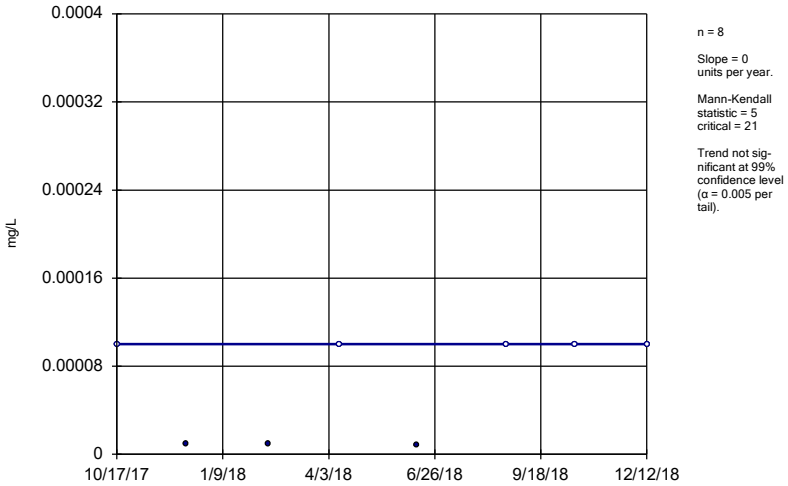
Constituent: Beryllium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1603

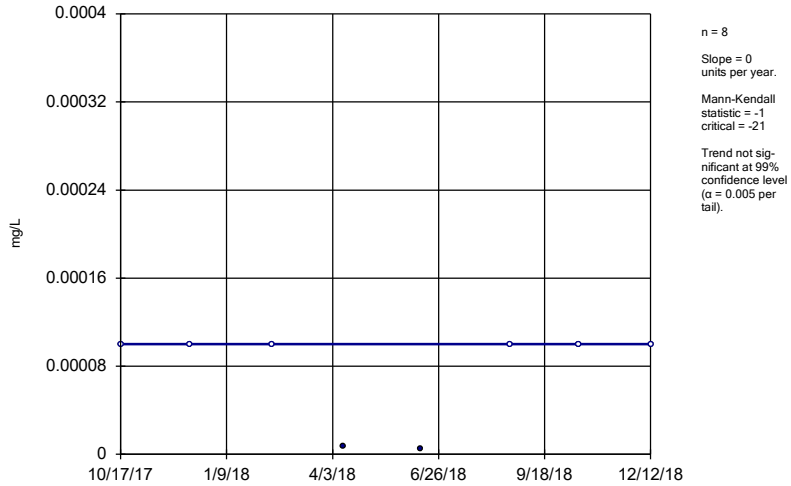


Constituent: Beryllium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1604

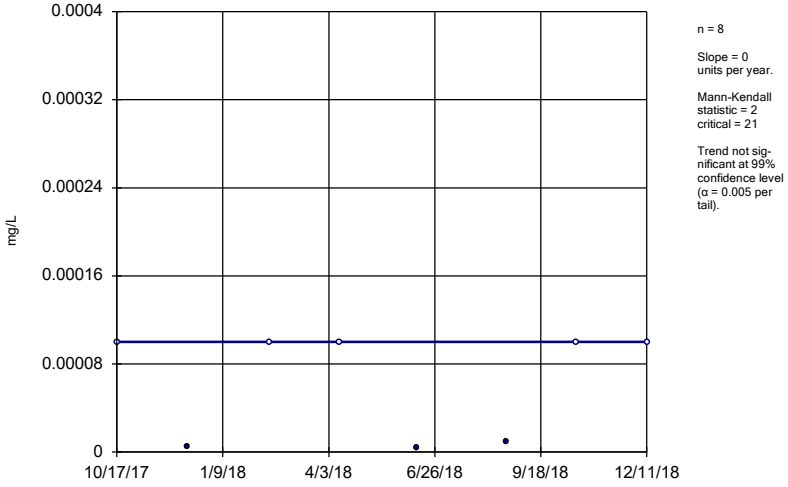


Constituent: Beryllium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1605

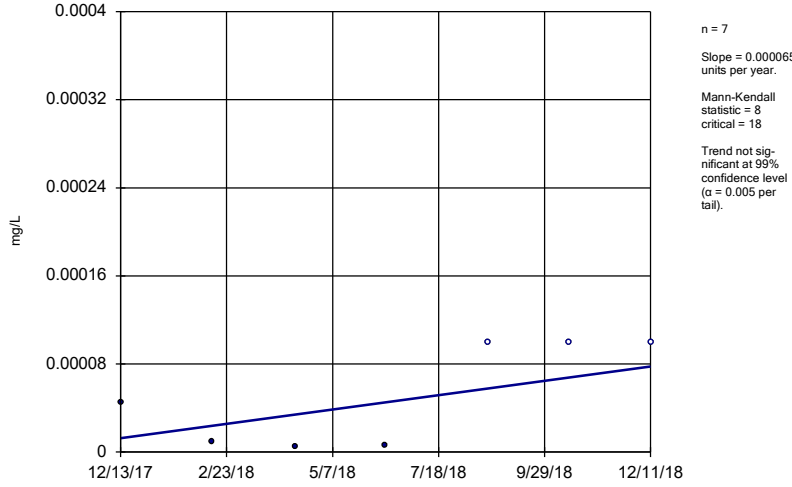


Constituent: Beryllium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

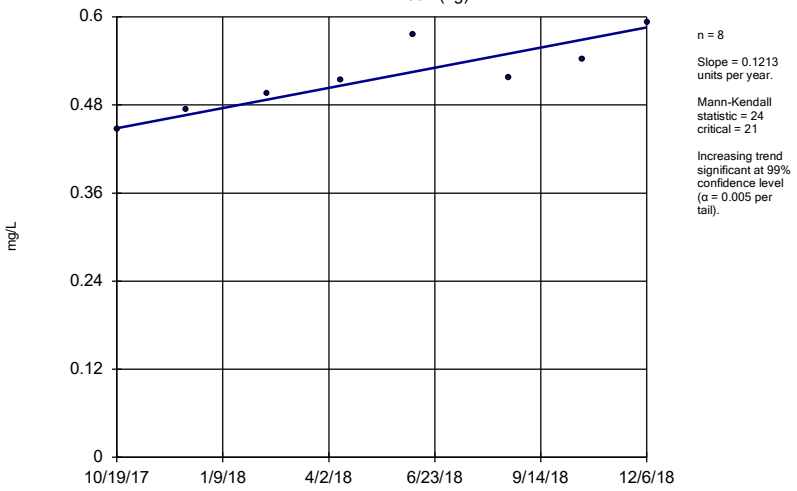
MW-1612



Constituent: Beryllium Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = 0.1213 units per year.

Mann-Kendall statistic = 24
critical = 21

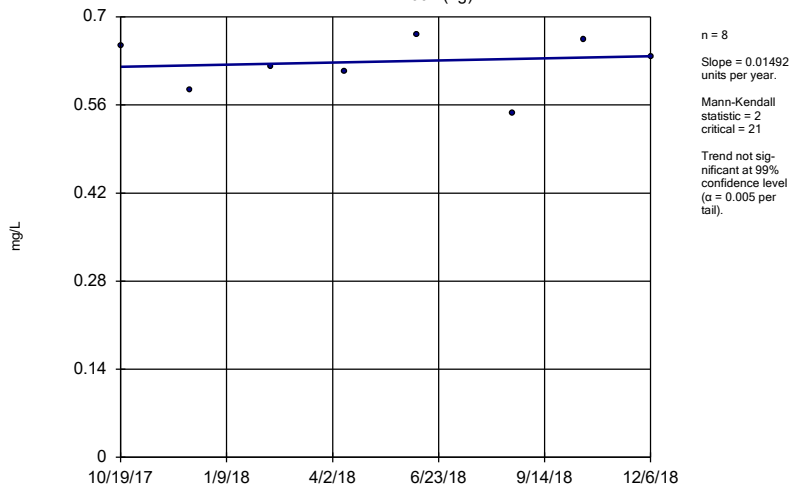
Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = 0.01492 units per year.

Mann-Kendall statistic = 2
critical = 21

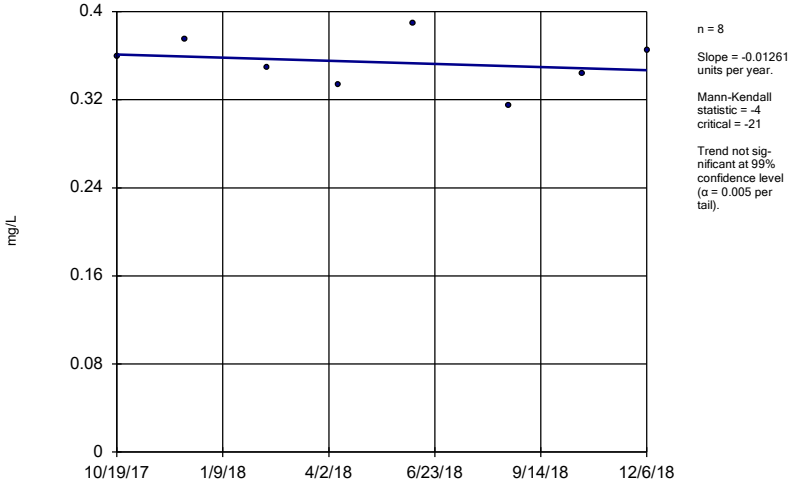
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -0.01261 units per year.

Mann-Kendall statistic = -4
critical = -21

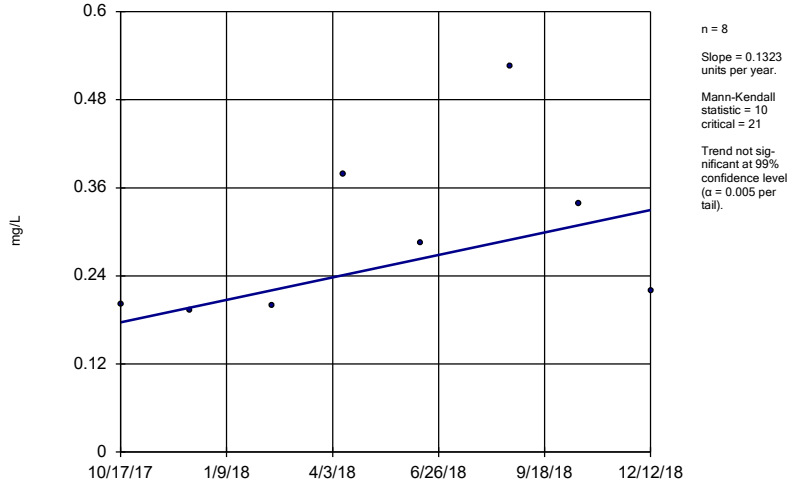
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0.1323 units per year.

Mann-Kendall statistic = 10
critical = 21

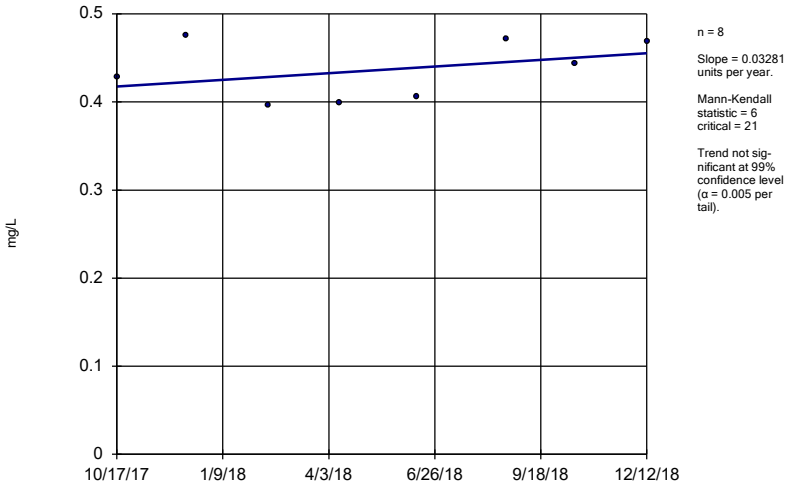
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1604



n = 8

Slope = 0.03281 units per year.

Mann-Kendall statistic = 6
critical = 21

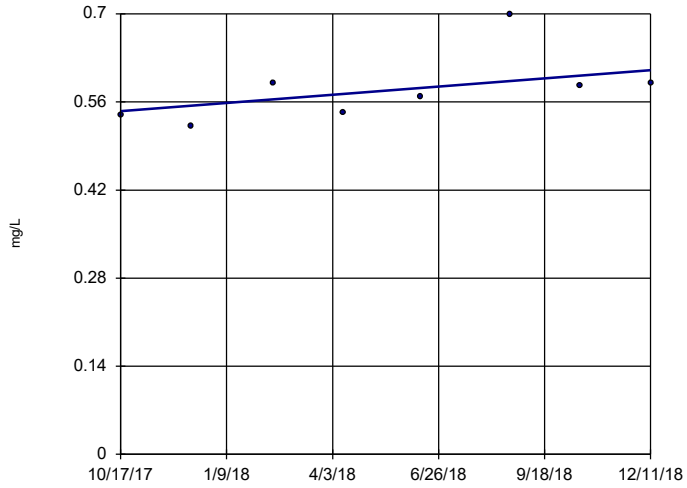
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605



n = 8

Slope = 0.05656 units per year.

Mann-Kendall statistic = 15
critical = 21

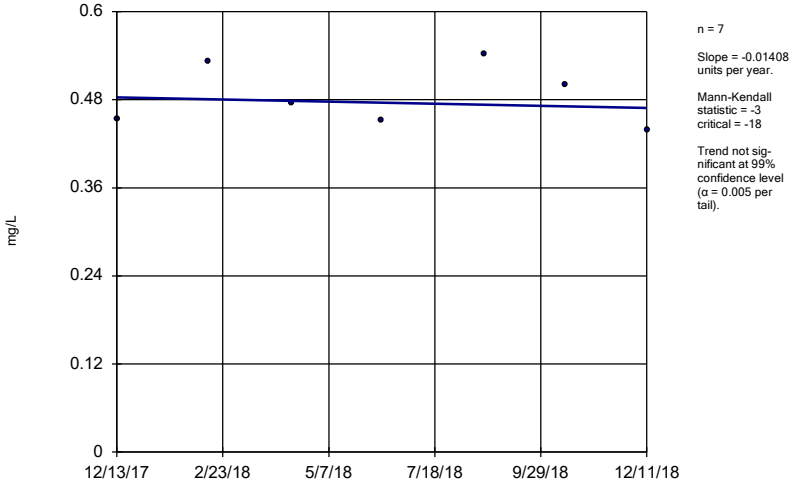
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612



n = 7

Slope = -0.01408 units per year.

Mann-Kendall statistic = -3
critical = -18

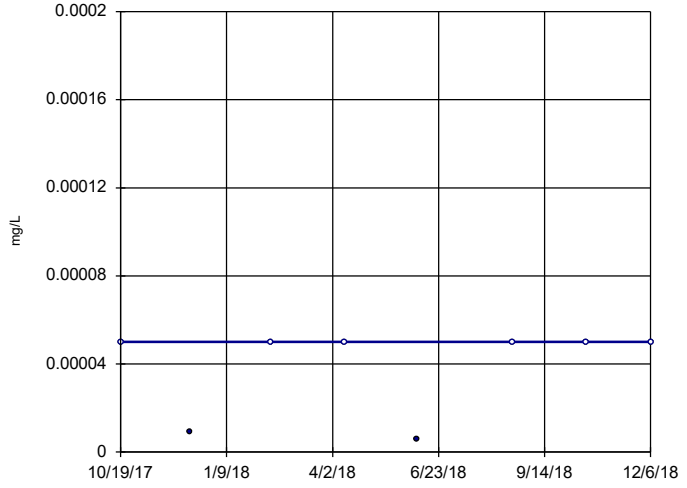
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 4/17/2019 3:55 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 3
critical = 21

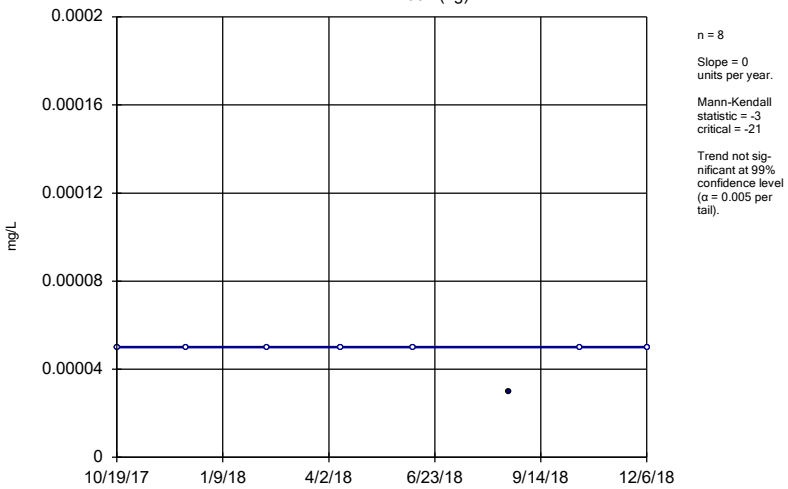
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cadmium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = -3 critical = -21

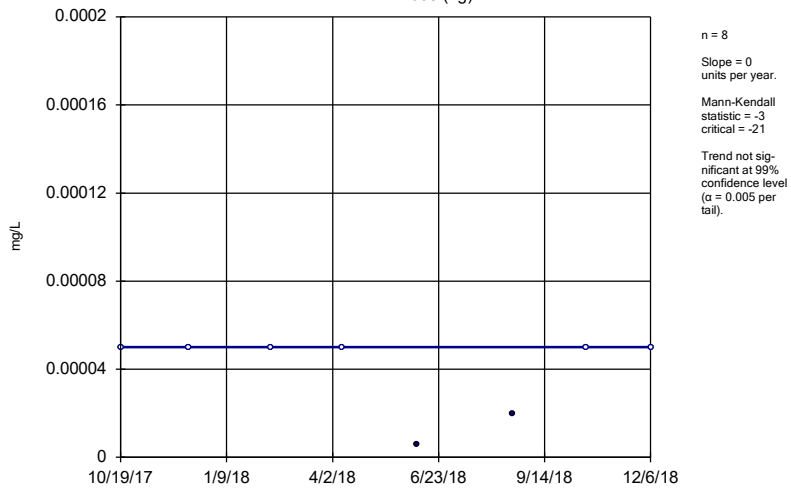
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cadmium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = -3 critical = -21

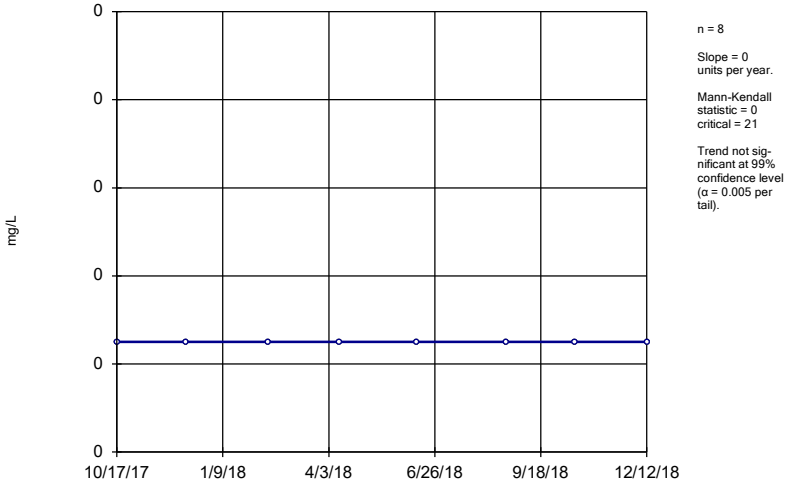
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cadmium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 0 critical = 21

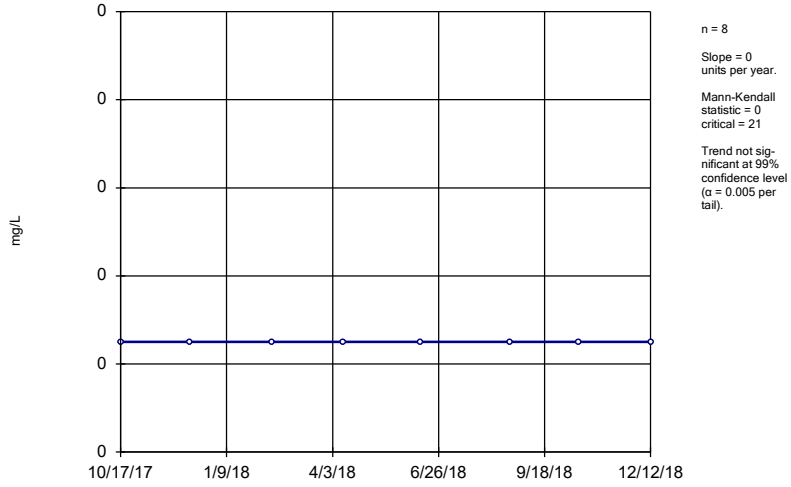
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cadmium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1604



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 0 critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cadmium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

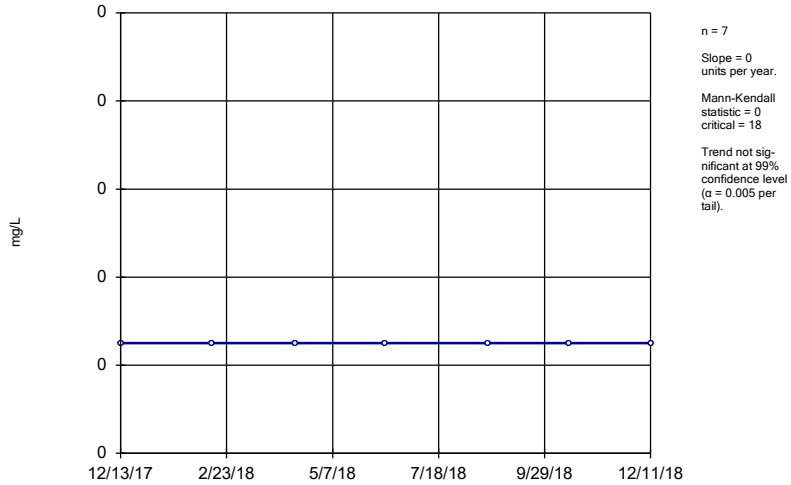
MW-1605

Constituent: Cadmium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1612

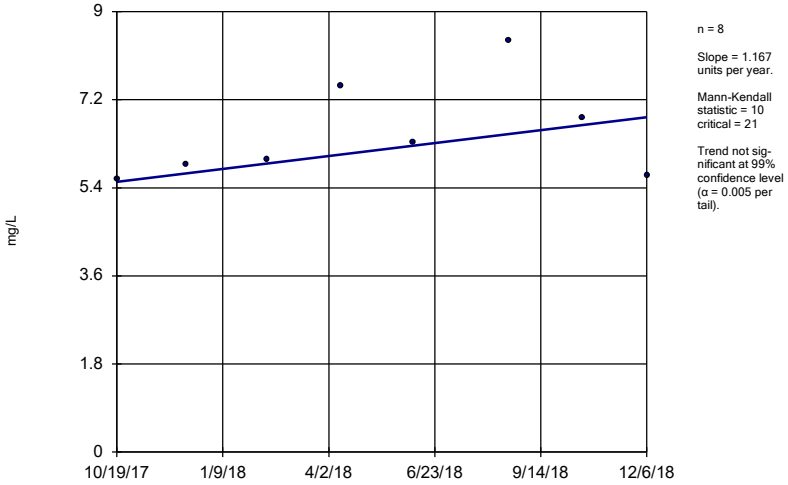


Constituent: Cadmium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601 (bg)

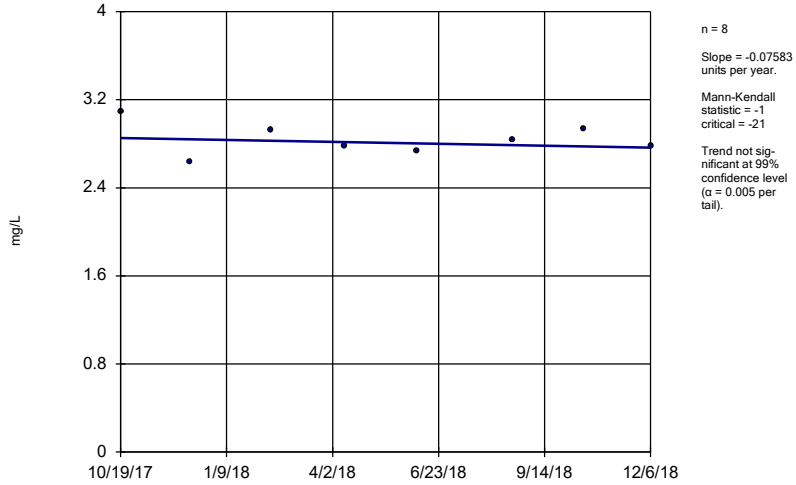


Constituent: Calcium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

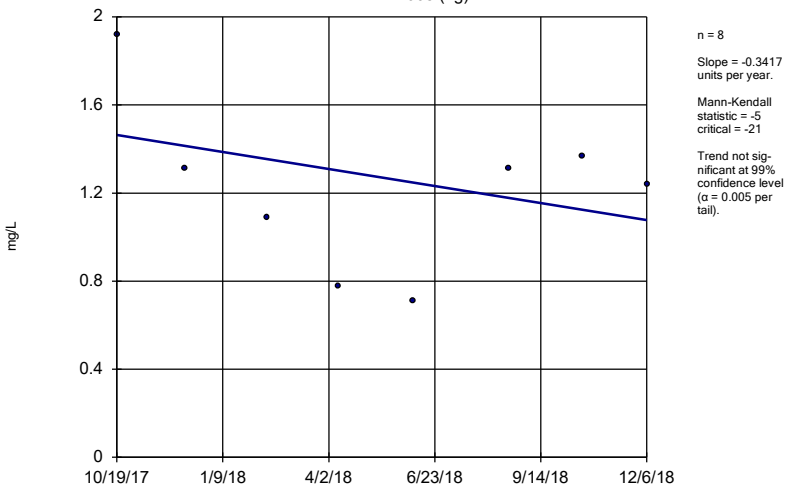
MW-1602 (bg)



Constituent: Calcium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -0.3417 units per year.

Mann-Kendall statistic = -5
critical = -21

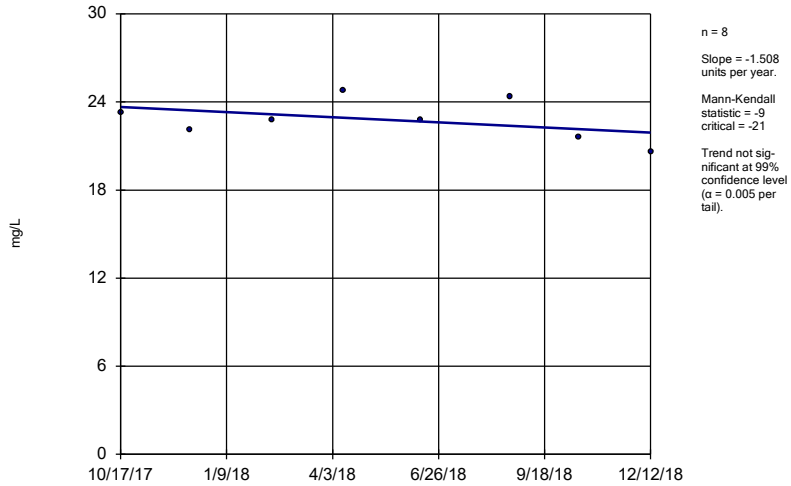
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 8

Slope = -1.508 units per year.

Mann-Kendall statistic = -9
critical = -21

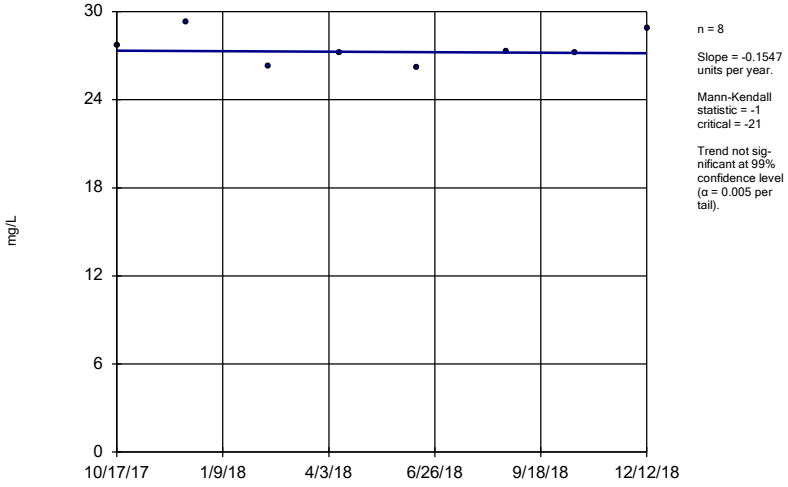
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1604



n = 8

Slope = -0.1547 units per year.

Mann-Kendall statistic = -1
critical = -21

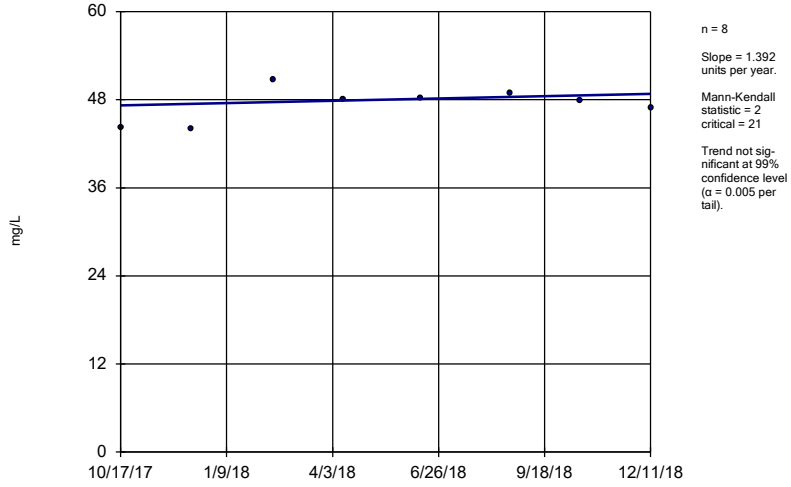
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605



n = 8

Slope = 1.392 units per year.

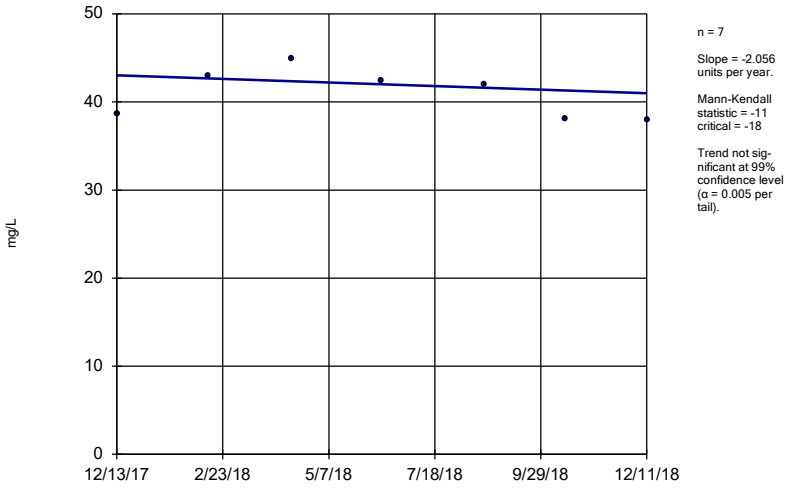
Mann-Kendall statistic = 2
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1612



n = 7

Slope = -2.056 units per year.

Mann-Kendall statistic = -11 critical = -18

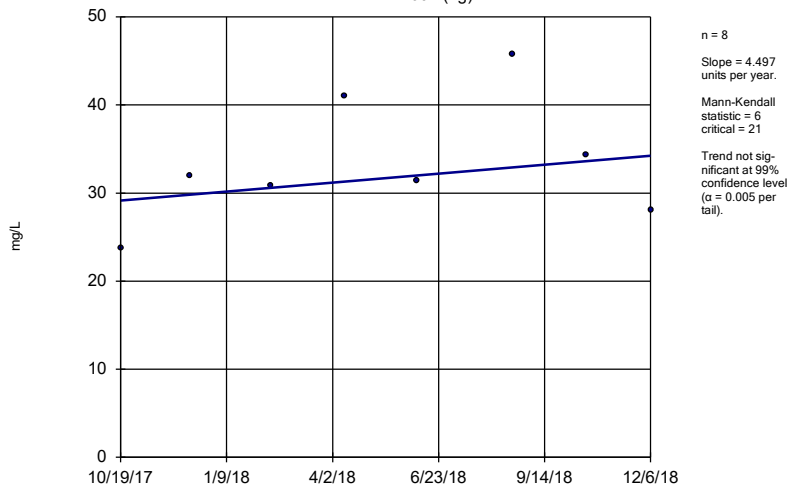
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = 4.497 units per year.

Mann-Kendall statistic = 6 critical = 21

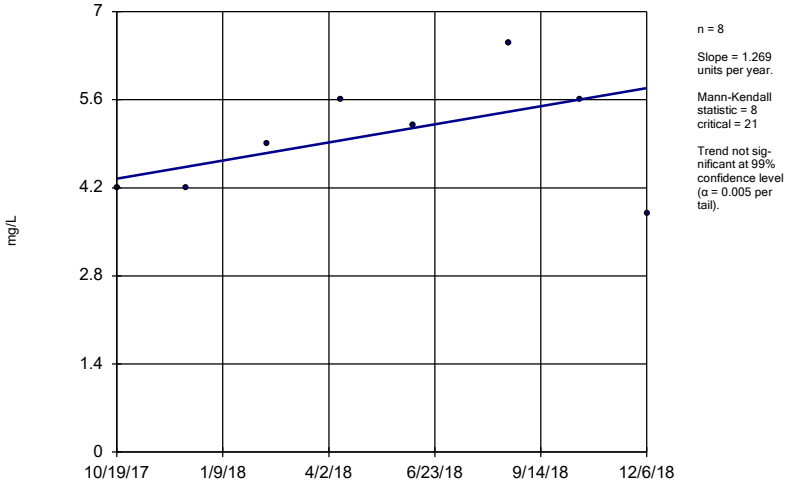
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = 1.269 units per year.

Mann-Kendall statistic = 8 critical = 21

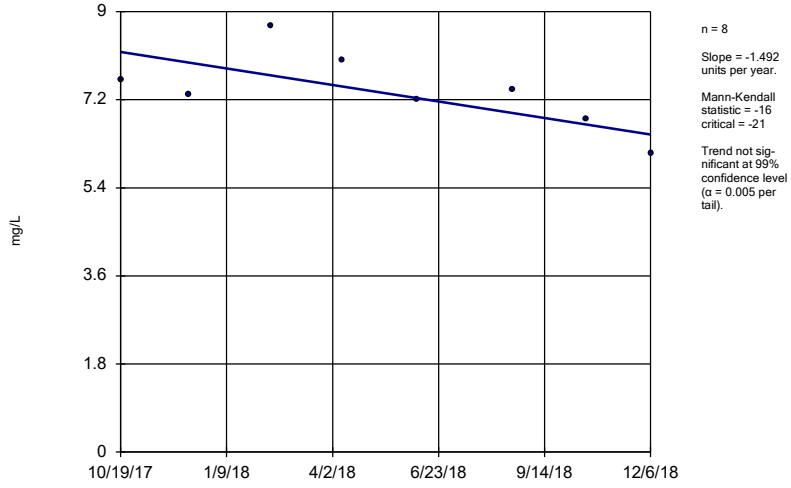
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -1.492 units per year.

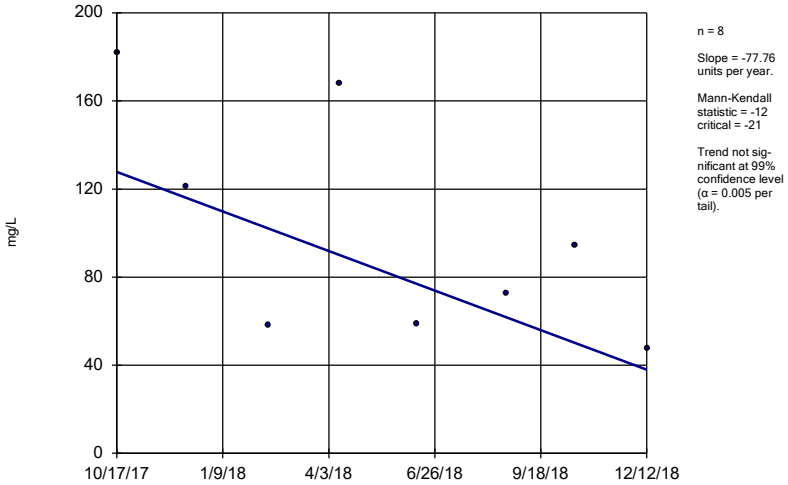
Mann-Kendall statistic = -16 critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1603



n = 8

Slope = -77.76 units per year.

Mann-Kendall statistic = -12 critical = -21

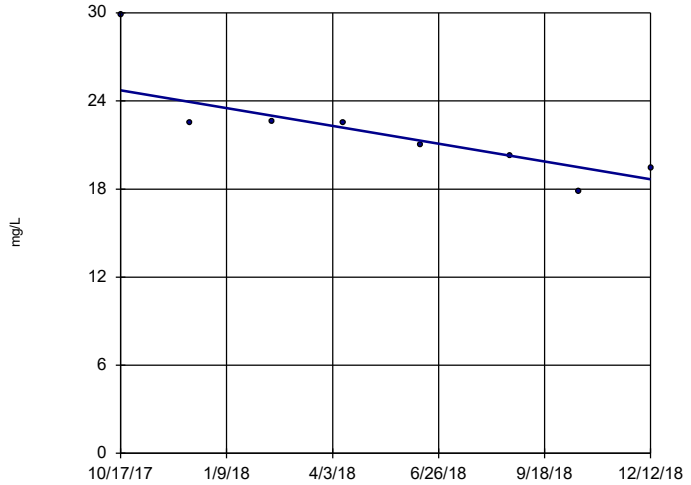
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1604



n = 8

Slope = -5.25 units per year.

Mann-Kendall statistic = -23 critical = -21

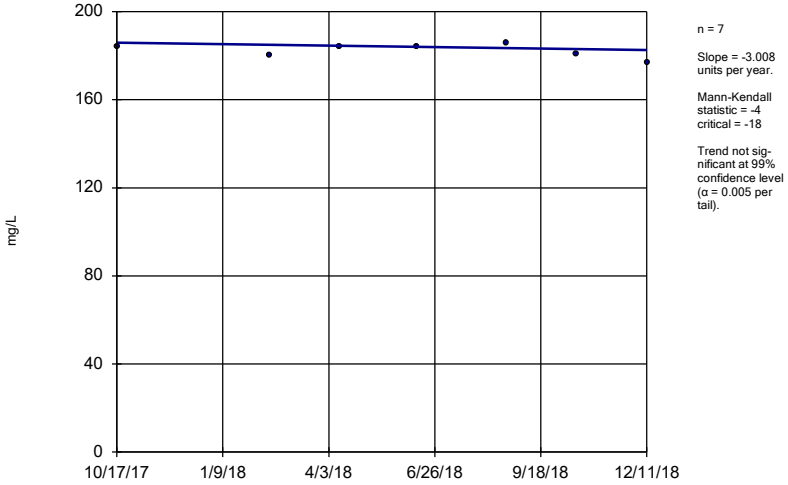
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605



n = 7

Slope = -3.008 units per year.

Mann-Kendall statistic = -4 critical = -18

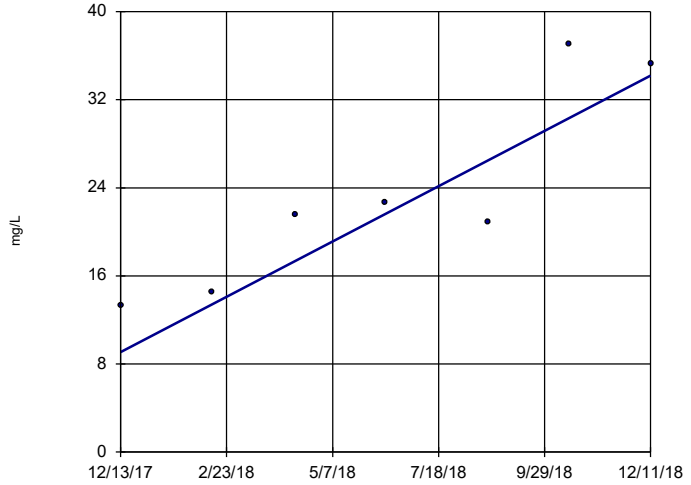
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612



n = 7

Slope = 25.25 units per year.

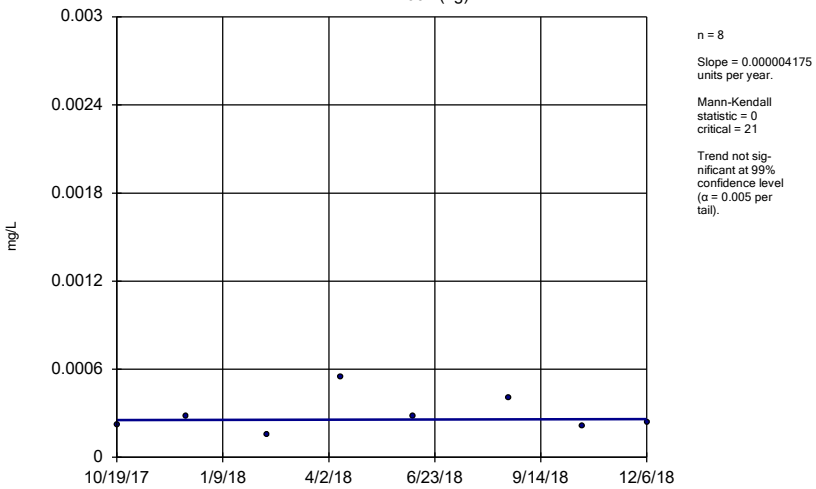
Mann-Kendall statistic = 15 critical = 18

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = 0.000004175 units per year.

Mann-Kendall statistic = 0
critical = 21

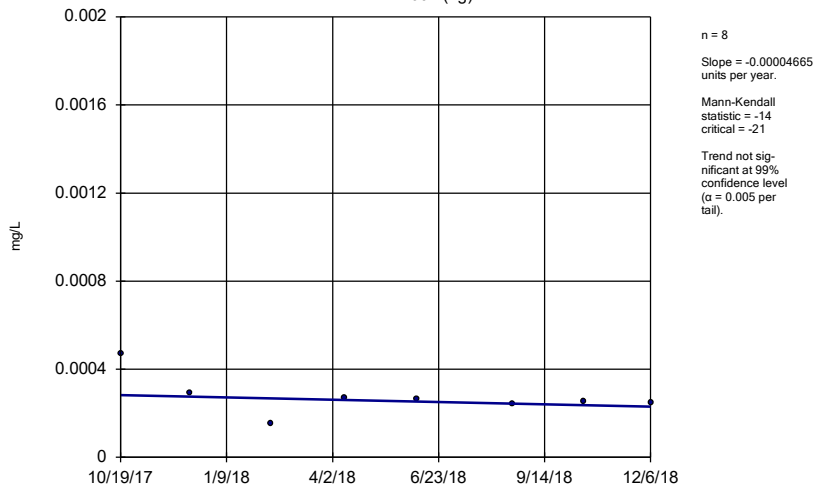
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chromium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = -0.00004665 units per year.

Mann-Kendall statistic = -14
critical = -21

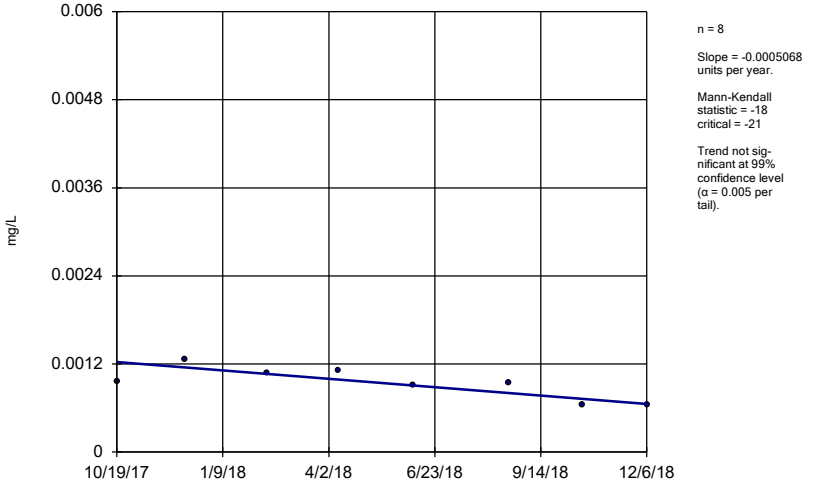
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chromium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -0.0005068 units per year.

Mann-Kendall statistic = -18
critical = -21

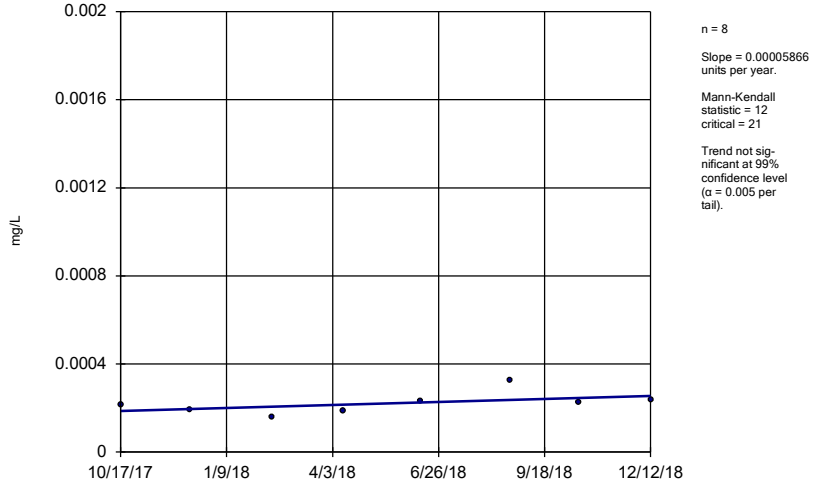
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chromium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0.00005866 units per year.

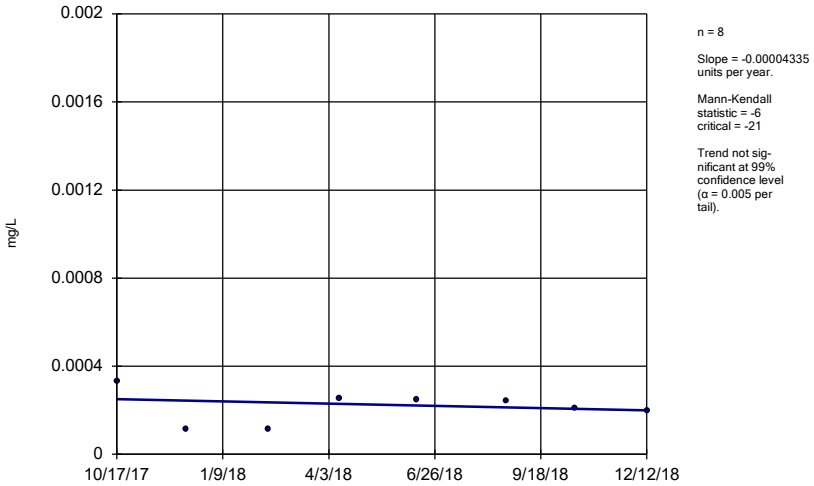
Mann-Kendall statistic = 12
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chromium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1604

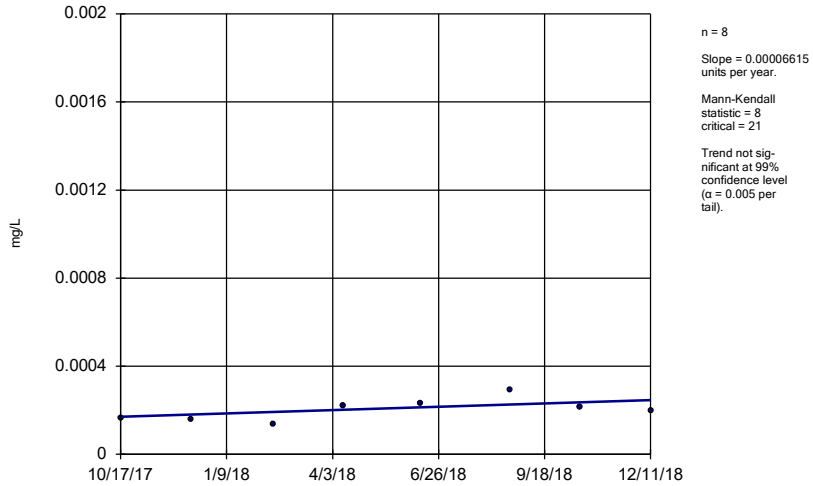


Constituent: Chromium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605

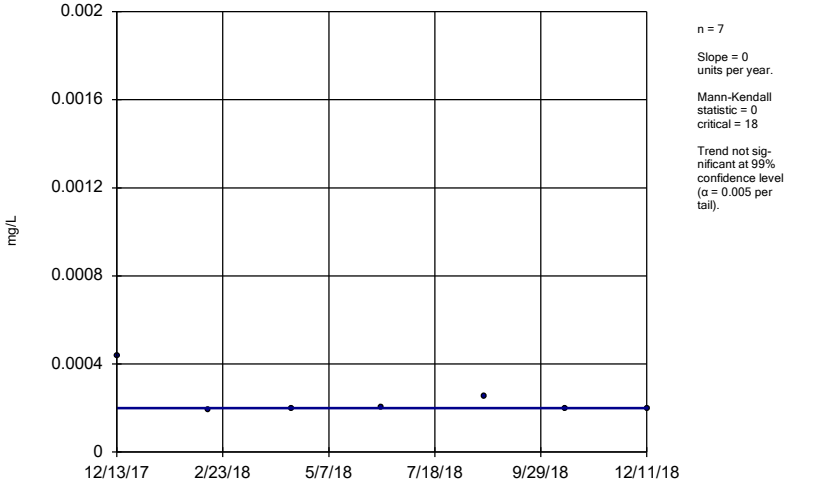


Constituent: Chromium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612

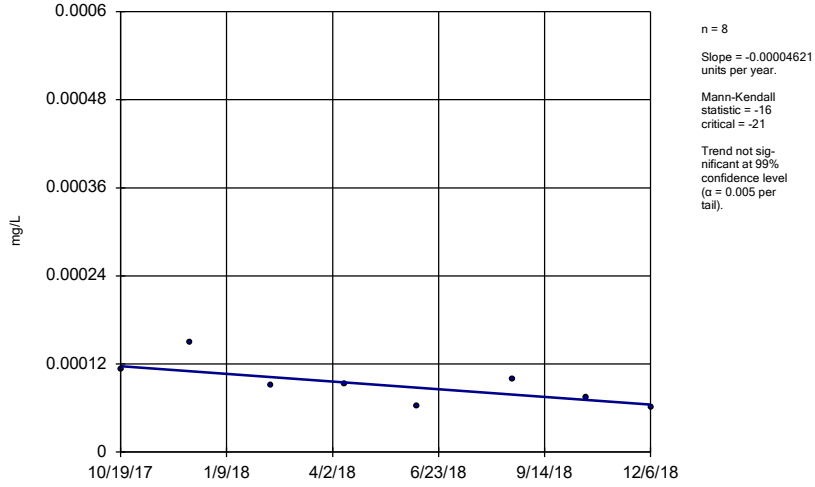


Constituent: Chromium Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

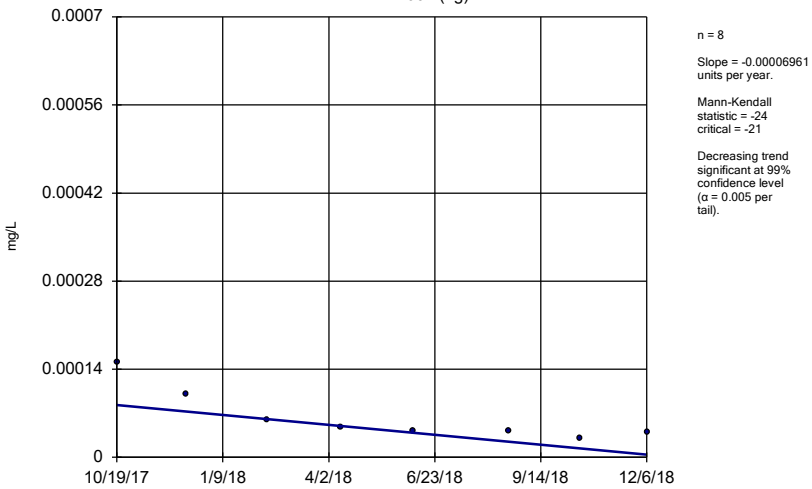
MW-1601 (bg)



Constituent: Cobalt Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = -0.00006961 units per year.

Mann-Kendall statistic = -24
critical = -21

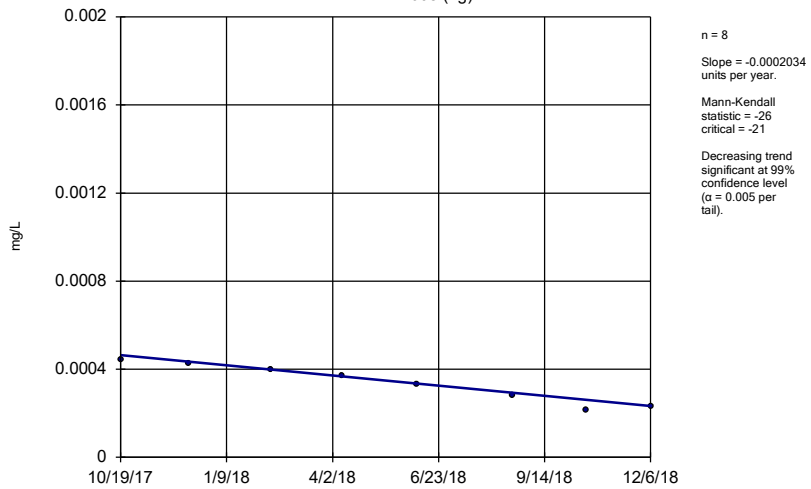
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cobalt Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -0.0002034 units per year.

Mann-Kendall statistic = -26
critical = -21

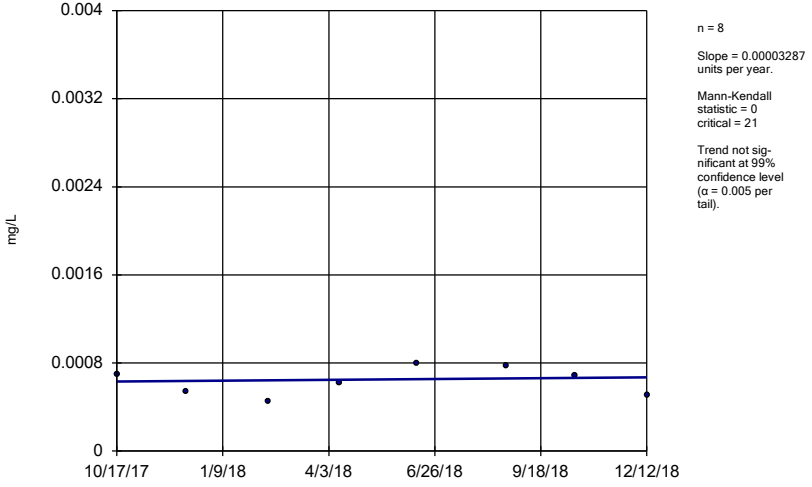
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cobalt Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0.00003287 units per year.

Mann-Kendall statistic = 0
critical = 21

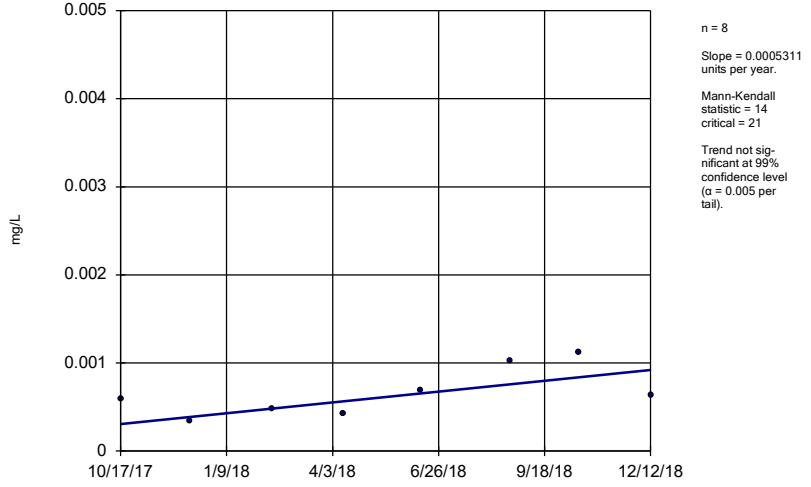
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cobalt Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1604



n = 8

Slope = 0.0005311 units per year.

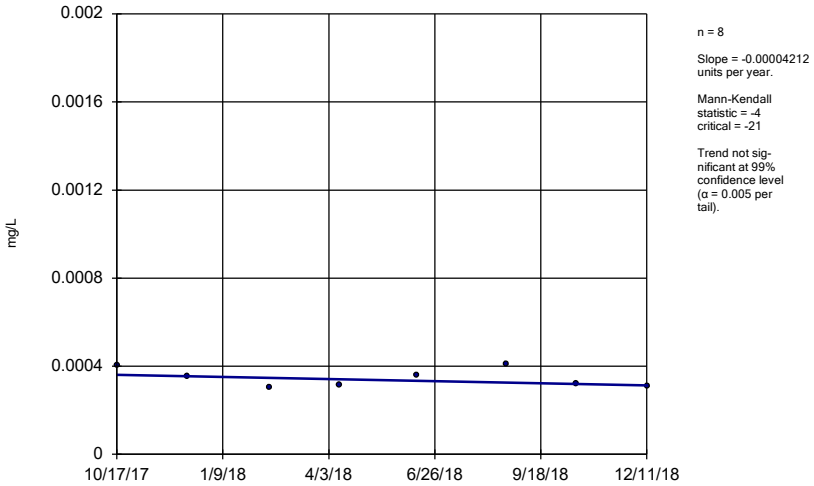
Mann-Kendall statistic = 14
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Cobalt Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1605

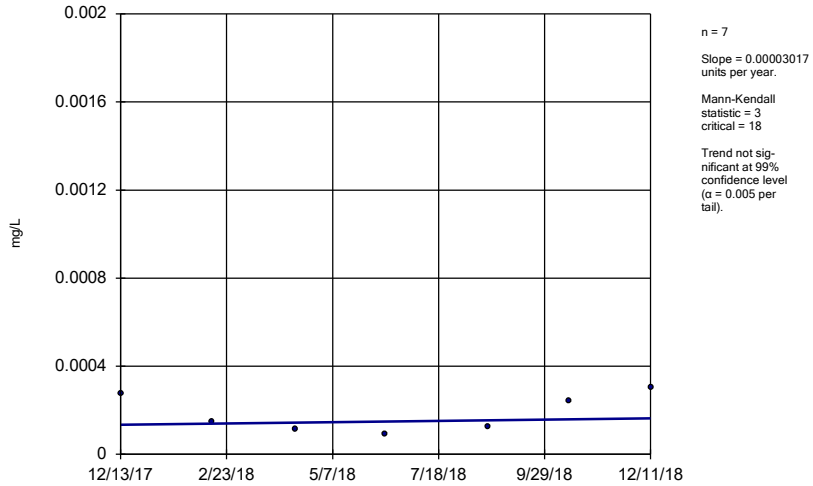


Constituent: Cobalt Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612

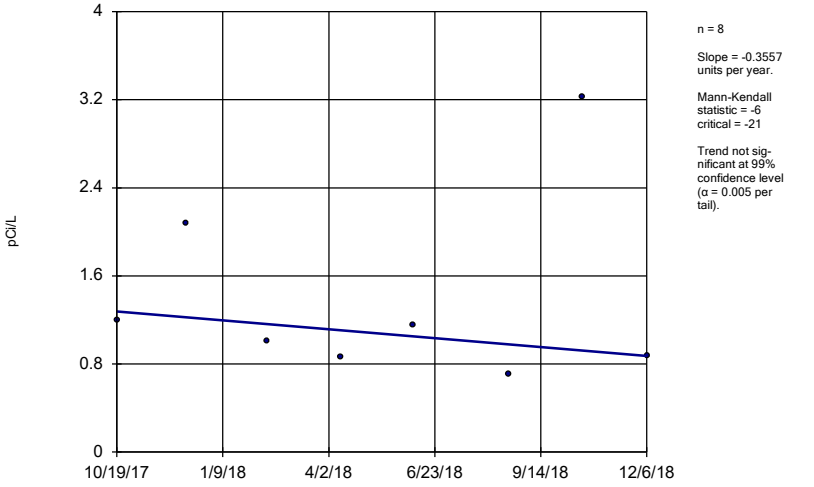


Constituent: Cobalt Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601 (bg)

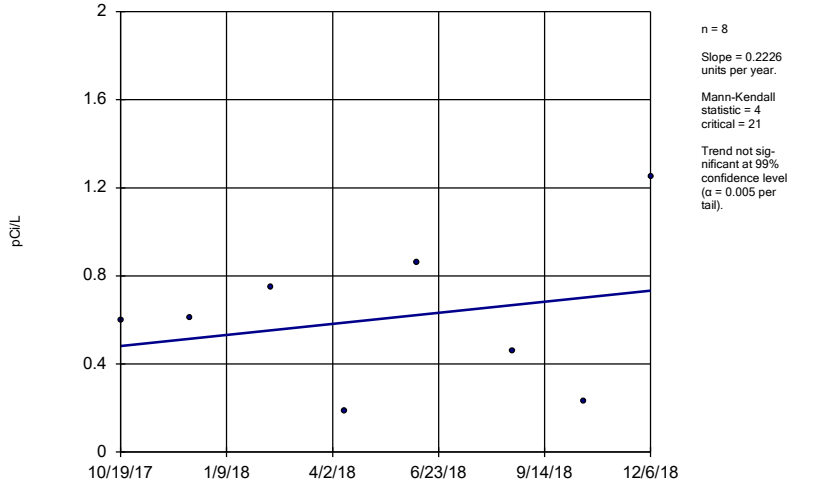


Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

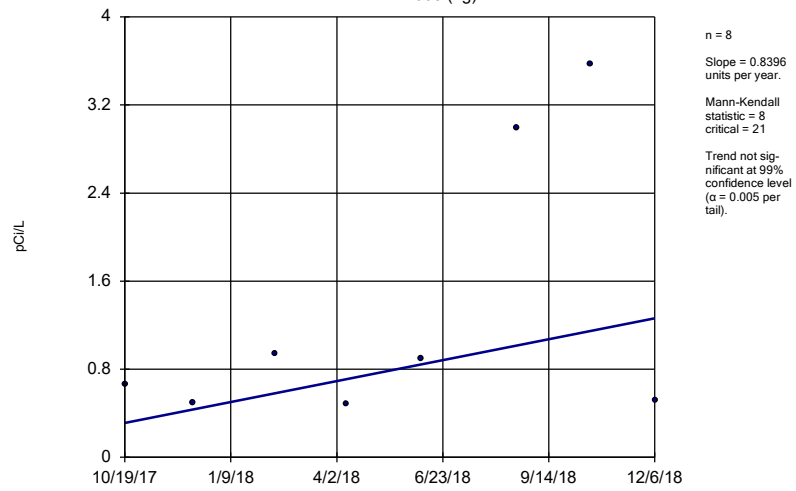
MW-1602 (bg)



Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = 0.8396 units per year.

Mann-Kendall statistic = 8 critical = 21

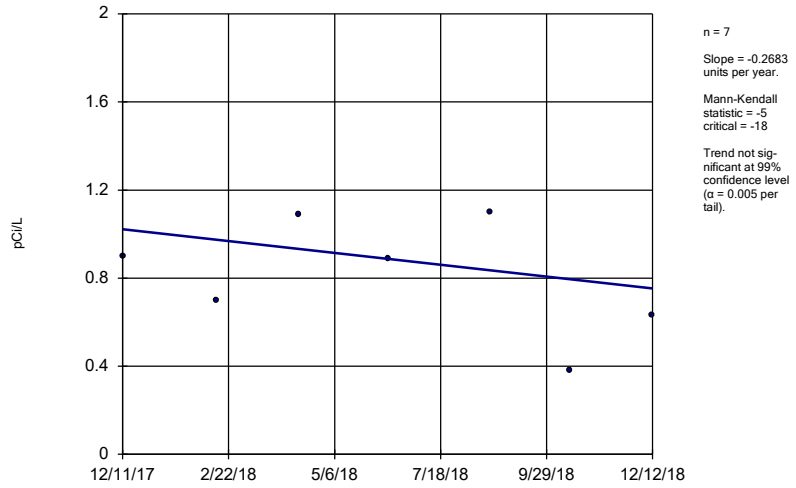
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 7

Slope = -0.2683 units per year.

Mann-Kendall statistic = -5 critical = -18

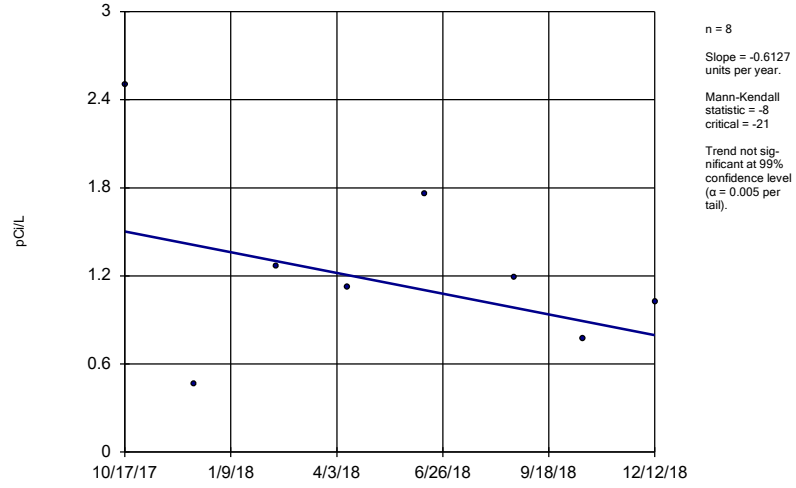
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1604



n = 8

Slope = -0.6127 units per year.

Mann-Kendall statistic = -8 critical = -21

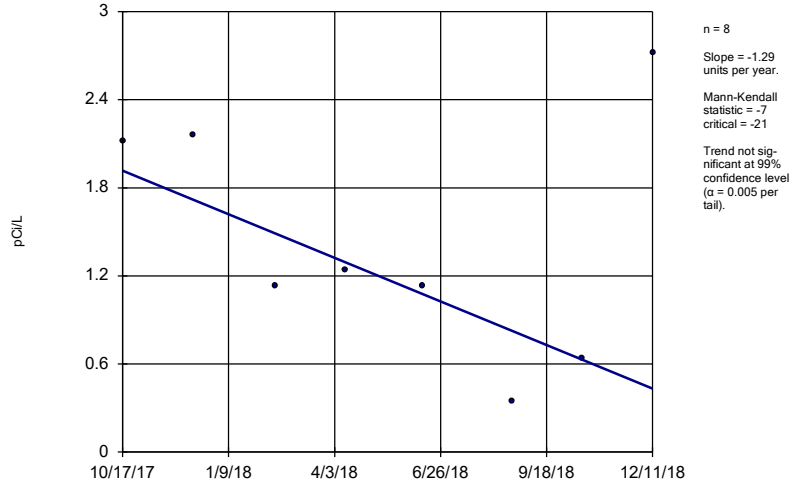
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605



n = 8

Slope = -1.29 units per year.

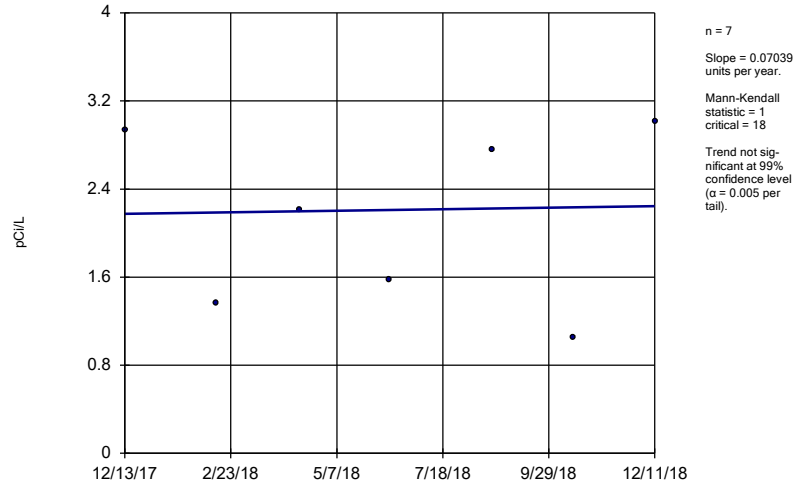
Mann-Kendall statistic = -7 critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1612



n = 7

Slope = 0.07039 units per year.

Mann-Kendall statistic = 1 critical = 18

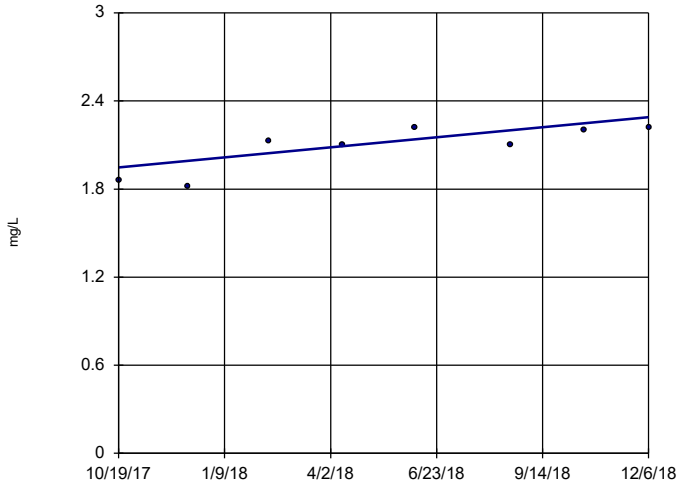
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Combined Radium 226 + 228 Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Des
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = 0.3032 units per year.

Mann-Kendall statistic = 16 critical = 21

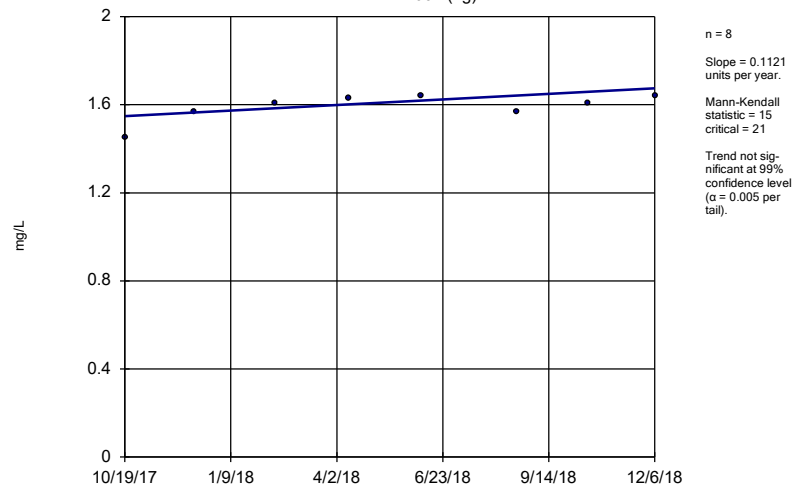
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = 0.1121 units per year.

Mann-Kendall statistic = 15 critical = 21

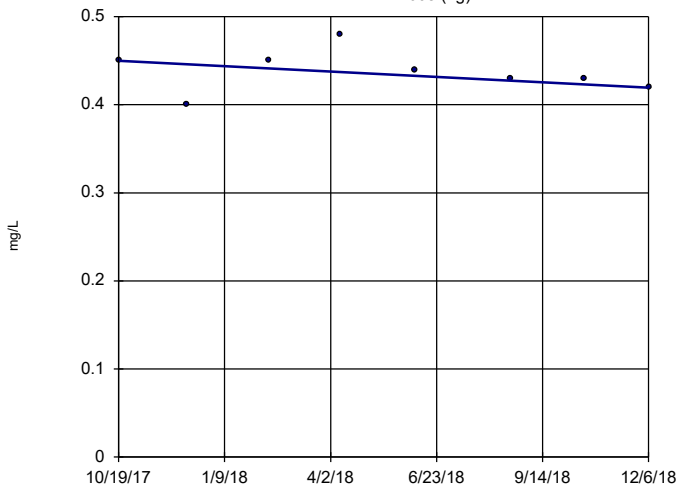
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -0.02708 units per year.

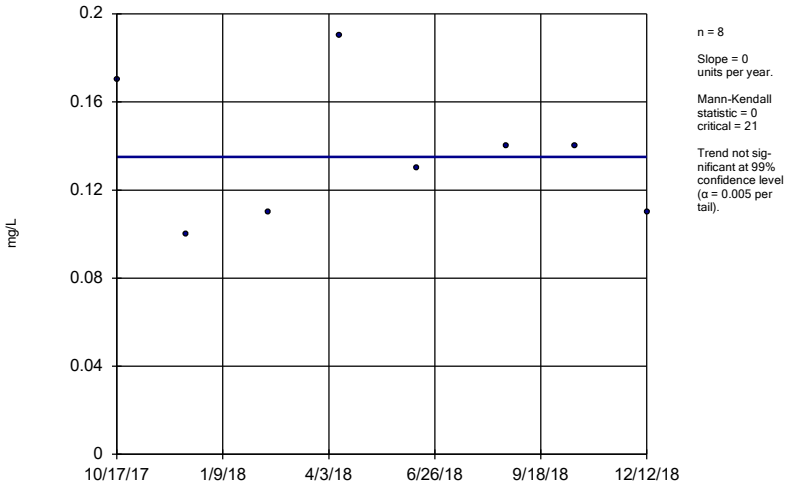
Mann-Kendall statistic = -10 critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 0 critical = 21

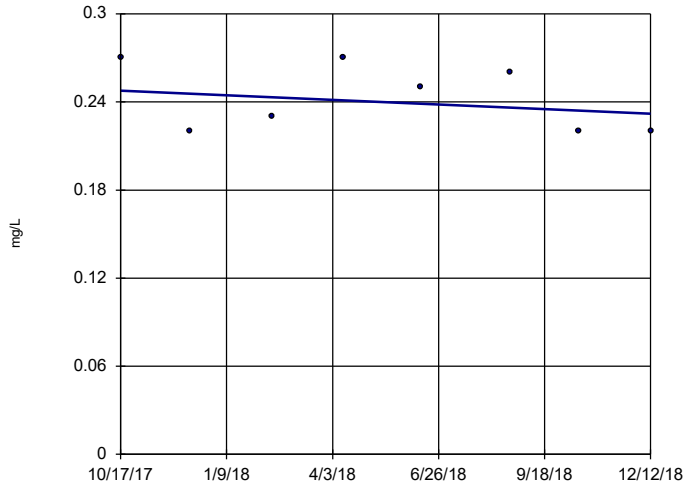
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 4/17/2019 3:56 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1604



n = 8

Slope = -0.01354 units per year.

Mann-Kendall statistic = -8 critical = -21

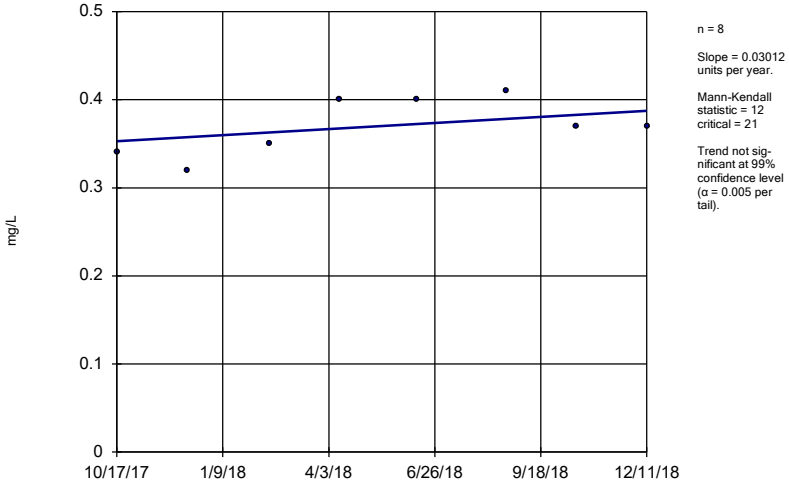
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605



n = 8

Slope = 0.03012 units per year.

Mann-Kendall statistic = 12 critical = 21

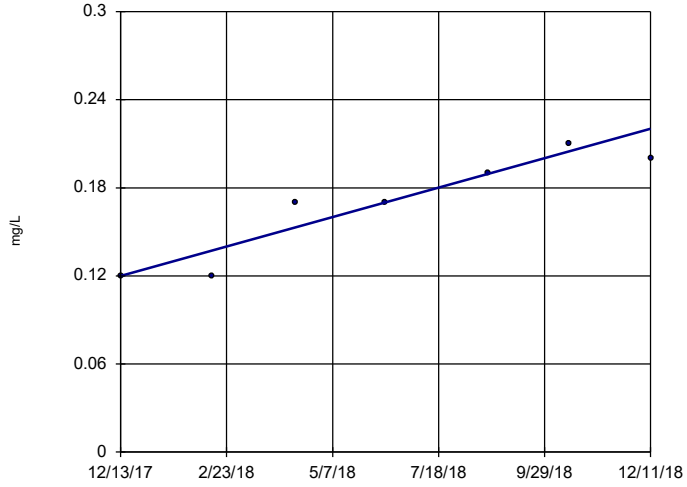
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612



n = 7

Slope = 0.1008 units per year.

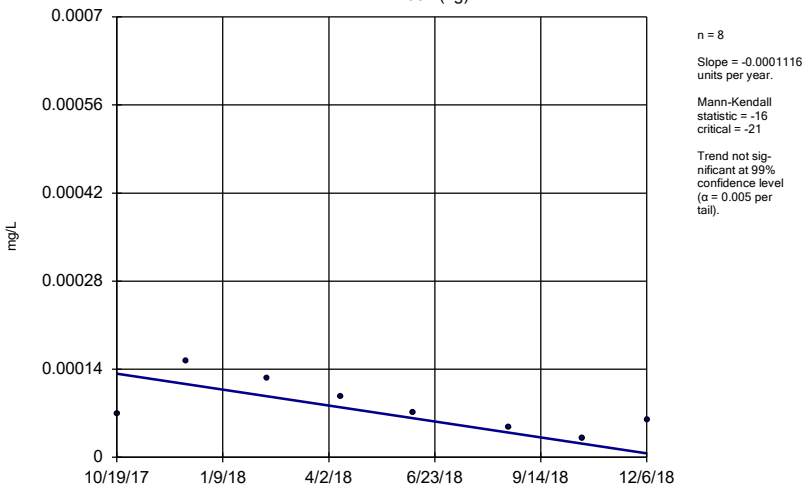
Mann-Kendall statistic = 17 critical = 18

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = -0.0001116 units per year.

Mann-Kendall statistic = -16
critical = -21

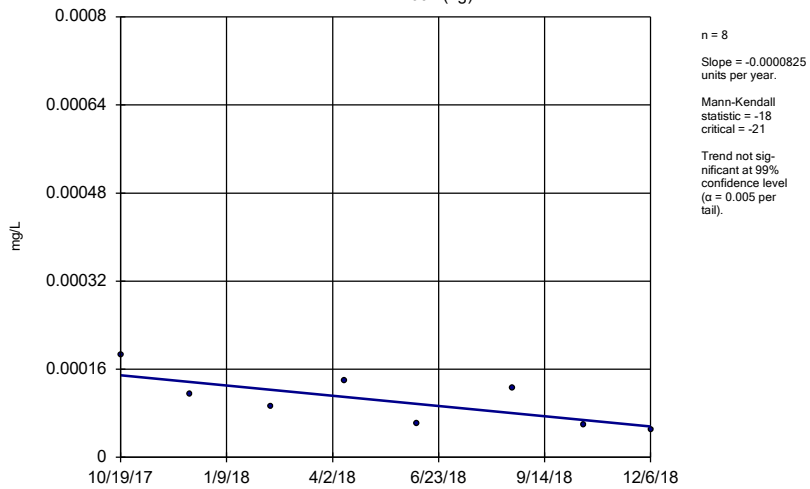
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lead Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = -0.0000825 units per year.

Mann-Kendall statistic = -18
critical = -21

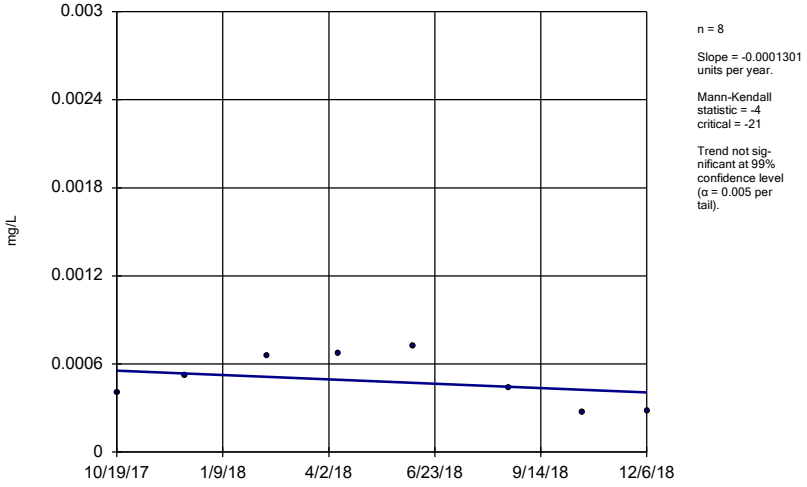
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lead Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -0.0001301 units per year.

Mann-Kendall statistic = -4
critical = -21

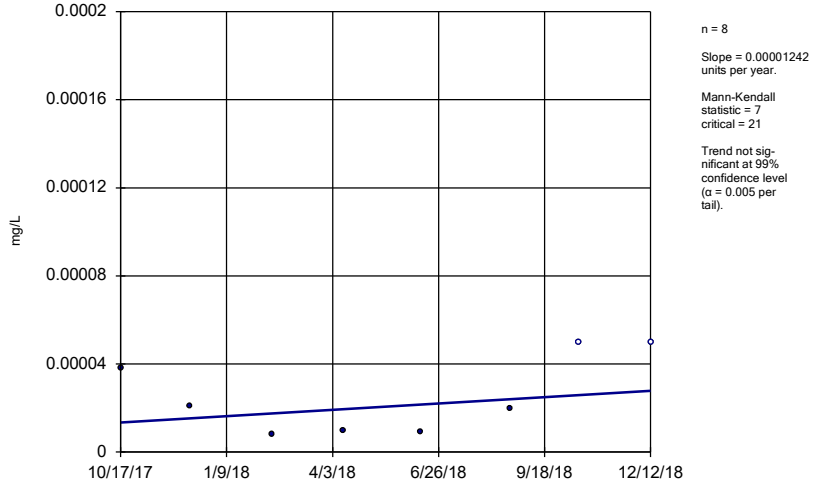
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lead Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0.00001242 units per year.

Mann-Kendall statistic = 7
critical = 21

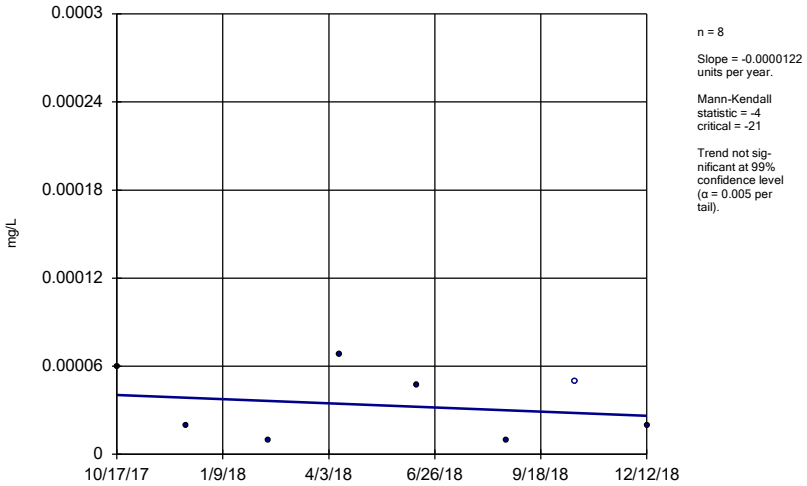
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lead Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1604



n = 8

Slope = -0.0000122 units per year.

Mann-Kendall statistic = -4
critical = -21

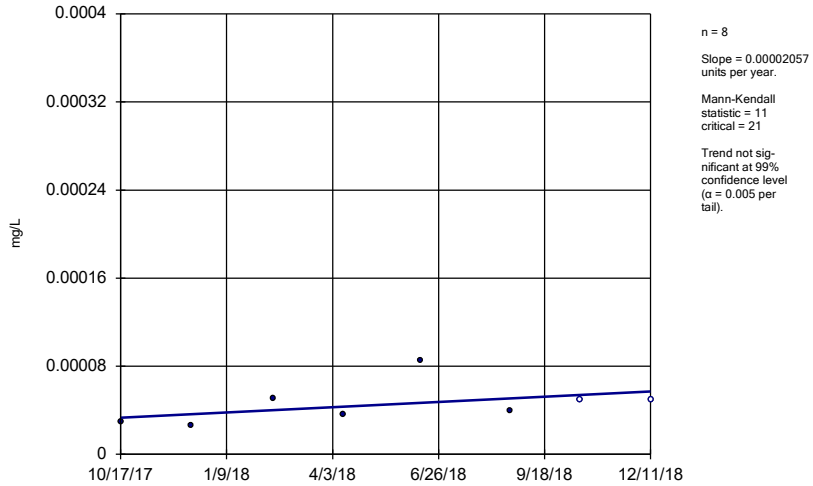
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lead Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1605



n = 8

Slope = 0.00002057 units per year.

Mann-Kendall statistic = 11
critical = 21

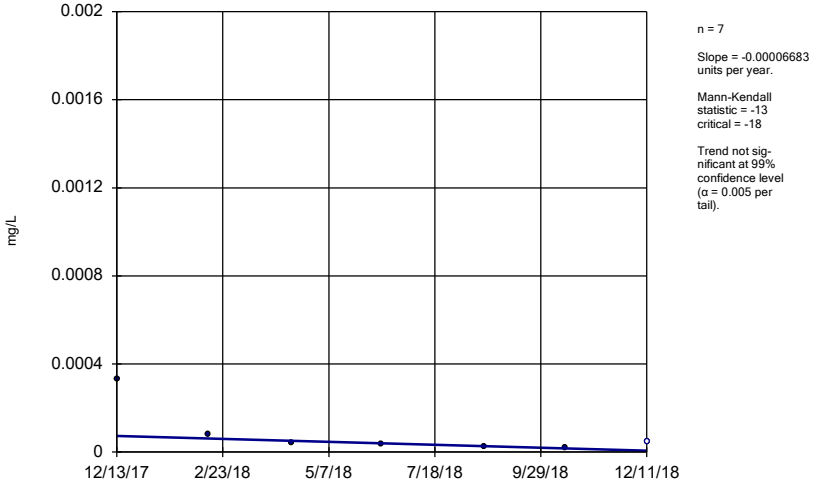
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lead Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1612



n = 7

Slope = -0.00006683 units per year.

Mann-Kendall statistic = -13
critical = -18

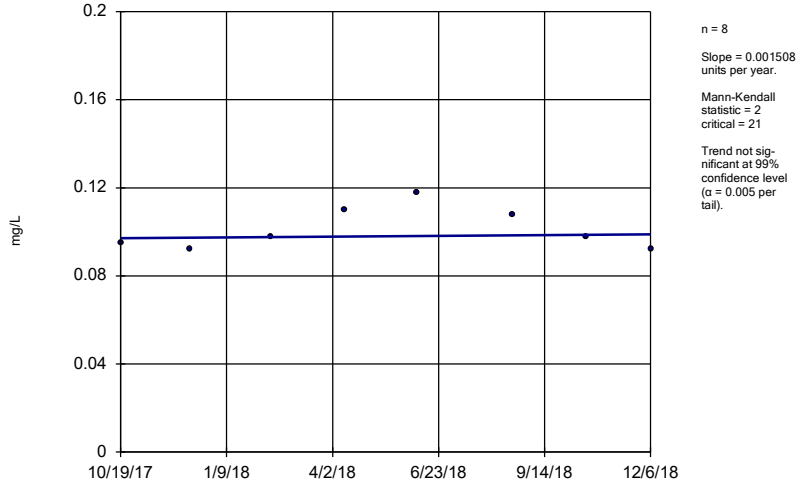
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lead Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = 0.001508 units per year.

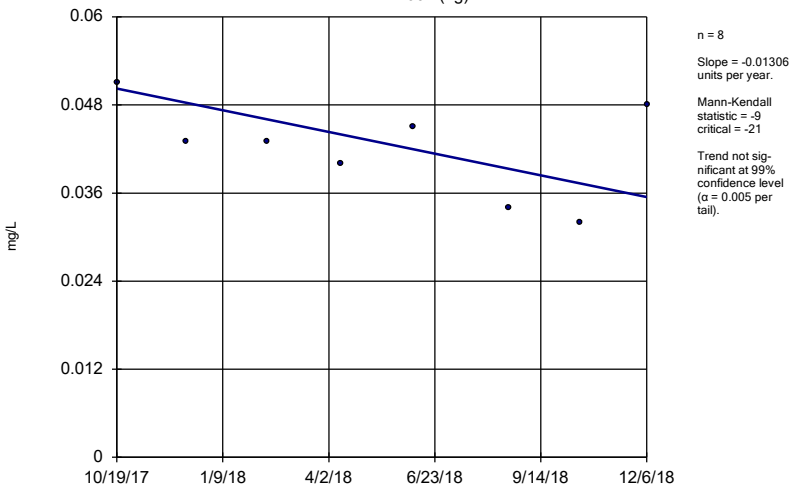
Mann-Kendall statistic = 2
critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lithium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = -0.01306 units per year.

Mann-Kendall statistic = -9
critical = -21

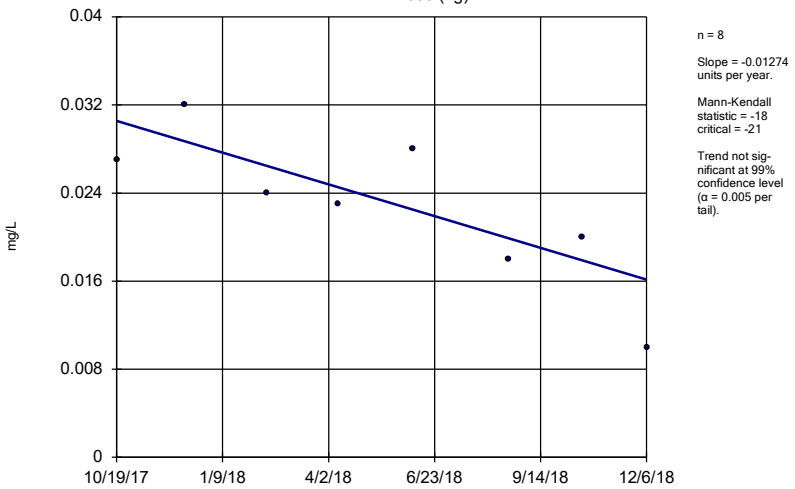
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lithium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -0.01274 units per year.

Mann-Kendall statistic = -18
critical = -21

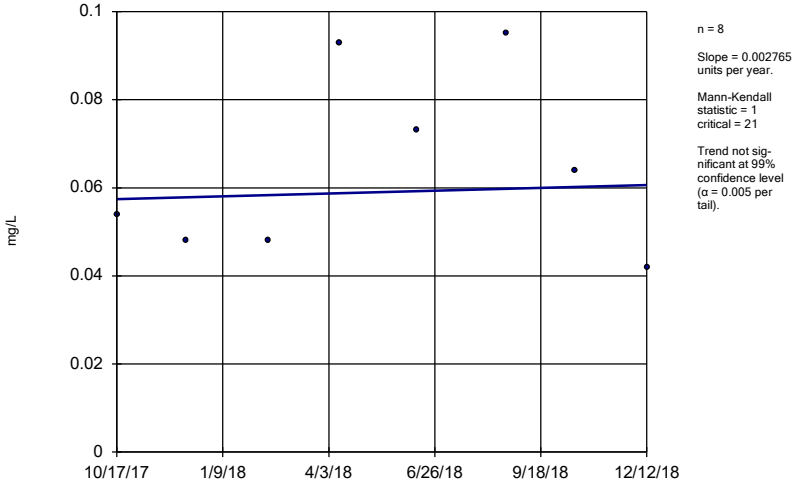
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lithium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0.002765 units per year.

Mann-Kendall statistic = 1
critical = 21

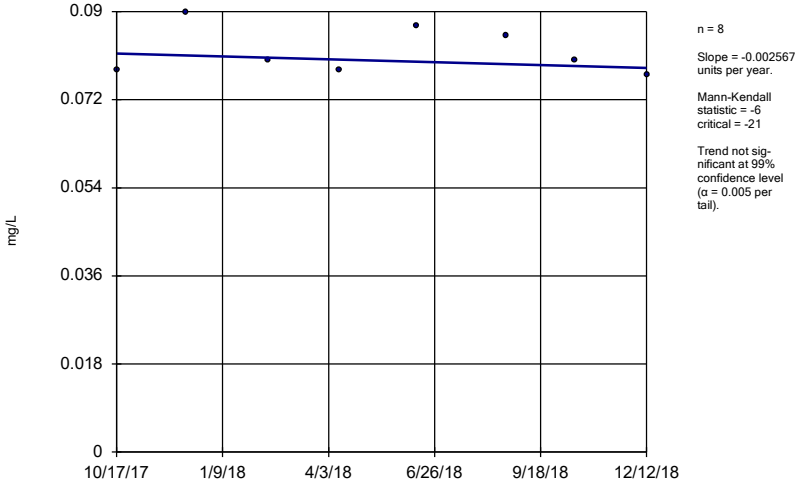
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lithium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1604



n = 8

Slope = -0.002567 units per year.

Mann-Kendall statistic = -6
critical = -21

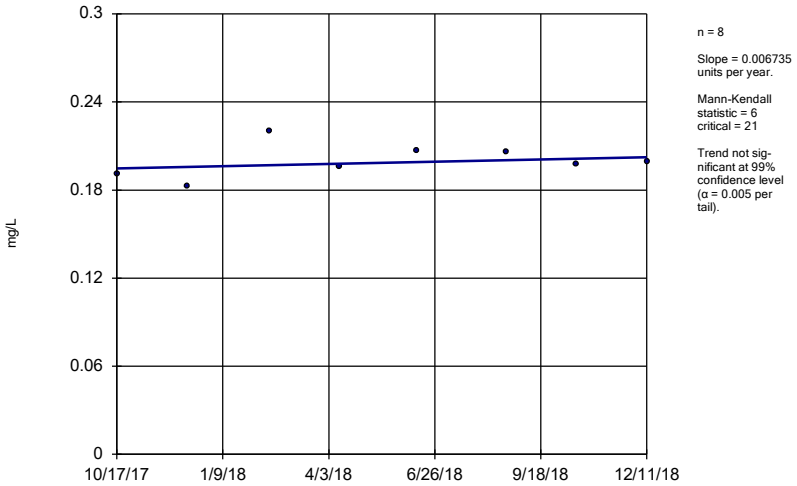
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Lithium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605



Constituent: Lithium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive

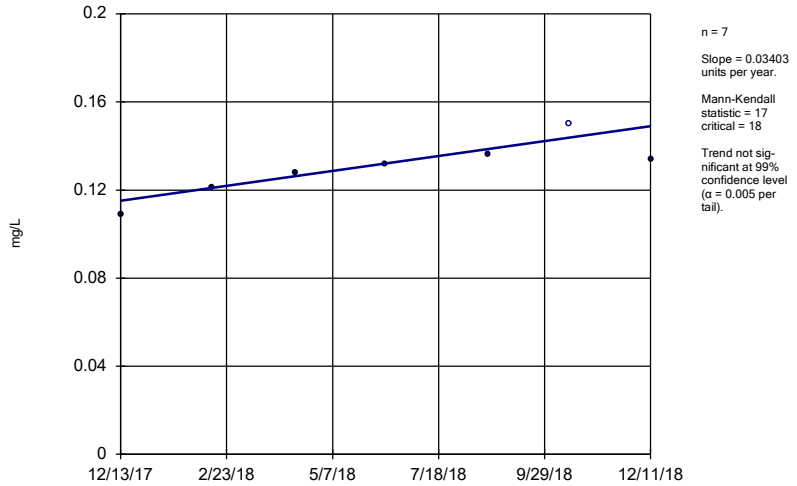
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1612



Constituent: Lithium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive

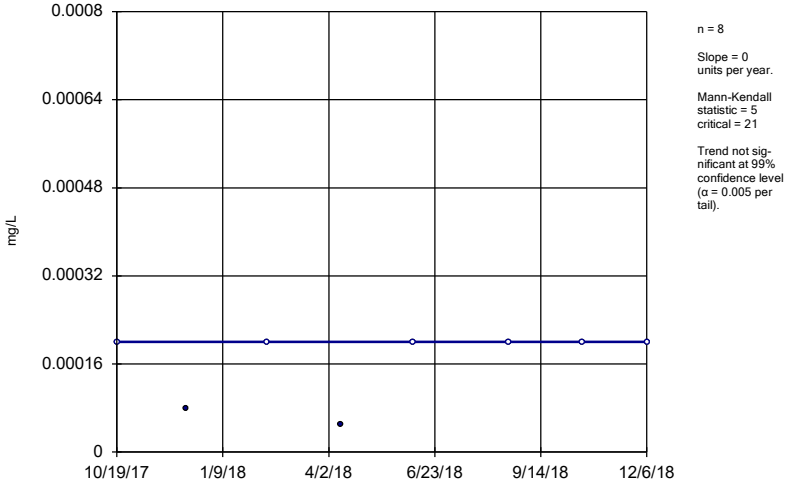
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1601 (bg)



Constituent: Mercury Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive

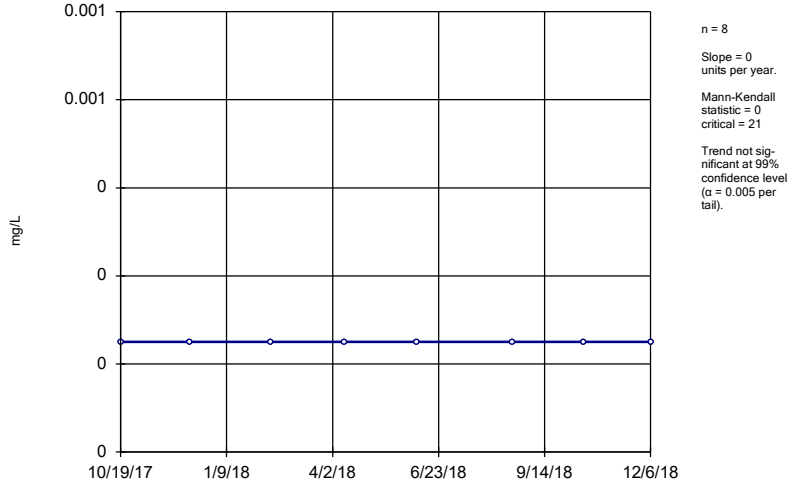
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1602 (bg)



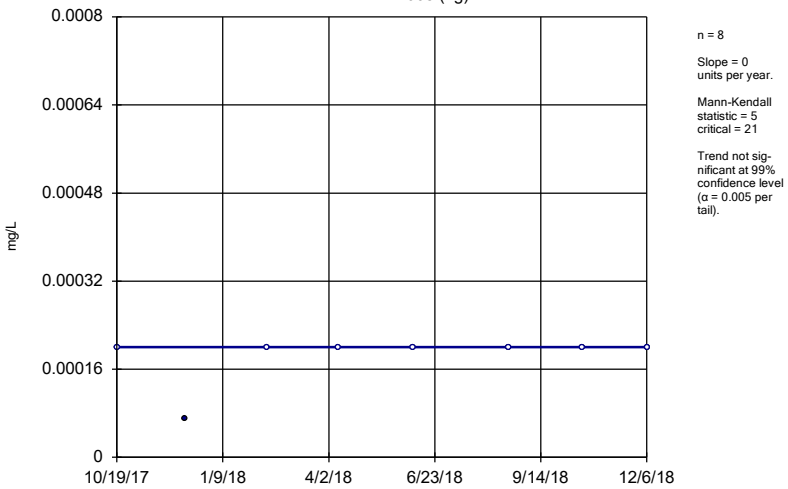
Constituent: Mercury Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 5 critical = 21

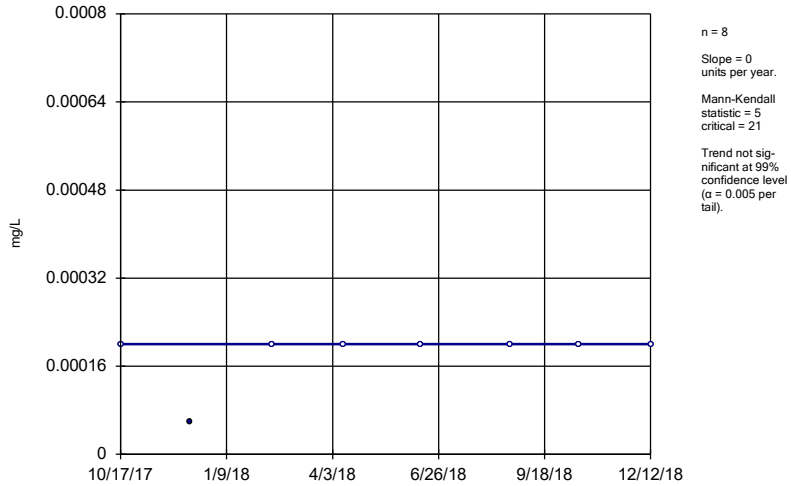
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Mercury Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 5 critical = 21

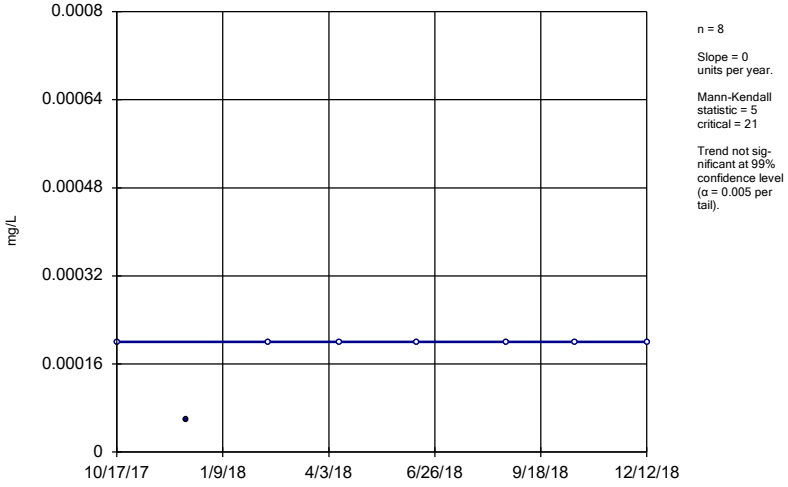
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Mercury Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1604



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 5 critical = 21

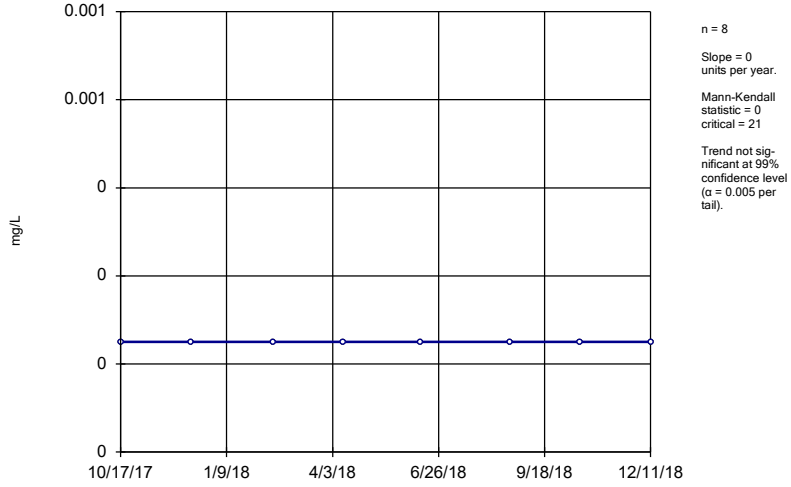
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Mercury Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1605



n = 8

Slope = 0 units per year.

Mann-Kendall statistic = 0 critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Mercury Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1612

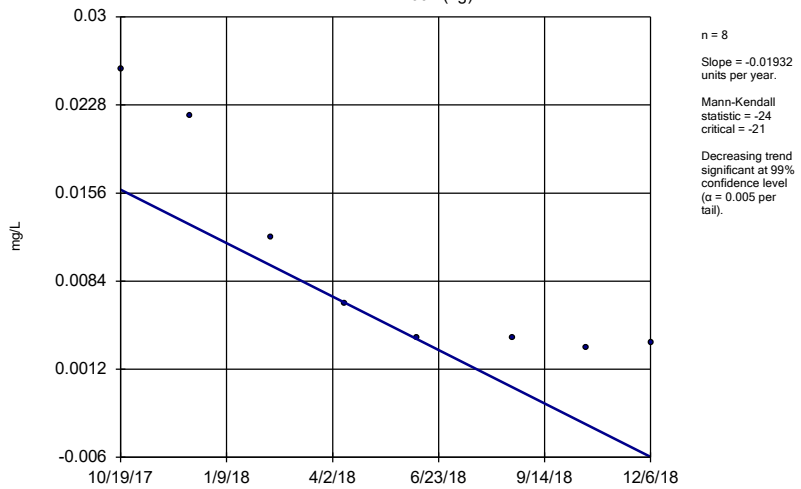
Constituent: Mercury Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601 (bg)



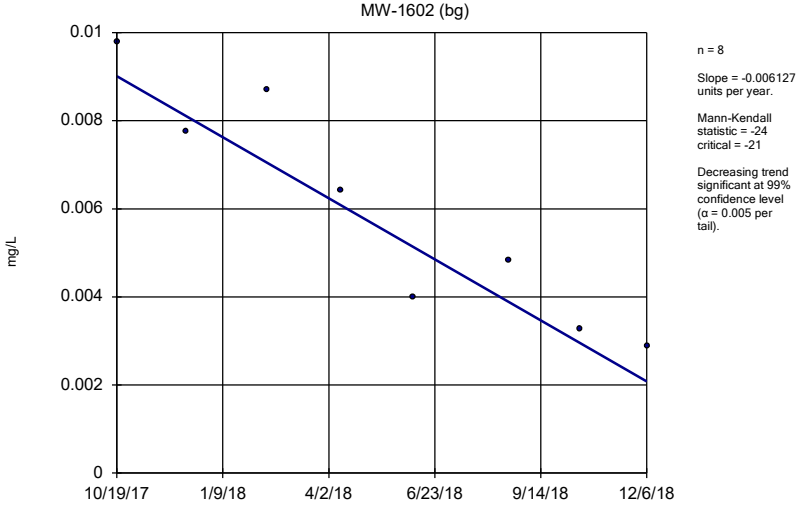
Constituent: Molybdenum Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



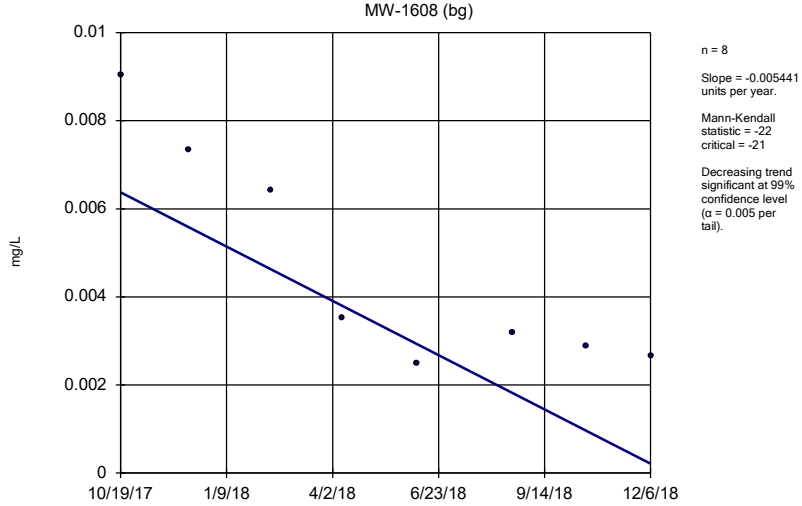
Constituent: Molybdenum Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)

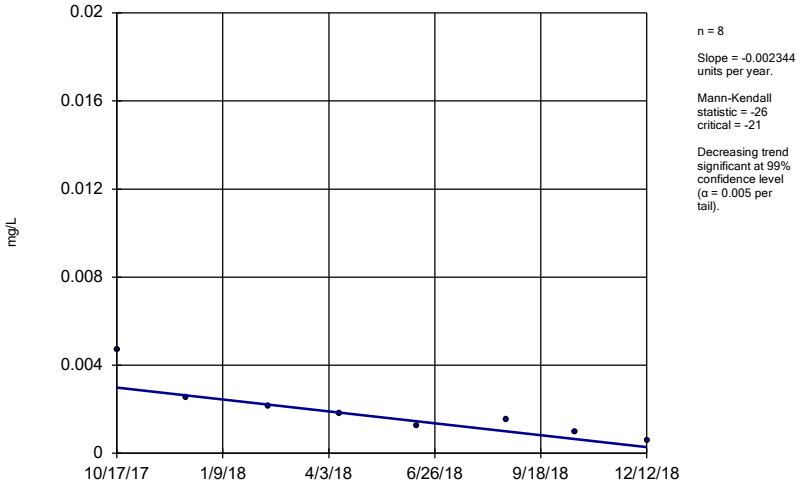


Constituent: Molybdenum Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1603



n = 8

Slope = -0.002344 units per year.

Mann-Kendall statistic = -26
critical = -21

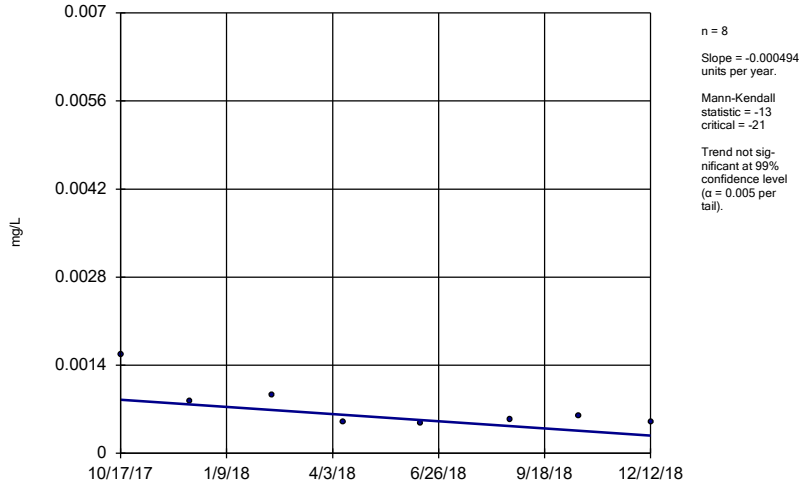
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Molybdenum Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1604



n = 8

Slope = -0.000494 units per year.

Mann-Kendall statistic = -13
critical = -21

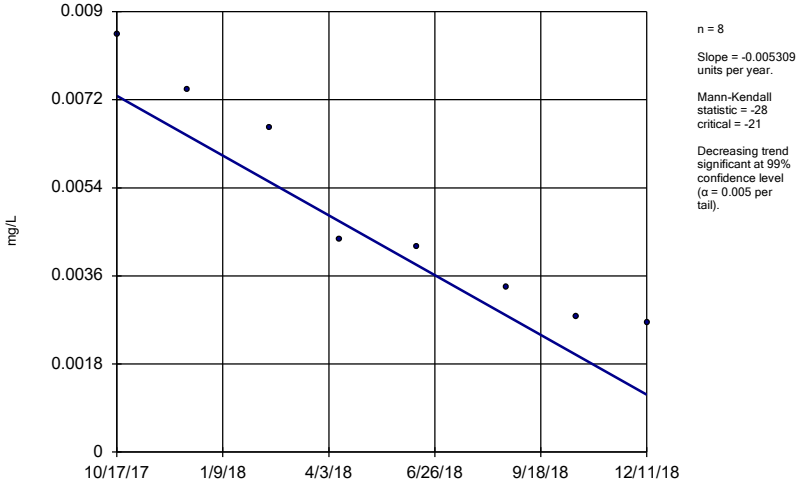
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Molybdenum Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605



n = 8

Slope = -0.005309 units per year.

Mann-Kendall statistic = -28
critical = -21

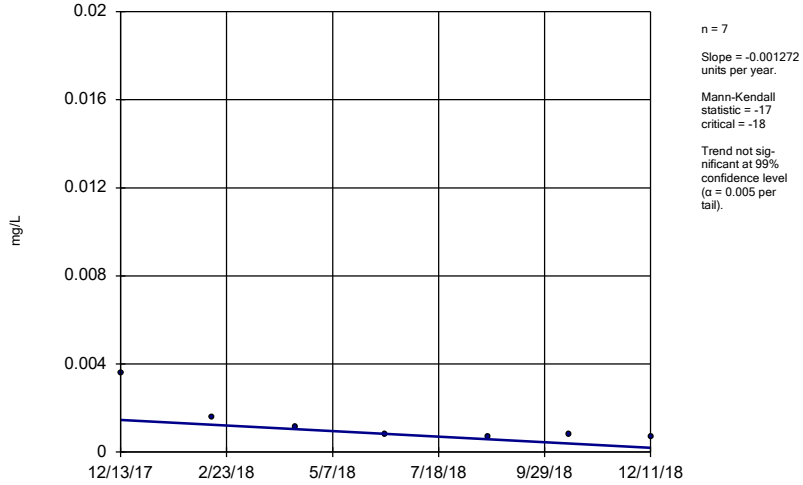
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Molybdenum Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612



n = 7

Slope = -0.001272 units per year.

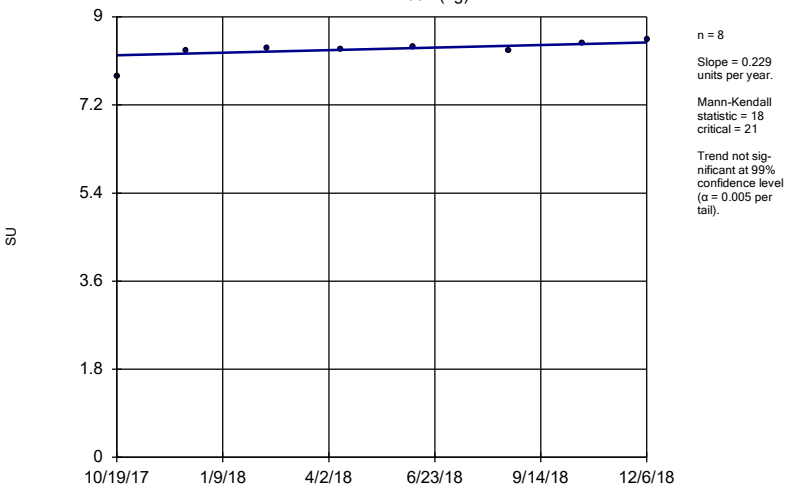
Mann-Kendall statistic = -17
critical = -18

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Molybdenum Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = 0.229 units per year.

Mann-Kendall statistic = 18 critical = 21

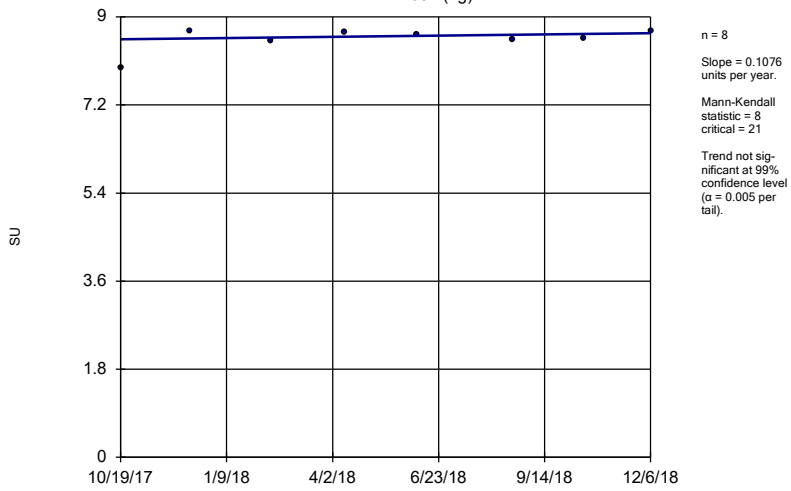
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = 0.1076 units per year.

Mann-Kendall statistic = 8 critical = 21

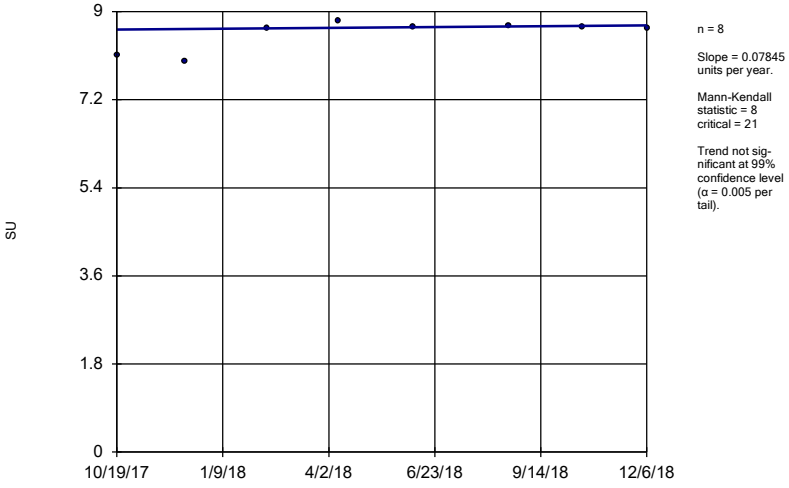
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = 0.07845 units per year.

Mann-Kendall statistic = 8 critical = 21

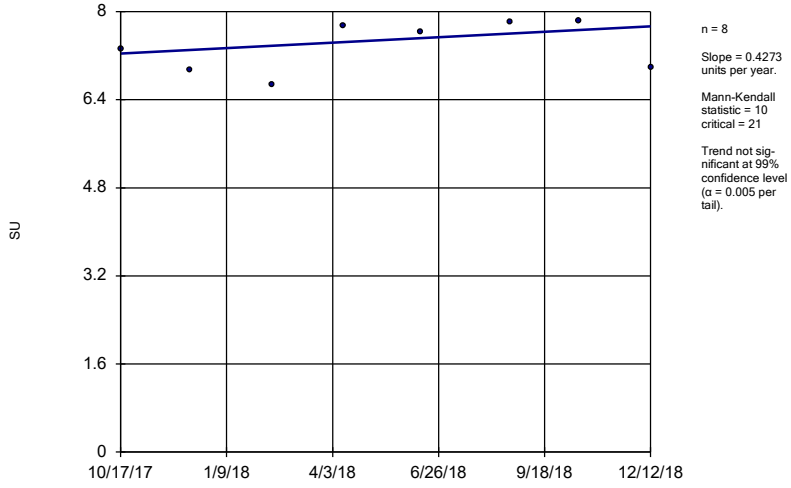
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0.4273 units per year.

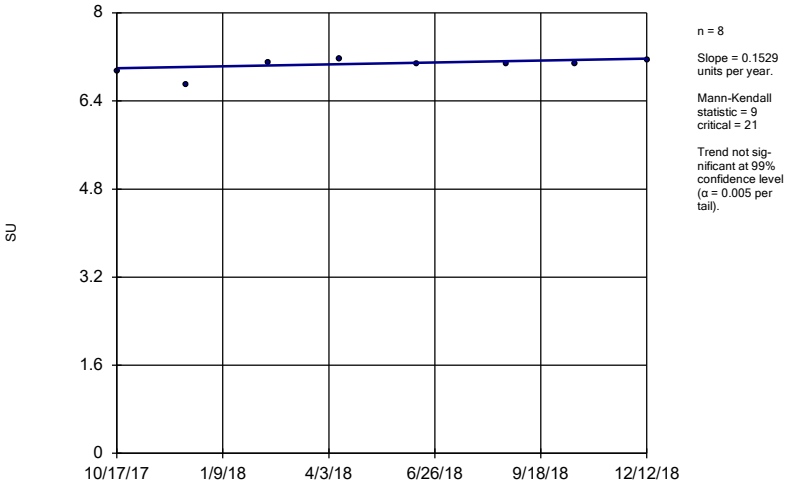
Mann-Kendall statistic = 10 critical = 21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1604

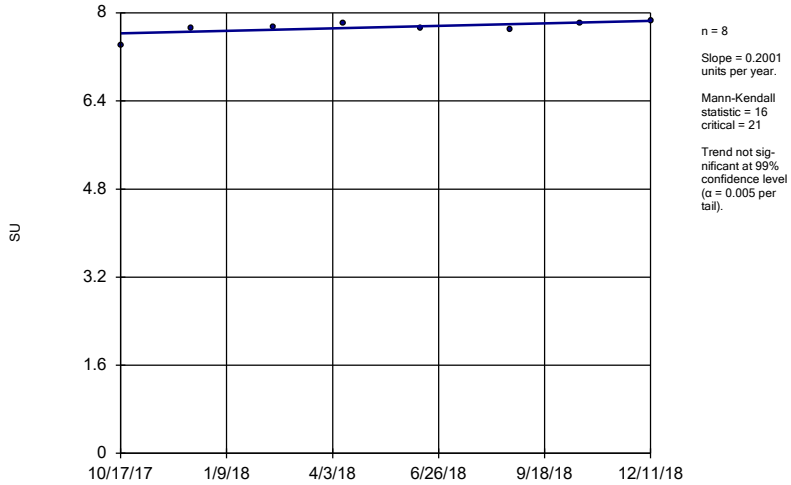


Constituent: pH Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605

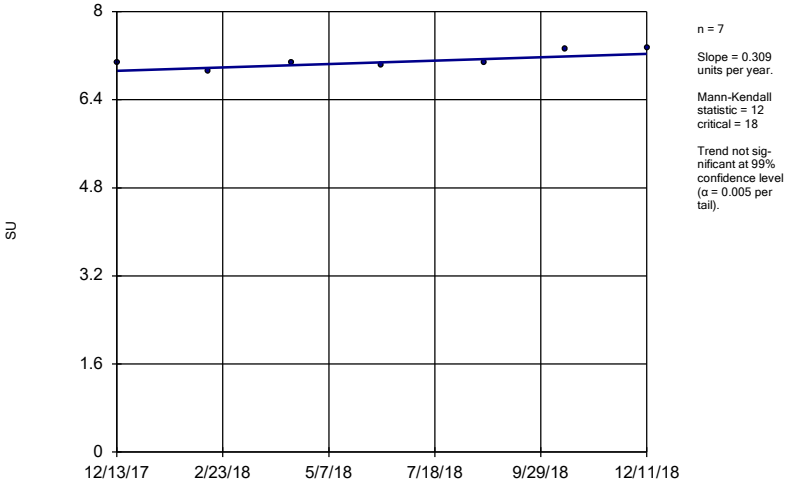


Constituent: pH Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612

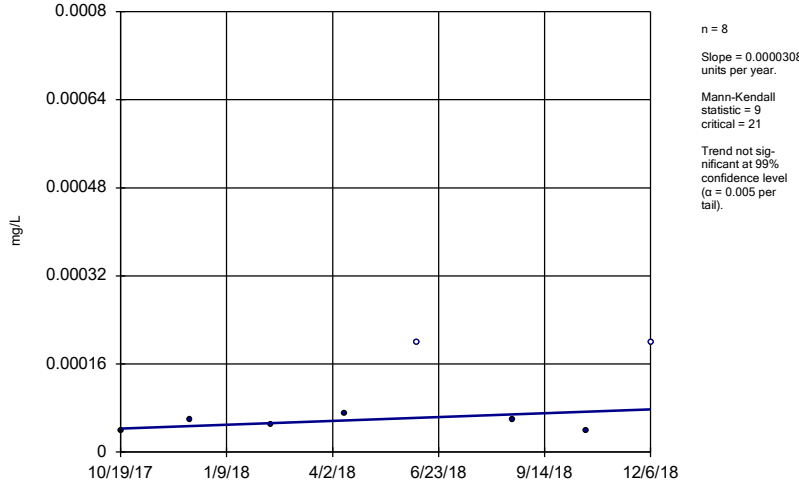


Constituent: pH Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1601 (bg)

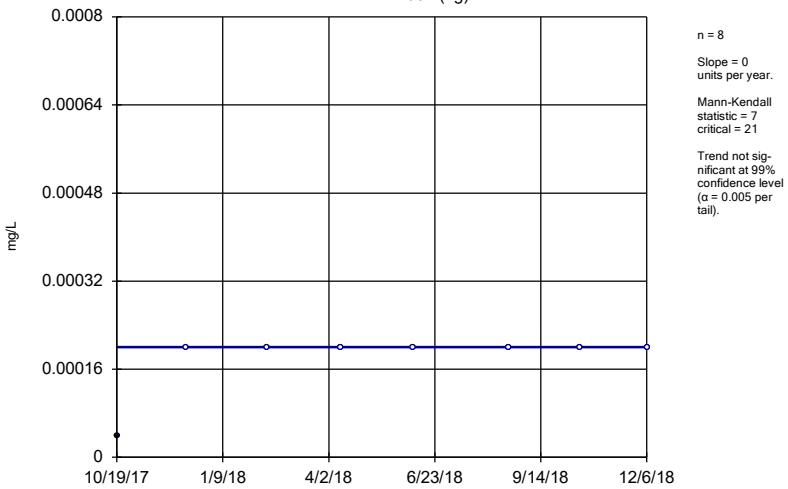


Constituent: Selenium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = 0
units per year.

Mann-Kendall
statistic = 7
critical = 21

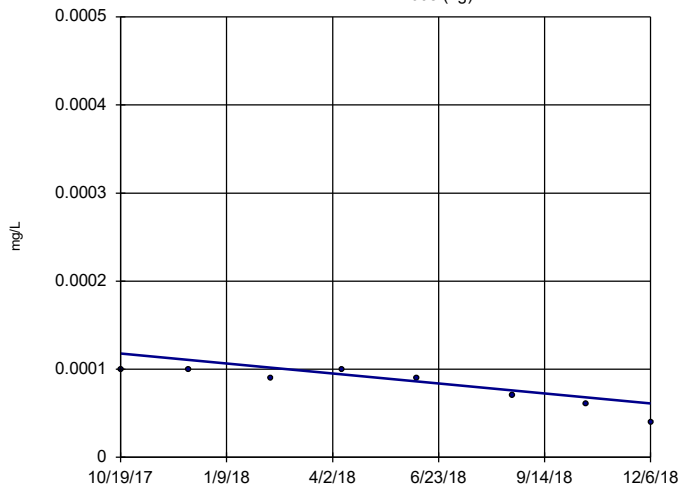
Trend not sig-
nificant at 99%
confidence level
(α = 0.005 per
tail).

Constituent: Selenium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -0.00005006
units per year.

Mann-Kendall
statistic = -22
critical = -21

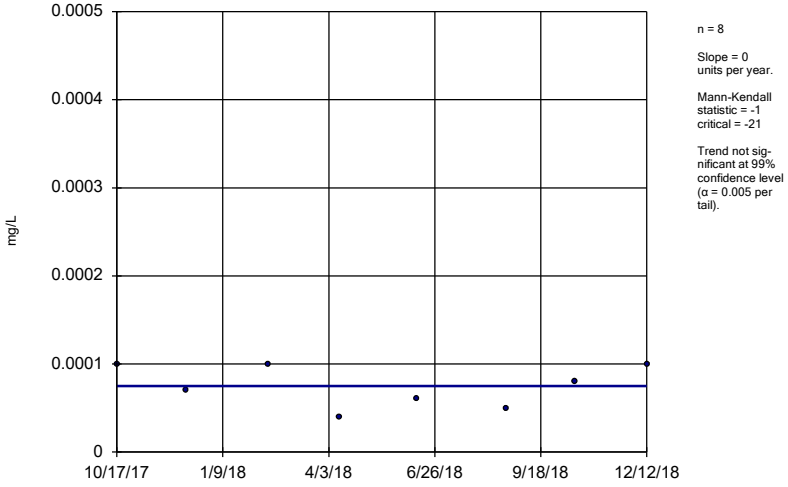
Decreasing trend
significant at 99%
confidence level
(α = 0.005 per
tail).

Constituent: Selenium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 8

Slope = 0
units per year.

Mann-Kendall
statistic = -1
critical = -21

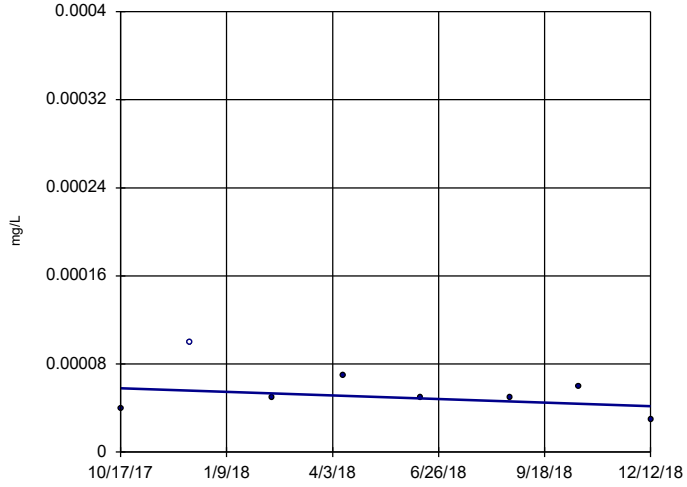
Trend not sig-
nificant at 99%
confidence level
(α = 0.005 per
tail).

Constituent: Selenium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1604



n = 8

Slope = -0.00001409
units per year.

Mann-Kendall
statistic = -5
critical = -21

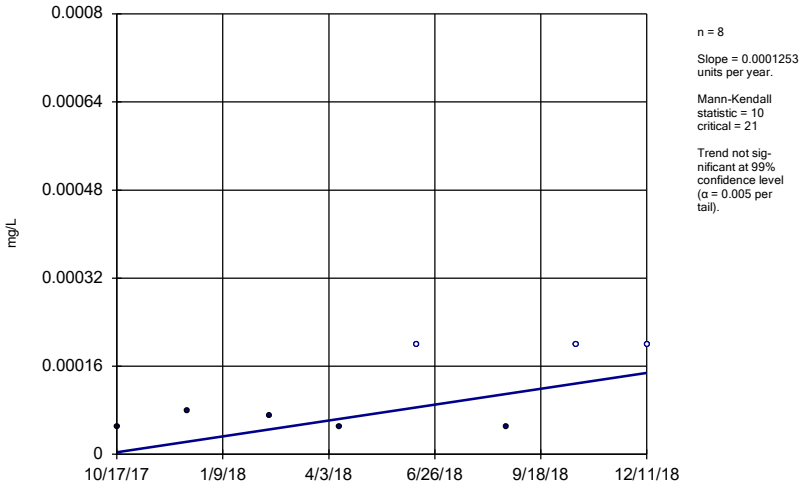
Trend not sig-
nificant at 99%
confidence level
(α = 0.005 per
tail).

Constituent: Selenium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1605

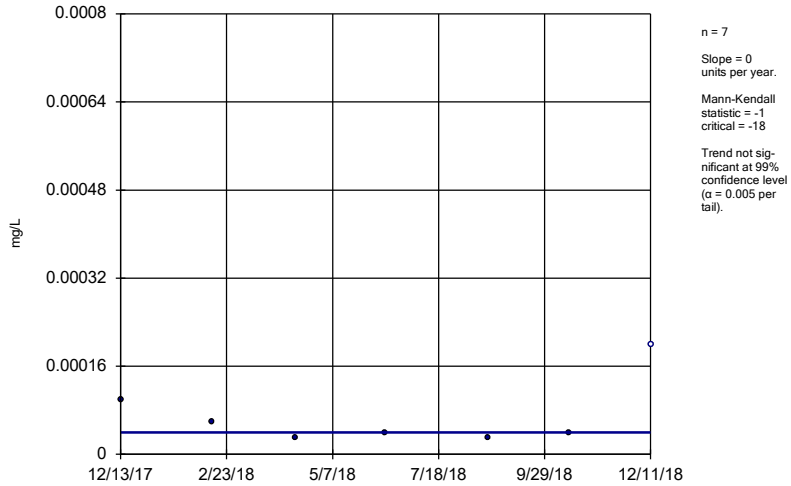


Constituent: Selenium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1612

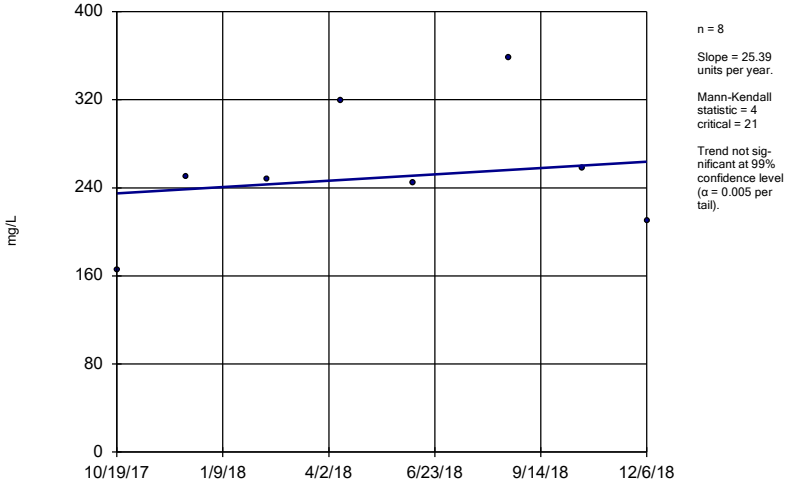


Constituent: Selenium Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1601 (bg)

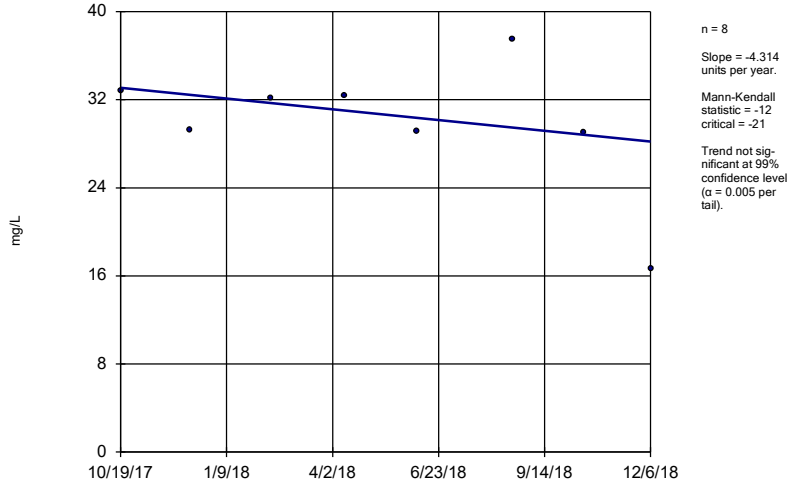


Constituent: Sulfate Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

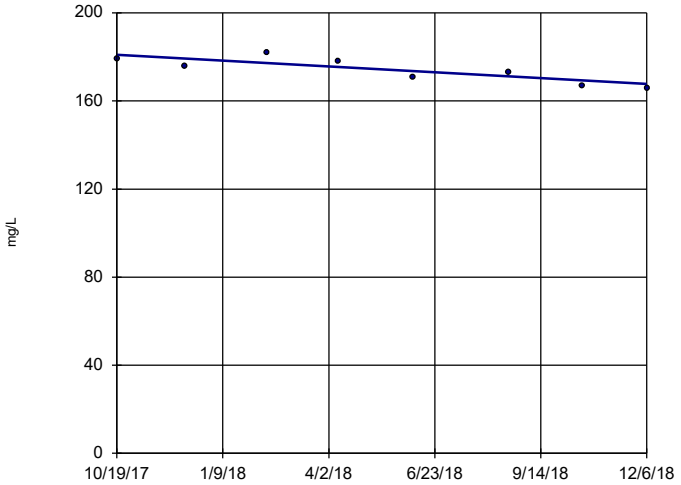
MW-1602 (bg)



Constituent: Sulfate Analysis Run 4/17/2019 3:57 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -11.78 units per year.

Mann-Kendall statistic = -20 critical = -21

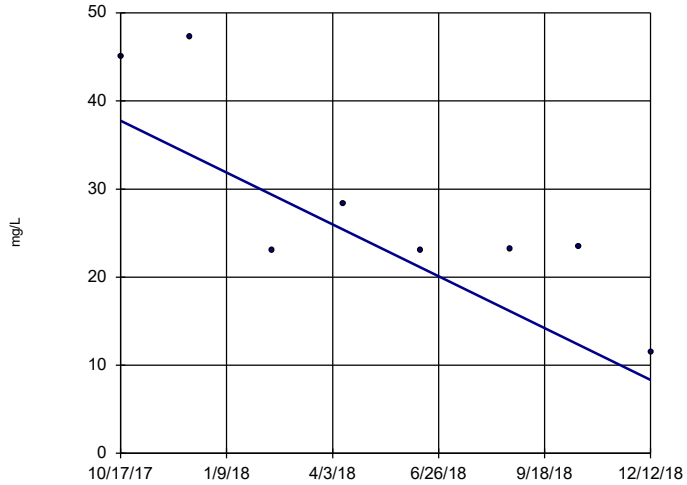
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 8

Slope = -25.5 units per year.

Mann-Kendall statistic = -13 critical = -21

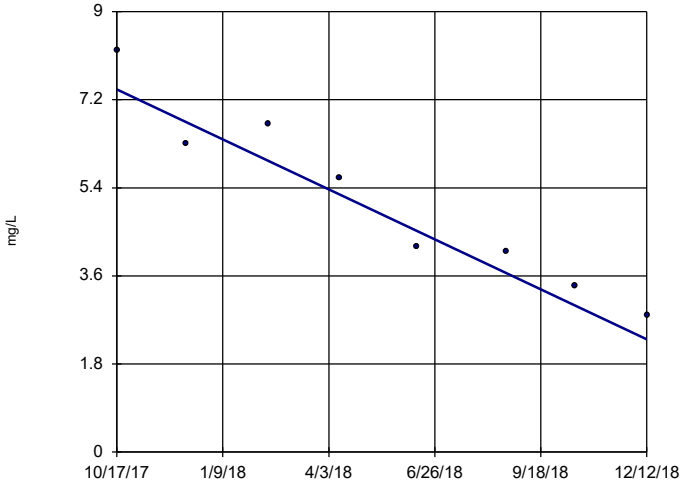
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1604



n = 8

Slope = -4.428 units per year.

Mann-Kendall statistic = -26 critical = -21

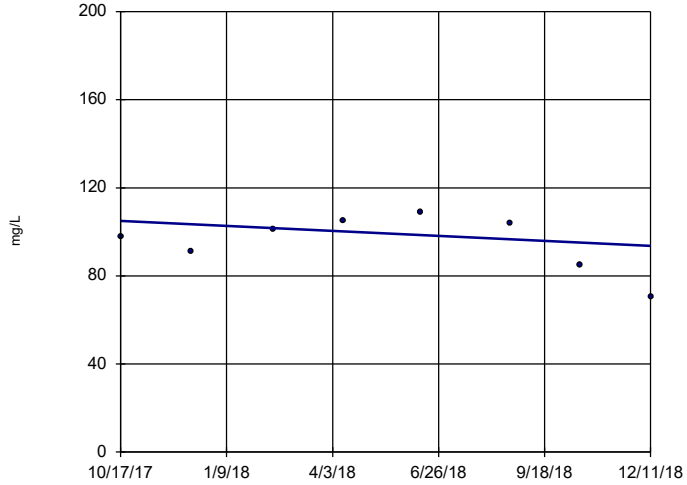
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605



n = 8

Slope = -9.813 units per year.

Mann-Kendall statistic = -4 critical = -21

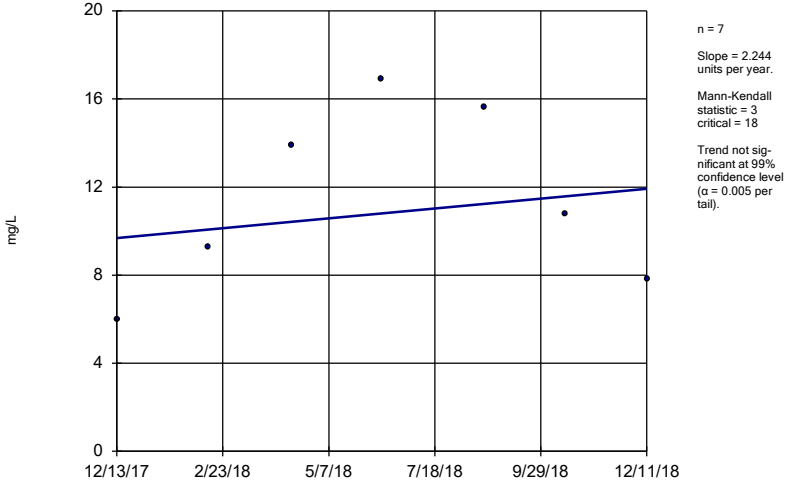
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612



Constituent: Sulfate Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive

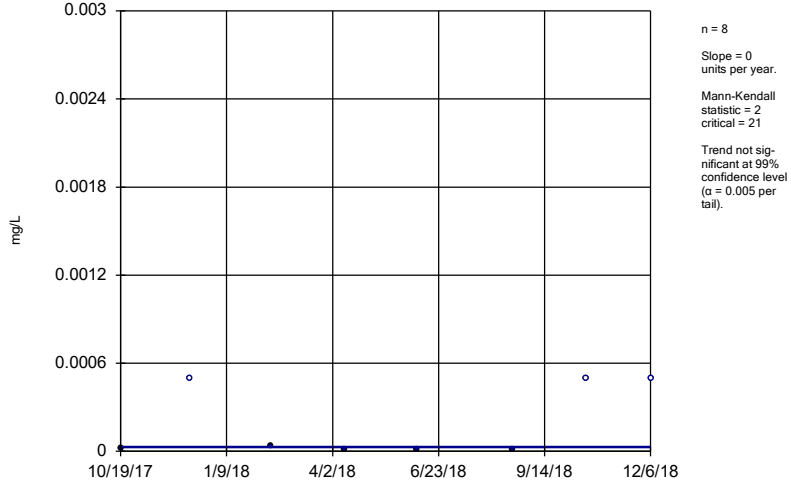
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1601 (bg)



Constituent: Thallium Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive

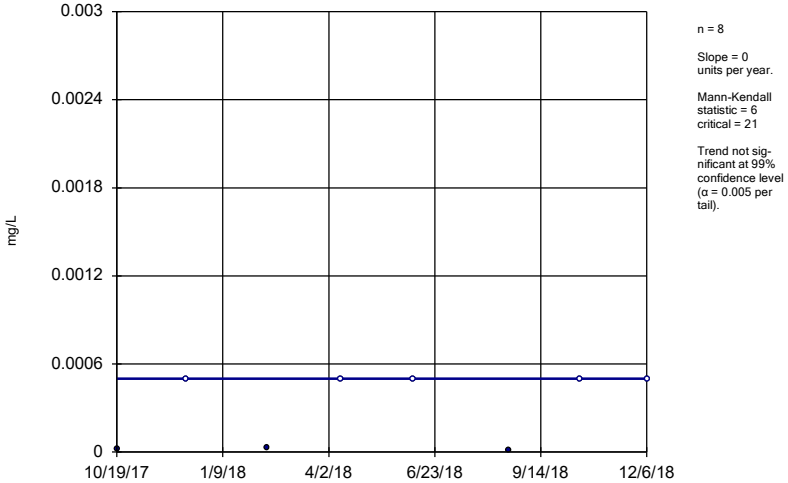
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1602 (bg)



Constituent: Thallium Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive

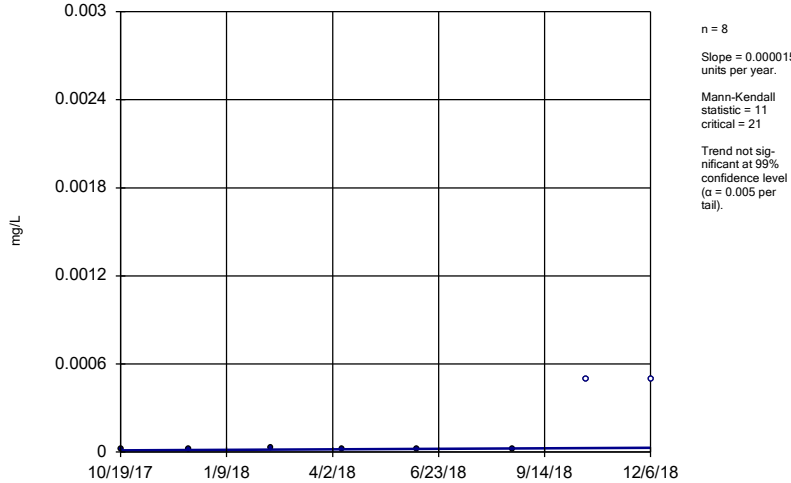
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1608 (bg)



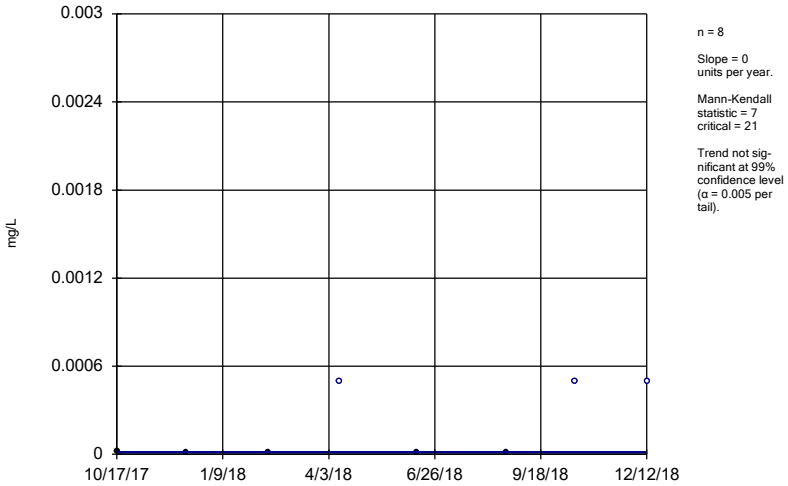
Constituent: Thallium Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive

Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1603

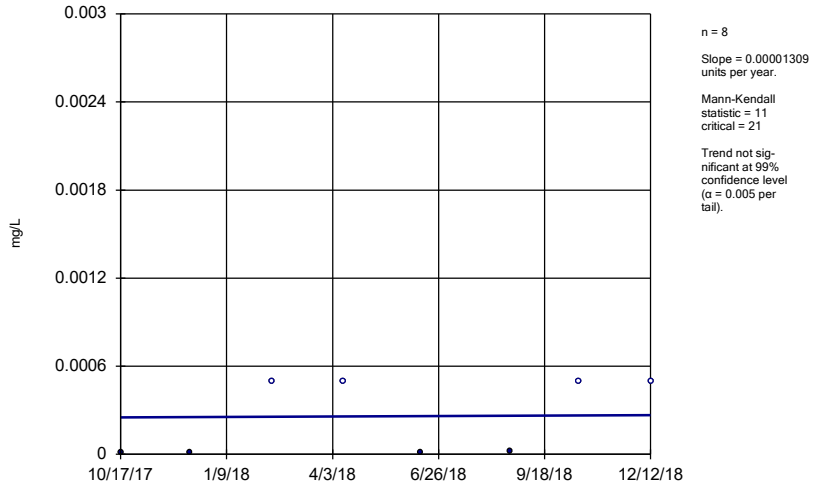


Constituent: Thallium Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1604

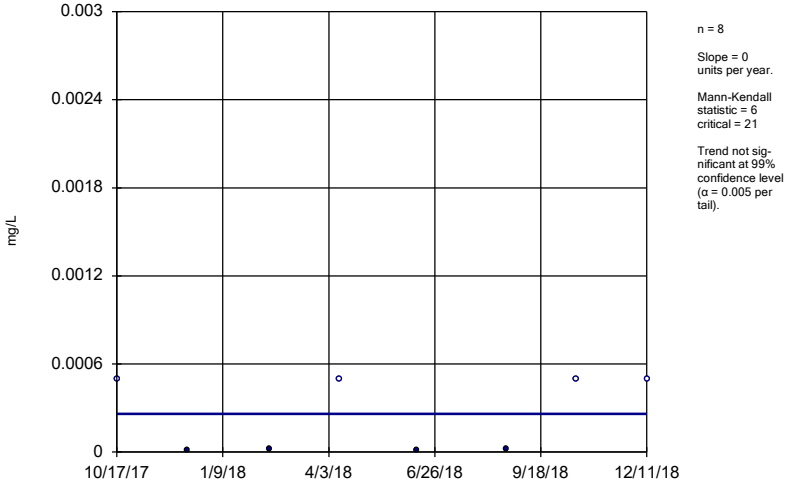


Constituent: Thallium Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-1605

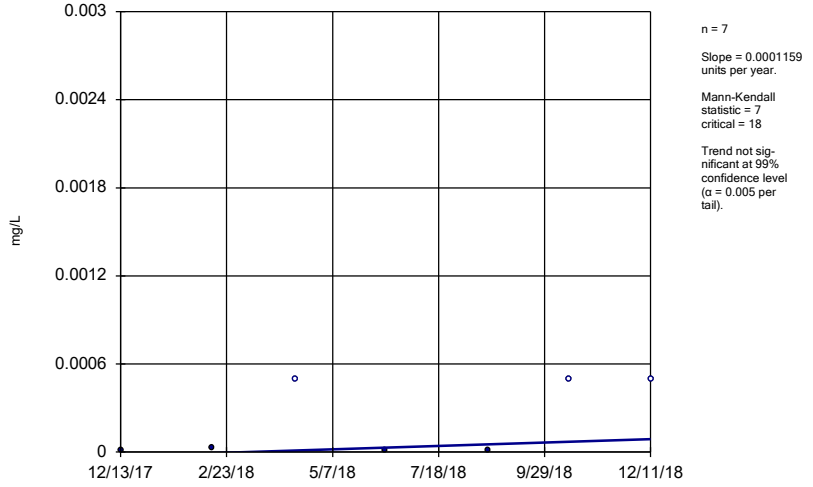


Constituent: Thallium Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

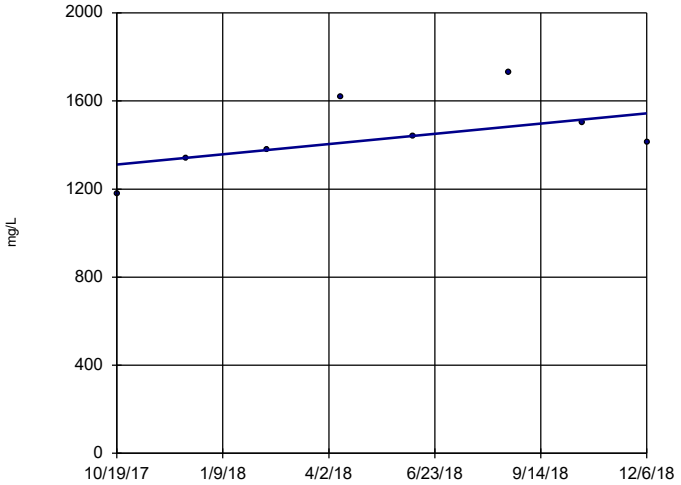
MW-1612



Constituent: Thallium Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1601 (bg)



n = 8

Slope = 204.7 units per year.

Mann-Kendall statistic = 14 critical = 21

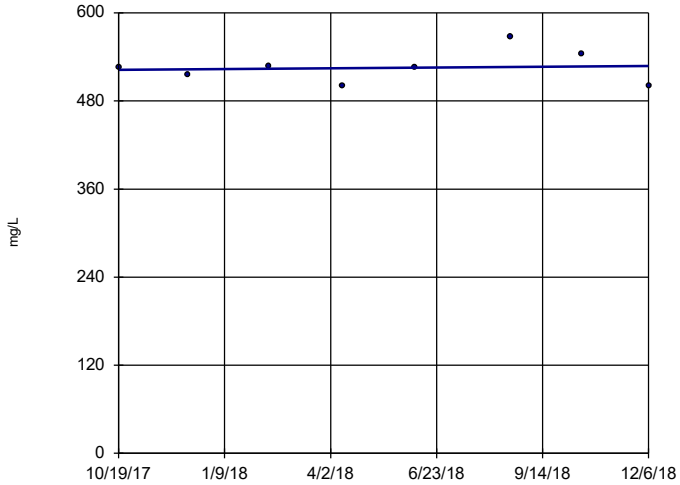
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1602 (bg)



n = 8

Slope = 4.679 units per year.

Mann-Kendall statistic = 2 critical = 21

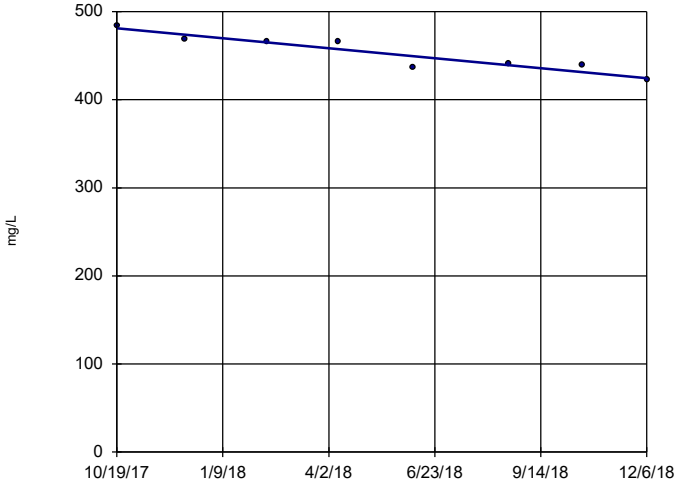
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1608 (bg)



n = 8

Slope = -50 units per year.

Mann-Kendall statistic = -23 critical = -21

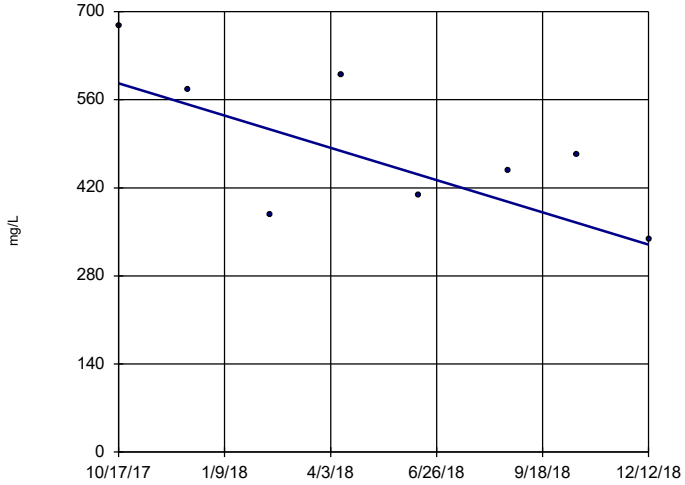
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1603



n = 8

Slope = -222 units per year.

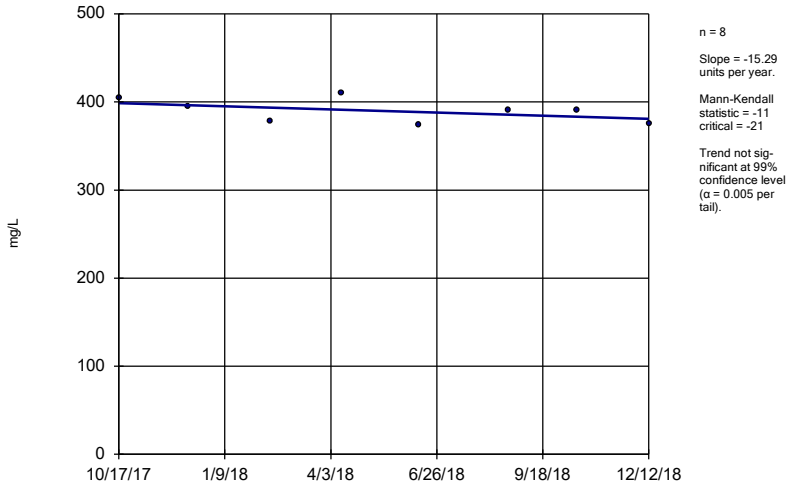
Mann-Kendall statistic = -12 critical = -21

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sen's Slope Estimator

MW-1604



n = 8

Slope = -15.29 units per year.

Mann-Kendall statistic = -11 critical = -21

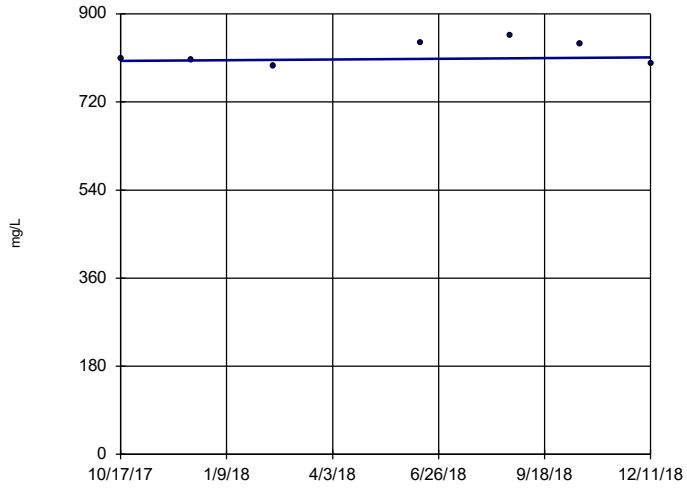
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1605



n = 7

Slope = 6.104 units per year.

Mann-Kendall statistic = 1 critical = 18

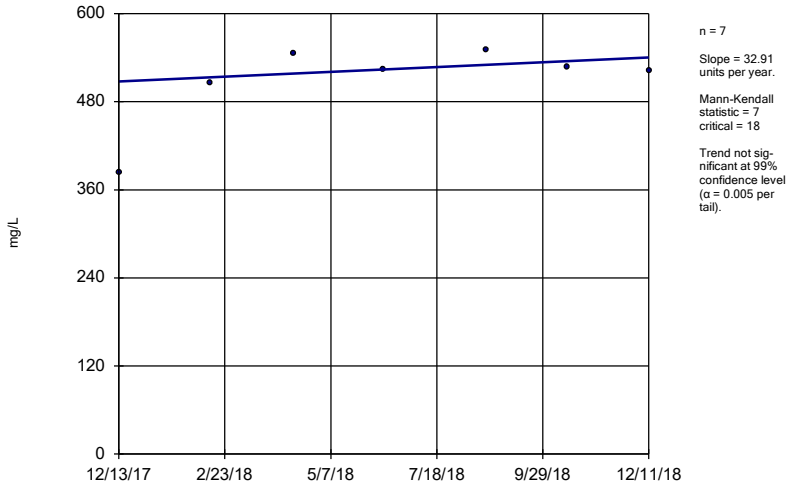
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1612



n = 7

Slope = 32.91 units per year.

Mann-Kendall statistic = 7 critical = 18

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids Analysis Run 4/17/2019 3:58 PM View: Chattanooga CCR Descriptive
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Trend Test Summary Table - Significant Results Rome

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/16/2019, 3:52 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Calcium (mg/L)	**MW-1607**	**-6.418**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	**MW-1609 (bg)**	**-0.001432**	**-23**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	**MW-1607**	**0.04952**	**22**	**21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**

Trend Test Summary Table - All Results Rome

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/16/2019, 3:52 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Antimony (mg/L)	MW-1609 (bg)	-0.00001265	-5	-21	No	8	0	n/a	n/a	0.01	NP
Antimony (mg/L)	MW-1606	0.00002406	17	21	No	8	12.5	n/a	n/a	0.01	NP
Antimony (mg/L)	MW-1607	0	-1	-21	No	8	0	n/a	n/a	0.01	NP
Arsenic (mg/L)	MW-1609 (bg)	-0.0006645	-19	-21	No	8	0	n/a	n/a	0.01	NP
Arsenic (mg/L)	MW-1606	0.0005741	12	21	No	8	0	n/a	n/a	0.01	NP
Arsenic (mg/L)	MW-1607	-0.0006657	-4	-21	No	8	0	n/a	n/a	0.01	NP
Barium (mg/L)	MW-1609 (bg)	-0.09397	-8	-21	No	8	0	n/a	n/a	0.01	NP
Barium (mg/L)	MW-1606	0	0	21	No	8	0	n/a	n/a	0.01	NP
Barium (mg/L)	MW-1607	-0.01972	-14	-21	No	8	0	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1609 (bg)	0	5	21	No	8	87.5	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1606	0.000001732	8	21	No	8	37.5	n/a	n/a	0.01	NP
Beryllium (mg/L)	MW-1607	0	5	21	No	8	87.5	n/a	n/a	0.01	NP
Boron (mg/L)	MW-1609 (bg)	-0.0007604	-1	-21	No	8	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-1606	-0.03434	-10	-21	No	8	0	n/a	n/a	0.01	NP
Boron (mg/L)	MW-1607	-0.03269	-7	-21	No	8	0	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1609 (bg)	-0.00002192	-12	-21	No	8	50	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1606	0	7	21	No	8	50	n/a	n/a	0.01	NP
Cadmium (mg/L)	MW-1607	0.00009678	7	21	No	8	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-1609 (bg)	2.958	2	21	No	8	0	n/a	n/a	0.01	NP
Calcium (mg/L)	MW-1606	6.944	12	21	No	8	0	n/a	n/a	0.01	NP
Calcium (mg/L)	**MW-1607**	**-6.418**	**-22**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Chloride (mg/L)	MW-1609 (bg)	-2.194	-21	-21	No	8	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-1606	-0.1592	-3	-21	No	8	0	n/a	n/a	0.01	NP
Chloride (mg/L)	MW-1607	-3.848	-10	-21	No	8	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1609 (bg)	0.00009177	20	21	No	8	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1606	0.00001022	4	21	No	8	0	n/a	n/a	0.01	NP
Chromium (mg/L)	MW-1607	0.00001981	4	21	No	8	0	n/a	n/a	0.01	NP
Cobalt (mg/L)	MW-1609 (bg)	-0.0001141	-2	-21	No	8	0	n/a	n/a	0.01	NP
Cobalt (mg/L)	MW-1606	-0.0005731	-10	-21	No	8	0	n/a	n/a	0.01	NP
Cobalt (mg/L)	MW-1607	0.002749	14	21	No	8	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1609 (bg)	-0.8739	-8	-21	No	8	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1606	0.1509	1	21	No	8	0	n/a	n/a	0.01	NP
Combined Radium 226 + 228 (pCi/L)	MW-1607	-0.5394	-10	-21	No	8	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MW-1609 (bg)	-0.05496	-20	-21	No	8	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MW-1606	0.06461	12	21	No	8	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	MW-1607	0.03499	11	21	No	8	0	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1609 (bg)	0.0003509	14	21	No	8	0	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1606	-0.0001572	-14	-21	No	8	0	n/a	n/a	0.01	NP
Lead (mg/L)	MW-1607	0.00000257	1	21	No	8	0	n/a	n/a	0.01	NP
Lithium (mg/L)	MW-1609 (bg)	-0.002204	-4	-21	No	8	37.5	n/a	n/a	0.01	NP
Lithium (mg/L)	MW-1606	0.003378	4	21	No	8	0	n/a	n/a	0.01	NP
Lithium (mg/L)	MW-1607	0.01685	15	21	No	8	0	n/a	n/a	0.01	NP
Mercury (mg/L)	MW-1609 (bg)	0	0	21	No	8	100	n/a	n/a	0.01	NP
Mercury (mg/L)	MW-1606	0	5	21	No	8	87.5	n/a	n/a	0.01	NP
Mercury (mg/L)	MW-1607	0	5	21	No	8	87.5	n/a	n/a	0.01	NP
Molybdenum (mg/L)	**MW-1609 (bg)**	**-0.001432**	**-23**	**-21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Molybdenum (mg/L)	MW-1606	-0.002377	-2	-21	No	8	0	n/a	n/a	0.01	NP
Molybdenum (mg/L)	**MW-1607**	**0.04952**	**22**	**21**	**Yes**	**8**	**0**	**n/a**	**n/a**	**0.01**	**NP**
pH (SU)	MW-1609 (bg)	0.672	11	21	No	8	0	n/a	n/a	0.01	NP
pH (SU)	MW-1606	0.1976	6	21	No	8	0	n/a	n/a	0.01	NP
pH (SU)	MW-1607	0.2906	12	21	No	8	0	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-1609 (bg)	1.3e-12	3	21	No	8	25	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-1606	-0.00003725	-12	-21	No	8	0	n/a	n/a	0.01	NP
Selenium (mg/L)	MW-1607	0.000009369	7	21	No	8	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-1609 (bg)	1.367	4	21	No	8	0	n/a	n/a	0.01	NP

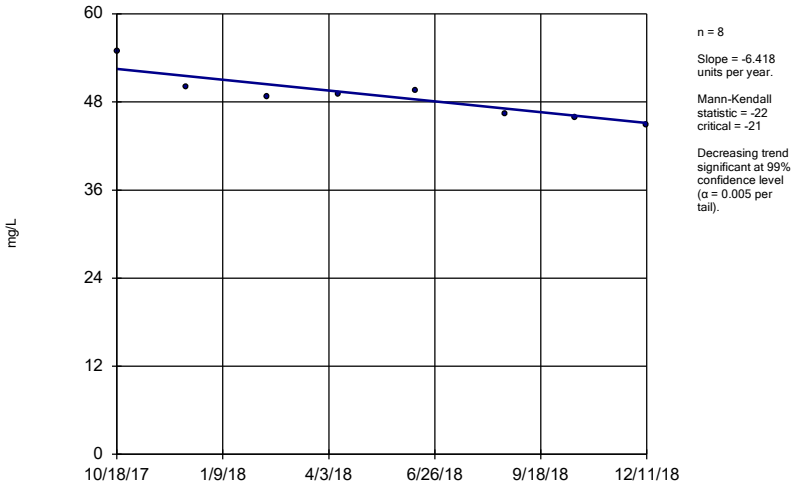
Trend Test Summary Table - All Results Rome

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/16/2019, 3:52 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Sulfate (mg/L)	MW-1606	-18.28	-12	-21	No	8	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	MW-1607	-29.11	-6	-21	No	8	0	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1609 (bg)	0.00004328	5	21	No	8	37.5	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1606	0.00002932	20	21	No	8	25	n/a	n/a	0.01	NP
Thallium (mg/L)	MW-1607	0.00007075	11	21	No	8	37.5	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	MW-1609 (bg)	-50.75	-12	-21	No	8	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	MW-1606	-24.65	-6	-21	No	8	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	MW-1607	-137.1	-14	-21	No	8	0	n/a	n/a	0.01	NP

Sen's Slope Estimator

MW-1607



n = 8

Slope = -6.418 units per year.

Mann-Kendall statistic = -22 critical = -21

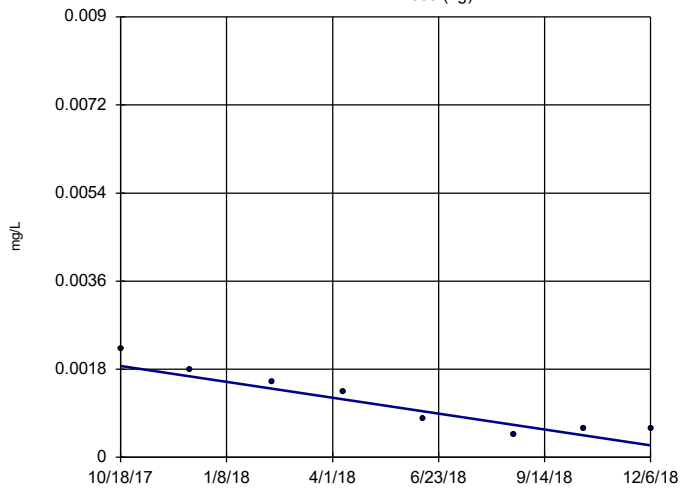
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium Analysis Run 4/16/2019 3:50 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1609 (bg)



n = 8

Slope = -0.001432 units per year.

Mann-Kendall statistic = -23 critical = -21

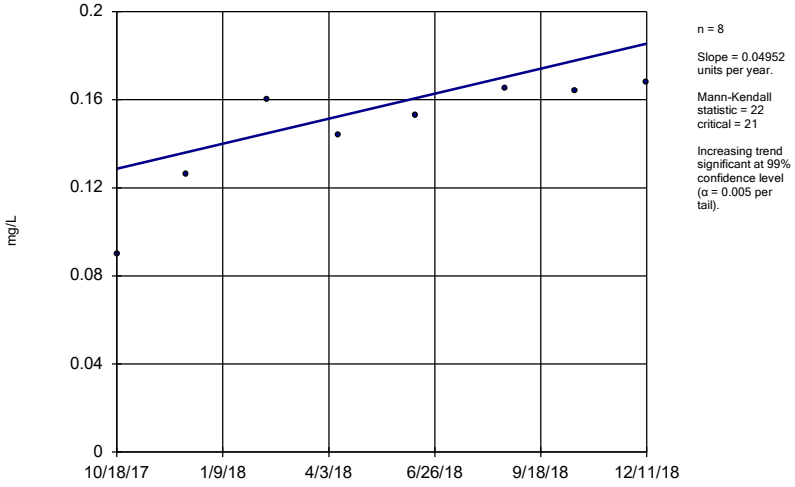
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Molybdenum Analysis Run 4/16/2019 3:50 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12h Sanitas software utilized by Groundwater Stats Consulting. UG

Sen's Slope Estimator

MW-1607



n = 8

Slope = 0.04952 units per year.

Mann-Kendall statistic = 22 critical = 21

Increasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Molybdenum Analysis Run 4/16/2019 3:50 PM View: Descriptive - Rome CCR
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Analysis of Variance

Clinch River Client: AEP Data: Clinch River Landfill AEP Printed 4/18/2019, 8:25 AM

Constituent	Well	Calc.	Crit.	Sig.	Alpha	Transform	ANOVA Sig.	Alpha	Method
Boron (mg/L)	n/a	n/a	n/a	n/a	n/a	No	Yes	0.05	Param.
Calcium (mg/L)	n/a	n/a	n/a	n/a	n/a	No	Yes	0.05	NP (eq. var.)
Chloride (mg/L)	n/a	n/a	n/a	n/a	n/a	ln(x)	Yes	0.05	Param.
Fluoride (mg/L)	n/a	n/a	n/a	n/a	n/a	ln(x)	Yes	0.05	Param.
Sulfate (mg/L)	n/a	n/a	n/a	n/a	n/a	No	Yes	0.05	NP (normality)
Total Dissolved Solids (mg/L)	n/a	n/a	n/a	n/a	n/a	ln(x)	Yes	0.05	Param.
pH (SU)	n/a	n/a	n/a	n/a	n/a	No	Yes	0.05	NP (normality)

Parametric ANOVA

Constituent: Boron Analysis Run 6/4/2019 8:29 PM
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

For observations made between 10/19/2017 and 2/7/2019 the parametric analysis of variance test indicates VARIATION at the 5% significance level. Because the calculated F statistic is greater than the tabulated F statistic, the hypothesis of a single homogeneous population is rejected.

Calculated F statistic = 113.9

Tabulated F statistic = 3.4 with 2 and 24 degrees of freedom at the 5% significance level.

ONE-WAY PARAMETRIC ANOVA TABLE

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Between Groups	0.3328	2	0.1664	113.9
Error Within Groups	0.03507	24	0.001461	
Total	0.3679	26		

The Shapiro Wilk normality test on the residuals passed on the raw data. Alpha = 0.05, calculated = 0.9832, critical = 0.923. Levene's Equality of Variance test passed. Calculated = 1.415, tabulated = 3.4.

Parametric ANOVA

Constituent: Calcium Analysis Run 6/4/2019 8:30 PM
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

For observations made between 10/19/2017 and 2/7/2019 the parametric analysis of variance test (after square root transformation) indicates VARIATION at the 5% significance level. Because the calculated F statistic is greater than the tabulated F statistic, the hypothesis of a single homogeneous population is rejected.

Calculated F statistic = 194.7

Tabulated F statistic = 3.4 with 2 and 24 degrees of freedom at the 5% significance level.

ONE-WAY PARAMETRIC ANOVA TABLE

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Between Groups	9.218	2	4.609	194.7
Error Within Groups	0.5681	24	0.02367	
Total	9.786	26		

The Shapiro Wilk normality test on the residuals passed after square root transformation. Alpha = 0.05, calculated = 0.9556, critical = 0.923. Levene's Equality of Variance test passed. Calculated = 2.243, tabulated = 3.4.

Parametric ANOVA

Constituent: Chloride Analysis Run 6/4/2019 8:30 PM
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

For observations made between 10/19/2017 and 2/7/2019 the parametric analysis of variance test (after natural log transformation) indicates VARIATION at the 5% significance level. Because the calculated F statistic is greater than the tabulated F statistic, the hypothesis of a single homogeneous population is rejected.

Calculated F statistic = 288.7

Tabulated F statistic = 3.4 with 2 and 24 degrees of freedom at the 5% significance level.

ONE-WAY PARAMETRIC ANOVA TABLE

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Between Groups	17.54	2	8.771	288.7
Error Within Groups	0.7291	24	0.03038	
Total	18.27	26		

The Shapiro Wilk normality test on the residuals passed after natural log transformation. Alpha = 0.05, calculated = 0.9764, critical = 0.923. Levene's Equality of Variance test passed. Calculated = 1.317, tabulated = 3.4.

Parametric ANOVA

Constituent: Fluoride Analysis Run 6/4/2019 8:31 PM
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

For observations made between 10/19/2017 and 2/7/2019 the parametric analysis of variance test (after natural log transformation) indicates VARIATION at the 5% significance level. Because the calculated F statistic is greater than the tabulated F statistic, the hypothesis of a single homogeneous population is rejected.

Calculated F statistic = 1689

Tabulated F statistic = 3.4 with 2 and 24 degrees of freedom at the 5% significance level.

ONE-WAY PARAMETRIC ANOVA TABLE

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
Between Groups	12.75	2	6.377	1689
Error Within Groups	0.0906	24	0.003775	
Total	12.84	26		

The Shapiro Wilk normality test on the residuals passed after natural log transformation. Alpha = 0.05, calculated = 0.9356, critical = 0.923. Levene's Equality of Variance test passed. Calculated = 1.321, tabulated = 3.4.

Non-Parametric ANOVA

Constituent: pH Analysis Run 6/4/2019 8:32 PM
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

For observations made between 10/19/2017 and 2/7/2019, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 8.189

Tabulated Chi-Squared value = 5.991 with 2 degrees of freedom at the 5% significance level.

There were 5 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 8.154
Adjusted Kruskal-Wallis statistic (H') = 8.189

Non-Parametric ANOVA

Constituent: Sulfate Analysis Run 6/4/2019 8:32 PM
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

For observations made between 10/19/2017 and 2/7/2019, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 20.98

Tabulated Chi-Squared value = 5.991 with 2 degrees of freedom at the 5% significance level.

There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 20.97
Adjusted Kruskal-Wallis statistic (H') = 20.98

Non-Parametric ANOVA

Constituent: Total Dissolved Solids Analysis Run 6/4/2019 8:32 PM
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

For observations made between 10/19/2017 and 2/7/2019, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 23.16

Tabulated Chi-Squared value = 5.991 with 2 degrees of freedom at the 5% significance level.

There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 23.14
Adjusted Kruskal-Wallis statistic (H') = 23.16

Interwell GWPS - Chattanooga Tolerance Limits - All Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 3/13/2019, 12:07 PM

Constituent	Well	Upper Lim.	Lower Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	n/a	0.8187	n/a	24	0.4992	0.12	0	None	No	0.01	Inter
Calcium (mg/L)	n/a	9.772	n/a	24	3.527	2.345	0	None	No	0.01	Inter
Chloride (mg/L)	n/a	45.8	n/a	24	n/a	n/a	0	n/a	n/a	0.292	NP Inter(normality)
Fluoride (mg/L)	n/a	2.22	n/a	24	n/a	n/a	0	n/a	n/a	0.292	NP Inter(normality)
pH (SU)	n/a	9.293	7.612	23	8.453	0.2765	0	None	No	0.01	Inter
Sulfate (mg/L)	n/a	423.4	n/a	24	153.5	101.3	0	None	No	0.01	Inter
Total Dissolved Solids (mg/L)	n/a	1730	n/a	24	n/a	n/a	0	n/a	n/a	0.292	NP Inter(normality)

UTL's - App III Dumps Fault (CCR)

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/18/2019, 4:27 PM

Constituent	Well	Upper Lim.	Lower Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	n/a	1.016	n/a	8	0.6215	0.09195	0	None	No	0.01	Inter
Calcium (mg/L)	n/a	260.2	n/a	8	84.04	41.09	0	None	No	0.01	Inter
Chloride (mg/L)	n/a	254.4	n/a	8	80.8	40.49	0	None	No	0.01	Inter
Fluoride (mg/L)	n/a	1.566	n/a	8	0.8038	0.1778	0	None	No	0.01	Inter
pH (SU)	n/a	8.5	6.875	8	7.688	0.1646	0	None	No	0.01	Inter
Sulfate (mg/L)	n/a	3407	n/a	8	1007	559.8	0	None	No	0.01	Inter
Total Dissolved Solids (mg/L)	n/a	5911	n/a	8	2133	881.3	0	None	No	0.01	Inter

Interwell GWPS App III - Rome

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/13/2019, 8:51 PM

Constituent	Well	Upper Lim.	Lower Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	n/a	0.2021	n/a	8	0.06375	0.03227	0	None	No	0.01	Inter
Calcium (mg/L)	n/a	90.51	n/a	8	67.41	5.387	0	None	No	0.01	Inter
Chloride (mg/L)	n/a	6.604	n/a	8	2.325	0.9982	0	None	No	0.01	Inter
Fluoride (mg/L)	n/a	0.3925	n/a	8	0.29	0.0239	0	None	No	0.01	Inter
pH (SU)	n/a	9.035	5.425	8	7.23	0.3656	0	None	No	0.01	Inter
Sulfate (mg/L)	n/a	31	n/a	8	16.28	3.434	0	None	No	0.01	Inter
Total Dissolved Solids (mg/L)	n/a	435	n/a	8	302.3	30.96	0	None	No	0.01	Inter

Confidence Interval Summary Table - App III Significant Results (Chattanooga)

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/13/2019, 12:10 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Calcium (mg/L)	**MW-1603**	**24.28**	**21.32**	**9.77**	**Yes**	**8**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	**MW-1604**	**28.69**	**26.34**	**9.77**	**Yes**	**8**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	**MW-1605**	**49.82**	**44.93**	**9.77**	**Yes**	**8**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	**MW-1612**	**44.27**	**37.73**	**9.77**	**Yes**	**7**	**0**	**No**	**0.01**	**Param.**
Chloride (mg/L)	**MW-1605**	**186**	**178.6**	**45.8**	**Yes**	**7**	**0**	**No**	**0.01**	**Param.**
pH (SU)	**MW-1604**	**7.16**	**6.7**	**9.3**	**Yes**	**8**	**0**	**No**	**0.004**	**NP (normality)**
pH (SU)	**MW-1612**	**7.345**	**6.898**	**9.3**	**Yes**	**7**	**0**	**No**	**0.005**	**Param.**

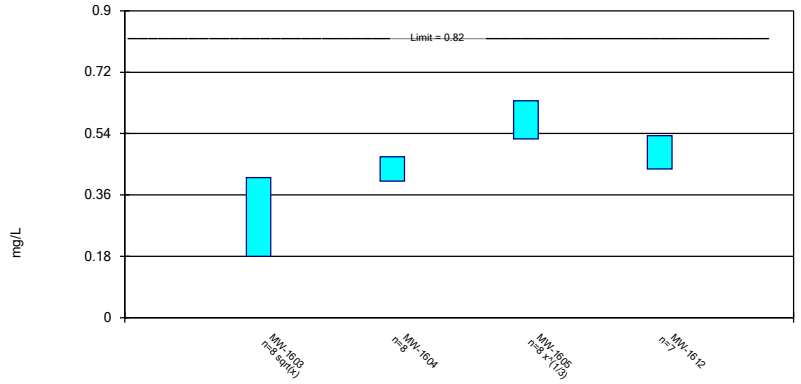
Confidence Interval Summary Table - App III All Results (Chattanooga)

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/13/2019, 12:10 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Boron (mg/L)	MW-1603	0.4109	0.1796	0.82	No	8	0	sqrt(x)	0.01	Param.
Boron (mg/L)	MW-1604	0.4715	0.4005	0.82	No	8	0	No	0.01	Param.
Boron (mg/L)	MW-1605	0.6358	0.5242	0.82	No	8	0	x^(1/3)	0.01	Param.
Boron (mg/L)	MW-1612	0.5338	0.4362	0.82	No	7	0	No	0.01	Param.
Calcium (mg/L)	**MW-1603**	**24.28**	**21.32**	**9.77**	**Yes**	**8**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	**MW-1604**	**28.69**	**26.34**	**9.77**	**Yes**	**8**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	**MW-1605**	**49.82**	**44.93**	**9.77**	**Yes**	**8**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	**MW-1612**	**44.27**	**37.73**	**9.77**	**Yes**	**7**	**0**	**No**	**0.01**	**Param.**
Chloride (mg/L)	MW-1603	155.2	45.51	45.8	No	8	0	No	0.01	Param.
Chloride (mg/L)	MW-1604	25.71	18.36	45.8	No	8	0	sqrt(x)	0.01	Param.
Chloride (mg/L)	**MW-1605**	**186**	**178.6**	**45.8**	**Yes**	**7**	**0**	**No**	**0.01**	**Param.**
Chloride (mg/L)	MW-1612	34.69	12.57	45.8	No	7	0	No	0.01	Param.
Fluoride (mg/L)	MW-1603	0.1693	0.1032	2.22	No	8	0	No	0.01	Param.
Fluoride (mg/L)	MW-1604	0.27	0.22	2.22	No	8	0	No	0.004	NP (normality)
Fluoride (mg/L)	MW-1605	0.404	0.336	2.22	No	8	0	No	0.01	Param.
Fluoride (mg/L)	MW-1612	0.2116	0.1255	2.22	No	7	0	No	0.01	Param.
pH (SU)	MW-1603	7.926	6.811	9.3	No	8	0	No	0.005	Param.
pH (SU)	**MW-1604**	**7.16**	**6.7**	**9.3**	**Yes**	**8**	**0**	**No**	**0.004**	**NP (normality)**
pH (SU)	MW-1605	7.85	7.4	9.3	No	8	0	No	0.004	NP (normality)
pH (SU)	**MW-1612**	**7.345**	**6.898**	**9.3**	**Yes**	**7**	**0**	**No**	**0.005**	**Param.**
Sulfate (mg/L)	MW-1603	40.91	15.93	423.4	No	8	0	sqrt(x)	0.01	Param.
Sulfate (mg/L)	MW-1604	7.118	3.207	423.4	No	8	0	No	0.01	Param.
Sulfate (mg/L)	MW-1605	108.9	81.98	423.4	No	8	0	No	0.01	Param.
Sulfate (mg/L)	MW-1612	16.34	6.598	423.4	No	7	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1603	613.4	361.4	1730	No	8	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1604	403.6	375.4	1730	No	8	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1605	849.9	790.9	1730	No	7	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1612	554.9	463.3	1730	No	7	0	x^6	0.01	Param.

Parametric Confidence Interval

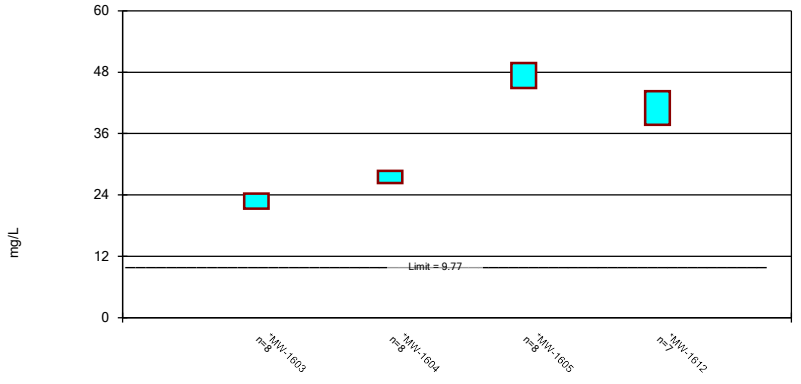
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron Analysis Run 3/13/2019 12:09 PM View: CI's - App III Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

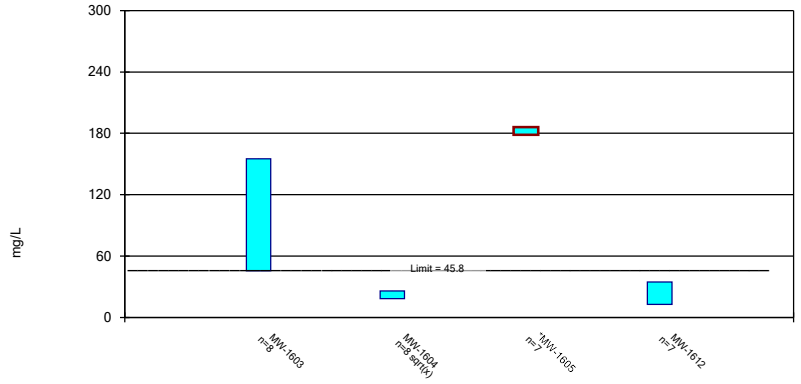
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium Analysis Run 3/13/2019 12:09 PM View: CI's - App III Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

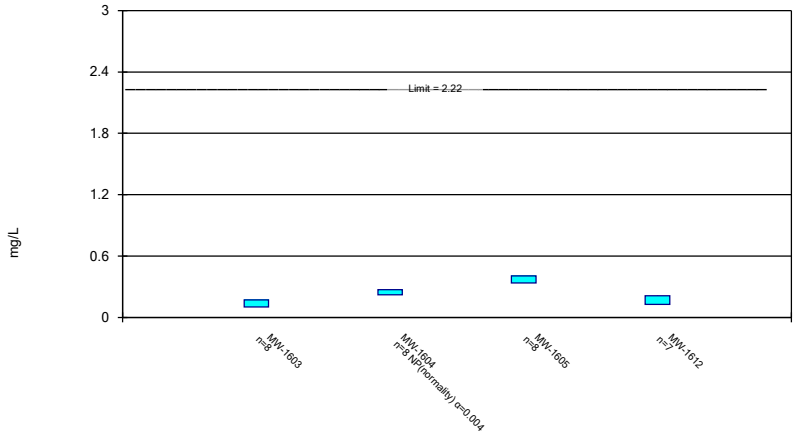
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chloride Analysis Run 3/13/2019 12:09 PM View: CI's - App III Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric and Non-Parametric (NP) Confidence Interval

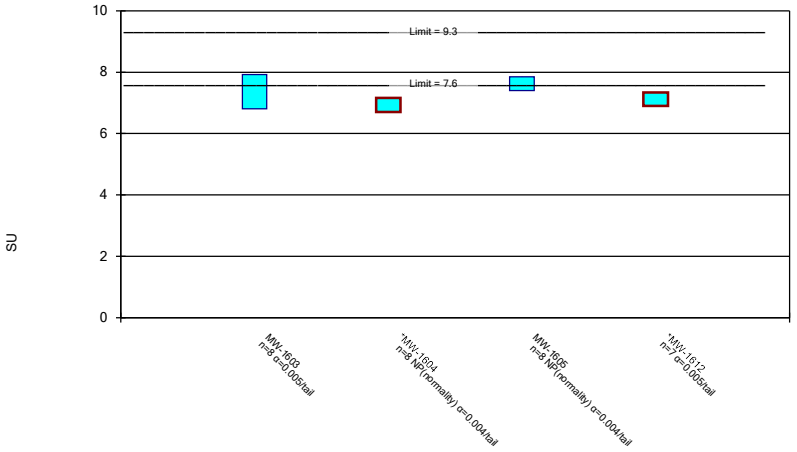
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 3/13/2019 12:09 PM View: CI's - App III Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Normality Test: Shapiro Wilk, alpha based on n.

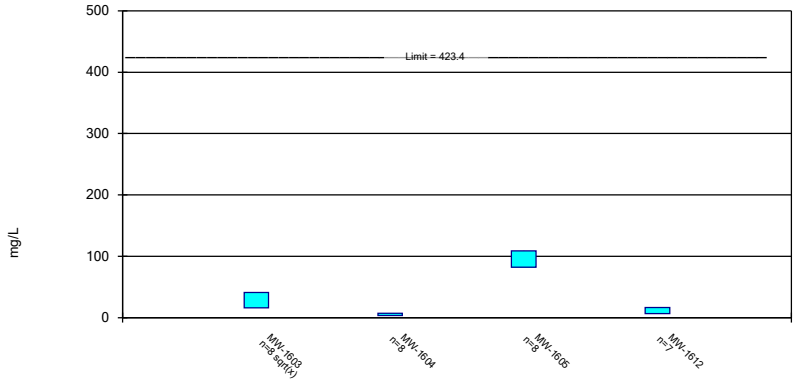


Constituent: pH Analysis Run 3/13/2019 12:09 PM View: CI's - App III Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

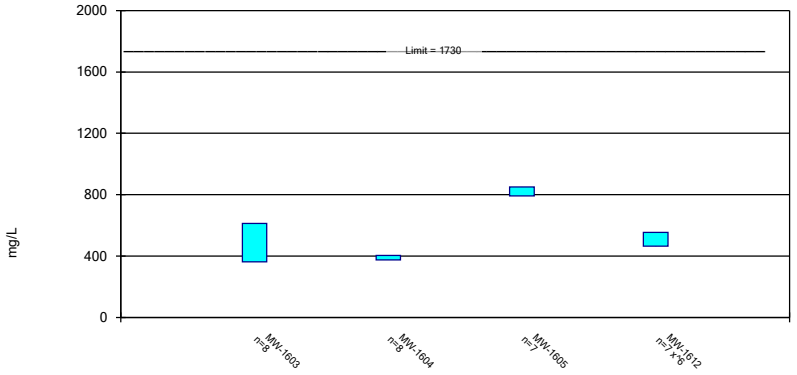


Constituent: Sulfate Analysis Run 3/13/2019 12:09 PM View: CI's - App III Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Total Dissolved Solids Analysis Run 3/13/2019 12:09 PM View: CI's - App III Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Confidence Interval Summary Table - All Results (Dumps Fault)

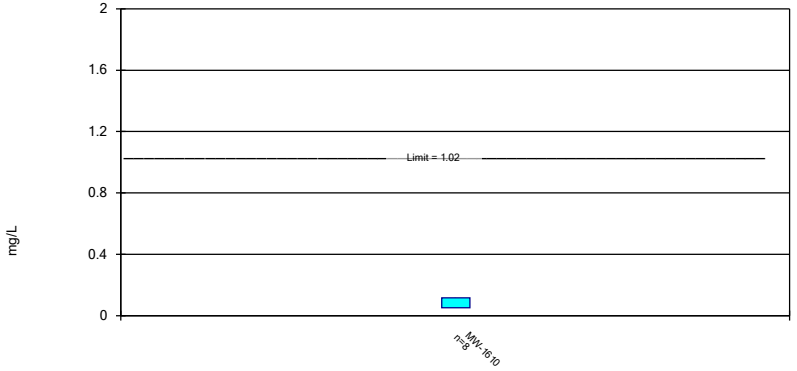
Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/18/2019, 4:36 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Boron (mg/L)	MW-1610	0.1158	0.05074	1.02	No	8	0	No	0.01	Param.
Calcium (mg/L)	MW-1610	36.56	34.31	260.2	No	8	0	No	0.01	Param.
Chloride (mg/L)	MW-1610	12.57	10.56	254.4	No	8	0	No	0.01	Param.
Fluoride (mg/L)	MW-1610	0.2211	0.1836	1.57	No	8	0	x^2	0.01	Param.
pH (SU)	MW-1610	7.78	7.242	8.5	No	8	0	No	0.005	Param.
Sulfate (mg/L)	MW-1610	50.88	43.04	3407	No	8	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1610	259.7	239.3	5911	No	8	0	No	0.01	Param.

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

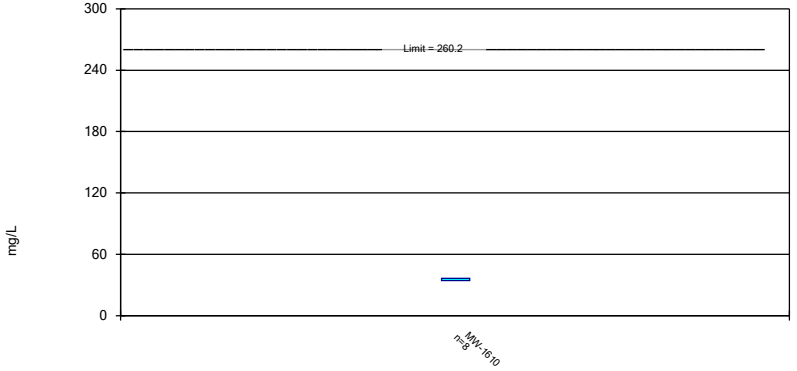


Constituent: Boron Analysis Run 3/18/2019 4:32 PM View: Confidence Intervals - App III Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

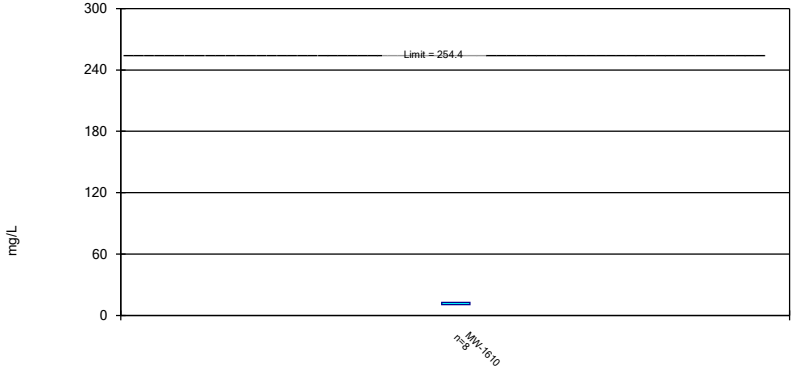


Constituent: Calcium Analysis Run 3/18/2019 4:32 PM View: Confidence Intervals - App III Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chloride Analysis Run 3/18/2019 4:32 PM View: Confidence Intervals - App III Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

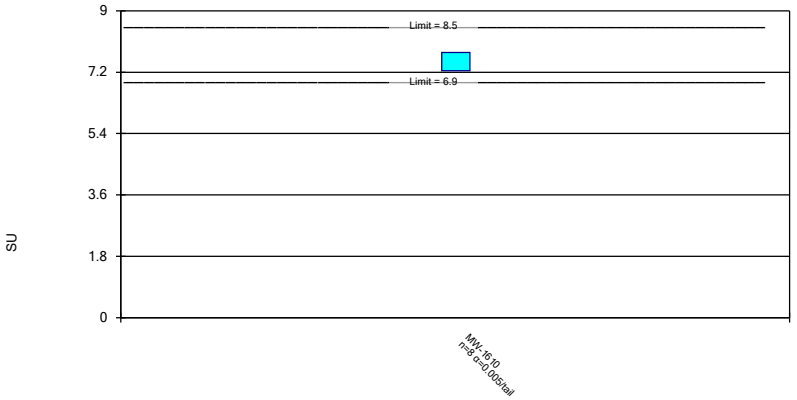
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

Constituent: Fluoride Analysis Run 3/18/2019 4:33 PM View: Confidence Intervals - App III Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

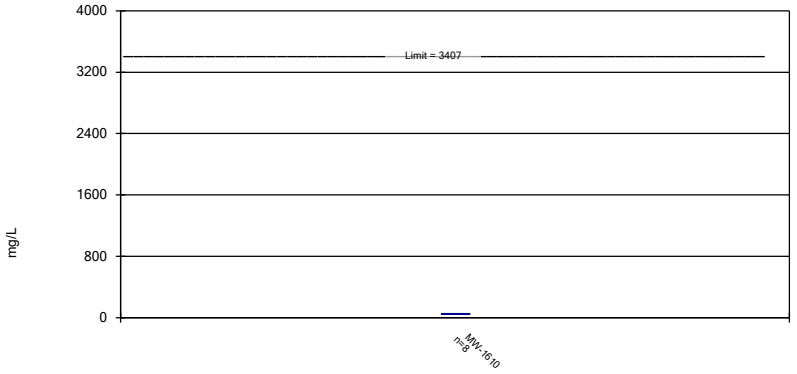


Constituent: pH Analysis Run 3/18/2019 4:33 PM View: Confidence Intervals - App III Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

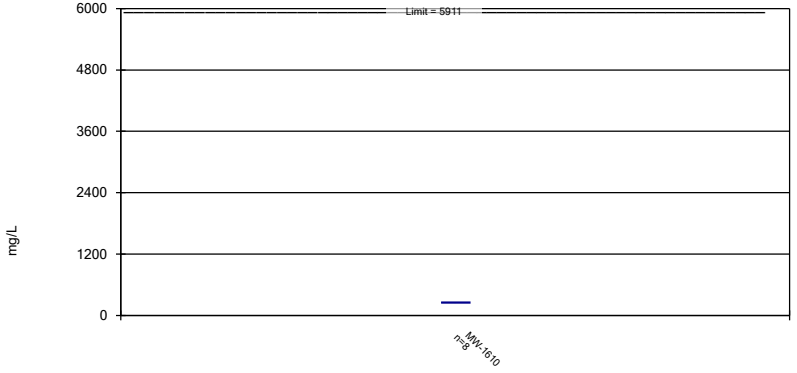


Constituent: Sulfate Analysis Run 3/18/2019 4:33 PM View: Confidence Intervals - App III Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Total Dissolved Solids Analysis Run 3/18/2019 4:33 PM View: Confidence Intervals - App III
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Confidence Interval Summary Table - App III Significant Results (Rome)

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/13/2019, 8:59 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Chloride (mg/L)	**MW-1606**	**15.15**	**13.45**	**6.6**	**Yes**	**8**	**0**	**No**	**0.01**	**Param.**
Chloride (mg/L)	**MW-1607**	**16.7**	**10**	**6.6**	**Yes**	**8**	**0**	**No**	**0.004**	**NP (normality)**
Sulfate (mg/L)	**MW-1606**	**64.3**	**42.1**	**31**	**Yes**	**8**	**0**	**No**	**0.01**	**Param.**
Sulfate (mg/L)	**MW-1607**	**206**	**149**	**31**	**Yes**	**8**	**0**	**No**	**0.004**	**NP (normality)**

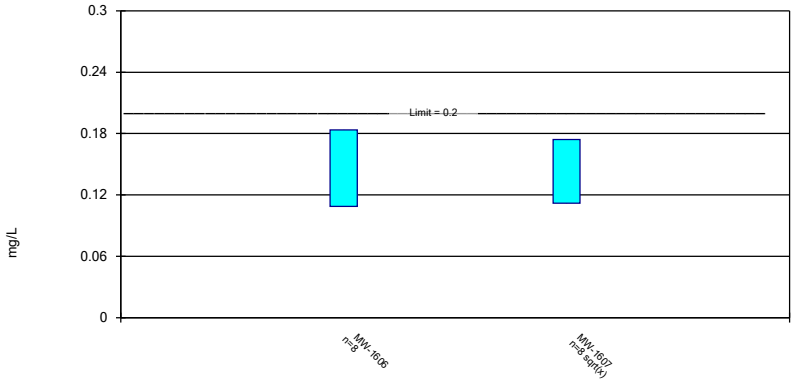
Confidence Interval Summary Table - App III All Results (Rome)

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/13/2019, 8:59 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Boron (mg/L)	MW-1606	0.1836	0.1086	0.2	No	8	0	No	0.01	Param.
Boron (mg/L)	MW-1607	0.1742	0.112	0.2	No	8	0	sqrt(x)	0.01	Param.
Calcium (mg/L)	MW-1606	62.01	49.44	90.51	No	8	0	No	0.01	Param.
Calcium (mg/L)	MW-1607	52.02	45.31	90.51	No	8	0	No	0.01	Param.
Chloride (mg/L)	**MW-1606**	**15.15**	**13.45**	**6.6**	**Yes**	**8**	**0**	**No**	**0.01**	**Param.**
Chloride (mg/L)	**MW-1607**	**16.7**	**10**	**6.6**	**Yes**	**8**	**0**	**No**	**0.004**	**NP (normality)**
Fluoride (mg/L)	MW-1606	0.2647	0.1853	0.39	No	8	0	No	0.01	Param.
Fluoride (mg/L)	MW-1607	0.2596	0.2129	0.39	No	8	0	No	0.01	Param.
pH (SU)	MW-1606	7.233	6.87	9	No	8	0	No	0.005	Param.
pH (SU)	MW-1607	8.083	7.537	9	No	8	0	No	0.005	Param.
Sulfate (mg/L)	**MW-1606**	**64.3**	**42.1**	**31**	**Yes**	**8**	**0**	**No**	**0.01**	**Param.**
Sulfate (mg/L)	**MW-1607**	**206**	**149**	**31**	**Yes**	**8**	**0**	**No**	**0.004**	**NP (normality)**
Total Dissolved Solids (mg/L)	MW-1606	368.4	313.1	435	No	8	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1607	468	278	435	No	8	0	No	0.004	NP (normality)

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

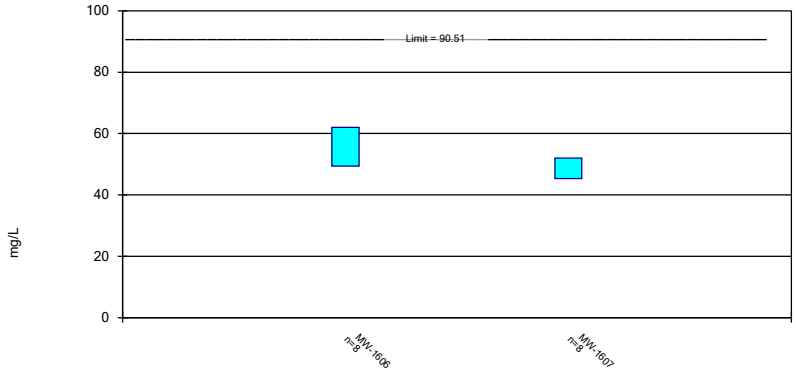


Constituent: Boron Analysis Run 3/13/2019 8:58 PM View: Confidence Intervals - App III Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

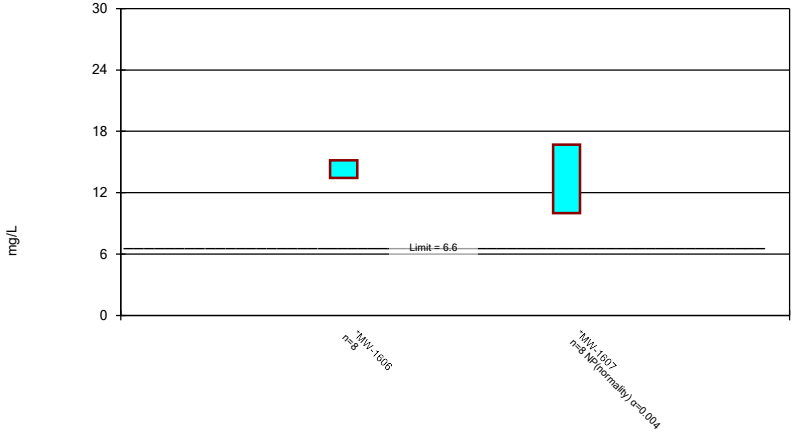


Constituent: Calcium Analysis Run 3/13/2019 8:58 PM View: Confidence Intervals - App III Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

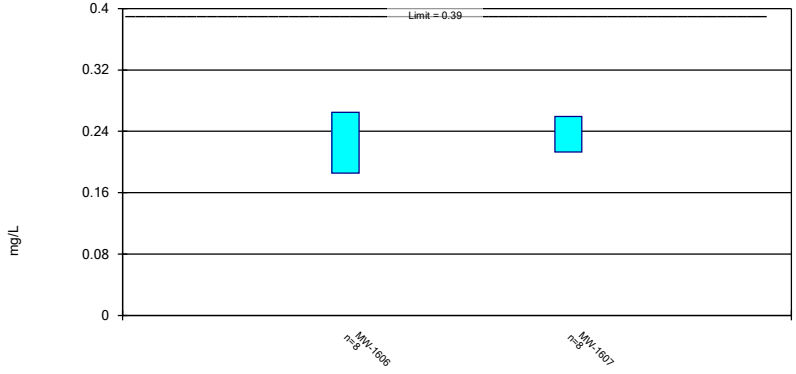


Constituent: Chloride Analysis Run 3/13/2019 8:58 PM View: Confidence Intervals - App III Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

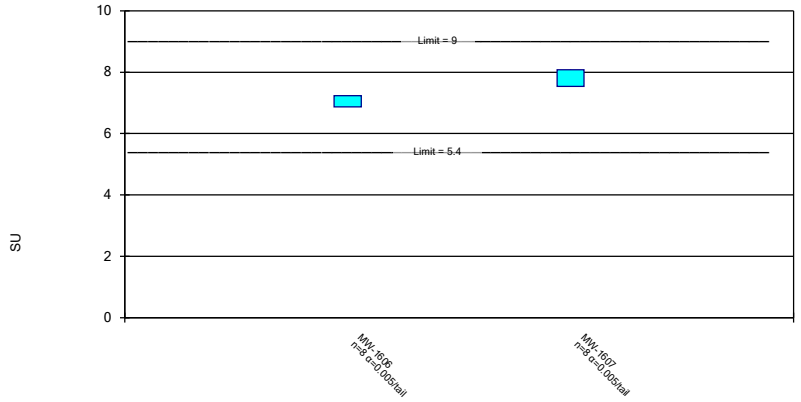
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 3/13/2019 8:58 PM View: Confidence Intervals - App III Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

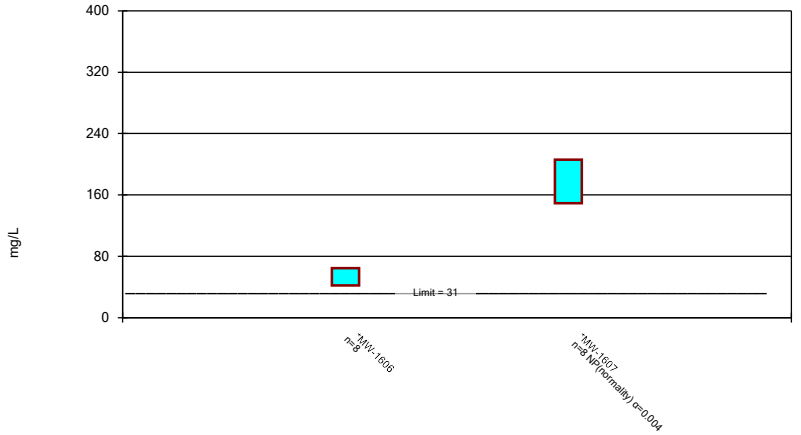


Constituent: pH Analysis Run 3/13/2019 8:58 PM View: Confidence Intervals - App III Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

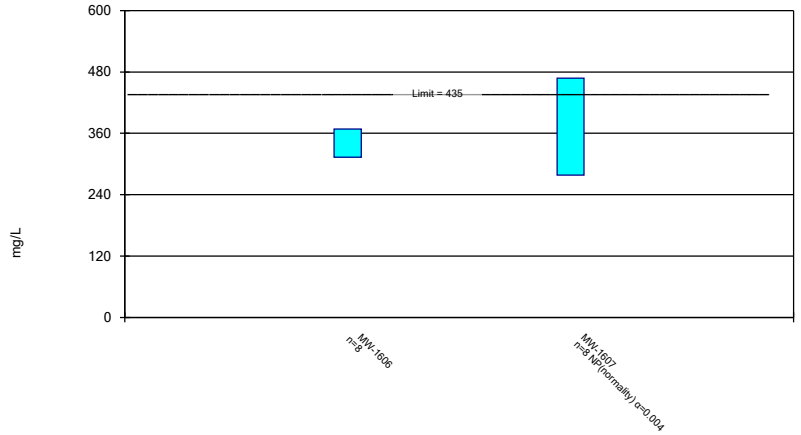


Constituent: Sulfate Analysis Run 3/13/2019 8:58 PM View: Confidence Intervals - App III Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Total Dissolved Solids Analysis Run 3/13/2019 8:58 PM View: Confidence Intervals - App III
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

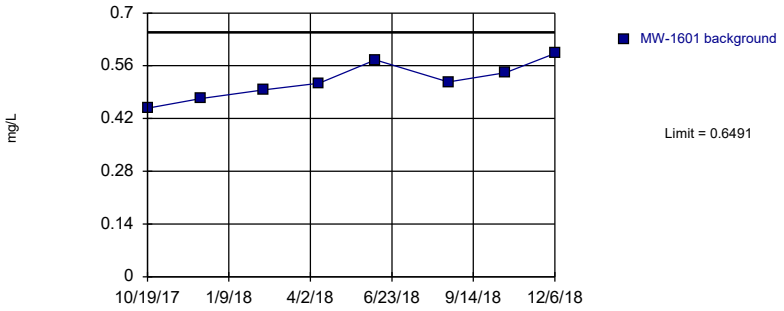
Intrawell Prediction Limit Summary - Chattanooga

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/13/2019, 8:18 PM

Constituent	Well	Upper Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MW-1601	0.6491	8	0.5198	0.04944	0	None	No	0.00188	Param Intra 1 of 2
Boron (mg/L)	MW-1602	0.7352	8	0.6241	0.04244	0	None	No	0.00188	Param Intra 1 of 2
Boron (mg/L)	MW-1608	0.4152	8	0.3538	0.02347	0	None	No	0.00188	Param Intra 1 of 2
Boron (mg/L)	MW-1603	0.599	8	0.2926	0.1171	0	None	No	0.00188	Param Intra 1 of 2
Boron (mg/L)	MW-1604	0.5236	8	0.436	0.03348	0	None	No	0.00188	Param Intra 1 of 2
Boron (mg/L)	MW-1605	0.7223	8	0.5796	0.05453	0	None	No	0.00188	Param Intra 1 of 2
Boron (mg/L)	MW-1612	0.6029	7	0.485	0.04104	0	None	No	0.00188	Param Intra 1 of 2
Fluoride (mg/L)	MW-1601	2.492	8	2.081	0.1572	0	None	No	0.00188	Param Intra 1 of 2
Fluoride (mg/L)	MW-1602	1.755	8	1.59	0.06302	0	None	No	0.00188	Param Intra 1 of 2
Fluoride (mg/L)	MW-1608	0.4996	8	0.4375	0.02375	0	None	No	0.00188	Param Intra 1 of 2
Fluoride (mg/L)	MW-1603	0.2177	8	0.1363	0.03114	0	None	No	0.00188	Param Intra 1 of 2
Fluoride (mg/L)	MW-1604	0.3014	8	0.2425	0.02252	0	None	No	0.00188	Param Intra 1 of 2
Fluoride (mg/L)	MW-1605	0.4539	8	0.37	0.03207	0	None	No	0.00188	Param Intra 1 of 2
Fluoride (mg/L)	MW-1612	0.2727	7	0.1686	0.03625	0	None	No	0.00188	Param Intra 1 of 2
Sulfate (mg/L)	MW-1601	412.5	8	256.8	59.53	0	None	No	0.00188	Param Intra 1 of 2
Sulfate (mg/L)	MW-1602	45.62	8	29.86	6.022	0	None	No	0.00188	Param Intra 1 of 2
Sulfate (mg/L)	MW-1608	189.1	8	174	5.757	0	None	No	0.00188	Param Intra 1 of 2
Sulfate (mg/L)	MW-1603	59.85	8	28.1	12.14	0	None	No	0.00188	Param Intra 1 of 2
Sulfate (mg/L)	MW-1604	9.988	8	5.163	1.845	0	None	No	0.00188	Param Intra 1 of 2
Sulfate (mg/L)	MW-1605	128.7	8	95.45	12.71	0	None	No	0.00188	Param Intra 1 of 2
Sulfate (mg/L)	MW-1612	23.26	7	11.47	4.103	0	None	No	0.00188	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1601	1894	8	1450	169.6	0	None	No	0.00188	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1602	583.8	8	525.6	22.24	0	None	No	0.00188	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1608	507.3	8	453	20.77	0	None	No	0.00188	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1603	798.3	8	487.4	118.9	0	None	No	0.00188	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1604	424.4	8	389.5	13.33	0	None	No	0.00188	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1605	891.8	7	820.4	24.84	0	None	No	0.00188	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1612	642.5	7	261422	52675	0	None	x^2	0.00188	Param Intra 1 of 2

Prediction Limit

Intrawell Parametric, MW-1601 (bg)



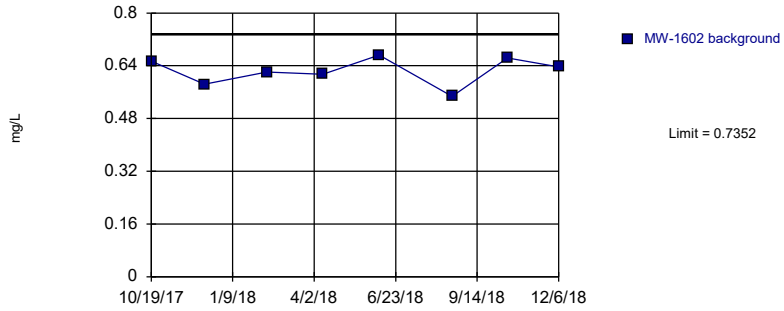
Background Data Summary: Mean=0.5198, Std. Dev.=0.04944, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9748, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Boron Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1602 (bg)



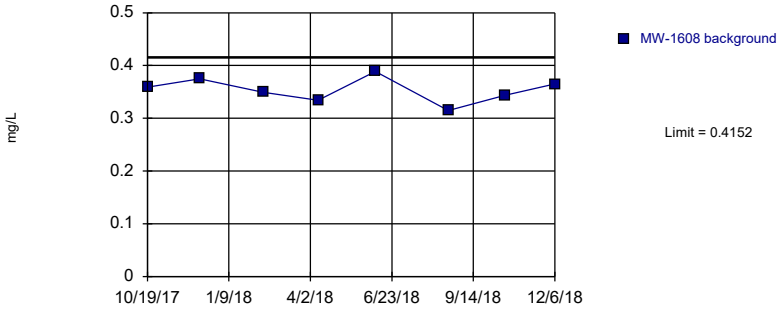
Background Data Summary: Mean=0.6241, Std. Dev.=0.04244, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9392, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Boron Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1608 (bg)



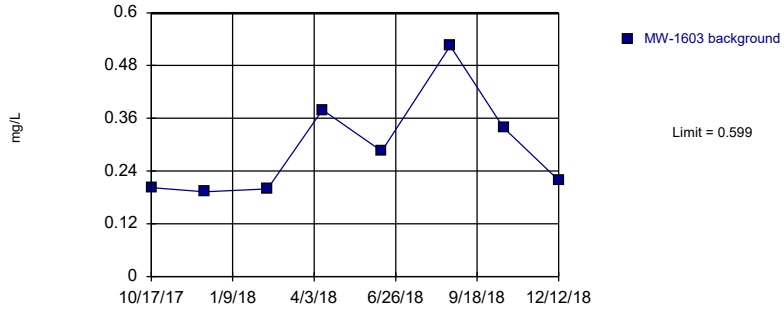
Background Data Summary: Mean=0.3538, Std. Dev.=0.02347, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9958, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Boron Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1603

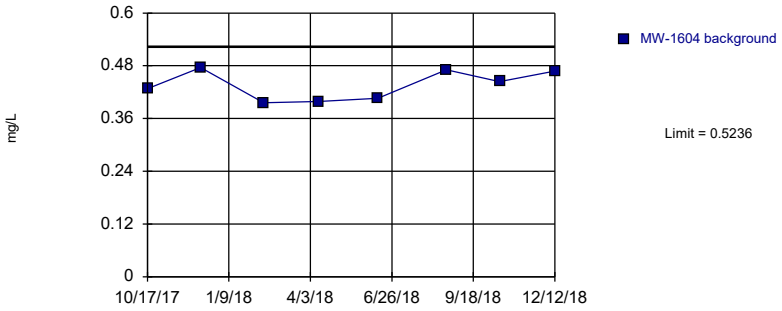


Background Data Summary: Mean=0.2926, Std. Dev.=0.1171, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8489, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Boron Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1604



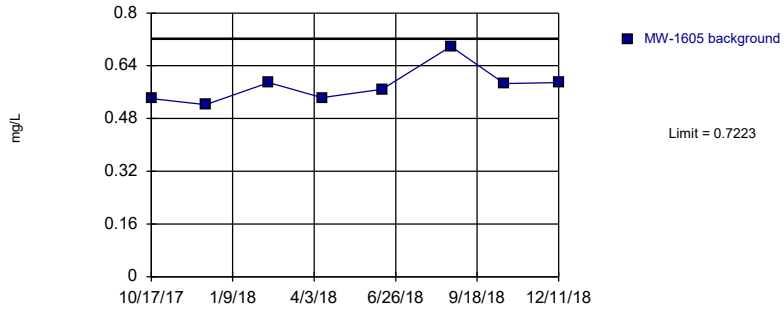
Background Data Summary: Mean=0.436, Std. Dev.=0.03348, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8759, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Boron Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1605



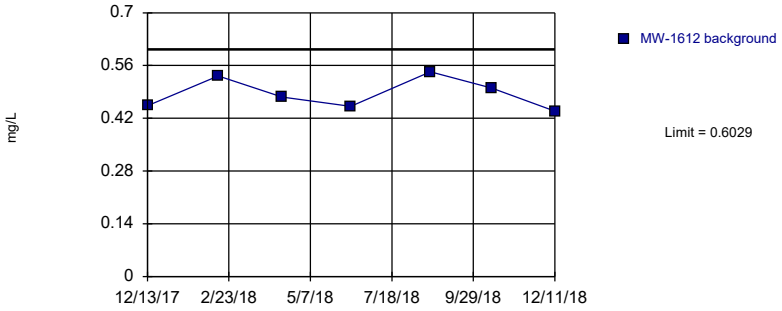
Background Data Summary: Mean=0.5796, Std. Dev.=0.05453, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8321, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Boron Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1612



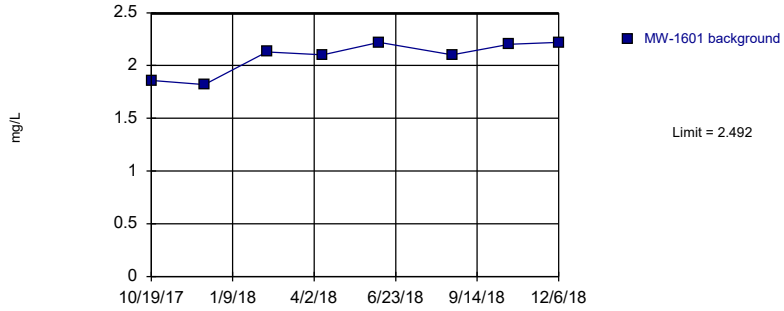
Background Data Summary: Mean=0.485, Std. Dev.=0.04104, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9052, critical = 0.73. Kappa = 2.873 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Boron Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1601 (bg)

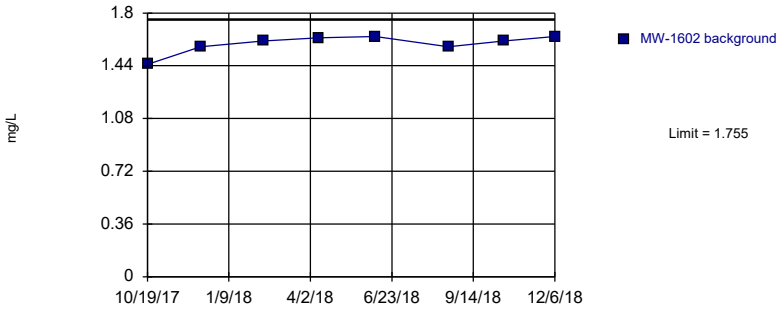


Background Data Summary: Mean=2.081, Std. Dev.=0.1572, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8138, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1602 (bg)



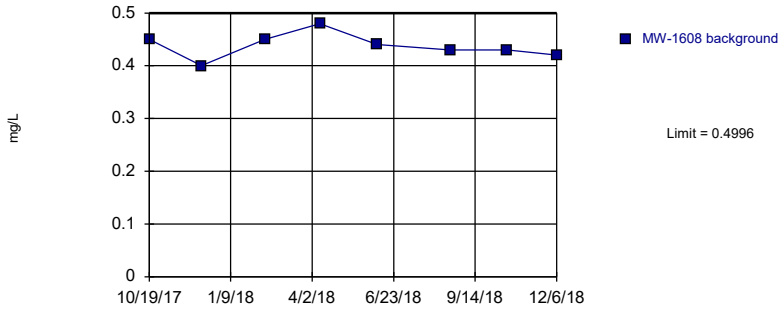
Background Data Summary: Mean=1.59, Std. Dev.=0.06302, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7836, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1608 (bg)



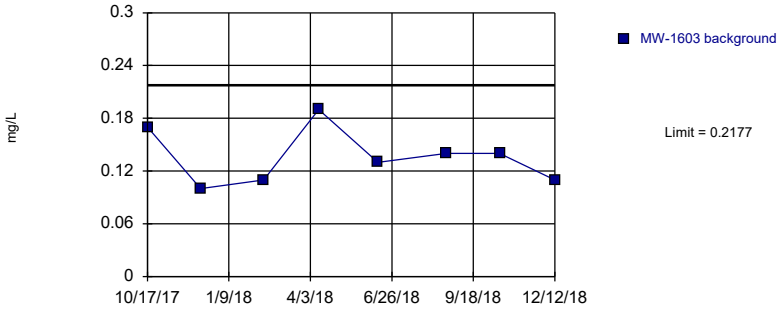
Background Data Summary: Mean=0.4375, Std. Dev.=0.02375, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9718, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1603



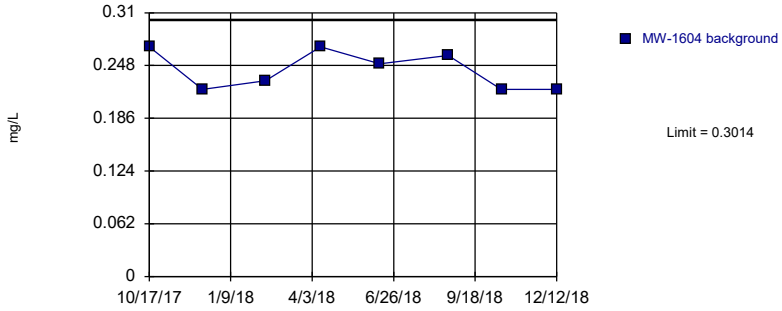
Background Data Summary: Mean=0.1363, Std. Dev.=0.03114, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9251, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1604

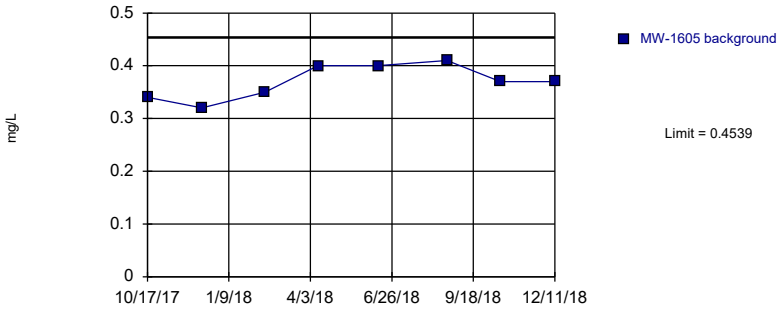


Background Data Summary: Mean=0.2425, Std. Dev.=0.02252, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8267, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1605



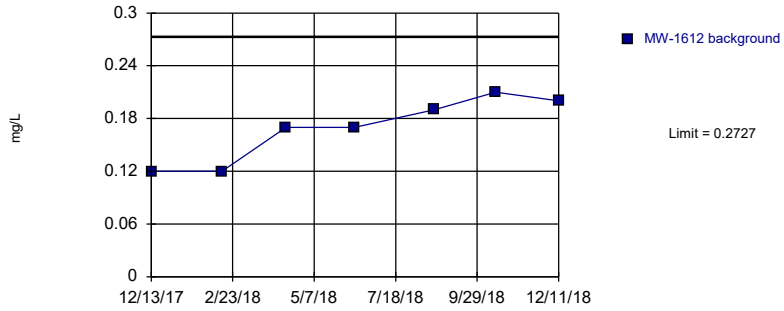
Background Data Summary: Mean=0.37, Std. Dev.=0.03207, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9377, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1612



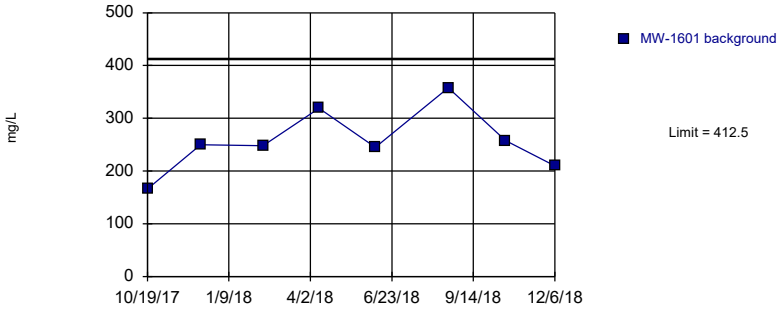
Background Data Summary: Mean=0.1686, Std. Dev.=0.03625, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8767, critical = 0.73. Kappa = 2.873 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1601 (bg)



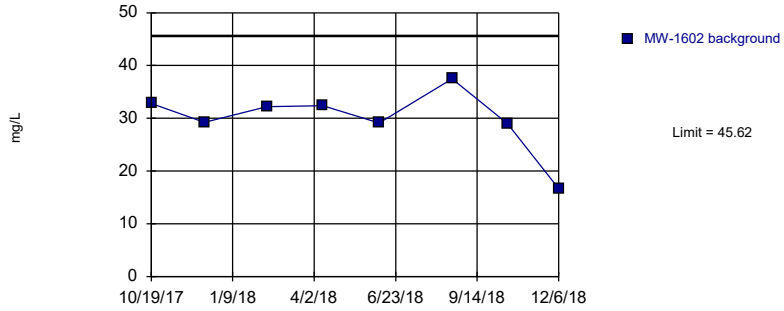
Background Data Summary: Mean=256.8, Std. Dev.=59.53, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9443, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Sulfate Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1602 (bg)

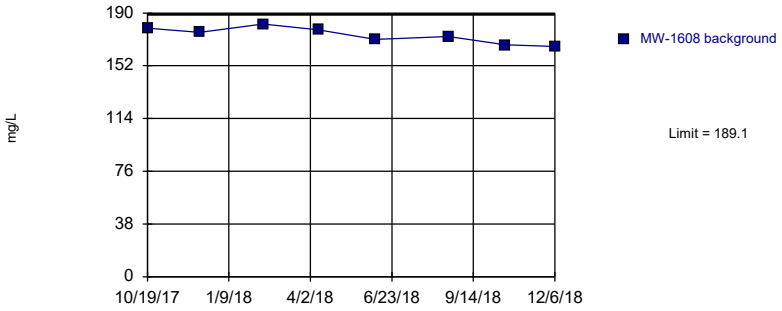


Background Data Summary: Mean=29.86, Std. Dev.=6.022, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.832, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Sulfate Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1608 (bg)



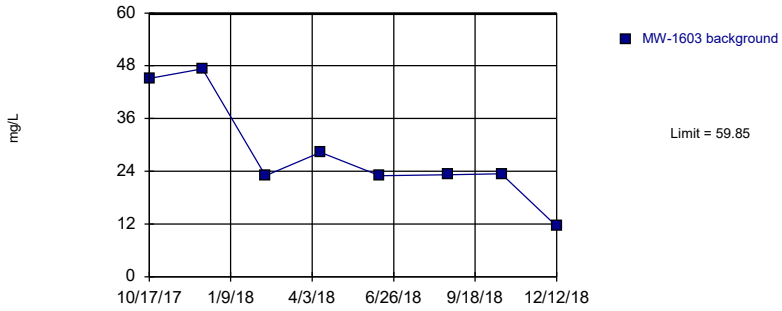
Background Data Summary: Mean=174, Std. Dev.=5.757, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9529, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Sulfate Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1603



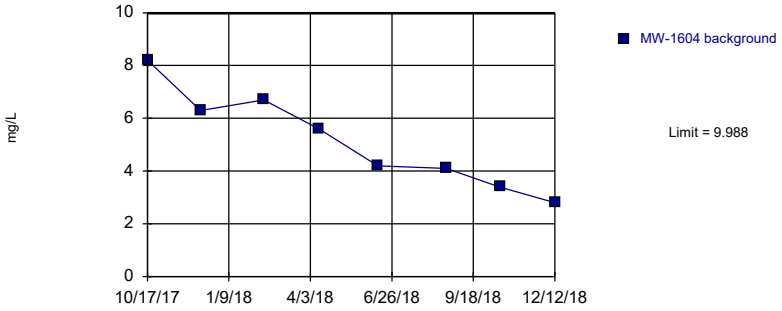
Background Data Summary: Mean=28.1, Std. Dev.=12.14, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8492, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Sulfate Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1604



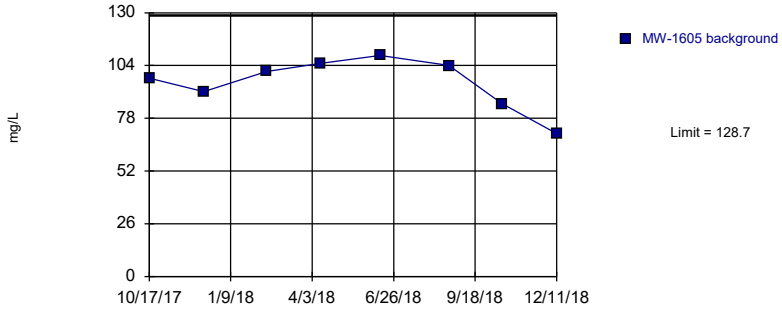
Background Data Summary: Mean=5.163, Std. Dev.=1.845, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9569, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Sulfate Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1605

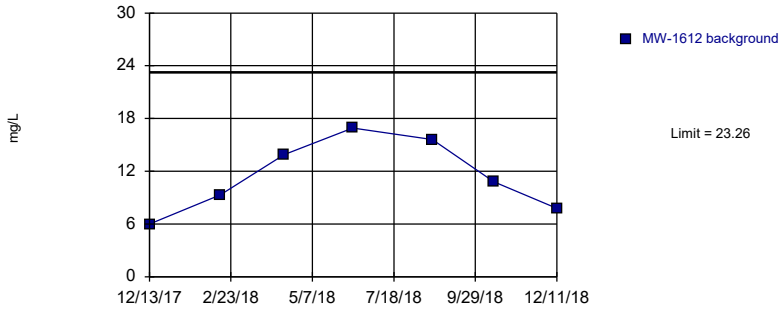


Background Data Summary: Mean=95.45, Std. Dev.=12.71, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9052, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Sulfate Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1612

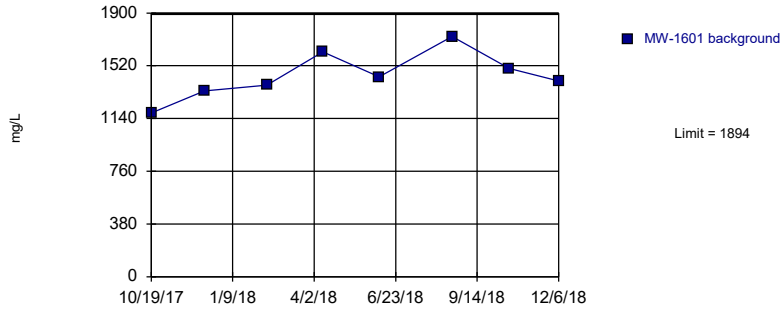


Background Data Summary: Mean=11.47, Std. Dev.=4.103, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9515, critical = 0.73. Kappa = 2.873 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Sulfate Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1601 (bg)

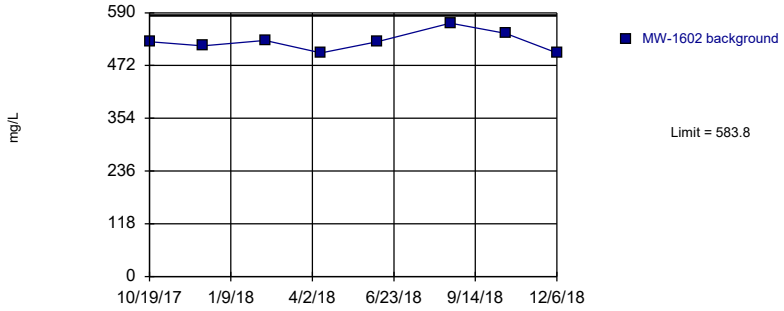


Background Data Summary: Mean=1450, Std. Dev.=169.6, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9791, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1602 (bg)

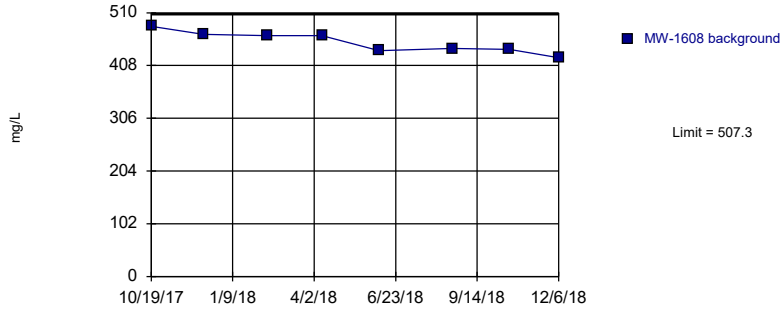


Background Data Summary: Mean=525.6, Std. Dev.=22.24, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9241, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1608 (bg)

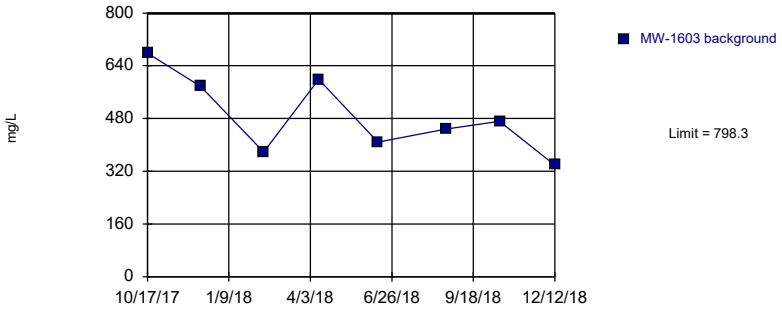


Background Data Summary: Mean=453, Std. Dev.=20.77, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9243, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1603



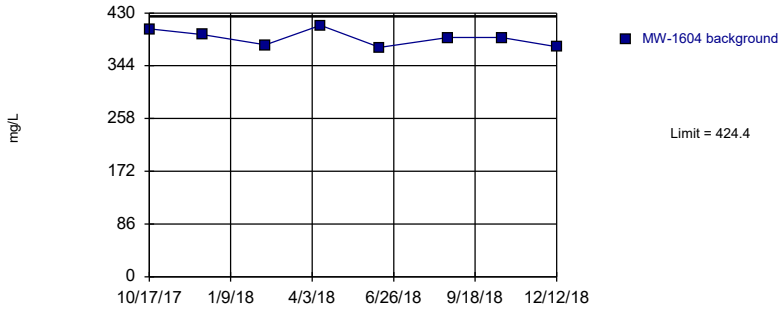
Background Data Summary: Mean=487.4, Std. Dev.=118.9, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9461, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1604



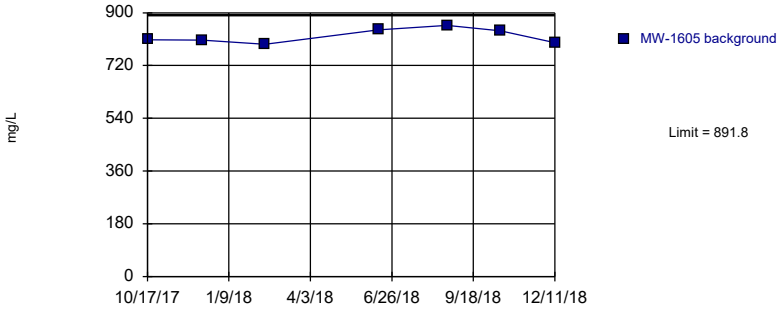
Background Data Summary: Mean=389.5, Std. Dev.=13.33, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9252, critical = 0.749. Kappa = 2.616 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/13/2019 8:16 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1605



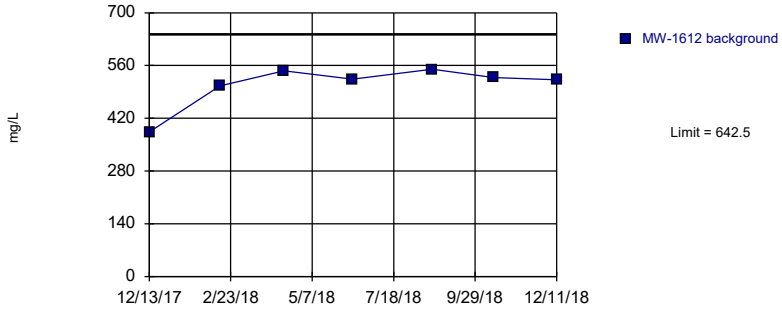
Background Data Summary: Mean=820.4, Std. Dev.=24.84, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8954, critical = 0.73. Kappa = 2.873 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/13/2019 8:17 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1612



Background Data Summary (based on square transformation): Mean=261422, Std. Dev.=52675, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7305, critical = 0.73. Kappa = 2.873 (c=7, w=4, 1 of 2, event alpha = 0.05132). Report alpha = 0.00188. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/13/2019 8:17 PM View: PL's - Intrawell Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

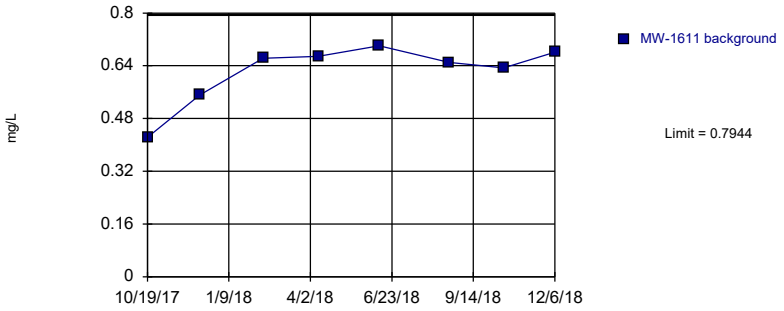
Intrawell Prediction Limit Summary - Dumps Fault (CCR)

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/17/2019, 12:49 PM

Constituent	Well	Upper Lim.	Lower Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MW-1611	0.7944	n/a	8	0.6215	0.09195	0	None	No	0.007498	Param Intra 1 of 2
Boron (mg/L)	MW-1610	0.1409	n/a	8	0.08325	0.03067	0	None	No	0.007498	Param Intra 1 of 2
Calcium (mg/L)	MW-1611	161.3	n/a	8	84.04	41.09	0	None	No	0.007498	Param Intra 1 of 2
Calcium (mg/L)	MW-1610	37.43	n/a	8	35.44	1.06	0	None	No	0.007498	Param Intra 1 of 2
Chloride (mg/L)	MW-1611	156.9	n/a	8	80.8	40.49	0	None	No	0.007498	Param Intra 1 of 2
Chloride (mg/L)	MW-1610	13.34	n/a	8	11.56	0.9471	0	None	No	0.007498	Param Intra 1 of 2
Fluoride (mg/L)	MW-1611	1.138	n/a	8	0.8038	0.1778	0	None	No	0.007498	Param Intra 1 of 2
Fluoride (mg/L)	MW-1610	0.2369	n/a	8	0.2025	0.01832	0	None	No	0.007498	Param Intra 1 of 2
pH (SU)	MW-1611	7.997	7.378	8	7.688	0.1646	0	None	No	0.003749	Param Intra 1 of 2
pH (SU)	MW-1610	7.92	7.102	8	7.511	0.2176	0	None	No	0.003749	Param Intra 1 of 2
Sulfate (mg/L)	MW-1611	2059	n/a	8	1007	559.8	0	None	No	0.007498	Param Intra 1 of 2
Sulfate (mg/L)	MW-1610	53.91	n/a	8	46.96	3.698	0	None	No	0.007498	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1611	3789	n/a	8	2133	881.3	0	None	No	0.007498	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1610	267.6	n/a	8	249.5	9.607	0	None	No	0.007498	Param Intra 1 of 2

Prediction Limit

Intrawell Parametric, MW-1611 (bg)

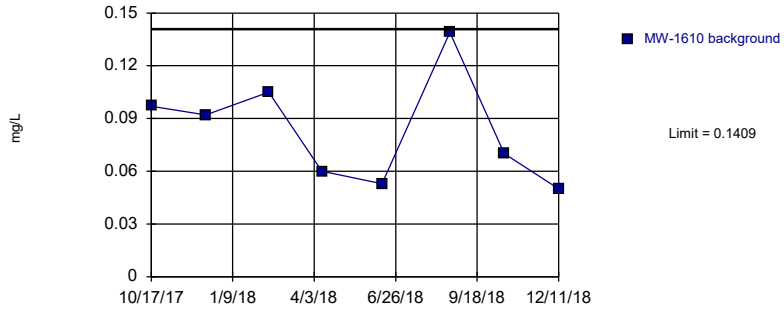


Background Data Summary: Mean=0.6215, Std. Dev.=0.09195, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7899, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Boron Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1610

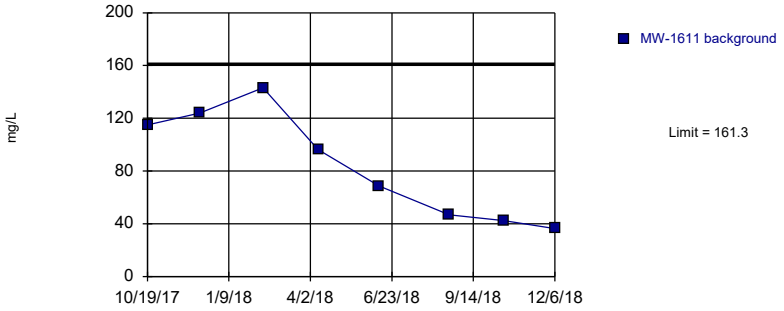


Background Data Summary: Mean=0.08325, Std. Dev.=0.03067, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9241, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Boron Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1611 (bg)

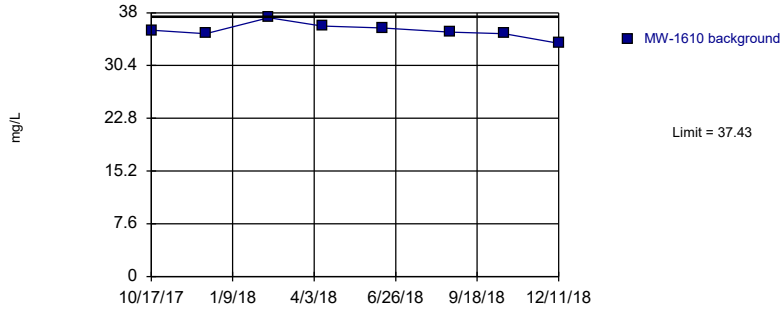


Background Data Summary: Mean=84.04, Std. Dev.=41.09, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.912, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Calcium Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1610

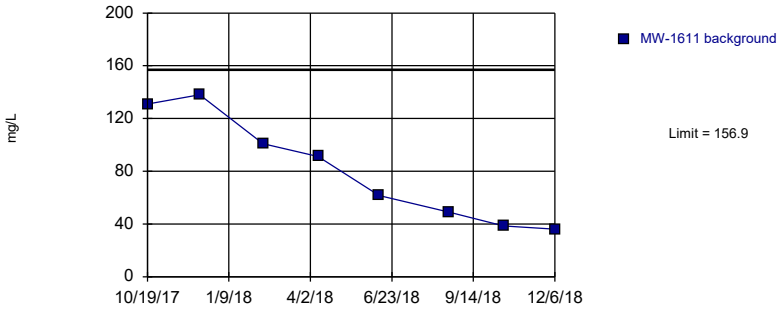


Background Data Summary: Mean=35.44, Std. Dev.=1.06, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9578, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Calcium Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1611 (bg)



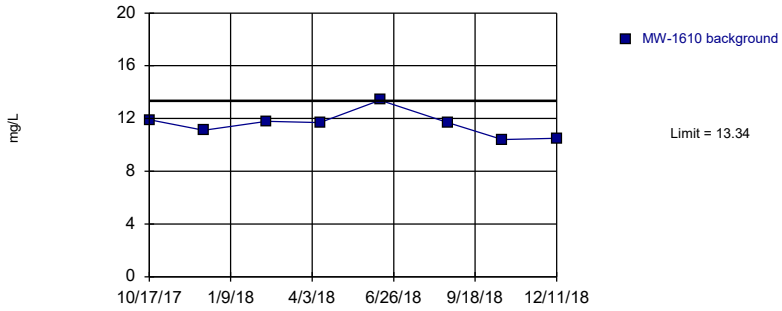
Background Data Summary: Mean=80.8, Std. Dev.=40.49, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8998, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Chloride Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1610



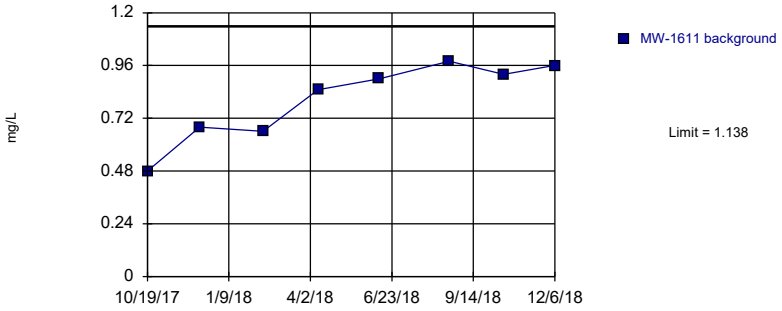
Background Data Summary: Mean=11.56, Std. Dev.=0.9471, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9026, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Chloride Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1611 (bg)



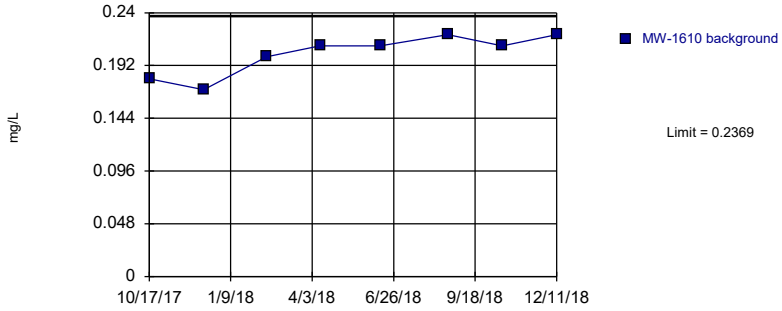
Background Data Summary: Mean=0.8038, Std. Dev.=0.1778, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8839, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1610

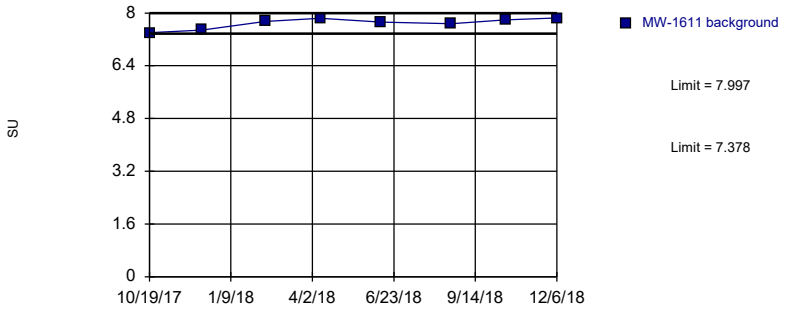


Background Data Summary: Mean=0.2025, Std. Dev.=0.01832, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8487, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1611 (bg)



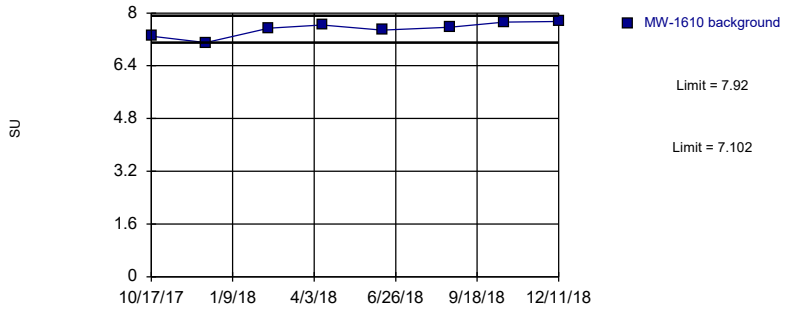
Background Data Summary: Mean=7.688, Std. Dev.=0.1646, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.871, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: pH Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1610



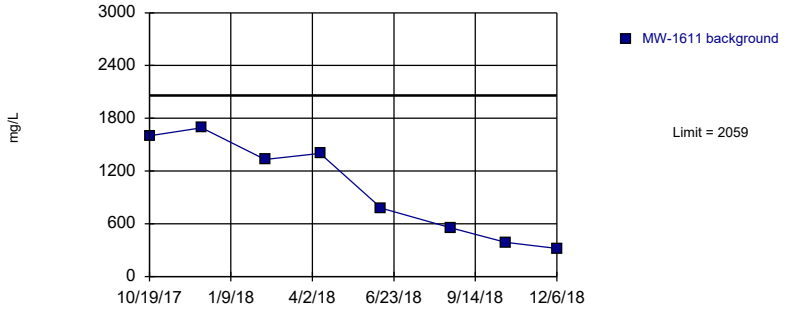
Background Data Summary: Mean=7.511, Std. Dev.=0.2176, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9118, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: pH Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1611 (bg)



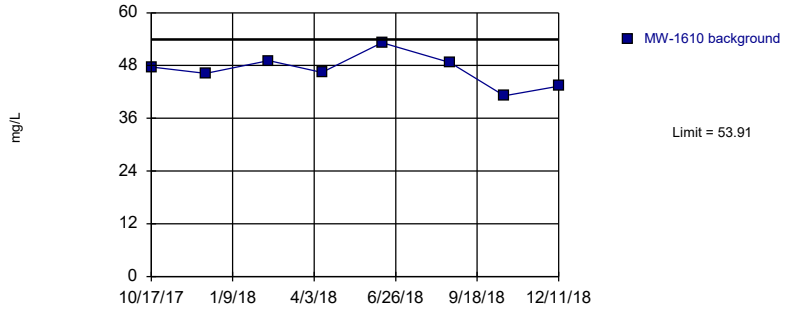
Background Data Summary: Mean=1007, Std. Dev.=559.8, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8838, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Sulfate Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1610

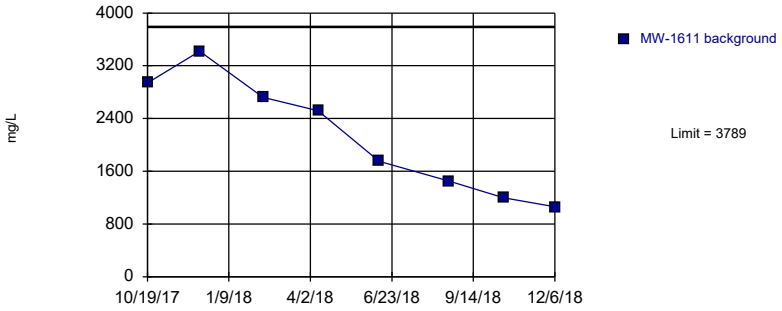


Background Data Summary: Mean=46.96, Std. Dev.=3.698, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9763, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Sulfate Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1611 (bg)



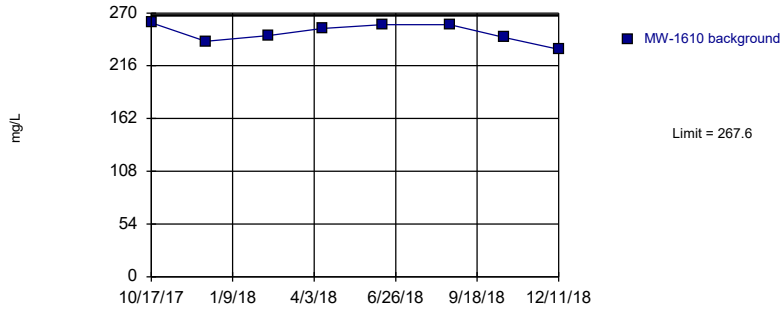
Background Data Summary: Mean=2133, Std. Dev.=881.3, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9256, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12f Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1610



Background Data Summary: Mean=249.5, Std. Dev.=9.607, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9199, critical = 0.749. Kappa = 1.88 (c=7, w=1, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/17/2019 12:45 PM View: PL's - Intrawell Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

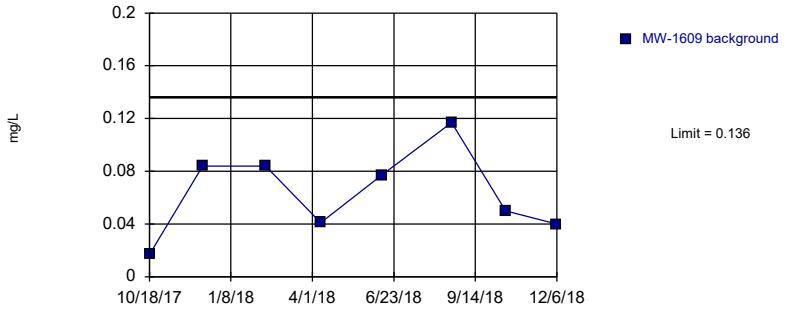
Intrawell Prediction Limit Summary - Rome

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/13/2019, 9:03 PM

Constituent	Well	Upper Lim.	Lower Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	MW-1609	0.136	n/a	8	0.06375	0.03227	0	None	No	0.003756	Param Intra 1 of 2
Boron (mg/L)	MW-1606	0.2253	n/a	8	0.1461	0.03538	0	None	No	0.003756	Param Intra 1 of 2
Boron (mg/L)	MW-1607	0.2124	n/a	8	0.1428	0.03114	0	None	No	0.003756	Param Intra 1 of 2
Calcium (mg/L)	MW-1609	79.47	n/a	8	67.41	5.387	0	None	No	0.003756	Param Intra 1 of 2
Calcium (mg/L)	MW-1606	69	n/a	8	55.73	5.932	0	None	No	0.003756	Param Intra 1 of 2
Calcium (mg/L)	MW-1607	55.74	n/a	8	48.66	3.165	0	None	No	0.003756	Param Intra 1 of 2
Fluoride (mg/L)	MW-1609	0.3435	n/a	8	0.29	0.0239	0	None	No	0.003756	Param Intra 1 of 2
Fluoride (mg/L)	MW-1606	0.3087	n/a	8	0.225	0.03742	0	None	No	0.003756	Param Intra 1 of 2
Fluoride (mg/L)	MW-1607	0.2855	n/a	8	0.2363	0.022	0	None	No	0.003756	Param Intra 1 of 2
pH (SU)	MW-1609	8.048	6.412	8	7.23	0.3656	0	None	No	0.001878	Param Intra 1 of 2
pH (SU)	MW-1606	7.38	6.723	8	7.051	0.1468	0	None	No	0.001878	Param Intra 1 of 2
pH (SU)	MW-1607	8.303	7.317	8	7.81	0.2203	0	None	No	0.001878	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1609	371.5	n/a	8	302.3	30.96	0	None	No	0.003756	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1606	399.1	n/a	8	340.8	26.07	0	None	No	0.003756	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-1607	490.6	n/a	8	331.3	71.22	0	None	No	0.003756	Param Intra 1 of 2

Prediction Limit

Intrawell Parametric, MW-1609 (bg)



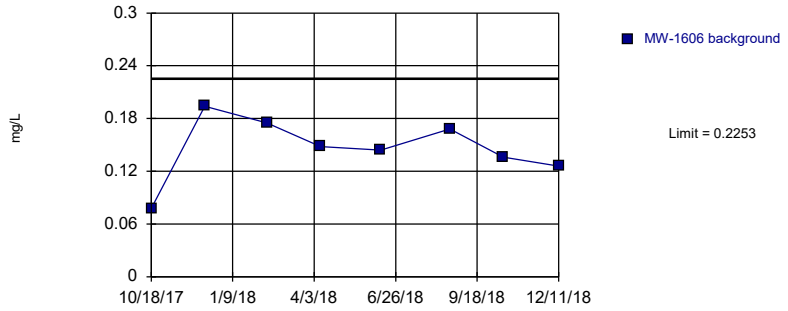
Background Data Summary: Mean=0.06375, Std. Dev.=0.03227, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9556, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Boron Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1606



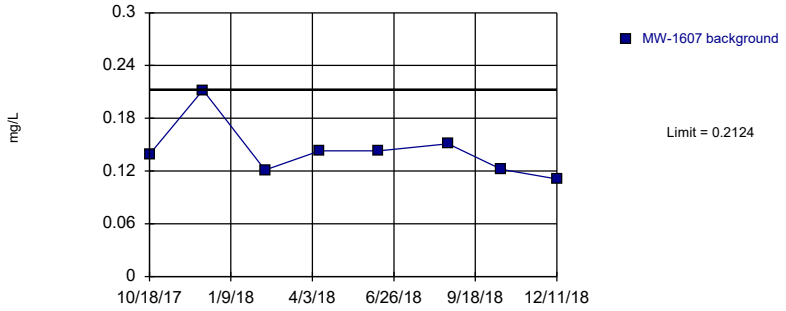
Background Data Summary: Mean=0.1461, Std. Dev.=0.03538, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9558, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Boron Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1607



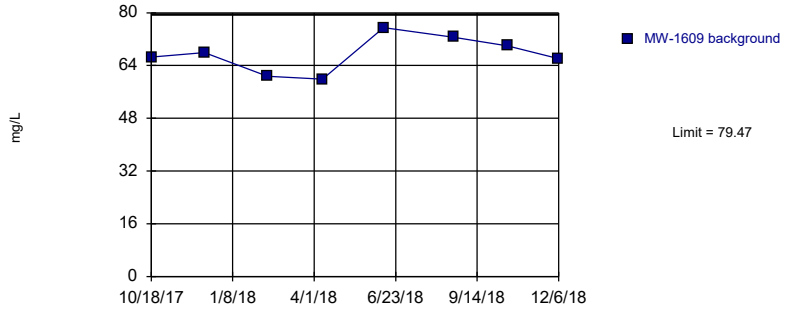
Background Data Summary: Mean=0.1428, Std. Dev.=0.03114, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8175, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Boron Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1609 (bg)

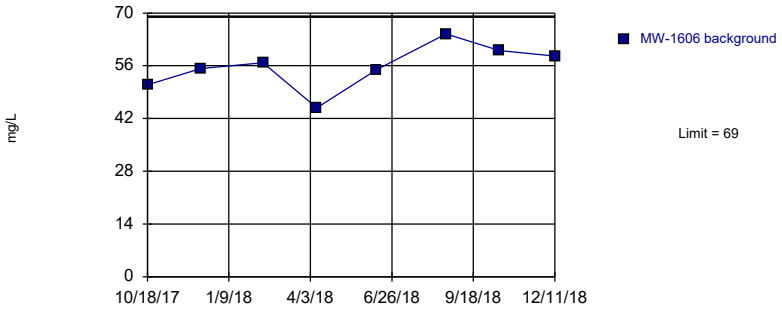


Background Data Summary: Mean=67.41, Std. Dev.=5.387, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9593, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Calcium Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1606



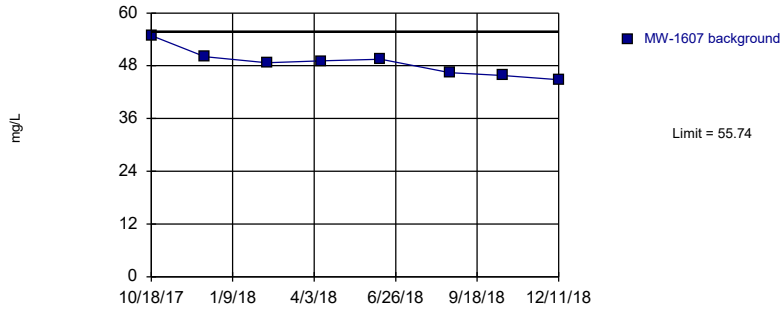
Background Data Summary: Mean=55.73, Std. Dev.=5.932, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9695, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Calcium Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1607



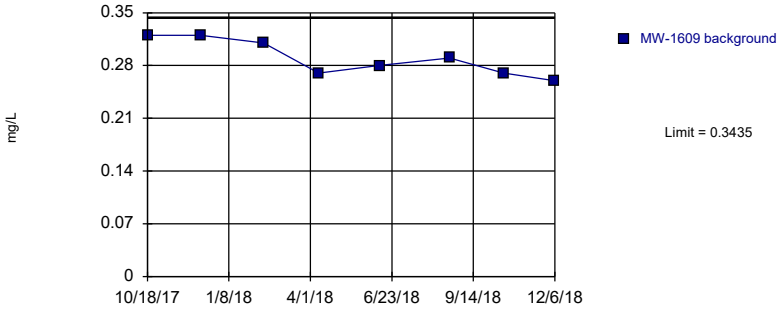
Background Data Summary: Mean=48.66, Std. Dev.=3.165, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9212, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Calcium Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1609 (bg)



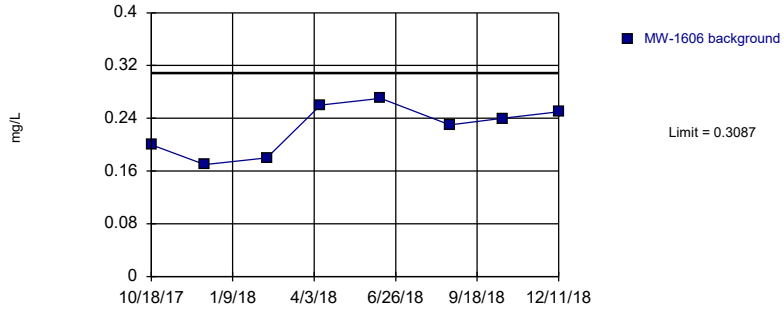
Background Data Summary: Mean=0.29, Std. Dev.=0.0239, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.89, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1606

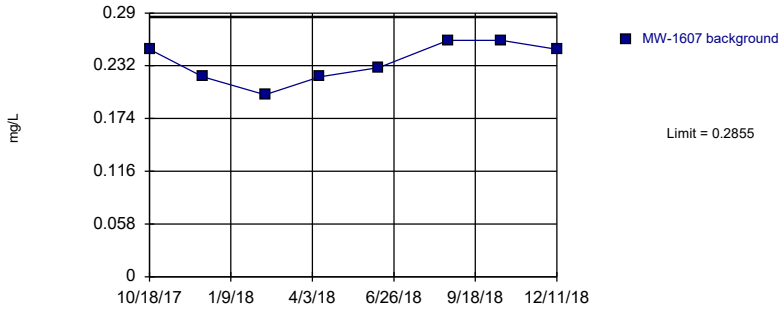


Background Data Summary: Mean=0.225, Std. Dev.=0.03742, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.923, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1607

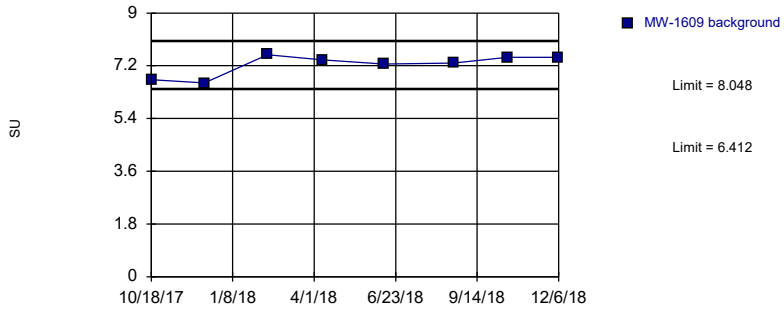


Background Data Summary: Mean=0.2363, Std. Dev.=0.022, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9034, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Fluoride Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1609 (bg)

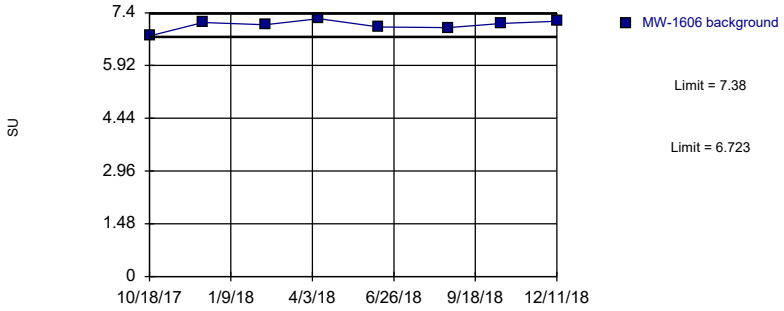


Background Data Summary: Mean=7.23, Std. Dev.=0.3656, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8219, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: pH Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1606

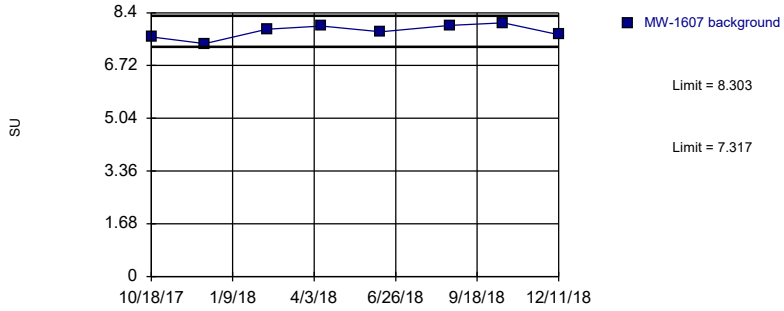


Background Data Summary: Mean=7.051, Std. Dev.=0.1468, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9189, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: pH Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1607

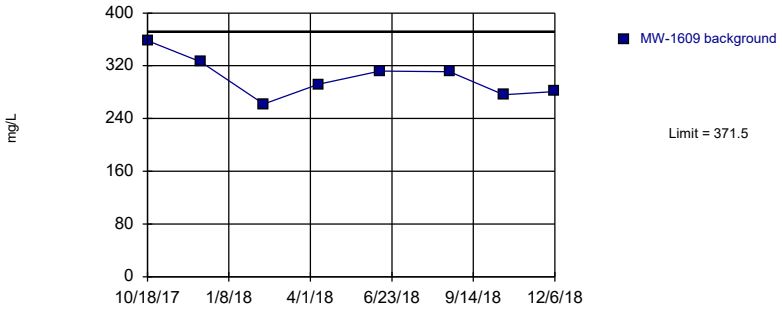


Background Data Summary: Mean=7.81, Std. Dev.=0.2203, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9573, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: pH Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Prediction Limit

Intrawell Parametric, MW-1609 (bg)



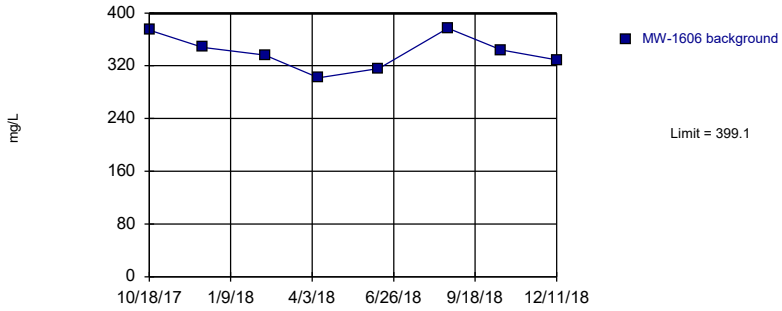
Background Data Summary: Mean=302.3, Std. Dev.=30.96, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9632, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1606



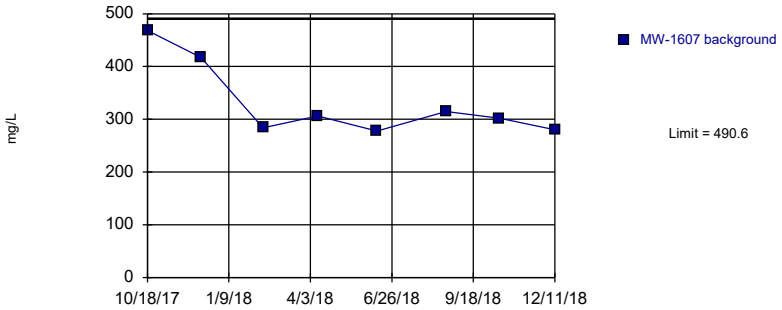
Background Data Summary: Mean=340.8, Std. Dev.=26.07, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9577, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.12d Sanitas software utilized by Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, MW-1607



Background Data Summary: Mean=331.3, Std. Dev.=71.22, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7572, critical = 0.749. Kappa = 2.238 (c=7, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003756. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 3/13/2019 9:02 PM View: PL's - Intrawell Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Interwell Prediction Limit Summary - Chattanooga CCR

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 4/25/2019, 10:50 AM

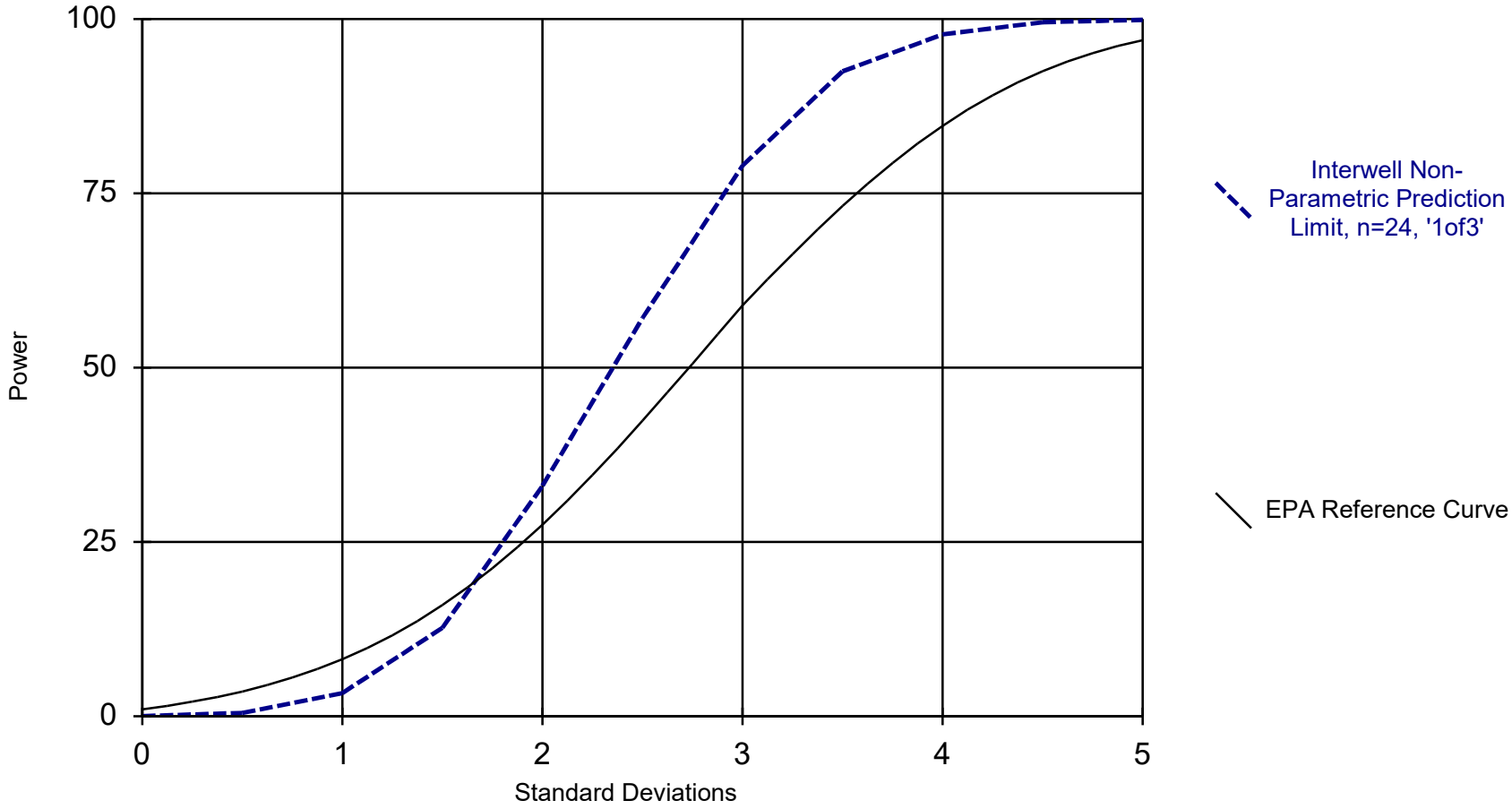
Constituent	Well	Upper Lim.	Lower Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Calcium (mg/L)	n/a	8.046	n/a	24	3.527	2.345	0	None	No	0.00188	Param Inter 1 of 2
Chloride (mg/L)	n/a	45.8	n/a	24	n/a	n/a	0	n/a	n/a	0.003005	NP Inter (normality) 1 of 2
pH (SU)	n/a	8.971	7.929	24	71.68	4.571	0	None	x^2	0.0009398	Param Inter 1 of 2

Interwell Prediction Limit Summary - Rome

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP Printed 3/13/2019, 9:01 PM

Constituent	Well	Upper Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Chloride (mg/L)	n/a	4.539	8	2.325	0.9982	0	None	No	0.003756	Param Inter 1 of 2
Sulfate (mg/L)	n/a	23.89	8	16.28	3.434	0	None	No	0.003756	Param Inter 1 of 2

Power Curve

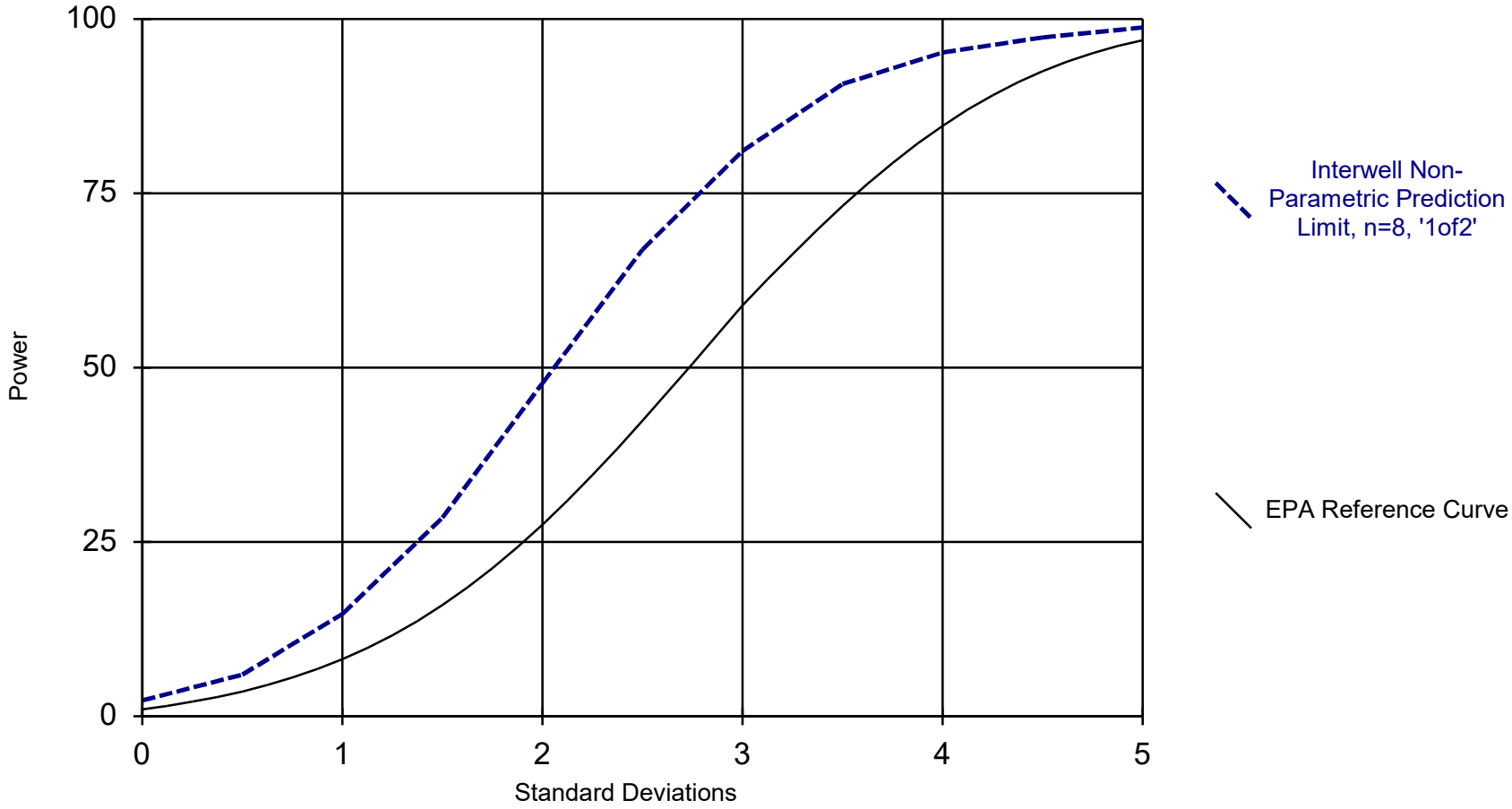


This report reflects annual total based on two evaluations per year.

Analysis Run 4/16/2019 10:47 AM

Clinch River Pond 1 Chattanooga Client: AEP Data: Clinch River Landfill AEP

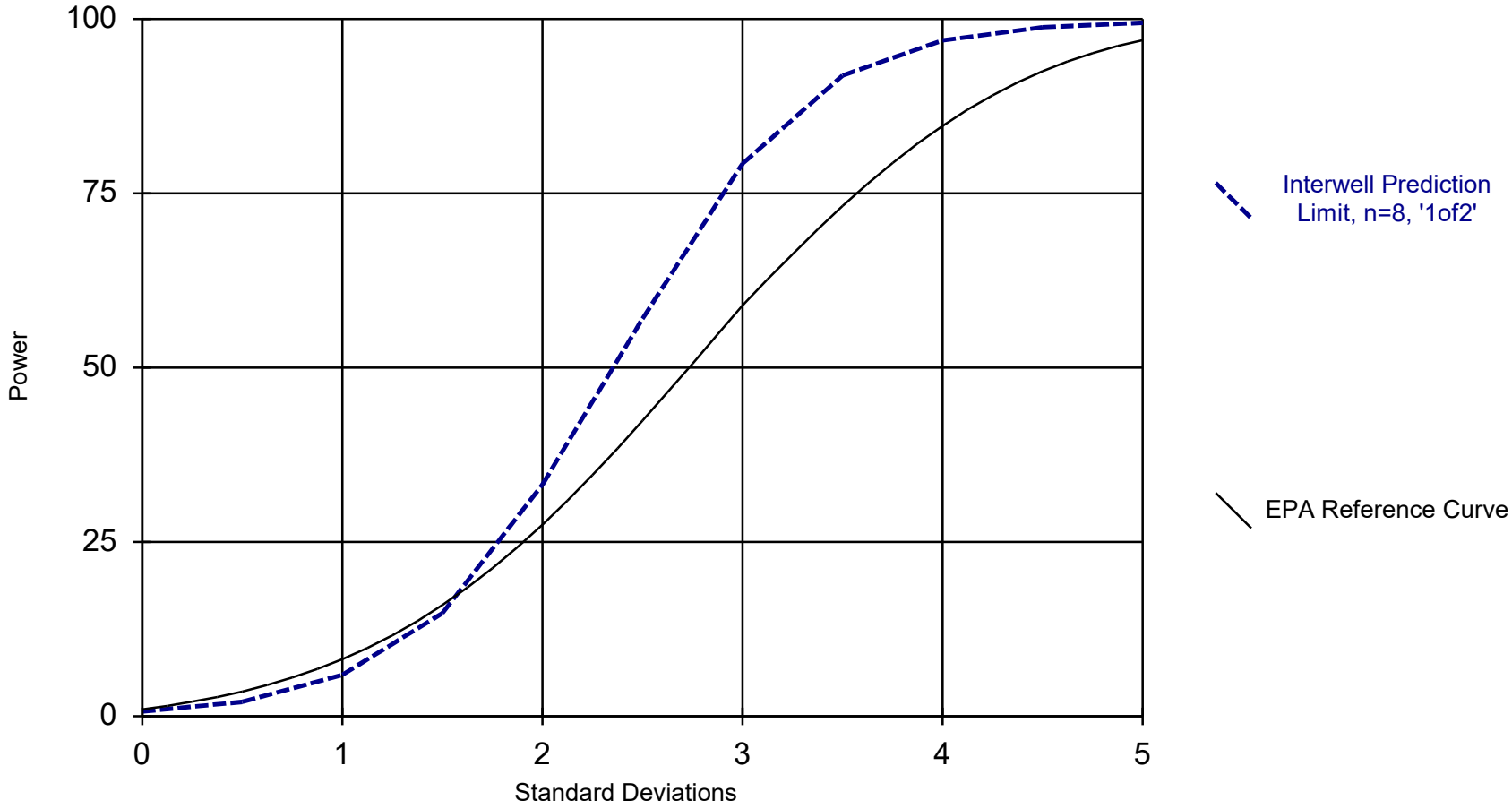
Power Curve - Rome



Analysis Run 3/18/2019 4:14 PM View: Descriptive - Rome CCR

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP

Power Curve - Rome

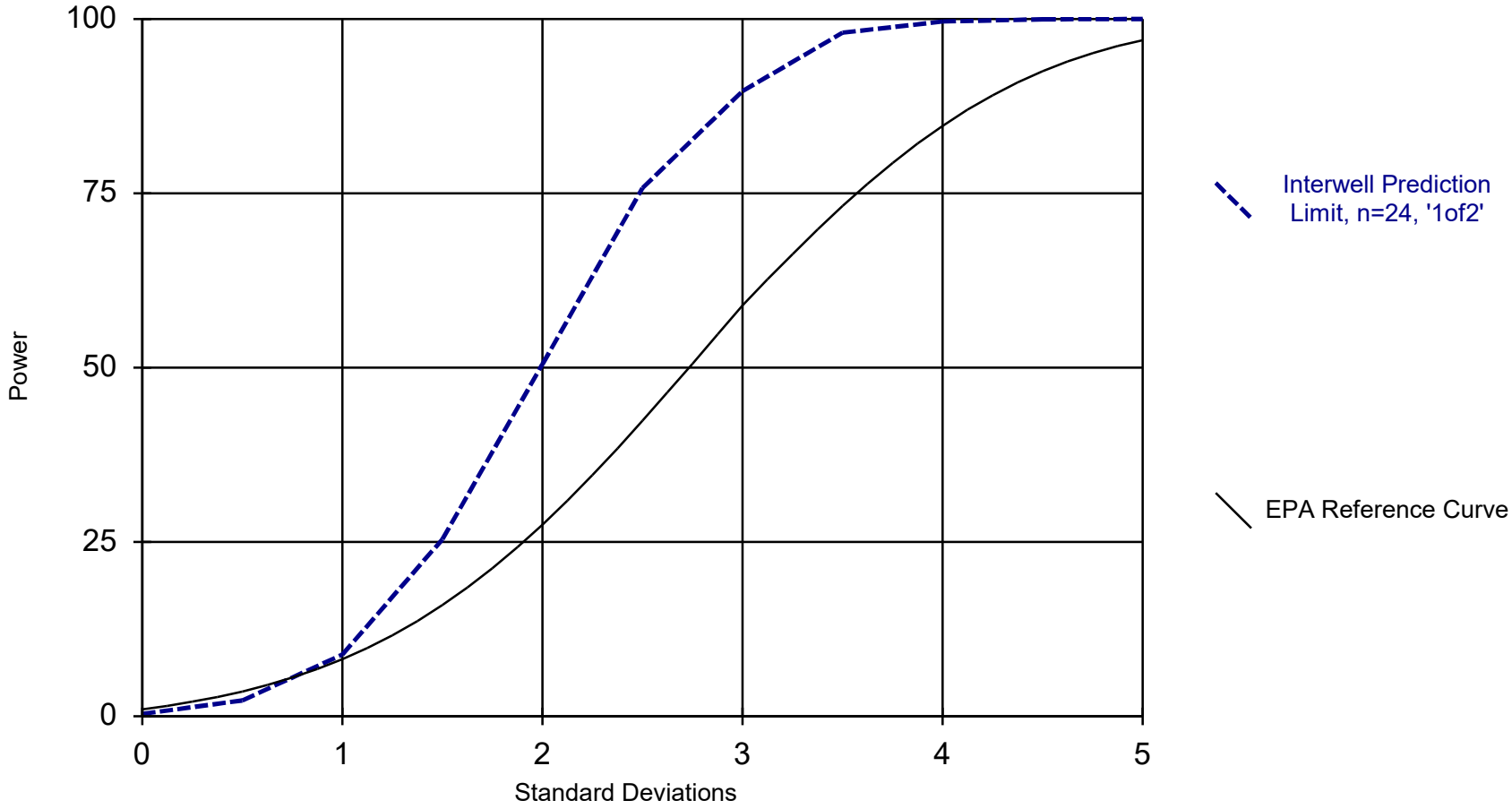


Kappa = 2.218, based on 2 compliance wells and 7 constituents, evaluated semi-annually (this report reflects annual total).

Analysis Run 3/18/2019 4:15 PM View: Descriptive - Rome CCR

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP

Power Curve

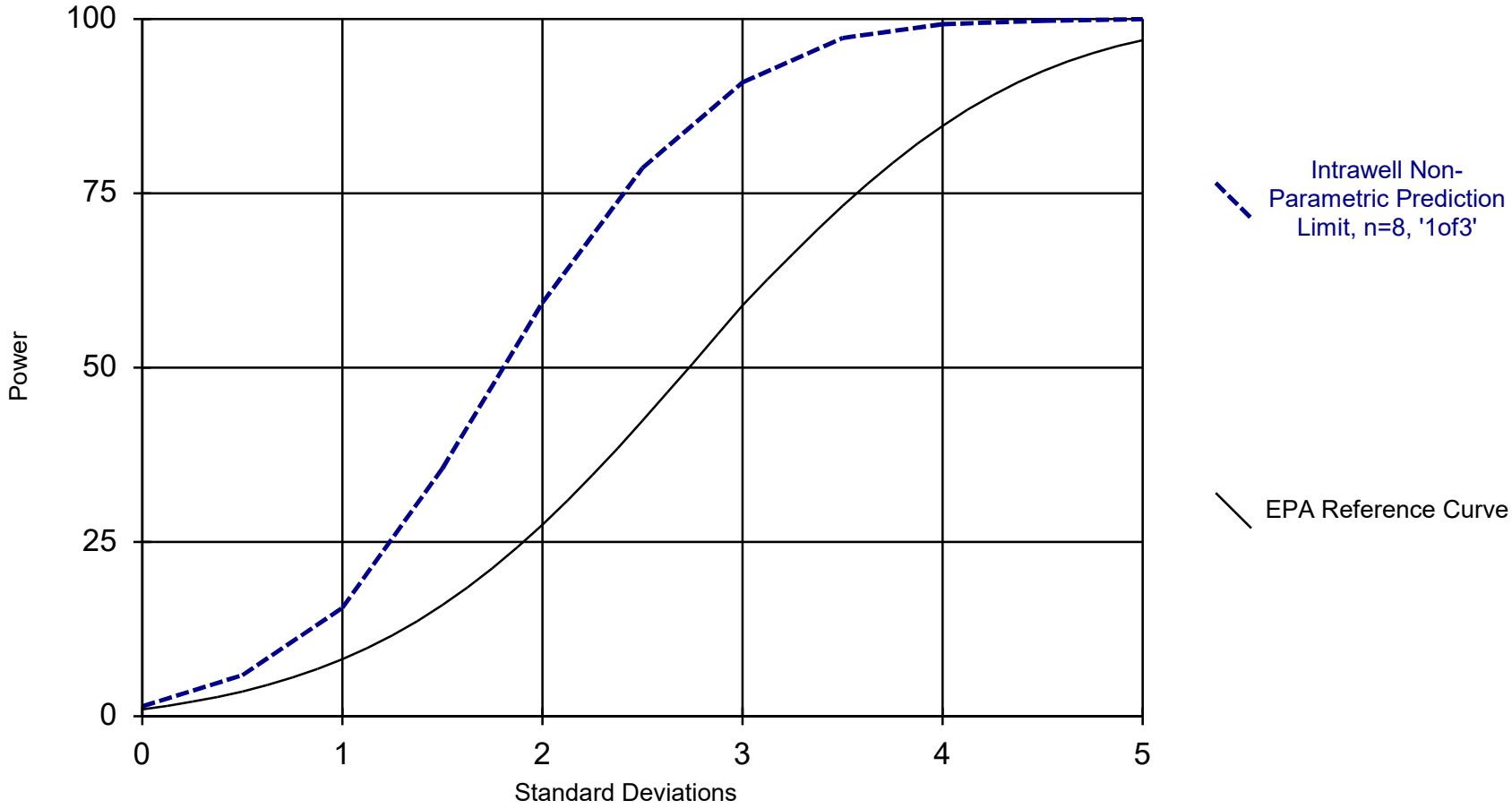


Kappa = 1.927, based on 4 compliance wells and 7 constituents, evaluated semi-annually (this report reflects annual total).

Analysis Run 4/16/2019 10:37 AM

Clinch River Pond 1 Chattanooga Client: AEP Data: Clinch River Landfill AEP

Power Curve

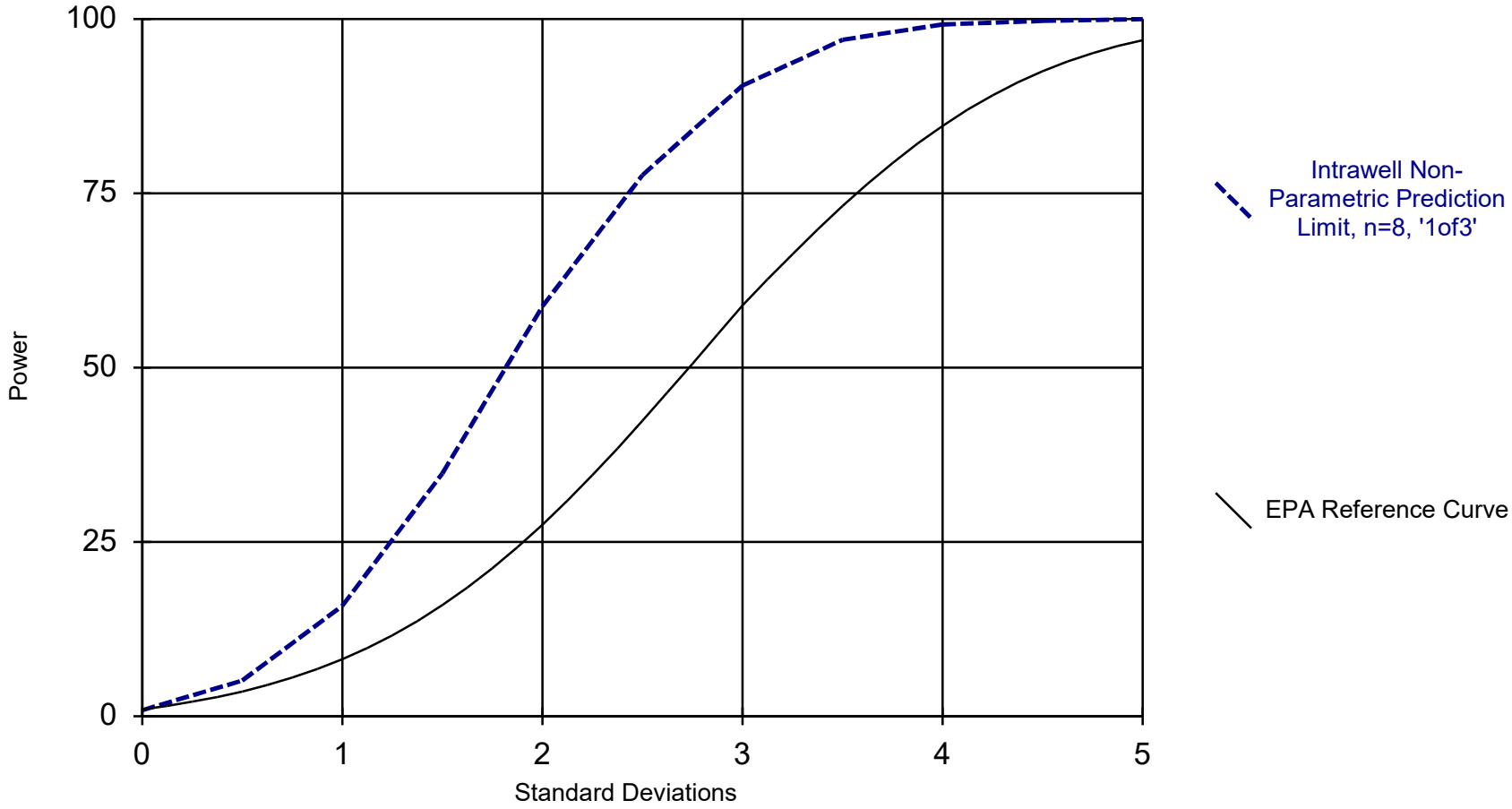


This report reflects annual total based on two evaluations per year.

Analysis Run 4/16/2019 10:42 AM

Clinch River Pond 1 Chattanooga Client: AEP Data: Clinch River Landfill AEP

Power Curve - Dumps Fault

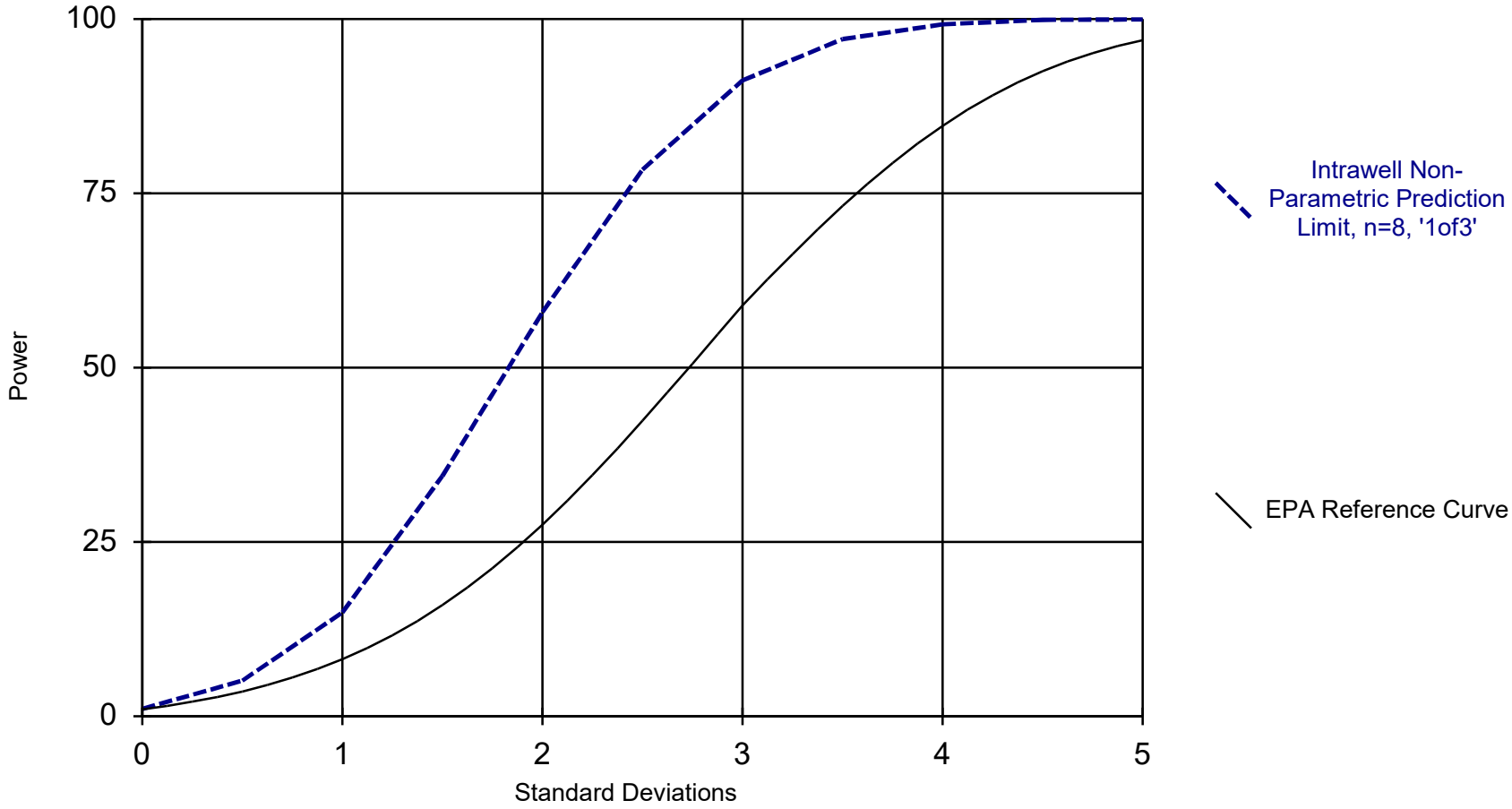


This report reflects annual total based on two evaluations per year.

Analysis Run 4/16/2019 2:18 PM View: Descriptive - Dumps Fault CCR

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP

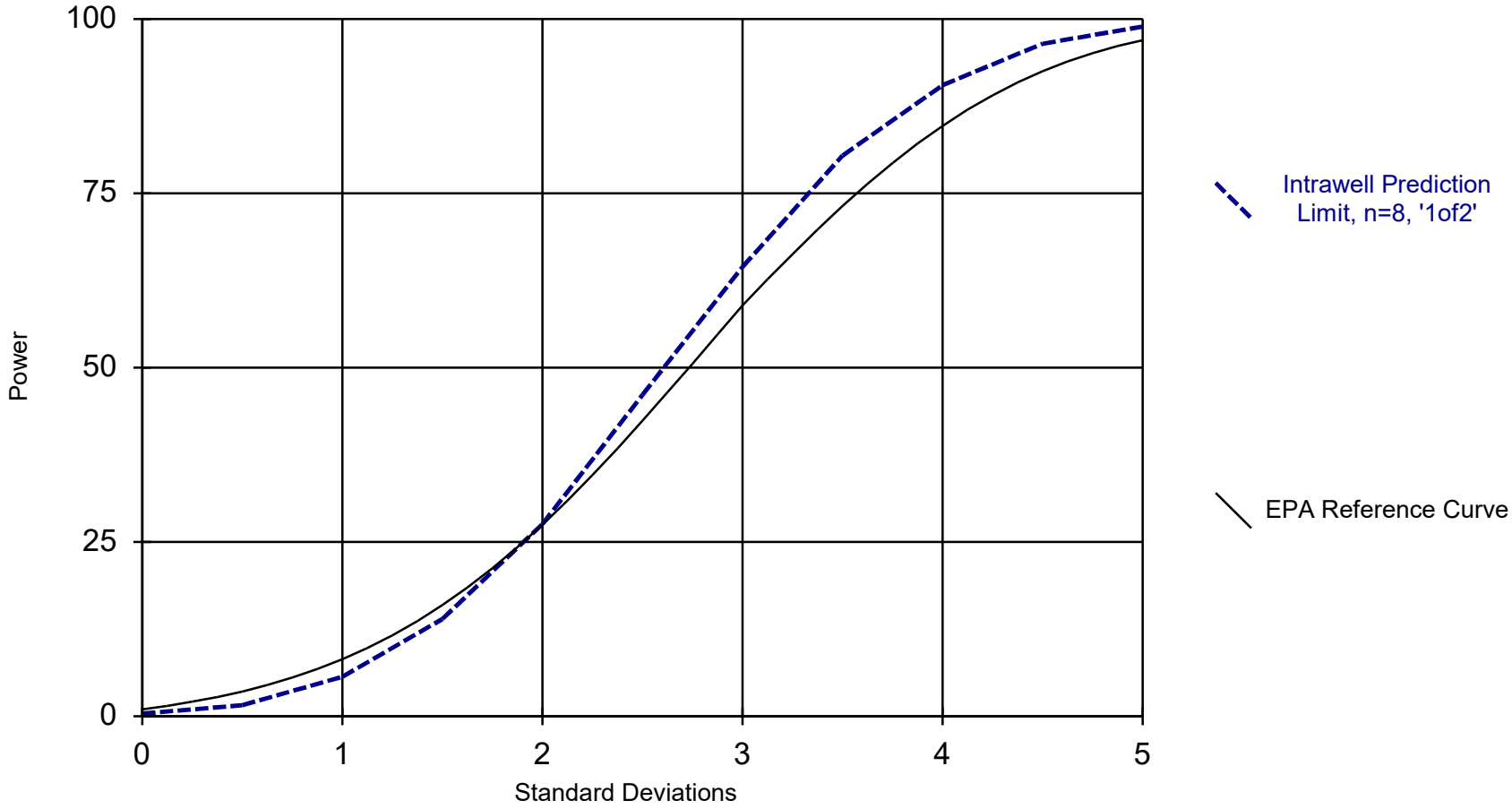
Power Curve - Rome



This report reflects annual total based on two evaluations per year.

Analysis Run 4/16/2019 3:58 PM View: Descriptive - Rome CCRClinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP

Power Curve

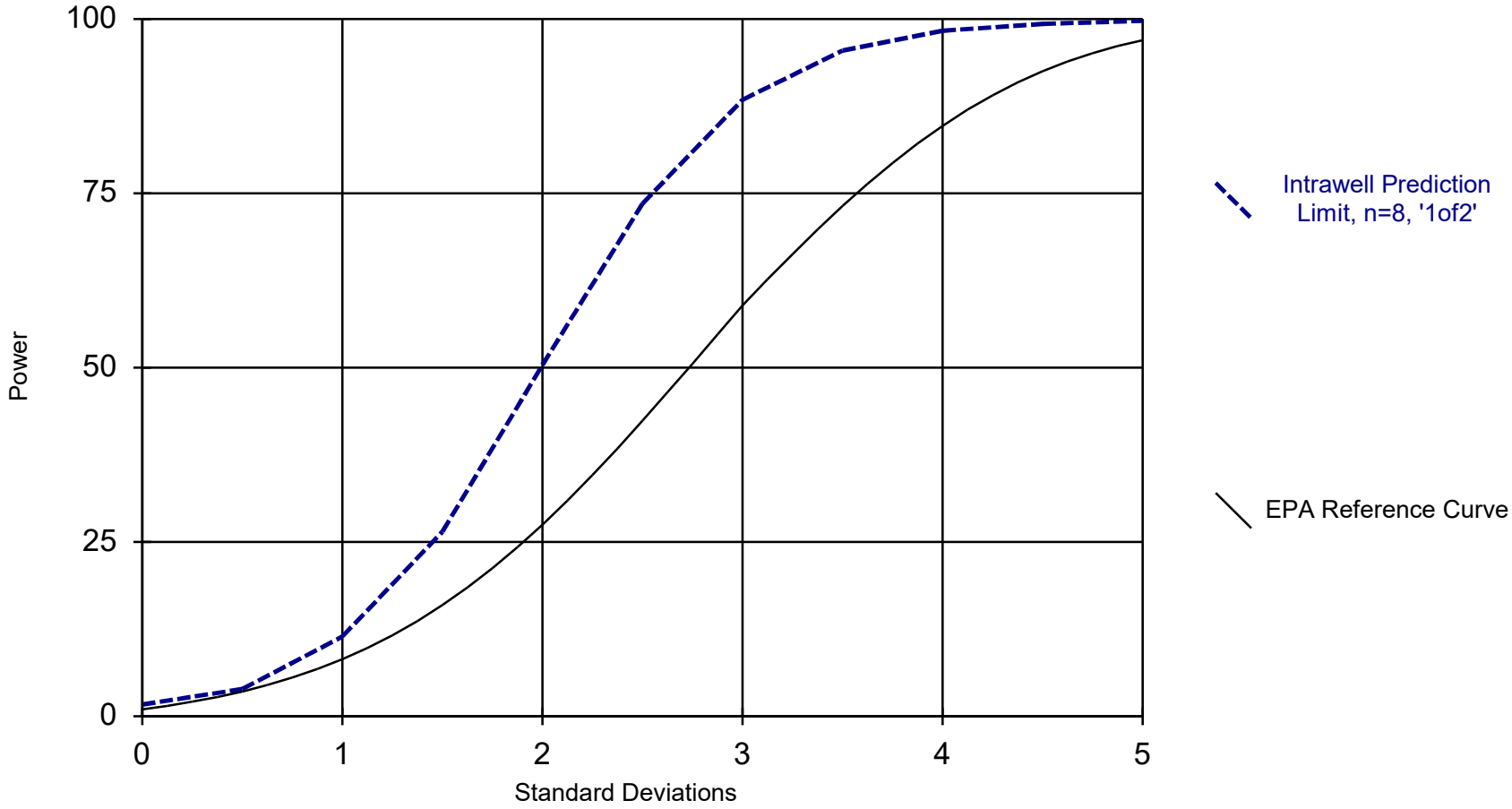


Kappa = 2.616, based on 4 compliance wells and 7 constituents, evaluated semi-annually (this report reflects annual total).

Analysis Run 4/16/2019 10:39 AM

Clinch River Pond 1 Chattanooga Client: AEP Data: Clinch River Landfill AEP

Power Curve - Dumps Fault

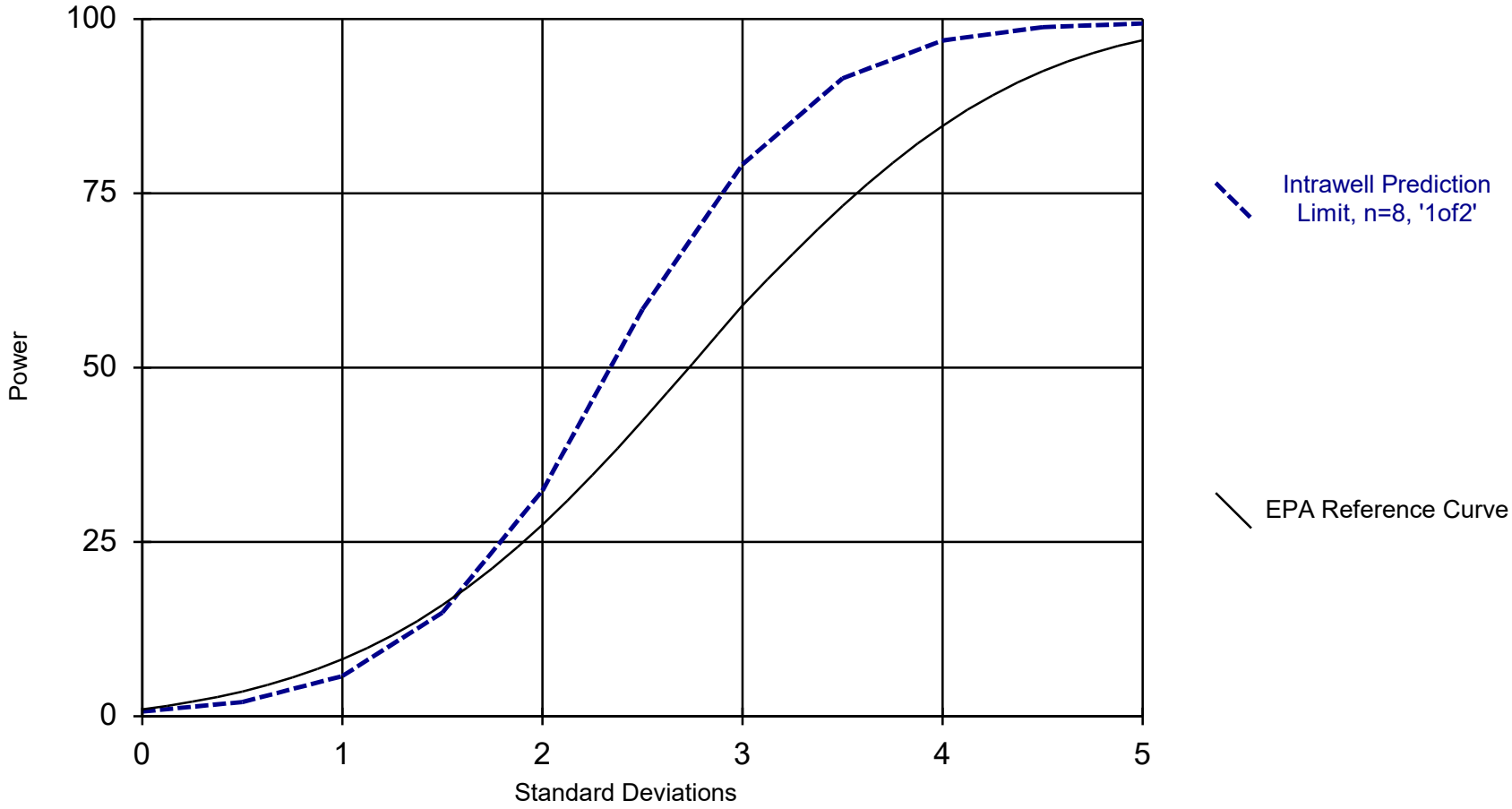


Kappa = 1.88, based on 1 compliance well and 7 constituents, evaluated semi-annually (this report reflects annual total).

Analysis Run 3/18/2019 4:09 PM View: Descriptive - Rome CCR

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP

Power Curve - Rome



Kappa = 2.238, based on 2 compliance wells and 7 constituents, evaluated semi-annually (this report reflects annual total).

Analysis Run 3/18/2019 4:15 PM View: Descriptive - Rome CCR

Clinch River Pond 1 Client: AEP Data: Clinch River Landfill AEP

Tolerance Limit Summary Table - Chattanooga

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 6/12/2019, 7:01 AM

Constituent	Well	Upper Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	n/a	0.0002684	30	0.009768	0.00298	0	None	sqrt(x)	0.05	Inter
Arsenic (mg/L)	n/a	0.0258	30	n/a	n/a	0	n/a	n/a	0.2146	NP Inter(normality)
Barium (mg/L)	n/a	0.306	30	n/a	n/a	0	n/a	n/a	0.2146	NP Inter(normality)
Beryllium (mg/L)	n/a	0.0001	30	n/a	n/a	36.67	n/a	n/a	0.2146	NP Inter(normality)
Cadmium (mg/L)	n/a	0.00005	30	n/a	n/a	76.67	n/a	n/a	0.2146	NP Inter(NDs)
Chromium (mg/L)	n/a	0.00126	30	n/a	n/a	0	n/a	n/a	0.2146	NP Inter(normality)
Cobalt (mg/L)	n/a	0.0005437	30	0.04974	0.01436	0	None	x^(1/3)	0.05	Inter
Combined Radium 226 + 228 (pCi/L)	n/a	3.353	30	0.9039	0.267	0	None	x^(1/3)	0.05	Inter
Fluoride (mg/L)	n/a	2.32	30	n/a	n/a	0	n/a	n/a	0.2146	NP Inter(normality)
Lead (mg/L)	n/a	0.001057	30	-8.909	0.9265	0	None	ln(x)	0.05	Inter
Lithium (mg/L)	n/a	0.1611	30	0.3658	0.08032	0	None	x^(1/3)	0.05	Inter
Mercury (mg/L)	n/a	0.0002	30	n/a	n/a	86.67	n/a	n/a	0.2146	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.02178	30	-5.354	0.6877	0	None	ln(x)	0.05	Inter
Selenium (mg/L)	n/a	0.0002	30	n/a	n/a	36.67	n/a	n/a	0.2146	NP Inter(normality)
Thallium (mg/L)	n/a	0.0005	30	n/a	n/a	53.33	n/a	n/a	0.2146	NP Inter(normality)

Tolerance Limit Summary Table - Dumps Fault

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 6/12/2019, 6:29 AM

Constituent	Well	Upper Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	n/a	0.0007481	10	0.000219	0.0001817	0	None	No	0.05	Inter
Arsenic (mg/L)	n/a	0.05204	10	0.0203	0.01091	0	None	No	0.05	Inter
Barium (mg/L)	n/a	0.1041	10	0.06662	0.01286	0	None	No	0.05	Inter
Beryllium (mg/L)	n/a	0.0001	10	n/a	n/a	50	n/a	n/a	0.5987	NP Inter(normality)
Cadmium (mg/L)	n/a	0.00005	10	n/a	n/a	90	n/a	n/a	0.5987	NP Inter(NDs)
Chromium (mg/L)	n/a	0.00111	10	0.0005673	0.0001865	0	None	No	0.05	Inter
Cobalt (mg/L)	n/a	0.0001671	9	0.00008178	0.00002816	0	None	No	0.05	Inter
Combined Radium 226 + 228 (pCi/L)	n/a	1.473	10	0.5417	0.32	0	None	No	0.05	Inter
Fluoride (mg/L)	n/a	1.325	10	0.833	0.1691	0	None	No	0.05	Inter
Lead (mg/L)	n/a	0.0002374	9	0.0001214	0.00003826	0	None	No	0.05	Inter
Lithium (mg/L)	n/a	0.1884	10	0.1047	0.02874	0	None	No	0.05	Inter
Mercury (mg/L)	n/a	0.0002	10	n/a	n/a	90	n/a	n/a	0.5987	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.00676	9	n/a	n/a	0	n/a	n/a	0.6302	NP Inter(normality)
Selenium (mg/L)	n/a	0.0001494	10	0.000074	0.00002591	0	None	No	0.05	Inter
Thallium (mg/L)	n/a	0.0005	10	n/a	n/a	70	n/a	n/a	0.5987	NP Inter(normality)

Tolerance Limit Summary Table - Rome

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 6/12/2019, 6:53 AM

Constituent	Well	Upper Lim.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	n/a	0.0001438	10	0.000052	0.00003155	0	None	No	0.05	Inter
Arsenic (mg/L)	n/a	0.00162	10	0.01723	0.007908	0	None	sqrt(x)	0.05	Inter
Barium (mg/L)	n/a	0.5769	10	0.4016	0.06022	0	None	No	0.05	Inter
Beryllium (mg/L)	n/a	0.0001	10	n/a	n/a	90	n/a	n/a	0.5987	NP Inter(NDs)
Cadmium (mg/L)	n/a	0.0001141	10	0.00003983	0.00002552	40	Cohen`s	No	0.05	Inter
Chromium (mg/L)	n/a	0.0003777	10	0.0001797	0.000068	0	None	No	0.05	Inter
Cobalt (mg/L)	n/a	0.001857	10	0.01722	0.00889	10	None	sqrt(x)	0.05	Inter
Combined Radium 226 + 228 (pCi/L)	n/a	3.519	10	1.665	0.6367	0	None	No	0.05	Inter
Fluoride (mg/L)	n/a	0.3942	10	0.273	0.04165	0	None	No	0.05	Inter
Lead (mg/L)	n/a	0.0008785	10	0.0003745	0.0001731	0	None	No	0.05	Inter
Lithium (mg/L)	n/a	0.03	10	n/a	n/a	50	n/a	n/a	0.5987	NP Inter(Cohens/xform)
Mercury (mg/L)	n/a	0.0002	10	n/a	n/a	100	n/a	n/a	0.5987	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.003169	10	0.001174	0.0006854	10	None	No	0.05	Inter
Selenium (mg/L)	n/a	0.0003809	10	0.0001317	0.0000856	20	Cohen`s	No	0.05	Inter
Thallium (mg/L)	n/a	0.0005	10	n/a	n/a	50	n/a	n/a	0.5987	NP Inter(Cohens/xform)

Chattanooga Confidence Interval Summary Table - Significant Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 6/12/2019, 7:16 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Lower Compl.	Sig.	N	%NDs	Transform	Alpha	Method
Barium (mg/L)	**MW-1604**	**3.296**	**3.034**	**2**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**
Lithium (mg/L)	**MW-1605**	**0.2095**	**0.1915**	**0.16**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**

Chattanooga Confidence Interval Summary Table - All Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 6/12/2019, 7:16 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Lower Compl.	Sig.	N	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-1603	0.001	0.00002	0.006	n/a	No	10	30	No	0.011	NP (normality)
Antimony (mg/L)	MW-1604	0.001	0.00003	0.006	n/a	No	10	20	No	0.011	NP (normality)
Antimony (mg/L)	MW-1605	0.000182	0.00004202	0.006	n/a	No	10	0	No	0.01	Param.
Antimony (mg/L)	MW-1612	0.0002713	0.00002474	0.006	n/a	No	9	11.11	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-1603	0.002556	0.00163	0.026	n/a	No	10	0	No	0.01	Param.
Arsenic (mg/L)	MW-1604	0.002182	0.001389	0.026	n/a	No	10	0	ln(x)	0.01	Param.
Arsenic (mg/L)	MW-1605	0.005727	0.003543	0.026	n/a	No	10	0	No	0.01	Param.
Arsenic (mg/L)	MW-1612	0.002741	0.0007344	0.026	n/a	No	9	0	No	0.01	Param.
Barium (mg/L)	MW-1603	2.193	1.901	2	n/a	No	10	0	No	0.01	Param.
Barium (mg/L)	**MW-1604**	**3.296**	**3.034**	**2**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**
Barium (mg/L)	MW-1605	1.506	1.13	2	n/a	No	10	0	No	0.01	Param.
Barium (mg/L)	MW-1612	2.298	1.807	2	n/a	No	9	0	No	0.01	Param.
Beryllium (mg/L)	MW-1603	0.0001	0.000008	0.004	n/a	No	10	70	No	0.011	NP (normality)
Beryllium (mg/L)	MW-1604	0.0001	0.000005	0.004	n/a	No	10	80	No	0.011	NP (NDs)
Beryllium (mg/L)	MW-1605	0.0001	0.000004	0.004	n/a	No	10	70	No	0.011	NP (normality)
Beryllium (mg/L)	MW-1612	0.0001	0.000005	0.004	n/a	No	9	55.56	No	0.002	NP (normality)
Cadmium (mg/L)	MW-1603	0.00005	0.00005	0.005	n/a	No	10	100	No	0.011	NP (NDs)
Cadmium (mg/L)	MW-1604	0.00005	0.00005	0.005	n/a	No	10	100	No	0.011	NP (NDs)
Cadmium (mg/L)	MW-1605	0.00005	0.00001	0.005	n/a	No	10	80	No	0.011	NP (NDs)
Cadmium (mg/L)	MW-1612	0.00005	0.00005	0.005	n/a	No	9	100	No	0.002	NP (NDs)
Chromium (mg/L)	MW-1603	0.000324	0.000157	0.1	n/a	No	10	10	No	0.011	NP (normality)
Chromium (mg/L)	MW-1604	0.0003383	0.0001245	0.1	n/a	No	10	0	No	0.01	Param.
Chromium (mg/L)	MW-1605	0.0002614	0.0001678	0.1	n/a	No	10	0	No	0.01	Param.
Chromium (mg/L)	MW-1612	0.0003411	0.0001443	0.1	n/a	No	9	0	sqrt(x)	0.01	Param.
Cobalt (mg/L)	MW-1603	0.0007179	0.0004705	0.006	n/a	No	10	0	No	0.01	Param.
Cobalt (mg/L)	MW-1604	0.0008834	0.0004462	0.006	n/a	No	10	0	No	0.01	Param.
Cobalt (mg/L)	MW-1605	0.0003791	0.0002683	0.006	n/a	No	10	0	No	0.01	Param.
Cobalt (mg/L)	MW-1612	0.0003073	0.0001241	0.006	n/a	No	9	0	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1603	1.239	0.4754	5	n/a	No	9	0	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1604	1.762	0.706	5	n/a	No	10	0	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1605	2.011	0.6442	5	n/a	No	10	0	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1612	2.725	0.9936	5	n/a	No	9	0	No	0.01	Param.
Fluoride (mg/L)	MW-1603	0.1573	0.1027	4	n/a	No	10	0	No	0.01	Param.
Fluoride (mg/L)	MW-1604	0.2575	0.2145	4	n/a	No	10	0	No	0.01	Param.
Fluoride (mg/L)	MW-1605	0.392	0.336	4	n/a	No	10	0	No	0.01	Param.
Fluoride (mg/L)	MW-1612	0.2034	0.141	4	n/a	No	9	0	No	0.01	Param.
Lead (mg/L)	MW-1603	0.0001	0.000008	0.015	n/a	No	10	40	No	0.011	NP (normality)
Lead (mg/L)	MW-1604	0.0001066	0.00001763	0.015	n/a	No	10	30	No	0.01	Param.
Lead (mg/L)	MW-1605	0.00008957	0.00003028	0.015	n/a	No	10	20	No	0.01	Param.
Lead (mg/L)	MW-1612	0.000331	0.00002	0.015	n/a	No	9	33.33	No	0.002	NP (Cohens/xfrm)
Lithium (mg/L)	MW-1603	0.07785	0.04547	0.16	n/a	No	10	0	sqrt(x)	0.01	Param.
Lithium (mg/L)	MW-1604	0.08557	0.07723	0.16	n/a	No	10	0	No	0.01	Param.
Lithium (mg/L)	**MW-1605**	**0.2095**	**0.1915**	**0.16**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**
Lithium (mg/L)	MW-1612	0.3	0.109	0.16	n/a	No	9	11.11	No	0.002	NP (normality)
Mercury (mg/L)	MW-1603	0.0002	0.00006	0.002	n/a	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	MW-1604	0.0002	0.00006	0.002	n/a	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	MW-1605	0.0002	0.0002	0.002	n/a	No	10	100	No	0.011	NP (NDs)
Mercury (mg/L)	MW-1612	0.0002	0.00006	0.002	n/a	No	9	88.89	No	0.002	NP (NDs)
Molybdenum (mg/L)	MW-1603	0.004829	0.0007211	0.1	n/a	No	10	10	ln(x)	0.01	Param.
Molybdenum (mg/L)	MW-1604	0.00157	0.0004	0.1	n/a	No	10	0	No	0.011	NP (normality)
Molybdenum (mg/L)	MW-1605	0.006486	0.002388	0.1	n/a	No	10	0	No	0.01	Param.
Molybdenum (mg/L)	MW-1612	0.02	0.00067	0.1	n/a	No	9	0	No	0.002	NP (normality)
Selenium (mg/L)	MW-1603	0.0001241	0.00005298	0.05	n/a	No	10	10	sqrt(x)	0.01	Param.
Selenium (mg/L)	MW-1604	0.0002	0.00003	0.05	n/a	No	10	20	No	0.011	NP (normality)
Selenium (mg/L)	MW-1605	0.0002	0.00004	0.05	n/a	No	10	30	No	0.011	NP (normality)

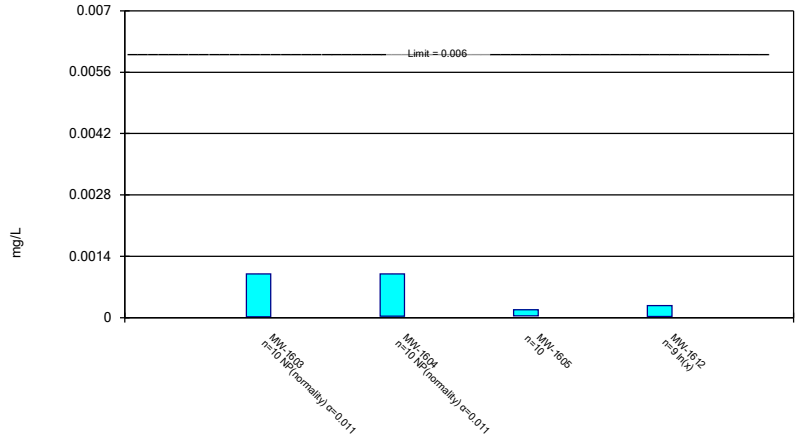
Chattanooga Confidence Interval Summary Table - All Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 6/12/2019, 7:16 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Lower Compl.	Sig.	N	%NDs	Transform	Alpha	Method
Selenium (mg/L)	MW-1612	0.0002	0.00003	0.05	n/a	No	9	33.33	No	0.002	NP (normality)
Thallium (mg/L)	MW-1603	0.0005	0.00001	0.002	n/a	No	10	50	No	0.011	NP (normality)
Thallium (mg/L)	MW-1604	0.0005	0.00001	0.002	n/a	No	10	60	No	0.011	NP (normality)
Thallium (mg/L)	MW-1605	0.0005	0.00001	0.002	n/a	No	10	60	No	0.011	NP (normality)
Thallium (mg/L)	MW-1612	0.0005	0.00001	0.002	n/a	No	9	55.56	No	0.002	NP (normality)

Parametric and Non-Parametric (NP) Confidence Interval

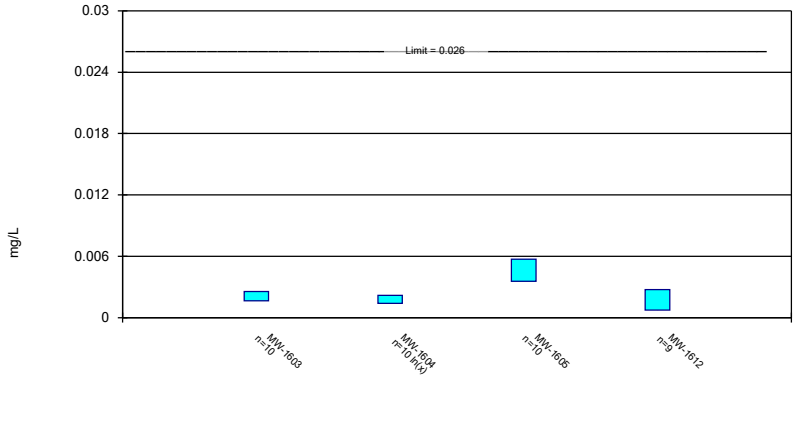
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Antimony Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

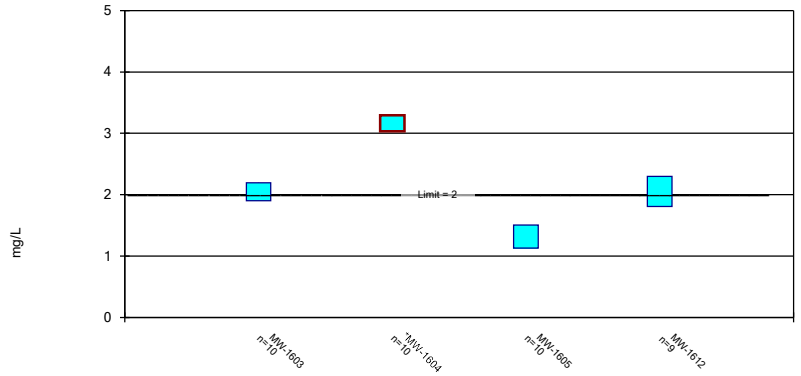
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

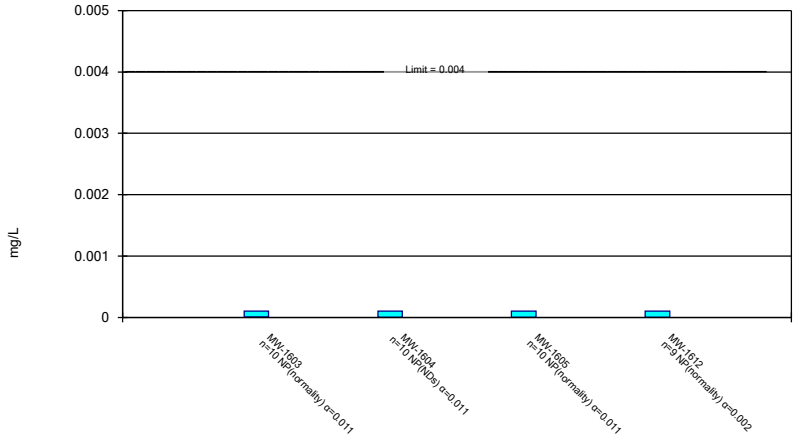
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Non-Parametric Confidence Interval

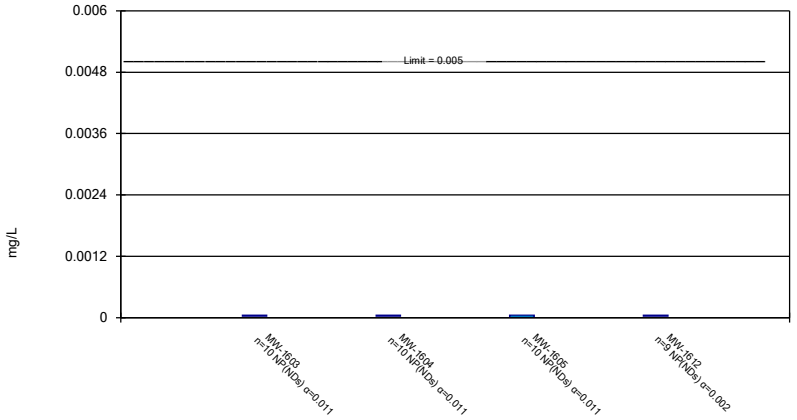
Compliance Limit is not exceeded.



Constituent: Beryllium Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Non-Parametric Confidence Interval

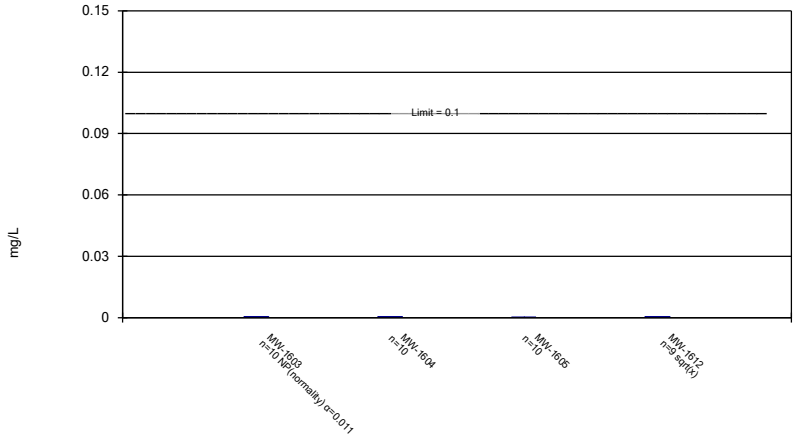
Compliance Limit is not exceeded.



Constituent: Cadmium Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric and Non-Parametric (NP) Confidence Interval

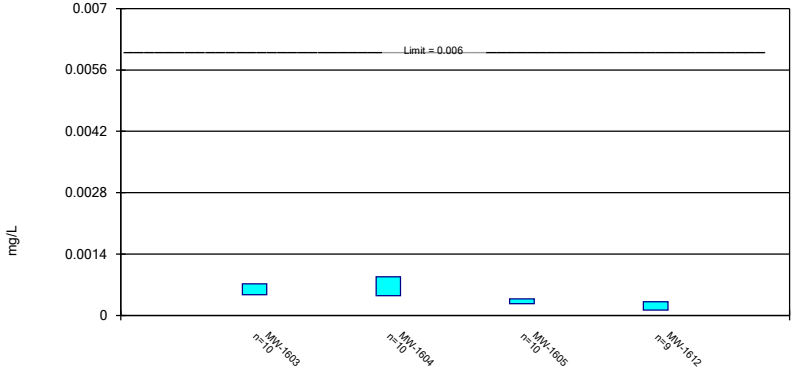
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

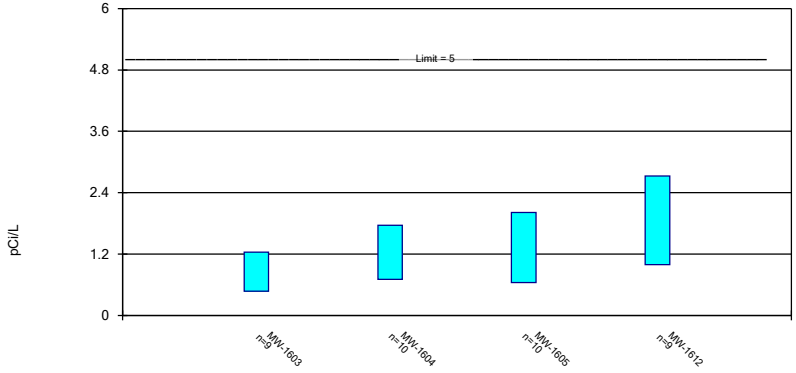
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

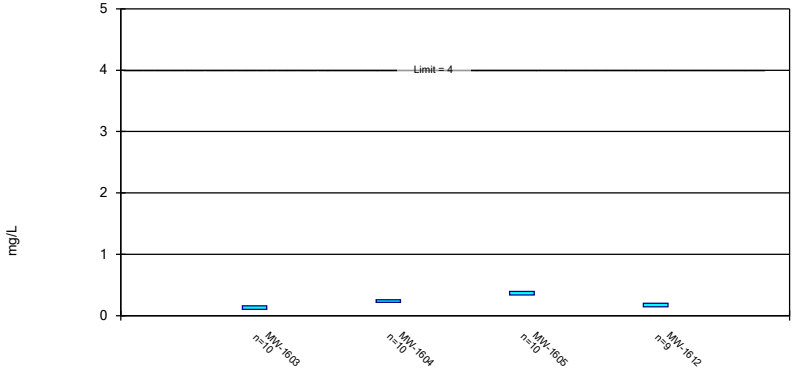
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals -
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

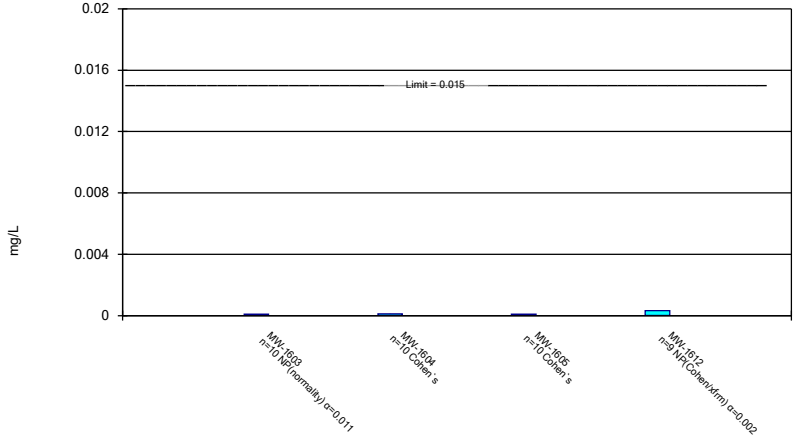
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric and Non-Parametric (NP) Confidence Interval

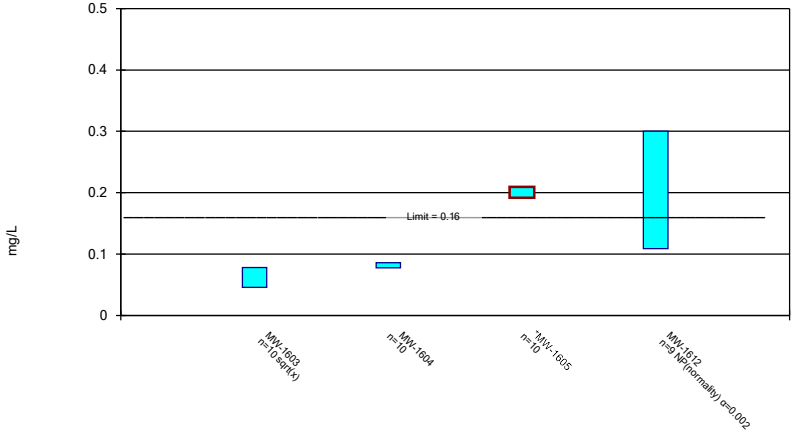
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric and Non-Parametric (NP) Confidence Interval

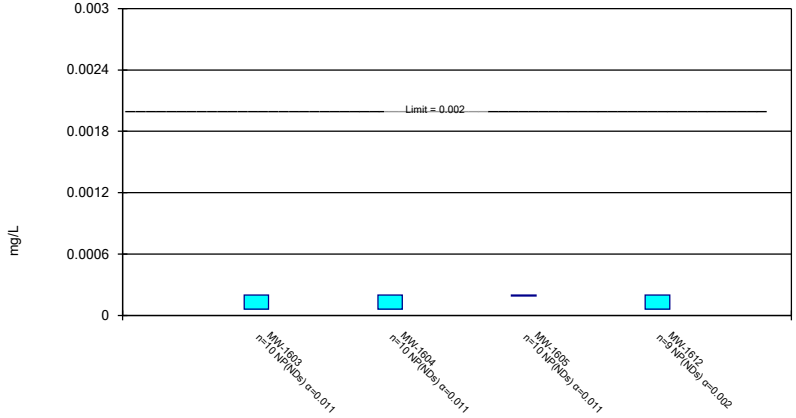
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Non-Parametric Confidence Interval

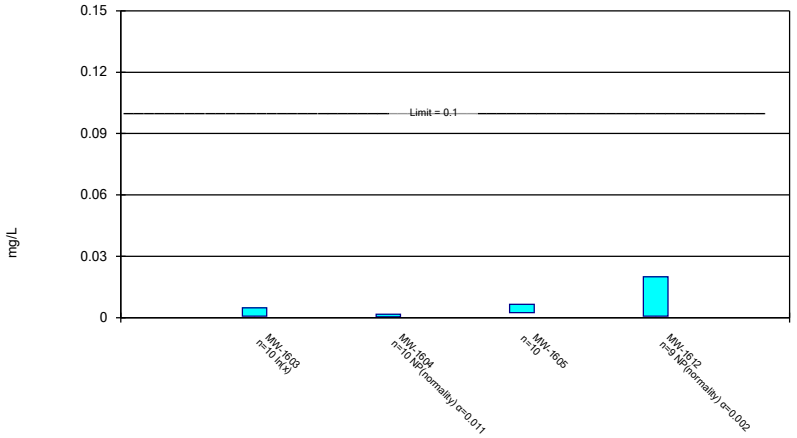
Compliance Limit is not exceeded.



Constituent: Mercury Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

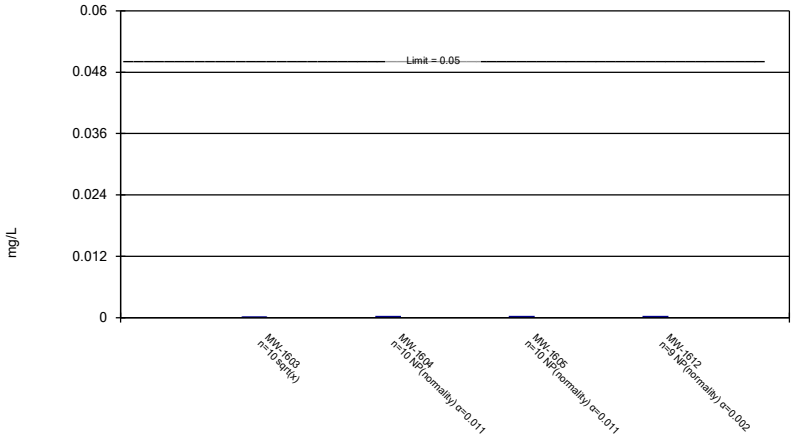


Constituent: Molybdenum Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

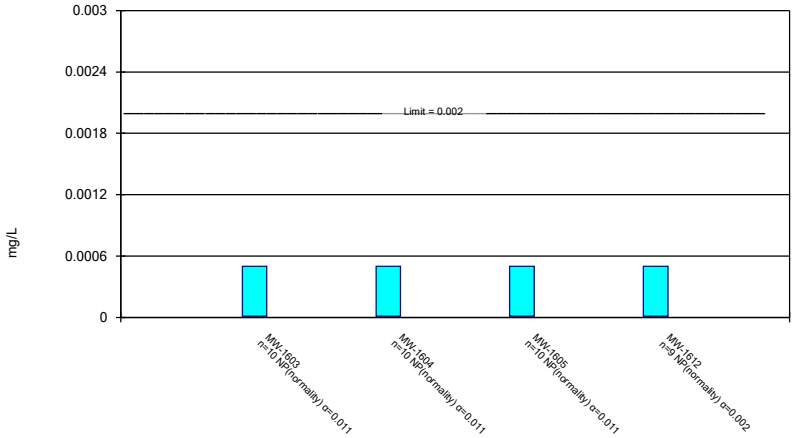


Constituent: Selenium Analysis Run 6/12/2019 7:14 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Thallium Analysis Run 6/12/2019 7:15 AM View: Confidence Intervals - Chattanooga
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Dumps Fault Confidence Interval Summary Table - Significant Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 6/12/2019, 6:39 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Lower Compl.	Sig.	N	%NDs	Transform	Alpha	Method
Cobalt (mg/L)	**MW-1610**	**0.01119**	**0.007916**	**0.006**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**
Molybdenum (mg/L)	**MW-1610**	**0.169**	**0.1406**	**0.1**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**

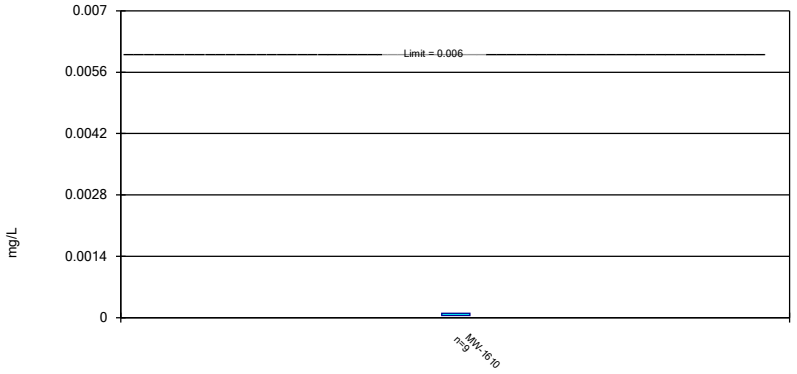
Dumps Fault Confidence Interval Summary Table - All Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 6/12/2019, 6:39 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Lower Compl.	Sig.	N	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-1610	0.0001016	0.00004951	0.006	n/a	No	9	11.11	No	0.01	Param.
Arsenic (mg/L)	MW-1610	0.001626	0.001228	0.052	n/a	No	10	0	No	0.01	Param.
Barium (mg/L)	MW-1610	0.247	0.193	2	n/a	No	10	0	No	0.011	NP (normality)
Beryllium (mg/L)	MW-1610	0.0001	0.000004	0.004	n/a	No	10	60	No	0.011	NP (normality)
Cadmium (mg/L)	MW-1610	0.00005	0.00001	0.005	n/a	No	10	50	No	0.011	NP (normality)
Chromium (mg/L)	MW-1610	0.0002433	0.0001741	0.1	n/a	No	10	0	No	0.01	Param.
Cobalt (mg/L)	**MW-1610**	**0.01119**	**0.007916**	**0.006**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**
Combined Radium 226 + 228 (pCi/L)	MW-1610	1.479	0.5681	5	n/a	No	10	0	No	0.01	Param.
Fluoride (mg/L)	MW-1610	0.2164	0.1847	4	n/a	No	10	0	x^4	0.01	Param.
Lead (mg/L)	MW-1610	0.01304	0.005771	0.015	n/a	No	10	0	No	0.01	Param.
Lithium (mg/L)	MW-1610	0.2066	0.161	0.19	n/a	No	10	0	No	0.01	Param.
Mercury (mg/L)	MW-1610	0.0002	0.00006	0.002	n/a	No	10	90	No	0.011	NP (NDs)
Molybdenum (mg/L)	**MW-1610**	**0.169**	**0.1406**	**0.1**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**
Selenium (mg/L)	MW-1610	0.000433	0.000167	0.05	n/a	No	10	0	No	0.01	Param.
Thallium (mg/L)	MW-1610	0.0005	0.00001	0.002	n/a	No	10	40	No	0.011	NP (normality)

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

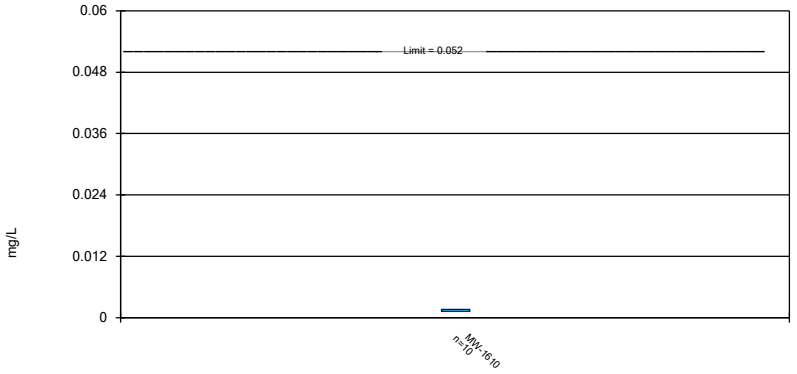


Constituent: Antimony Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

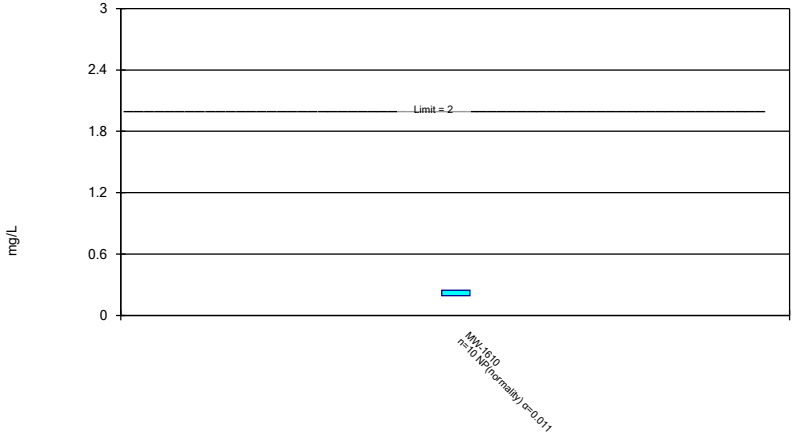


Constituent: Arsenic Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

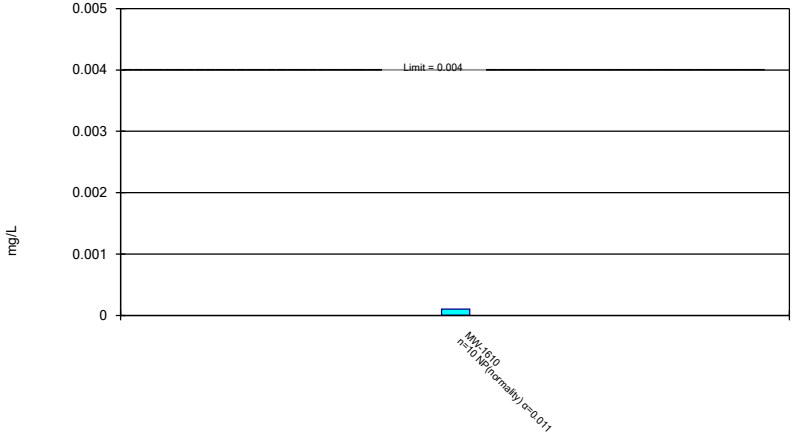


Constituent: Barium Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

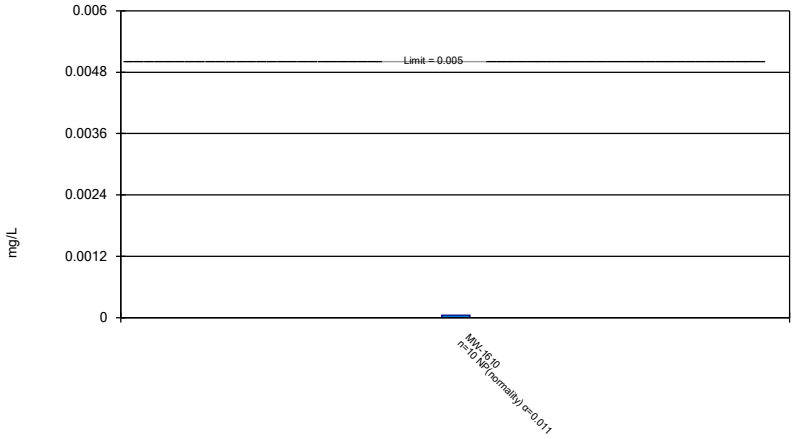
Compliance Limit is not exceeded.



Constituent: Beryllium Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

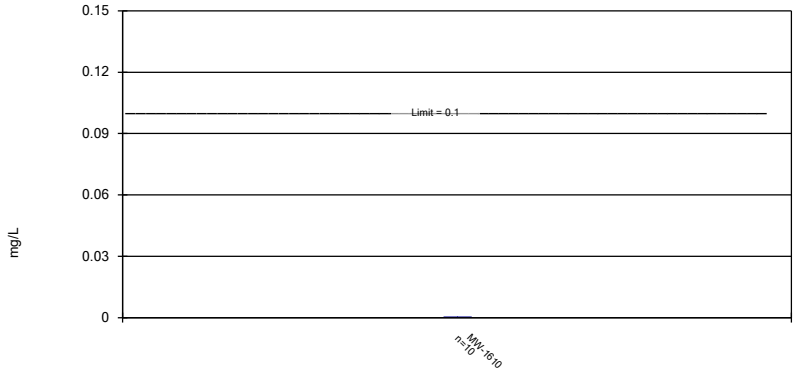


Constituent: Cadmium Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

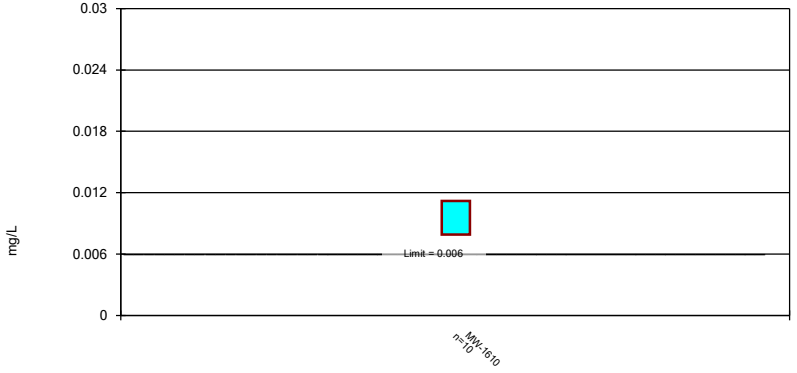


Constituent: Chromium Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance limit is exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

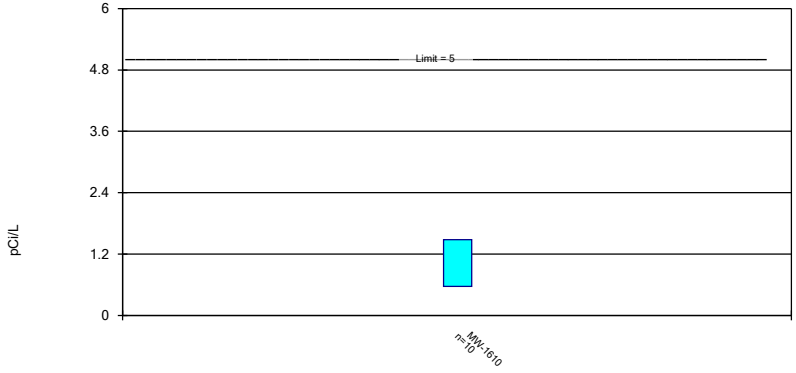


Constituent: Cobalt Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

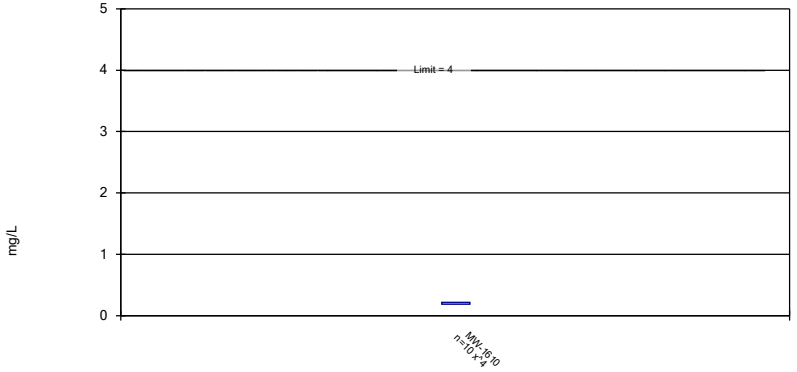
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals -
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

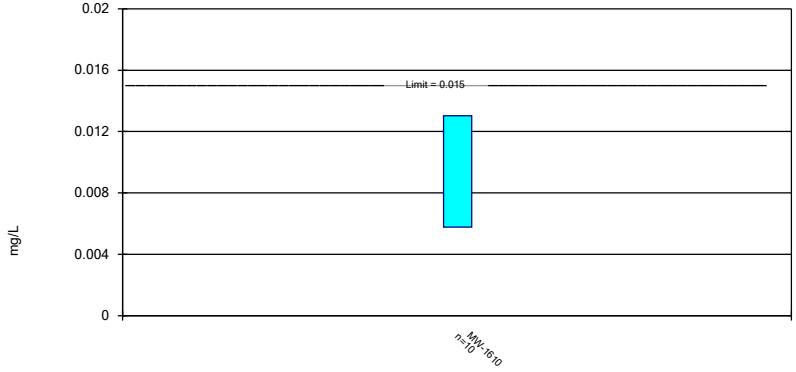
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

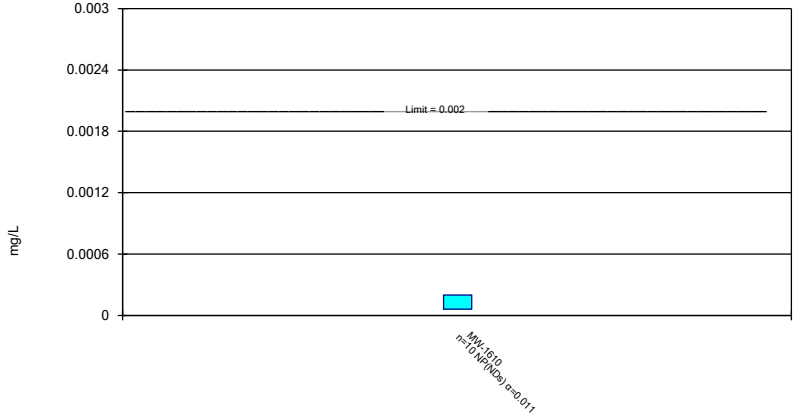
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

Constituent: Lithium Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Non-Parametric Confidence Interval

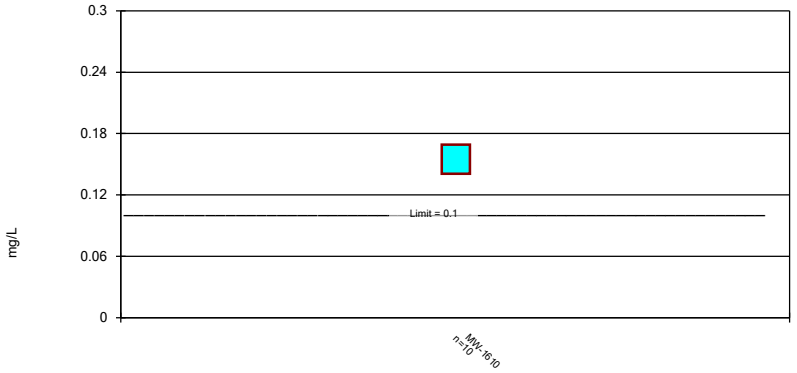
Compliance Limit is not exceeded.



Constituent: Mercury Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

Compliance limit is exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

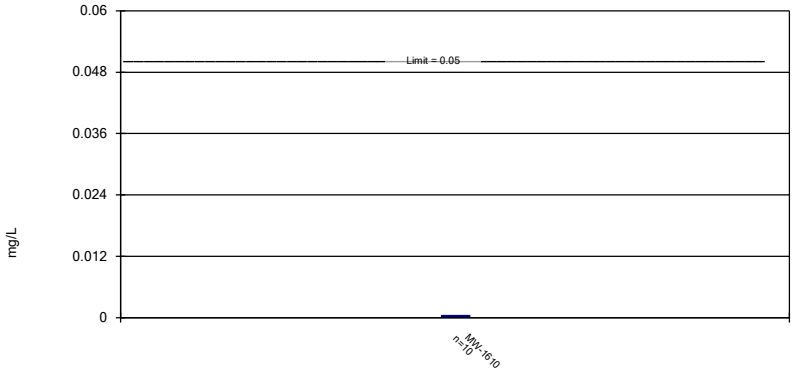


Constituent: Molybdenum Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

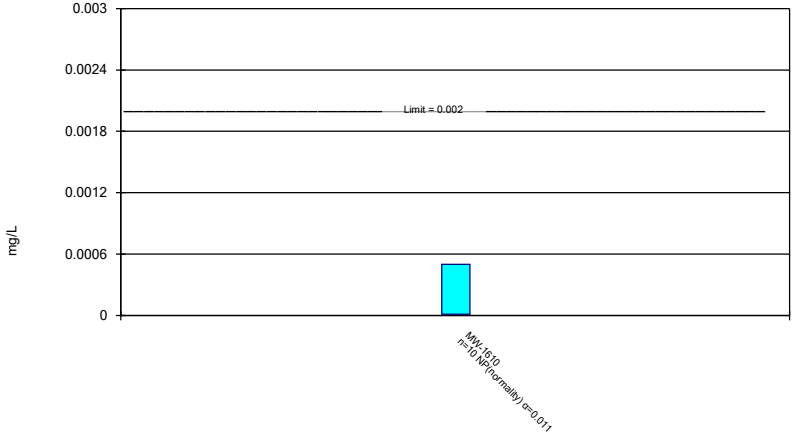


Constituent: Selenium Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Thallium Analysis Run 6/12/2019 6:38 AM View: Confidence Intervals - Dumps Fault
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Rome Confidence Interval Summary Table - Significant Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 6/12/2019, 9:52 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Lower Compl.	Sig.	N	%NDs	Transform	Alpha	Method
Cobalt (mg/L)	**MW-1607**	**0.01208**	**0.008453**	**0.006**	**n/a**	**Yes**	**10**	**0**	**x^2**	**0.01**	**Param.**
Lithium (mg/L)	**MW-1606**	**0.0975**	**0.07134**	**0.04**	**n/a**	**Yes**	**10**	**0**	**x^2**	**0.01**	**Param.**
Lithium (mg/L)	**MW-1607**	**0.1335**	**0.1165**	**0.04**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**
Molybdenum (mg/L)	**MW-1607**	**0.171**	**0.1255**	**0.1**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**

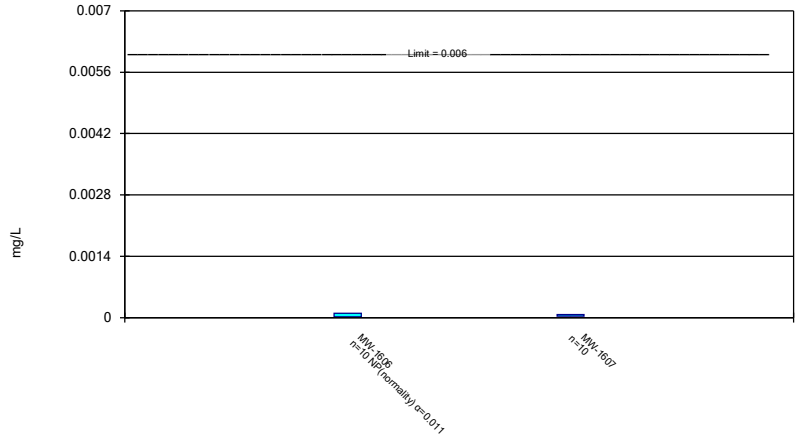
Rome Confidence Interval Summary Table - All Results

Clinch River LF Client: AEP Data: Clinch River Landfill AEP Printed 6/12/2019, 9:52 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Lower Compl.	Sig.	N	%NDs	Transform	Alpha	Method
Antimony (mg/L)	MW-1606	0.0001	0.00002	0.006	n/a	No	10	30	No	0.011	NP (normality)
Antimony (mg/L)	MW-1607	0.00006974	0.00003426	0.006	n/a	No	10	0	No	0.01	Param.
Arsenic (mg/L)	MW-1606	0.0079	0.00672	0.01	n/a	No	10	0	No	0.011	NP (normality)
Arsenic (mg/L)	MW-1607	0.00438	0.00086	0.01	n/a	No	10	0	No	0.011	NP (normality)
Barium (mg/L)	MW-1606	0.1199	0.1099	2	n/a	No	10	0	No	0.01	Param.
Barium (mg/L)	MW-1607	0.0925	0.0704	2	n/a	No	10	0	No	0.011	NP (normality)
Beryllium (mg/L)	MW-1606	0.0001	0.000005	0.004	n/a	No	10	50	No	0.011	NP (normality)
Beryllium (mg/L)	MW-1607	0.0001	0.000005	0.004	n/a	No	10	90	No	0.011	NP (NDs)
Cadmium (mg/L)	MW-1606	0.00005	0.000006	0.005	n/a	No	10	60	No	0.011	NP (normality)
Cadmium (mg/L)	MW-1607	0.0001903	0.0000777	0.005	n/a	No	10	0	No	0.01	Param.
Cobalt (mg/L)	MW-1606	0.006036	0.00523	0.006	n/a	No	10	0	No	0.01	Param.
Cobalt (mg/L)	**MW-1607**	**0.01208**	**0.008453**	**0.006**	**n/a**	**Yes**	**10**	**0**	**x^2**	**0.01**	**Param.**
Combined Radium 226 + 228 (pCi/L)	MW-1606	1.961	0.9602	5	n/a	No	10	0	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	MW-1607	1.328	0.5408	5	n/a	No	10	0	ln(x)	0.01	Param.
Fluoride (mg/L)	MW-1606	0.2552	0.1848	4	n/a	No	10	0	No	0.01	Param.
Fluoride (mg/L)	MW-1607	0.2521	0.2119	4	n/a	No	10	0	No	0.01	Param.
Lead (mg/L)	MW-1606	0.0005581	0.0003435	0.015	n/a	No	10	0	No	0.01	Param.
Lead (mg/L)	MW-1607	0.0006706	0.0004168	0.015	n/a	No	10	0	No	0.01	Param.
Lithium (mg/L)	**MW-1606**	**0.0975**	**0.07134**	**0.04**	**n/a**	**Yes**	**10**	**0**	**x^2**	**0.01**	**Param.**
Lithium (mg/L)	**MW-1607**	**0.1335**	**0.1165**	**0.04**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**
Mercury (mg/L)	MW-1606	0.0002	0.00006	0.002	n/a	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	MW-1607	0.0002	0.00008	0.002	n/a	No	10	90	No	0.011	NP (NDs)
Molybdenum (mg/L)	MW-1606	0.0893	0.06344	0.1	n/a	No	10	0	No	0.01	Param.
Molybdenum (mg/L)	**MW-1607**	**0.171**	**0.1255**	**0.1**	**n/a**	**Yes**	**10**	**0**	**No**	**0.01**	**Param.**
Selenium (mg/L)	MW-1606	0.0000949	0.0000571	0.05	n/a	No	10	0	No	0.01	Param.
Selenium (mg/L)	MW-1607	0.0002	0.00004	0.05	n/a	No	10	0	No	0.011	NP (normality)
Thallium (mg/L)	MW-1606	0.0005	0.00004	0.002	n/a	No	10	40	No	0.011	NP (normality)
Thallium (mg/L)	MW-1607	0.0005	0.00001	0.002	n/a	No	10	50	No	0.011	NP (normality)

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

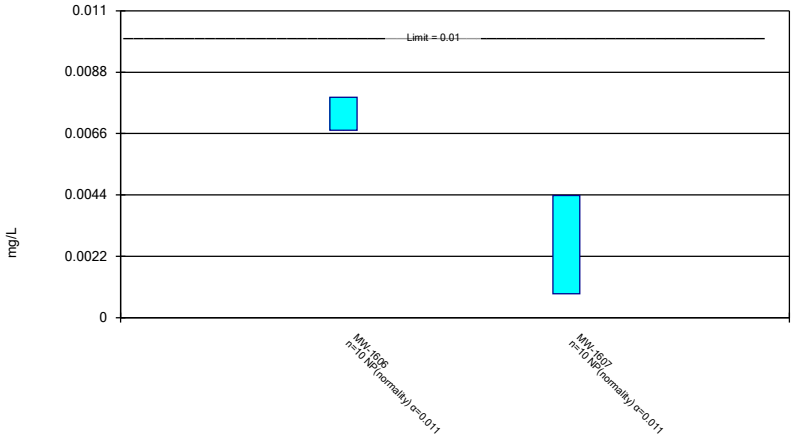


Constituent: Antimony Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

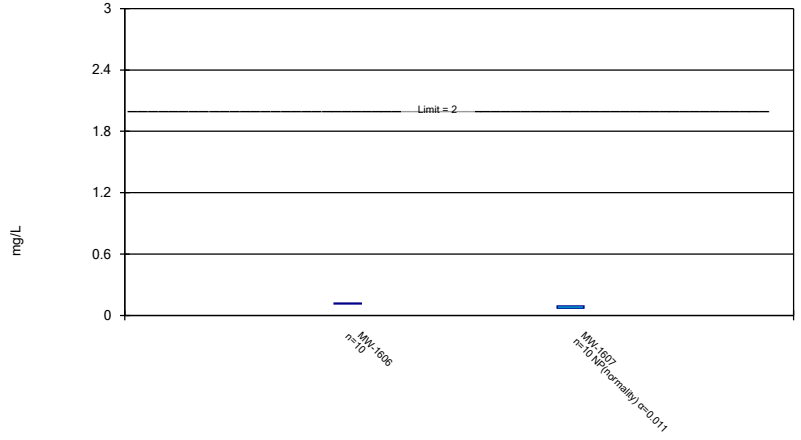


Constituent: Arsenic Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

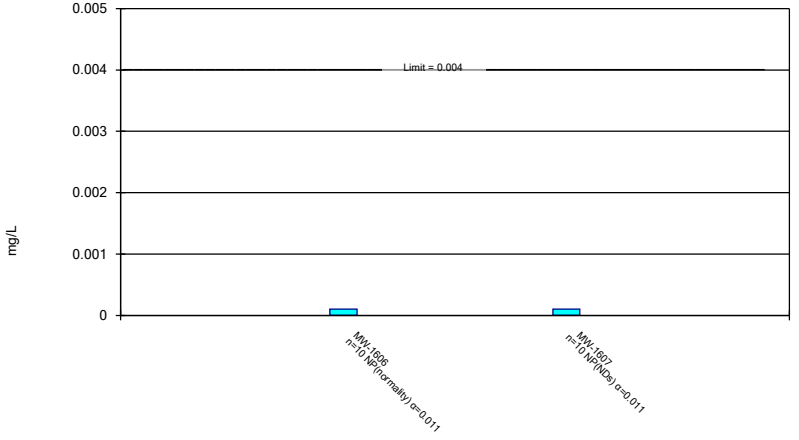


Constituent: Barium Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

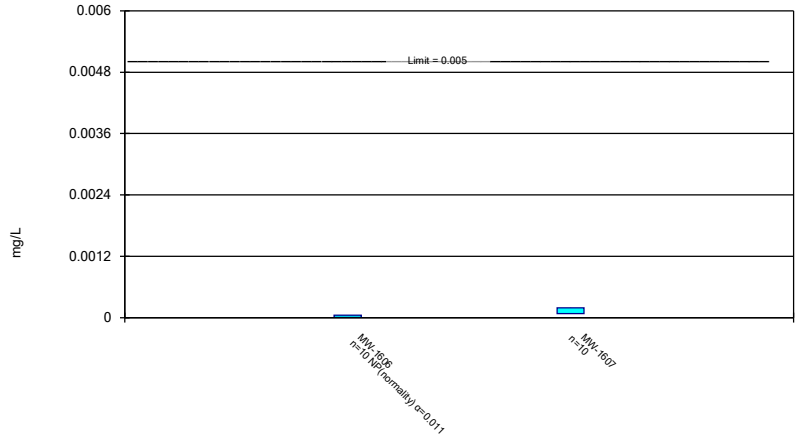
Compliance Limit is not exceeded.



Constituent: Beryllium Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric and Non-Parametric (NP) Confidence Interval

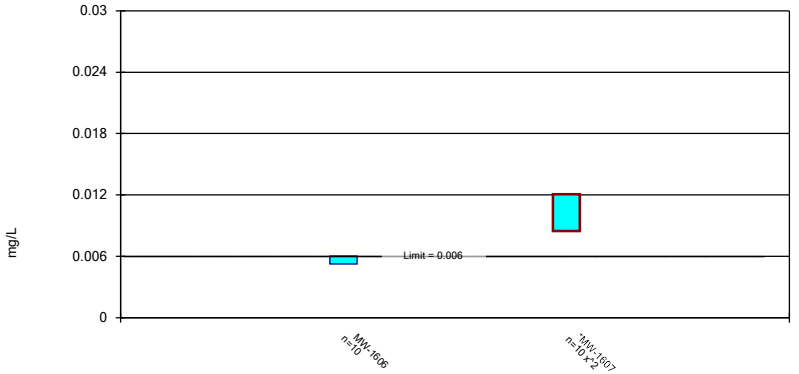
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cadmium Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

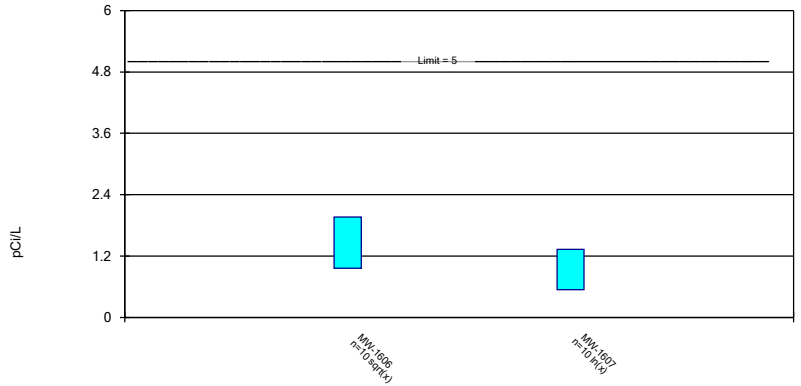
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

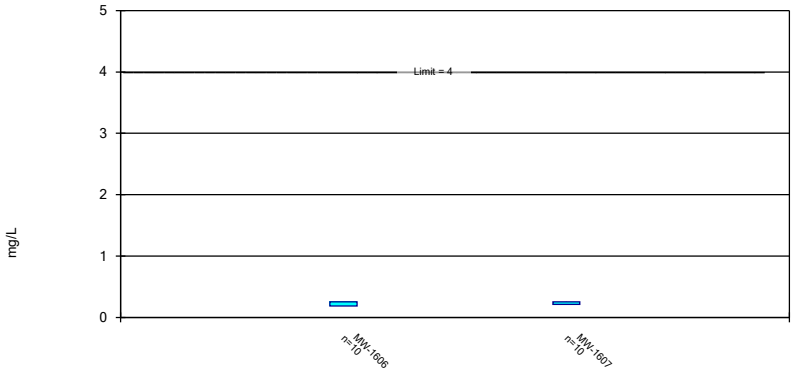
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals -
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

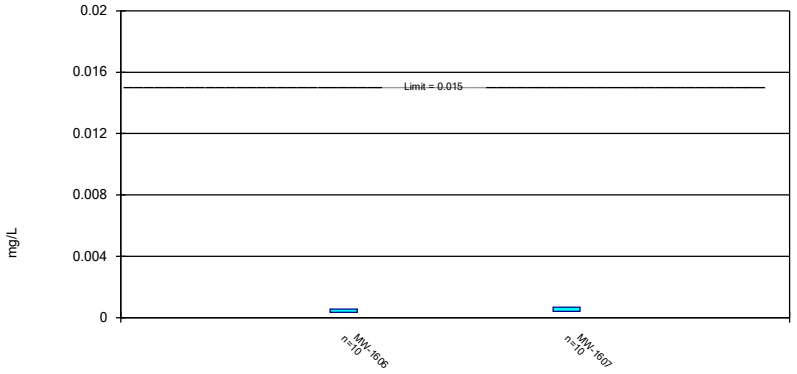
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

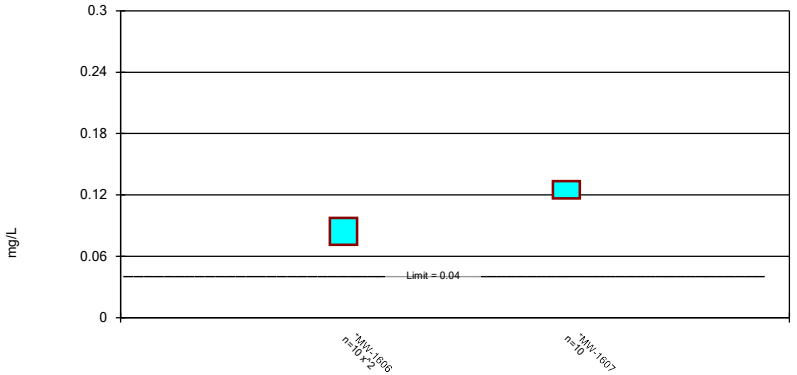
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

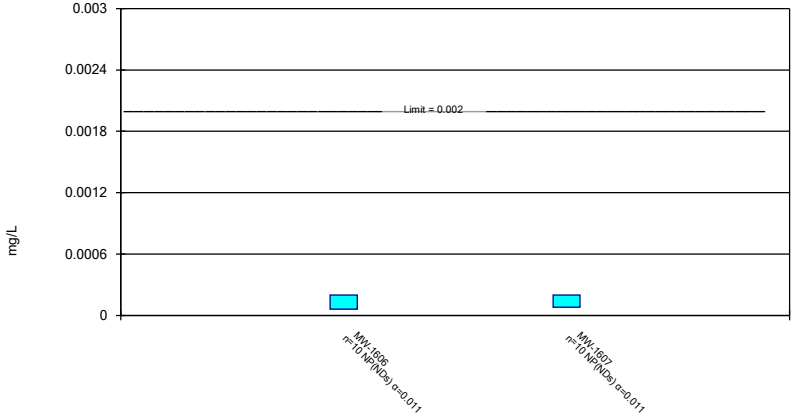
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Non-Parametric Confidence Interval

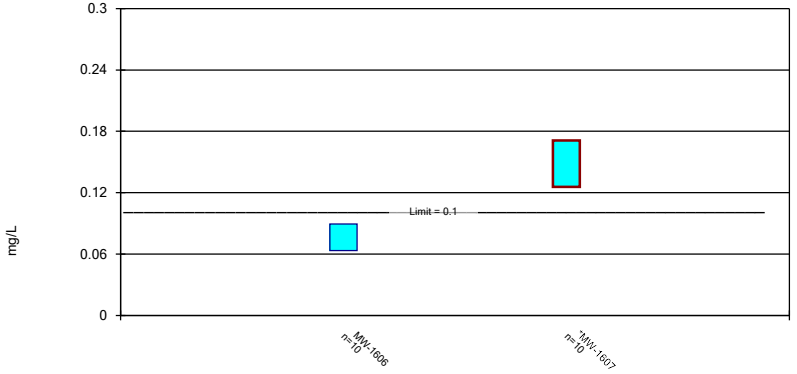
Compliance Limit is not exceeded.



Constituent: Mercury Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric Confidence Interval

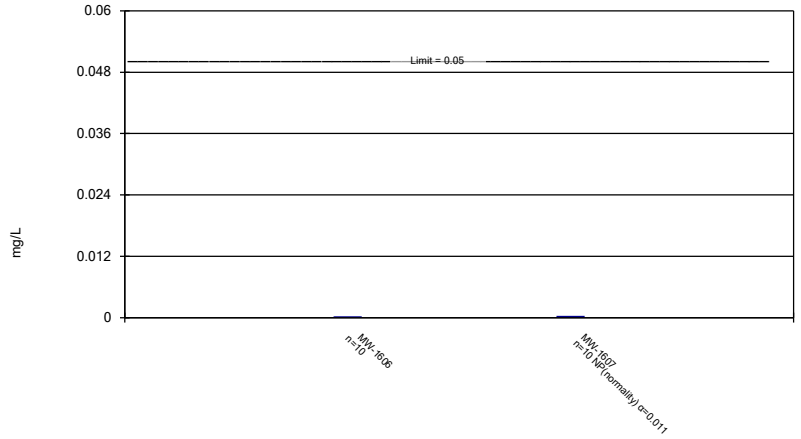
Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Molybdenum Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

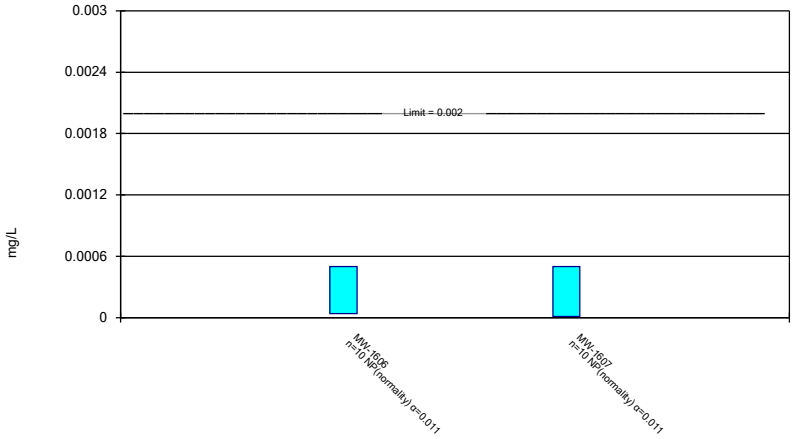


Constituent: Selenium Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

Sanitas™ v.9.6.14 Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Thallium Analysis Run 6/12/2019 9:51 AM View: Confidence Intervals - Rome
Clinch River LF Client: AEP Data: Clinch River Landfill AEP

APPENDIX 3 – Alternate Source Demonstrations

No alternate source demonstrations have been completed as of January 31, 2020.

APPENDIX 4 – Notices for Monitoring Program Transitions

The notification that an assessment monitoring program and assessment of corrective measure was initiated follows.

Clinch River Plant

Notice for Initiating an Assessment of Corrective Measures

CCR Unit – Pond 1

This notice is being provided, as required by 40 CFR 257.95(g)(5), that an Assessment of Corrective Measures was initiated on October 13, 2019 for Clinch River Plant's Pond 1 due to the statistically significant concentrations detected above the established groundwater protection standards for cobalt, lithium, molybdenum and barium.

Clinch River Plant
Notice of Assessment Monitoring Program Establishment
Pond 1 CCR Management Unit

On July 15, 2019, it was determined that Clinch River Plant's Pond 1 had statistically significant increases over background for calcium, chloride and sulfate and a statistically significant decrease for pH.

Clinch River Pond 1 was officially closed on August 6, 2018 under a Solid Waste Permit issued by Virginia Department of Environmental Quality. The State solid waste permit included a groundwater monitoring program that required the groundwater to be sampled and analyzed for Appendix III, Appendix IV and additional State parameters immediately following the collection of background. Under the State statistical methods, the statistical analysis of the first compliance sampling event indicated statistical significant increases above groundwater protection standards for cobalt, lithium, molybdenum, nickel, lead and barium. Nickel and lead are State-only parameters.

Based on the results of the State statistical analysis, Appalachian Power Company made the decision to statistically evaluate Appendix IV parameters during the first Federal CCR detection monitoring event. This evaluation following Federal statistical analysis methods, indicated statistical significant increases above groundwater protection standards for barium, cobalt, lithium and molybdenum. This evaluation can be found as Appendix 2 of the Annual Groundwater Report dated August 1, 2019.

At this point, no alternate source demonstration (ASD) for Appendix III parameters will be completed in accordance with §257.94(e)(2), prompting the initiation of an assessment monitoring program, which was established on July 15, 2019. Therefore this notice is being placed in the operating record in accordance with the requirement of 257.94(e)(3). If a successful ASD is completed for the Appendix IV exceedances then an ASD will be completed for the Appendix III parameters.

APPENDIX 5 – Well Installation/Decommissioning Logs

Nature and extent well installation report follows.

Groundwater Monitoring Well
AEP Clinch River
Cleveland, Virginia

I certify, as a qualified professional engineer in the Commonwealth of Virginia, that monitoring wells W-1903D, W-1903S, W-1904D, W-1904S, W-1905D, W-1905S, W-1906D, W-1906S, W-1907D, W-1907S, W-1910S, W-1913D, and W-1913S were installed in accordance with the boring log and monitoring well construction diagrams provided to comply with VAC20-81-250.A.3.d. This certification has been prepared to comply with the requirements of 9VAC20-81-250.A.3.g.

Signature

01/27/2020
Date

Jason C. Monk P.E.
Project Manager
Wood Environment and Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, VA 24210

Attachments:

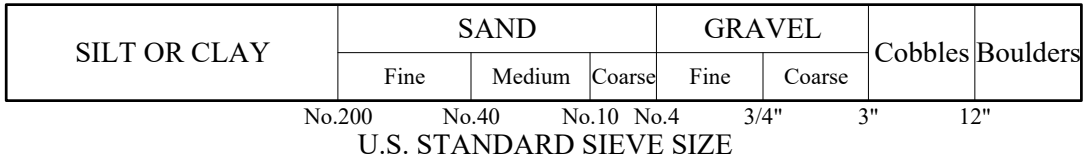
1) Boring Logs
2) Well Construction Diagrams

Attachment 1:

Boring Logs

MAJOR DIVISIONS			GROUP SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)		GW	Well graded gravels, gravel - sand mixtures, little or no fines.
				GP	Poorly graded gravels or grave - sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)		GM	Silty gravels, gravel - sand - silt mixtures.
				GC	Clayey gravels, gravel - sand - clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 Sieve Size)	CLEAN SANDS (Little or no fines)		SW	Well graded sands, gravelly sands, little or no fines.
				SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)		SM	Silty sands, sand - silt mixtures
				SC	Clayey sands, sand - clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)			ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts and with slight plasticity.
				CL	Inorganic lays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
				OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)			MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS				PT	Peat and other highly organic soils.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.



Reference: The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No. 3-357, Vol. 1, March, 1953 (Revised April, 1960)

Undisturbed Sample	Auger Cuttings
Split Spoon Sample	Bulk Sample
Sonic Core (S.C.)	Casing Advance
Rock Core (RC)	Grab Sample
Water Table after 48 hours	No Recovery
Water Table at time of drilling	Water Table After Well Construction
FILL	SHALE
HIGHLY WEATHERED ROCK	SANDSTONE
LIMESTONE	

Correlation of Penetration Resistance with Relative Density and Consistency

SAND & GRAVEL		SILT & CLAY	
No. of Blows	Relative Density	No. of Blows	Consistency
0 - 4	Very Loose	0 - 1	Very Soft
5 - 10	Loose	2 - 4	Soft
11 - 20	Firm	5 - 8	Firm
21 - 30	Very Firm	9 - 15	Stiff
31 - 50	Dense	16 - 30	Very Stiff
Over 50	Very Dense	Over 31	Hard

KEY TO SYMBOLS AND DESCRIPTIONS

wood.

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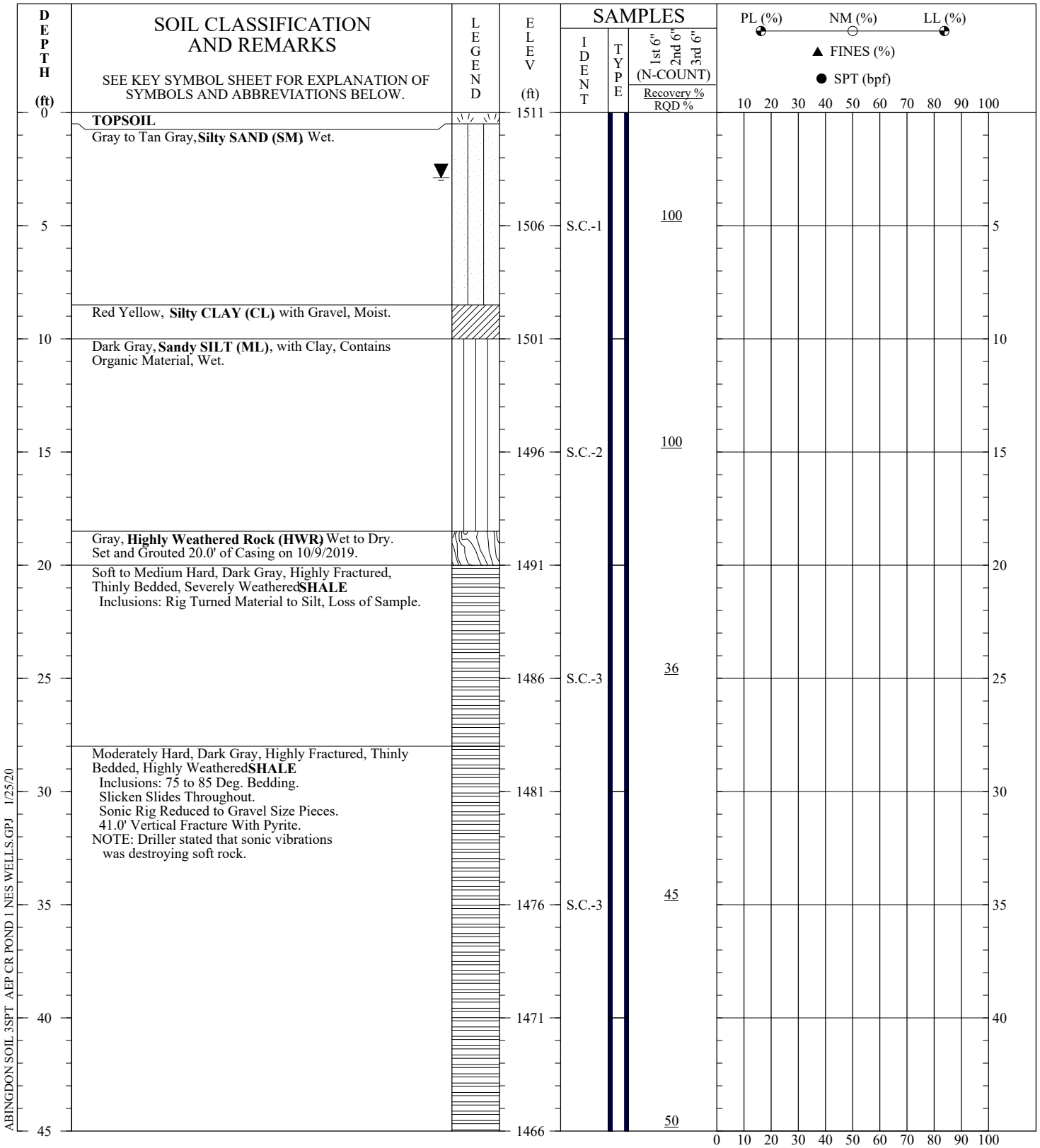

ELEVATION: 1,511.0480
NORTHING: 3522431.1926
EASTING: 10403954.9617
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 11/14/2019 to 11/20/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1903D
Date Drilled: 10/9/2019 to 10/10/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
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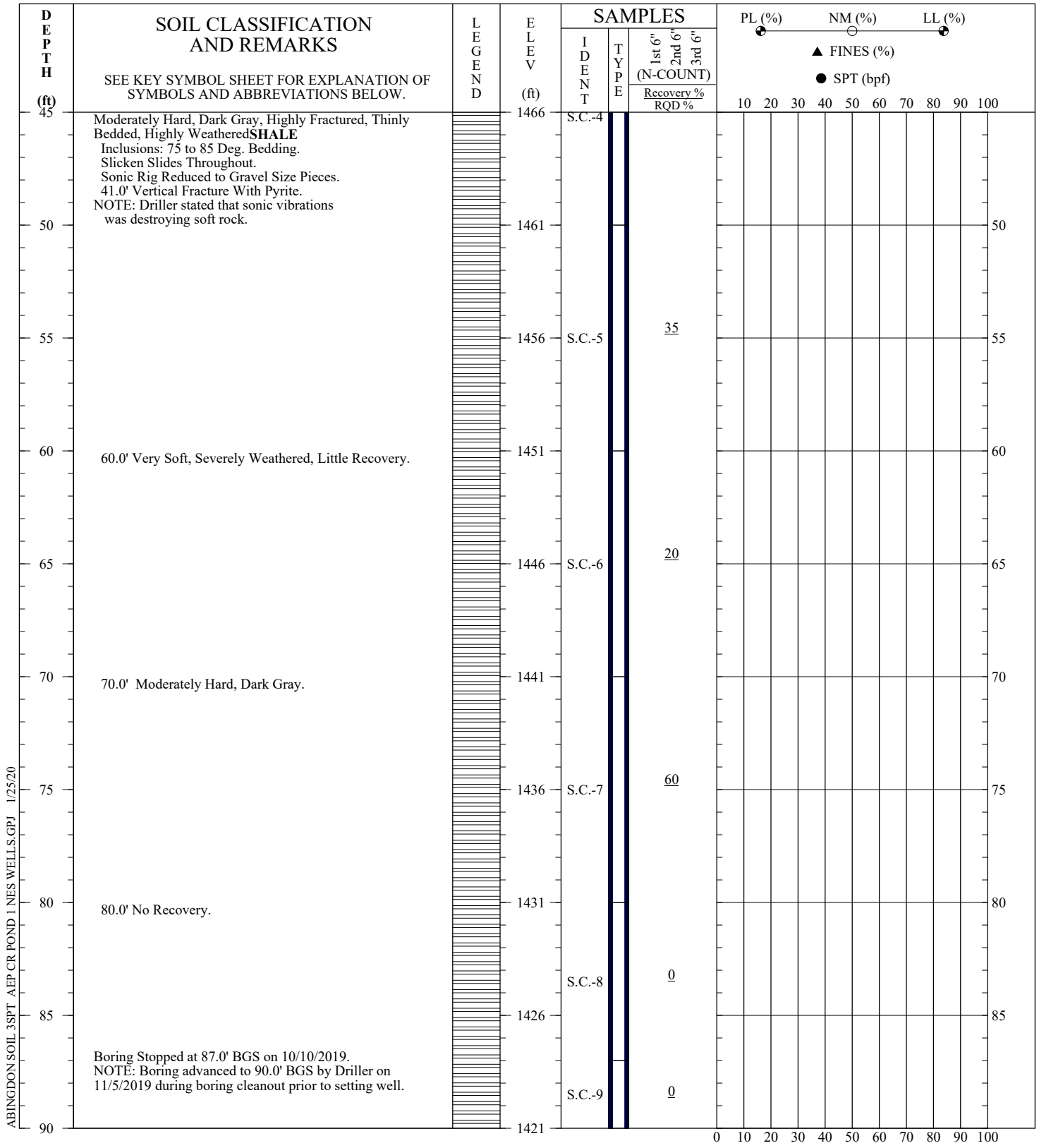
Abingdon, Virginia 24210



ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,511.0480
NORTHING: 3522431.1926
EASTING: 10403954.9617
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 11/14/2019 to 11/20/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1903D
Date Drilled: 10/9/2019 to 10/10/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	SAMPLES 1st 6" 2nd 6" 3rd 6" (N-COUNT) Recovery % RQD %	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
90	SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.		1421				10 20 30 40 50 60 70 80 90 100
	Boring Terminated at 90.0' BGS on 11/5/2019.						
95			1416				95
100			1411				100
105			1406				105
110			1401				110
115			1396				115
120			1391				120
125			1386				125
130			1381				130
135			1376				0 10 20 30 40 50 60 70 80 90 100

ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,511.0480
NORTHING: 3522431.1926
EASTING: 10403954.9617
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 11/14/2019 to 11/20/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1903D
Date Drilled: 10/9/2019 to 10/10/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

wood.
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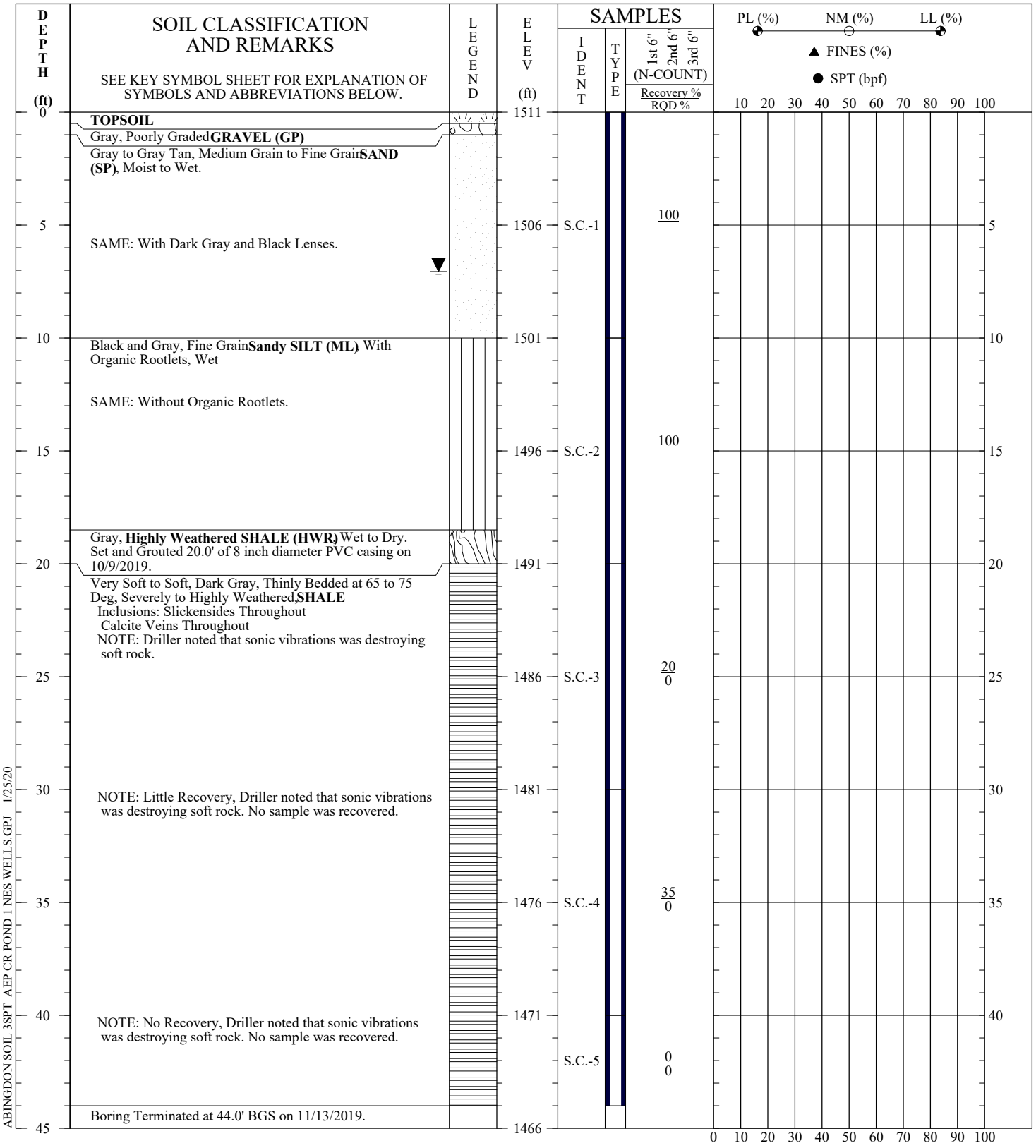
Abingdon, Virginia 24210



ELEVATION: 1,510.9910
NORTHING: 3522434.6589
EASTING: 10403958.5216
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 11/14/2019 to 11/15/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1903S
Date Drilled: 10/9/2019 to 11/13/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

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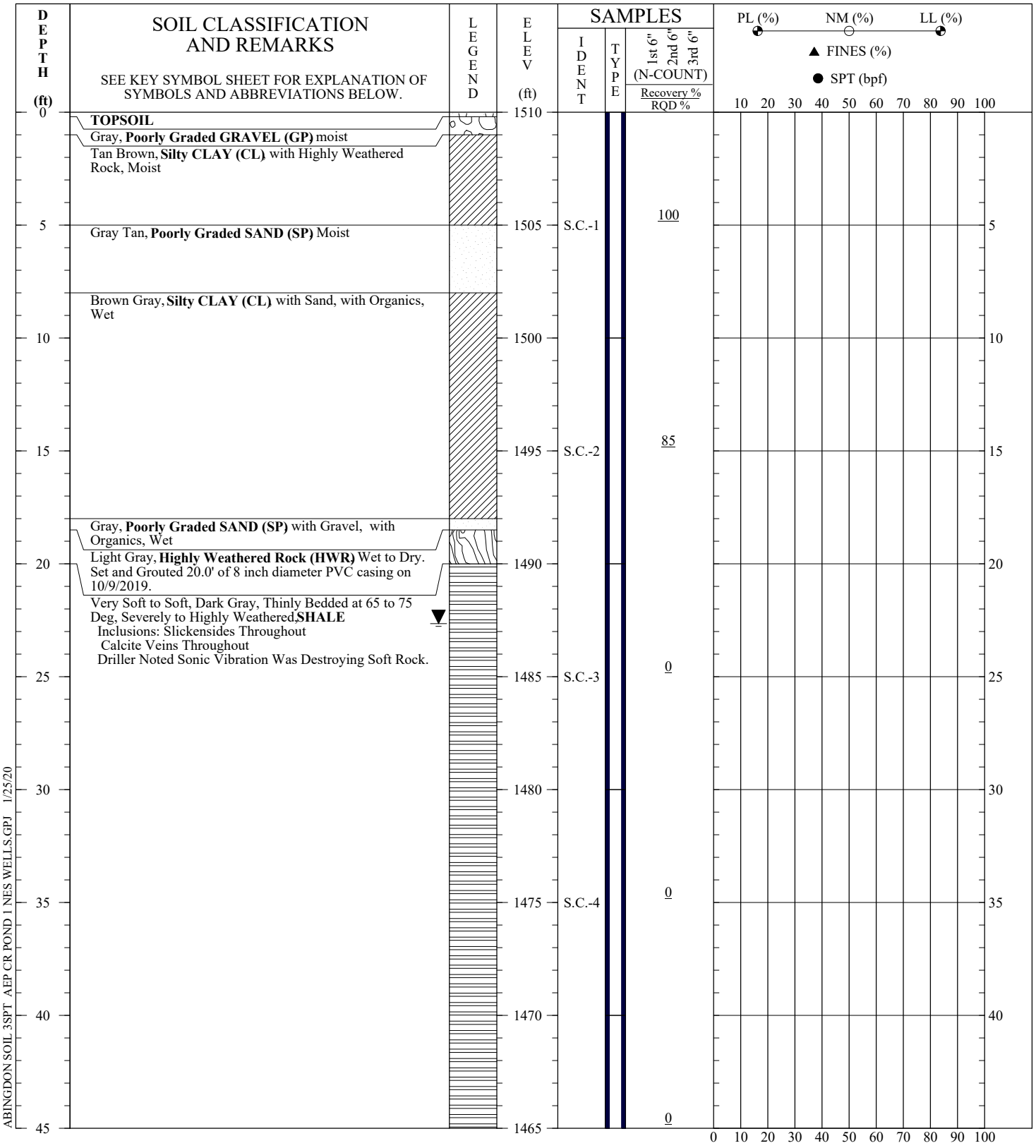

ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,509.6618
NORTHING: 3522093.6703
EASTING: 10403578.0591
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 11/05/2019 to 11/11/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1904D
Date Drilled: 10/11/2019 to 10/16/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
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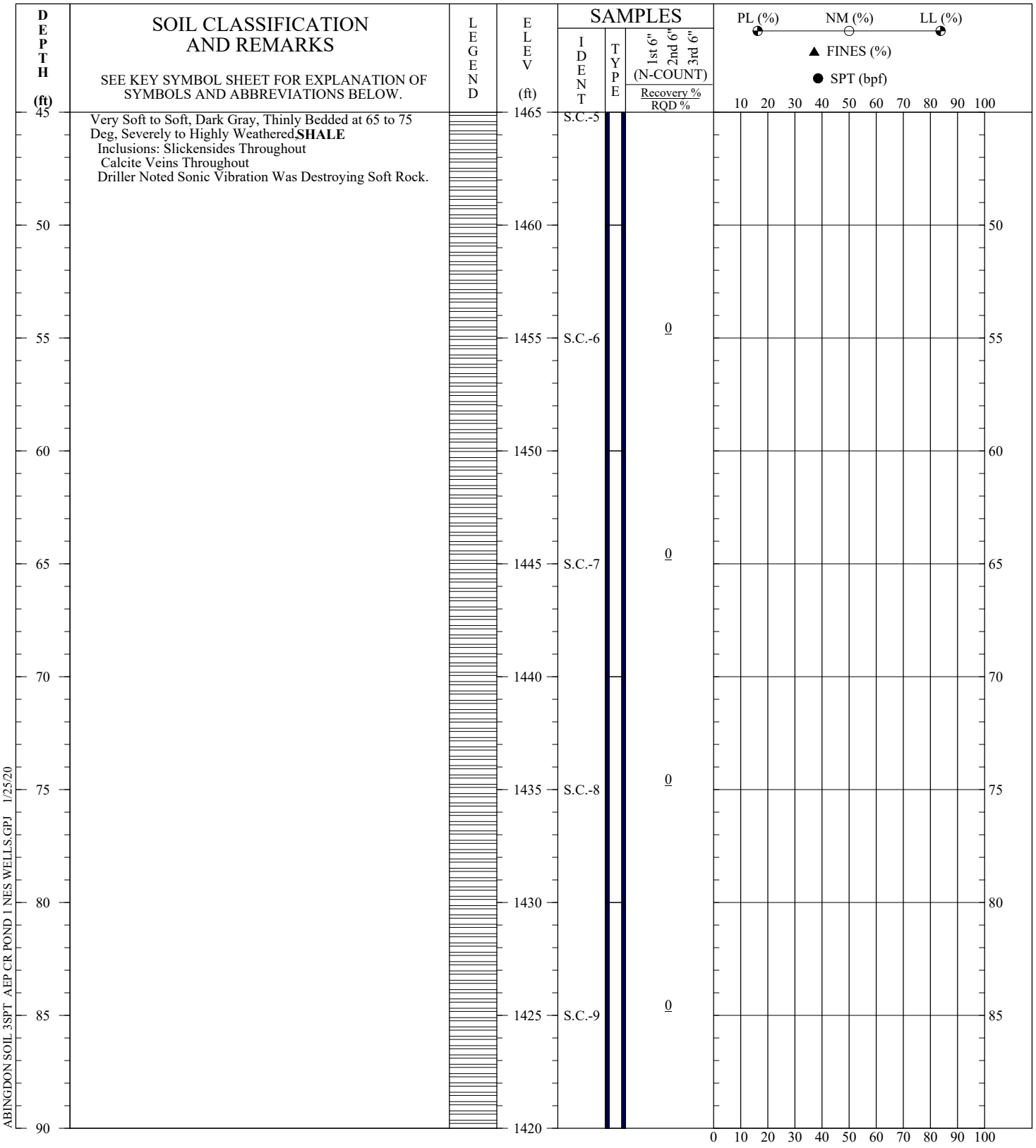
Abingdon, Virginia 24210



ELEVATION: 1,509.6618
NORTHING: 3522093.6703
EASTING: 10403578.0591
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 11/05/2019 to 11/11/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1904D
Date Drilled: 10/11/2019 to 10/16/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

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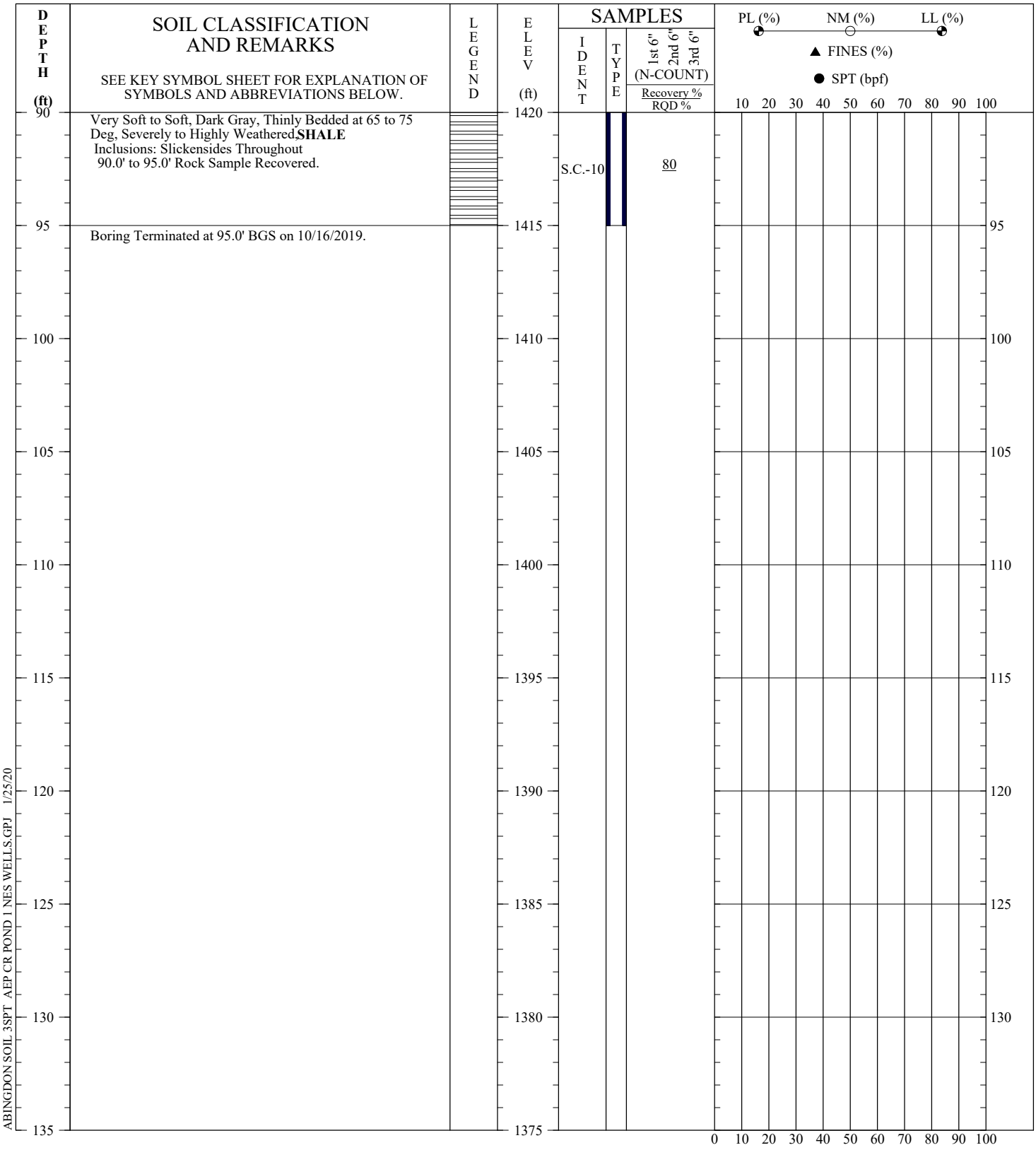
Abingdon, Virginia 24210



ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,509.6618
NORTHING: 3522093.6703
EASTING: 10403578.0591
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 11/05/2019 to 11/11/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1904D
Date Drilled: 10/11/2019 to 10/16/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
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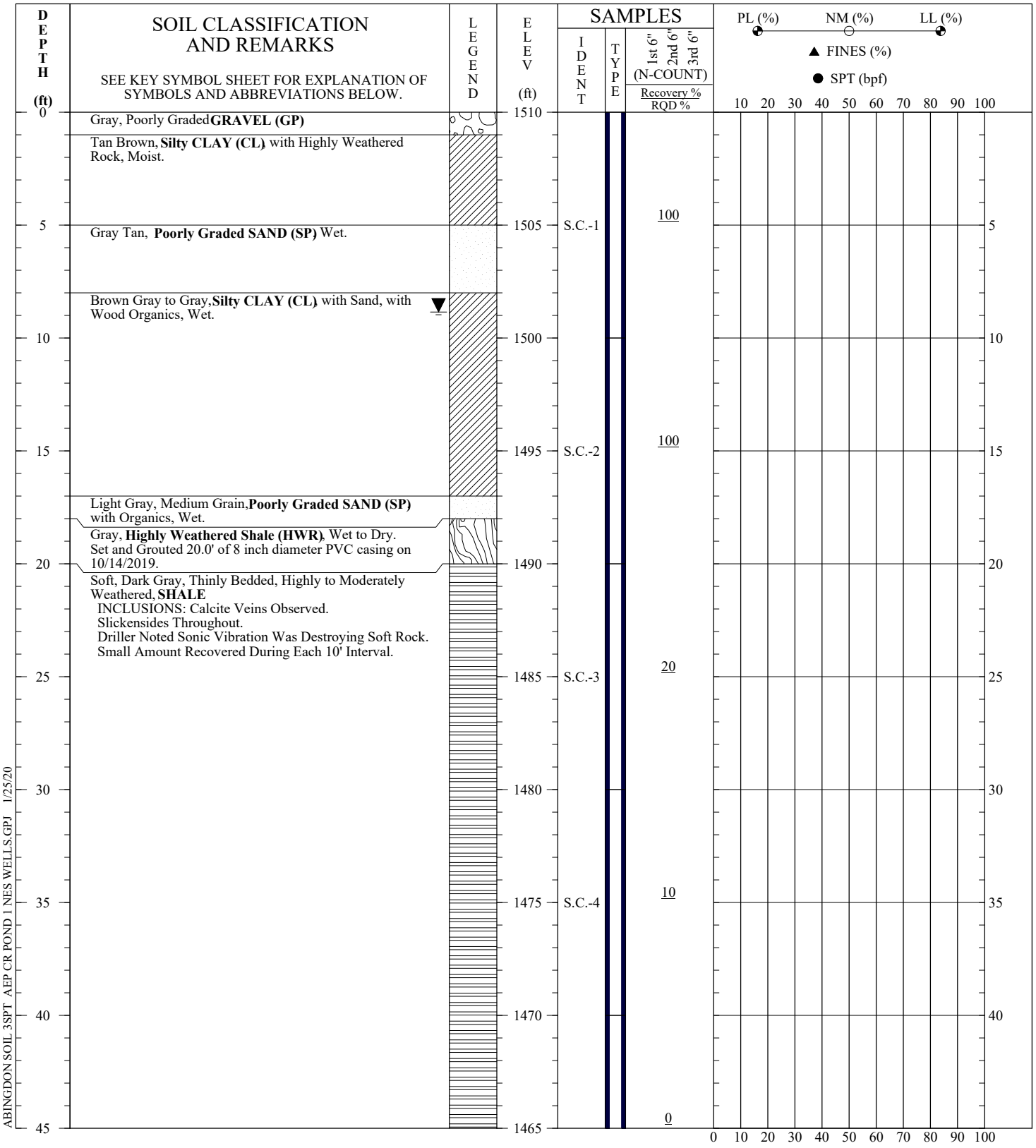

ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,509.7406
NORTHING: 3522098.951
EASTING: 10403583.8712
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 11/06/2019 to 11/11/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1904S
Date Drilled: 10/14/2019 to 11/5/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
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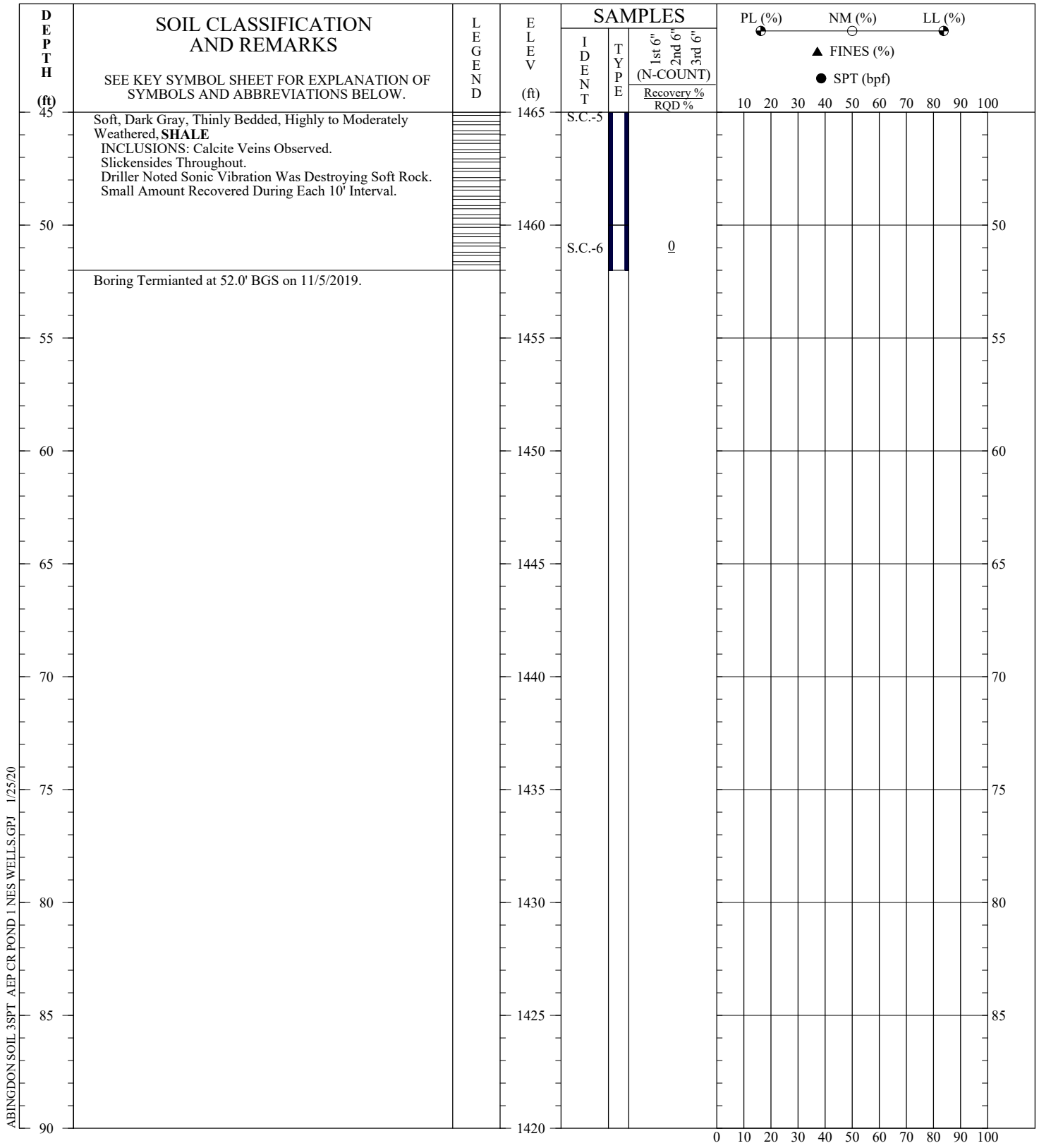


ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

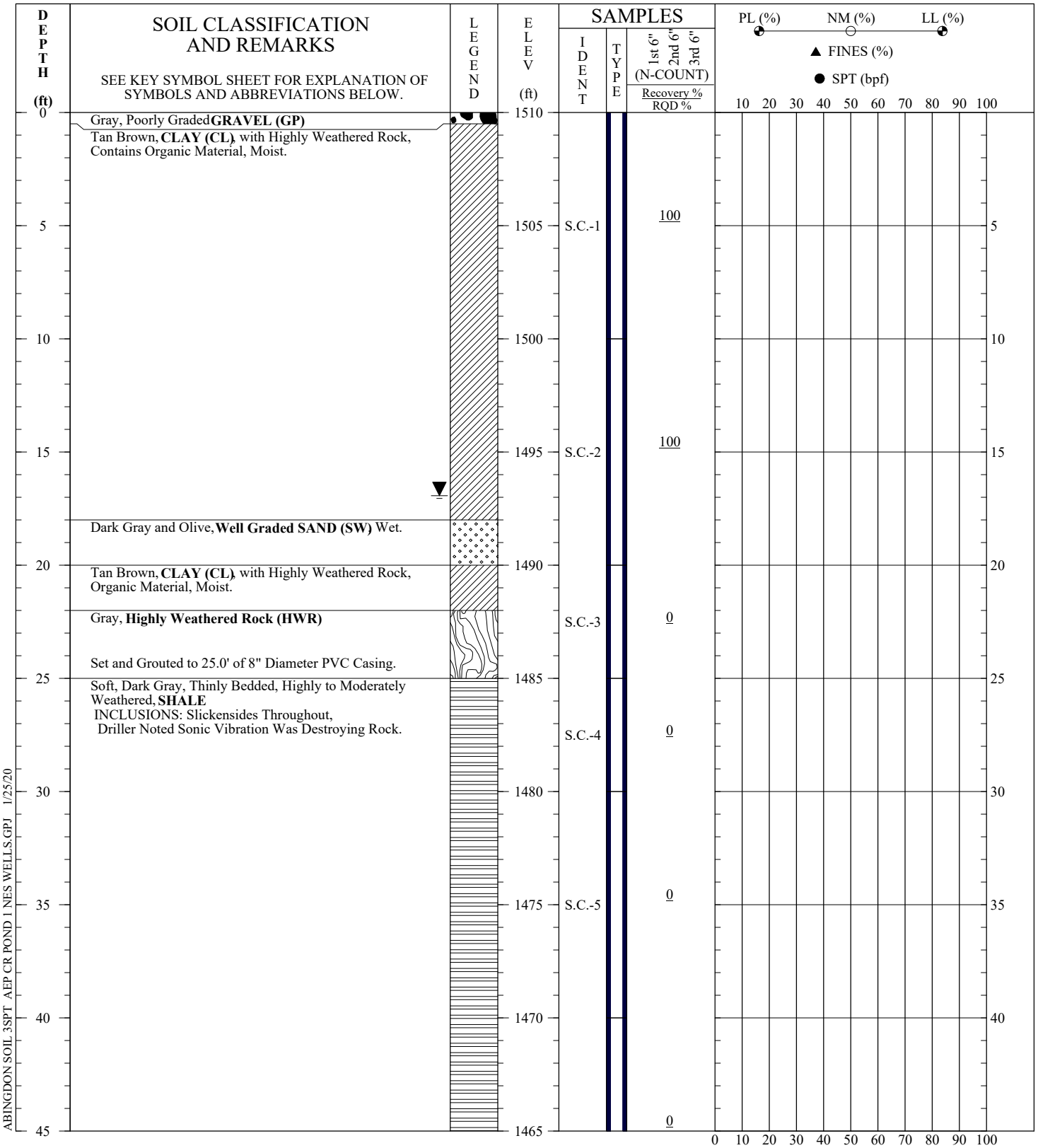
ELEVATION: 1,509.7406
NORTHING: 3522098.951
EASTING: 10403583.8712
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 11/06/2019 to 11/11/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1904S
Date Drilled: 10/14/2019 to 11/5/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210



ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,510.1596
NORTHING: 3521777.8195
EASTING: 10403190.8963
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: RS **REVIEWED BY:** DR
REMARKS: 2" Well Installed 11/07/2019 to 11/11/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1905D
Date Drilled: 10/29/2019 to 11/4/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
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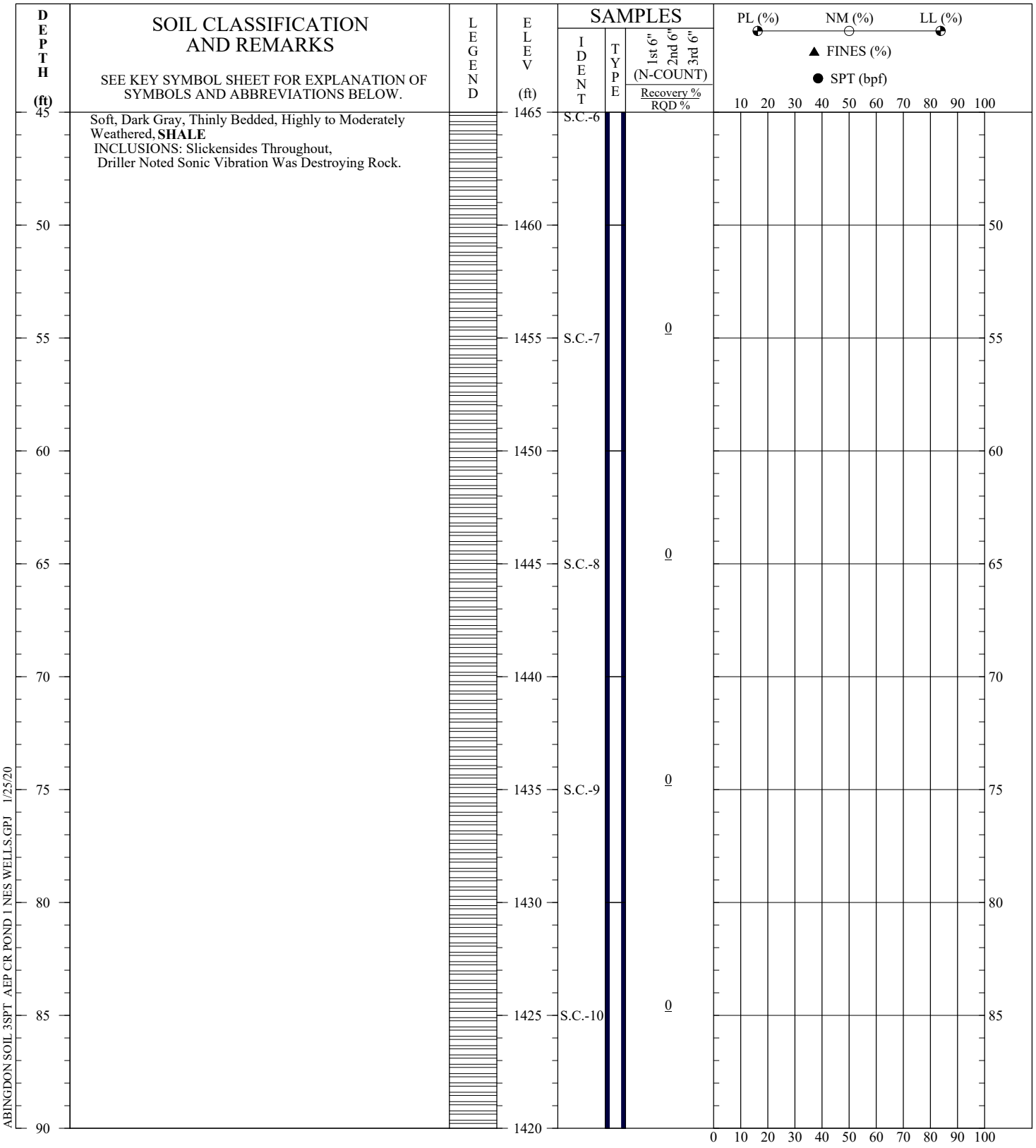
Abingdon, Virginia 24210



ELEVATION: 1,510.1596
NORTHING: 3521777.8195
EASTING: 10403190.8963
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: RS **REVIEWED BY:** DR
REMARKS: 2" Well Installed 11/07/2019 to 11/11/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1905D
Date Drilled: 10/29/2019 to 11/4/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	SAMPLES 1st 6" 2nd 6" 3rd 6" (N-COUNT) Recovery % RQD %	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
90	SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.		1420				10 20 30 40 50 60 70 80 90 100
	Boring Terminated at 90.0' BGS on 11/4/2019.						
95			1415				95
100			1410				100
105			1405				105
110			1400				110
115			1395				115
120			1390				120
125			1385				125
130			1380				130
135			1375				0 10 20 30 40 50 60 70 80 90 100

ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

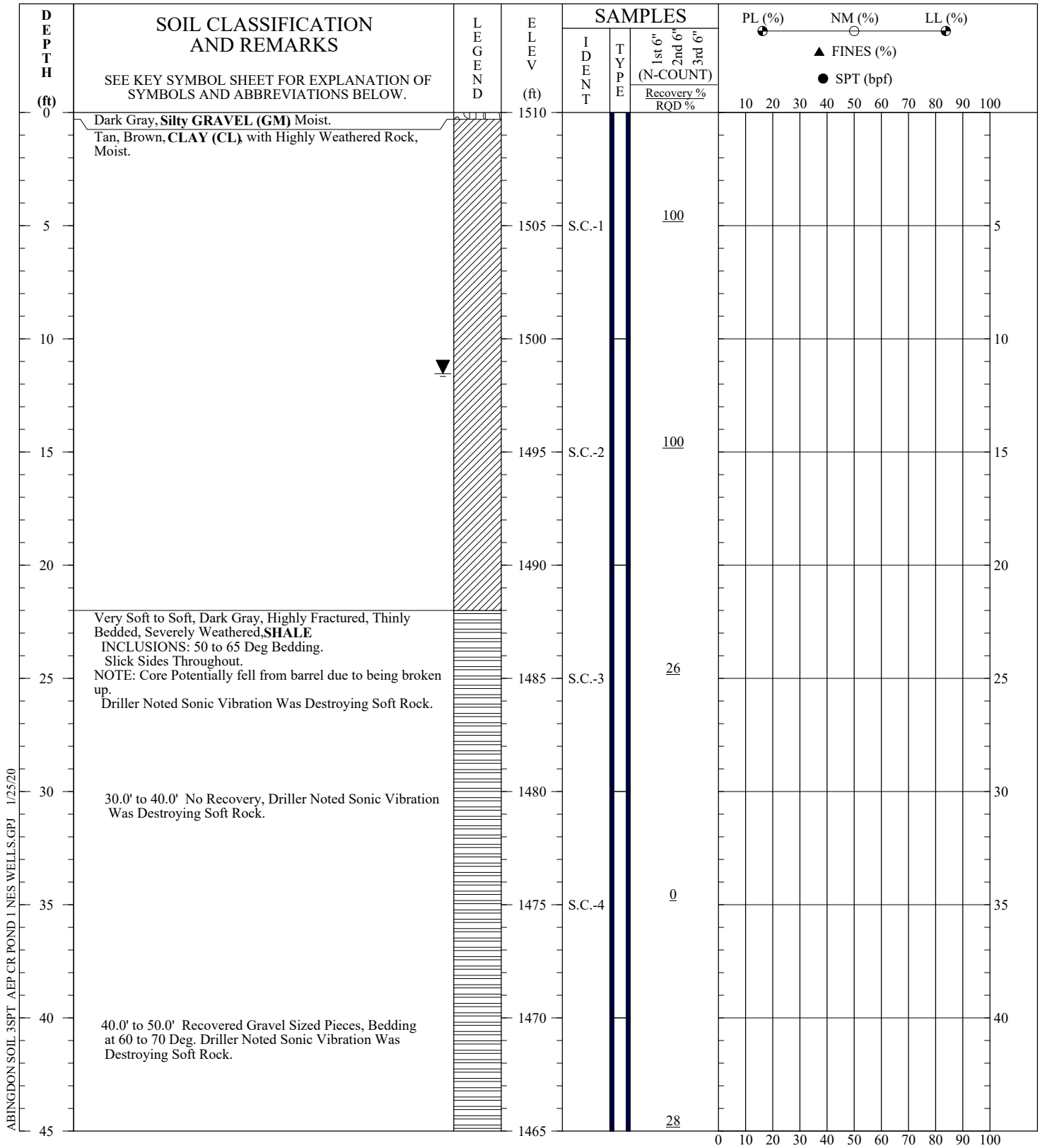
ELEVATION: 1,510.1596
NORTHING: 3521777.8195
EASTING: 10403190.8963
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: RS **REVIEWED BY:** DR
REMARKS: 2" Well Installed 11/07/2019 to 11/11/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1905D
Date Drilled: 10/29/2019 to 11/4/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210



ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,510.3872
NORTHING: 3521772.3975
EASTING: 10403185.577
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: No Casing Set. 2" Well Installed 11/07/2019 to 11/11/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1905S
Date Drilled: 11/8/2019 to 11/8/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	SAMPLES 1st 6" 2nd 6" 3rd 6" (N-COUNT) Recovery % RQD %	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
45	Very Soft to Soft, Dark Gray, Highly Fractured, Thinly Bedded, Severely Weathered, **SHALE** INCLUSIONS: 50 to 65 Deg Bedding. Slick Sides Throughout. NOTE: Core Potentially fell from barrel due to being broken up. Driller Noted Sonic Vibration Was Destroying Soft Rock.		1465	S.C.-5			
50			1460	S.C.-6		20	
55	Boring Terminated at 55.0' BGS on 11/8/2019.		1455				
60			1450				
65			1445				
70			1440				
75			1435				
80			1430				
85			1425				
90			1420				

0 10 20 30 40 50 60 70 80 90 100

ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

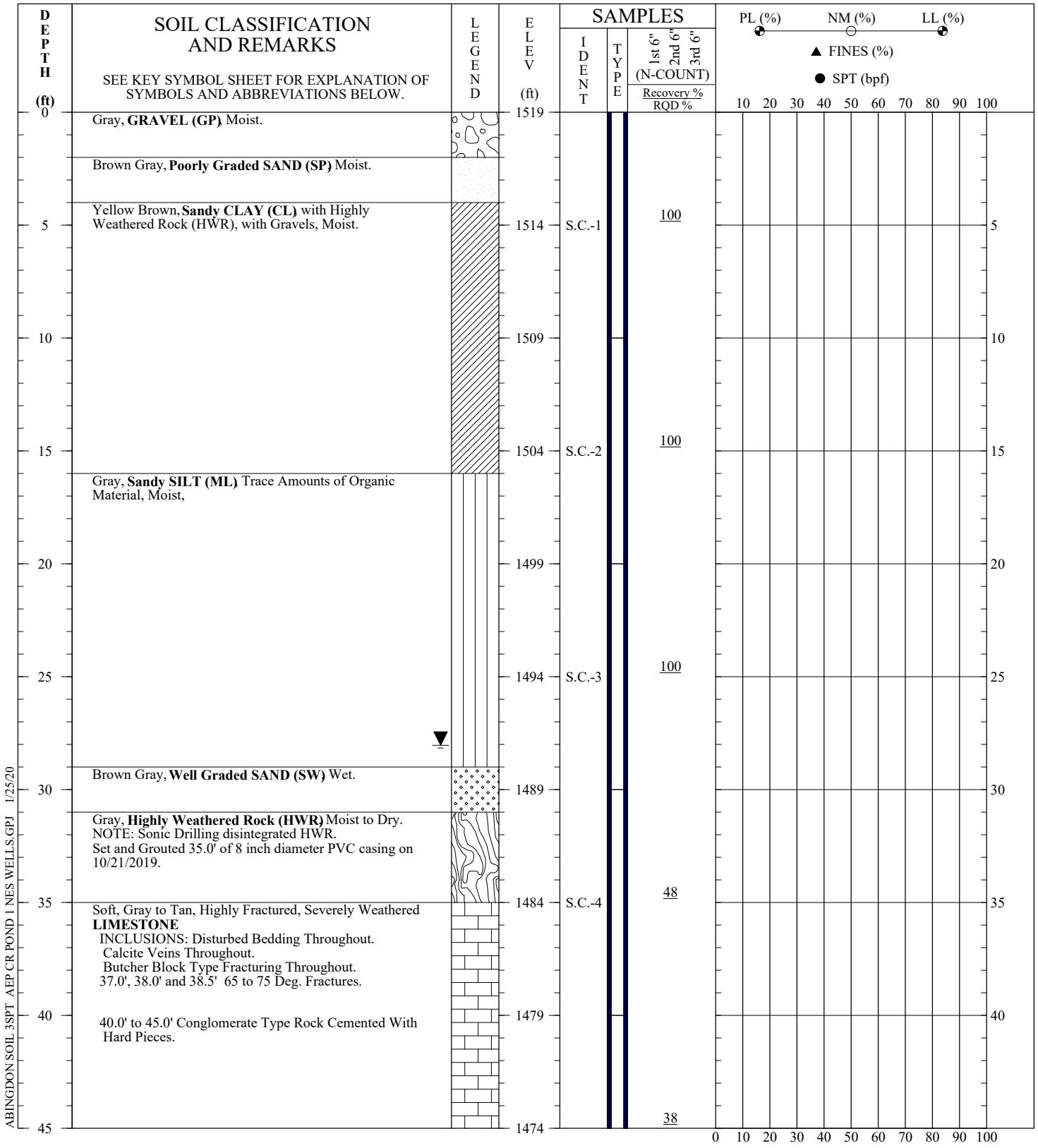
ELEVATION: 1,510.3872
NORTHING: 3521772.3975
EASTING: 10403185.577
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: No Casing Set. 2" Well Installed 11/07/2019 to 11/11/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1905S
Date Drilled: 11/8/2019 to 11/8/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210



ELEVATION: 1,519.1358
NORTHING: 3521314.9308
EASTING: 10402700.5541
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 12/20/2019 to 01/06/2020.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1906D
Date Drilled: 10/21/2019 to 10/22/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	SAMPLES 1st 6" 2nd 6" 3rd 6" (N-COUNT) Recovery % RQD %
45	Soft, Gray to Tan, Highly Fractured, Severely Weathered **LIMESTONE** INCLUSIONS: Disturbed Bedding Throughout. Calcite Veins Throughout. Butcher Block Type Fracturing Throughout. 45.0' to 50.0' Tan to Dark Red.		1474	S.C.-5		
50	50.0' to 58.0' Dark Red with Calcite Crystals, Moderately Hard.		1469			
55	55.0' Weathered Vug with Calcite Crystals.		1464	S.C.-6		93
	58.0' Tan, Very Soft with Clay Infilling.					
60	60.0' Variegated olive gray, tan and dark red mixed, Disturbed Bedding. 61.0' 60 Deg. Joint.		1459			
65	64.0' Intact Calcite Vein with Tan Weathering. 65.0' Dark Red, Broken to Gravels.		1454	S.C.-7		88
70	69.0' Clay Seam, Recovered 0.4', Intact with Weathered Gravel. 70.0' Very Soft, Driller Noted Solid But Soft. Quicker Drill Advance, No Recovery.		1449			
75			1444	S.C.-8		0
80	80.0' Soft, Recovered Gravel Pieces. Olive, Tan, Red, Gravels with Iron Stains and Calcite Veins.		1439			
85			1434	S.C.-9		50
	87.0' Olive with Vugs Containing Crystals. 88.0' Olive to Gray, with Calcite. 89.0' Recovered Gray Clay on Rock Sample.					
90			1429			

PL (%) NM (%) LL (%)
▲ FINES (%)
● SPT (bpf)
10 20 30 40 50 60 70 80 90 100

ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

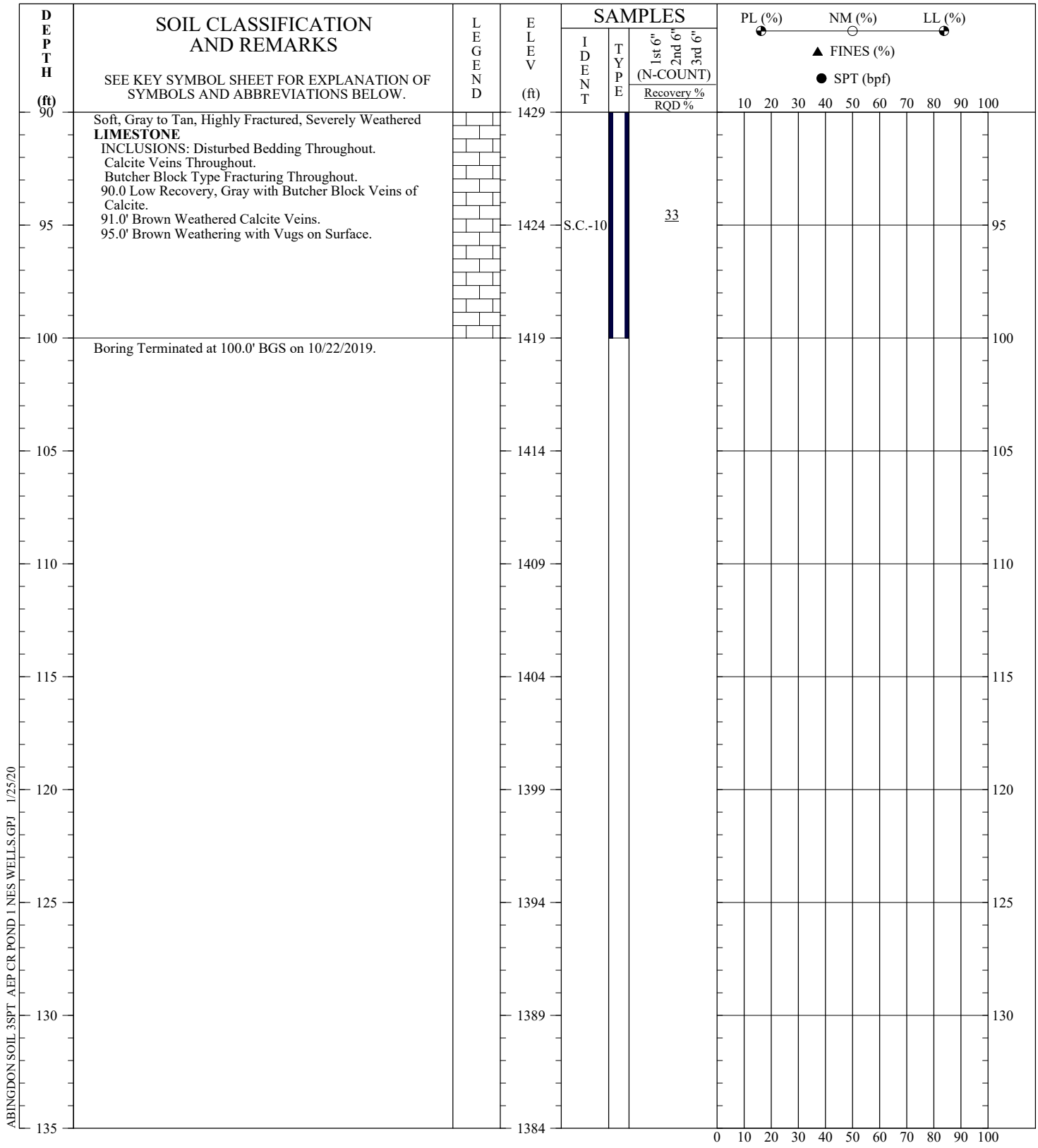
ELEVATION: 1,519.1358
NORTHING: 3521314.9308
EASTING: 10402700.5541
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 12/20/2019 to 01/06/2020.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1906D
Date Drilled: 10/21/2019 to 10/22/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210



ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,519.1358
NORTHING: 3521314.9308
EASTING: 10402700.5541
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 12/20/2019 to 01/06/2020.

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TEST BORING RECORD

Boring: W-1906D
Date Drilled: 10/21/2019 to 10/22/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

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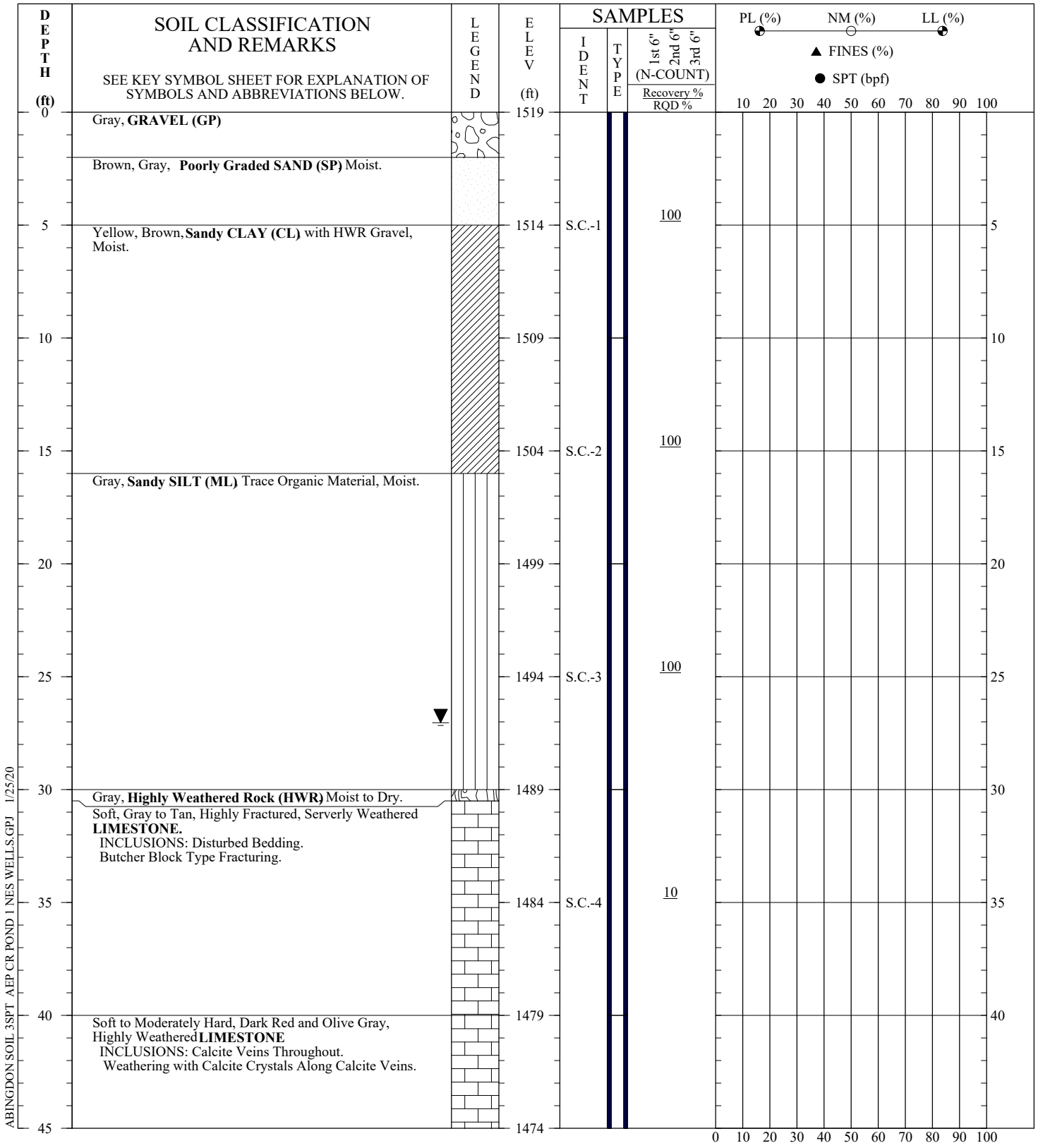

ELEVATION: 1,519.4032
NORTHING: 3521312.9787
EASTING: 10402694.9028
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: RS **REVIEWED BY:** DR
REMARKS: No Casing Set. 2" Well Installed 10/23/2019 to 01/06/2020.

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TEST BORING RECORD

Boring: W-1906S
Date Drilled: 10/23/2019 to 10/23/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.	LEGEND	ELEV (ft)	SAMPLES: IDENT	SAMPLES: TYPE	SAMPLES: 1st 6" 2nd 6" 3rd 6" (N-COUNT) / Recovery % / RQD %	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
45	Soft to Moderately Hard, Dark Red and Olive Gray, Highly Weathered **LIMESTONE** INCLUSIONS: Calcite Veins Throughout. Weathering with Calcite Crystals Along Calcite Veins.		1474	S.C.-5		36	
50	Boring Terminated at 51.0' BGS on 12/23/2019.		1469				
55			1464				
60			1459				
65			1454				
70			1449				
75			1444				
80			1439				
85			1434				
90			1429				

PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)

10 20 30 40 50 60 70 80 90 100

0 10 20 30 40 50 60 70 80 90 100

ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,519.4032
NORTHING: 3521312.9787
EASTING: 10402694.9028
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: RS **REVIEWED BY:** DR
REMARKS: No Casing Set. 2" Well Installed 10/23/2019 to 01/06/2020.

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TEST BORING RECORD

Boring: W-1906S
Date Drilled: 10/23/2019 to 10/23/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
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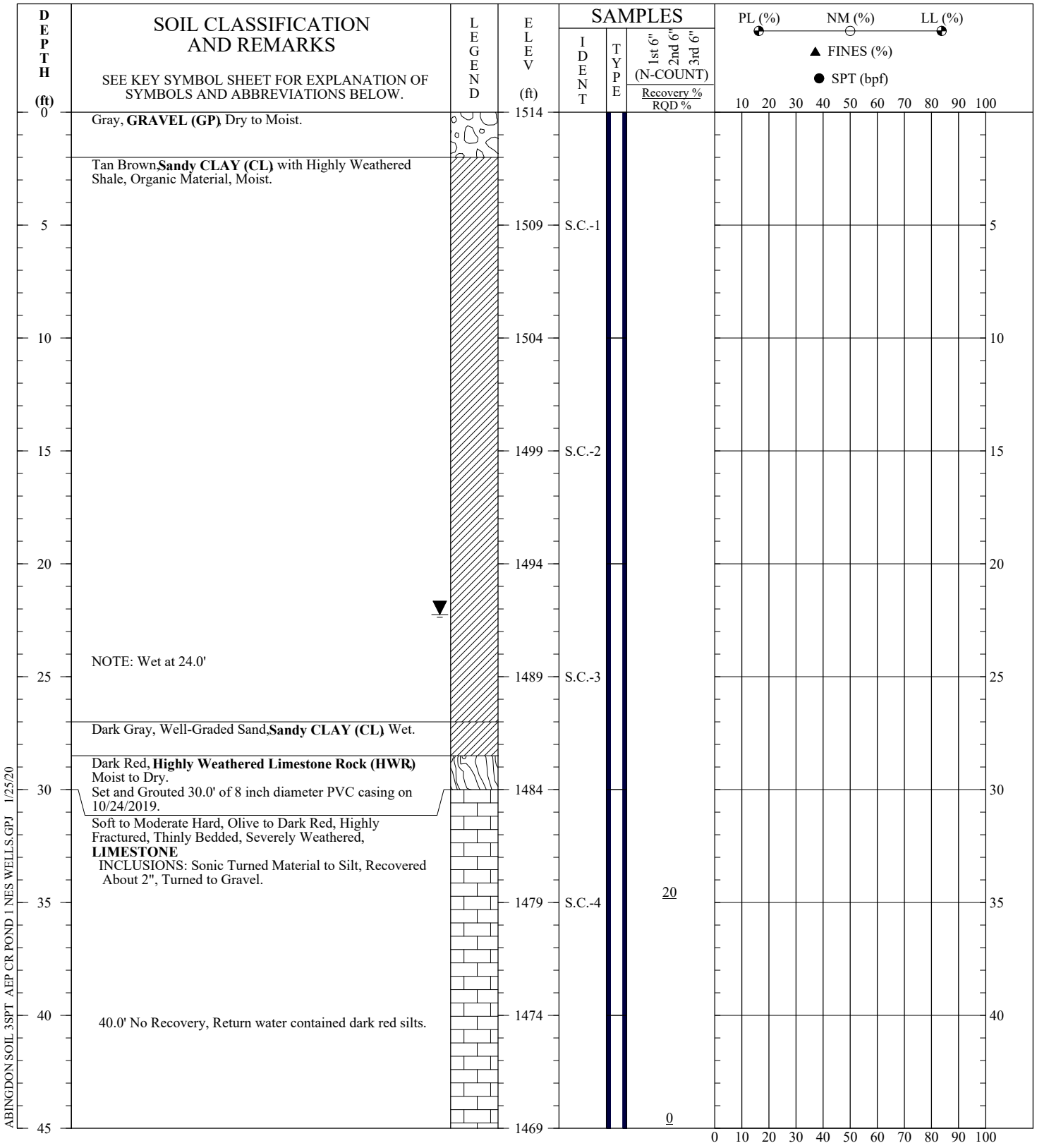
Abingdon, Virginia 24210



ELEVATION: 1,513.9413
NORTHING: 3521231.7449
EASTING: 10402476.8273
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: RS **REVIEWED BY:** DR
REMARKS: 2" Well Installed 12/06/2019 to 01/06/2020.

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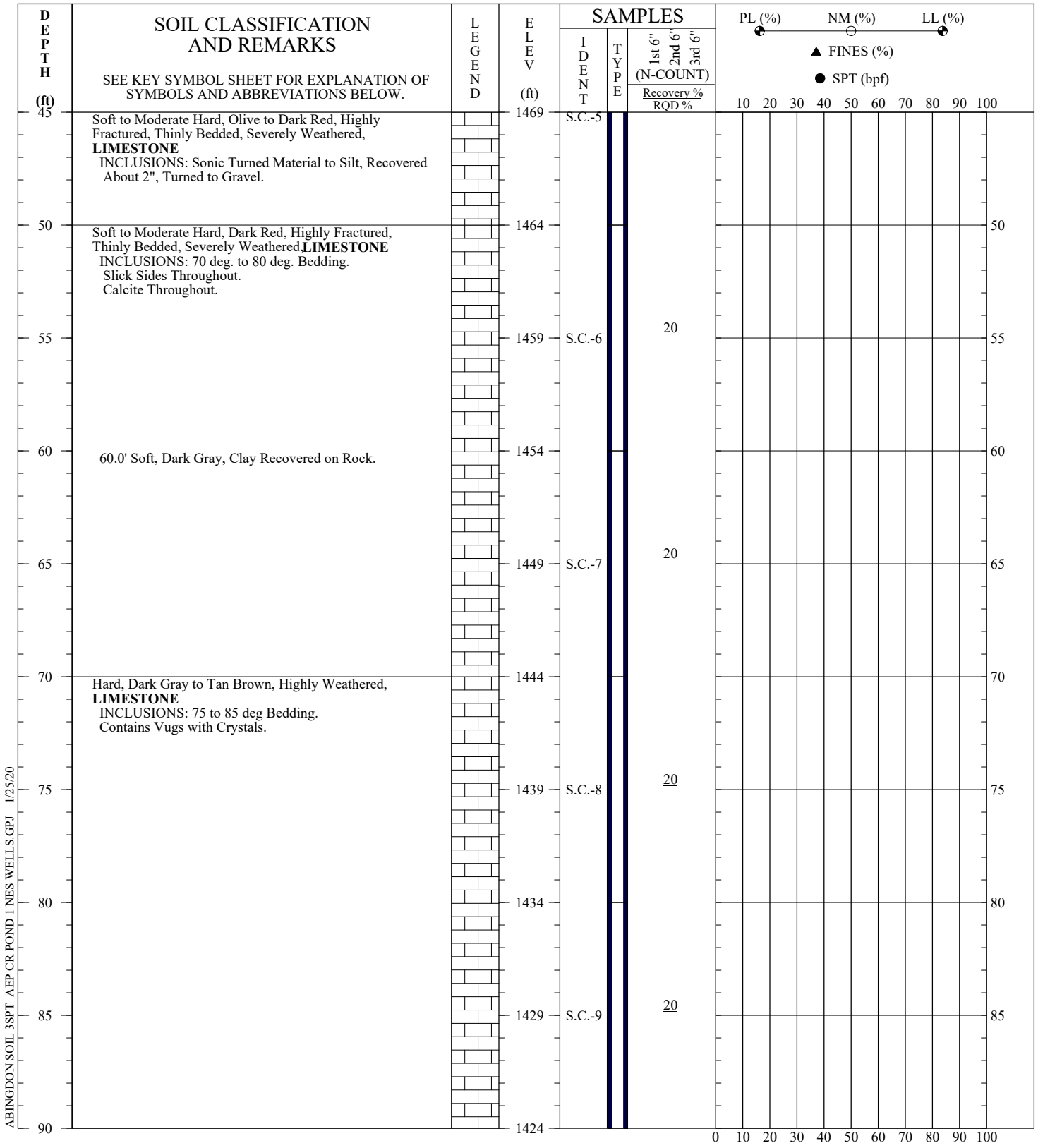
TEST BORING RECORD

Boring: W-1907D
Date Drilled: 10/24/2019 to 11/19/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210



ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,513.9413
NORTHING: 3521231.7449
EASTING: 10402476.8273
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: RS **REVIEWED BY:** DR
REMARKS: 2" Well Installed 12/06/2019 to 01/06/2020.

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TEST BORING RECORD

Boring: W-1907D
Date Drilled: 10/24/2019 to 11/19/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	SAMPLES 1st 6" 2nd 6" 3rd 6" (N-COUNT) Recovery % RQD %	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
90	SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.		1424				10 20 30 40 50 60 70 80 90 100
	Boring Terminated at 90.0' BGS on 11/19/2019.						
95			1419				95
100			1414				100
105			1409				105
110			1404				110
115			1399				115
120			1394				120
125			1389				125
130			1384				130
135			1379				0 10 20 30 40 50 60 70 80 90 100

ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,513.9413
NORTHING: 3521231.7449
EASTING: 10402476.8273
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: RS **REVIEWED BY:** DR
REMARKS: 2" Well Installed 12/06/2019 to 01/06/2020.

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TEST BORING RECORD

Boring: W-1907D
Date Drilled: 10/24/2019 to 11/19/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
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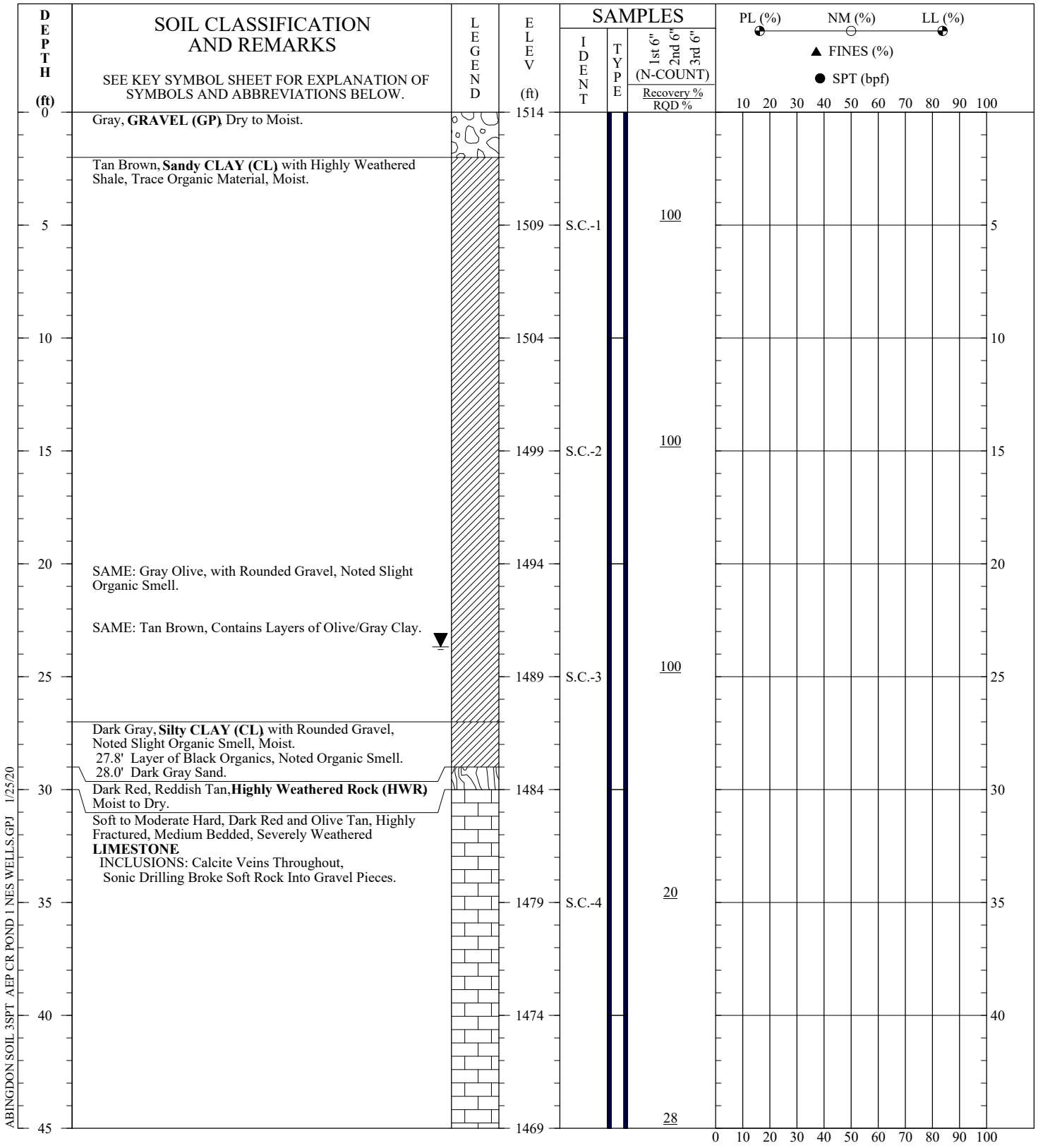
Abingdon, Virginia 24210



ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

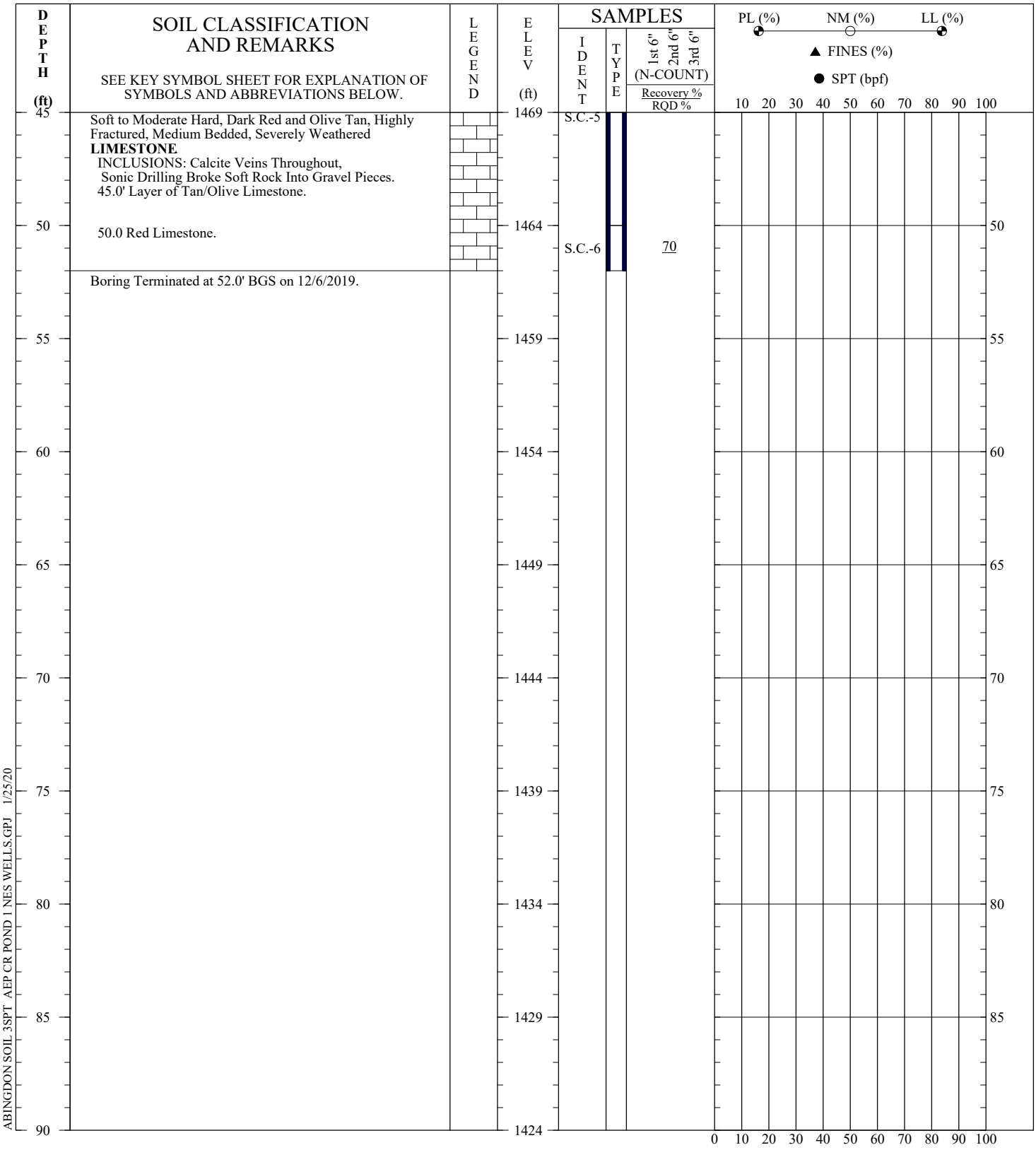
ELEVATION: 1,514.0820
NORTHING: 3521236.5191
EASTING: 10402472.1759
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: No Casing Set. 2" Well Installed 12/06/2019 to 01/06/2020.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1907S
Date Drilled: 12/5/2019 to 12/6/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210



ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,514.0820
NORTHING: 3521236.5191
EASTING: 10402472.1759
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: No Casing Set. 2" Well Installed 12/06/2019 to 01/06/2020.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1907S
Date Drilled: 12/5/2019 to 12/6/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

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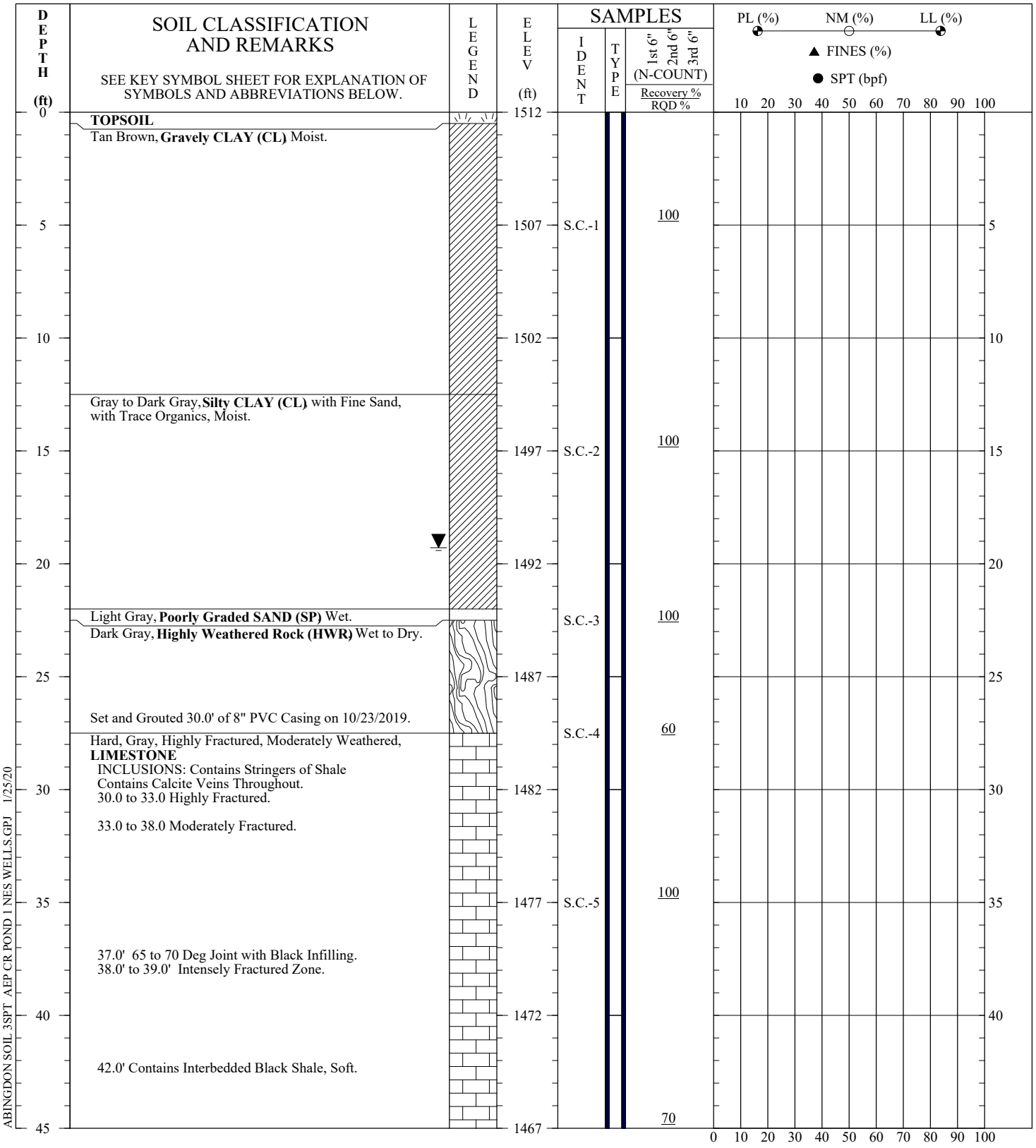
Abingdon, Virginia 24210



ELEVATION: 1,512.0628
NORTHING: 3521521.0908
EASTING: 10402961.2936
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 10/24/2019 to 10/28/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1910S
Date Drilled: 10/18/2019 to 10/21/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	SAMPLES 1st 6" 2nd 6" 3rd 6" (N-COUNT) Recovery % RQD %
45	Hard, Gray, Highly Fractured, Moderately Weathered, **LIMESTONE** INCLUSIONS: Contains Stringers of Shale Contains Calcite Veins Throughout. 46.5' Recovered Layer of Black Shale with Black Decomposed Silty Material, Organic Smell. 47.0' Hard, With Calcite Throughout, Stringers of Shale. 49.5' Quartz Crystal lined Vug in Fracture with Organic Smell. 52.0' to 53.0' Brown Weathering. NOTE: Lost Drilling Water Circulation, But Returned. 53.0' Moderately Hard With Interbedded Shale. 54.0' Intensely Fractured at Interbedded Shale, Contains Organic Smell.		1467	S.C.-6		
50			1462			
55			1457	S.C.-7		80
60	Moderately Hard, Dark Gray, Highly Fractured, Severely Weathered, **SHALE**. INCLUSIONS: Bedded at 60 Deg. Slickensides Throughout. Organic Smell Throughout. Contains Calcite Veins Throughout. 59.5' to 60.0' Recovered Layer of Black Silt with Shale Pieces, Possible Fault Gauge. Driller noted fast advance from 58.0' to 60.0'. 60.0' Large Calcite Veins with Pyrite Observed on Slickensides.		1452			
65			1447	S.C.-8		63
70	68.0' to 70.0' Recovered Silt, Possible Fault Gauge. 70.0' to 72.0' Layers of Interbedded Very Hard Shale with Calcite Veins Throughout. 72.0' to 75.0' Soft.		1442			
75			1437	S.C.-9		68
80	78.0' to 80.0' Recovered A Zone of Decomposed Silty Clay, Possible Fault Gauge. Boring Terminated at 80.0' BGS on 10/21/2019.		1432			
85			1427			
90			1422			

PL (%) NM (%) LL (%)
▲ FINES (%)
● SPT (bpf)
10 20 30 40 50 60 70 80 90 100

ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,512.0628
NORTHING: 3521521.0908
EASTING: 10402961.2936
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 10/24/2019 to 10/28/2019.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1910S
Date Drilled: 10/18/2019 to 10/21/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

wood.
Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
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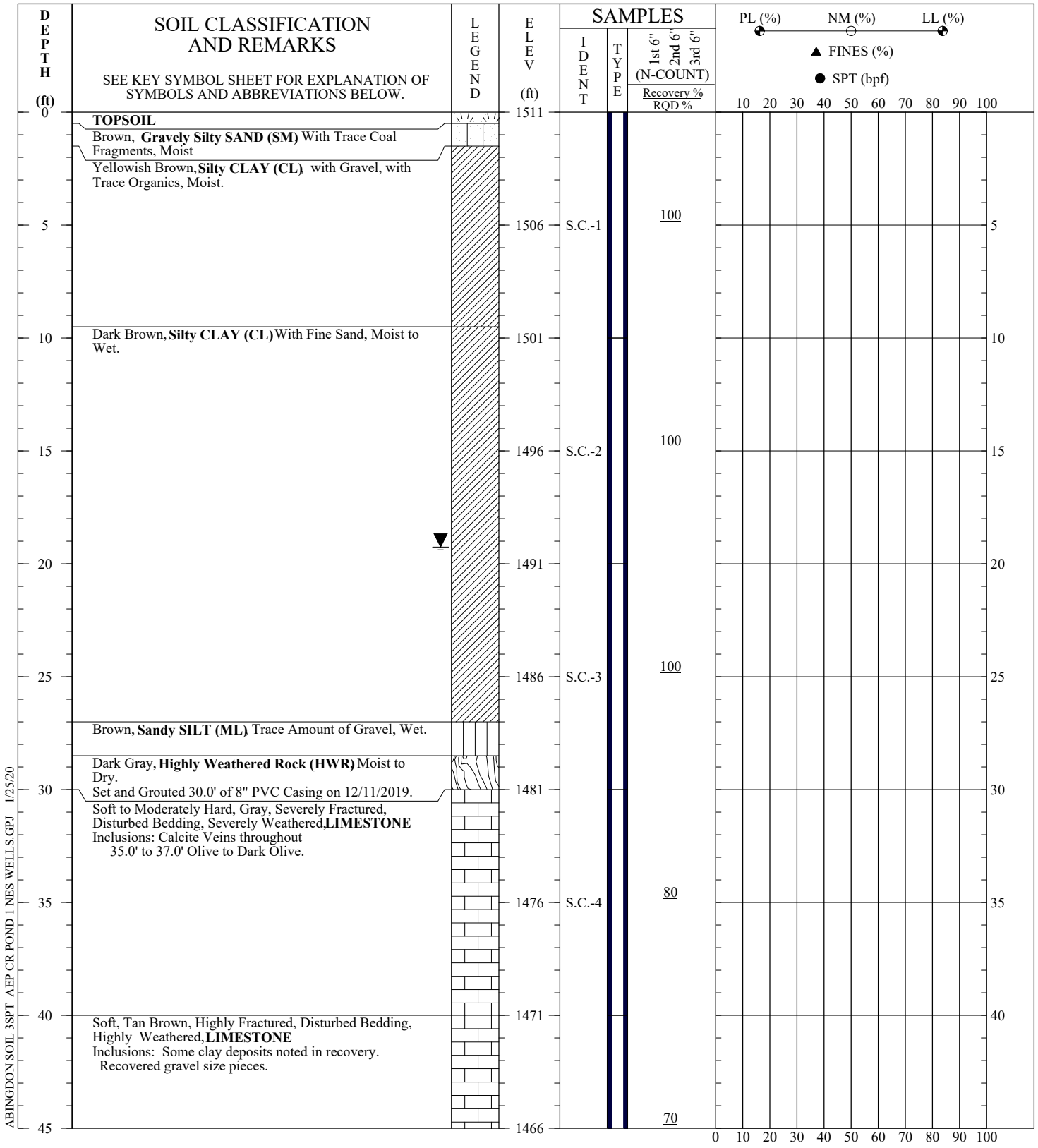

ELEVATION: 1,510.5365
NORTHING: 3521021.8227
EASTING: 10402738.1683
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: RS **REVIEWED BY:** DR
REMARKS: 2" Well Installed 12/19/2019 to 01/07/2020.

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TEST BORING RECORD

Boring: W-1913D
Date Drilled: 12/11/2019 to 12/18/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	SAMPLES 1st 6" 2nd 6" 3rd 6" (N-COUNT) Recovery % RQD %	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
45	Soft, Tan Brown, Highly Fractured, Disturbed Bedding, Highly Weathered, **LIMESTONE** Inclusions: Some clay deposits noted in recovery. Recovered gravel size pieces.		1466	S.C.-5			
50	50.0' to 55.0' Moderately Hard, Dark Gray to Light Gray. Contains Calcite Veins with Vugs. Recovered gravel size pieces.		1461				
55	55.0' to 60.0' Light Brown to Gray, 70 deg bedding.		1456	S.C.-6		80	
60	60.0' to 64.0' Light Brown to Gray, Calcite Veins Throughout. Contains Vugs with White Crystals.		1451				
65	64.0' to 70.0' Light Brown to Gray, Calcite Veins Throughout, Recovered Broken Pieces.		1446	S.C.-7		0	
70	70.0' to 90.0' Very little recover. Driller noted solid drilling throughout.		1441				
75			1436	S.C.-8		0	
80			1431				
85			1426	S.C.-9		0	
90			1421				

ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,510.5365
NORTHING: 3521021.8227
EASTING: 10402738.1683
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: RS **REVIEWED BY:** DR
REMARKS: 2" Well Installed 12/19/2019 to 01/07/2020.

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TEST BORING RECORD

Boring: W-1913D
Date Drilled: 12/11/2019 to 12/18/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

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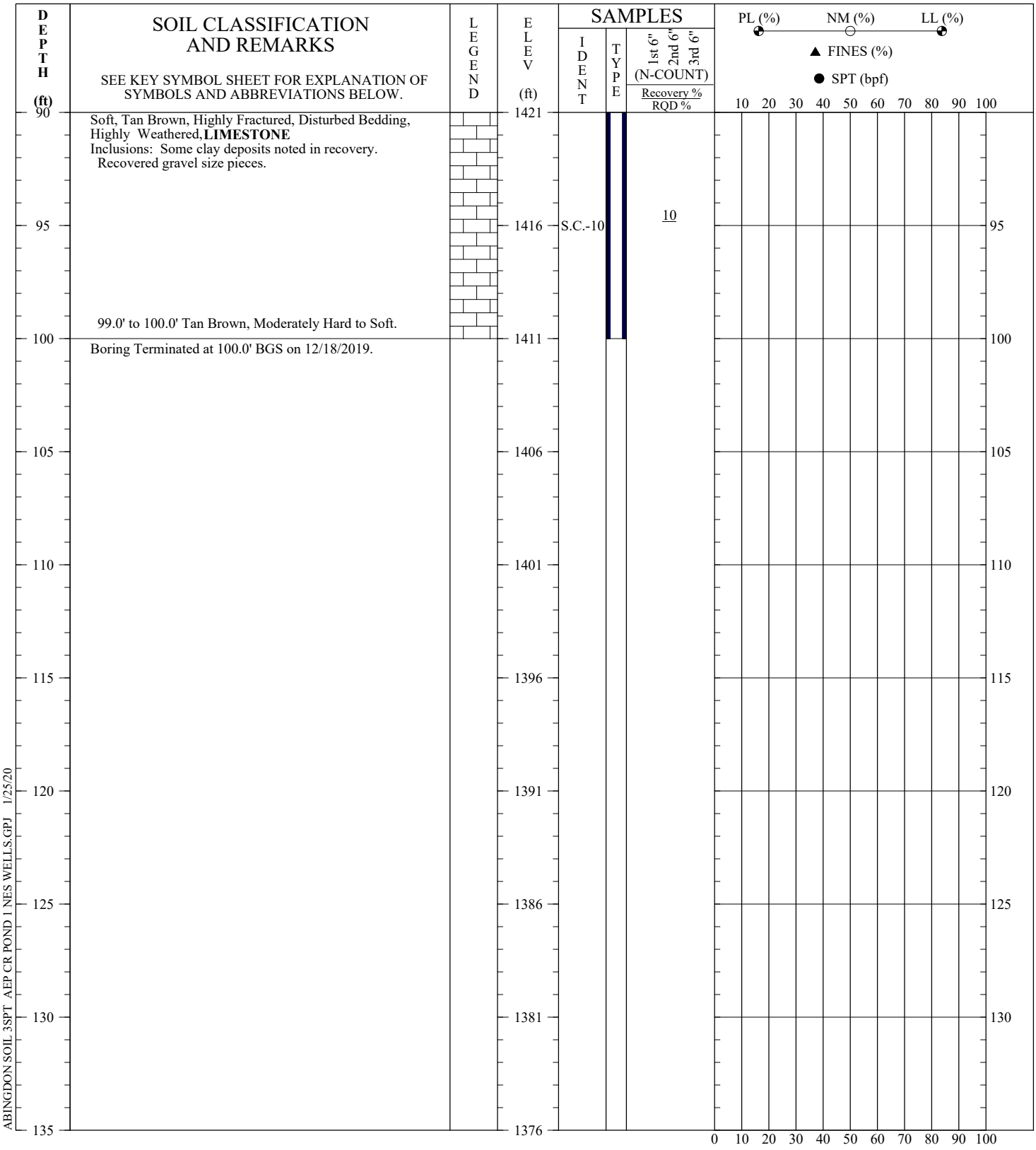

ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,510.5365
NORTHING: 3521021.8227
EASTING: 10402738.1683
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: RS **REVIEWED BY:** DR
REMARKS: 2" Well Installed 12/19/2019 to 01/07/2020.

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TEST BORING RECORD

Boring: W-1913D
Date Drilled: 12/11/2019 to 12/18/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

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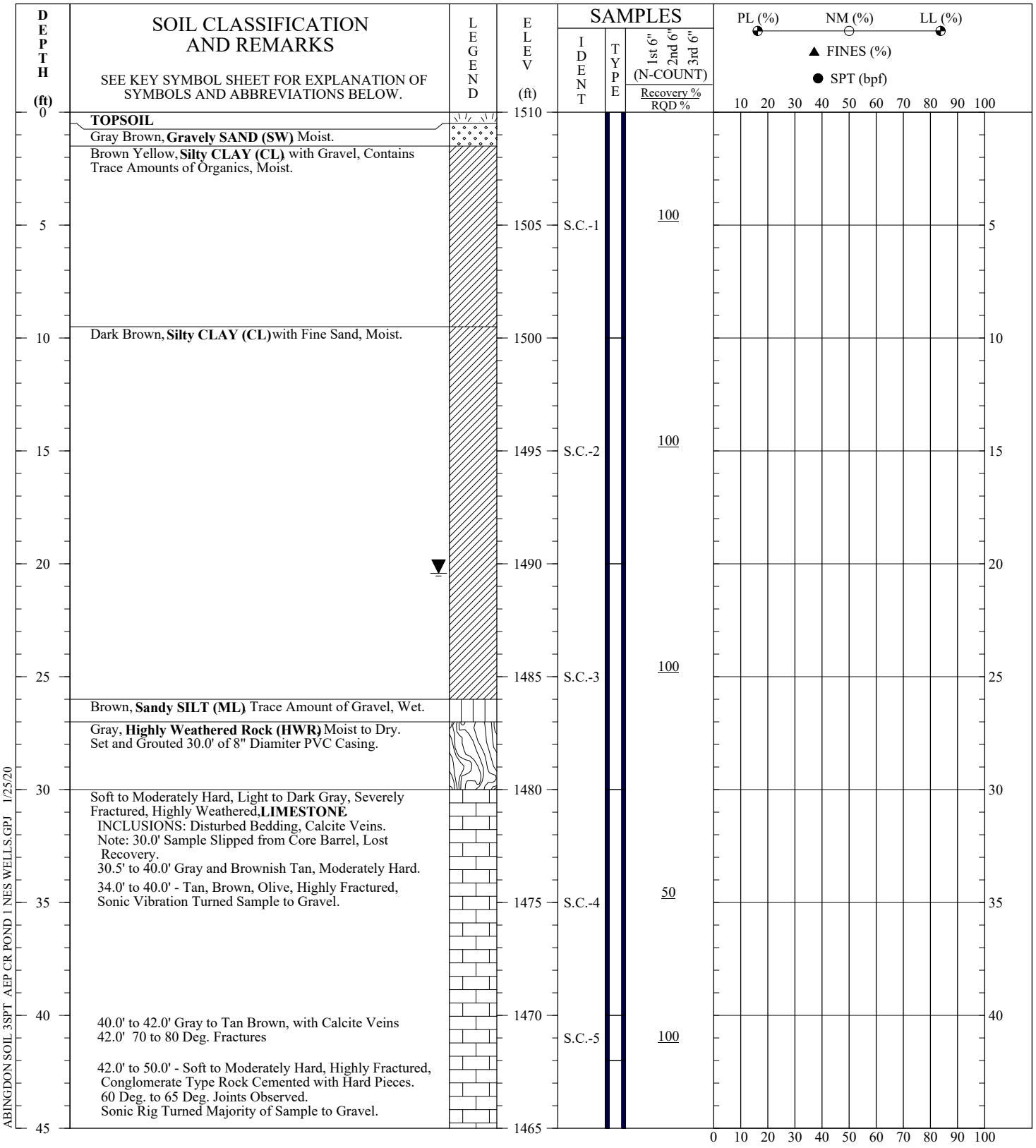
1070 West Main Street, Suite 5
Abingdon, Virginia 24210



ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

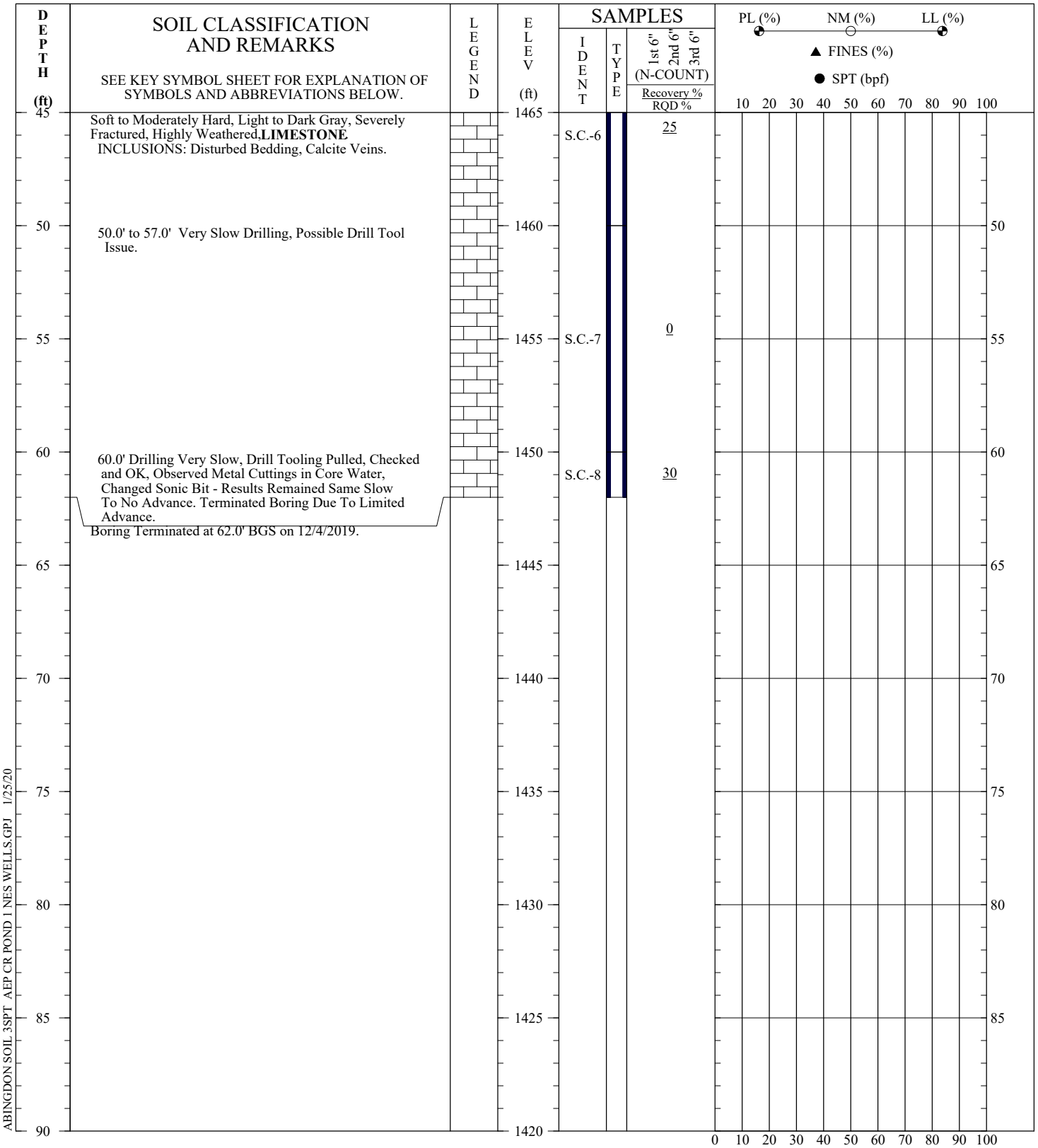
ELEVATION: 1,510.1416
NORTHING: 3521017.5943
EASTING: 10402730.3281
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM/RS **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 12/19/2019 to 01/07/2020.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1913S
Date Drilled: 10/17/2019 to 12/4/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

wood.
Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210



ABINGDON SOIL 3SPT AEP CR POND 1 NES WELLS.GPJ 1/25/20

ELEVATION: 1,510.1416
NORTHING: 3521017.5943
EASTING: 10402730.3281
DRILLER: EnviroProbe
EQUIPMENT: GeoProbe 8150LS
METHOD: 6" Sonic, 5" Sampler
LOGGED BY: JCM/RS **REVIEWED BY:** RDR
REMARKS: 2" Well Installed 12/19/2019 to 01/07/2020.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

TEST BORING RECORD

Boring: W-1913S
Date Drilled: 10/17/2019 to 12/4/2019
Project: AEP Pond 1 NES Wells
Project No.: 3050-19-0349
Project Location: Cleveland, Virginia

Wood Environment & Infrastructure Solutions, Inc.
1070 West Main Street, Suite 5
Abingdon, Virginia 24210

Attachment 2:

Well Construction Diagrams

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1903D
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1511.048
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	10/9/2019 to 10/10/2019
		DATE WELL CONST.:	11/14/2019 to 11/20/2019

Monitoring Well Construction Details

Date Set Start:	11/14/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 6
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 5
Date Complete:	11/20/2019	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 1
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 5

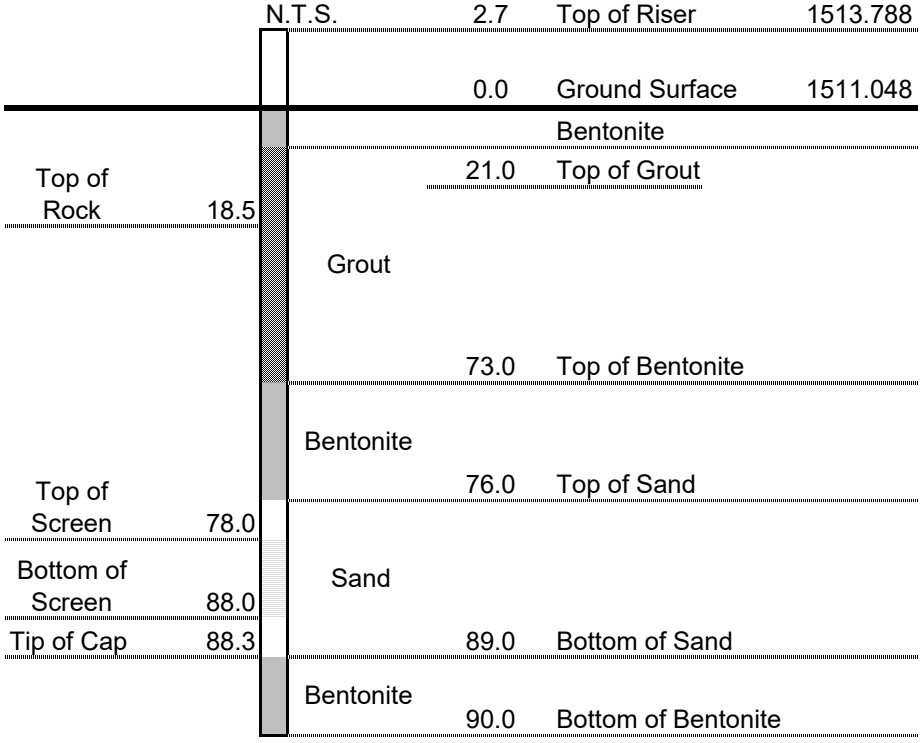
Well Survey Information

Top of Well Casing Elevation	1513.788
Concrete Pad Elevation	1511.450
Ground Surface Elevation	1511.048
Northing Top of Well Riser	3,522,431.19
Easting Top of Well Riser	10,403,954.96

Well Construction Information

Depth to Bed Rock			18.5
Depth of Boring - 6" Sonic			90.0
Depth of 8" PVC Casing			20.0
Bentonite	0.0	to	21.0
Grout	21.0	to	73.0
Bentonite	73.0	to	76.0
Sand	76.0	to	89.0
Bentonite	89.0	to	90.0
Comp. Stickup	2.7	to	0.0
Riser Pipe to GS	0.0	to	78.0
Screen	78.0	to	88.0
Pipe Cap at	88.3		

Well Diagram



COMMENTS: Well drilled using Sonic Drilling Techniques.
Set dedicated bladder pump on 12/26/19: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

wood.

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1903S
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1510.991
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	10/9/2019 to 11/13/2019
		DATE WELL CONST.:	11/14/2019 to 11/15/2019

Monitoring Well Construction Details

Date Set Start:	11/14/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 6
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 5
Date Complete:	11/15/2019	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR30 - 1
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 4

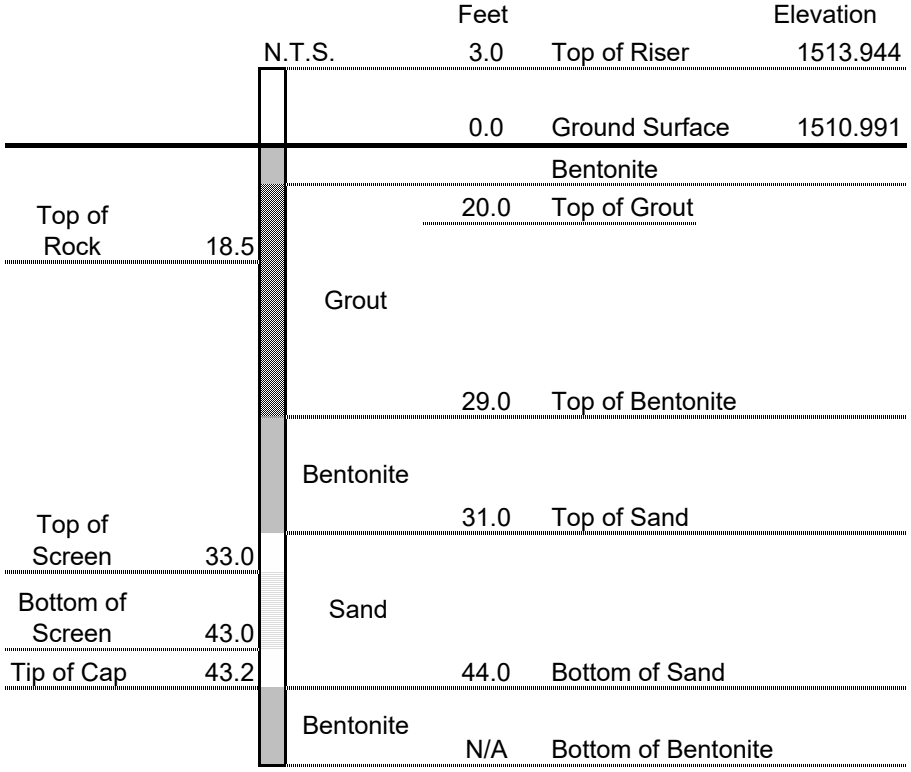
Well Survey Information

Top of Well Casing Elevation	1513.944
Concrete Pad Elevation	1511.425
Ground Surface Elevation	1510.991
Northing Top of Well Riser	3,522,434.66
Easting Top of Well Riser	10,403,958.52

Well Construction Information

Depth to Bed Rock			18.5
Depth of Boring - 6" Sonic			44.0
Depth of 8" PVC Casing			20.0
Bentonite	0.0	to	20.0
Grout	20.0	to	29.0
Bentonite	29.0	to	31.0
Sand	31.0	to	44.0
Bentonite	N/A	to	N/A
Comp. Stickup	3.0	to	0.0
Riser Pipe to GS	0.0	to	33.0
Screen	33.0	to	43.0
Pipe Cap at	43.2		

Well Diagram



COMMENTS: Well drilled using Sonic Drilling Techniques.

Set dedicated bladder pump on 12/26/19: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1904D
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1509.662
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	10/14/2019 to 10/16/2019
		DATE WELL CONST.:	11/5/2019 to 11/11/2019

Monitoring Well Construction Details

Date Set Start:	11/5/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 5
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 5
Date Complete:	11/11/2019	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 1
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 4

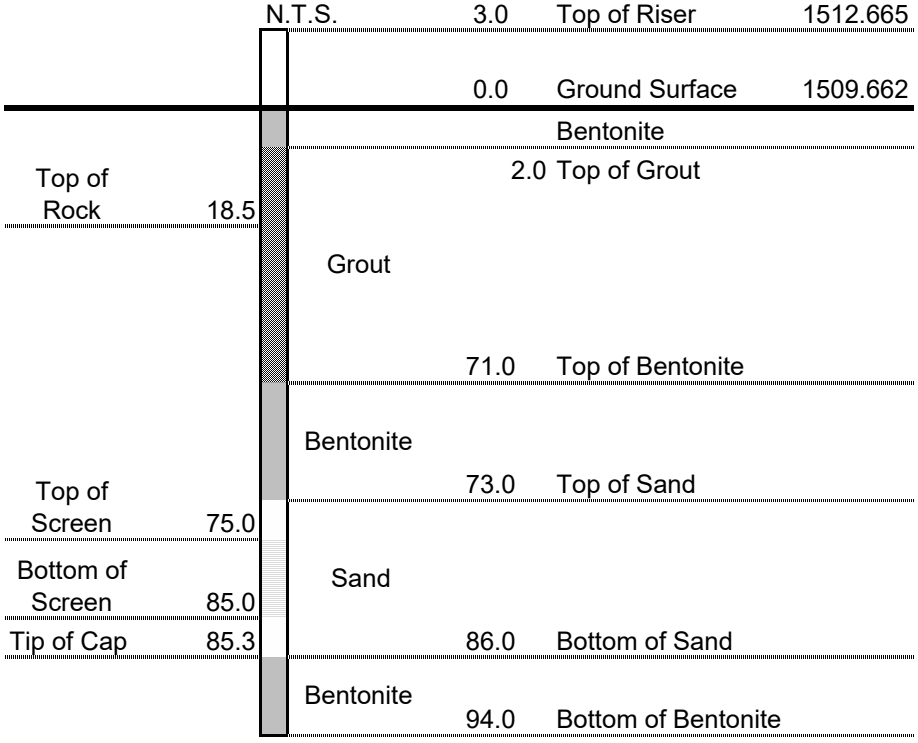
Well Survey Information

Top of Well Casing Elevation	1512.665
Concrete Pad Elevation	1509.789
Ground Surface Elevation	1509.662
Northing Top of Well Riser	3,522,093.67
Easting Top of Well Riser	10,403,578.06

Well Construction Information

Depth to Bed Rock			18.5
Depth of Boring - 6" Sonic			94.0
Depth of 8" PVC Casing			20.0
Bentonite	0.0	to	2.0
Grout	2.0	to	71.0
Bentonite	71.0	to	73.0
Sand	73.0	to	86.0
Bentonite	86.0	to	94.0
Comp. Stickup	3.0	to	0.0
Riser Pipe to GS	0.0	to	75.0
Screen	75.0	to	85.0
Pipe Cap at	85.3		

Well Diagram



COMMENTS: Well drilled using Sonic Drilling Techniques.
Set dedicated bladder pump on 12/26/19: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1904S
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1509.741
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	10/14/2019 to 11/5/2019
		DATE WELL CONST.:	11/6/2019 to 11/11/2019

Monitoring Well Construction Details

Date Set Start:	11/6/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 5
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 1
Date Complete:	11/11/2019	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 1
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 4

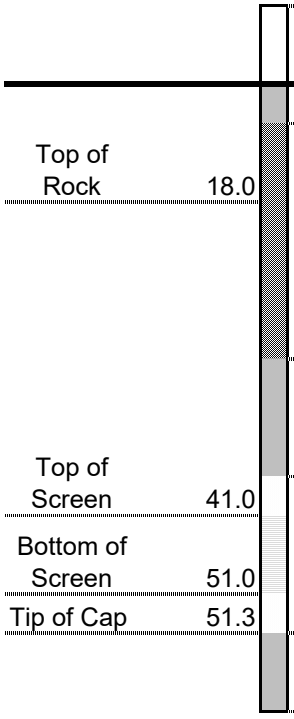
Well Survey Information

Top of Well Casing Elevation	1512.715
Concrete Pad Elevation	1510.002
Ground Surface Elevation	1509.741
Northing Top of Well Riser	3,522,098.95
Easting Top of Well Riser	10,403,583.87

Well Construction Information

Depth to Bed Rock			18.0
Depth of Boring - 6" Sonic			88.0
Depth of 8" PVC Casing			20.0
Bentonite	0.0	to	3.0
Grout	3.0	to	36.0
Bentonite	36.0	to	39.0
Sand	39.0	to	52.0
Bentonite	52.0	to	55.0
Comp. Stickup	3.0	to	0.0
Riser Pipe to GS	0.0	to	41.0
Screen	41.0	to	51.0
Pipe Cap at	51.3		

Well Diagram



Feet		Elevation
3.0	Top of Riser	1512.715
0.0	Ground Surface	1509.741
3.0	Top of Grout	
36.0	Top of Bentonite	
39.0	Top of Sand	
52.0	Bottom of Sand	
55.0	Bottom of Bentonite	

COMMENTS: Well drilled using Sonic Drilling Techniques.
Set dedicated bladder pump on 12/26/19: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1905D
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1510.160
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	10/29/2019 to 11/4/2019
		DATE WELL CONST.:	11/7/2019 to 11/11/2019

Monitoring Well Construction Details

Date Set Start:	11/7/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 2
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 5
Date Complete:	11/11/2019	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 1
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 8

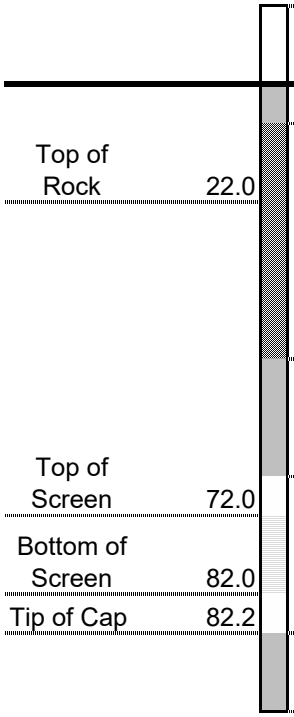
Well Survey Information

Top of Well Casing Elevation	1512.812
Concrete Pad Elevation	1510.706
Ground Surface Elevation	1510.160
Northing Top of Well Riser	3,521,777.82
Easting Top of Well Riser	10,403,190.90

Well Construction Information

Depth to Bed Rock			22.0
Depth of Boring - 6" Sonic			90.0
Depth of 8" PVC Casing			25.0
Bentonite	0.0	to	22.0
Grout	22.0	to	68.0
Bentonite	68.0	to	70.0
Sand	70.0	to	83.0
Bentonite	83.0	to	90.0
Comp. Stickup	2.7	to	0.0
Riser Pipe to GS	0.0	to	72.0
Screen	72.0	to	82.0
Pipe Cap at	82.2		

Well Diagram



Feet		Elevation
2.7	Top of Riser	1512.812
0.0	Ground Surface	1510.160
	Bentonite	
22.0	Top of Grout	
	Grout	
68.0	Top of Bentonite	
	Bentonite	
70.0	Top of Sand	
	Sand	
83.0	Bottom of Sand	
	Bentonite	
90.0	Bottom of Bentonite	

COMMENTS: Well drilled using Sonic Drilling Techniques.
Set dedicated bladder pump on 12/26/19: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1905S
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1510.387
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	11/8/2019 to 11/8/2019
		DATE WELL CONST.:	11/8/2019 to 11/11/2019

Monitoring Well Construction Details

Date Set Start:	11/8/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 2
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 5
Date Complete:	11/11/2019	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 1
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 5

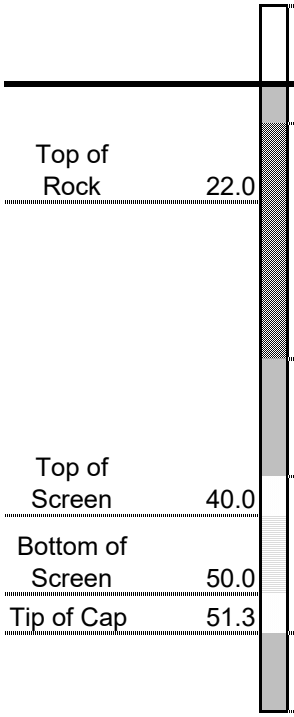
Well Survey Information

Top of Well Casing Elevation	1513.054
Concrete Pad Elevation	1510.810
Ground Surface Elevation	1510.387
Northing Top of Well Riser	3,521,772.40
Easting Top of Well Riser	10,403,185.58

Well Construction Information

Depth to Bed Rock			22.0
Depth of Boring - 6" Sonic			55.0
Depth of 8" PVC Casing			0.0
Bentonite	0.0	to	6.0
Grout	6.0	to	36.0
Bentonite	36.0	to	38.0
Sand	38.0	to	51.0
Bentonite	51.0	to	55.0
Comp. Stickup	2.7	to	0.0
Riser Pipe to GS	0.0	to	40.0
Screen	40.0	to	50.0
Pipe Cap at	51.3		

Well Diagram



Feet		Elevation
2.7	Top of Riser	1513.054
0.0	Ground Surface	1510.387
	Bentonite	
6.0	Top of Grout	
36.0	Top of Bentonite	
38.0	Top of Sand	
51.0	Bottom of Sand	
55.0	Bottom of Bentonite	

COMMENTS: Well drilled using Sonic Drilling Techniques. No 8" Casing Set

Set dedicated bladder pump on 12/26/19: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

wood.

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1906D
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1519.136
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	10/21/2019 to 10/22/2019
		DATE WELL CONST.:	12/20/2019 to 1/6/2020

Monitoring Well Construction Details

Date Set Start:	12/20/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 4
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 6
Date Complete:	1/6/2020	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 1
Datum:	Ground Surface				3/8" Hole Plug - 5

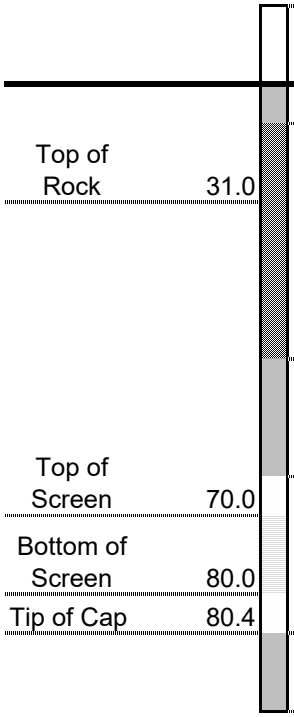
Well Survey Information

Top of Well Casing Elevation	1521.883
Concrete Pad Elevation	1519.623
Ground Surface Elevation	1519.136
Northing Top of Well Riser	3,521,314.93
Easting Top of Well Riser	10,402,700.55

Well Construction Information

Depth to Bed Rock			31.0
Depth of Boring - 6" Sonic			100.0
Depth of 8" PVC Casing			35.0
Bentonite	0.0	to	5.0
Grout	2.0	to	66.0
Bentonite	66.0	to	68.0
Sand	68.0	to	81.0
Bentonite	81.0	to	100.0
Comp. Stickup	2.7	to	0.0
Riser Pipe to GS	0.0	to	70.0
Screen	70.0	to	80.0
Pipe Cap at	80.4		

Well Diagram



Feet		Elevation
2.7	Top of Riser	1521.883
0.0	Ground Surface	1519.136
	Bentonite	
2.0	Top of Grout	
66.0	Top of Bentonite	
68.0	Top of Sand	
81.0	Bottom of Sand	
100.0	Bottom of Bentonite	

COMMENTS: Well drilled using Sonic Drilling Techniques.
Set dedicated bladder pump on 1/8/2020: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

wood.

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1906S
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1519.403
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	10/23/2019 to 10/23/2019
		DATE WELL CONST.:	10/23/2019 to 1/6/2020

Monitoring Well Construction Details

Date Set Start:	10/23/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 5
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 4
Date Complete:	1/6/2020	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 4
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 1

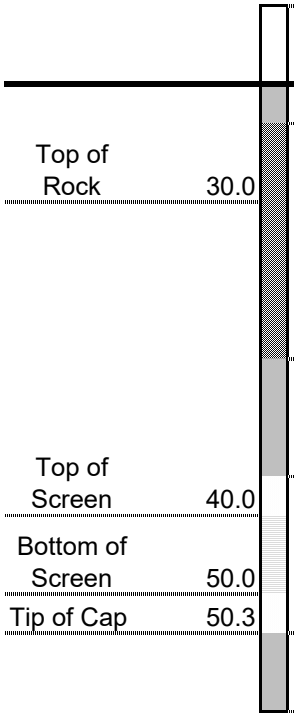
Well Survey Information

Top of Well Casing Elevation	1522.021
Concrete Pad Elevation	1519.794
Ground Surface Elevation	1519.403
Northing Top of Well Riser	3,521,312.98
Easting Top of Well Riser	10,402,694.90

Well Construction Information

Depth to Bed Rock			30.0
Depth of Boring - 6" Sonic			51.0
Depth of 8" PVC Casing			0.0
Bentonite	0.0	to	2.0
Grout	2.0	to	36.0
Bentonite	36.0	to	38.0
Sand	38.0	to	51.0
Bentonite		to	
Comp. Stickup	2.6	to	0.0
Riser Pipe to GS	0.0	to	40.0
Screen	40.0	to	50.0
Pipe Cap at	50.3		

Well Diagram



Feet		Elevation
2.6	Top of Riser	1522.021
0.0	Ground Surface	1519.403
	Bentonite	
2.0	Top of Grout	
36.0	Top of Bentonite	
38.0	Top of Sand	
51.0	Bottom of Sand	
0.0	Bottom of Bentonite	

COMMENTS: Well drilled using Sonic Drilling Techniques. No 8" Casing Set

Set dedicated bladder pump on 1/8/2020: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1907D
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1513.941
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	10/24/2019 to 11/19/2019
		DATE WELL CONST.:	12/6/2019 to 1/6/2020

Monitoring Well Construction Details

Date Set Start:	12/6/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 2
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 5.5
Date Complete:	1/6/2020	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 3.5
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 6

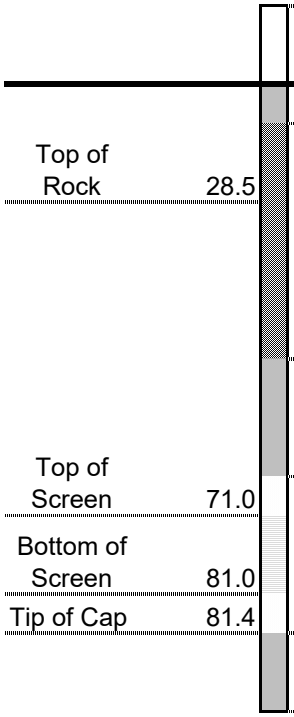
Well Survey Information

Top of Well Casing Elevation	1516.733
Concrete Pad Elevation	1514.297
Ground Surface Elevation	1513.941
Northing Top of Well Riser	3,521,231.74
Easting Top of Well Riser	10,402,476.83

Well Construction Information

Depth to Bed Rock			28.5
Depth of Boring - 6" Sonic			90.0
Depth of 8" PVC Casing			30.0
Bentonite	0.0	to	30.0
Grout	30.0	to	64.0
Bentonite	64.0	to	69.0
Sand	69.0	to	82.0
Bentonite	82.0	to	90.0
Comp. Stickup	2.8	to	0.0
Riser Pipe to GS	0.0	to	71.0
Screen	71.0	to	81.0
Pipe Cap at	81.4		

Well Diagram



	Feet		Elevation
	2.8	Top of Riser	1516.733
N.T.S.	0.0	Ground Surface	1513.941
		Bentonite	
	30.0	Top of Grout	
Top of Rock 28.5			
Grout			
	64.0	Top of Bentonite	
Bentonite			
	69.0	Top of Sand	
Top of Screen 71.0			
Bottom of Screen 81.0			
Sand			
Tip of Cap 81.4	82.0	Bottom of Sand	
Bentonite			
	90.0	Bottom of Bentonite	

COMMENTS: Well drilled using Sonic Drilling Techniques.
Set dedicated bladder pump on 1/15/2020: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1907S
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1514.082
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	12/5/2019 to 12/6/2019
		DATE WELL CONST.:	12/6/2019 to 1/6/2020

Monitoring Well Construction Details

Date Set Start:	12/6/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 4
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 5
Date Complete:	1/6/2020	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 1.5
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 3

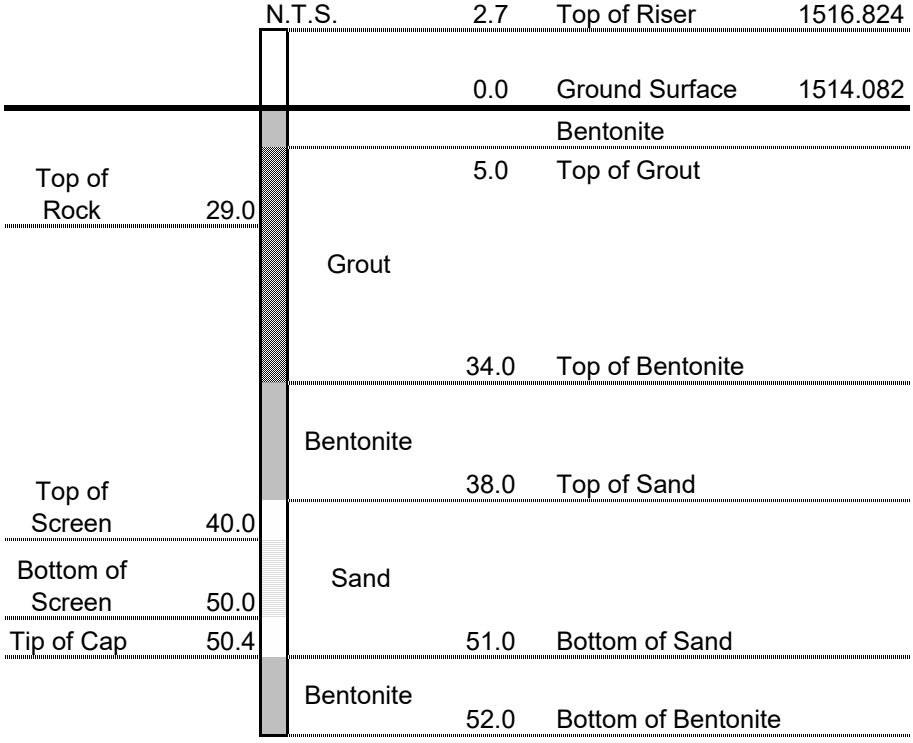
Well Survey Information

Top of Well Casing Elevation	1516.824
Concrete Pad Elevation	1514.961
Ground Surface Elevation	1514.082
Northing Top of Well Riser	3,521,236.52
Easting Top of Well Riser	10,402,472.18

Well Construction Information

Depth to Bed Rock			29.0
Depth of Boring - 6" Sonic			52.0
Depth of 8" PVC Casing			0.0
Bentonite	0.0	to	5.0
Grout	5.0	to	34.0
Bentonite	34.0	to	38.0
Sand	38.0	to	51.0
Bentonite	51.0	to	52.0
Comp. Stickup	2.7	to	0.0
Riser Pipe to GS	0.0	to	40.0
Screen	40.0	to	50.0
Pipe Cap at	50.4		

Well Diagram



COMMENTS: Well drilled using Sonic Drilling Techniques. No Casing Set

Set dedicated bladder pump on 1/15/2020: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1910S
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1512.063
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	10/18/2019 to 10/21/2019
		DATE WELL CONST.:	10/24/2019 to 10/28/2019

Monitoring Well Construction Details

Date Set Start:	10/24/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 6
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20- 6
Date Complete:	10/28/2019	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 1
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 4

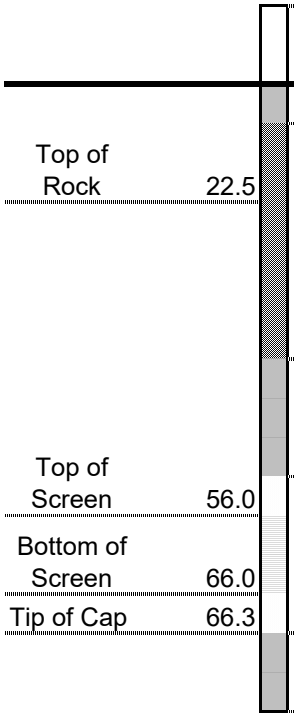
Well Survey Information

Top of Well Casing Elevation	1514.797
Concrete Pad Elevation	1512.549
Ground Surface Elevation	1512.063
Northing Top of Well Riser	3,521,521.09
Easting Top of Well Riser	10,402,961.29

Well Construction Information

Depth to Bed Rock			22.5
Depth of Boring - 6" Sonic			80.0
Depth of 8" PVC Casing			25.0
Bentonite	0.0	to	2.0
Grout	2.0	to	52.0
Bentonite	52.0	to	54.0
Sand	54.0	to	67.0
Bentonite	67.0	to	80.0
Comp. Stickup	2.7	to	0.0
Riser Pipe to GS	0.0	to	56.0
Screen	56.0	to	66.0
Pipe Cap at	66.3		

Well Diagram



Feet		Elevation
2.7	Top of Riser	1514.797
0.0	Ground Surface	1512.063
	Bentonite	
2.0	Top of Grout	
52.0	Top of Bentonite	
54.0	Top of Sand	
67.0	Bottom of Sand	
80.0	Bottom of Bentonite	

COMMENTS: Well drilled using Sonic Drilling Techniques.
Set dedicated bladder pump on 12/26/19: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

wood.

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1913D
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1510.537
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	12/11/2019 to 12/18/2019
		DATE WELL CONST.:	12/19/2019 to 1/7/2020

Monitoring Well Construction Details

Date Set Start:	12/19/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 10
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 6
Date Complete:	1/7/2020	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 1
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 12

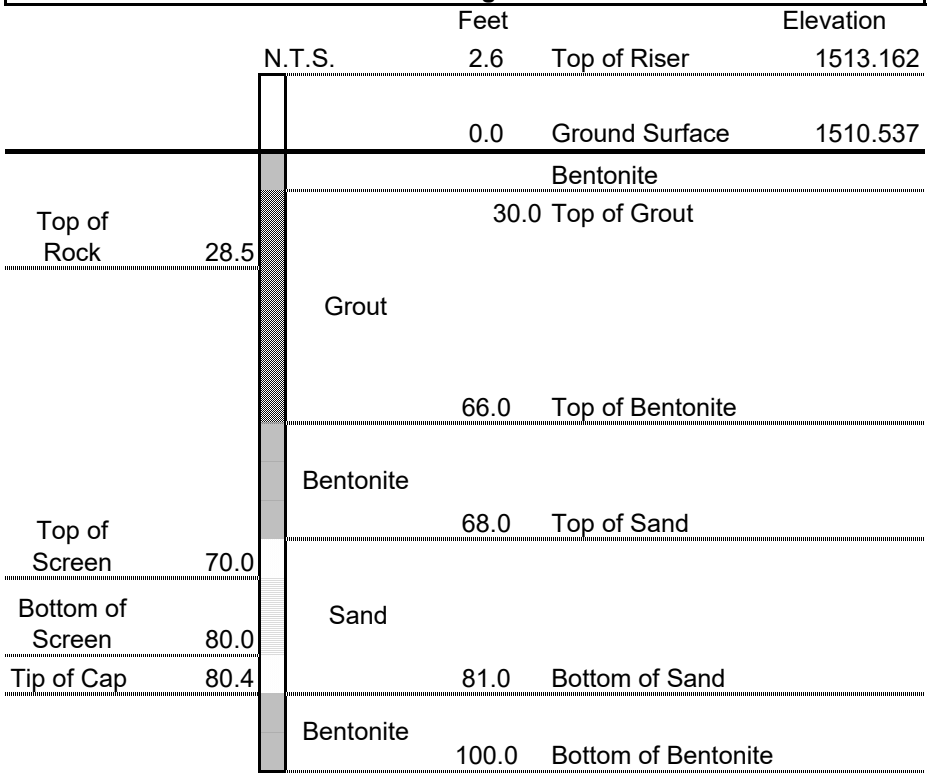
Well Survey Information

Top of Well Casing Elevation	1513.162
Concrete Pad Elevation	1510.870
Ground Surface Elevation	1510.537
Northing Top of Well Riser	3,521,021.82
Easting Top of Well Riser	10,402,738.17

Well Construction Information

Depth to Bed Rock			28.5
Depth of Boring - 6" Sonic			100.0
Depth of 8" PVC Casing			30.0
Bentonite	0.0	to	30.0
Grout	30.0	to	66.0
Bentonite	66.0	to	68.0
Sand	68.0	to	81.0
Bentonite	81.0	to	100.0
Comp. Stickup	2.6	to	0.0
Riser Pipe to GS	0.0	to	70.0
Screen	70.0	to	80.0
Pipe Cap at	80.4		

Well Diagram



COMMENTS: Well drilled using Sonic Drilling Techniques.
Set dedicated bladder pump on 1/8/2020: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM

MONITORING WELL CONSTRUCTION LOG

PROJECT NAME:	AEP Clinch River Pond 1 NES Monitoring Wells	**BORING NO:**	W-1913S
PROJECT LOCATION:	Carbo, VA	**ELEVATION (G.S.):**	1510.142
WOOD PROJECT #:	3050-19-0394	**DATE DRILLED:**	10/17/2019 to 12/4/2019
		DATE WELL CONST.:	12/19/2019 to 1/7/2020

Monitoring Well Construction Details

Date Set Start:	12/19/2019	Surface Comp:	2'x'2x4" Conc. 6"X6" Alu.	Grout:	Cetco Pure Gold 30% Solids - 5
Set By:	EnviroProbe	Pipe Size:	2" Flush Thread Sch. 40	Sand:	Gillibrand #10/20 - 6
Date Complete:	1/7/2020	Screen Size:	0.010 Slot	Bentonite:	Pel-Plug 3/8" TR.30 - 1
Datum:	Ground Surface				Haliburton 3/8" Hole Plug - 3

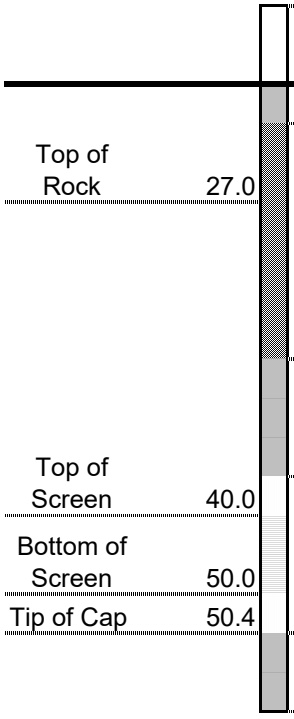
Well Survey Information

Top of Well Casing Elevation	1513.391
Concrete Pad Elevation	1510.881
Ground Surface Elevation	1510.142
Northing Top of Well Riser	3,521,017.59
Easting Top of Well Riser	10,402,730.33

Well Construction Information

Depth to Bed Rock			27.0
Depth of Boring - 6" Sonic			62.0
Depth of 8" PVC Casing			30.0
Bentonite	0.0	to	2.0
Grout	2.0	to	36.0
Bentonite	36.0	to	38.0
Sand	38.0	to	51.0
Bentonite	51.0	to	62.0
Comp. Stickup	3.2	to	0.0
Riser Pipe to GS	0.0	to	10.0
Screen	40.0	to	50.0
Pipe Cap at	50.4		

Well Diagram



Feet		Elevation
3.2	Top of Riser	1513.391
0.0	Ground Surface	1510.142
	Bentonite	
2.0	Top of Grout	
36.0	Top of Bentonite	
38.0	Top of Sand	
51.0	Bottom of Sand	
62.0	Bottom of Bentonite	

COMMENTS: Well drilled using Sonic Drilling Techniques.
Set dedicated bladder pump on 1/8/2020: Geotech, 166SS36 with Teflon bladder, 3/8" Teflon lined tubing, stainless safety cable and slip fit cap.

Logged by: RFS

Checked by: JCM